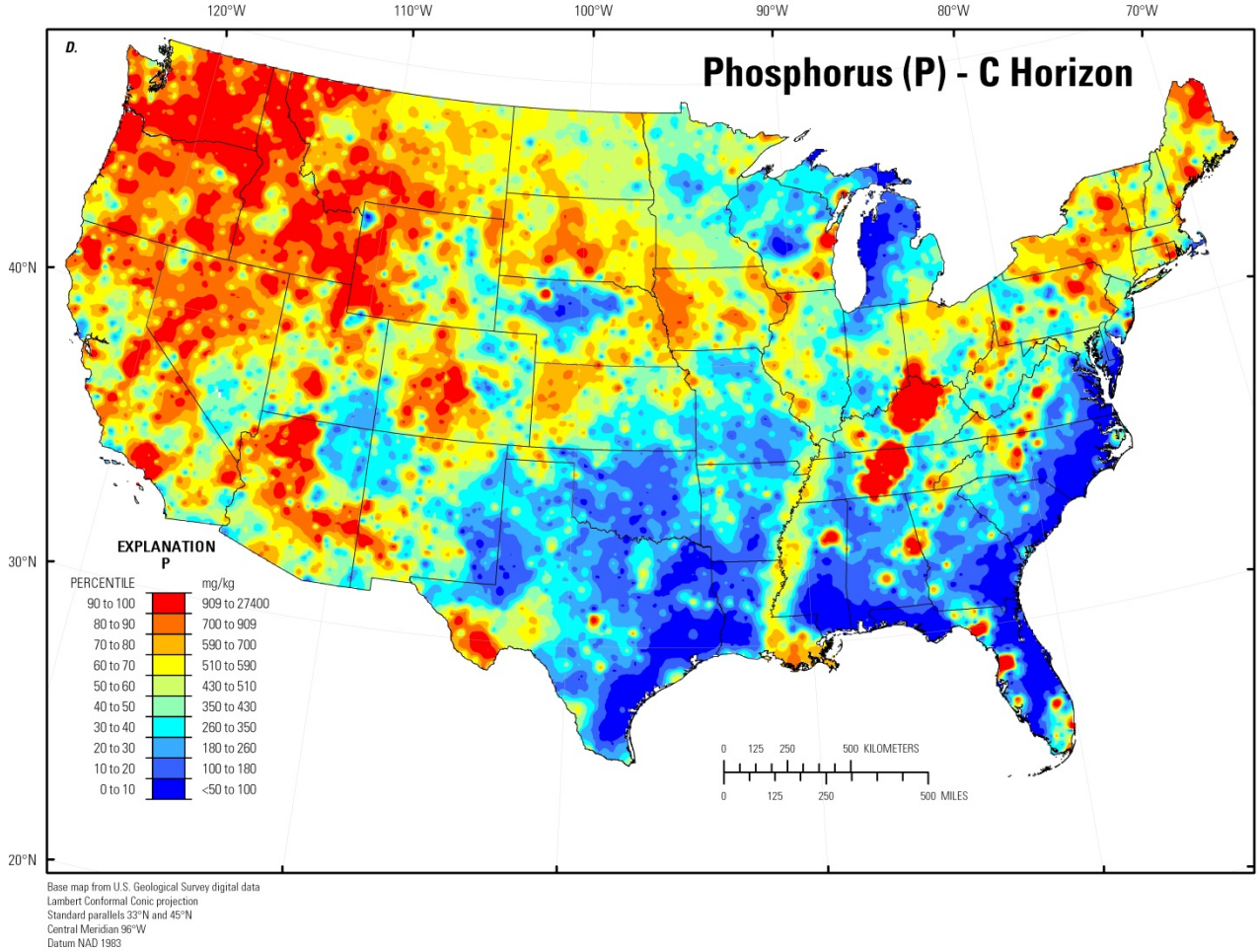
Geochemical and Mineralogical Maps for Soils of the Conterminous United States



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Geochemical and Mineralogical Maps for Soils of the Conterminous United States

By David B. Smith, William F. Cannon, Laurel G. Woodruff, Federico Solano, and Karl J. Ellefsen

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Conversion Factors

SI to Inch/Pound

Multiply	By	To obtain
	Length	
centimeter (cm)	0.3937	inch (in.)
millimeter (mm)	0.03937	inch (in.)
angstrom	0.00000000394	inch (in.)
meter (m)	3.281	foot (ft)
kilometer (km)	0.6214	mile (mi)
meter (m)	1.094	yard (yd)
	Area	
square kilometer (km^2)	247.1	acre
square kilometer (km^2)	0.3861	square mile (mi^2)
	Mass	
kilogram (kg)	2.205	pound avoirdupois (lb)
milligram	0.0000353	Ounce, avoirdupois (oz)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:
°F=(1.8×°C)+32

Geochemical and Mineralogical Maps for Soils of the Conterminous United States

By David B. Smith, William F. Cannon, Laurel G. Woodruff, Federico Solano, and Karl J. Ellefsen

Abstract

The U.S. Geological Survey began sampling in 2007 for a low-density (1 site per 1,600 square kilometers, 4,857 sites) geochemical and mineralogical survey of soils in the conterminous United States as part of the North American Soil Geochemical Landscapes Project. The sampling protocol for the national-scale survey included, at each site, a sample from a depth of 0 to 5 centimeters, a composite of the soil A horizon, and a deeper sample from the soil C horizon or, if the top of the C horizon was at a depth greater than 1 meter, a sample from a depth of approximately 80–100 centimeters. The <2-millimeter fraction of each sample was analyzed for a suite of 45 major and trace elements by methods that yield the total or near-total elemental content. The major mineralogical components in the samples from the soil A and C horizons were determined by a quantitative X-ray diffraction method using Rietveld refinement. Sampling in the conterminous United States was completed in 2010, with chemical and mineralogical analyses completed in May 2013. The resulting data set provides an estimate of the abundance and spatial distribution of chemical elements and minerals in soils of the conterminous United States and represents a baseline for soil geochemistry and mineralogy against which future changes may be recognized and quantified. This report releases geochemical and mineralogical maps along with a histogram, boxplot, and empirical cumulative distribution function plot for each element or mineral.

Introduction

V.M. Goldschmidt, generally considered to be the father of modern-day geochemistry, stated that the primary objectives of geochemistry are to determine quantitatively the chemical composition of the Earth and its parts and to discover the laws that control the distribution of the individual elements (Goldschmidt, 1937, 1954). Understanding the variability in the natural abundance and spatial distribution of chemical elements (geochemical background) in the near-surface environment of the Earth is important for such fields as risk-based assessment of contaminated land, environmental regulation, human and animal health, agriculture, land-use planning, mineral exploration, and water quality. Geochemical mapping, conducted at appropriate scales, is the primary method for establishing this variability.

Garrett and others (2008) provide a summary of the evolution of regional geochemical mapping. Over the past 25 years, numerous collections of regional-, national-, or international-scale geochemical maps, or geochemical atlases, have been published based primarily on soils or stream sediments as the sample medium (for example, Webb and others, 1973, 1978; Weaver and others, 1983; Fauth and others, 1985; Bølviken and others, 1986; Thalmann and others, 1989; Lahermo and others, 1990, 1996; Geological Survey of Japan, 1991; British Geological Survey, 1992, 1993; Koljonen, 1992; McGrath and Loveland, 1992; Lalor and others, 1995; Lis and Pasieczna, 1995; Reimann and others, 1998, 2003;

Čurlík and Šefčík, 1999; Kadūnas and others, 1999; Li and Wu, 1999; Ottesen and others, 2000; Gustavsson and others, 2001; De Vivo and others, 2003; Salminen and others, 2004, 2005; De Vos and others, 2006; Xi, 2010, 2011; Caritat and Cooper, 2011; Cohen and others, 2011; Rawlins and others, 2012; Mol and others, 2012; and Xie and others, 2012). These publications portray elemental abundance and spatial variation in map form and illustrate the different ways in which these types of maps can be generated. Reimann (2005) discusses how map design and different mapping techniques can be used to optimize the communication of spatial geochemical information.

From 2007 to 2010, the U.S. Geological Survey collected soil samples from 4,857 sites throughout the conterminous United States (fig. 1) as part of the North American Soil Geochemical Landscapes Project (Smith, 2009; Smith and others, 2009, 2011, 2012; Friske and others, 2013). The objectives of this project were to (1) produce a soil geochemical and mineralogical database and its representation in map form for the continent of North America (21 million square kilometers [km^2]), (2) interpret the observed geochemical and mineralogical patterns in terms of the processes that caused the patterns, and (3) establish an archive of soil samples for use by future investigators. The geochemical and mineralogical data for the conterminous United States were published by Smith and others (2013) and are available as digital download files at *http://pubs.usgs.gov/ds/801/*. The purpose of this report is to release geochemical and mineralogical maps based on these data as produced using a standardized protocol and publicly available GIS software. Only a brief overview of the sampling protocols and analytical methods are given below; details are provided in Smith and others (2013).

Figure 1. Map showing the location of 4,857 soil sampling sites in the conterminous United States.

Sampling

Target sampling sites were selected on the basis of a generalized random tessellation stratified design (Stevens and Olsen, 2000, 2003, 2004; Olsen, 2005) at a density of approximately 1 site per 1,600 km^2 (4,857 sites for the conterminous United States). This design produces a spatially balanced set of sampling points without adhering to a strict grid-based system.

If a target site was inaccessible for any reason during the sampling program, the field crew would select an alternative site as close as possible to the original site with landscape and soil characteristics as similar to the original site as possible. The following guidelines were also used in the site selection process to ensure that samples were not collected from obviously contaminated areas:

- No sample should be collected within 200 meters (m) of a major highway.
- No sample should be collected within 50 m of a rural road.
- No sample should be collected within 100 m of a building or structure.
- No sample should be collected within 5 kilometers (km) downwind of active major industrial activities such as power plants or smelters.

The sampling protocols used for the national-scale survey were a combination of depth-based and horizon-based sampling. Ideally, the following samples were collected at each site: (1) soil from a depth of 0 to 5 centimeters (cm); (2) a composite of the soil A horizon (the uppermost mineral soil); and (3) a sample from the soil C horizon (generally partially weathered parent material) or, if the top of the C horizon was deeper than 1 m, a sample from about 80 to 100 cm. The specific depths of collection for samples from the soil A and C horizons are given in Smith and others (2013).

Chemical Analysis

Each sample was air-dried at ambient temperature, disaggregated, and sieved to <2 millimeters (mm). The <2-mm material was then crushed to <150 micrometers (µm) prior to chemical analysis by methods that yielded the total or near-total elemental content. Concentrations of aluminum (Al), calcium (Ca), iron (Fe), potassium (K), magnesium (Mg), sodium (Na), sulfur (S), titanium (Ti), silver (Ag), barium (Ba), beryllium (Be), bismuth (Bi), cadmium (Cd), cerium (Ce), cobalt (Co), chromium (Cr), cesium (Cs), copper (Cu), gallium (Ga), indium (In), lanthanum (La), lithium (Li), manganese (Mn), molybdenum (Mo), niobium (Nb), nickel (Ni), phosphorus (P), lead (Pb), rubidium (Rb), antimony (Sb), scandium (Sc), tin (Sn), strontium (Sr), tellurium (Te), thorium (Th), thallium (Tl), uranium (U), vanadium (V), tungsten (W), yttrium (Y), and zinc (Zn) were determined by inductively coupled plasma–atomic emission spectrometry (ICP–AES) and inductively coupled plasma–mass spectrometry (ICP–MS) following dissolution in a mixture of hydrochloric, nitric, perchloric, and hydrofluoric acids. Mercury (Hg) was determined by cold-vapor atomic absorption spectrometry after dissolution in a mixture of nitric and hydrochloric acids. Arsenic (As) was determined by hydride-generation atomic absorption spectrometry following fusion in a mixture of sodium peroxide and sodium hydroxide. Selenium (Se) was determined by hydride-generation atomic absorption spectrometry after dissolution in a mixture of nitric, hydrofluoric, and perchloric acids. Total carbon (C) was determined by the use of an automated carbon analyzer. The concentration of organic C was calculated by subtracting the concentration of inorganic (carbonate) C (determined from the mineralogical data for the carbonate minerals calcite, dolomite, and aragonite) from the total C concentration. A complete discussion of the analytical methods, including quality control protocols, is given in Smith and others (2013).

Mineralogical Analysis

All A-horizon and C-horizon samples were analyzed by X-ray diffraction (XRD), and the percentages of major mineral phases were calculated using a Rietveld refinement method. The major mineral phases reported are quartz, total potassium feldspar, total plagioclase, total feldspar, total 14-angstrom (Å) clays, total 10-Å clays, kaolinite, total clays, gibbsite, calcite, dolomite, aragonite, total carbonates, analcime, heulandite, total zeolites, gypsum, talc, hornblende, serpentine, hematite, goethite, pyroxene, pyrite, and amorphous content. Splits of the <2-mm fraction were used for analysis. Zinc oxide (ZnO, 10 weight percent) was added to each sample as an internal standard, which allows calculation of the amorphous component (portion of sample that is not quantified by the diffraction technique). The sample-ZnO mixture was ground for 3 minutes in isopropyl alcohol using a micronizing mill and agate beads. Dried samples were disaggregated by passing through a 400-µm sieve and lightly pressed into back-loaded sample mounts. Samples were analyzed on a PANalytical X'Pert PRO Materials Research Diffractometer using Cu Kα radiation to collect digital data continuously from 3° to 70° 2θ (scan speed = 0.0567° 2θ per second). PANalytical HighScore Plus software version 2.2a was used for pattern processing, mineral phase identification, and Rietveld quantitative mineral analysis. See Smith and others (2013) for a complete discussion of the mineralogical analysis and quality control protocols used.

Map Generation

In the map figures, the spatial distribution of each element or mineral is shown either by an interpolated and smoothed average color surface map or a proportional symbol map. Elements and minerals with only a small proportion of samples above the lower limit of determination (LLD) are shown as proportional symbol maps; the others are shown as color surface maps.

Interpolated Surface Maps

Maps showing predicted element and mineral concentrations for the conterminous United States are interpolated from the actual data points published in Smith and others (2013) by an inverse distance weighted (IDW) technique using ArcGIS software. The IDW method used here predicts unique concentration values for an array of 444-km^2 grid cells covering the conterminous United States (approximately 8 million km^2). A weighted average of concentration values for all data points within 75 km of the center of each grid cell is calculated. The closer a sample point is to the cell being estimated, the more influence that point has in the averaging process. The relative influence of closer and more distant points can be adjusted by varying a power function. For all of the maps, we have used a default value of 2 for the power function, which assigns relatively high significance to the nearest data points. Use of this value commonly produces numerous small, circular areas showing the influence of individual sample values that vary substantially from neighboring samples and yield a spotted appearance of local high and low values. Many of these could be removed by varying interpolation parameters to produce a smoother surface. The IDW method is an exact interpolator in which minimum and maximum concentrations can occur only at data points, so the interpolated values all lie within the range of analytically determined concentrations. To produce the final maps, the array of grid cells generated by IDW was further smoothed using a bilinear interpolation to suppress the appearance of sharp grid-cell boundaries.

To produce the geochemical maps, samples containing less than the LLD for an element were assigned a value of one half of the LLD. For mineralogical data, a nominal LLD of 0.2 weight percent was used for all mineral phases that had been quantified, realizing that actual detection limits may have

been higher in cases of severe peak overlap. A value of 0.1 weight percent was assigned to all cases of non-detection for each mineral. For approximately half of the geochemical maps, a small number of outliers (one to six) were removed prior to the IDW interpolation. Those outliers are extreme high concentrations that appear to represent a point source of either natural or anthropogenic origin and are not representative of a larger region. If they are included in the interpolation, they produce an unrealistically large area of predicted high concentrations and also unduly affect the classification of values used in the display. All removed outlier samples are shown as points (diamond symbols) on the interpolated maps along with their element concentrations.

As pointed out by Reimann (2005), perhaps the most important step in the construction of an informative geochemical map is the choice of classes for color-coding the element concentrations. The chosen classes must relate to the statistical distribution of the concentrations if processes governing the regional distribution of an element are to be accurately discerned. In accordance with the recommendation of Reimann (2005), we have chosen classes on the basis of percentiles of the analytically determined values for each element and mineral. The interpolated grid cell values are thus portioned into ten classes as follows: 0–10th percentile, 10th–20th percentile, 20th–30th percentile, 30th–40th percentile, 40th–50th percentile, 50th–60th percentile, 60th–70th percentile, 70th–80th percentile, 80th–90th percentile, and 90th–100th percentile. Each class is represented by a unique color, ranging from blues (lowest concentrations) to reds (highest concentrations). With these classes, each color represents approximately 10 percent of the data. For elements having more than 10 percent of concentration values below the LLD (Cd [fig. 20*D*], In [fig. 50*D*], and Se [fig. 95*D*] for soils collected from a depth of 0 to 5 cm; inorganic C [fig. 28*D*], Cd [fig. 21*D*], In [fig. 51*D*], Hg [fig. 72D], S [fig. 108*D*], and Se [fig. 96*D*] for the soil A horizon; inorganic C [fig. 29*D*], Cd [fig. 22*D*], Hg [fig. 73*D*], In [fig. 52*D*], S [fig. 109*D*], and Se [fig. 97*D*] for the soil C horizon), the percentile representation was modified so that all values below the LLD are included in the lowest concentration class, and the remaining values are shown by the appropriate percentile values and colors. On the maps for Cd (figs. 20*D*, 21*D*, and 22*D*), Hg (figs. 71*D*, 72*D*, and 73*D*), In (figs. 50*D*, 51*D*, and 52*D*), S (figs. 107*D*, 108*D*, and 109*D*), Se (figs. 95*D*, 96*D*, and 97*D*), and Tl (figs. 113*D*, 114*D*, and 115*D*), some percentile classes have been combined because the same concentration represents more than one percentile. This is shown clearly on the statistical summary included with each map.

Users of these maps should remember the low-density nature of the data set. The maps represent data collected at a density of approximately 1 site per 1,600 km^2, so there is, on average, about 40 km between each sample site. Soil geochemistry can vary considerably over that distance, and this variation will not be accurately portrayed by the IDW interpolation procedure. This study and the other low-density geochemical surveys cited in the Introduction were designed to reveal regional-, national-, and continental-scale geochemical and mineralogical patterns extending over thousands or hundreds of thousands of square kilometers. The resulting data sets are not appropriate for the accurate estimation of the concentration of a given element or mineral at a site where a sample was not collected. To paraphrase Blum (2013) in reference to the data for the conterminous United States: The data aren't so fine that they will tell you what lies in your backyard behind the raspberry bush; however, they will show you the metal and mineral patterns that color your part of the world and they will remind you—as they should—of the astonishing and diverse chemistry that the planet creates under our feet.

Proportional Symbol Maps

Elements and minerals that were detected in less than 30 percent of samples are mapped using proportional symbols rather than an interpolated surface. These elements are Ag (figs. 98*D*, 99*D*, and 100*D*), Cs (figs. 35*D*, 36*D*, and 37*D*), and Te (figs. 110*D*, 111*D*, and 112*D*), and the minerals shown by

this method are gibbsite (figs. 156*D* and 157*D*), aragonite (figs. 162*D* and 163*D*), analcime (figs. 166*D* and 167*D*), heulandite (figs. 168*D* and 169*D*), total zeolites (figs. 170*D* and 171*D*), gypsum (figs. 172*D* and 173*D*), talc (figs. 174*D* and 175*D*), serpentine (figs. 178*D* and 179*D*), hematite (figs. 180*D* and 181*D*), goethite (figs. 182*D* and 183*D*), pyroxene (figs. 184*D* and 185*D*), and pyrite (figs. 186*D* and 187*D*). They are classified into five concentration ranges, but as with interpolated surfaces, all samples with concentrations less than the LLD are grouped into the lowest class.

Explanation of Figures

In the following 188 figures, the geochemical maps (figs. 2*D*–139*D*) are presented first and are arranged alphabetically by element name (not symbol). For each element (except total C, inorganic C, and organic C, which have two maps each), there are three maps representing each of the three soil sample types collected (soil from a depth of 0 to 5 cm, soil A horizon, and soil C horizon). These are followed by mineralogical maps (figs. 140*D*–189*D*) with two maps for each mineral (soil A horizon and soil C horizon).

In addition to considering the spatial distribution of an element or mineral as shown on the maps, it is important to consider the statistical distribution of the measured concentration values. The statistical distribution is shown in three graphics and a table (parts *A*, *B*, and *C* of each figure) accompanying each geochemical or mineralogical map (part *D* of each figure). Part *A* of each figure is a histogram and a table of summary statistics, part *B* is a Tukey boxplot, and part *C* is a plot of the empirical cumulative distribution function. All three plots are generated with the R statistical computing environment (R Core Team, 2013). Each of these graphics, in its own way, allows the determination of whether the data distribution is symmetric or skewed, unimodal or multimodal, and whether there are data outliers at either extreme of the distribution. The horizontal axis (concentration) is arithmetic except for some elements or minerals where the distribution is highly right-skewed. In those cases, a logarithmic scale is used. For the histograms, the bin widths are determined by the Sturges formula (Sturges, 1926) when the horizontal axis is arithmetic and by the range of the log-transformed data when the horizontal axis is logarithmic. Each graph shows the LLD as a red vertical dashed line. Concentrations that are below the LLD have been set to a value of one-half the LLD for the graphics. For some elements or minerals (for example, Ag), a large percentage of the data are below the LLD; this results in highly distorted plots. The median absolute deviation (MAD) and robust coefficient of variation as shown in the summary table are not calculated for those elements having more than 5 percent of the analyzed concentrations below the LLD. The MAD is scaled by 1.4826 for asymptotically normal consistency.

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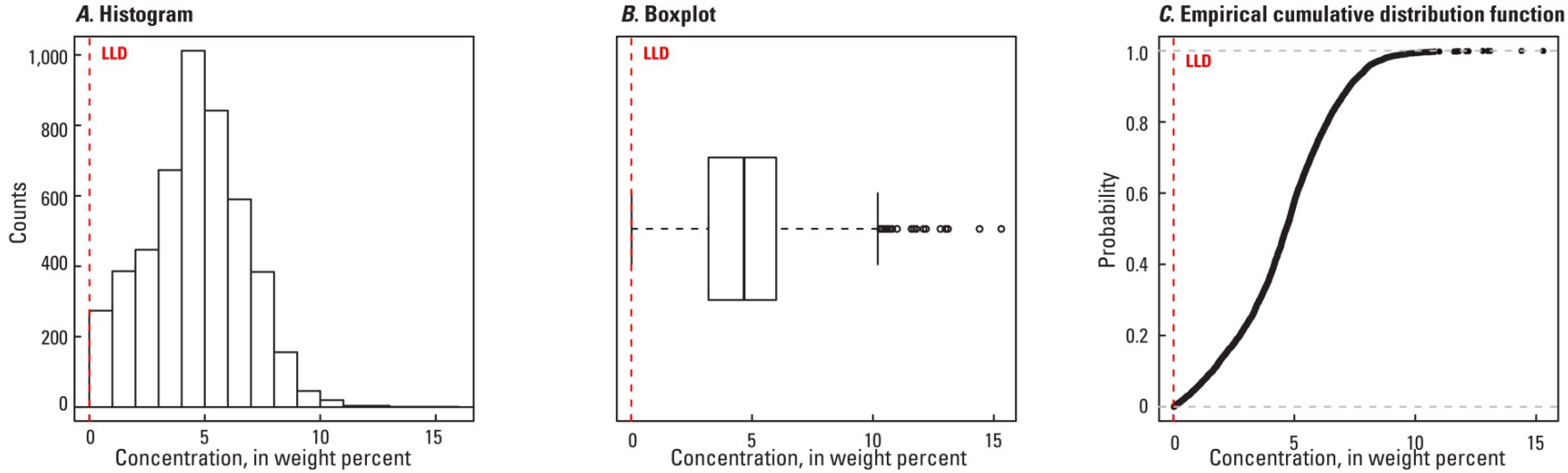
Aluminum (Al) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.01 weight percent
Number below LLD = 0
Minimum = 0.02 weight percent
5 percentile = 0.9 weight percent
25 percentile = 3.2 weight percent
50 percentile = 4.7 weight percent
75 percentile = 6.0 weight percent
95 percentile = 8.0 weight percent
Maximum = 15.3 weight percent
MAD = 2.06 weight percent
Robust CV = 44.1 %

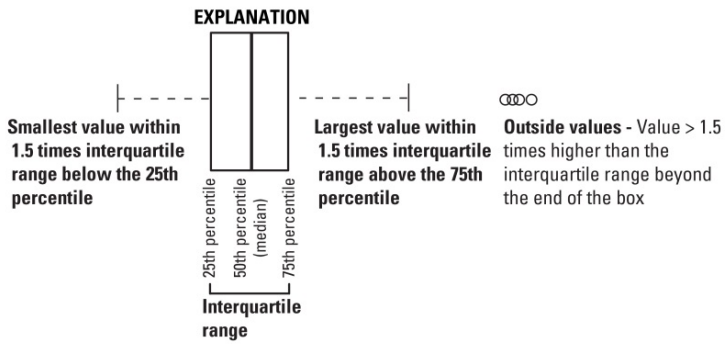


Figure 2. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aluminum (Al) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).

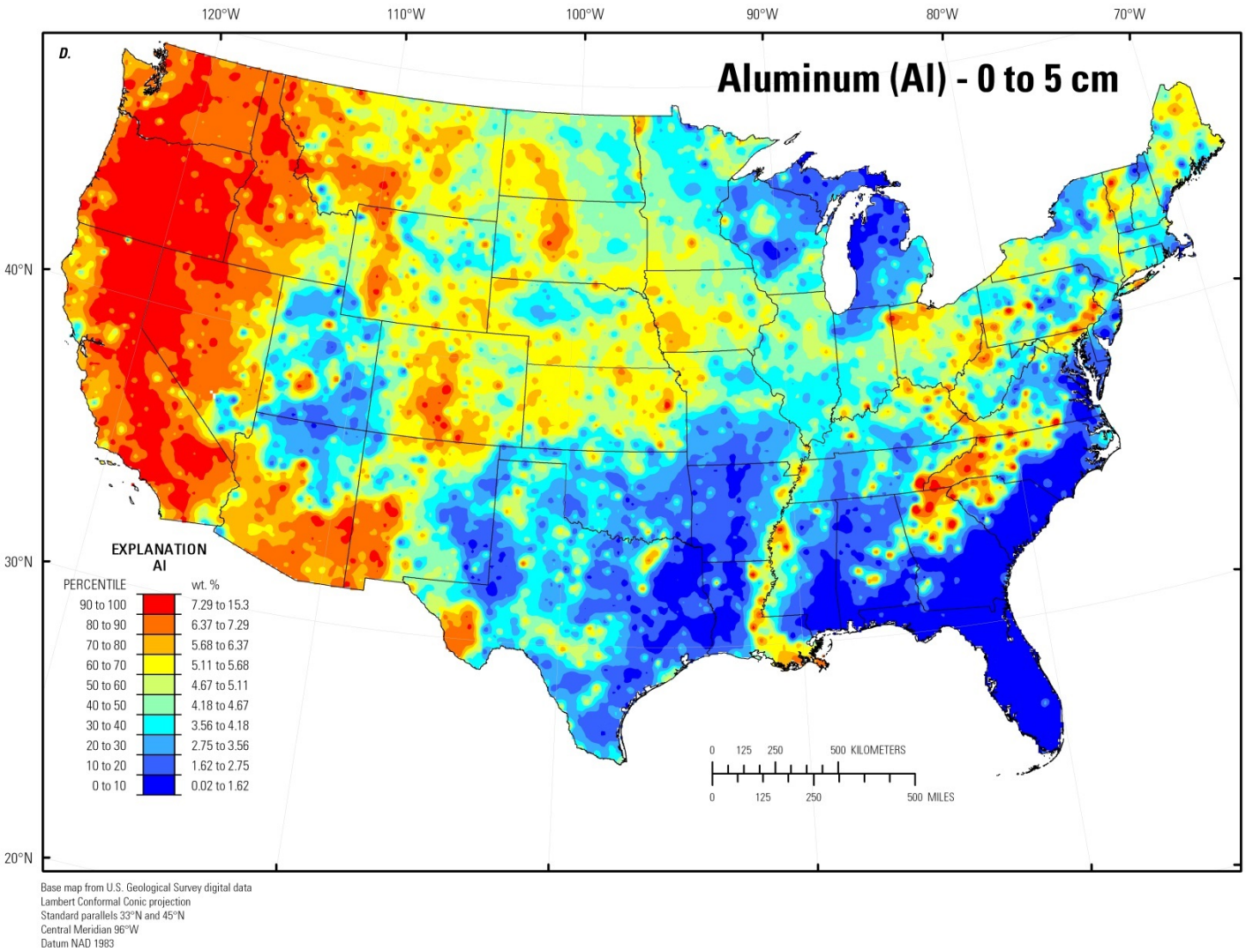
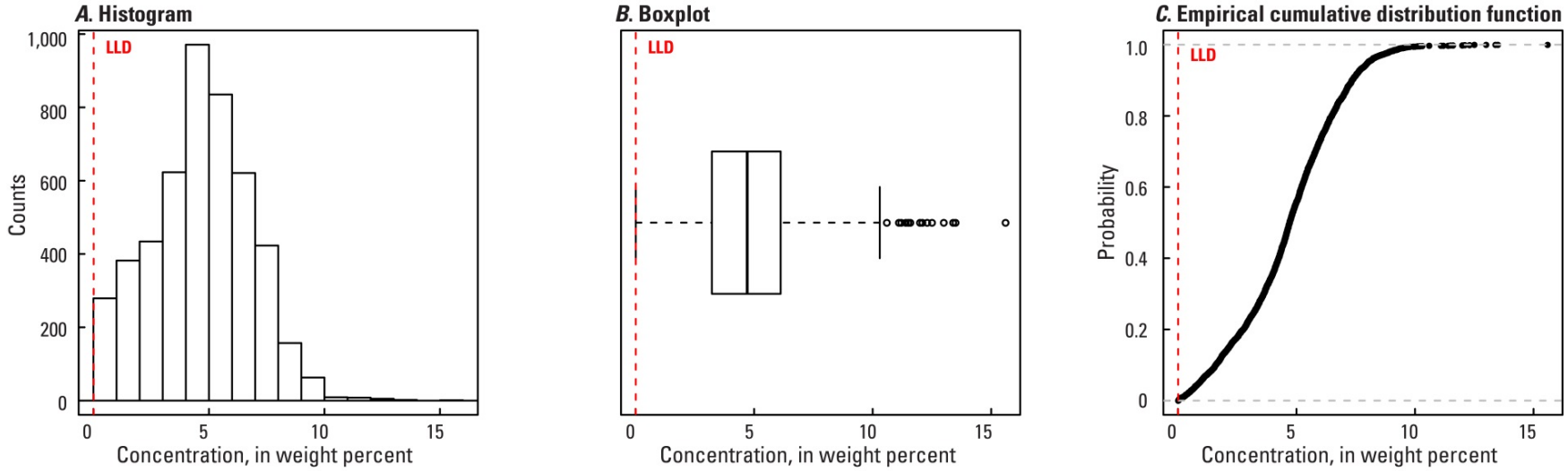


Figure 2. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aluminum (Al) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).—Continued

Aluminum (Al) in soil A horizon



Number of samples = 4,813
LLD = 0.01 weight percent
Number below LLD = 0
Minimum = 0.01 weight percent
5 percentile = 0.90 weight percent
25 percentile = 3.22 weight percent
50 percentile = 4.71 weight percent
75 percentile = 6.12 weight percent
95 percentile = 8.02 weight percent
Maximum = 15.6 weight percent
MAD = 2.15 weight percent
Robust CV = 45.6 %

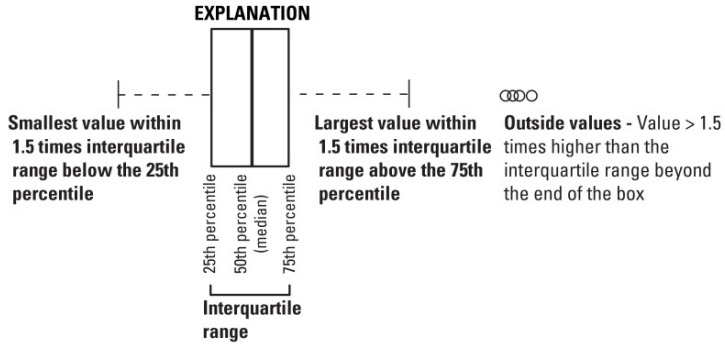


Figure 3. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aluminum (Al) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

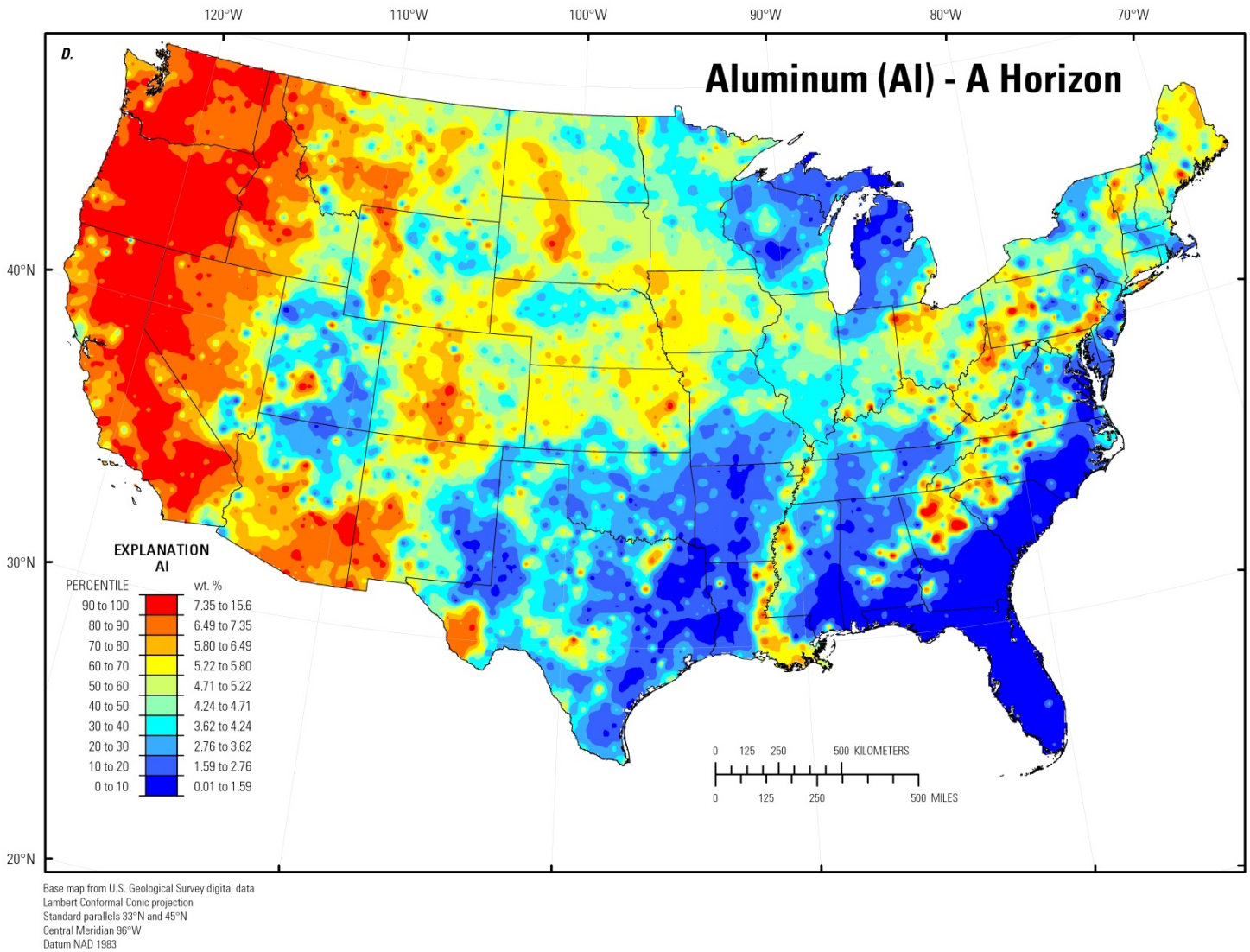
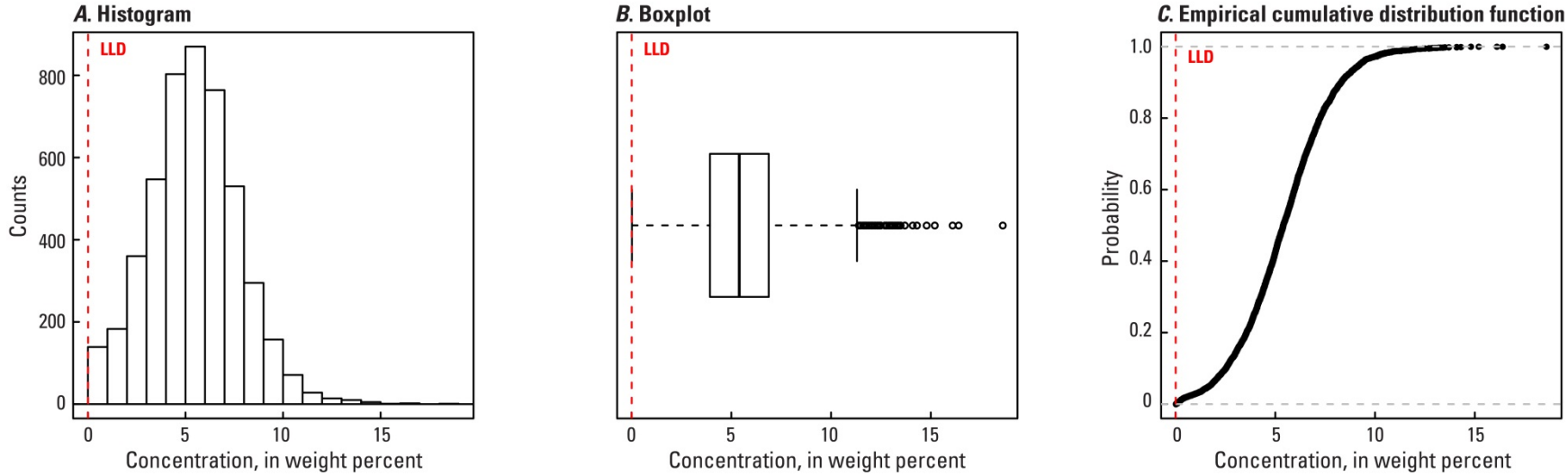


Figure 3. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aluminum (Al) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

Aluminum (Al) in soil C horizon



Number of samples = 4,780
LLD = 0.01 weight percent
Number below LLD = 0
Minimum = 0.02 weight percent
5 percentile = 1.69 weight percent
25 percentile = 3.93 weight percent
50 percentile = 5.40 weight percent
75 percentile = 6.88 weight percent
95 percentile = 9.24 weight percent
Maximum = 18.6 weight percent
MAD = 2.18 weight percent
Robust CV = 40.4 %

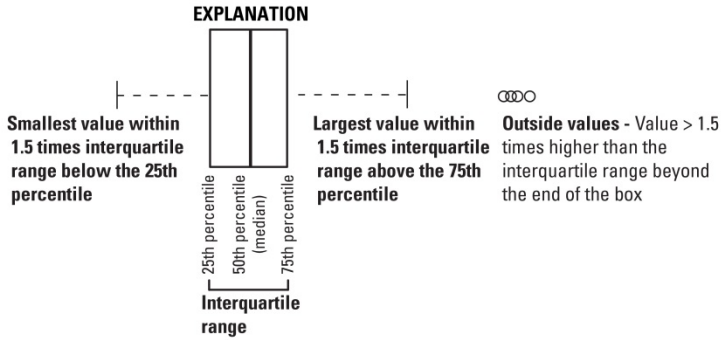


Figure 4. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aluminum (Al) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

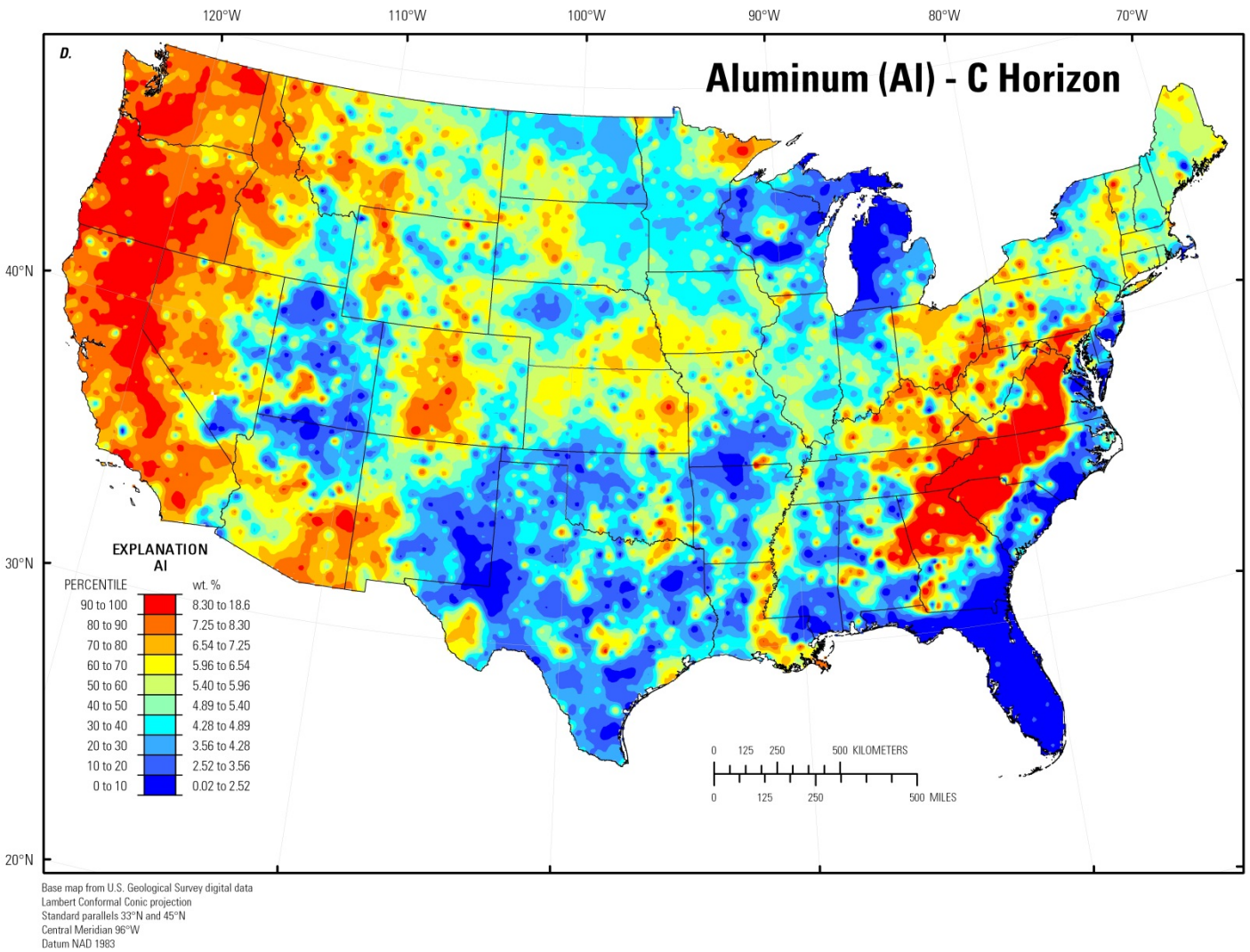
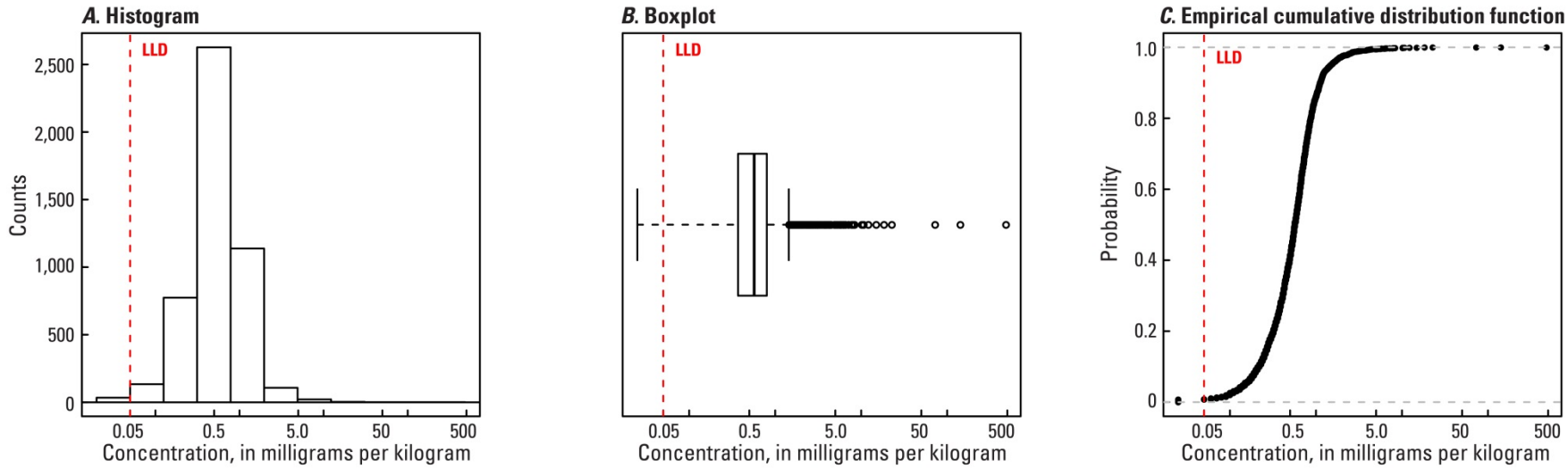


Figure 4. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aluminum (Al) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

Antimony (Sb) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.05 milligrams per kilogram
Number below LLD = 34
Minimum = <0.05 milligrams per kilogram
5 percentile = 0.15 milligrams per kilogram
25 percentile = 0.37 milligrams per kilogram
50 percentile = 0.57 milligrams per kilogram
75 percentile = 0.80 milligrams per kilogram
95 percentile = 1.49 milligrams per kilogram
Maximum = 482 milligrams per kilogram
MAD = 0.311 milligrams per kilogram
Robust CV = 54.6 %

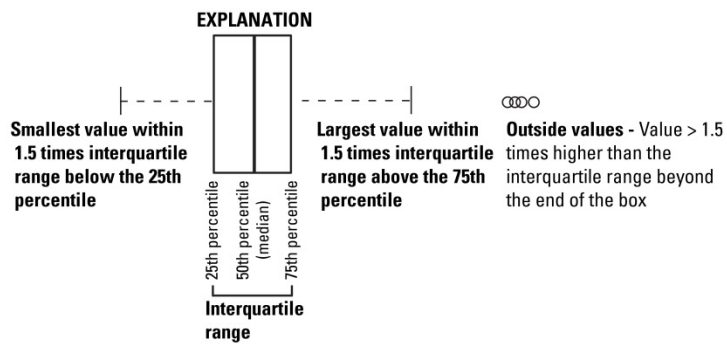


Figure 5. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of antimony (Sb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

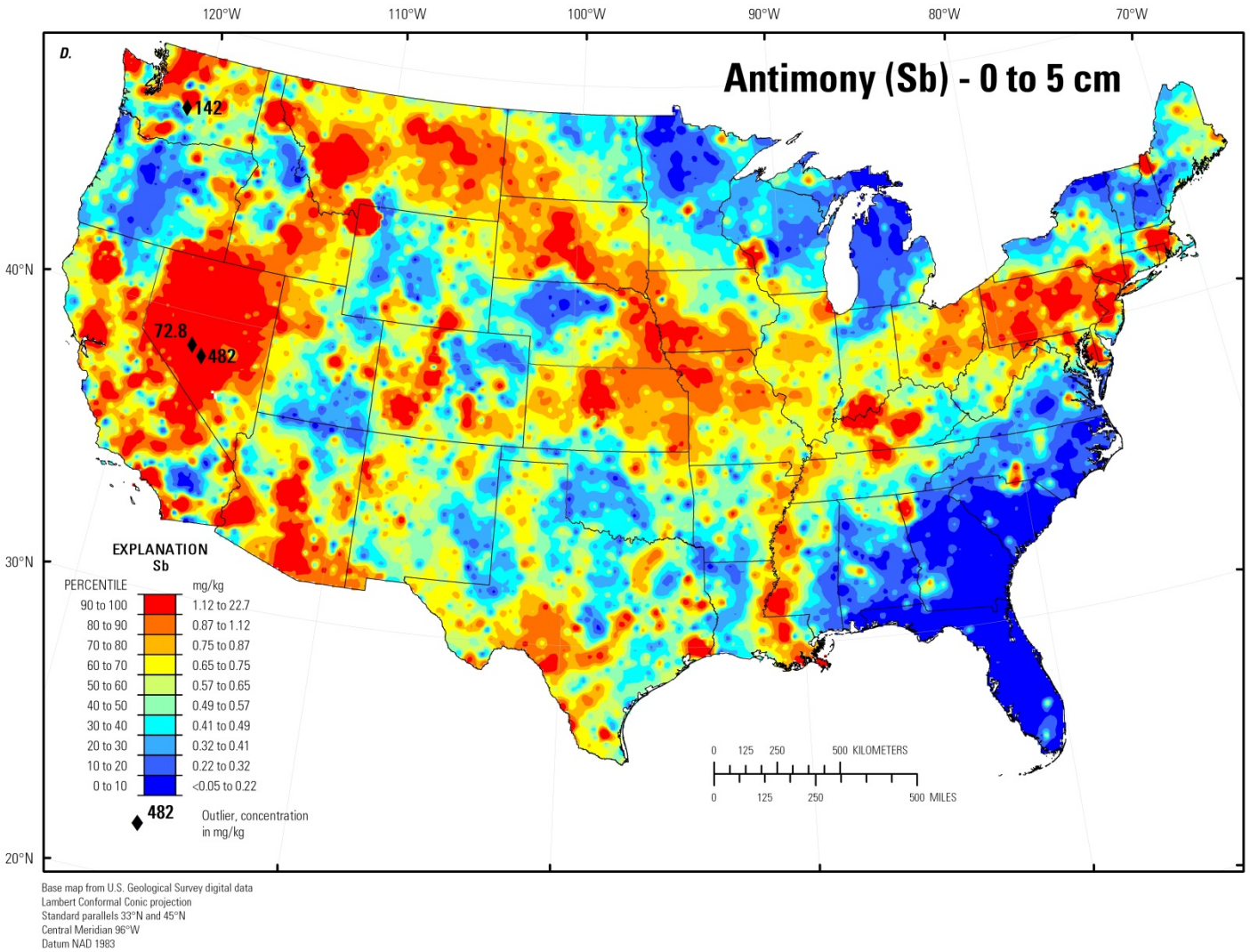
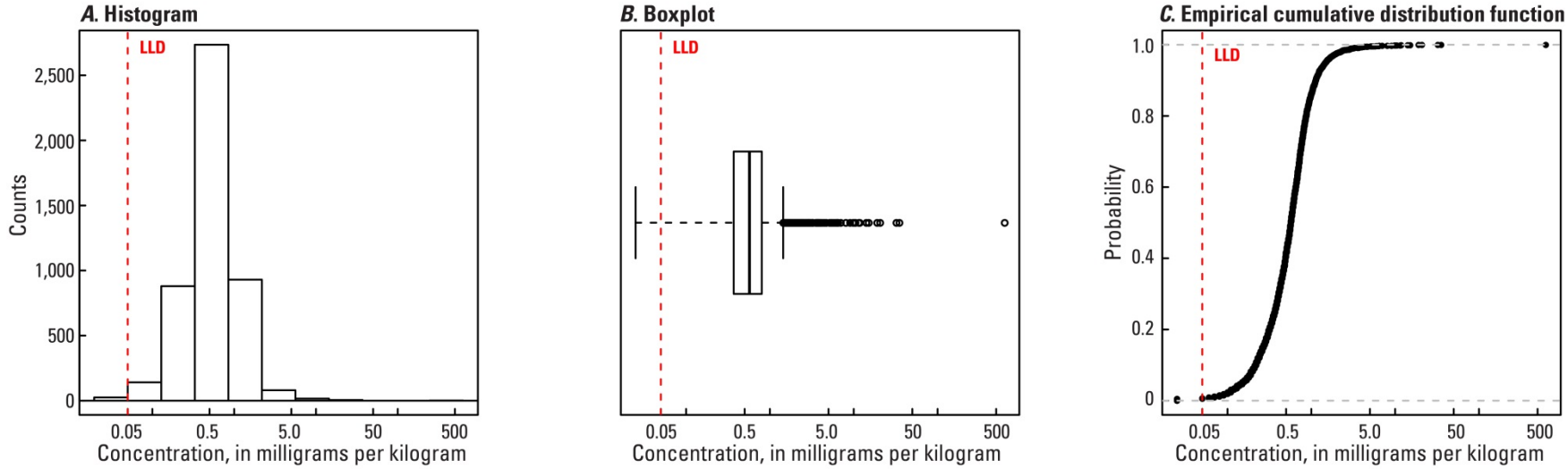


Figure 5. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of antimony (Sb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Antimony (Sb) in soil A horizon



Number of samples = 4,813
LLD = 0.05 milligrams per kilogram
Number below LLD = 25
Minimum = <0.05 milligrams per kilogram
5 percentile = 0.15 milligrams per kilogram
25 percentile = 0.37 milligrams per kilogram
50 percentile = 0.57 milligrams per kilogram
75 percentile = 0.80 milligrams per kilogram
95 percentile = 1.48 milligrams per kilogram
Maximum = 630 milligrams per kilogram
MAD = 0.311 milligrams per kilogram
Robust CV = 54.6 %

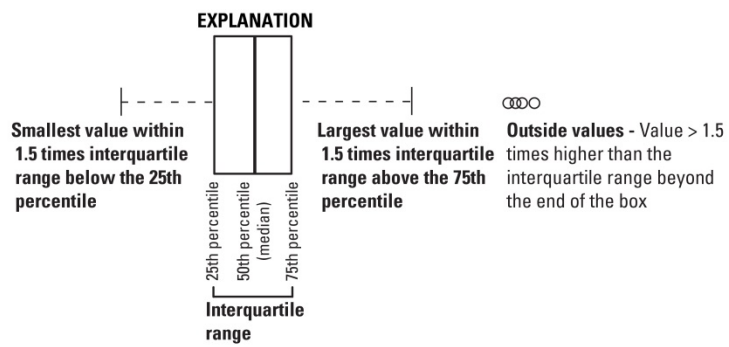


Figure 6. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of antimony (Sb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

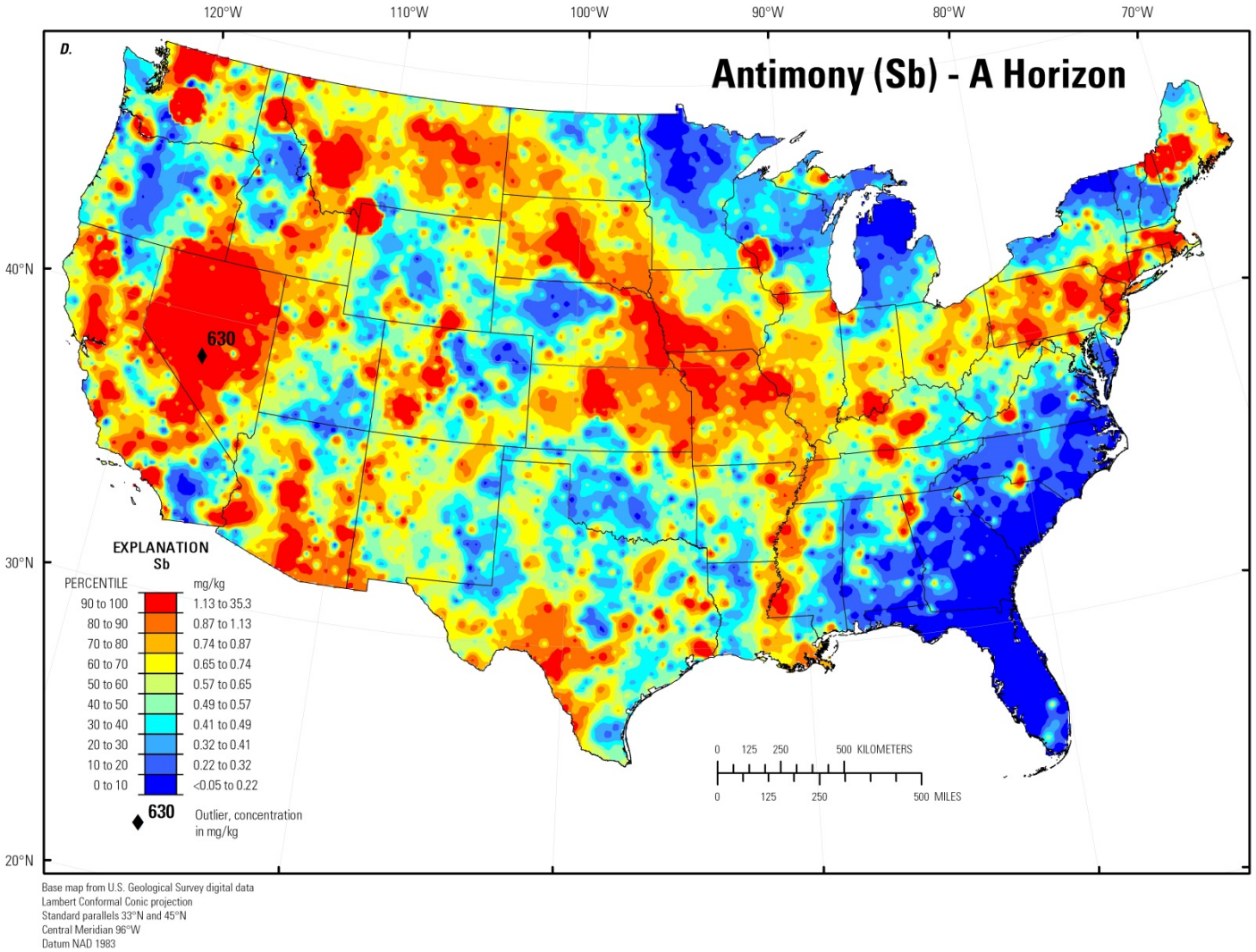


Figure 6. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of antimony (Sb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

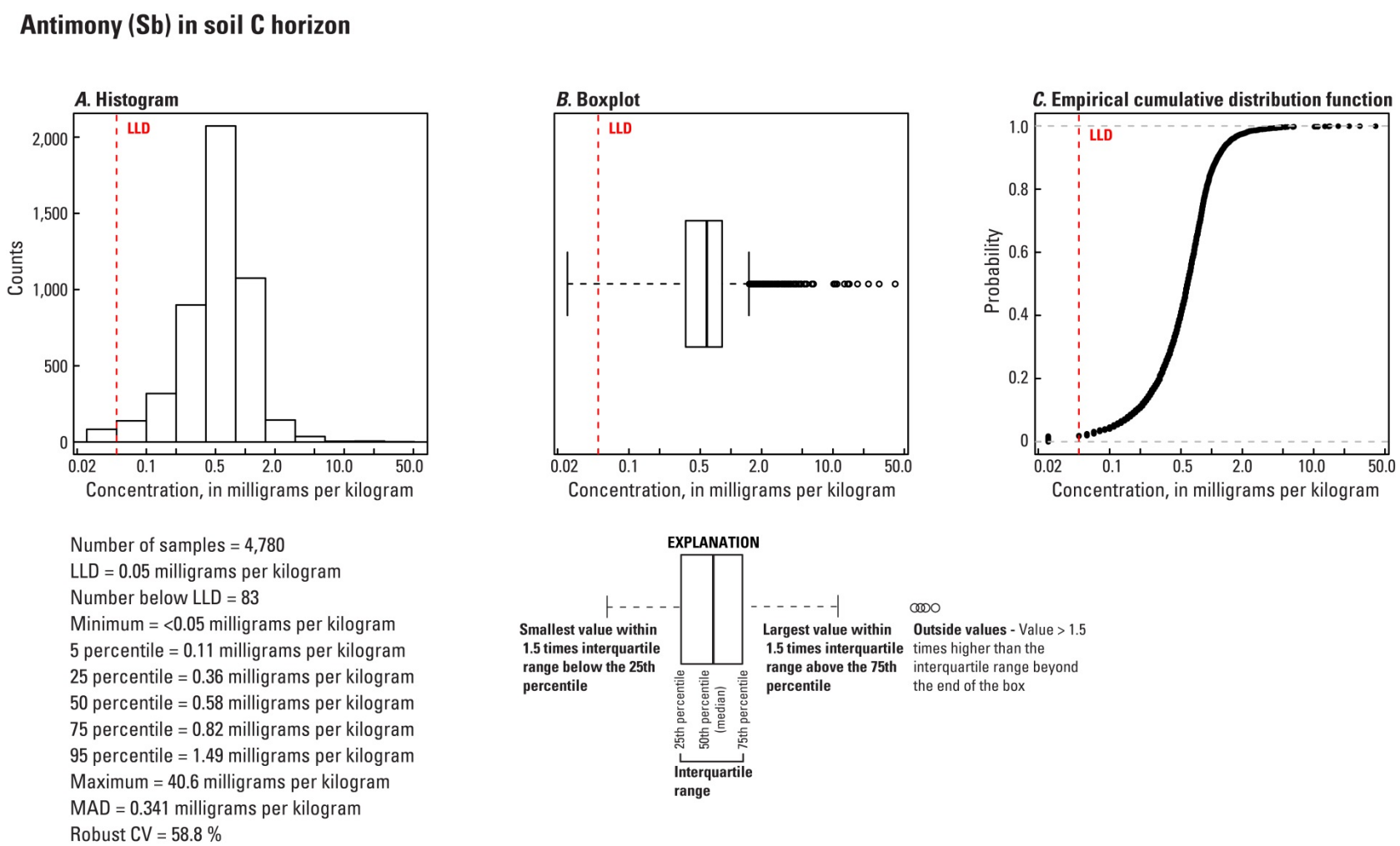


Figure 7. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of antimony (Sb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

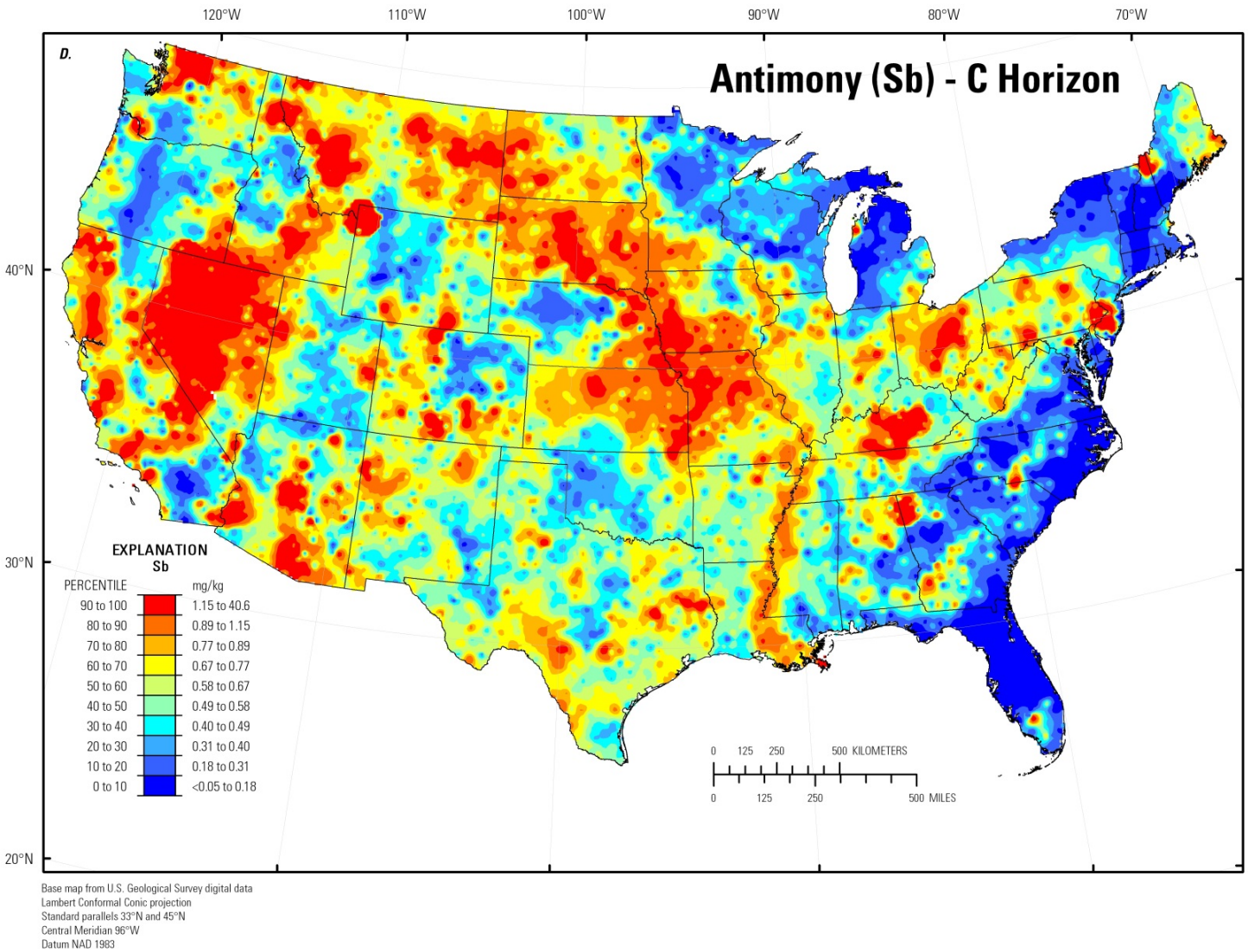


Figure 7. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of antimony (Sb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

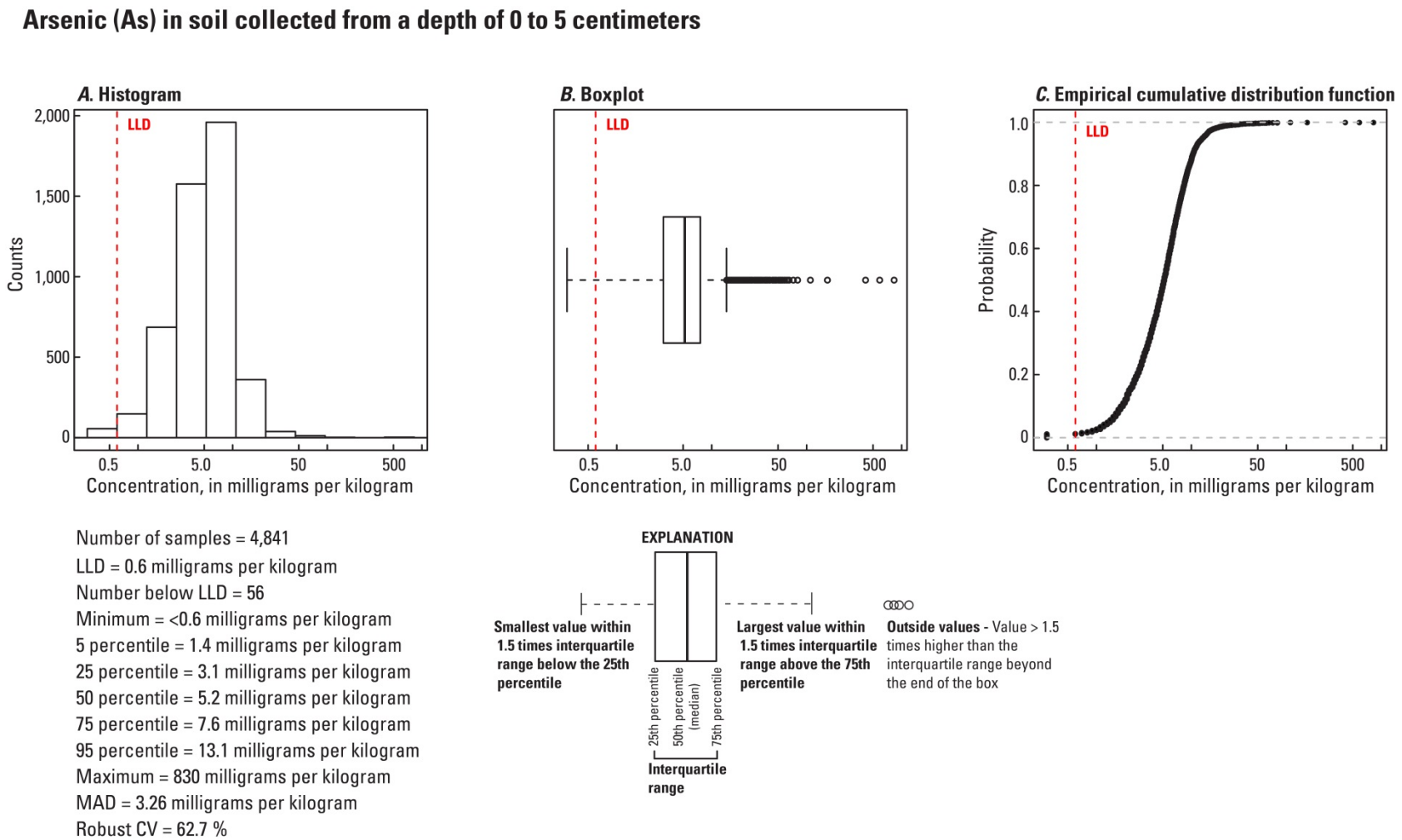


Figure 8. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of arsenic (As) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

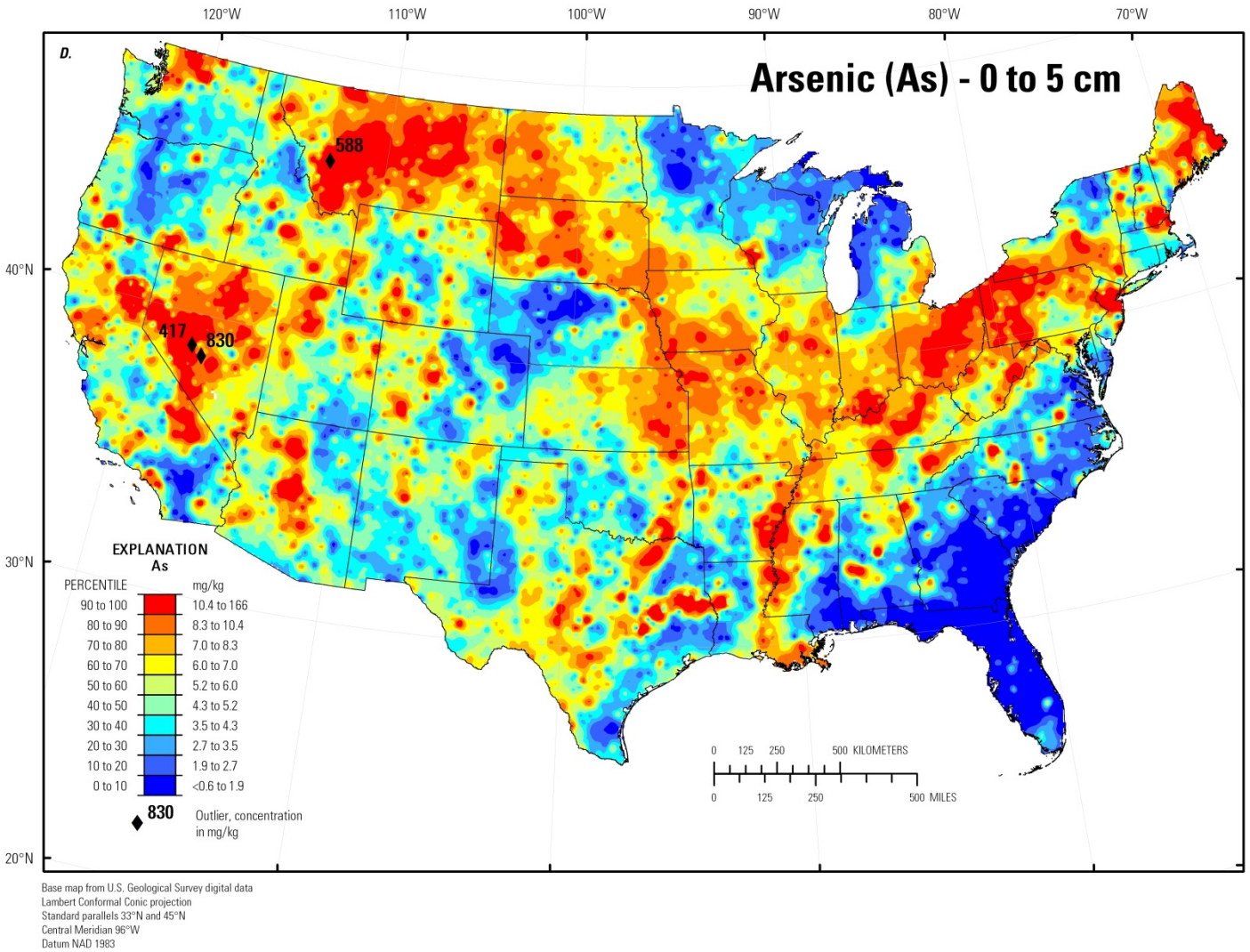


Figure 8. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of arsenic (As) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

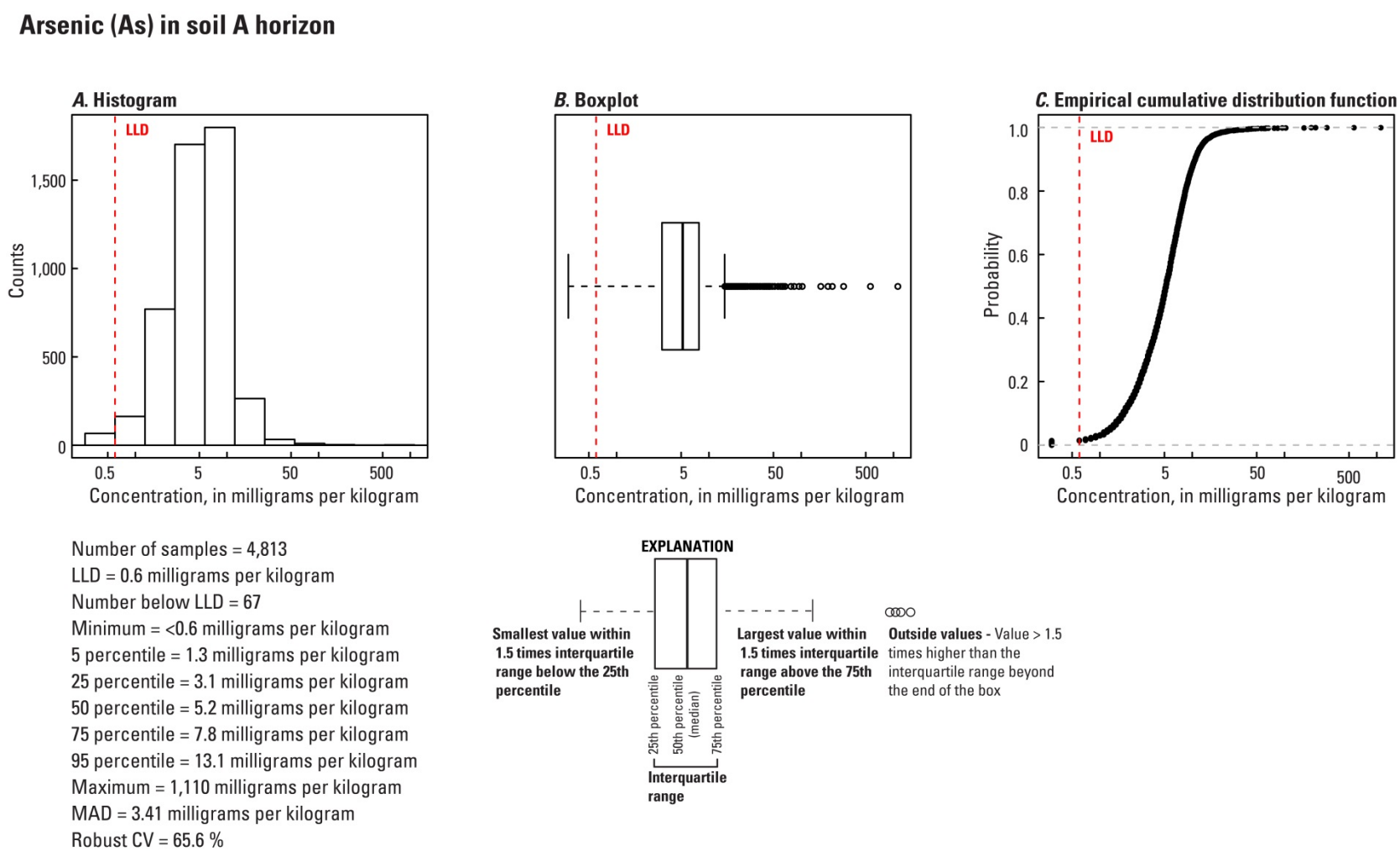


Figure 9. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of arsenic (As) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

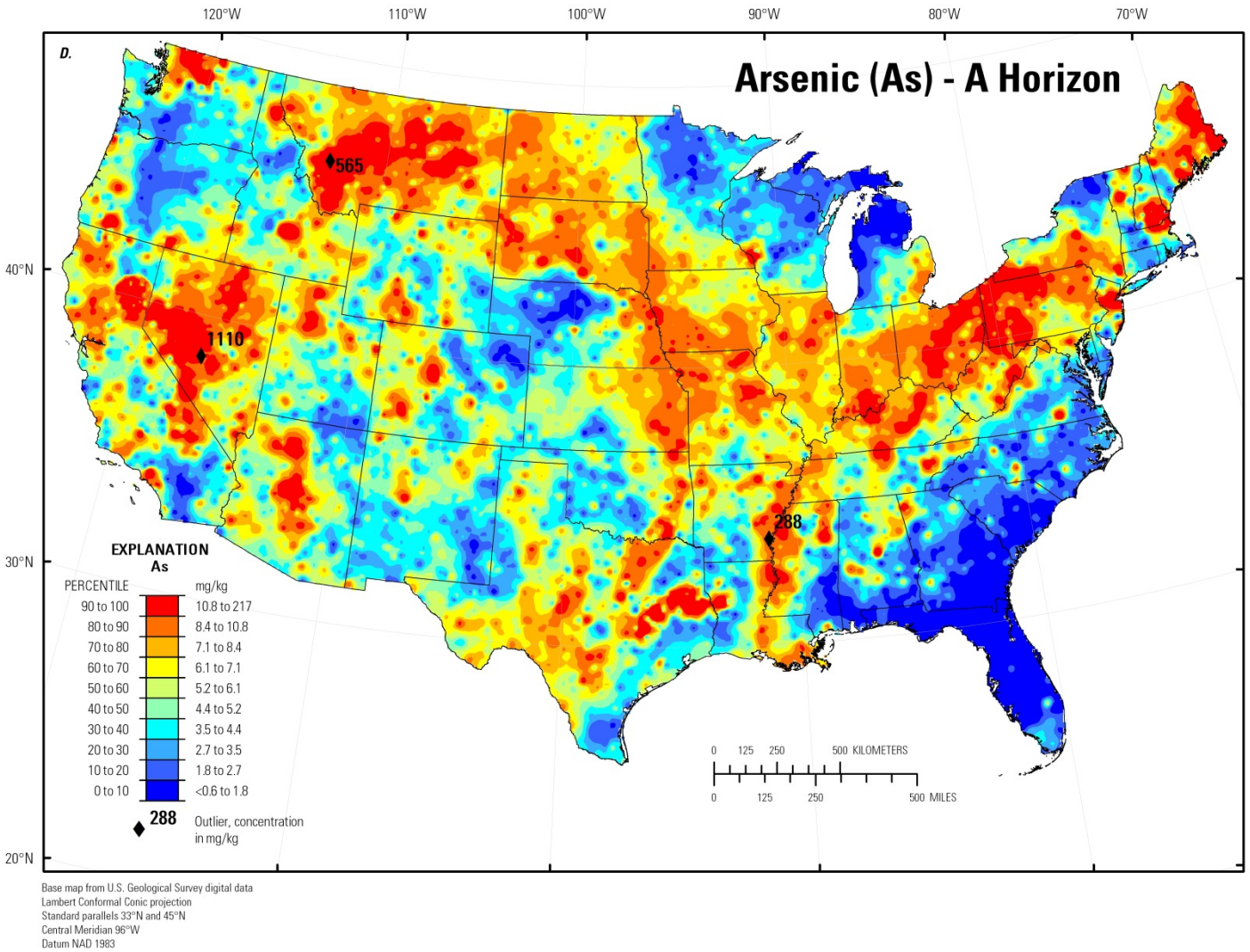


Figure 9. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of arsenic (As) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

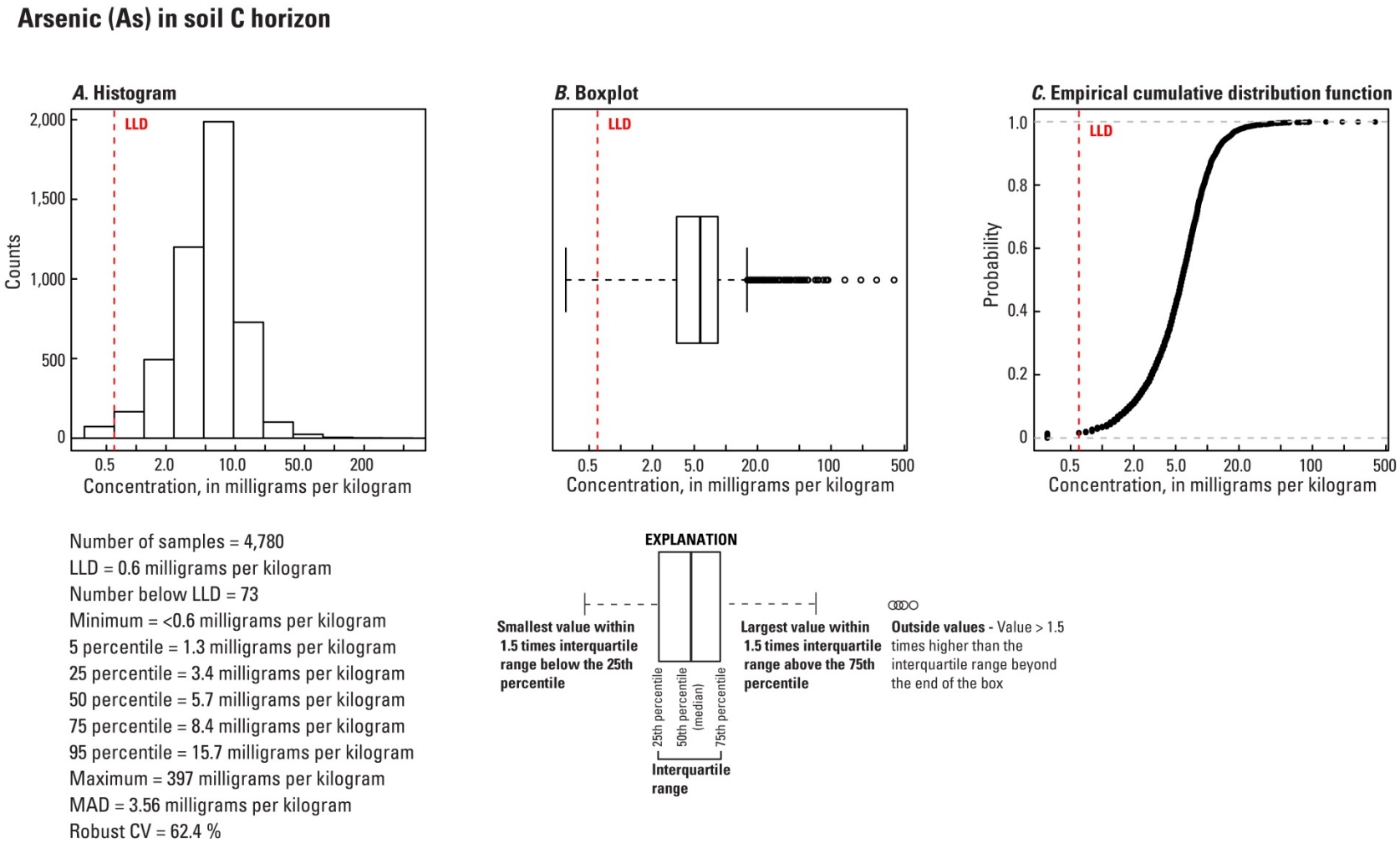


Figure 10. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of arsenic (As) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

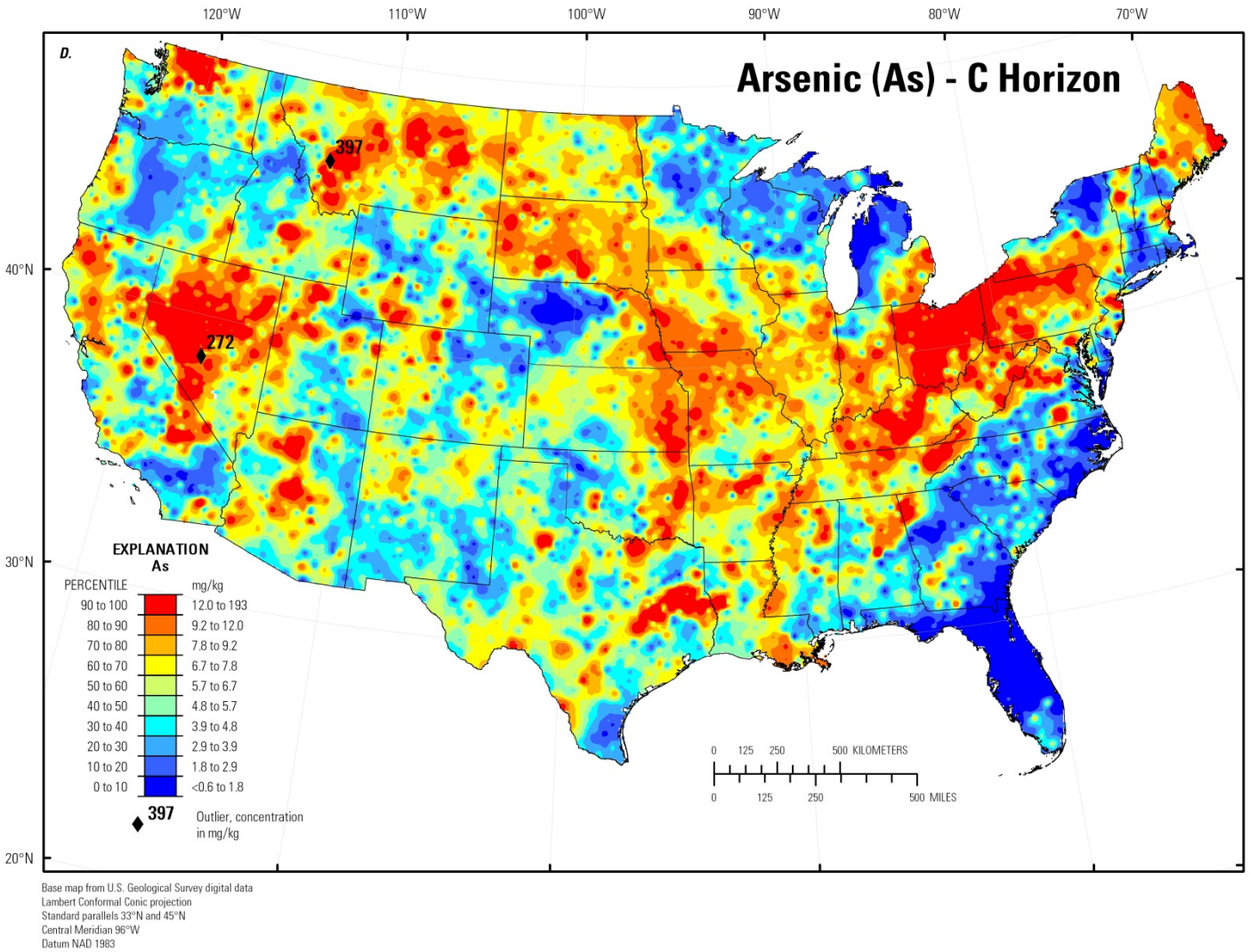


Figure 10. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of arsenic (As) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

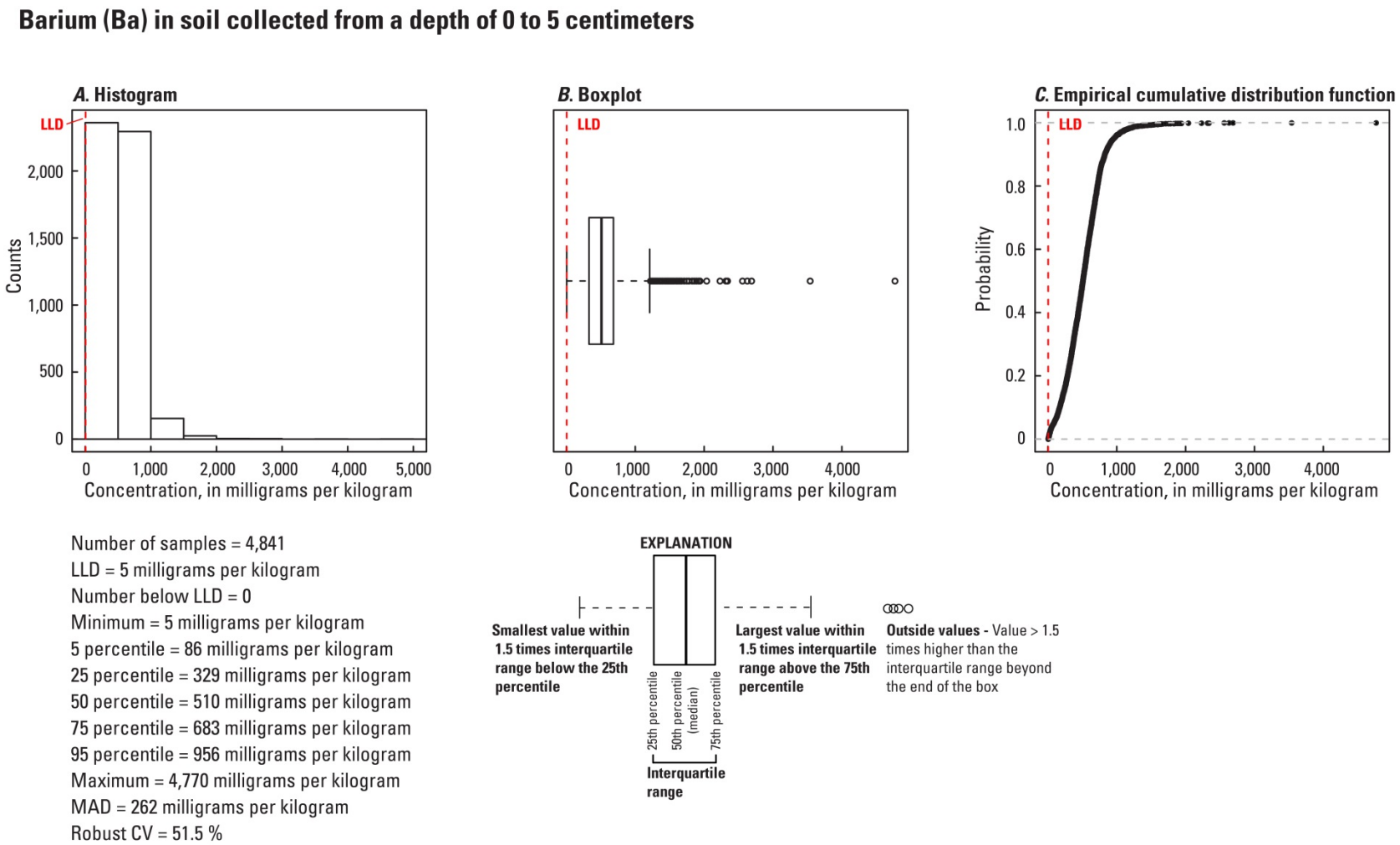


Figure 11. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of barium (Ba) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

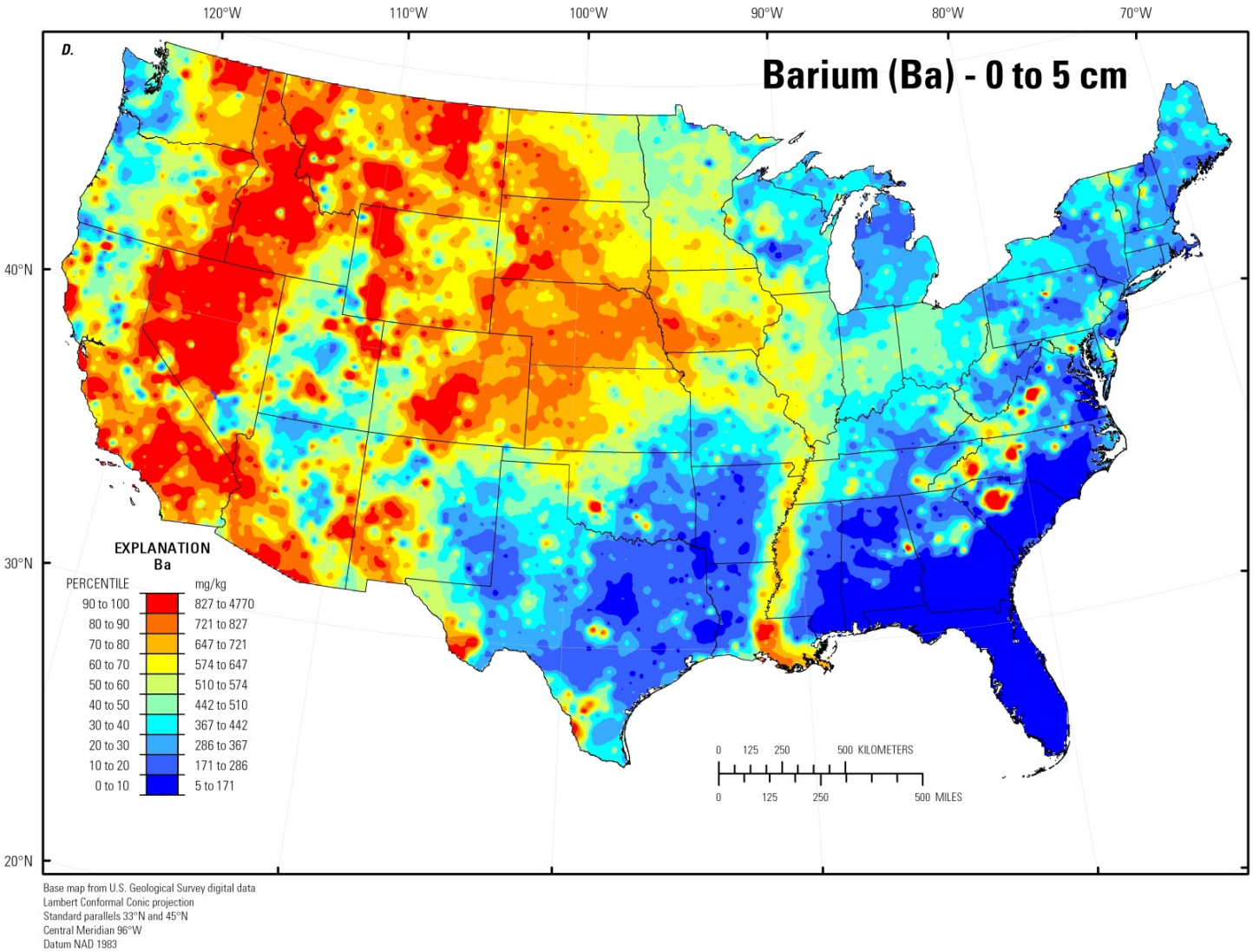


Figure 11. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of barium (Ba) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

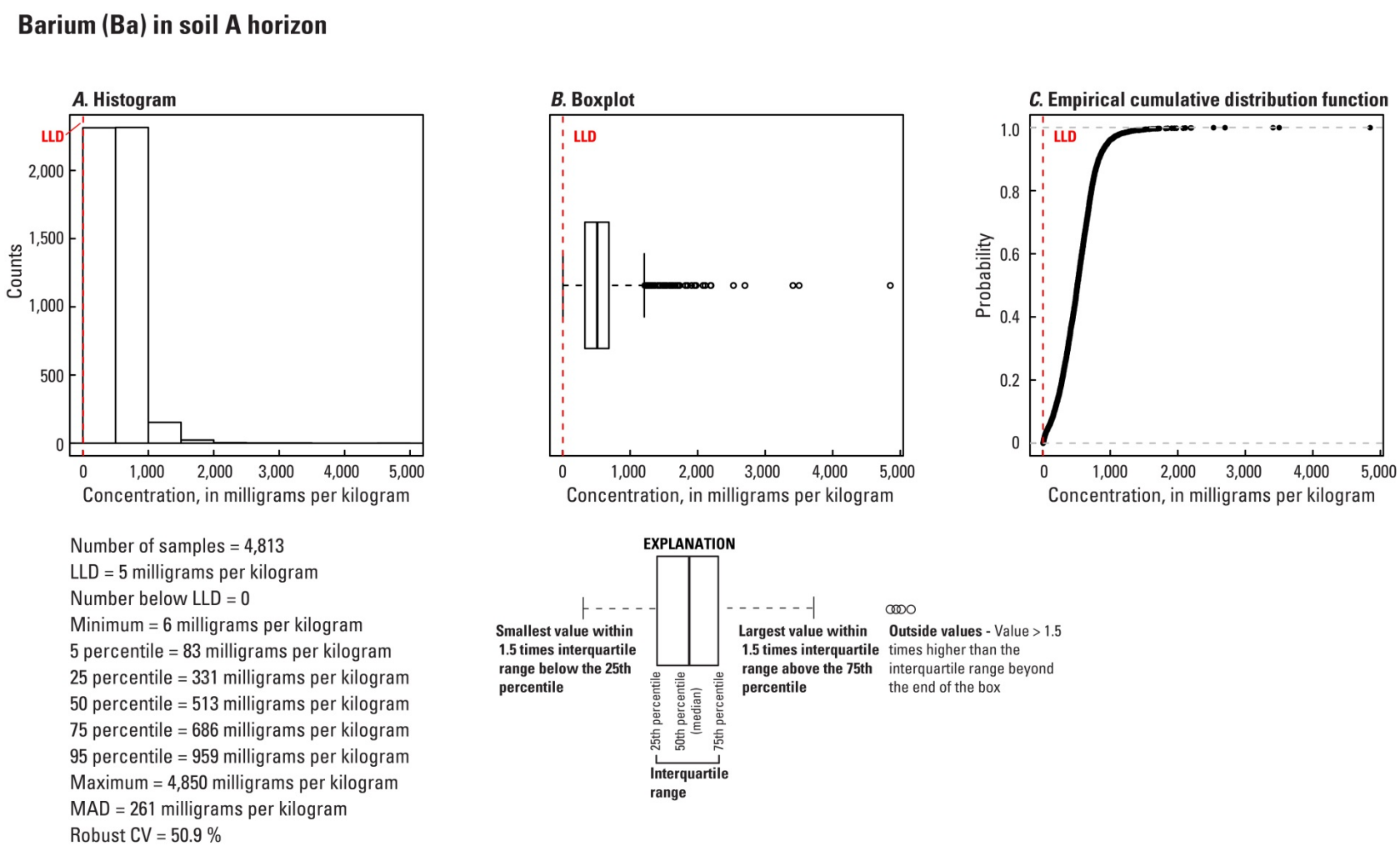


Figure 12. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of barium (Ba) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

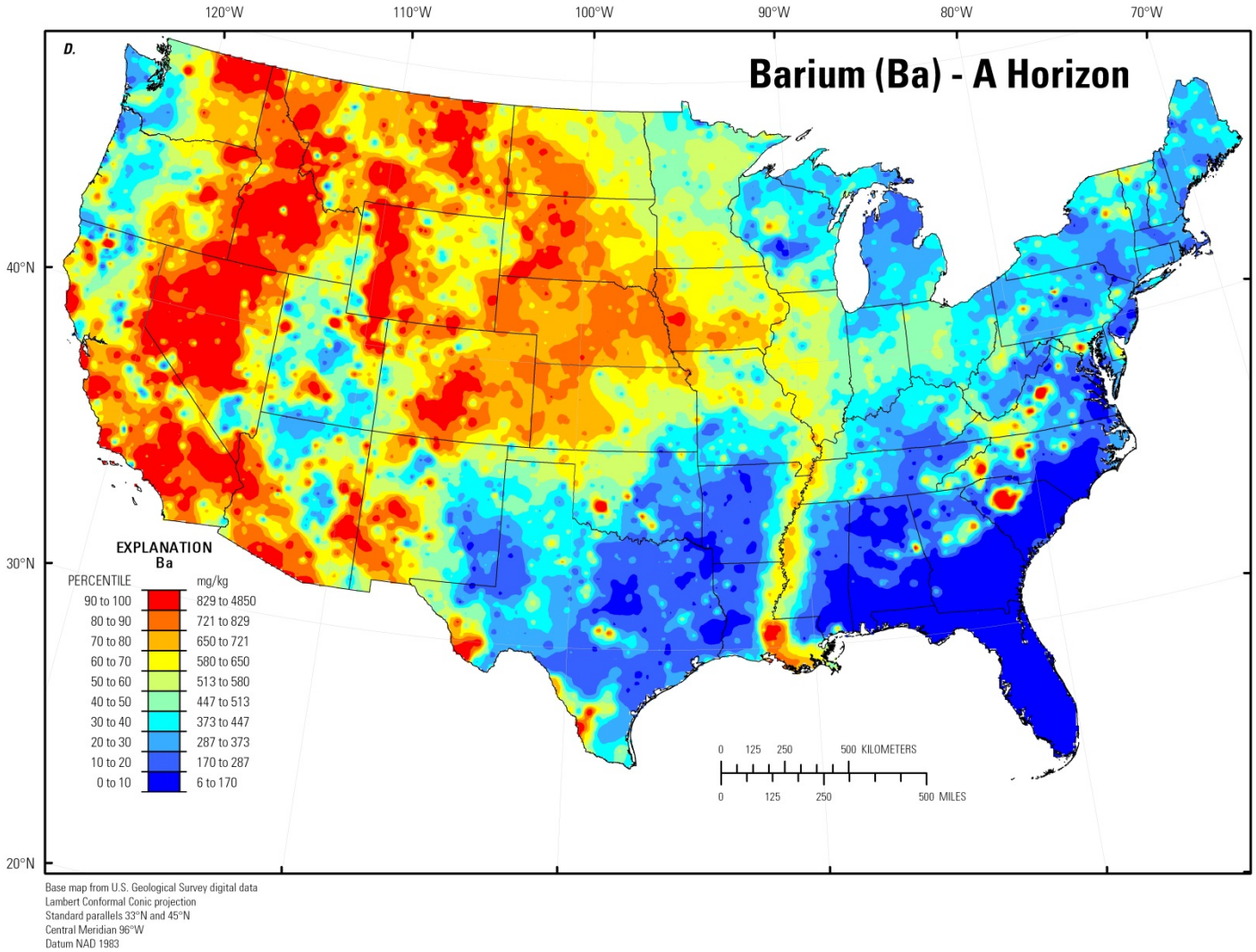


Figure 12. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of barium (Ba) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

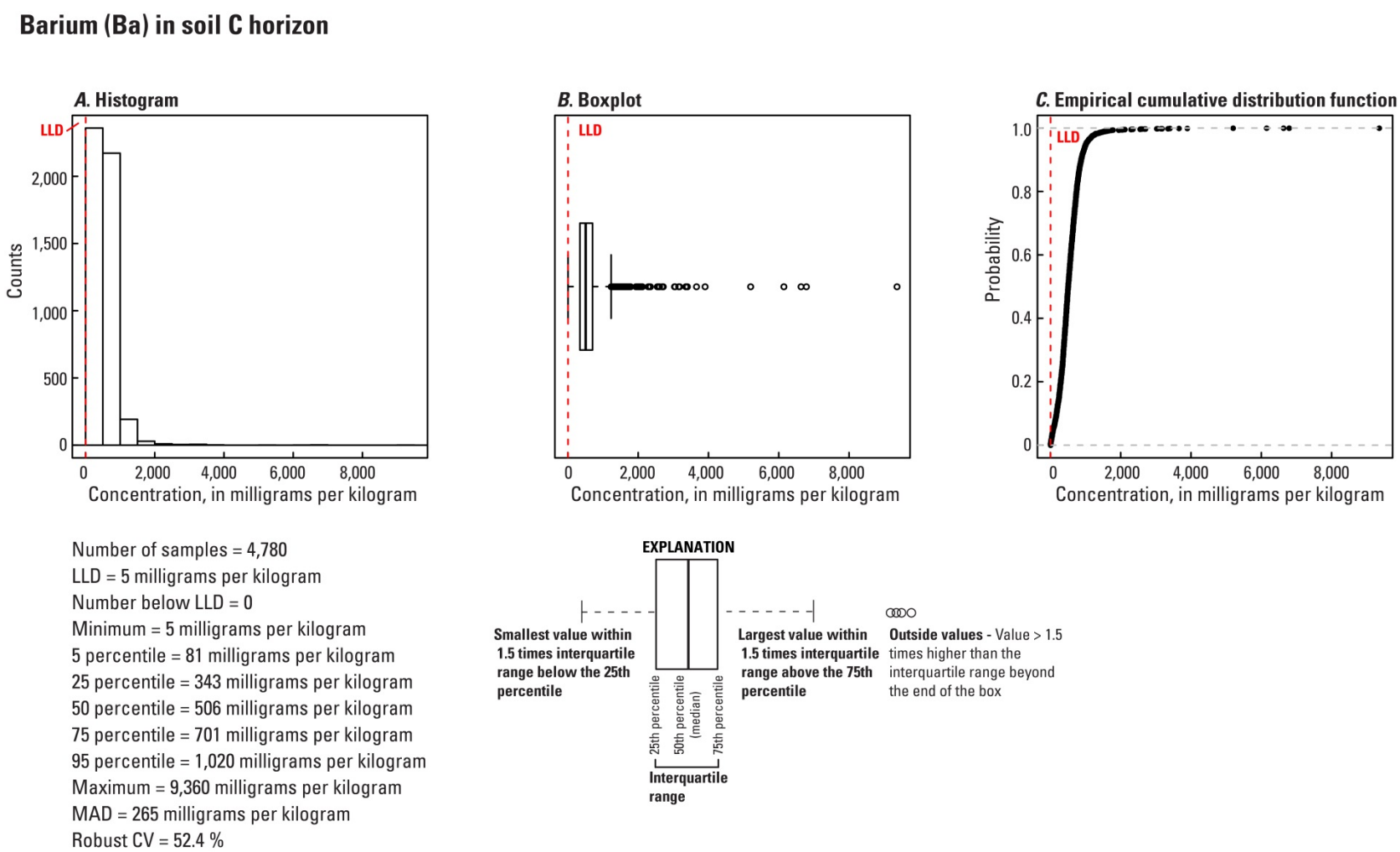


Figure 13. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of barium (Ba) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

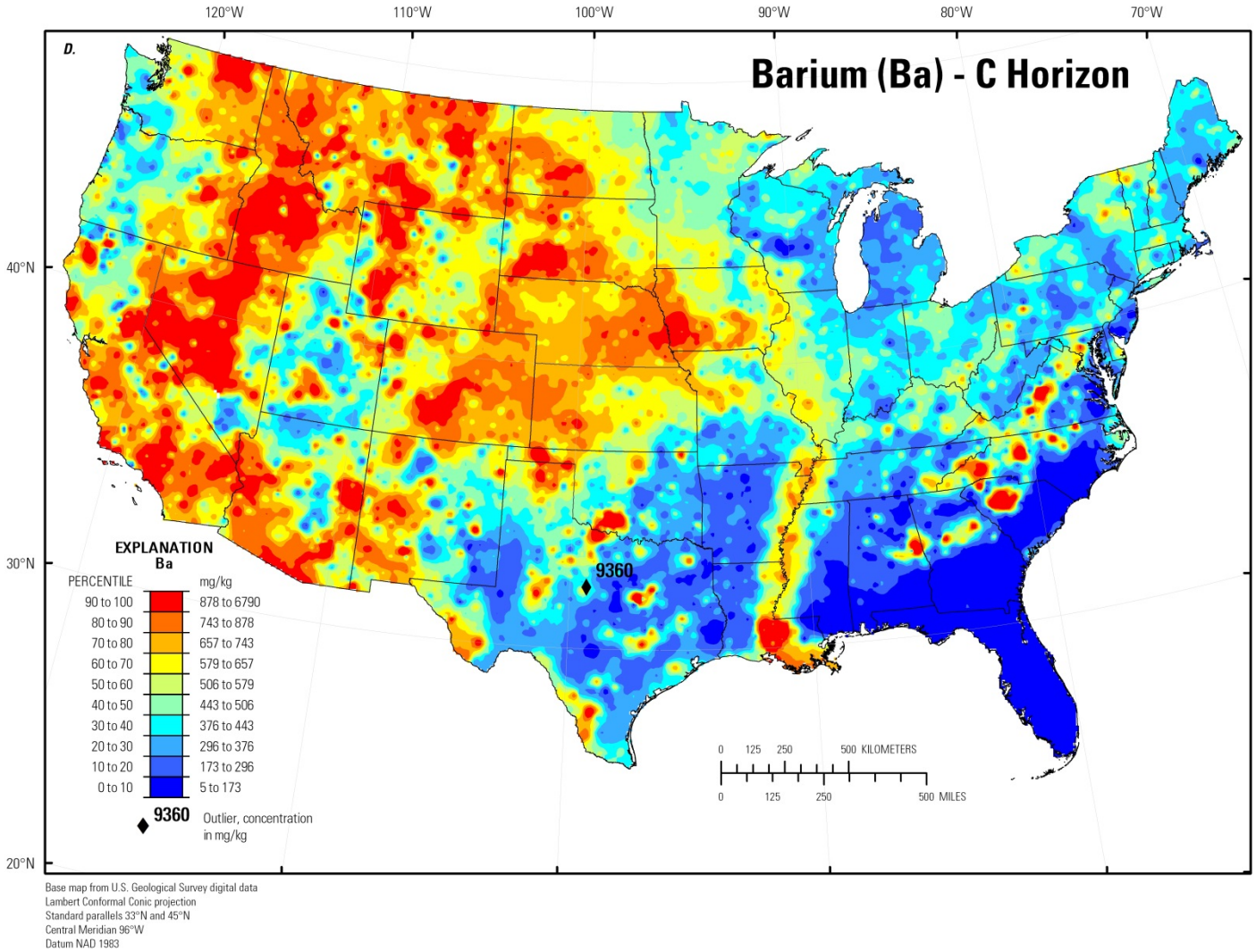
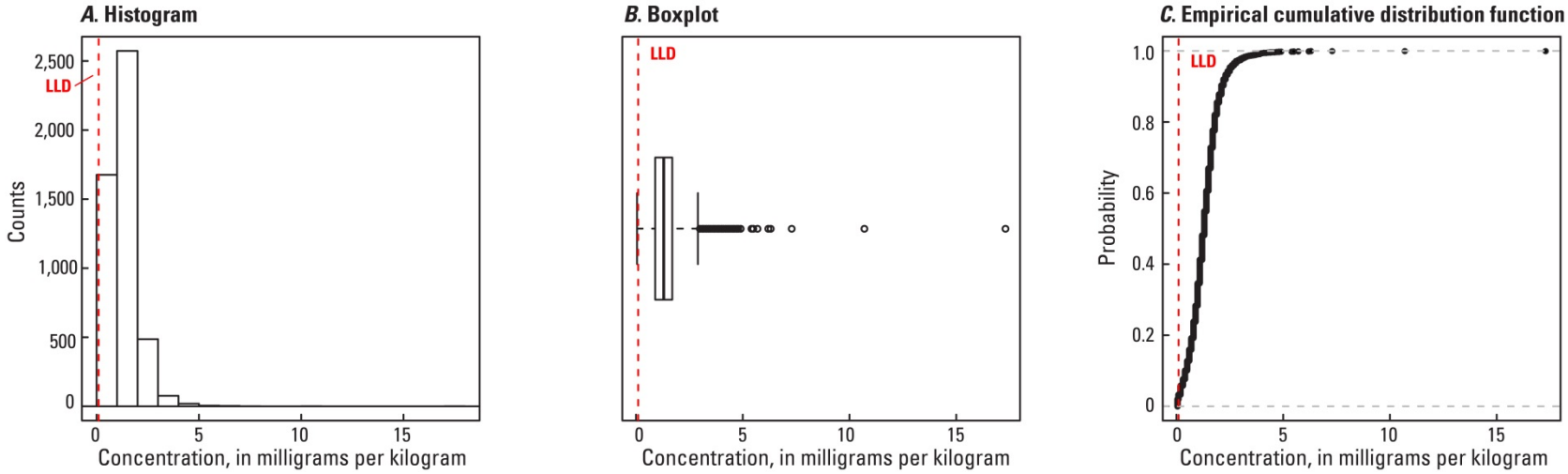


Figure 13. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of barium (Ba) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Beryllium (Be) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.1 milligrams per kilogram
Number below LLD = 97
Minimum = <0.1 milligrams per kilogram
5 percentile = 0.2 milligrams per kilogram
25 percentile = 0.9 milligrams per kilogram
50 percentile = 1.3 milligrams per kilogram
75 percentile = 1.7 milligrams per kilogram
95 percentile = 2.5 milligrams per kilogram
Maximum = 17.3 milligrams per kilogram
MAD = 0.593 milligrams per kilogram
Robust CV = 45.6 %

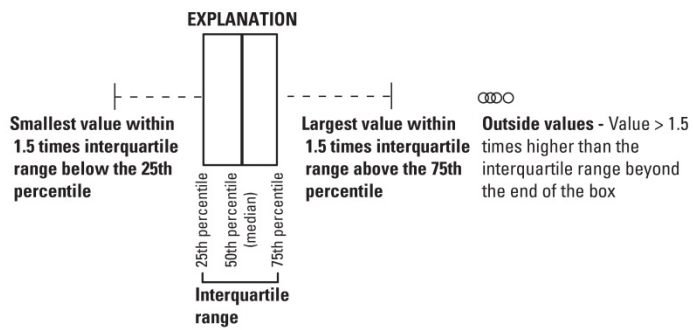


Figure 14. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of beryllium (Be) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

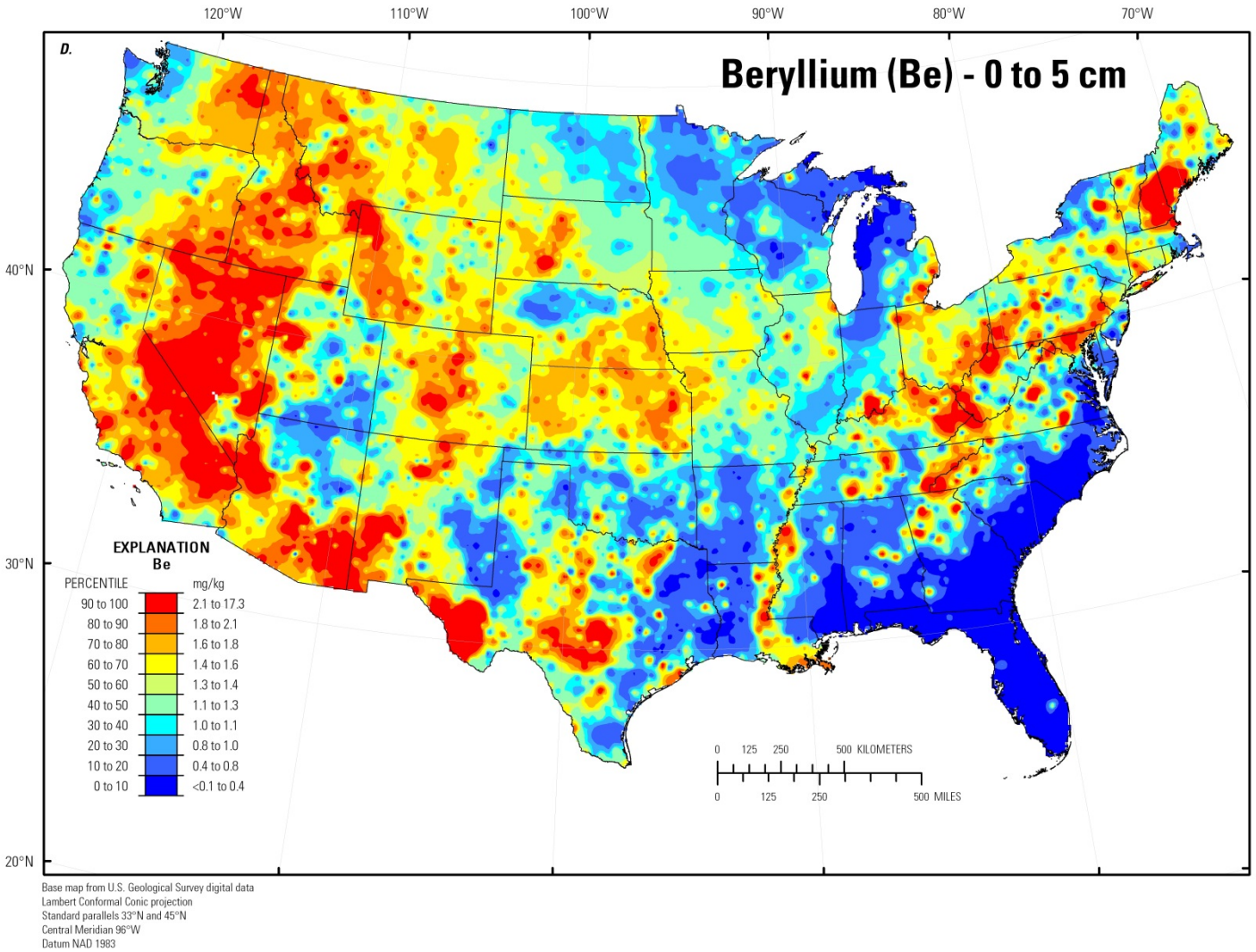


Figure 14. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of beryllium (Be) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

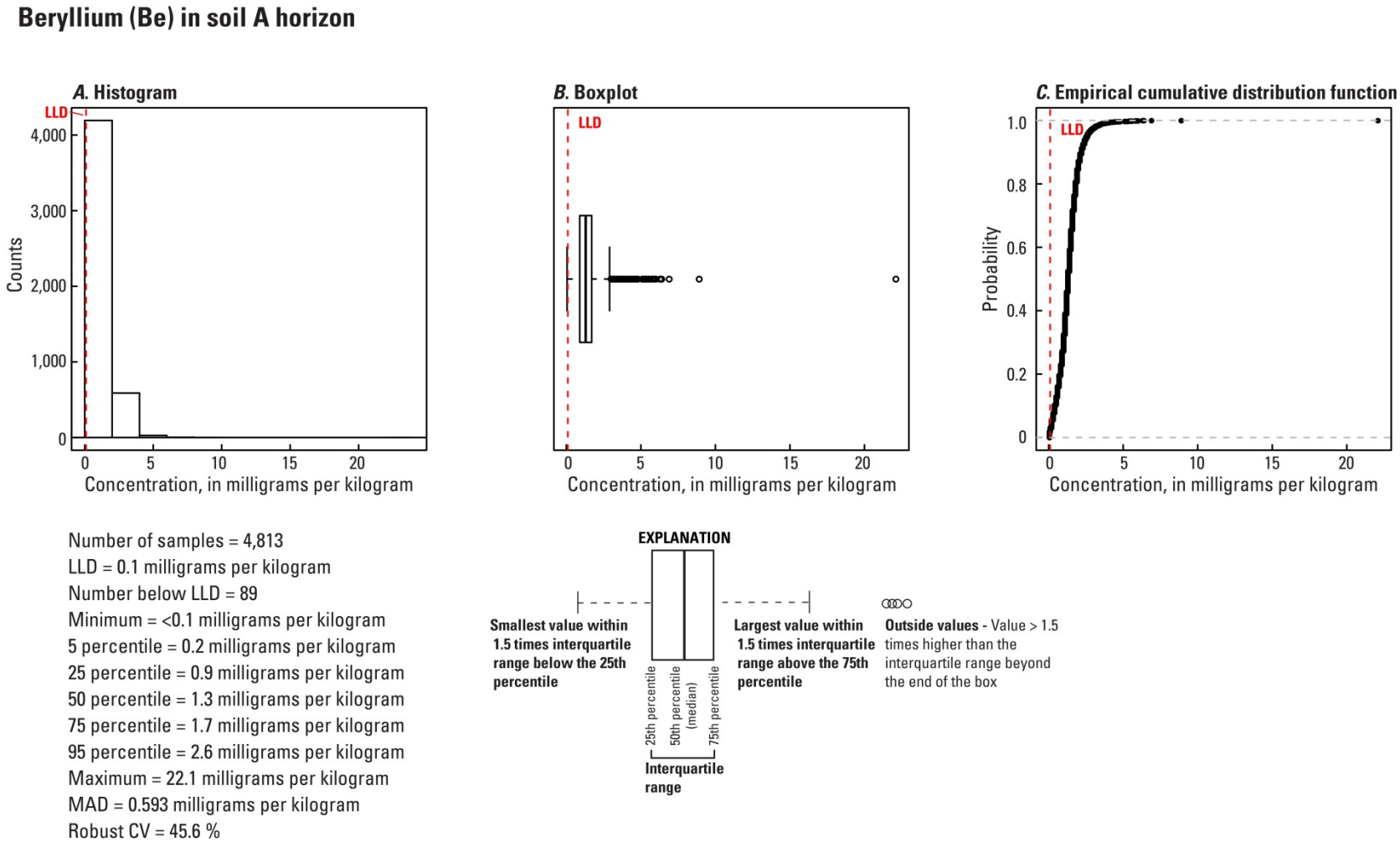


Figure 15. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of beryllium (Be) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

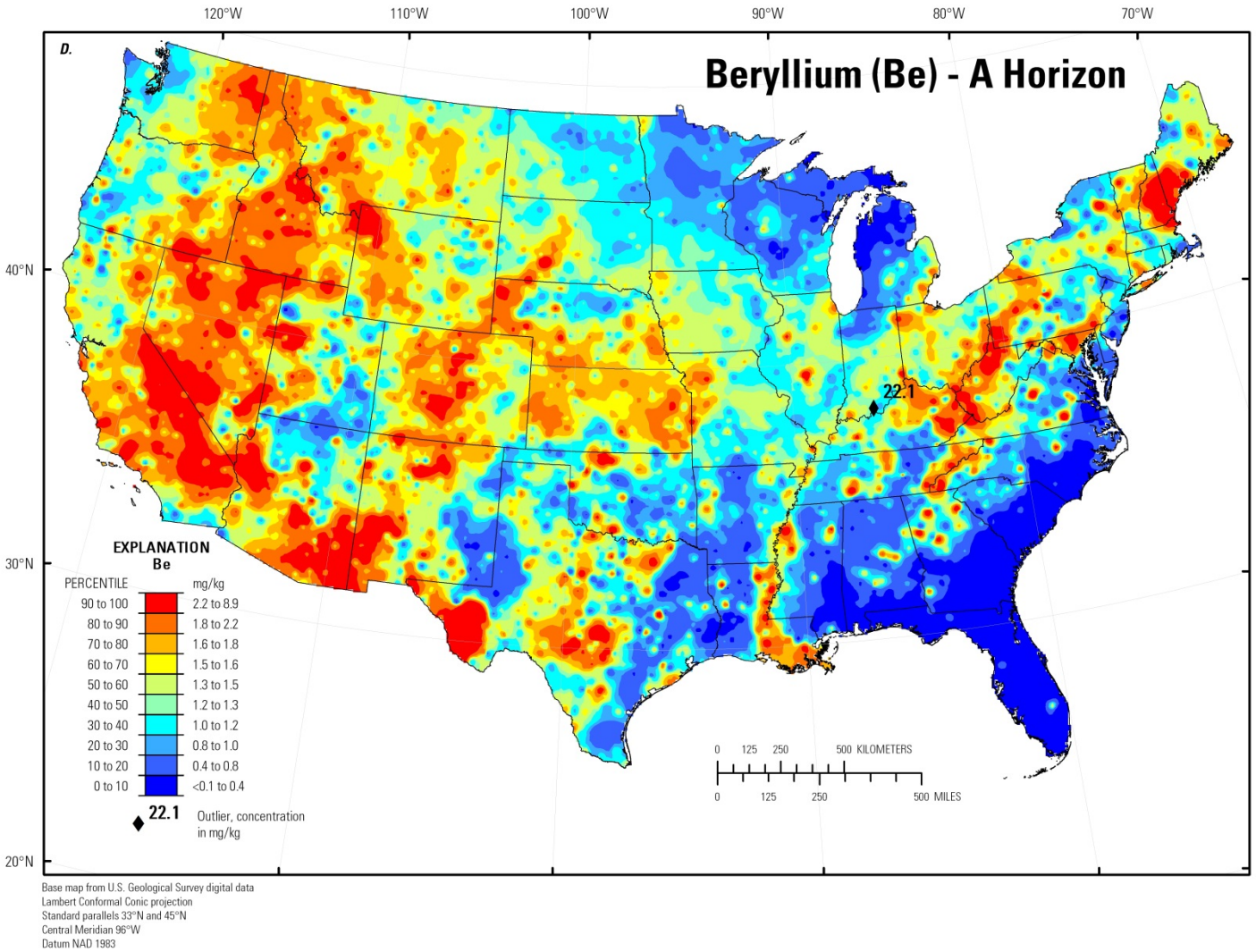


Figure 15. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of beryllium (Be) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

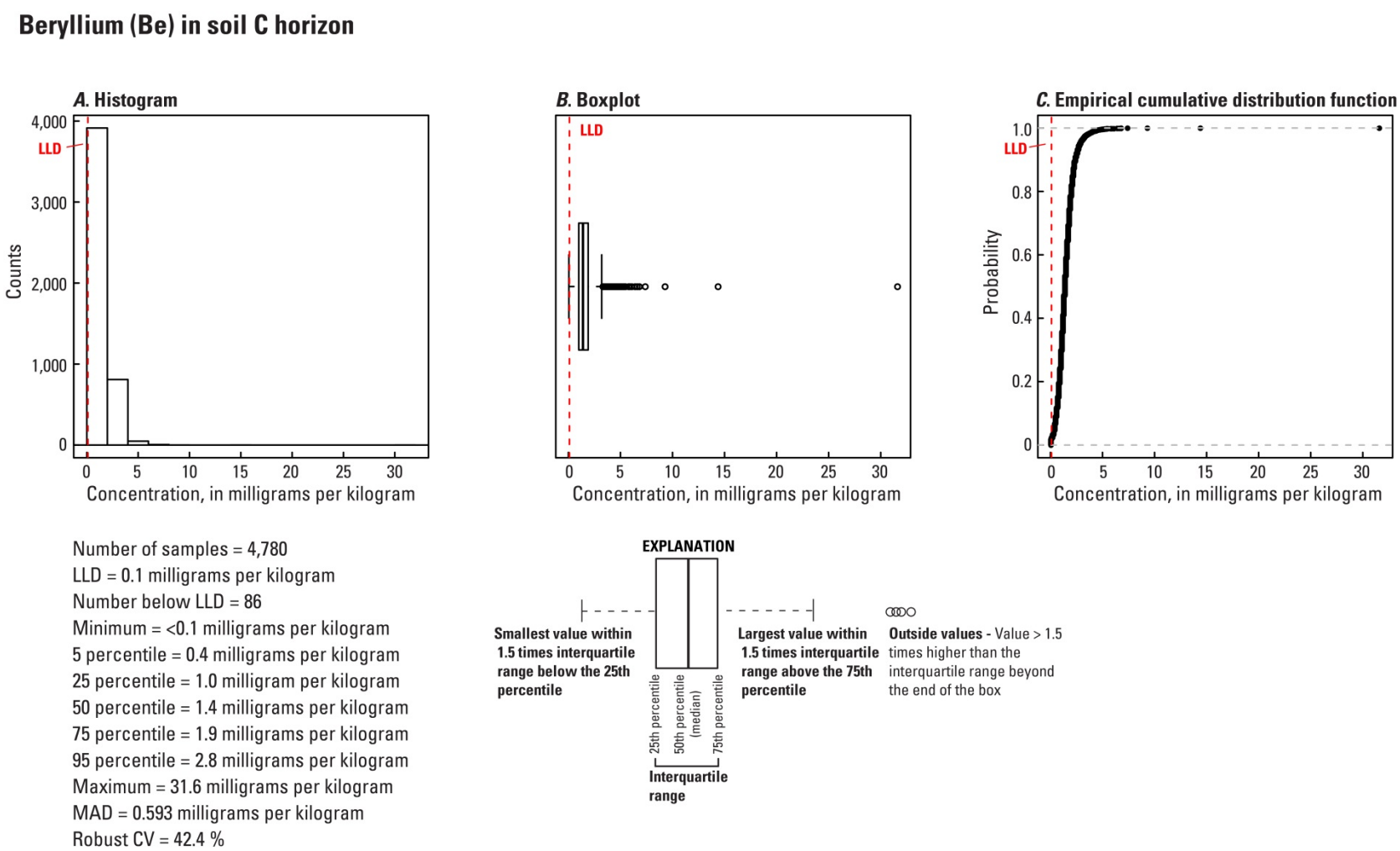


Figure 16. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of beryllium (Be) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

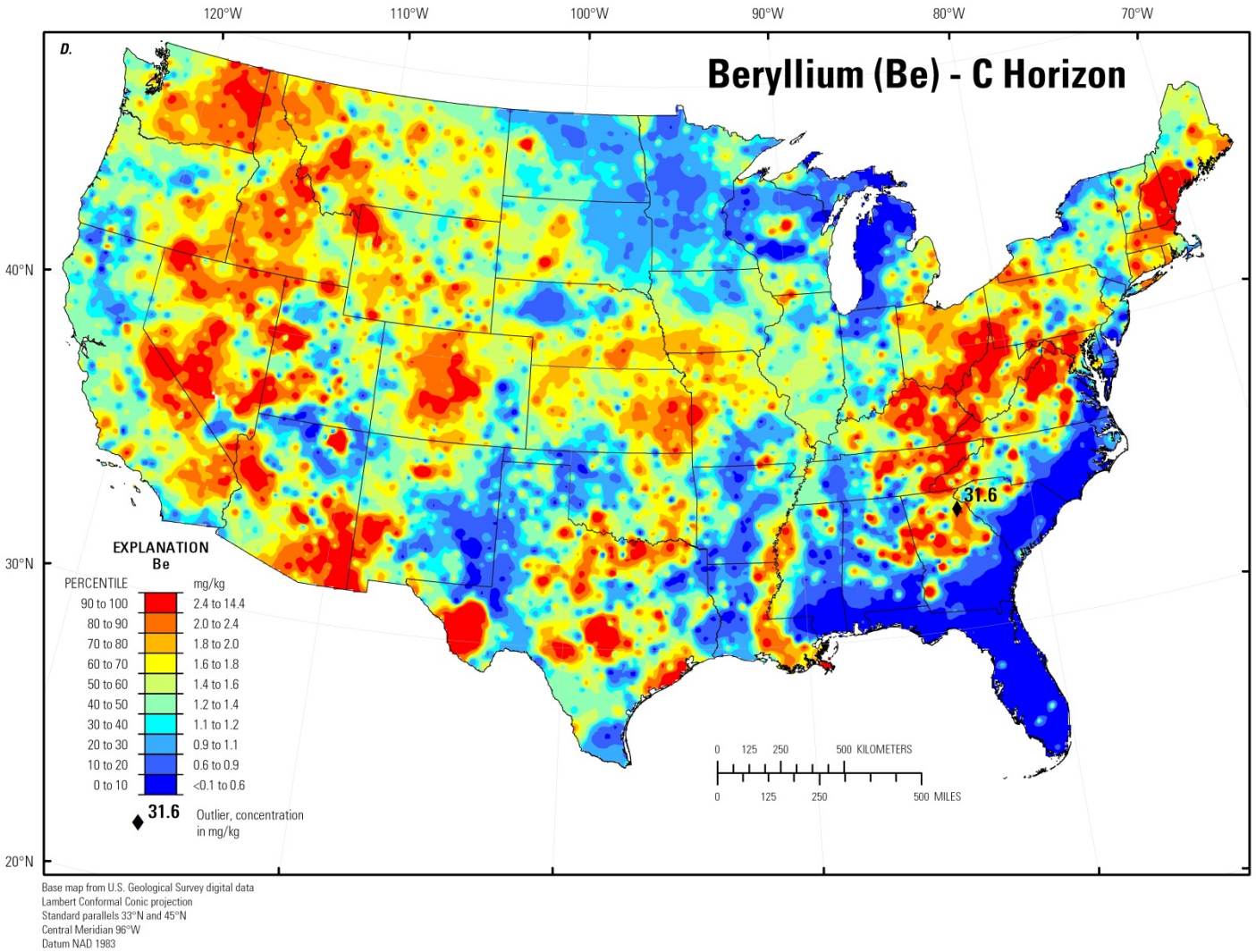


Figure 16. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of beryllium (Be) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

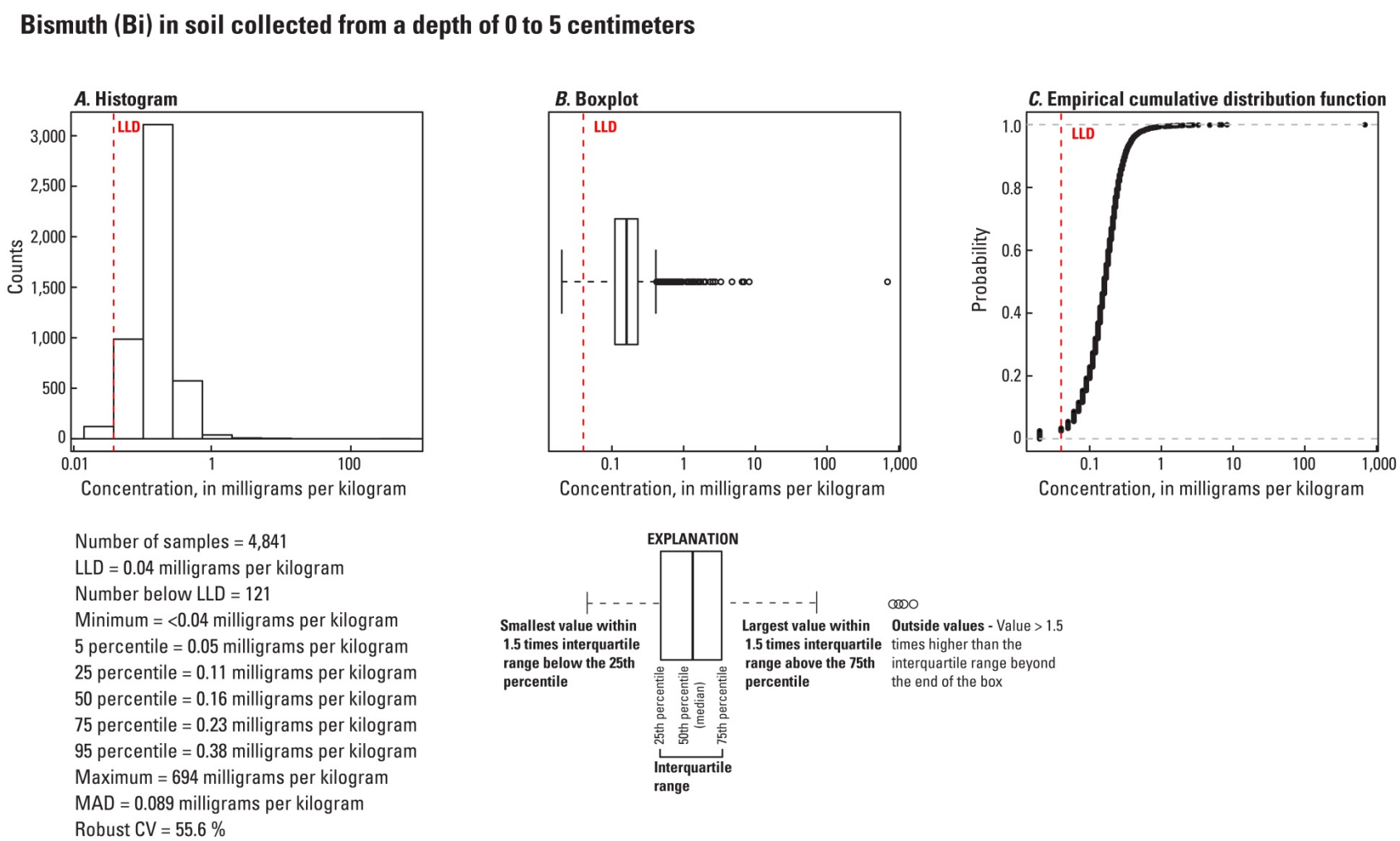


Figure 17. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of bismuth (Bi) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

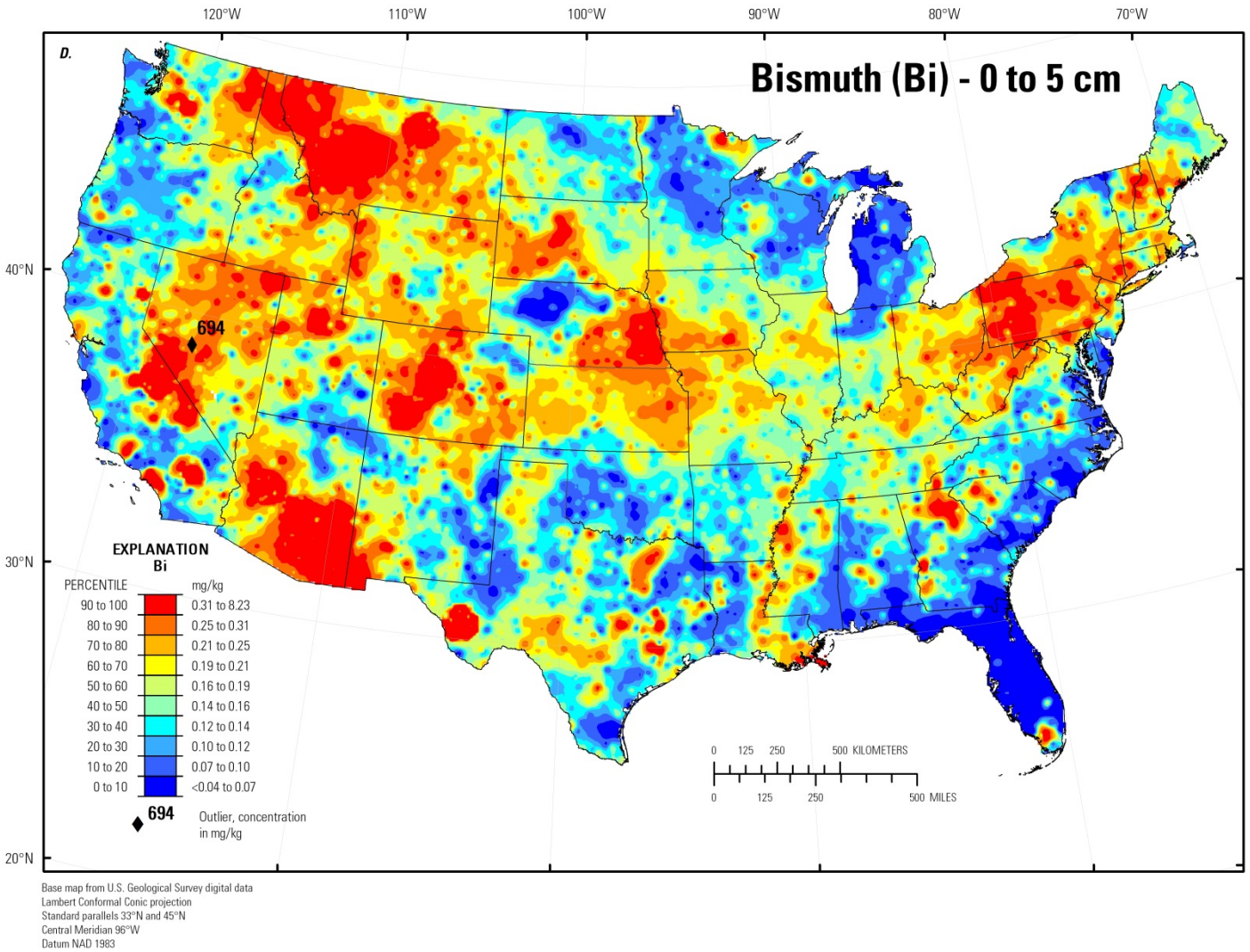


Figure 17. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of bismuth (Bi) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

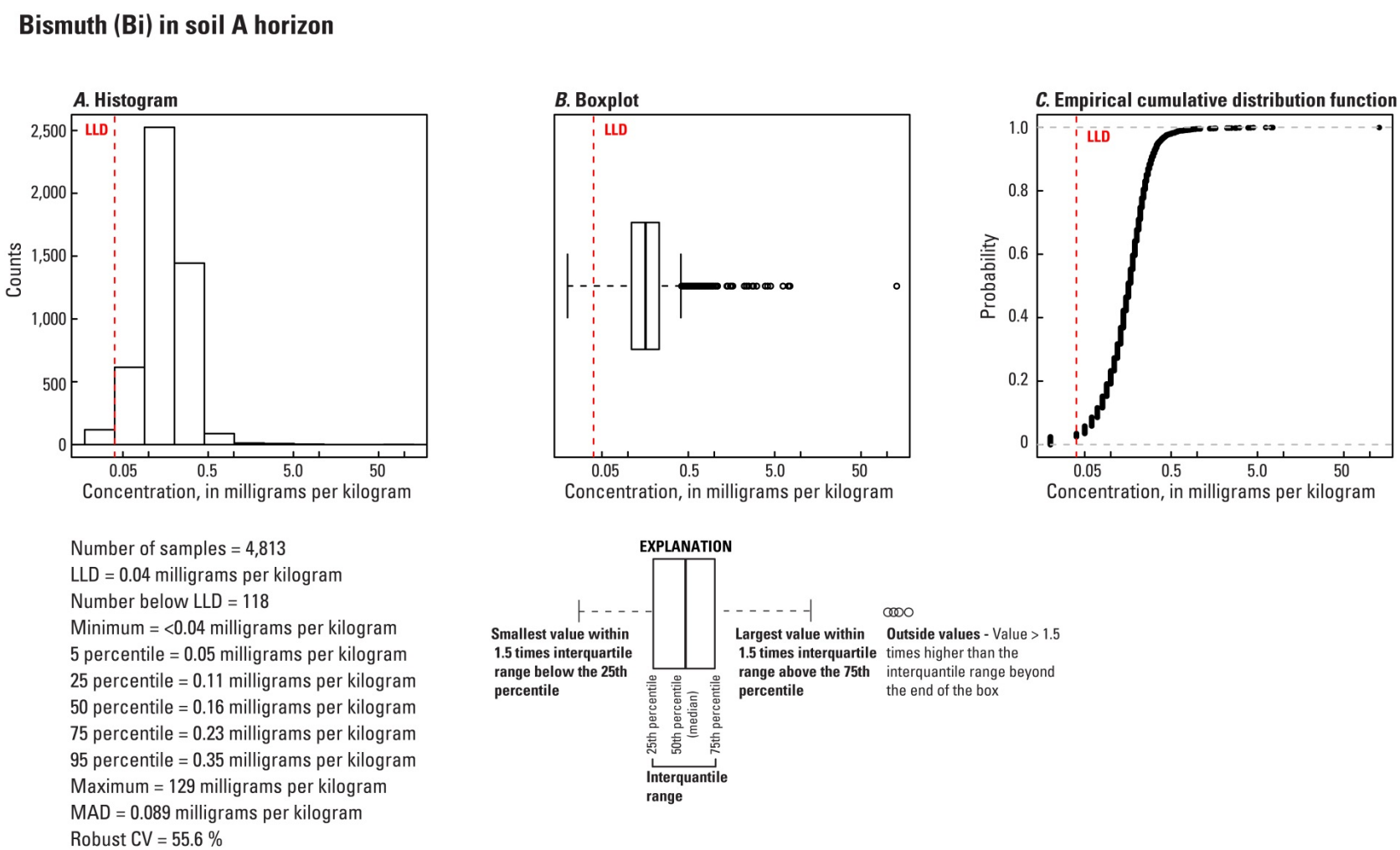


Figure 18. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of bismuth (Bi) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

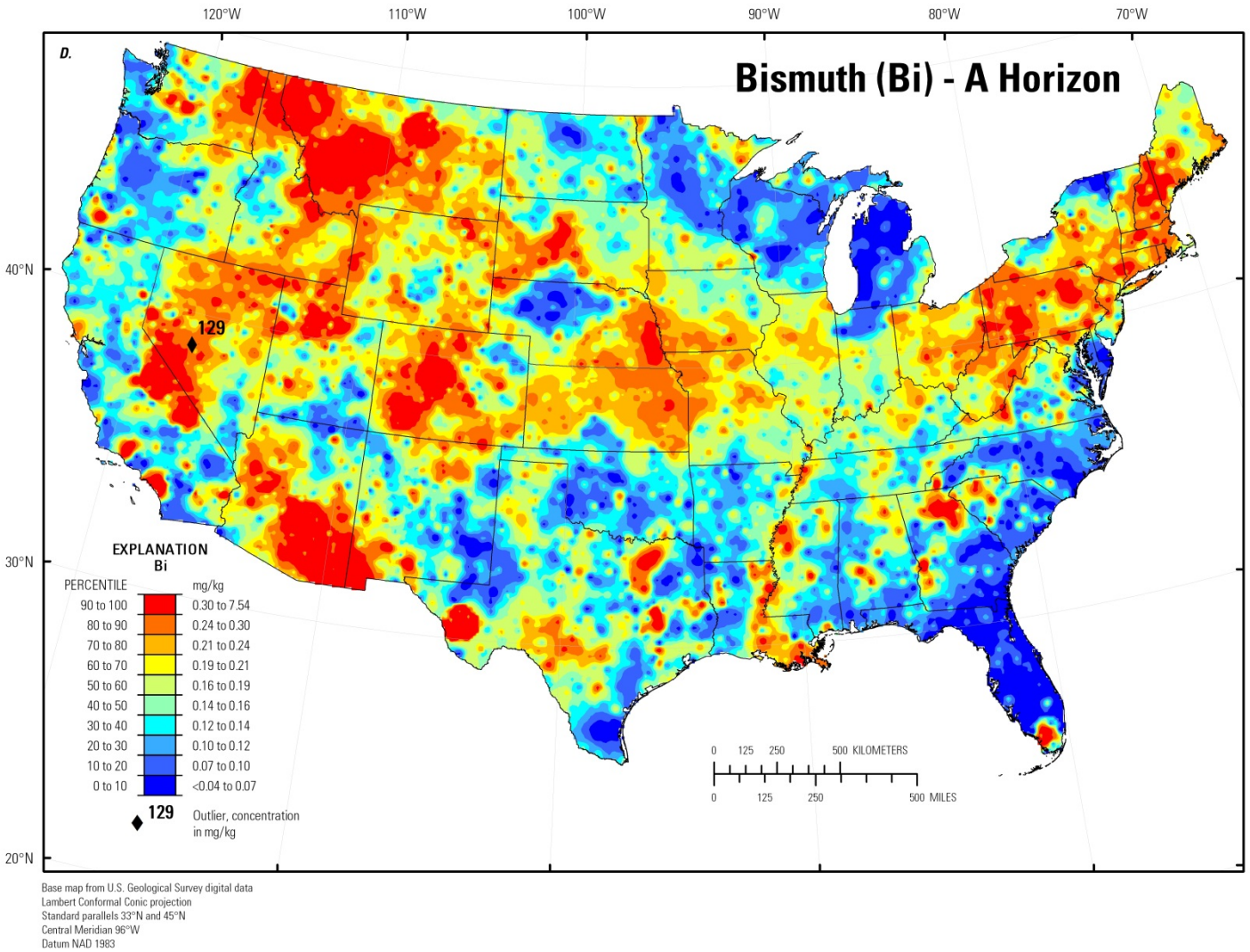
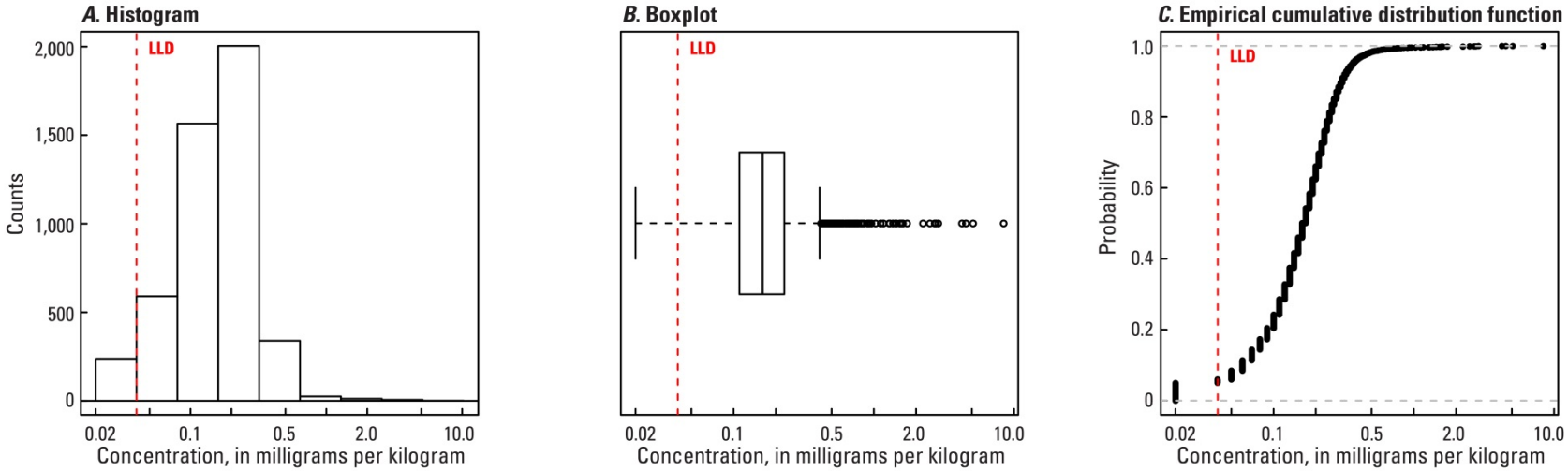


Figure 18. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of bismuth (Bi) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Bismuth (Bi) in soil C horizon



Number of samples = 4,780
LLD = 0.04 milligrams per kilogram
Number below LLD = 238
Minimum = <0.04 milligrams per kilogram
5 percentile = 0.04 milligrams per kilogram
25 percentile = 0.11 milligrams per kilogram
50 percentile = 0.16 milligrams per kilogram
75 percentile = 0.23 milligrams per kilogram
95 percentile = 0.37 milligrams per kilogram
Maximum = 8.41 milligrams per kilogram
MAD = 0.089 milligrams per kilogram
Robust CV = 55.6 %

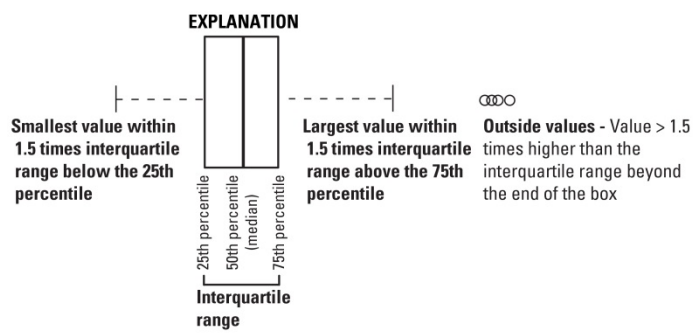


Figure 19. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of bismuth (Bi) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

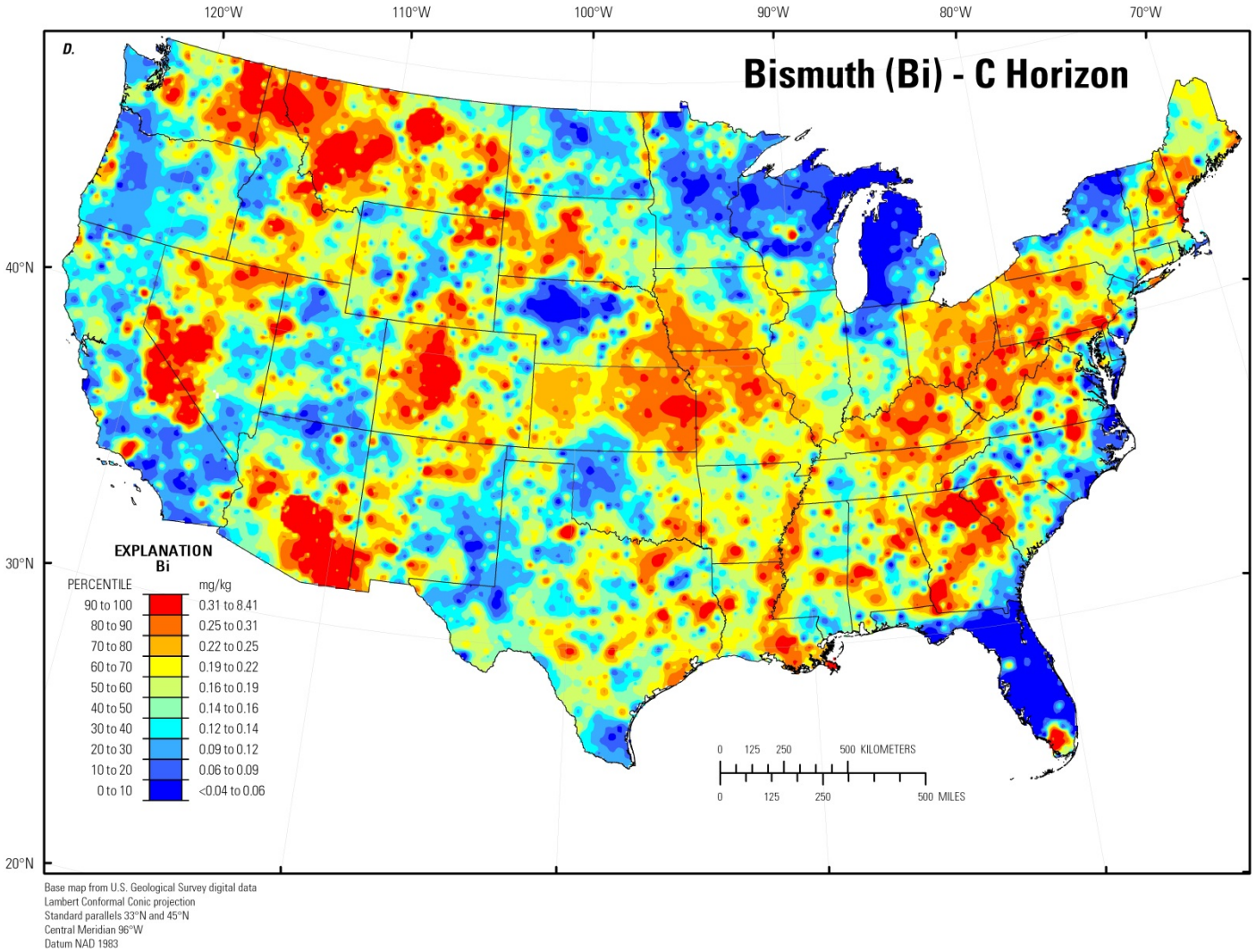
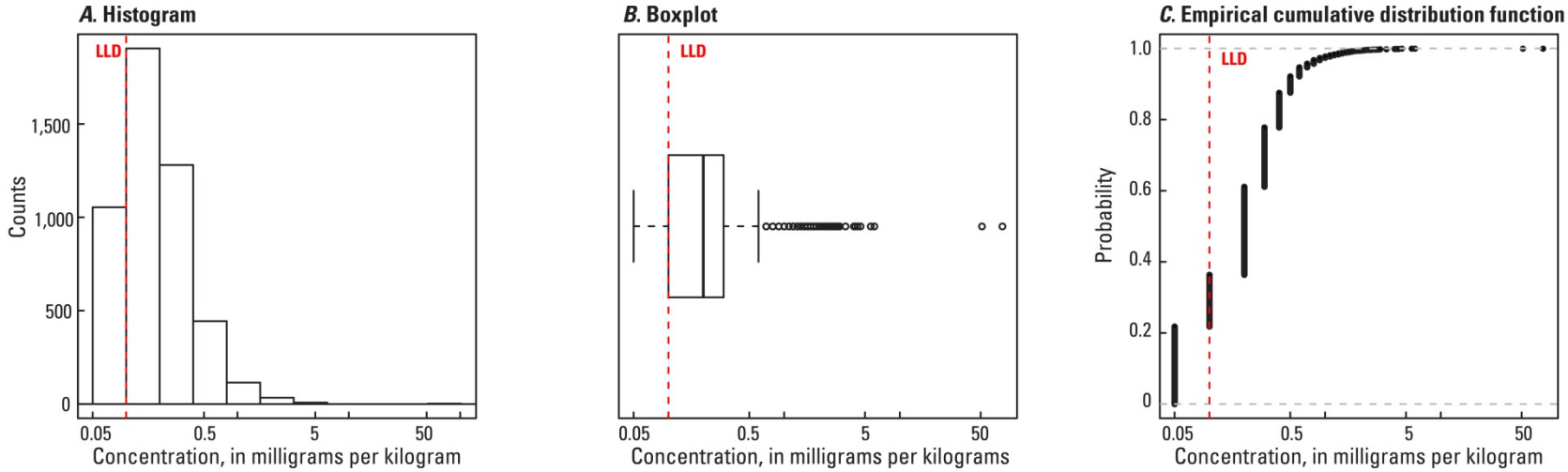


Figure 19. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of bismuth (Bi) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Cadmium (Cd) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.1 milligrams per kilogram
Number below LLD = 1,054
Minimum = <0.1 milligrams per kilogram
5 percentile = <0.1 milligrams per kilogram
25 percentile = 0.1 milligrams per kilogram
50 percentile = 0.2 milligrams per kilogram
75 percentile = 0.3 milligrams per kilogram
95 percentile = 0.7 milligrams per kilogram
Maximum = 76.8 milligrams per kilogram
MAD = ND
Robust CV = ND

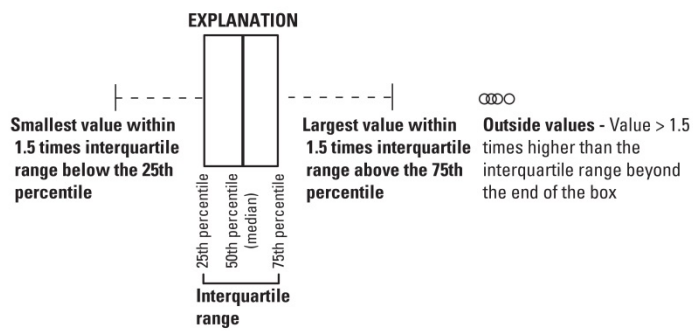


Figure 20. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cadmium (Cd) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

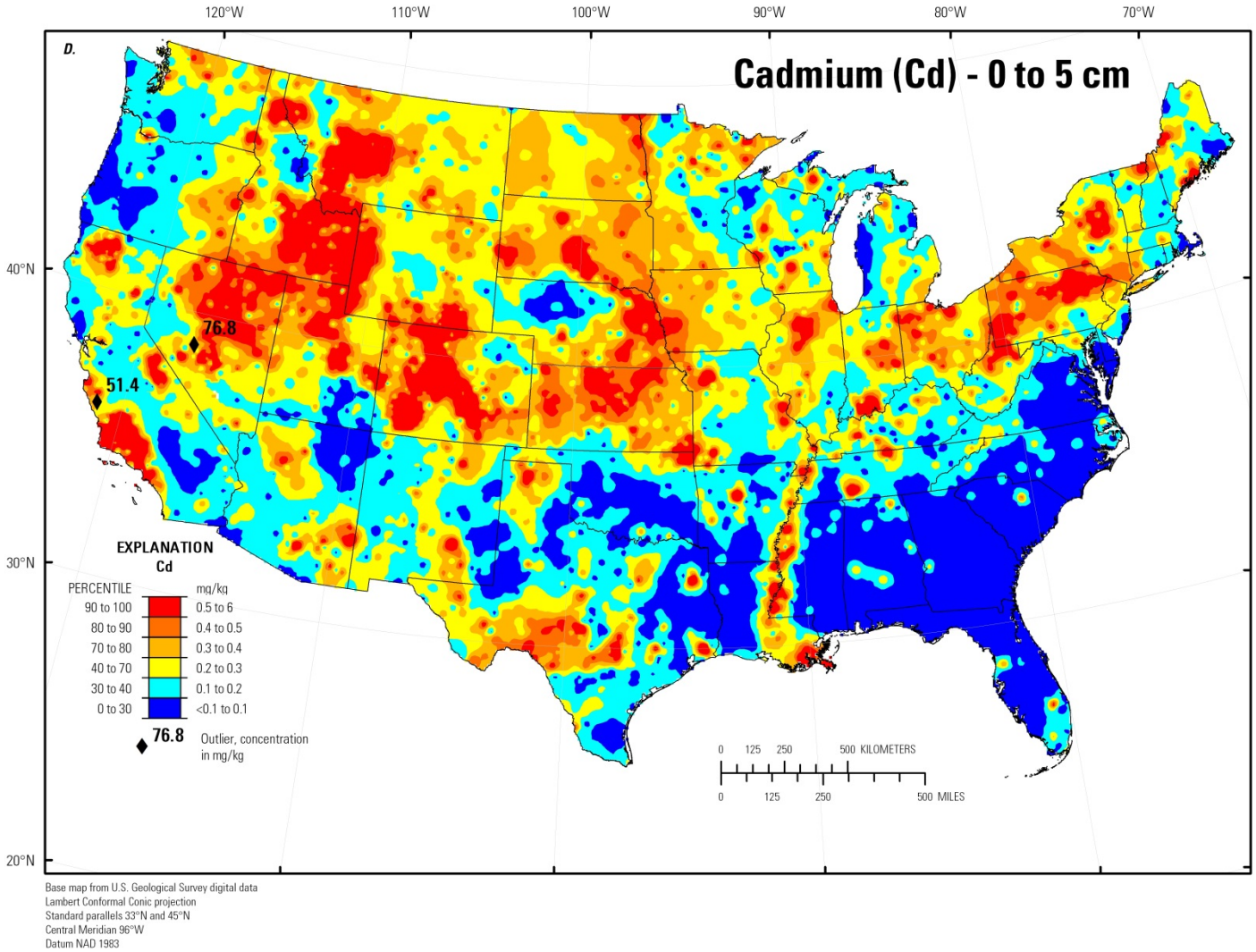


Figure 20. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cadmium (Cd) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

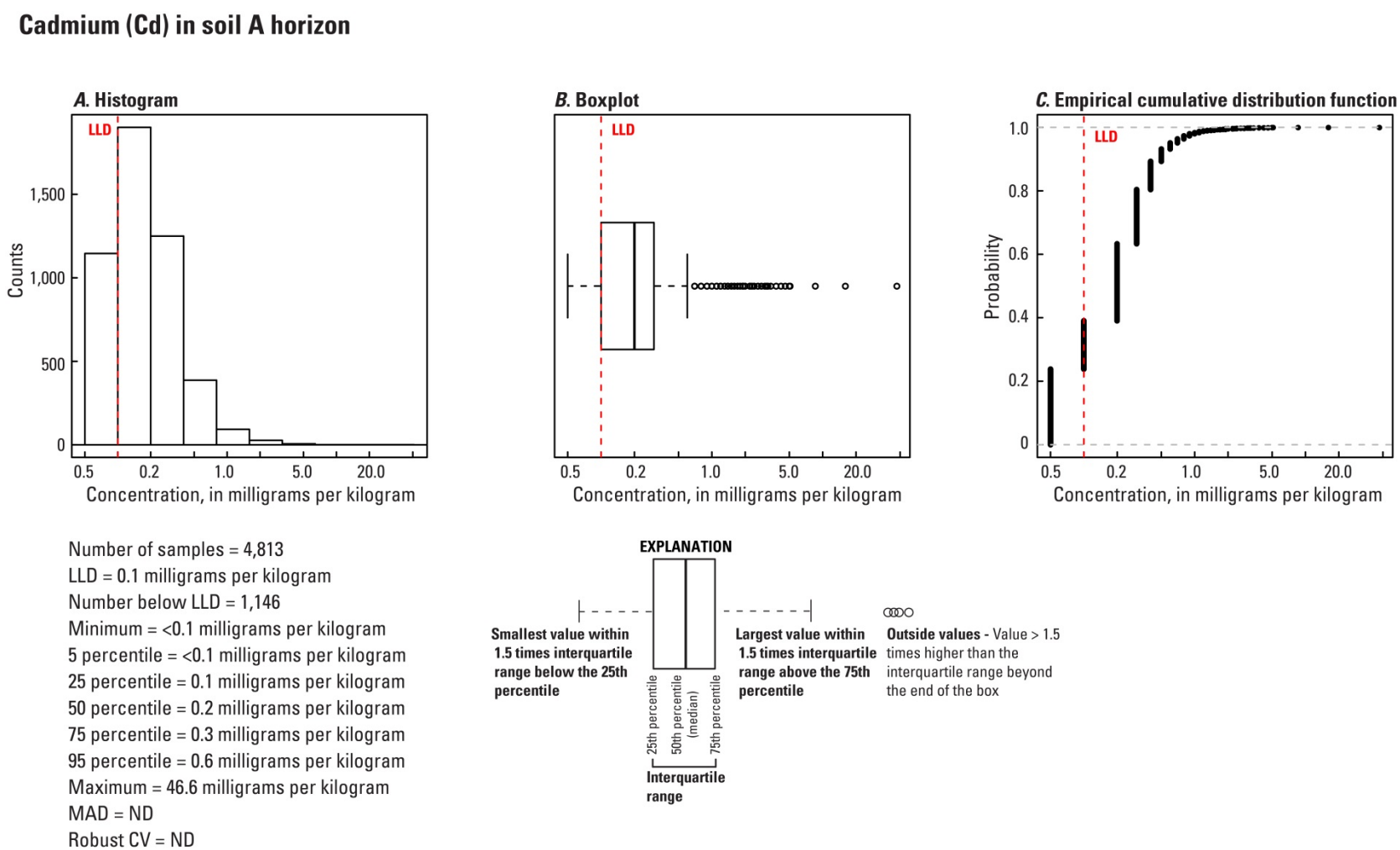


Figure 21. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cadmium (Cd) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

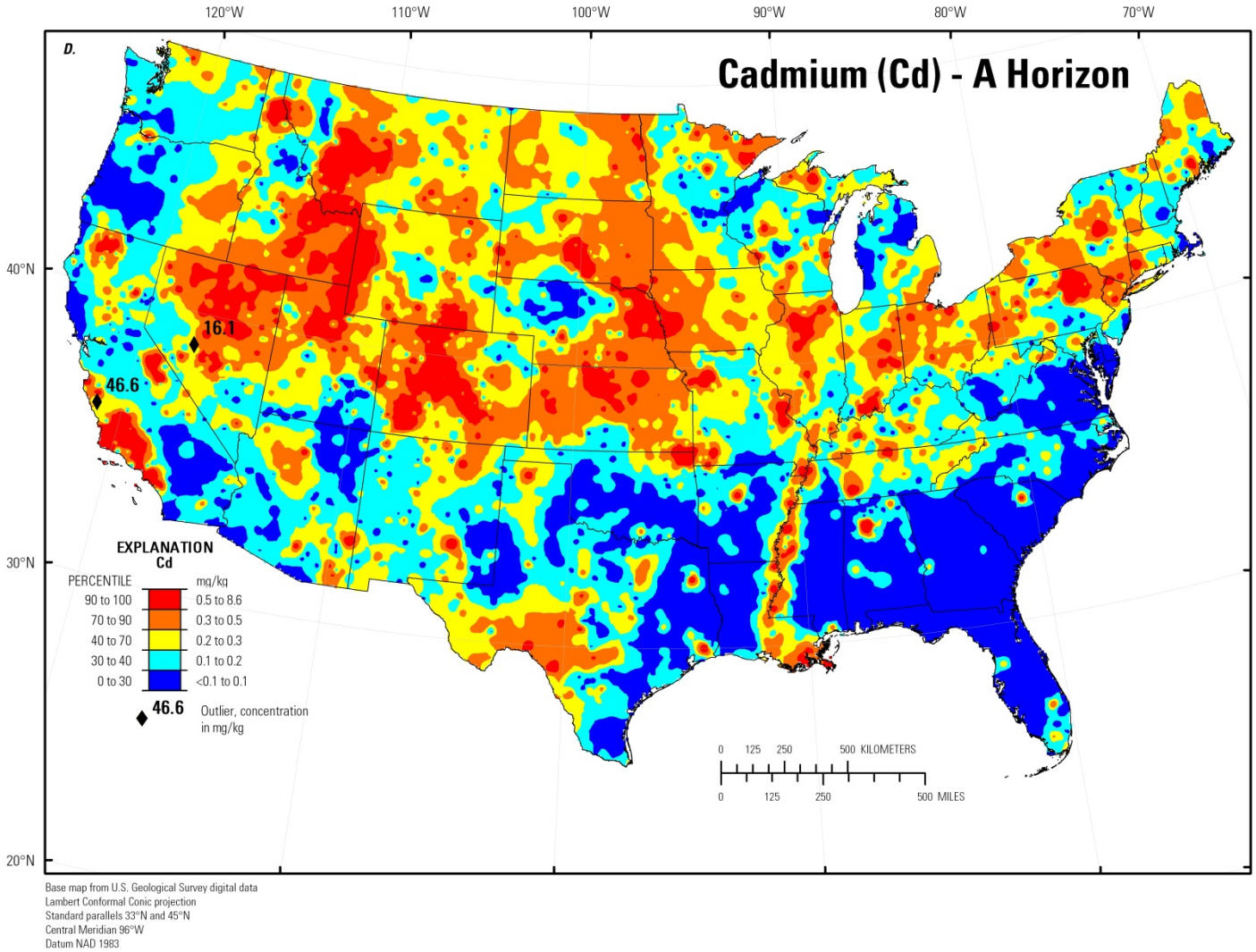
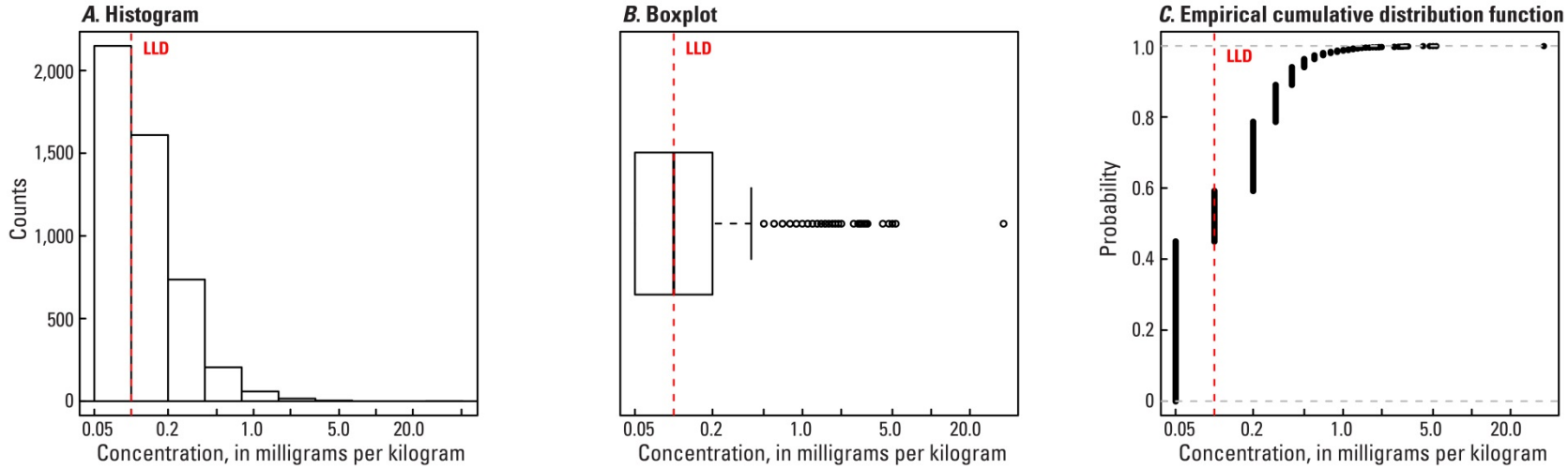


Figure 21. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cadmium (Cd) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Cadmium (Cd) in soil C horizon



Number of samples = 4,780
LLD = 0.1 milligrams per kilogram
Number below LLD = 2,149
Minimum = <0.1 milligrams per kilogram
5 percentile = <0.1 milligrams per kilogram
25 percentile = <0.1 milligrams per kilogram
50 percentile = 0.1 milligrams per kilogram
75 percentile = 0.2 milligrams per kilogram
95 percentile = 0.5 milligrams per kilogram
Maximum = 36.4 milligrams per kilogram
MAD = ND
Robust CV = ND

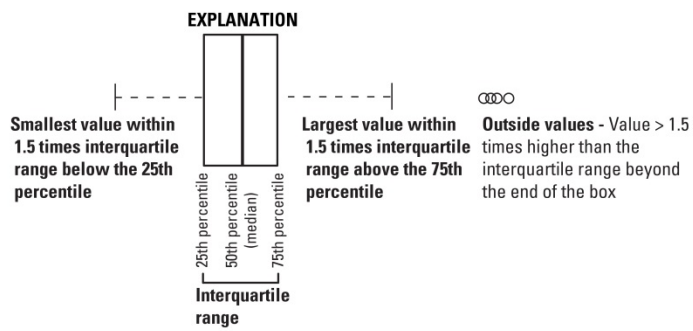


Figure 22. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cadmium (Cd) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

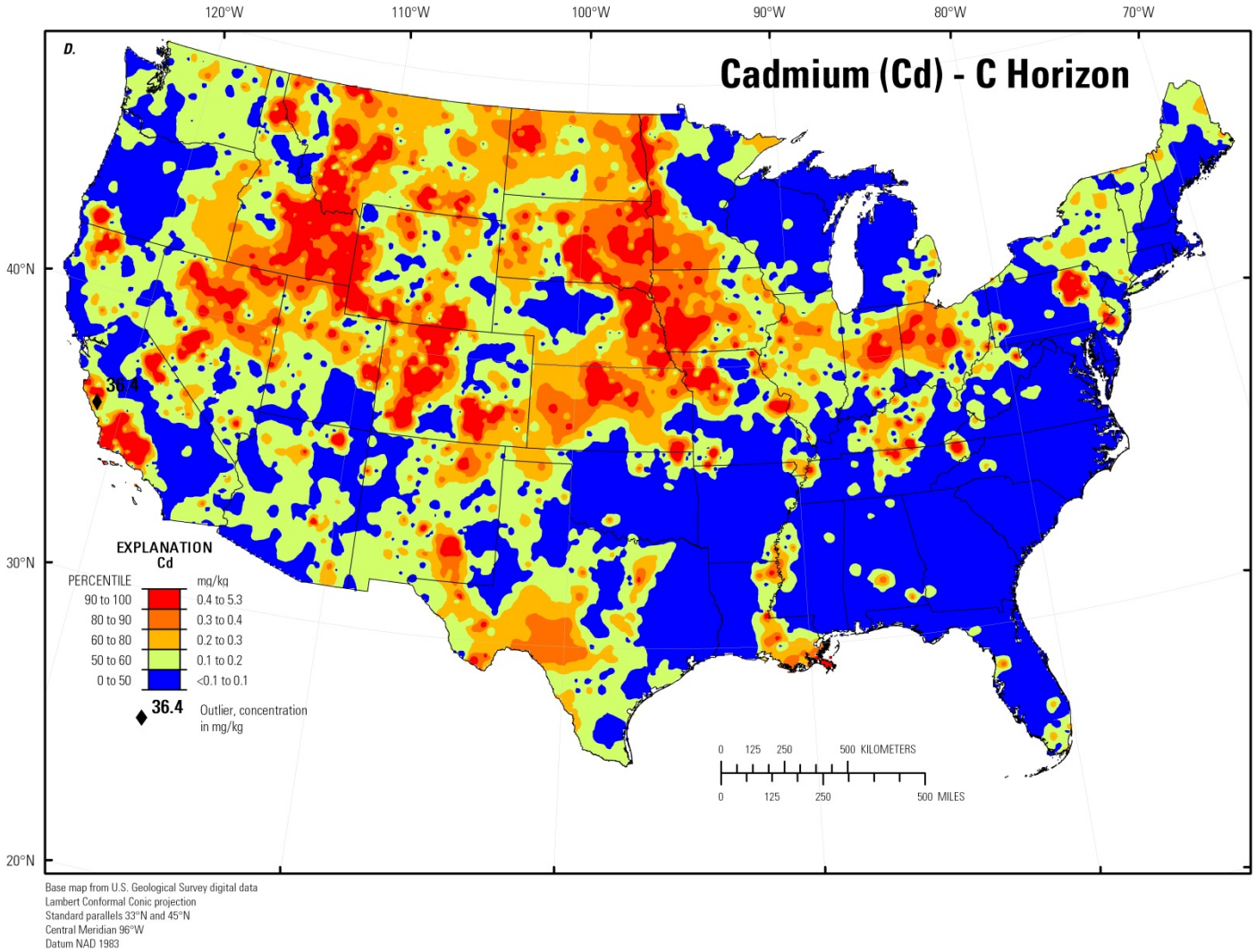


Figure 22. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cadmium (Cd) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

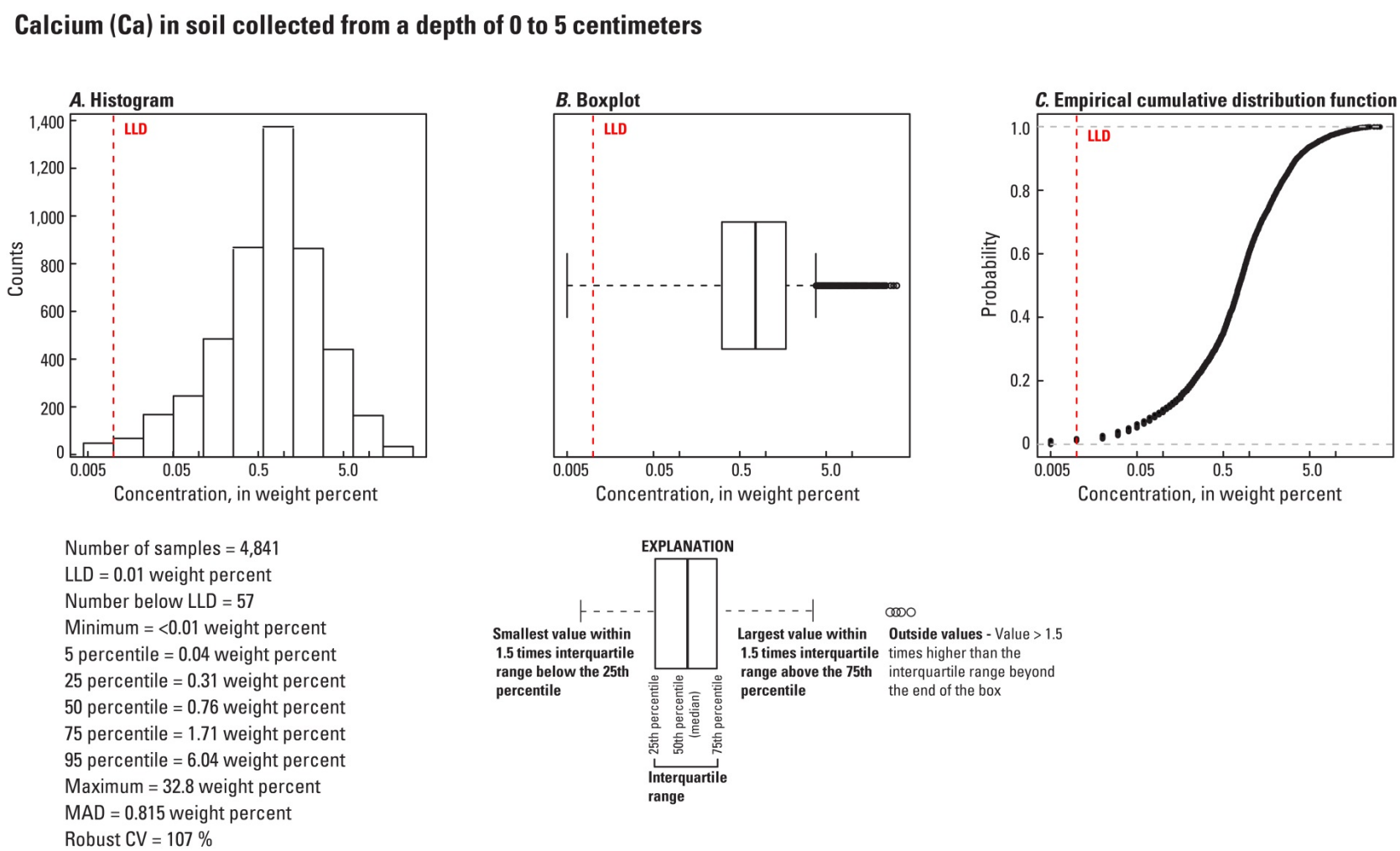


Figure 23. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcium (Ca) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).

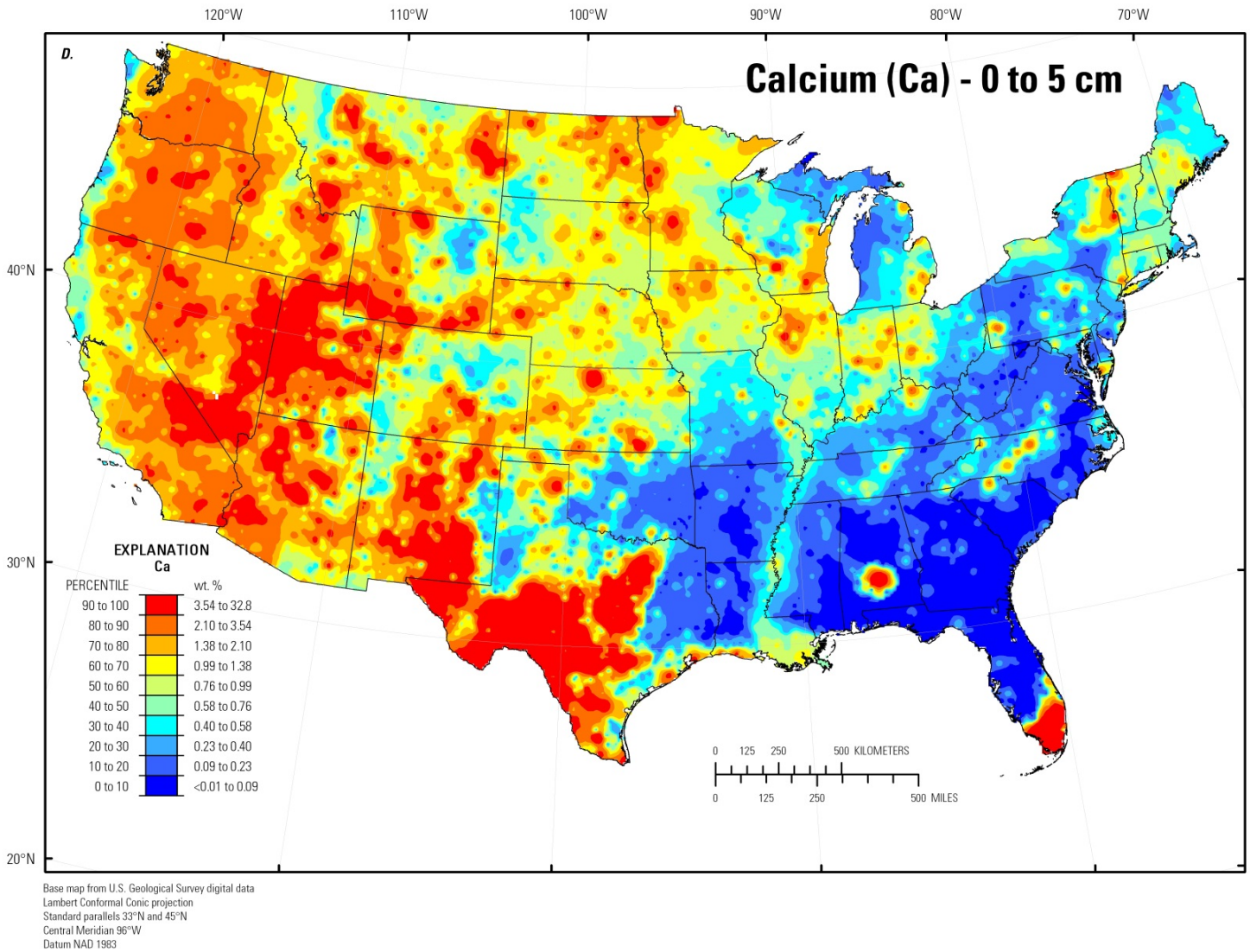


Figure 23. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcium (Ca) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).—Continued

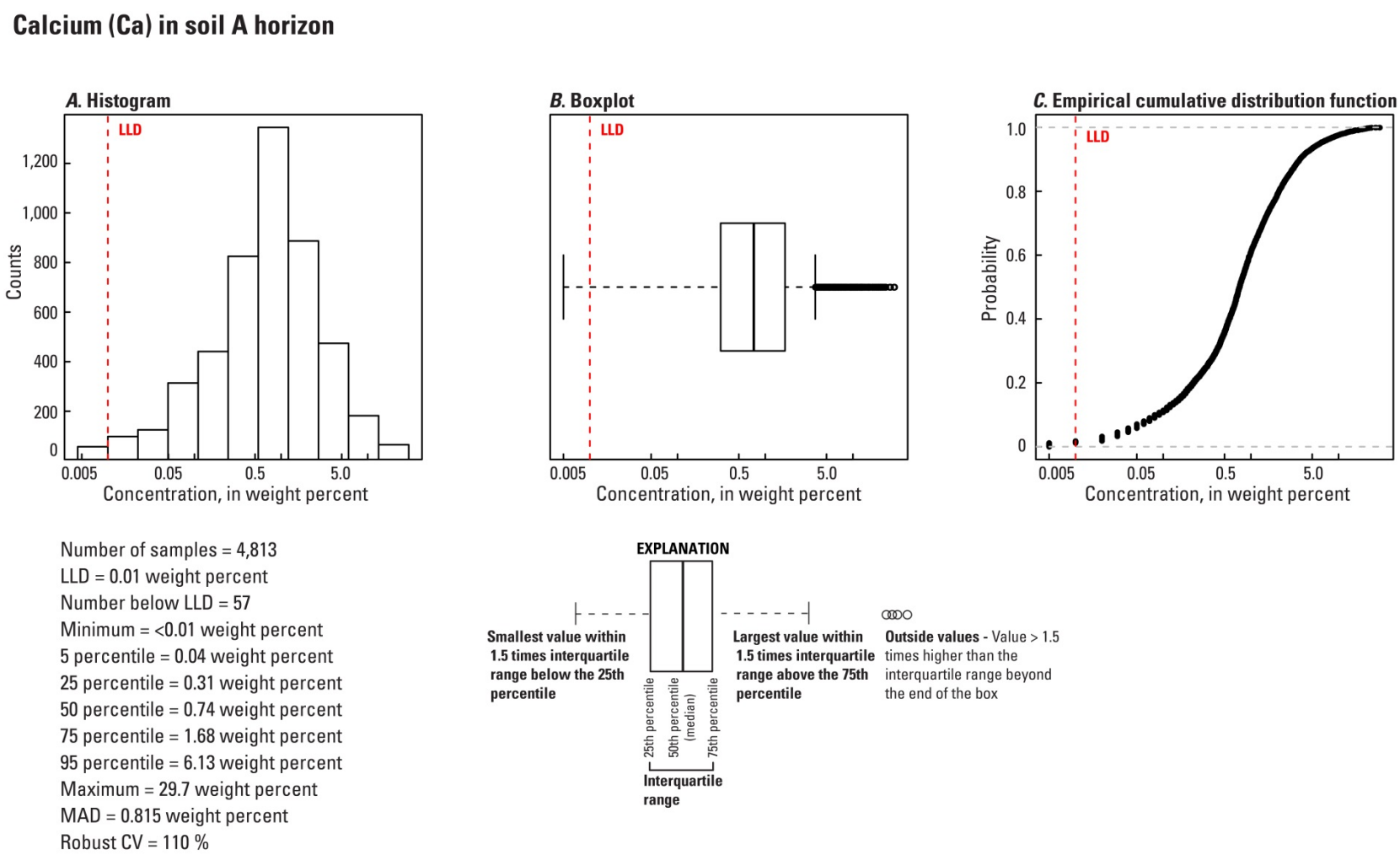


Figure 24. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcium (Ca) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

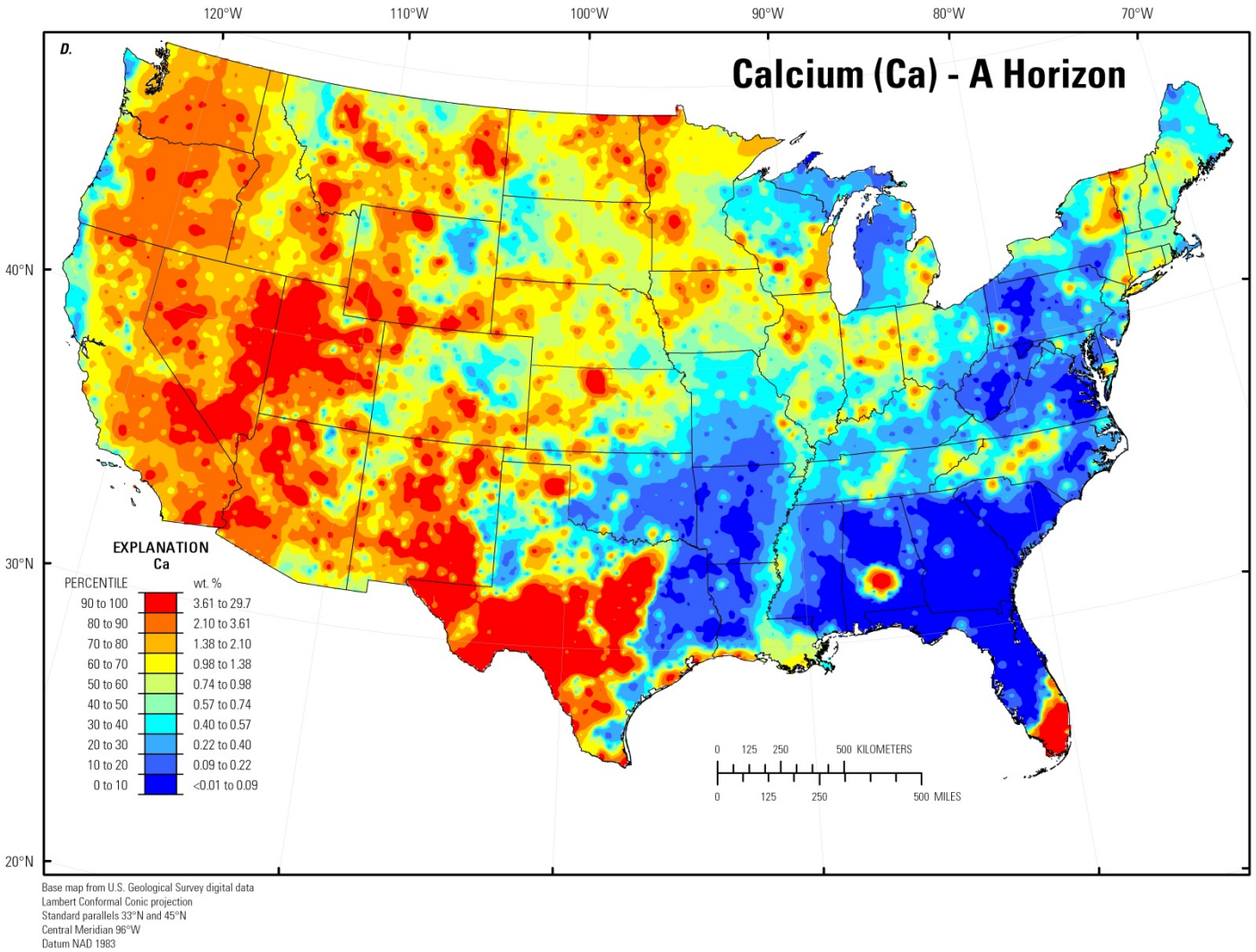


Figure 24. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcium (Ca) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

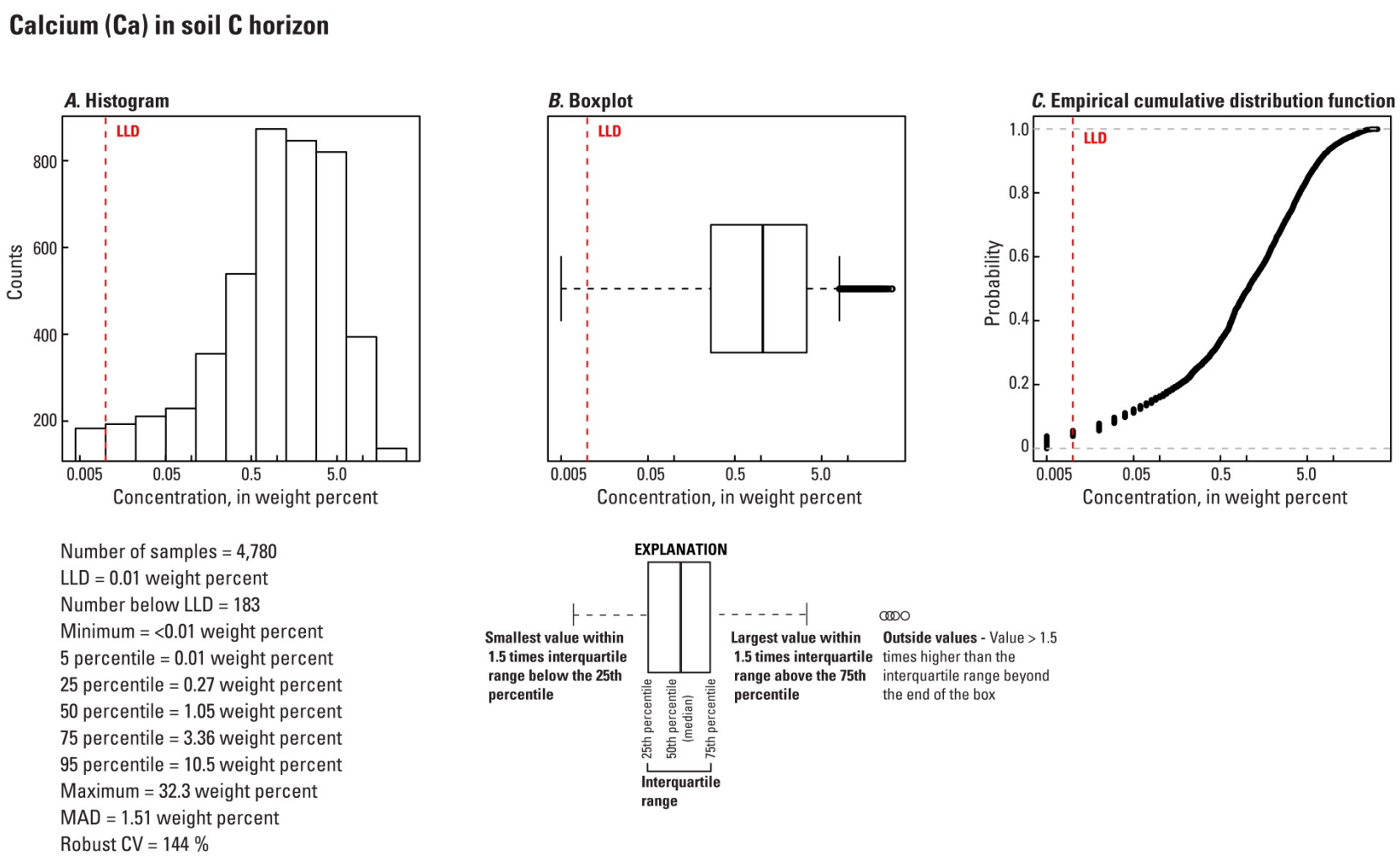


Figure 25. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcium (Ca) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

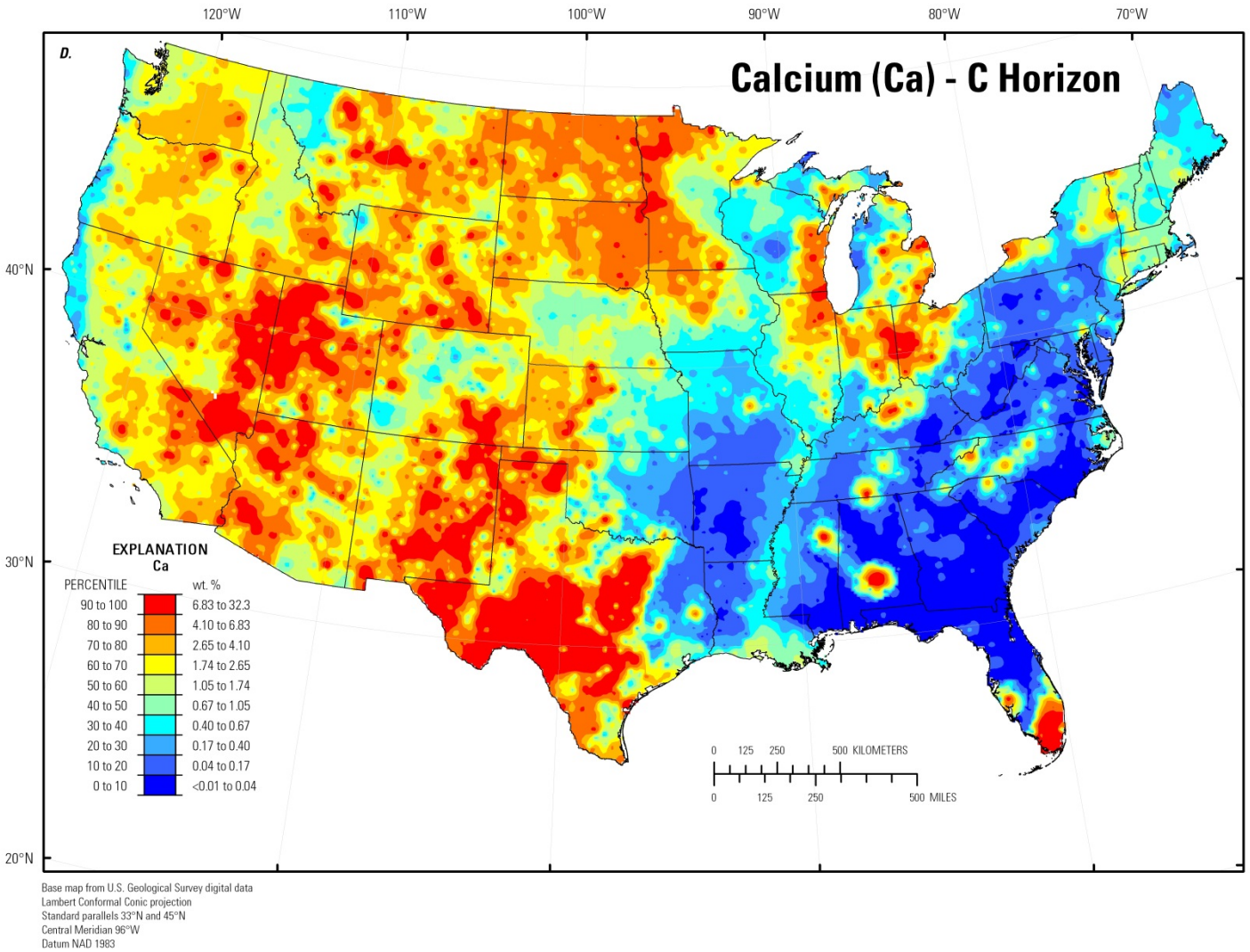


Figure 25. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcium (Ca) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

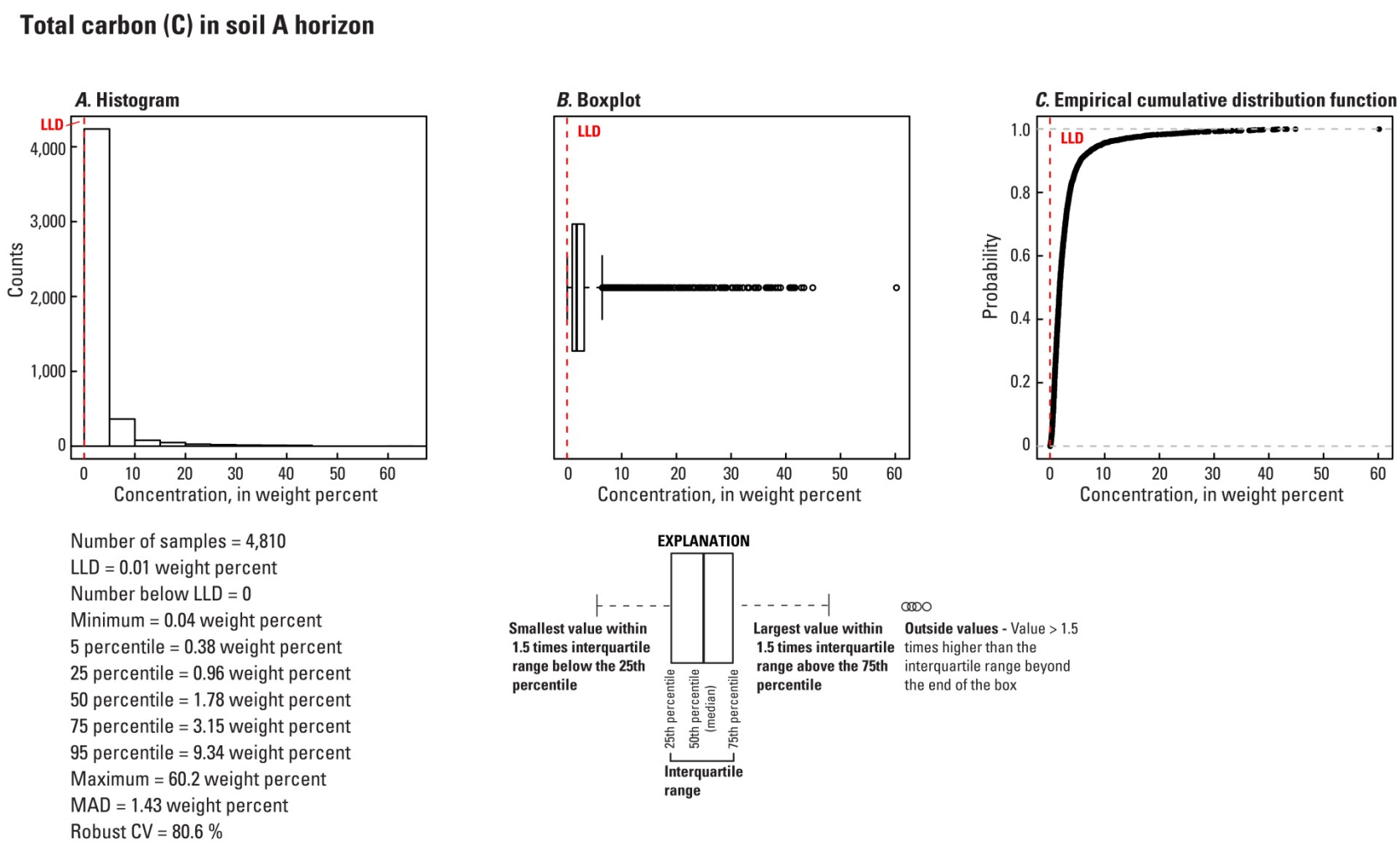


Figure 26. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbon (C) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

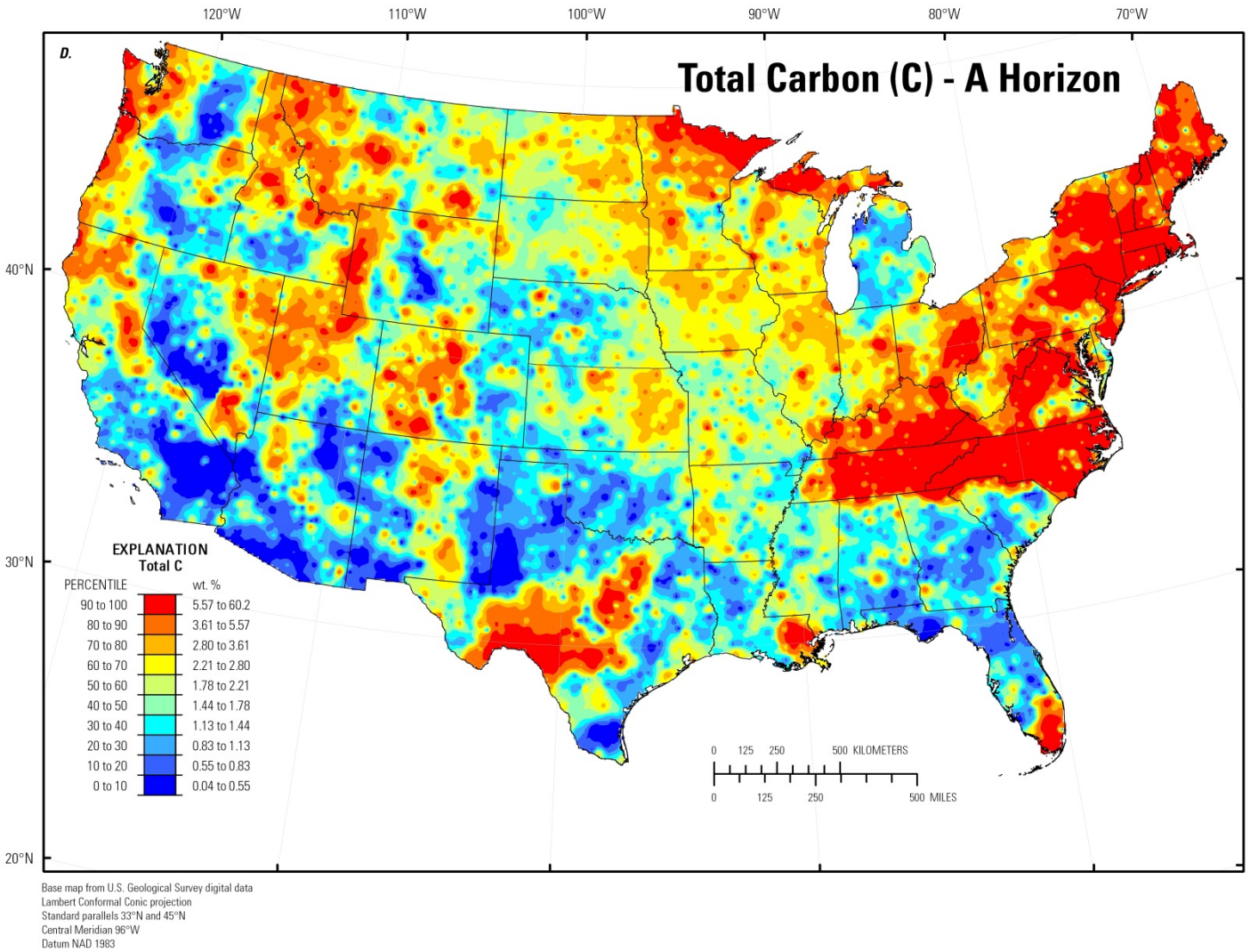


Figure 26. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbon (C) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

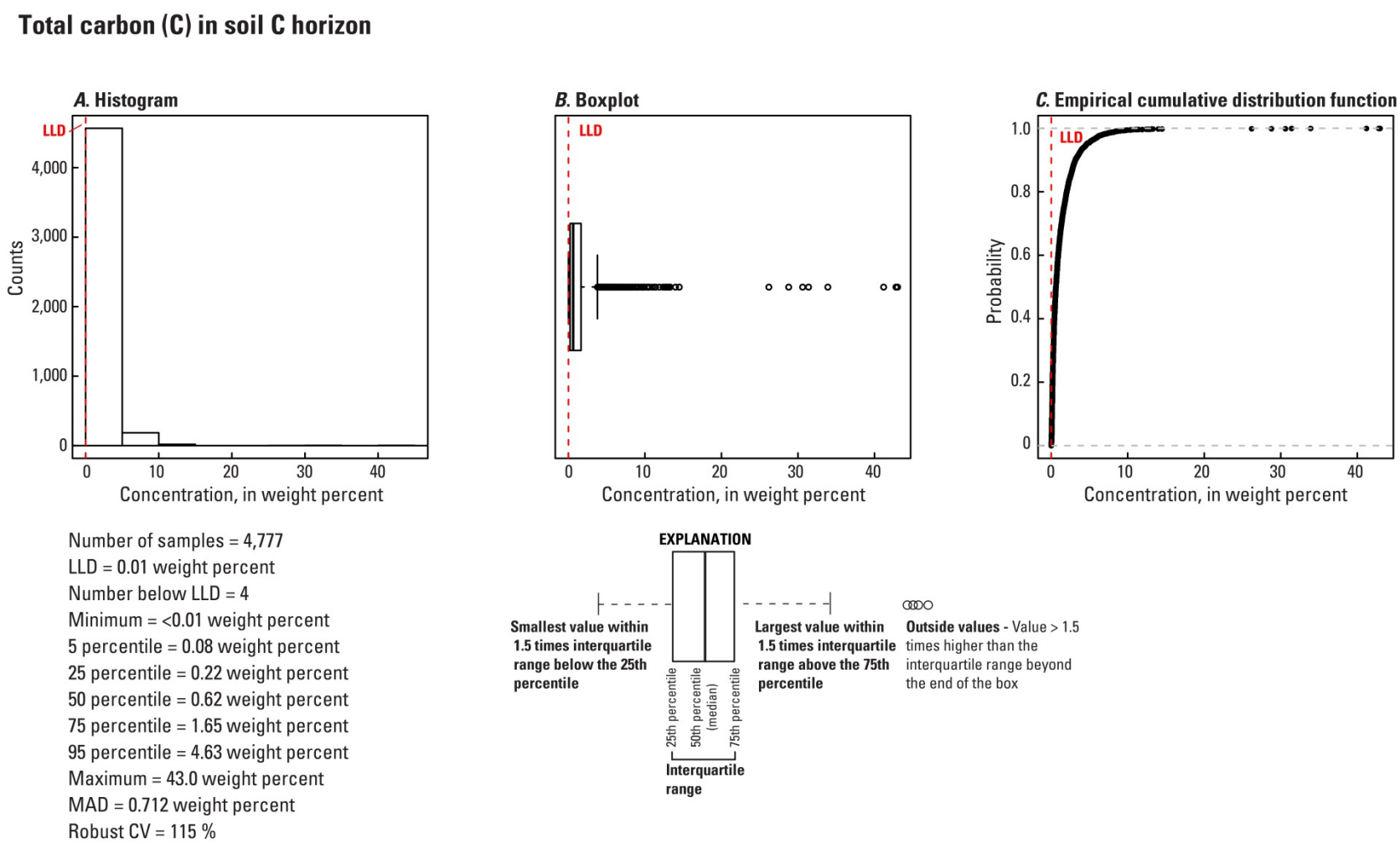


Figure 27. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbon (C) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

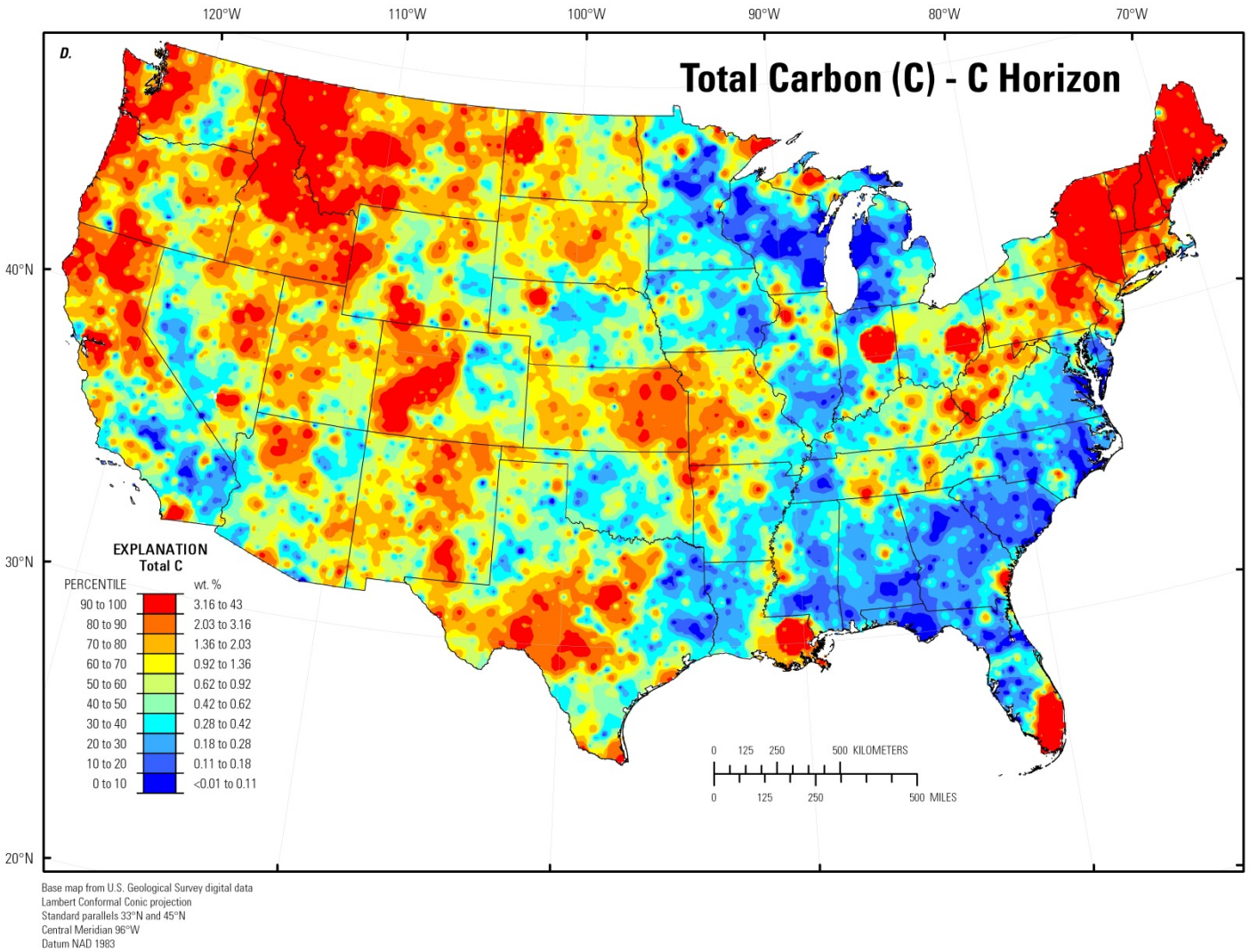


Figure 27. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbon (C) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

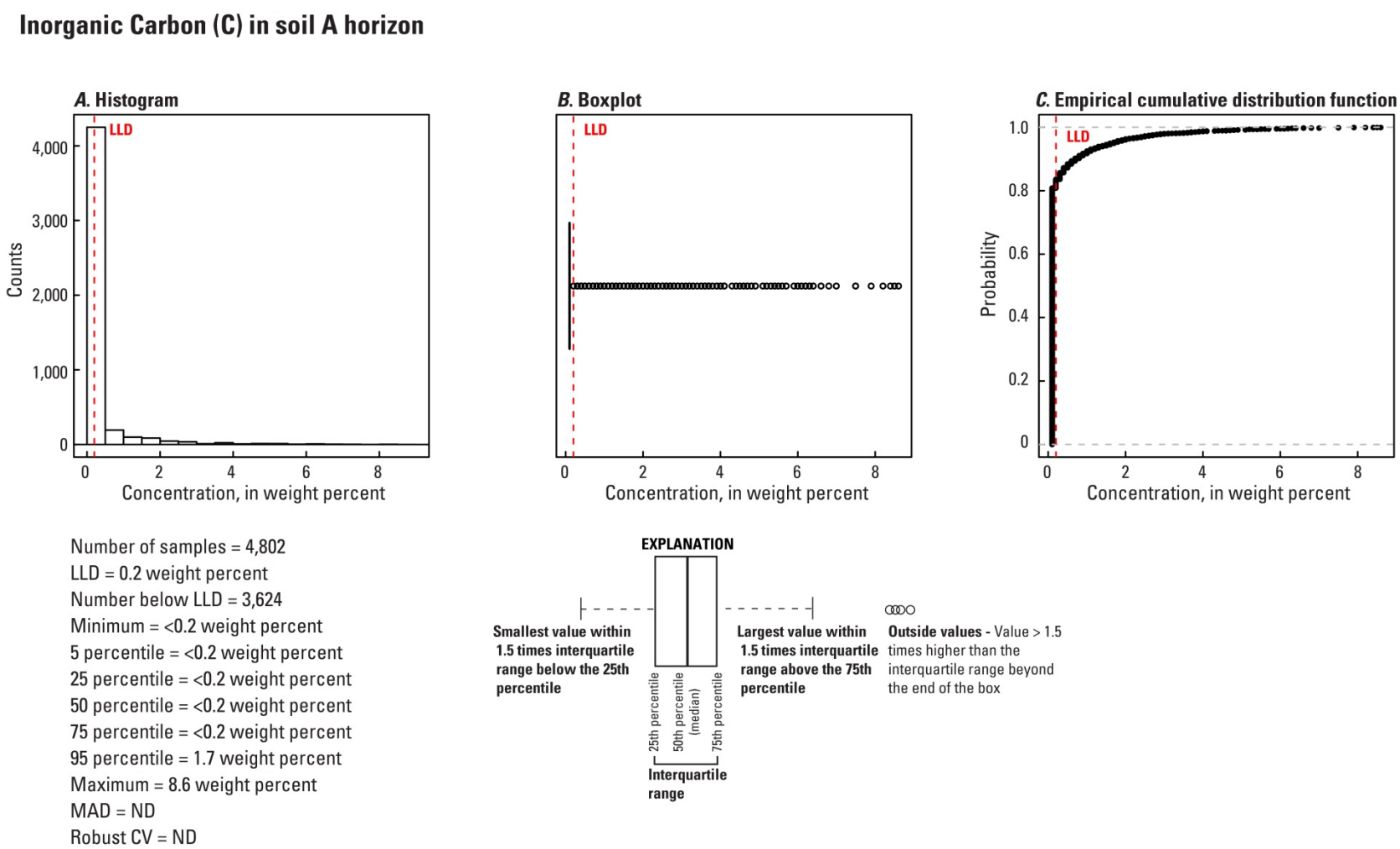


Figure 28. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of inorganic carbon (C) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).

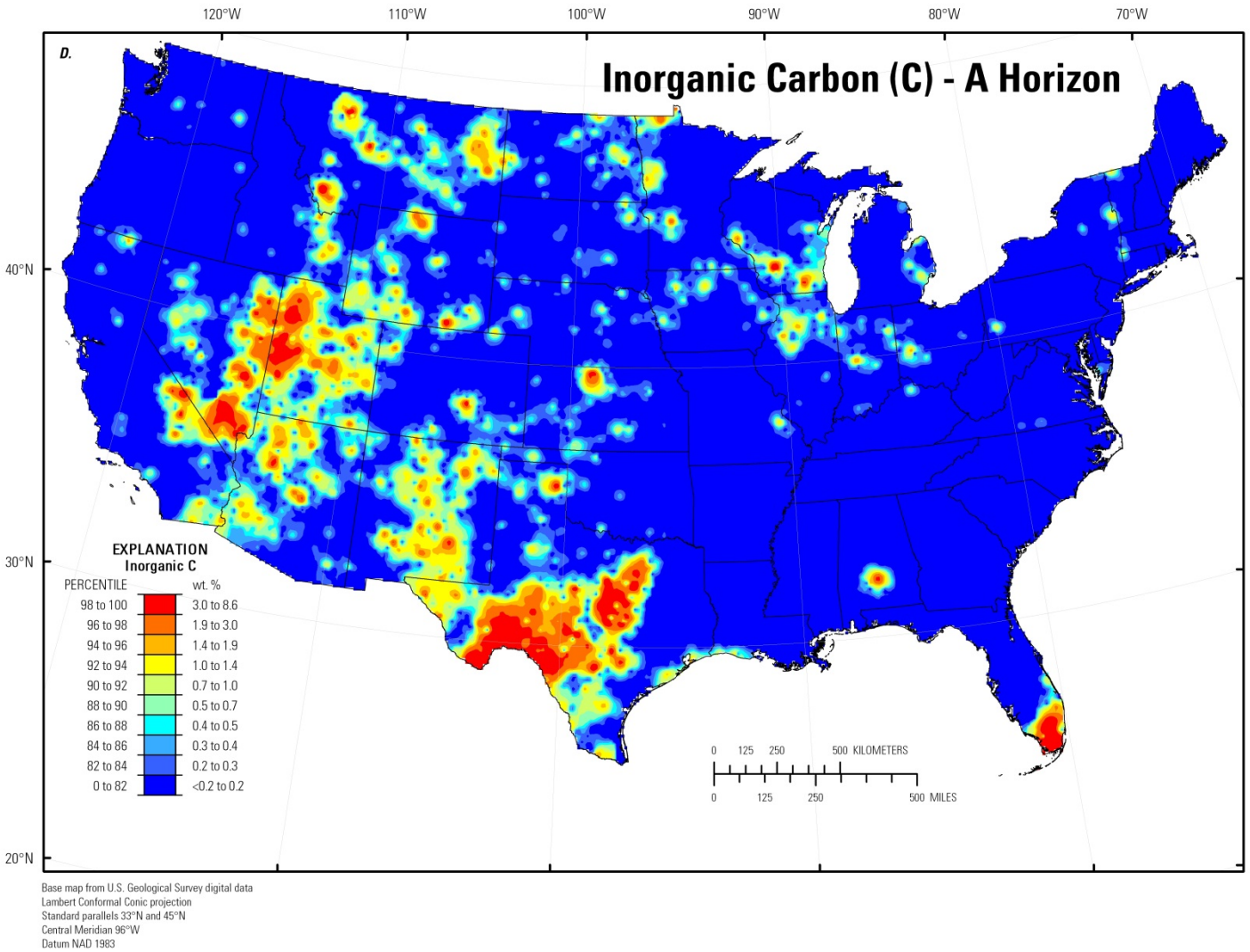
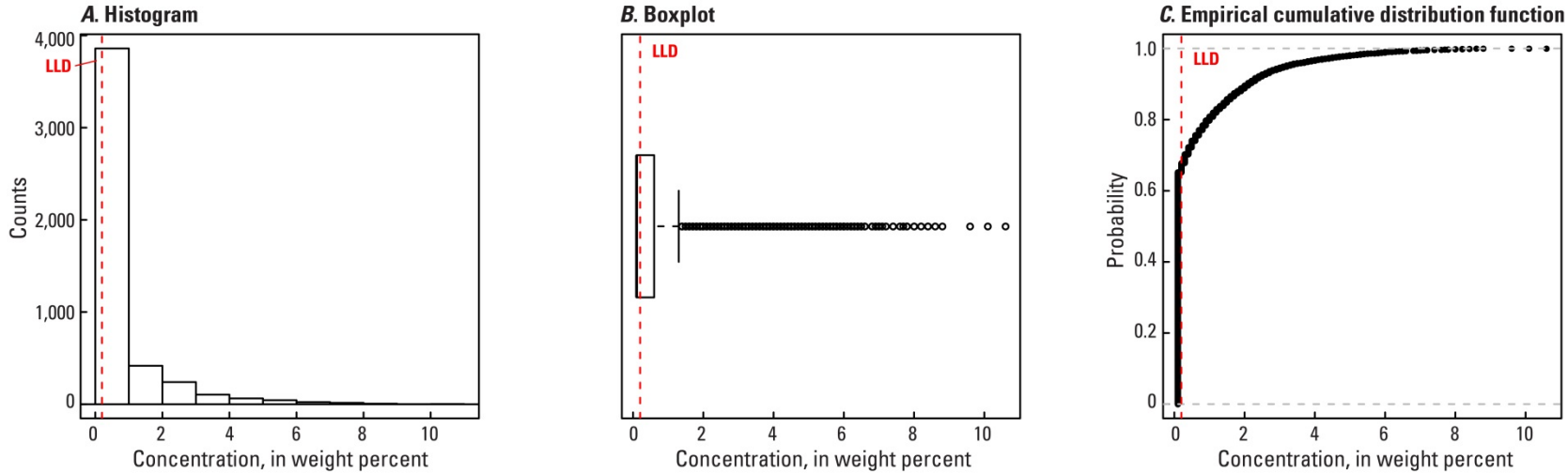


Figure 28. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of inorganic carbon (C) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).—Continued

Inorganic carbon (C) in soil C horizon



Number of samples = 4,774
LLD = 0.2 weight percent
Number below LLD = 2,903
Minimum = <0.2 weight percent
5 percentile = <0.2 weight percent
25 percentile = <0.2 weight percent
50 percentile = <0.2 weight percent
75 percentile = 0.6 weight percent
95 percentile = 3.2 weight percent
Maximum = 10.6 weight percent
MAD = ND
Robust CV = ND

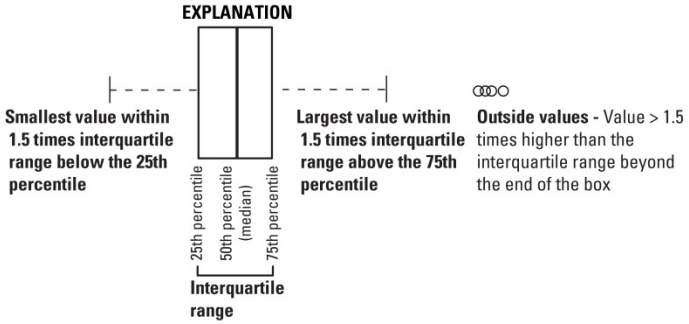


Figure 29. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of inorganic carbon (C) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).

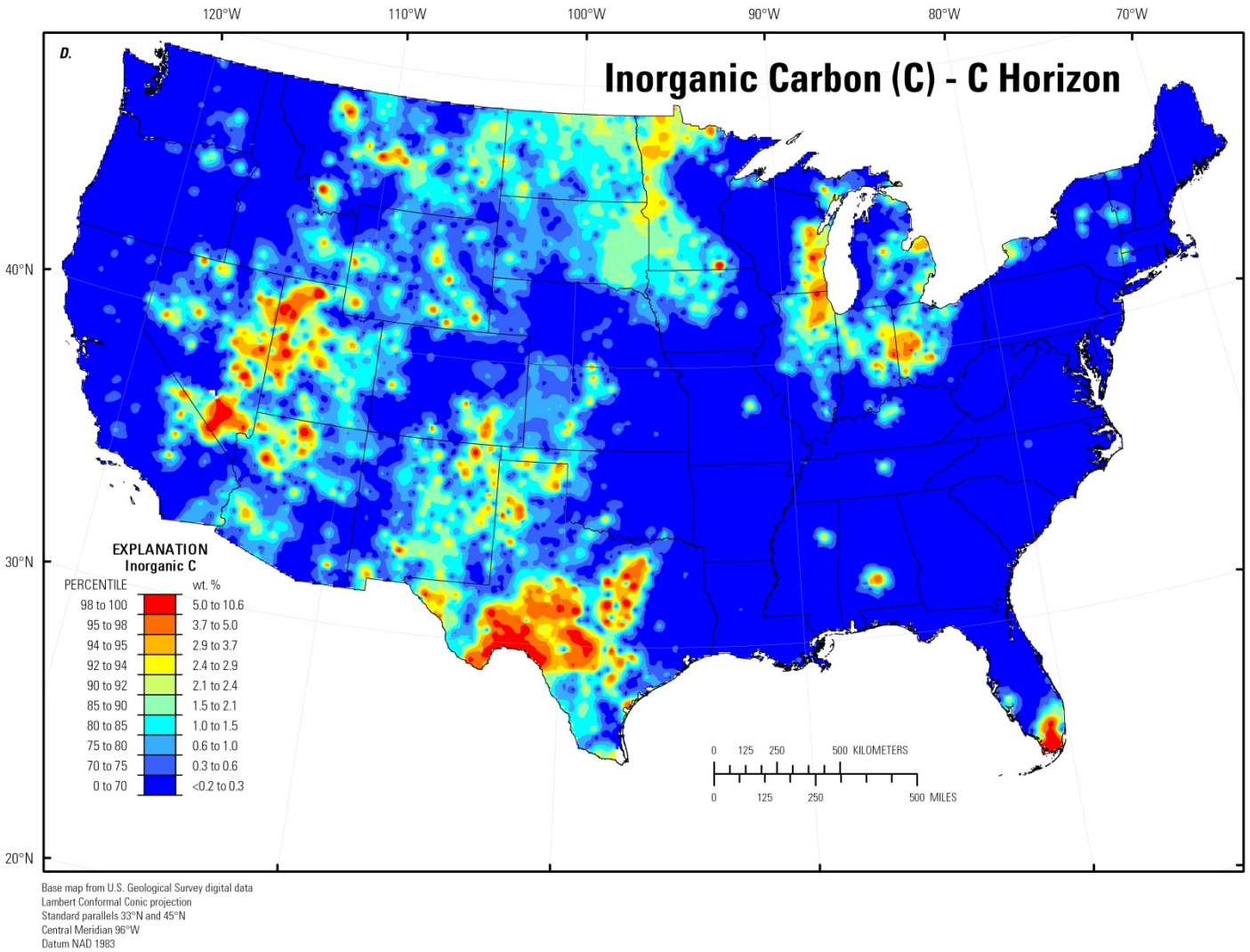


Figure 29. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of inorganic carbon (C) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).—Continued

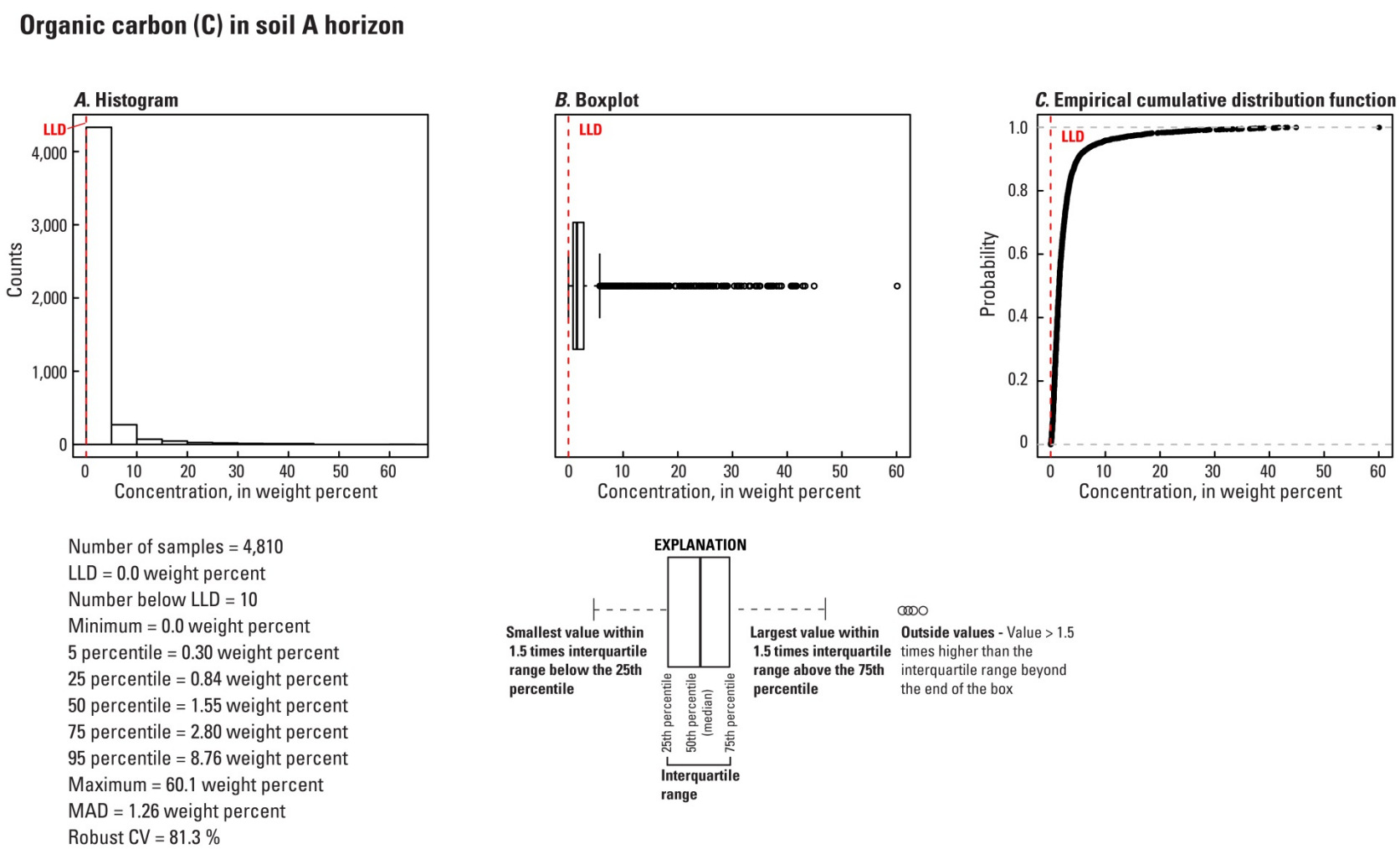


Figure 30. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of organic carbon (C) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

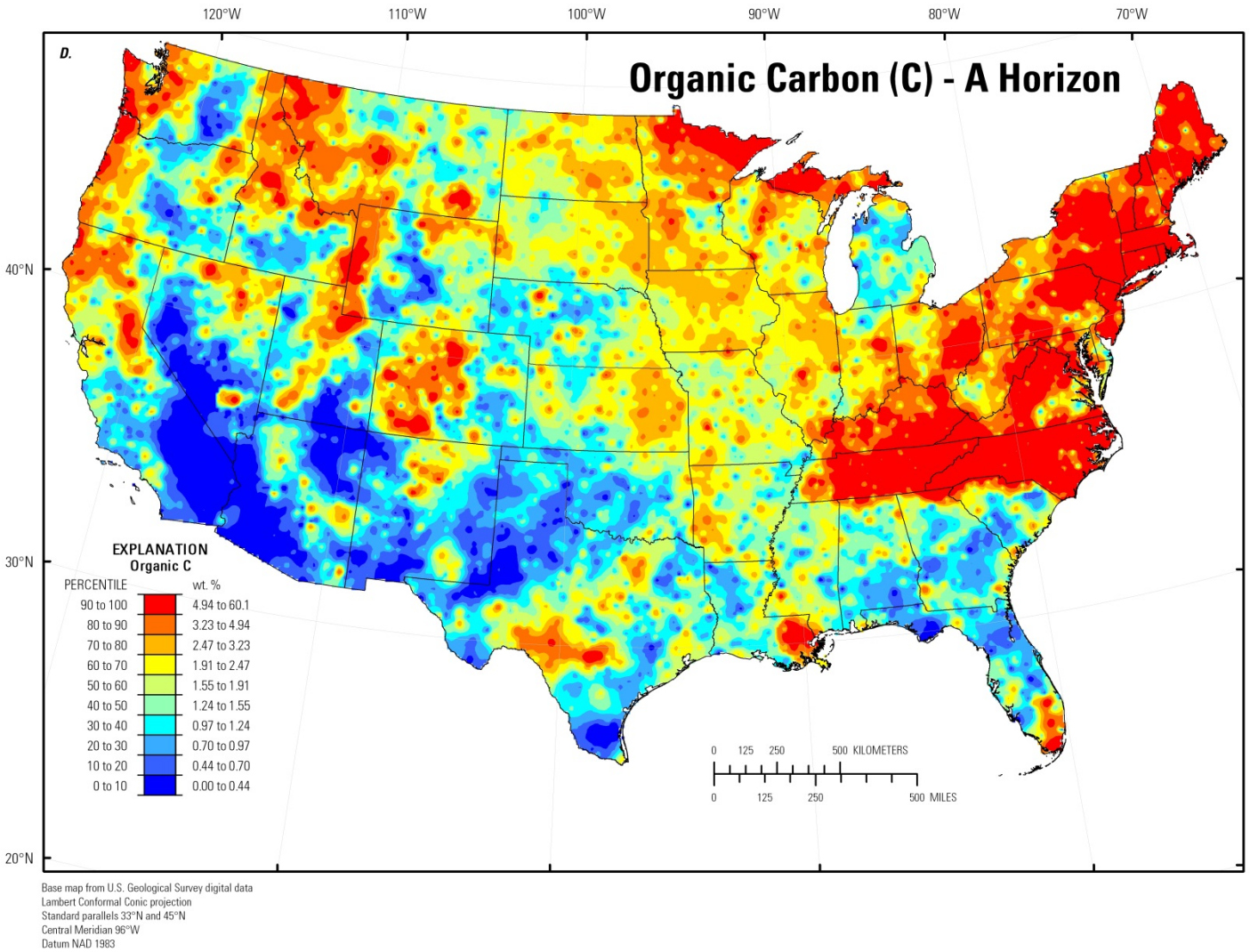


Figure 30. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of organic carbon (C) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

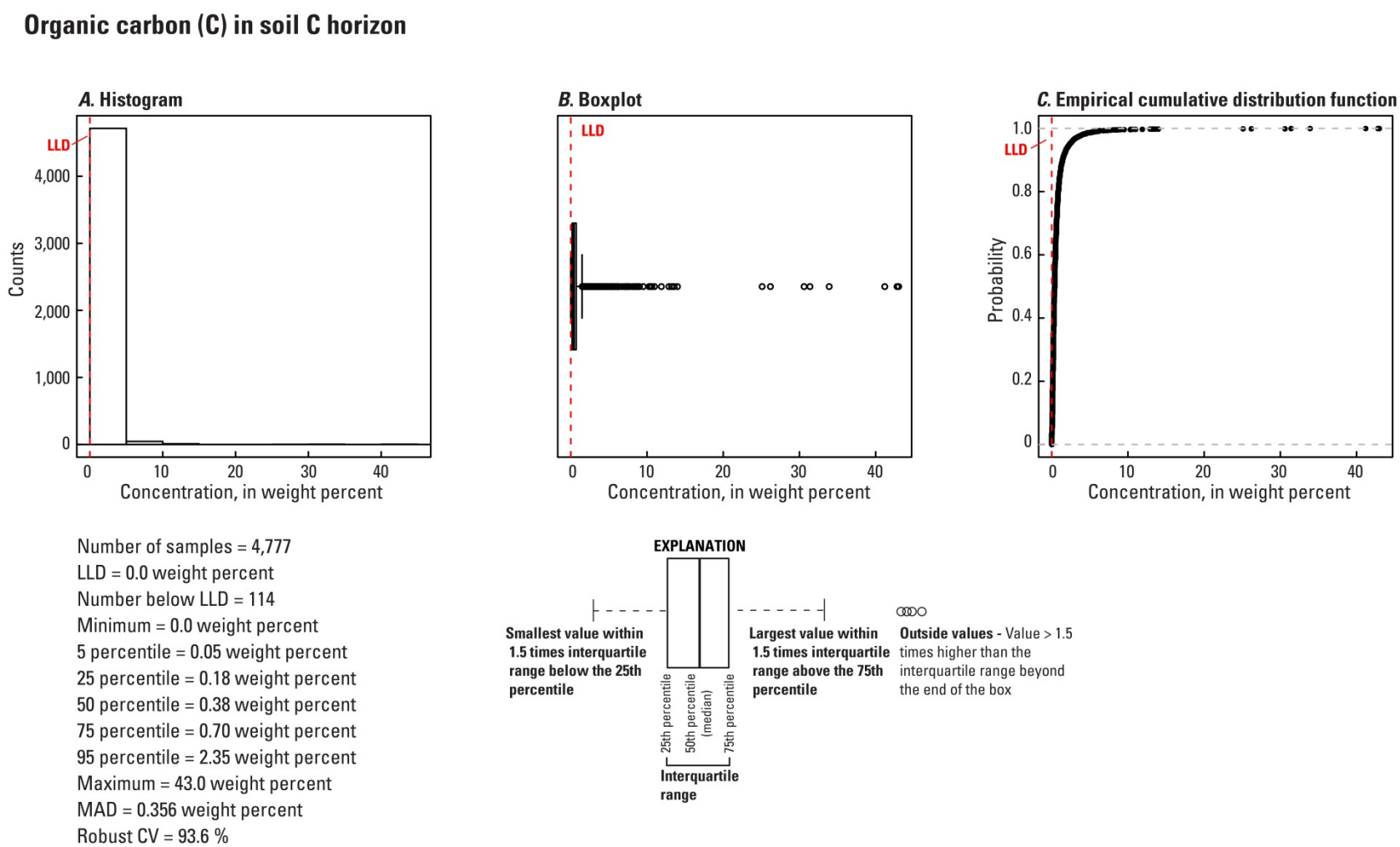


Figure 31. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of organic carbon (C) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

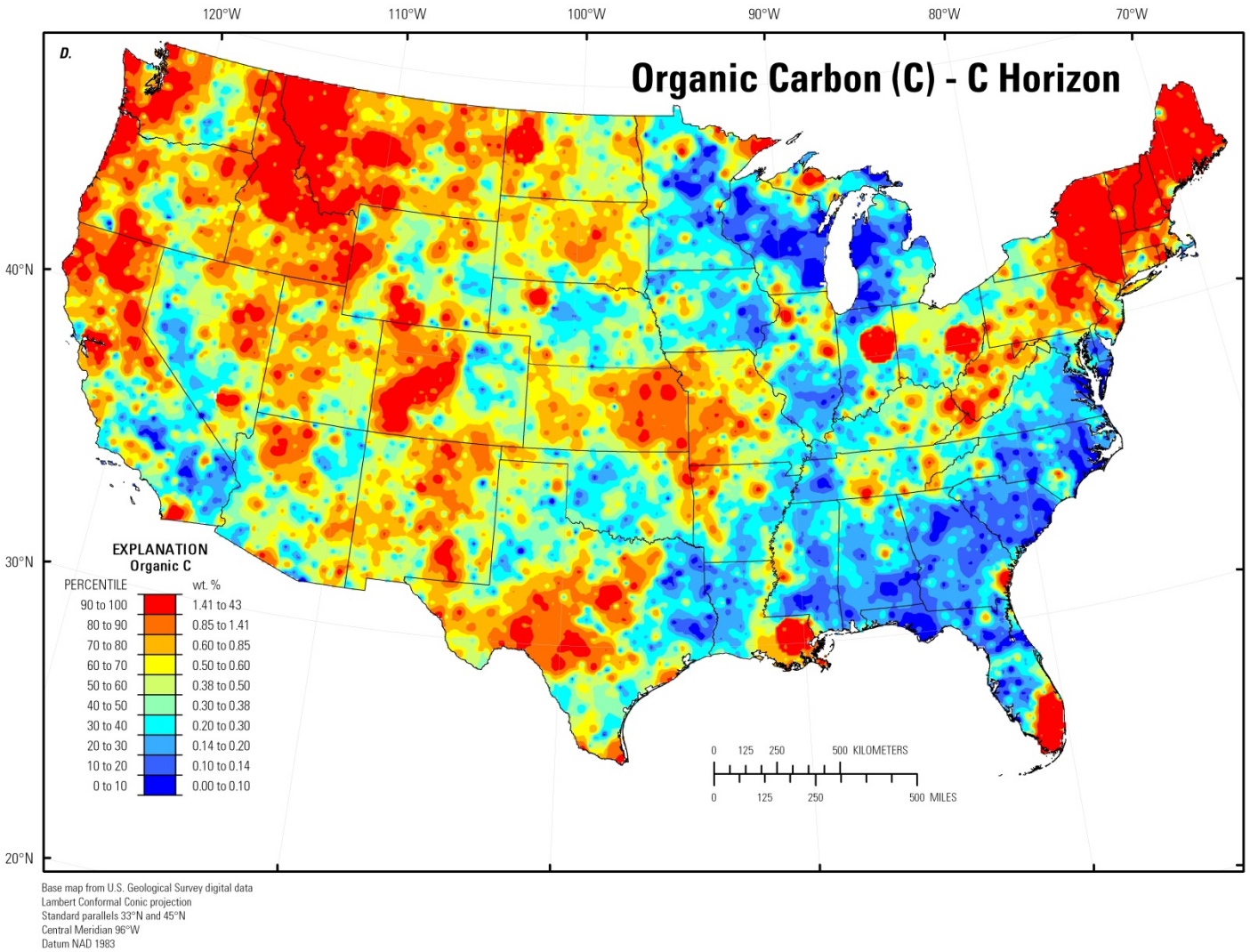
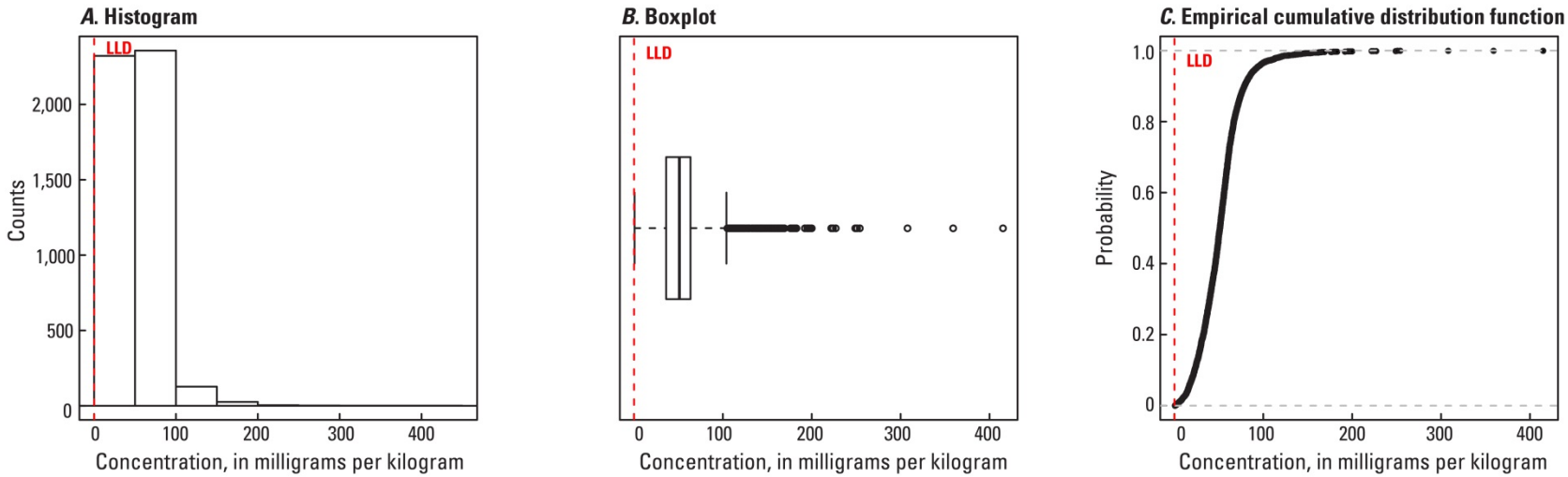


Figure 31. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of organic carbon (C) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

Cerium (Ce) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.05 milligrams per kilogram
Number below LLD = 0
Minimum = 0.65 milligrams per kilogram
5 percentile = 16.0 milligrams per kilogram
25 percentile = 36.2 milligrams per kilogram
50 percentile = 51.1 milligrams per kilogram
75 percentile = 63.6 milligrams per kilogram
95 percentile = 92.1 milligrams per kilogram
Maximum = 415 milligrams per kilogram
MAD = 20.2 milligrams per kilogram
Robust CV = 39.5 %

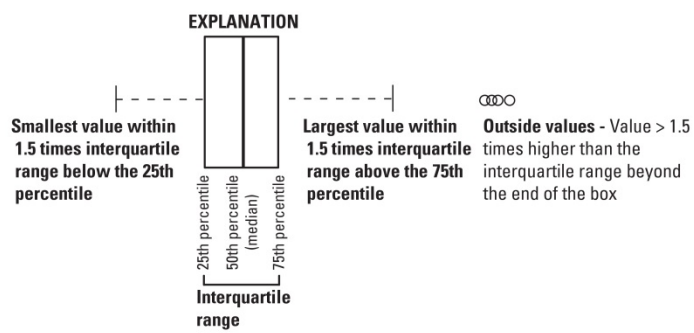


Figure 32. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cerium (Ce) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

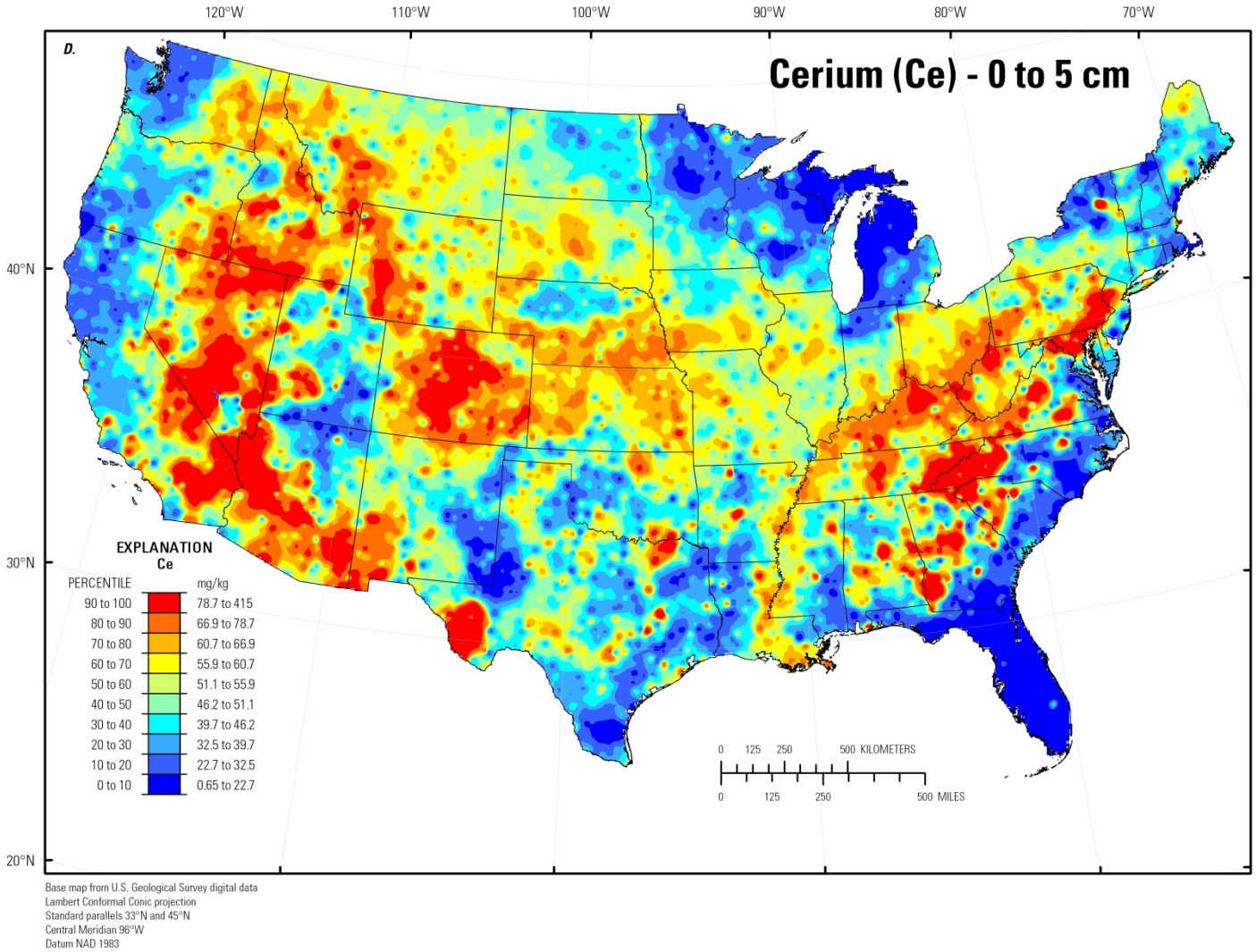


Figure 32. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cerium (Ce) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

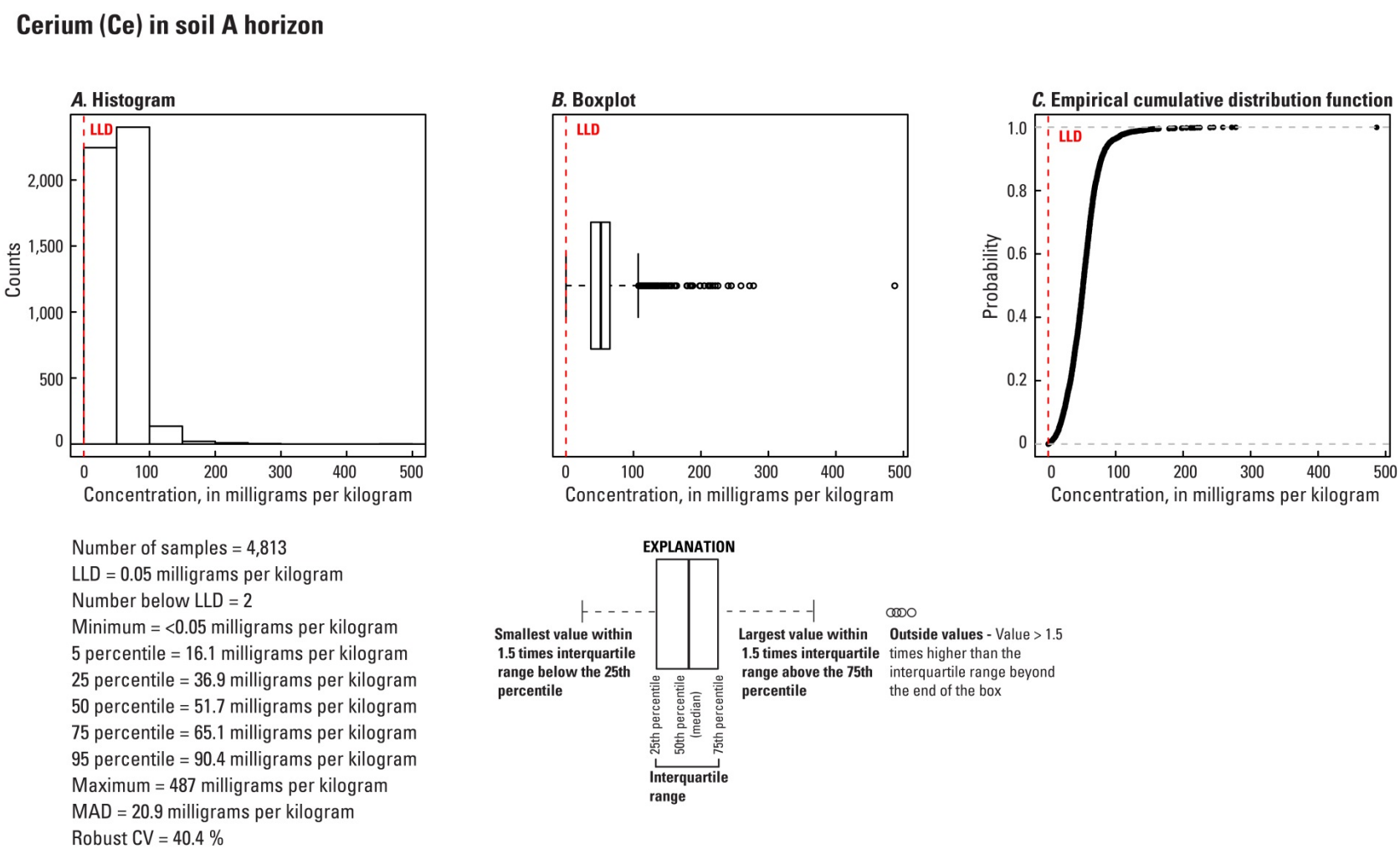


Figure 33. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cerium (Ce) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

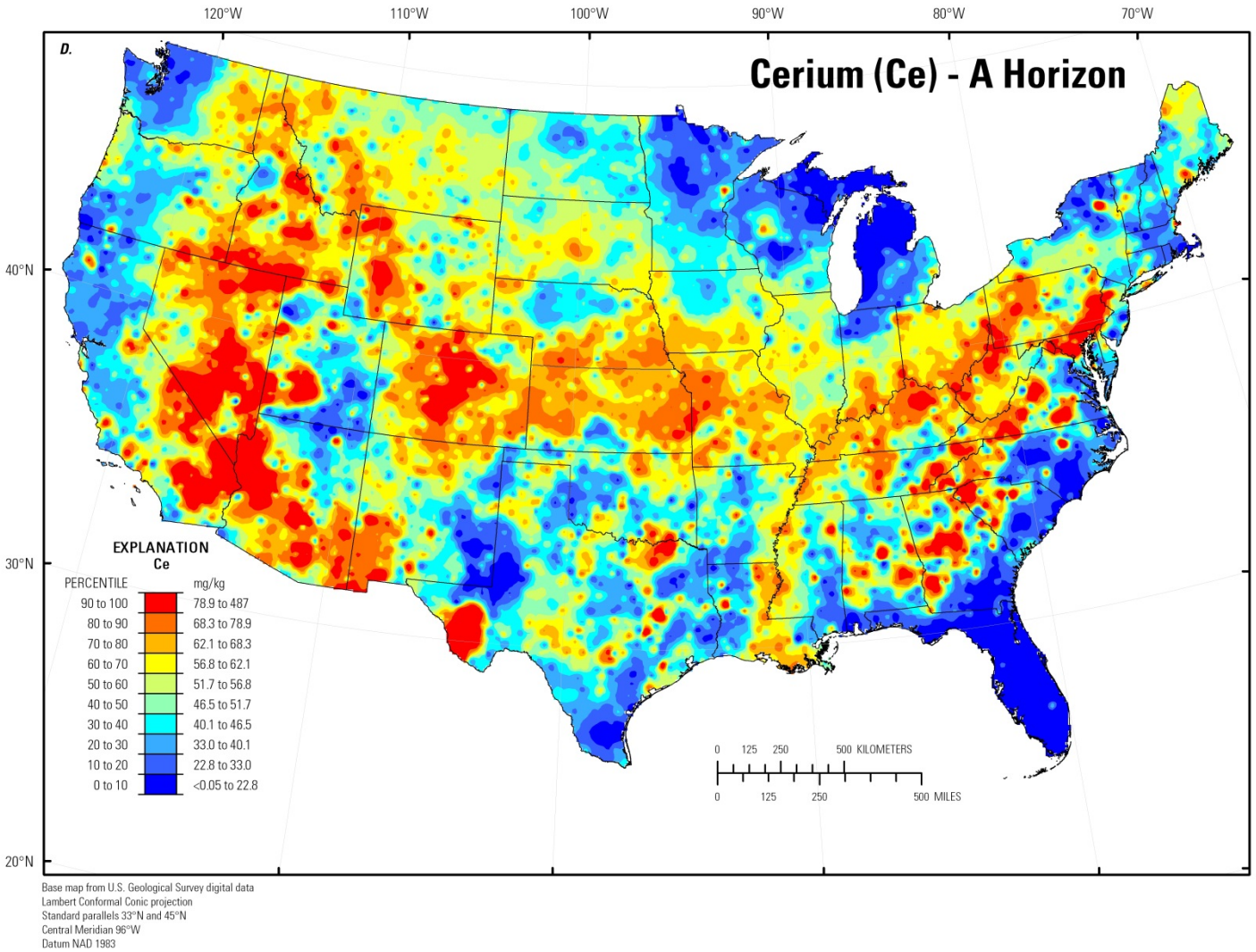


Figure 33. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cerium (Ce) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

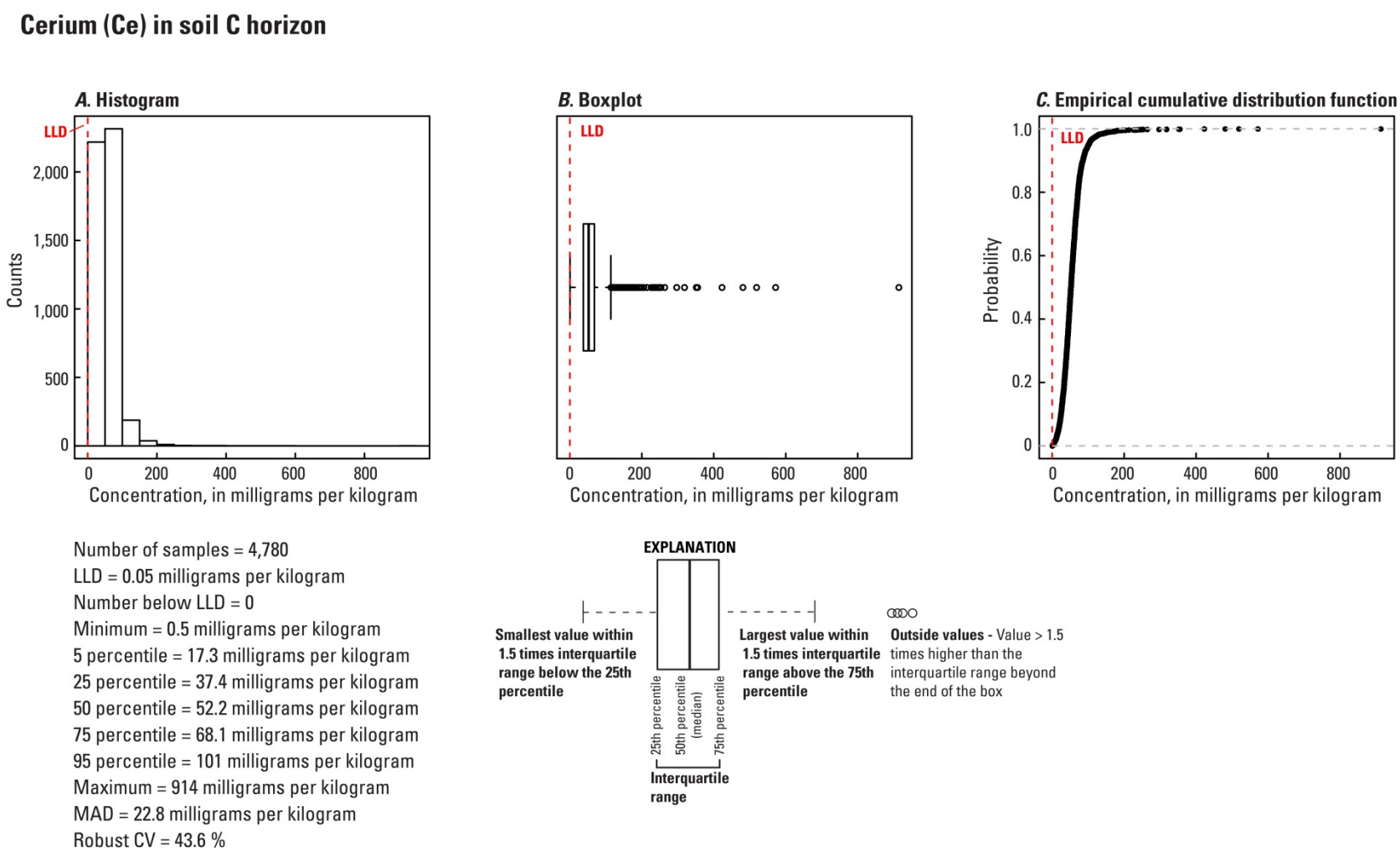


Figure 34. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cerium (Ce) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

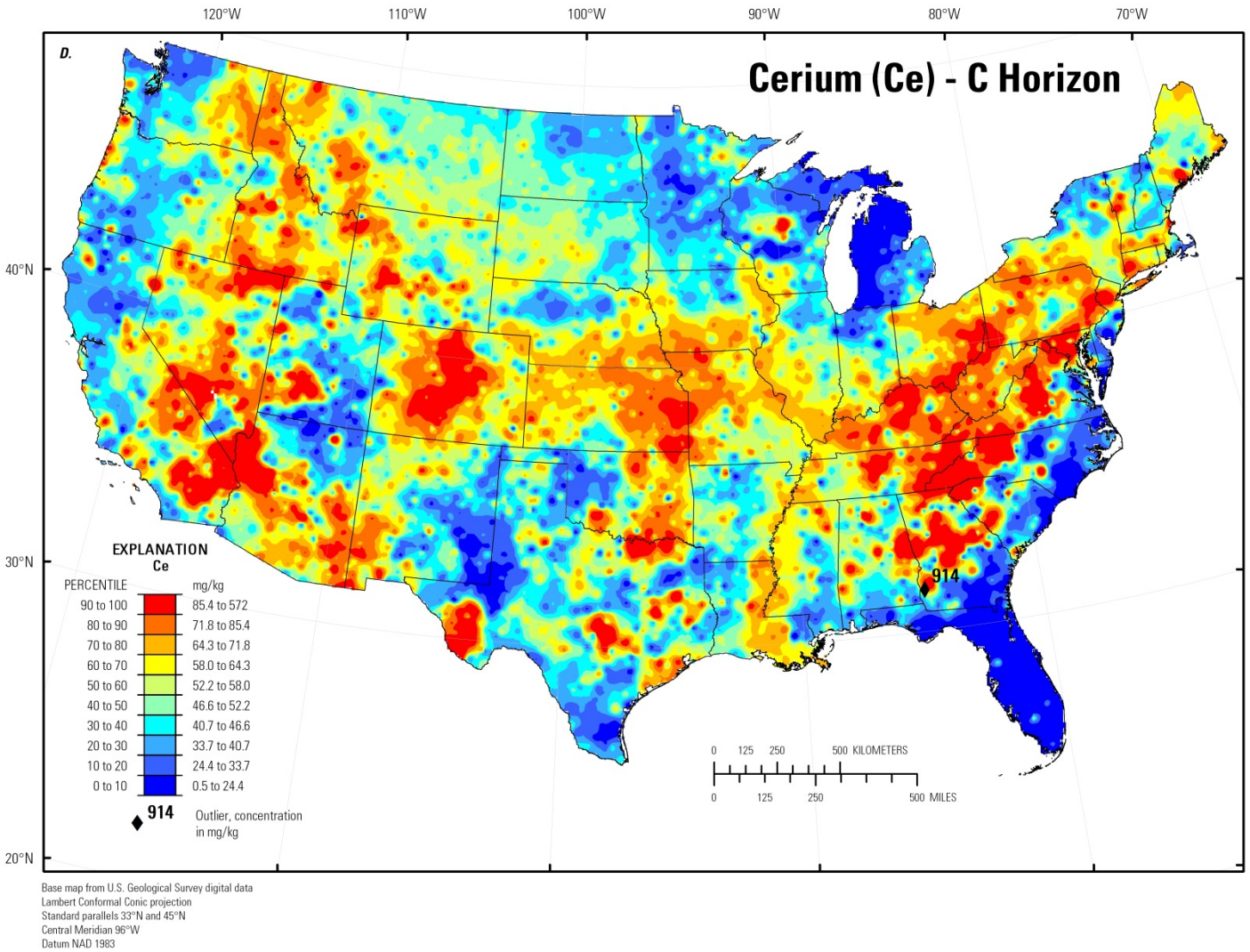


Figure 34. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cerium (Ce) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

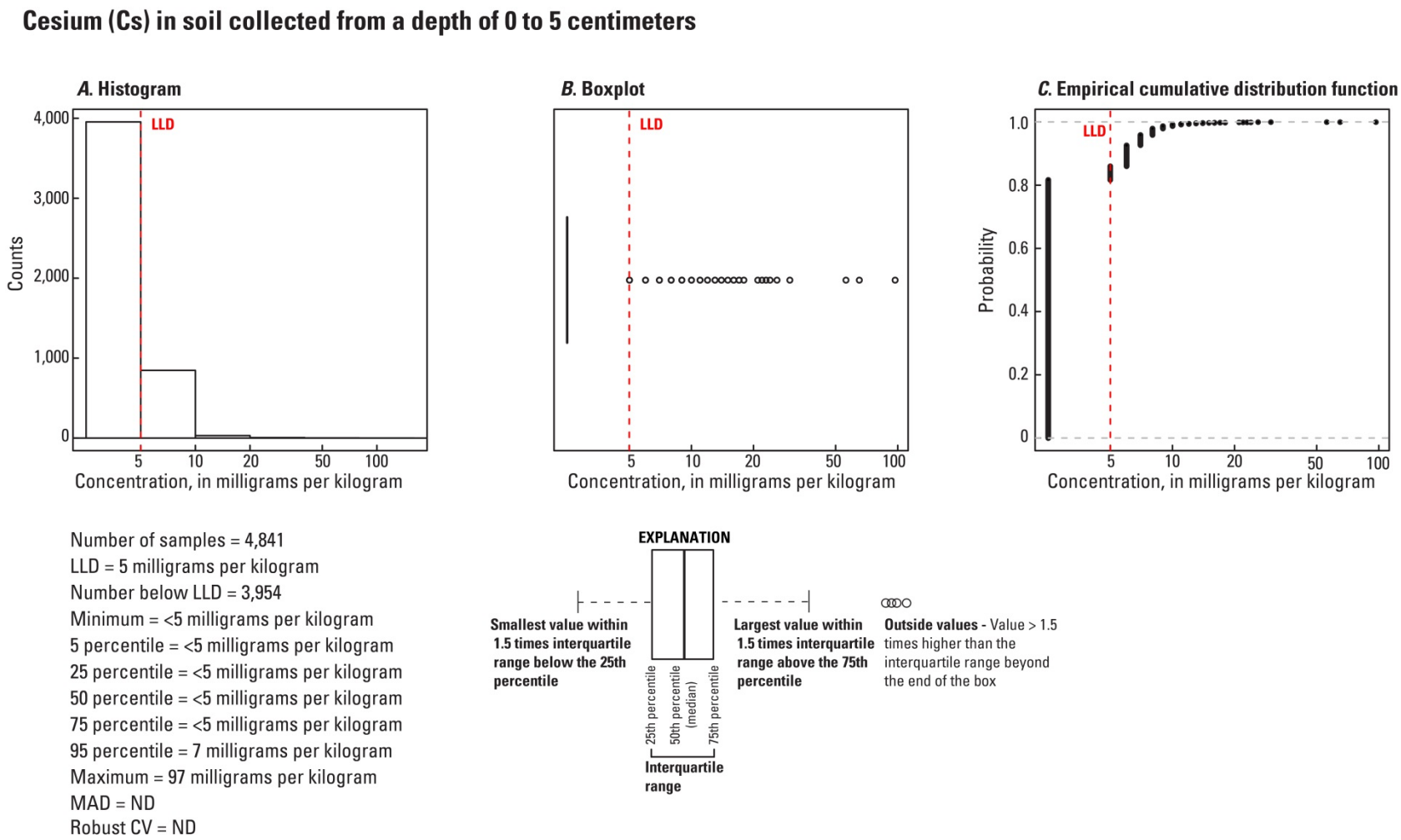


Figure 35. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cesium (Cs) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

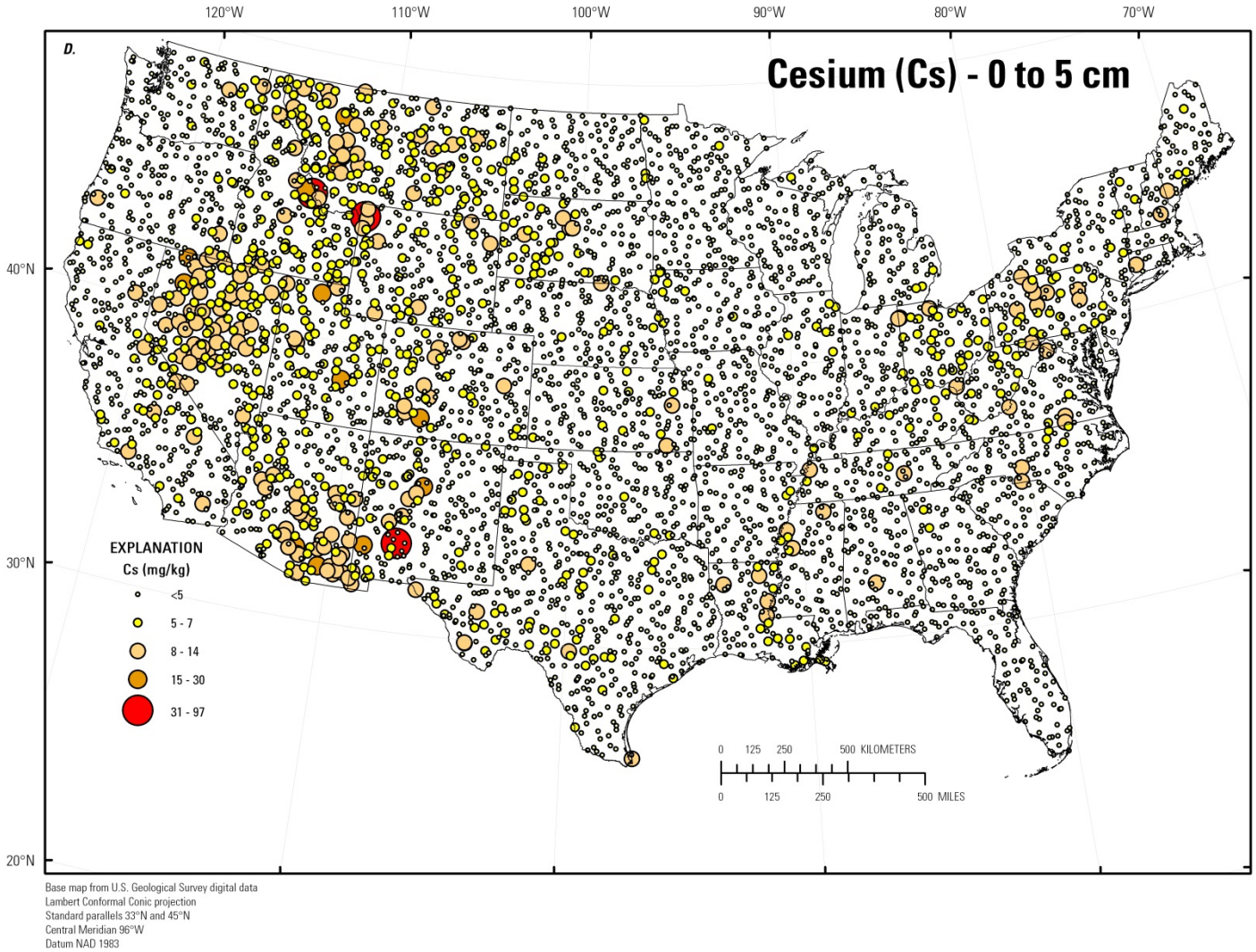


Figure 35. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cesium (Cs) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

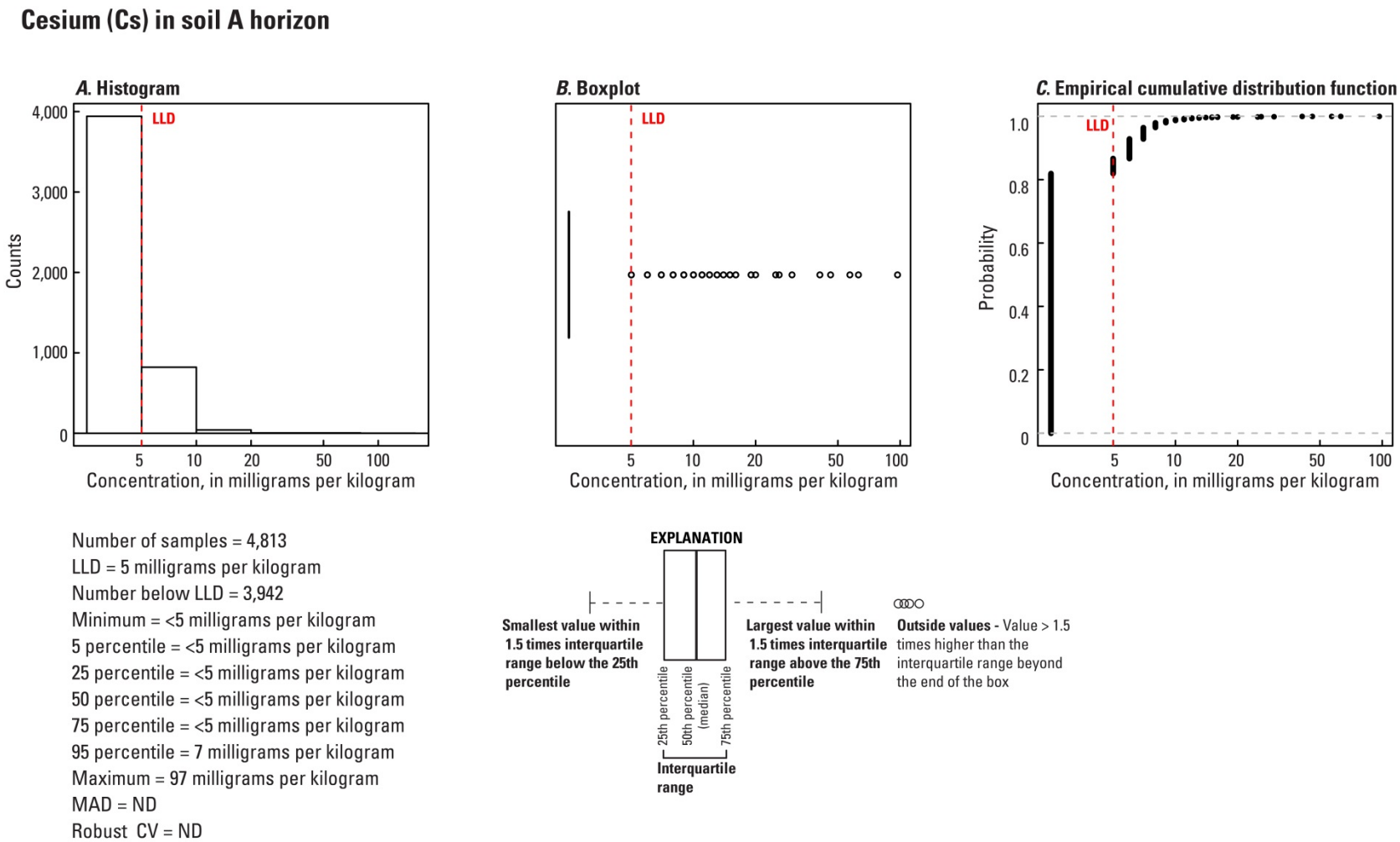


Figure 36. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cesium (Cs) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

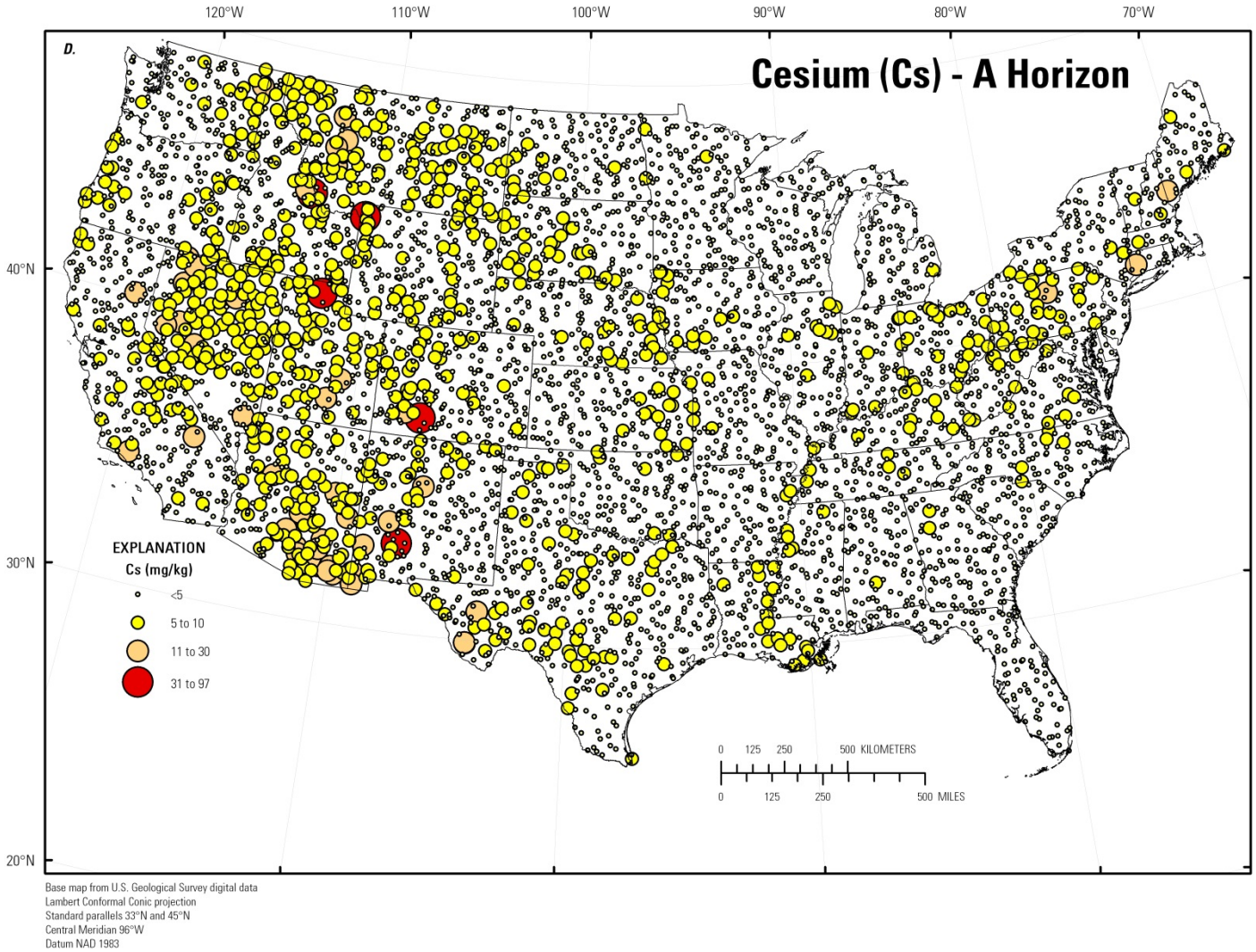
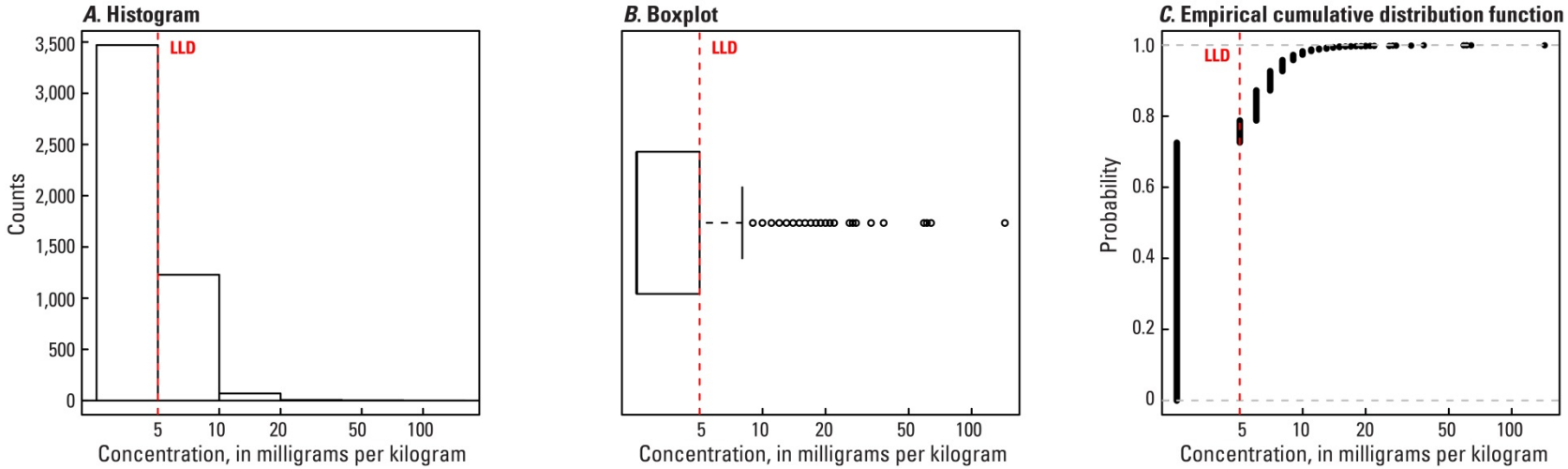


Figure 36. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cesium (Cs) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Cesium (Cs) in soil C horizon



Number of samples = 4,780
LLD = 5 milligrams per kilogram
Number below LLD = 3,470
Minimum = <5 milligrams per kilogram
5 percentile = <5 milligrams per kilogram
25 percentile = <5 milligrams per kilogram
50 percentile = <5 milligrams per kilogram
75 percentile = 5 milligrams per kilogram
95 percentile = 8 milligrams per kilogram
Maximum = 144 milligrams per kilogram
MAD = ND
Robust CV = ND

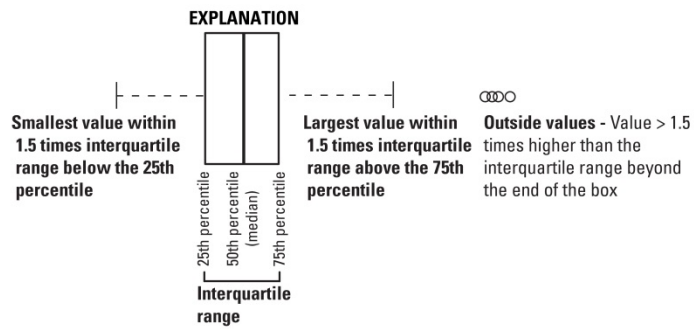


Figure 37. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cesium (Cs) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

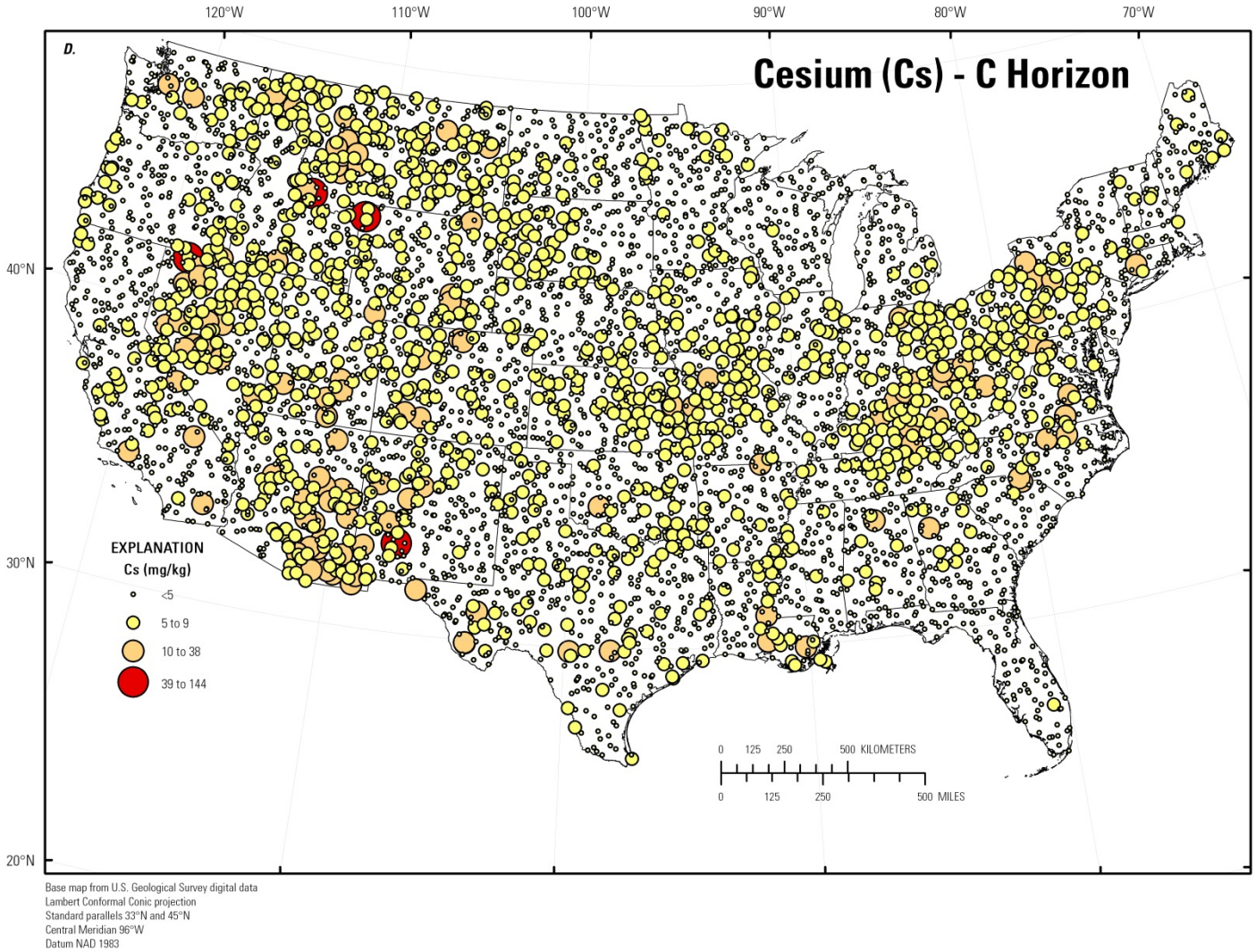


Figure 37. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cesium (Cs) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

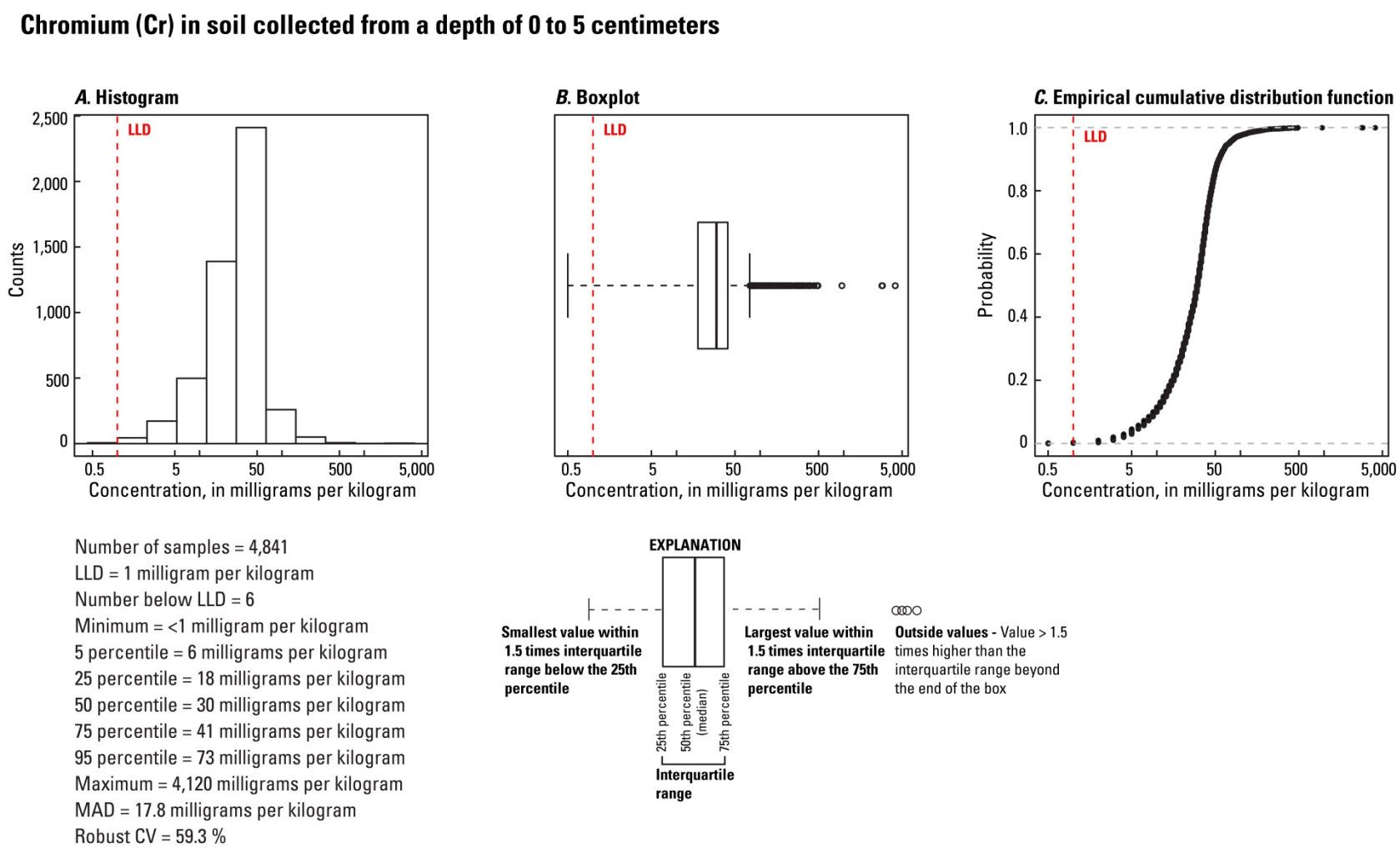


Figure 38. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of chromium (Cr) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

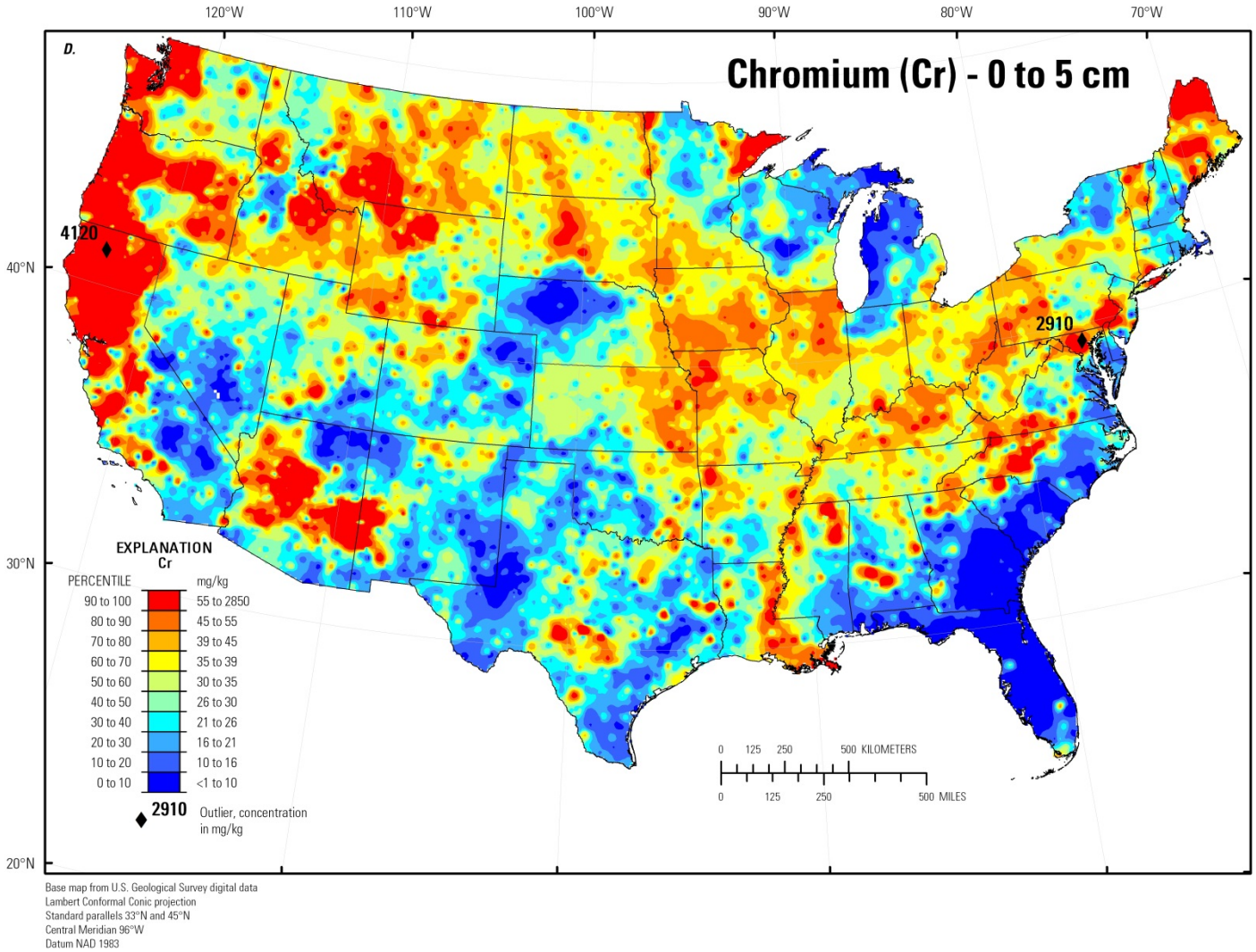


Figure 38. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of chromium (Cr) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

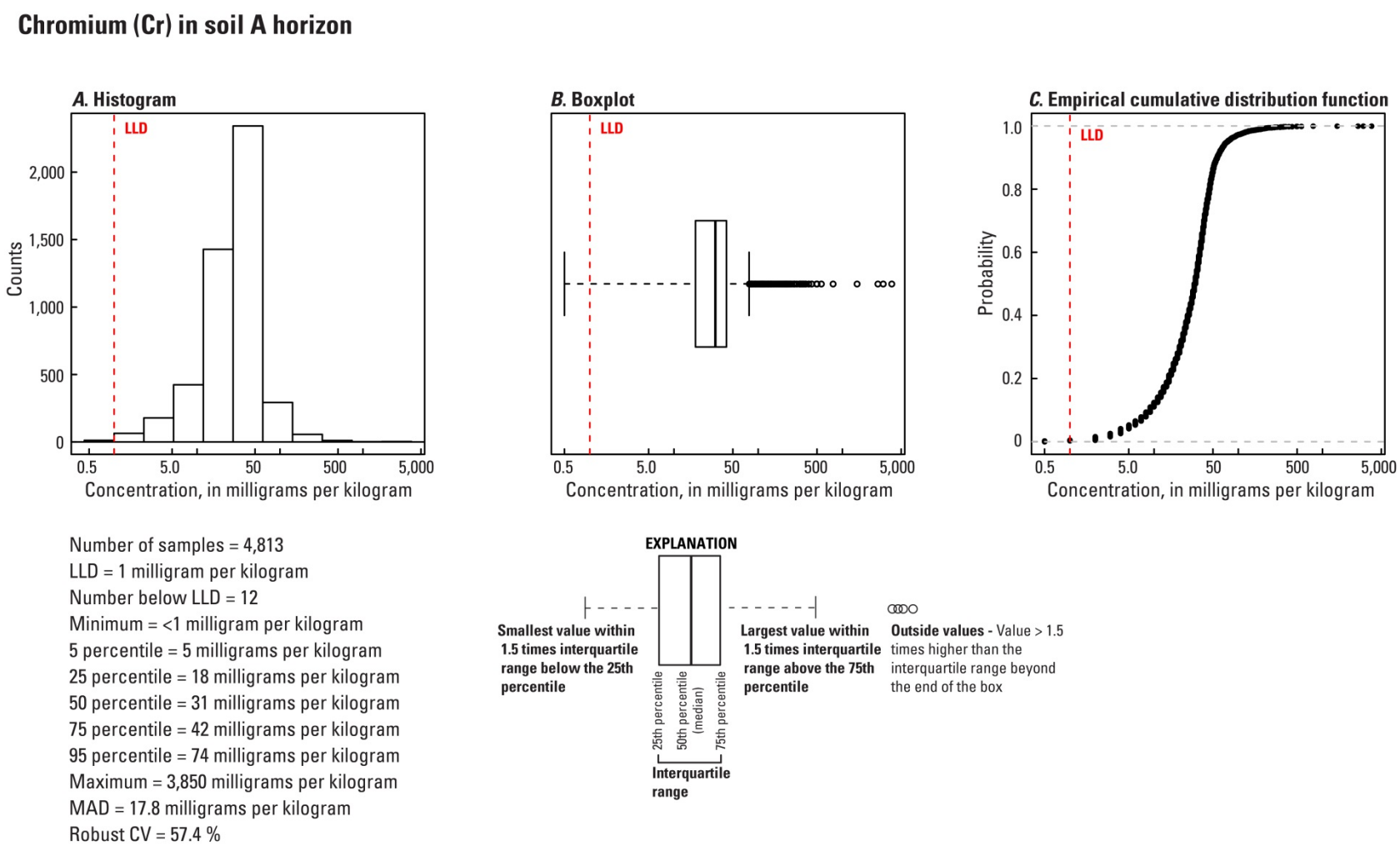


Figure. 39. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of chromium (Cr) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

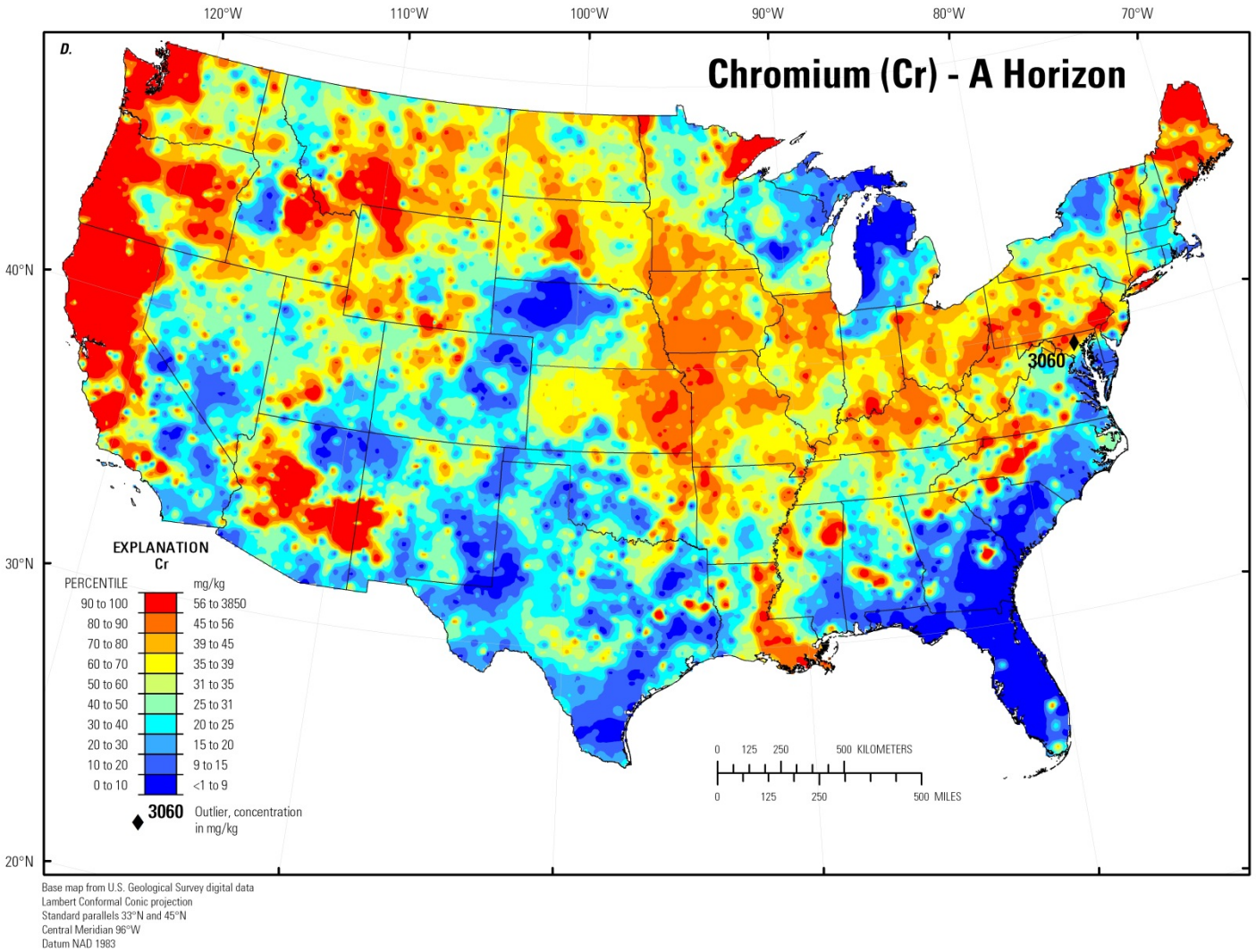


Figure. 39. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of chromium (Cr) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

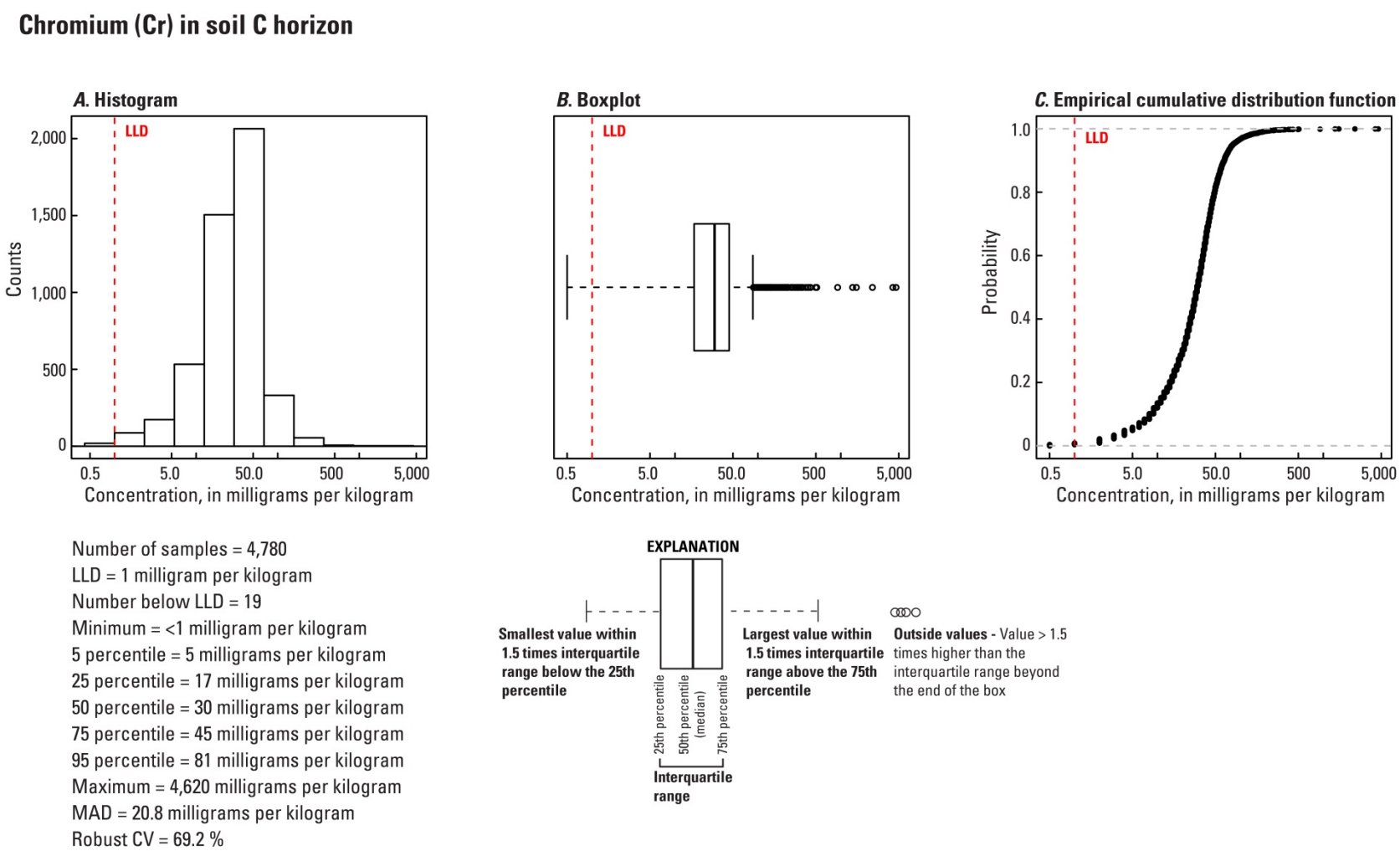


Figure 40. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of chromium (Cr) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

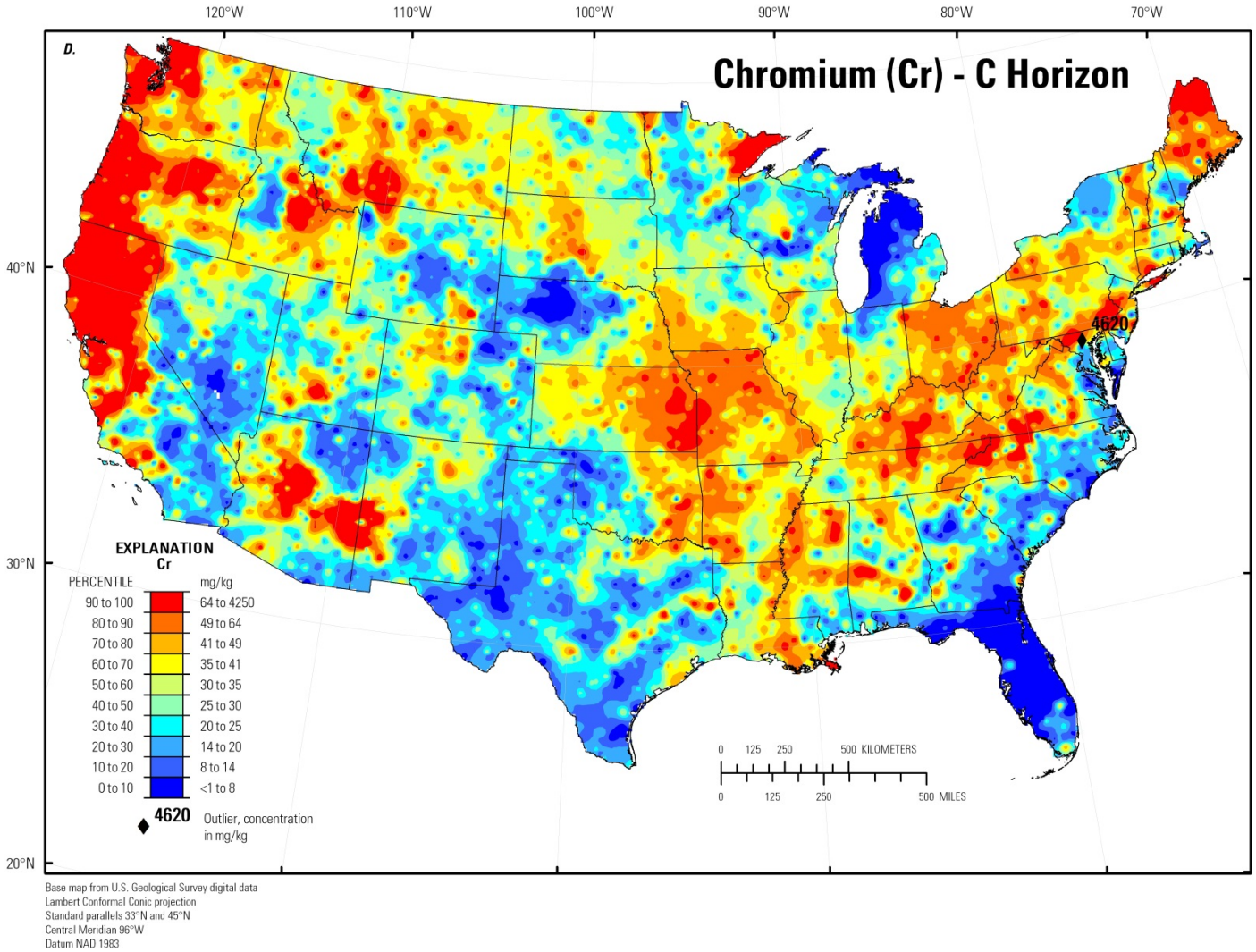
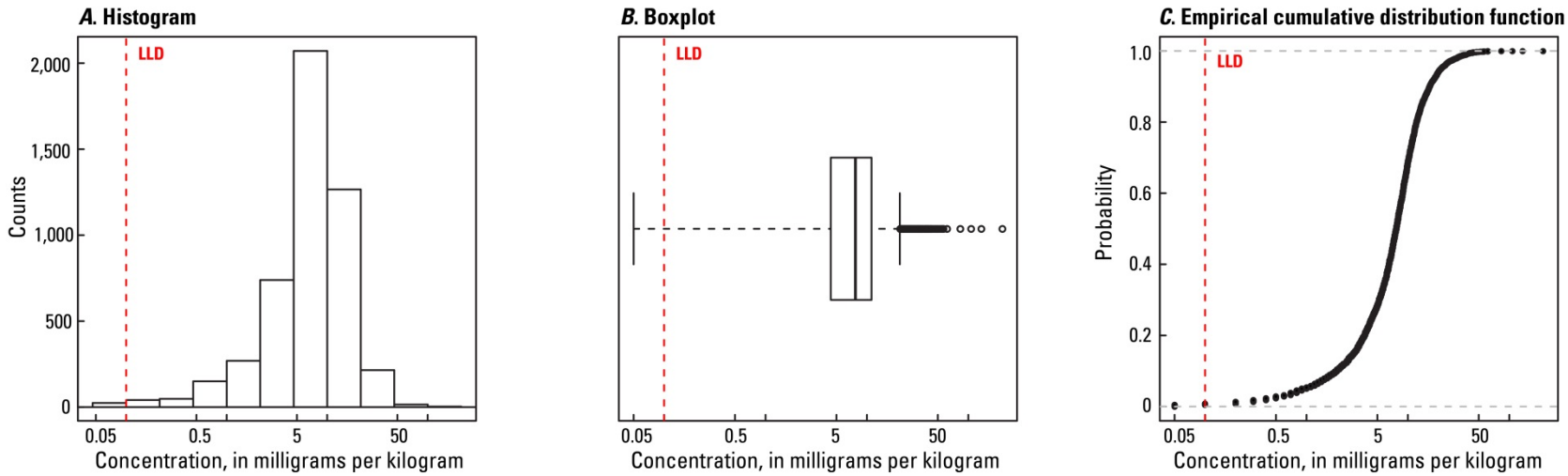


Figure 40. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of chromium (Cr) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Cobalt (Co) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.1 milligrams per kilogram
Number below LLD = 24
Minimum = <0.1 milligrams per kilogram
5 percentile = 0.9 milligrams per kilogram
25 percentile = 4.4 milligrams per kilogram
50 percentile = 7.7 milligrams per kilogram
75 percentile = 11.1 milligrams per kilogram
95 percentile = 21.2 milligrams per kilogram
Maximum = 216 milligrams per kilogram
MAD = 4.89 milligrams per kilogram
Robust CV = 63.5 %

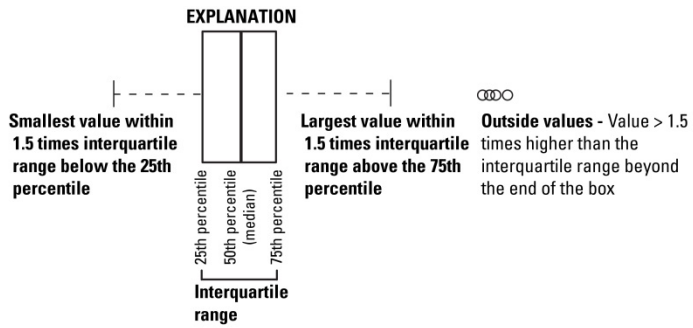


Figure 41. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cobalt (Co) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

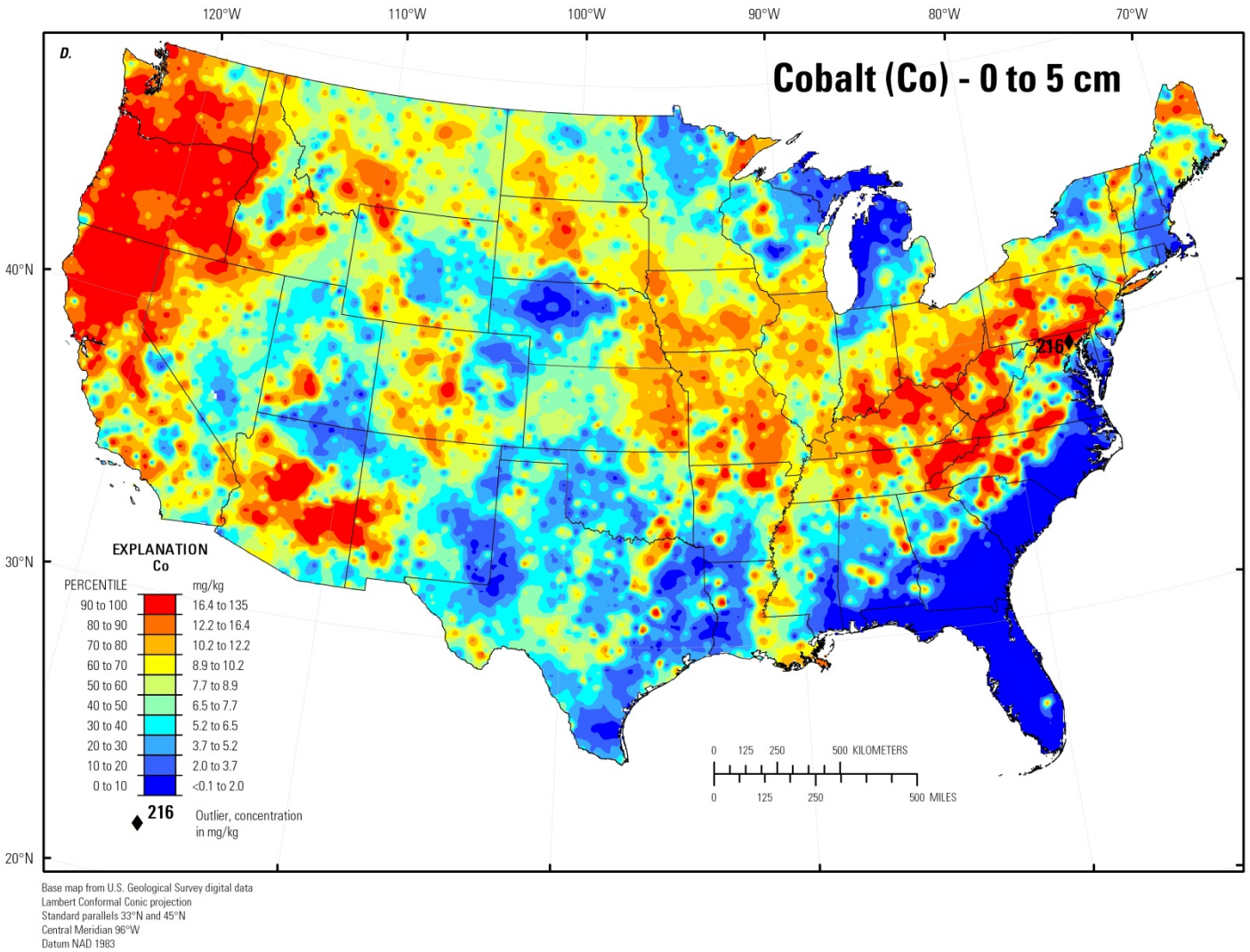
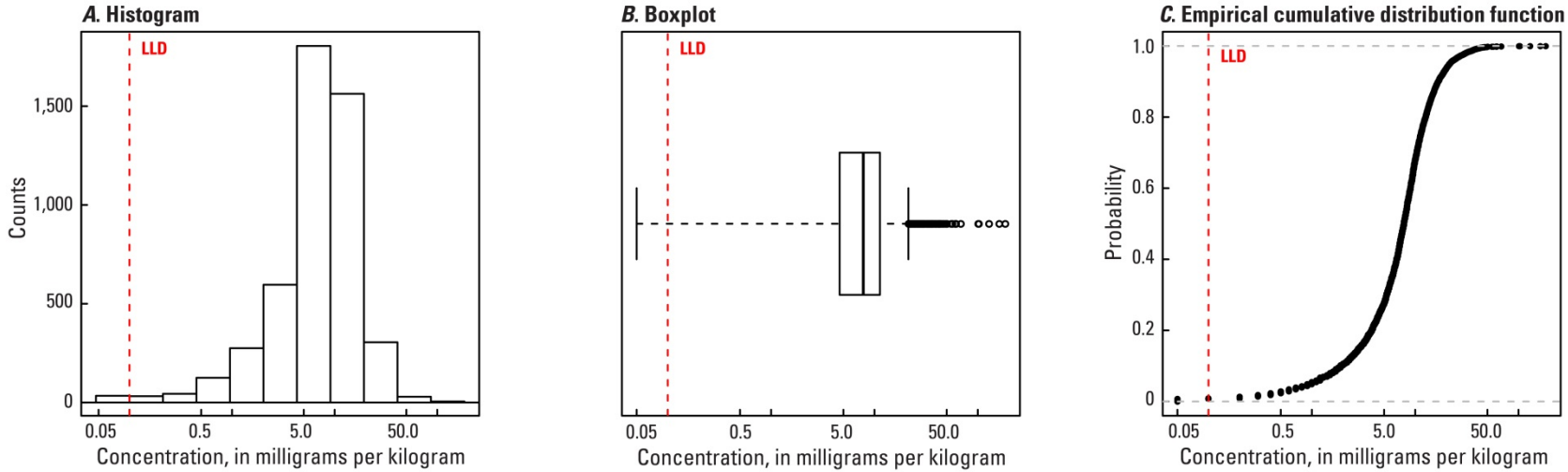


Figure 41. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cobalt (Co) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Cobalt (Co) in soil A horizon



Number of samples = 4,813
LLD = 0.1 milligrams per kilogram
Number below LLD = 34
Minimum = <0.1 milligrams per kilogram
5 percentile = 1.0 milligram per kilogram
25 percentile = 4.6 milligrams per kilogram
50 percentile = 7.8 milligrams per kilogram
75 percentile = 11.3 milligrams per kilogram
95 percentile = 21.6 milligrams per kilogram
Maximum = 184 milligrams per kilogram
MAD = 4.89 milligrams per kilogram
Robust CV = 62.7 %

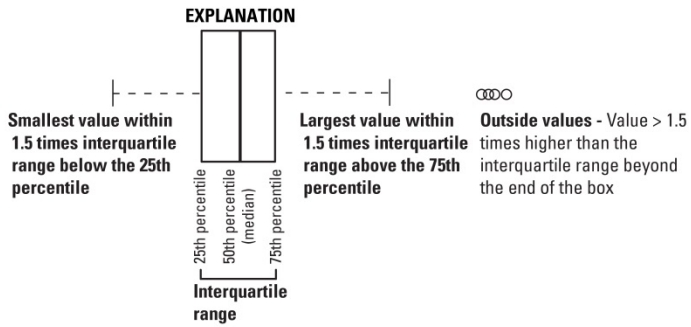


Figure 42. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cobalt (Co) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

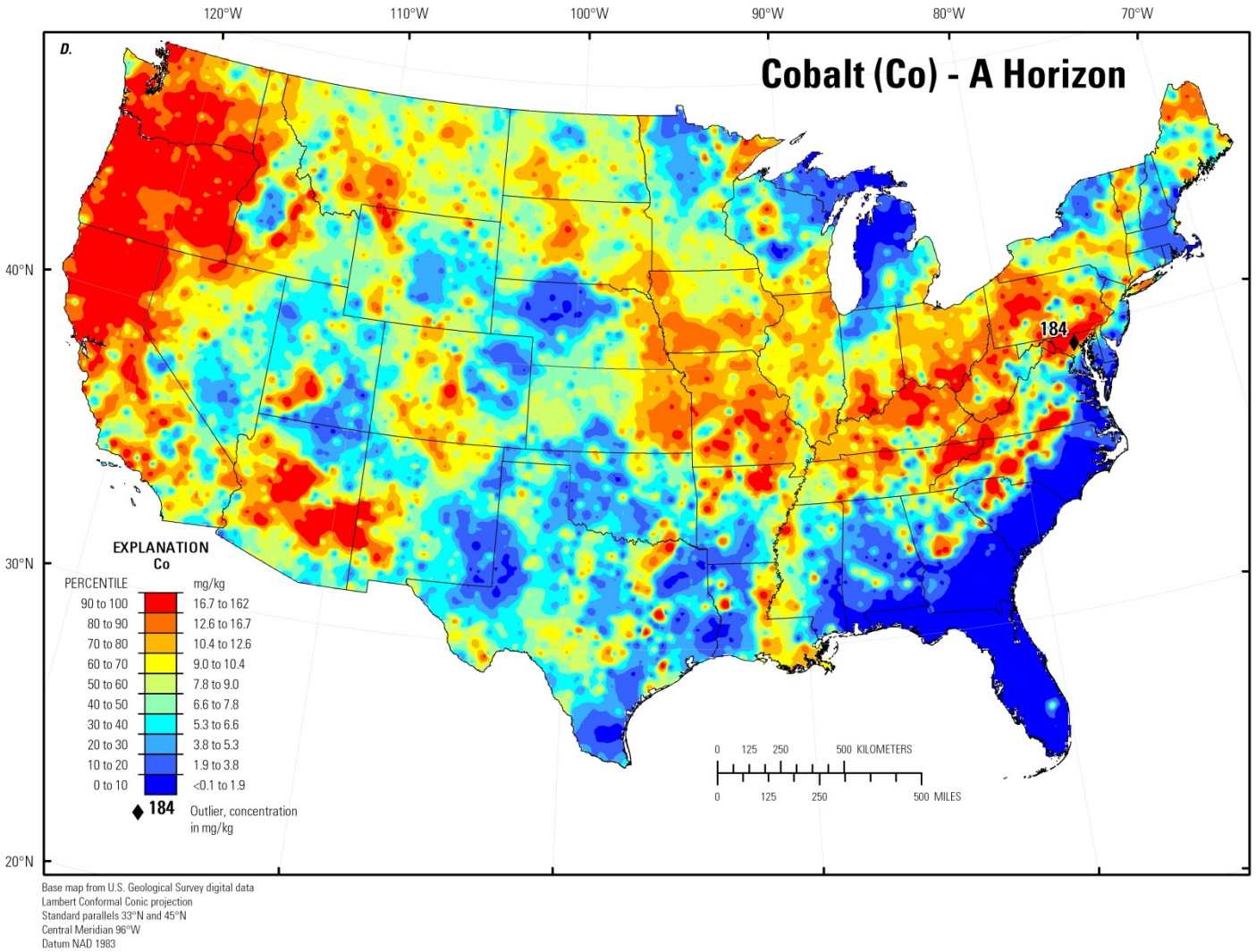


Figure 42. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cobalt (Co) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

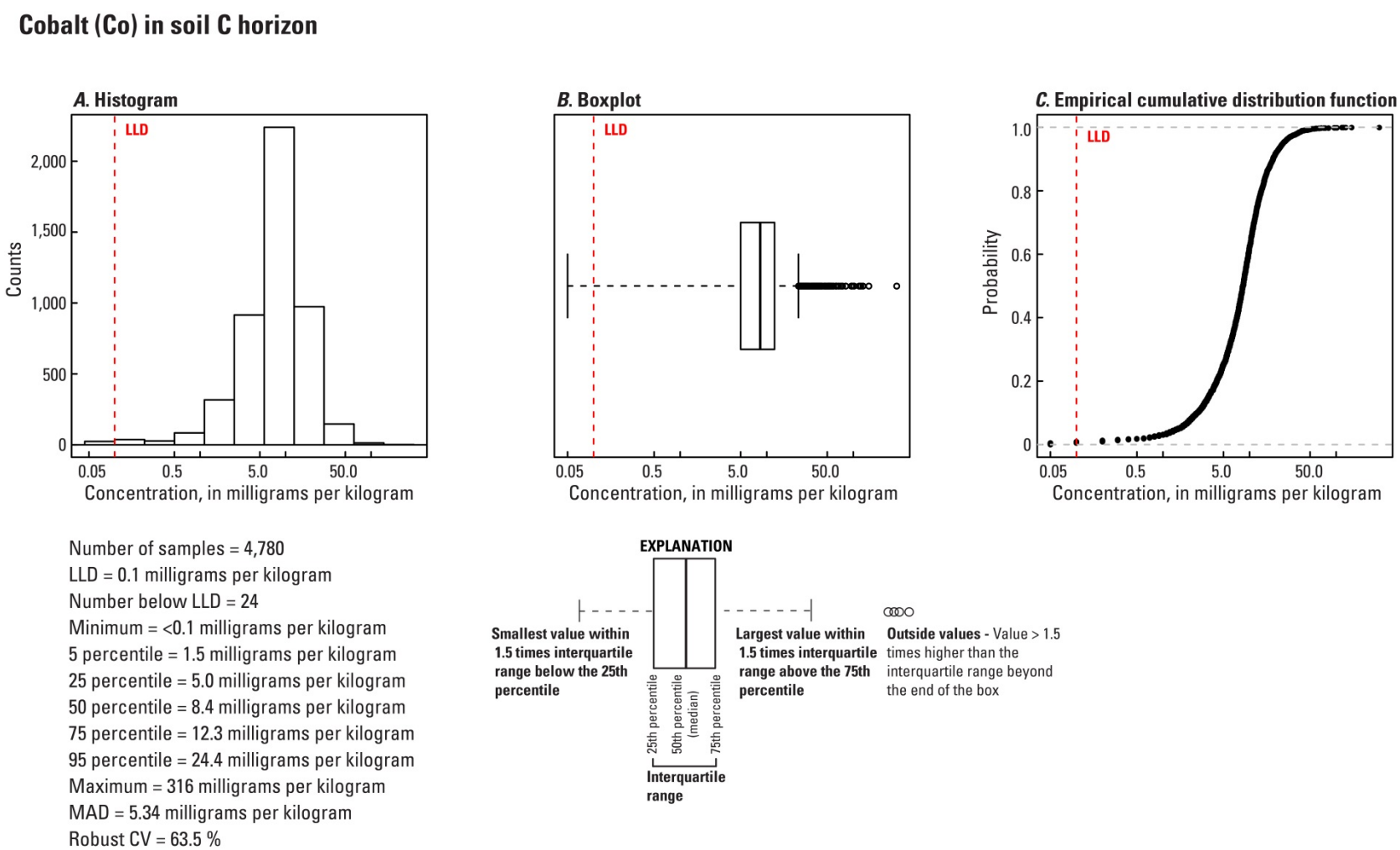


Figure 43. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cobalt (Co) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

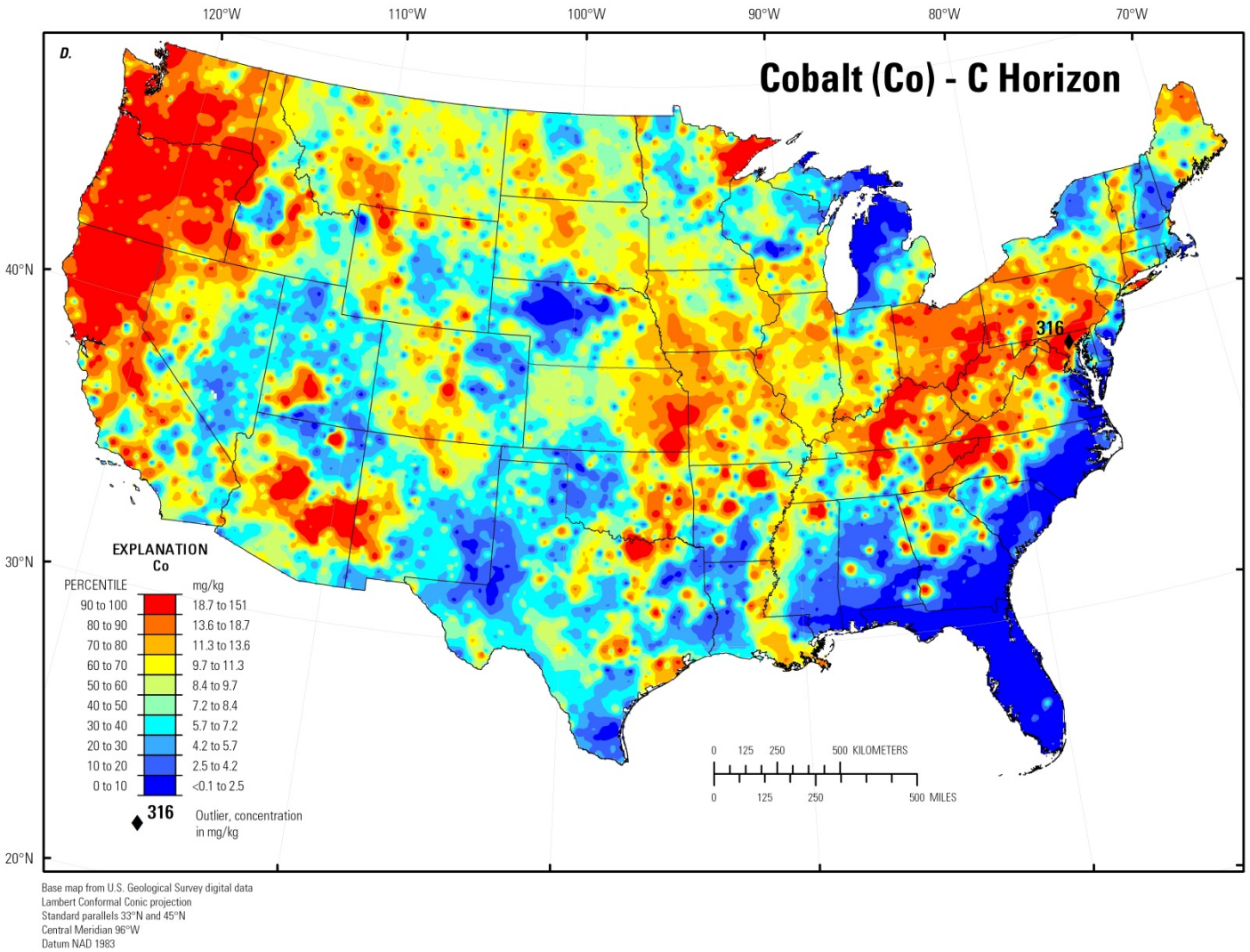
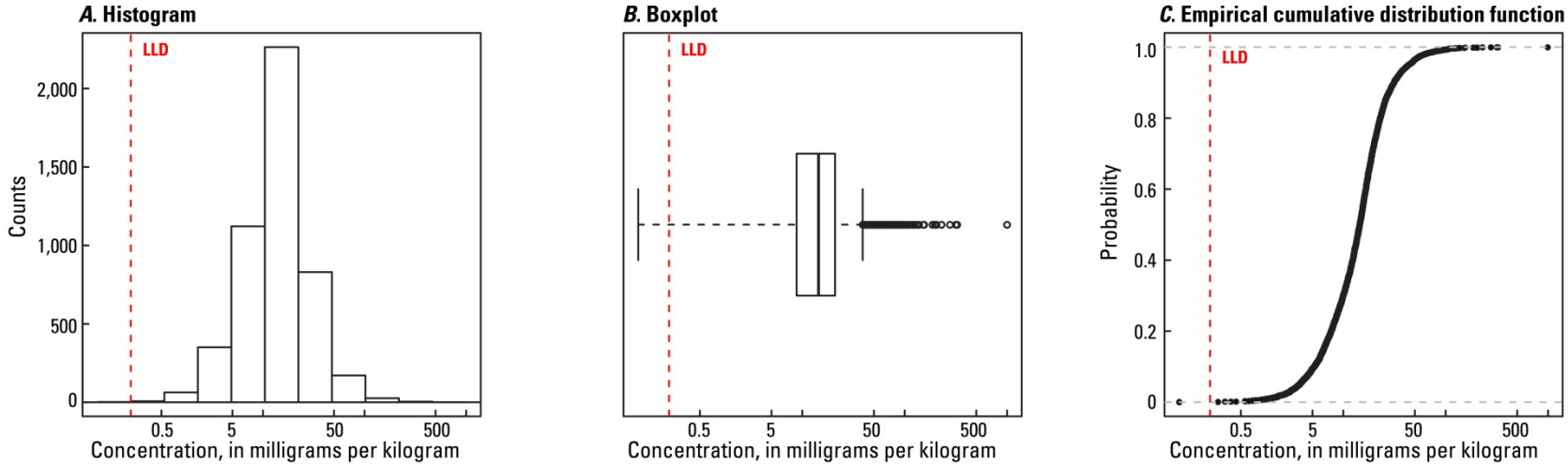


Figure 43. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of cobalt (Co) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Copper (Cu) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.5 milligrams per kilogram
Number below LLD = 2
Minimum = <0.5 milligrams per kilogram
5 percentile = 3.8 milligrams per kilogram
25 percentile = 8.8 milligrams per kilogram
50 percentile = 14.4 milligrams per kilogram
75 percentile = 20.9 milligrams per kilogram
95 percentile = 43.3 milligrams per kilogram
Maximum = 996 milligrams per kilogram
MAD = 8.75 milligrams per kilogram
Robust CV = 60.7 %

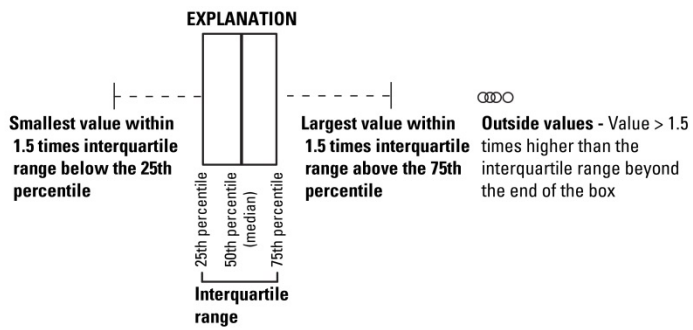


Figure 44. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of copper (Cu) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

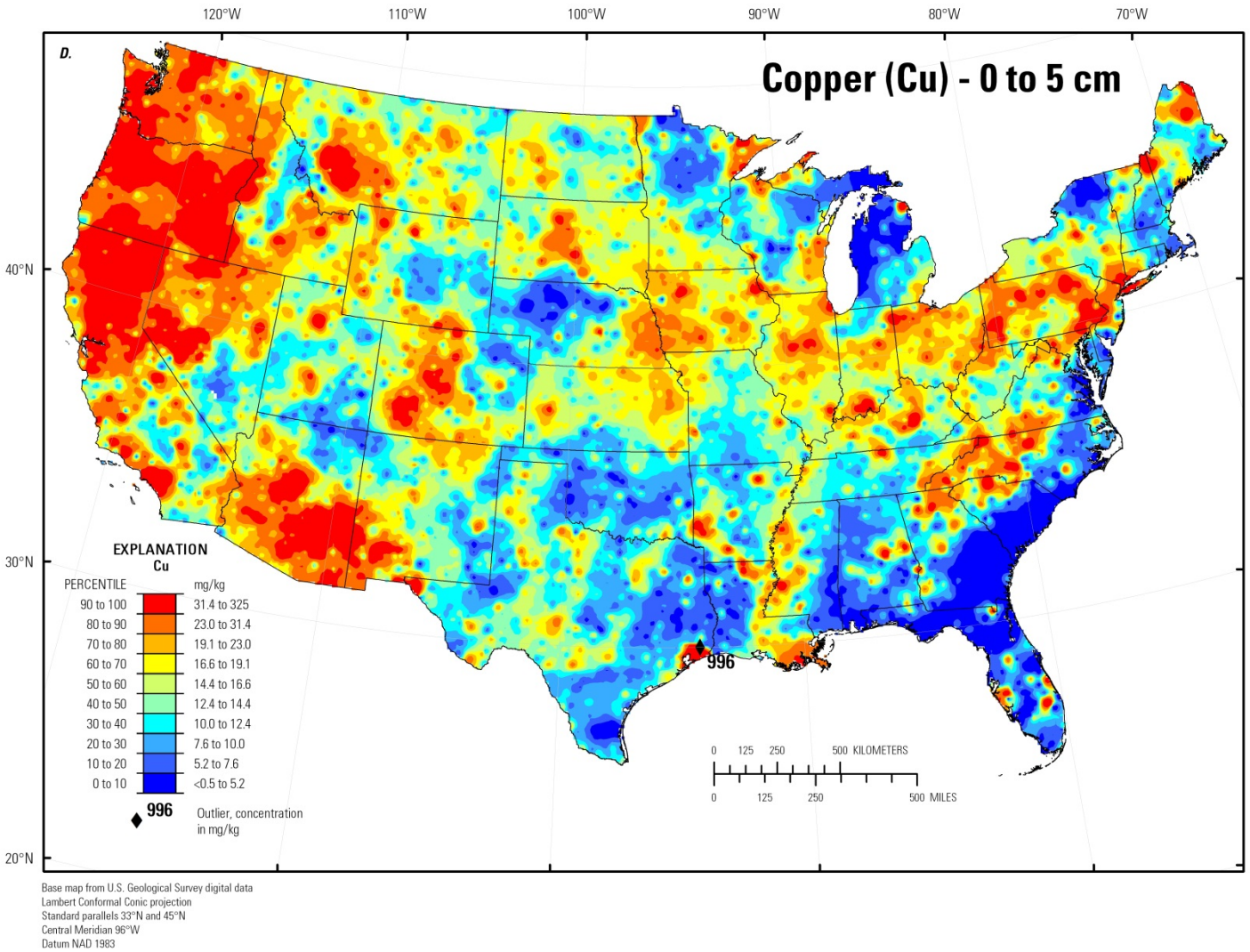


Figure 44. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of copper (Cu) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

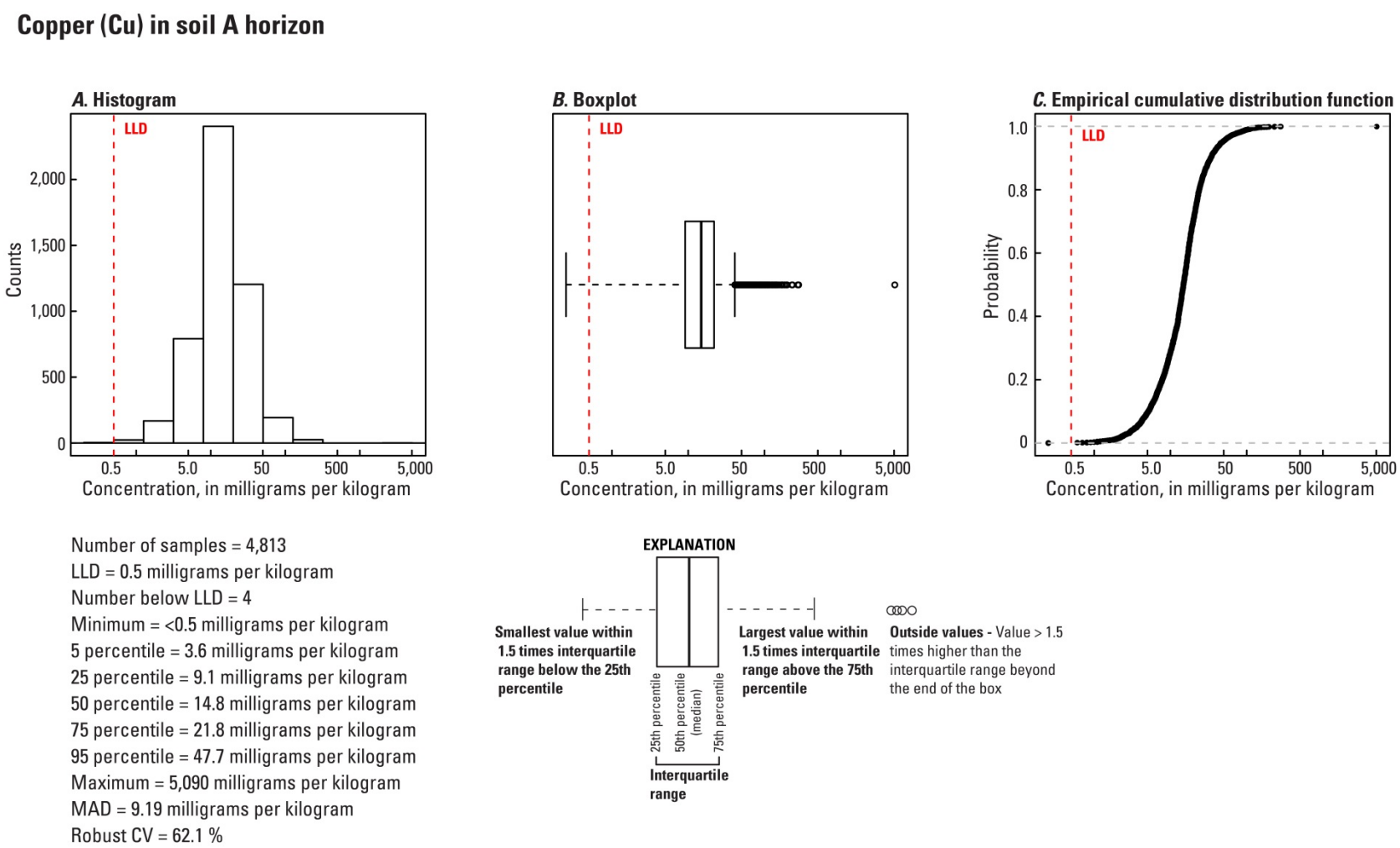


Figure 45. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of copper (Cu) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

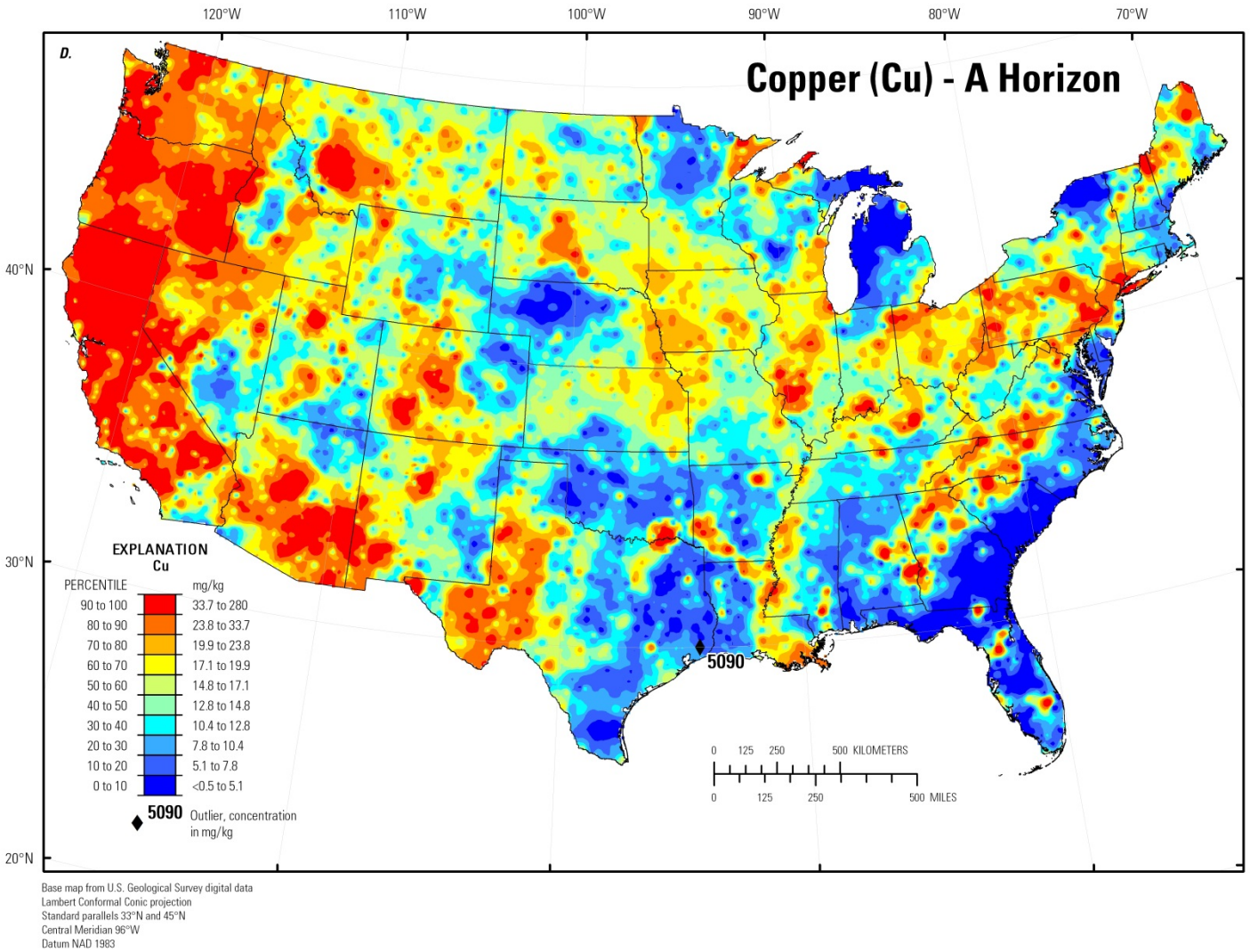


Figure 45. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of copper (Cu) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

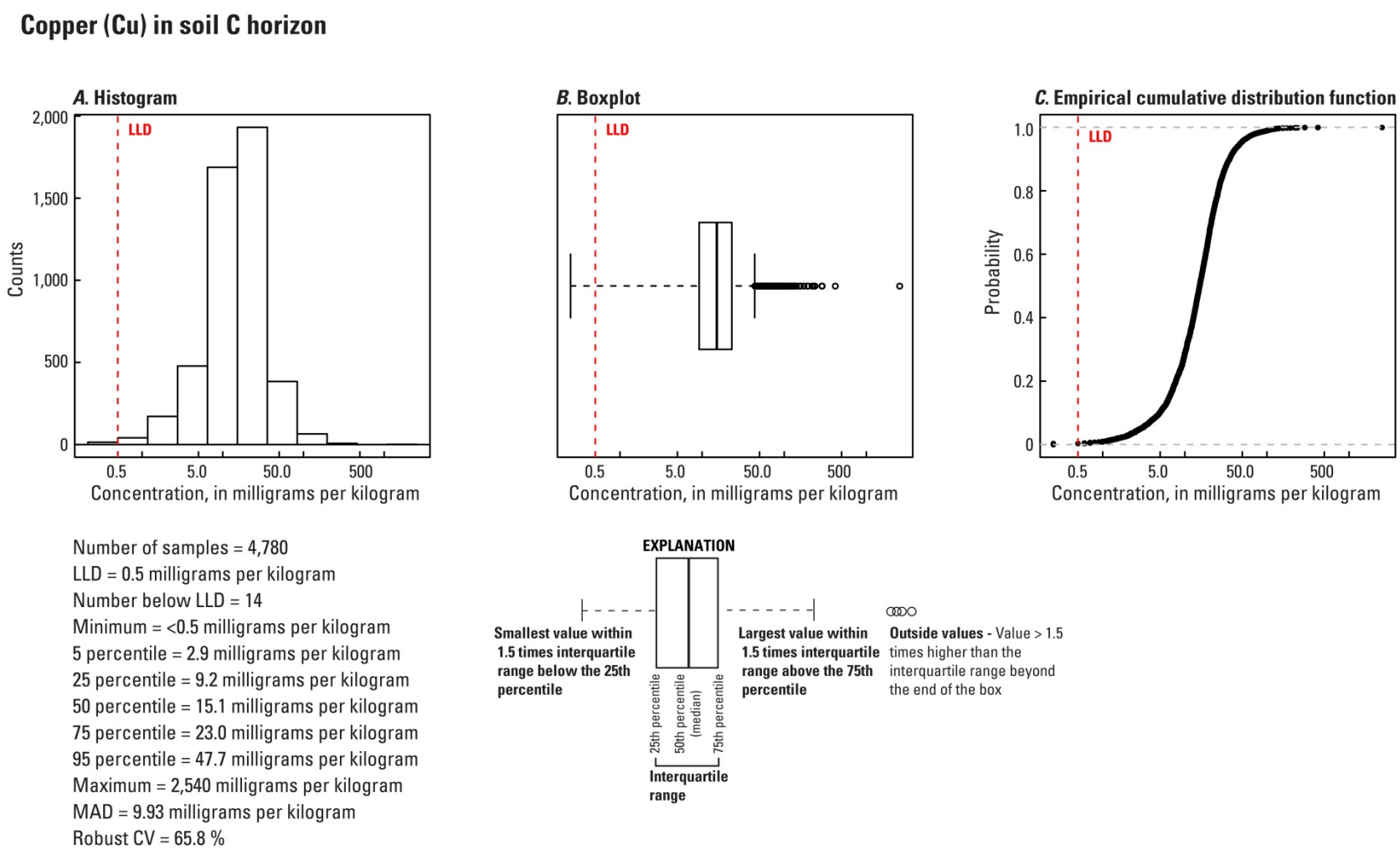


Figure 46. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of copper (Cu) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

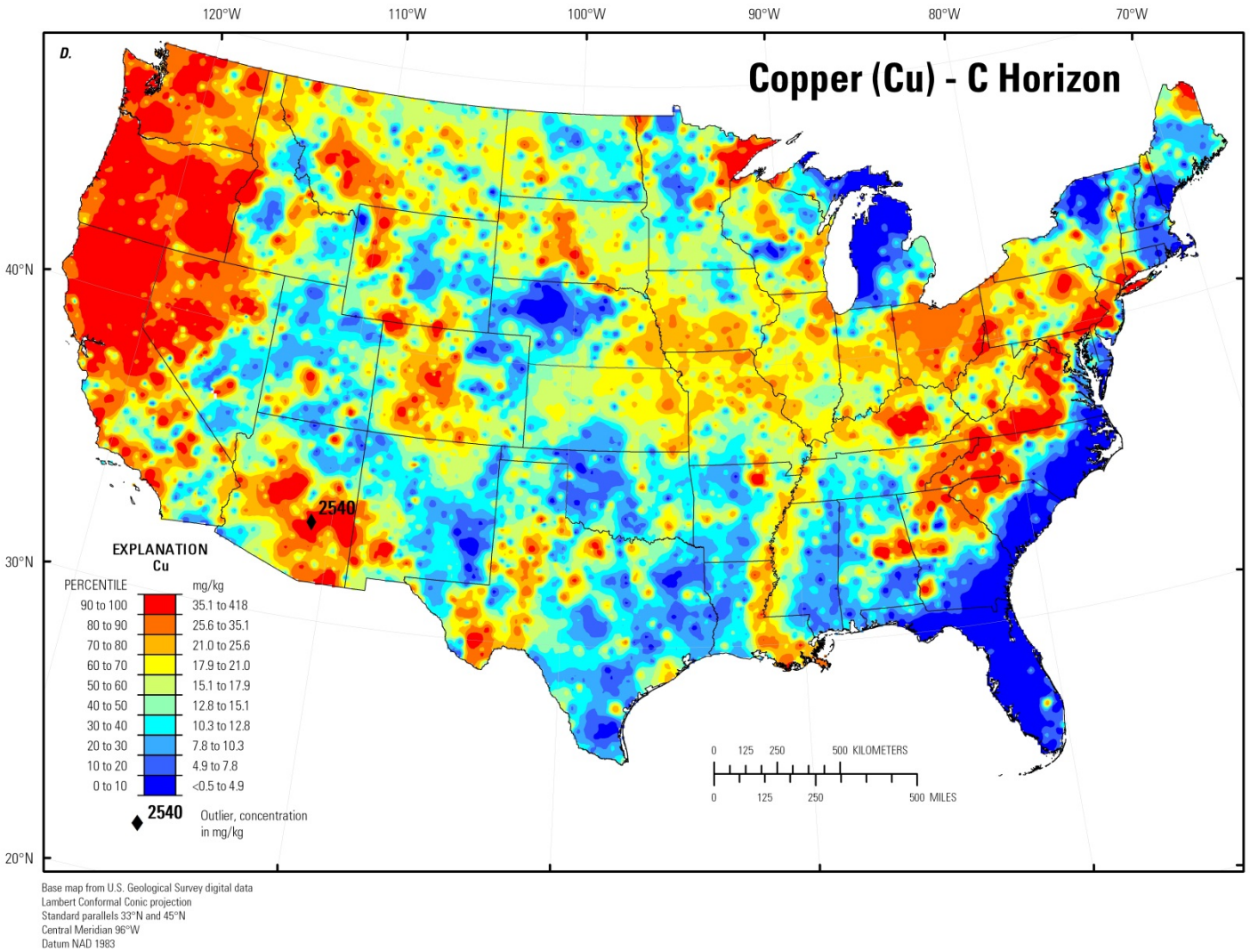
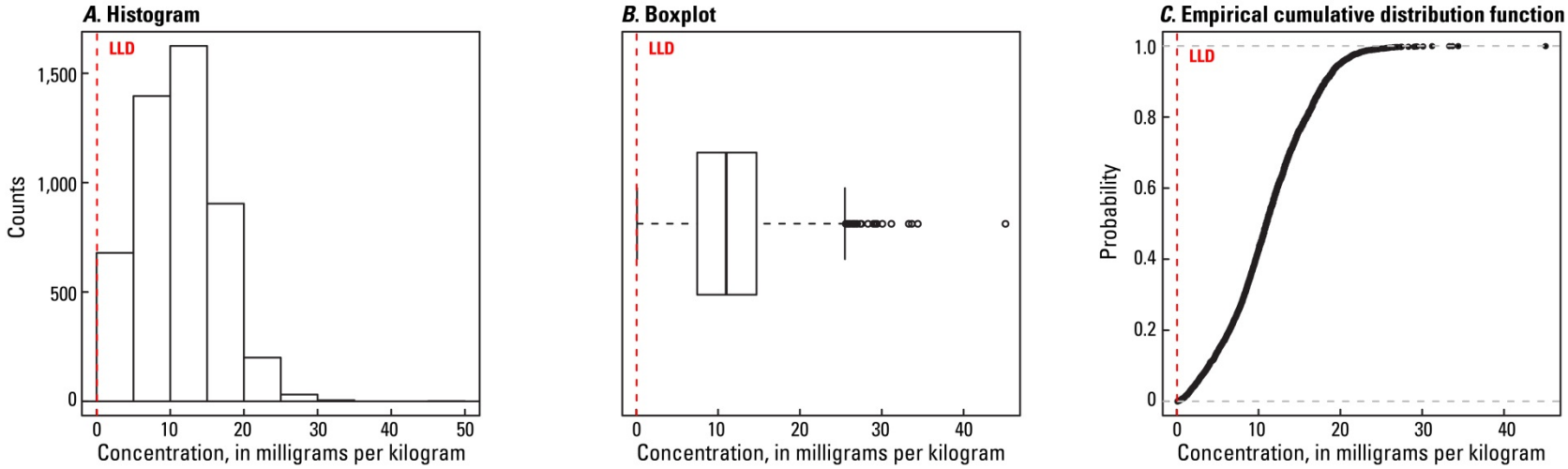


Figure 46. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of copper (Cu) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Gallium (Ga) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.05 milligrams per kilogram
Number below LLD = 0
Minimum = 0.1 milligrams per kilogram
5 percentile = 2.4 milligrams per kilogram
25 percentile = 7.5 milligrams per kilogram
50 percentile = 11.0 milligrams per kilogram
75 percentile = 14.7 milligrams per kilogram
95 percentile = 20.0 milligrams per kilogram
Maximum = 45.1 milligrams per kilogram
MAD = 5.4 milligrams per kilogram
Robust CV = 49.1 %

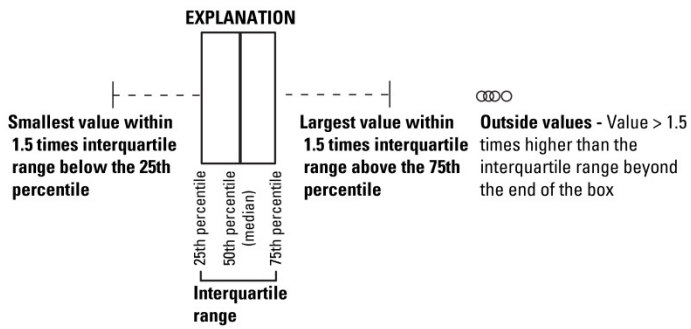


Figure 47. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gallium (Ga) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

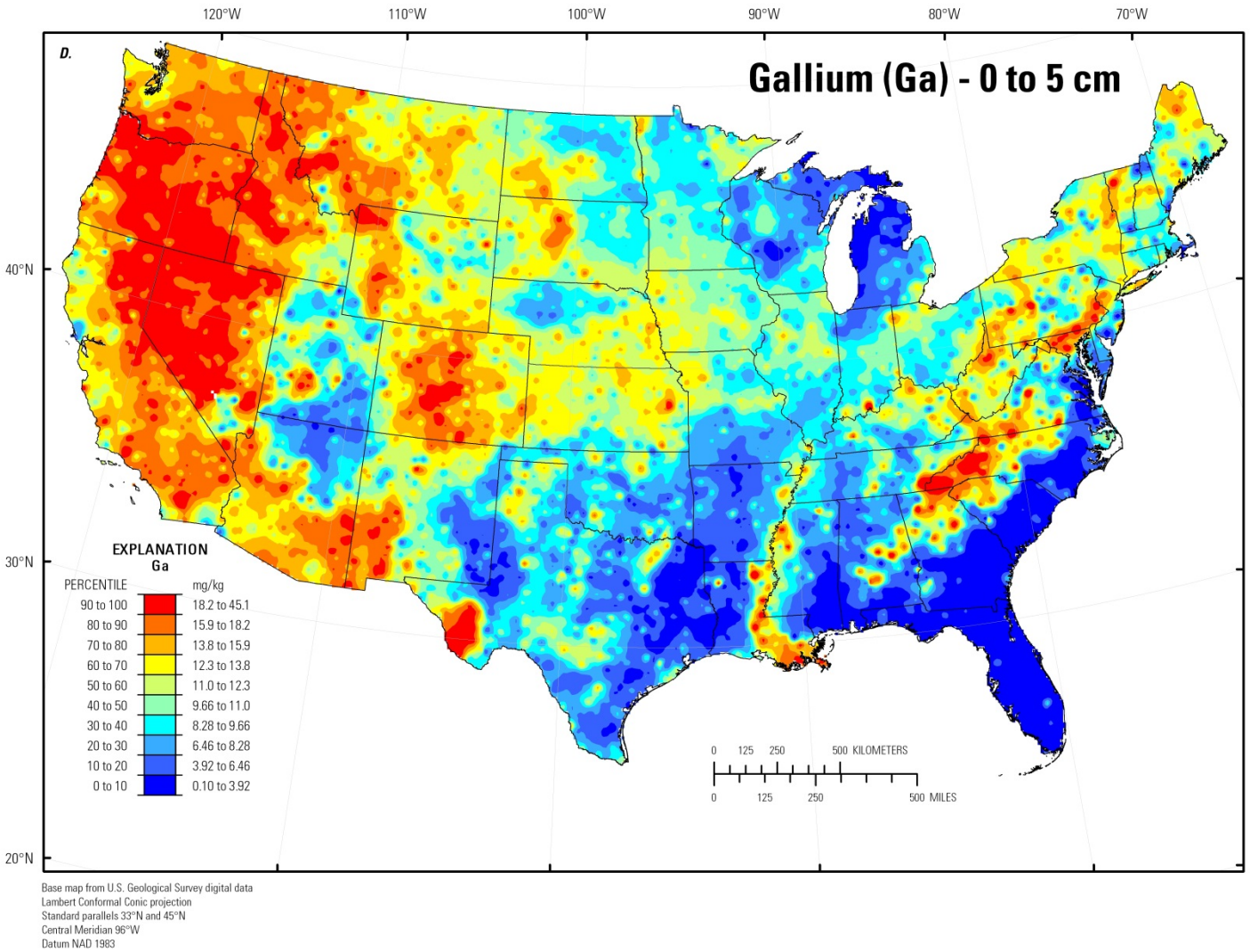


Figure 47. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gallium (Ga) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

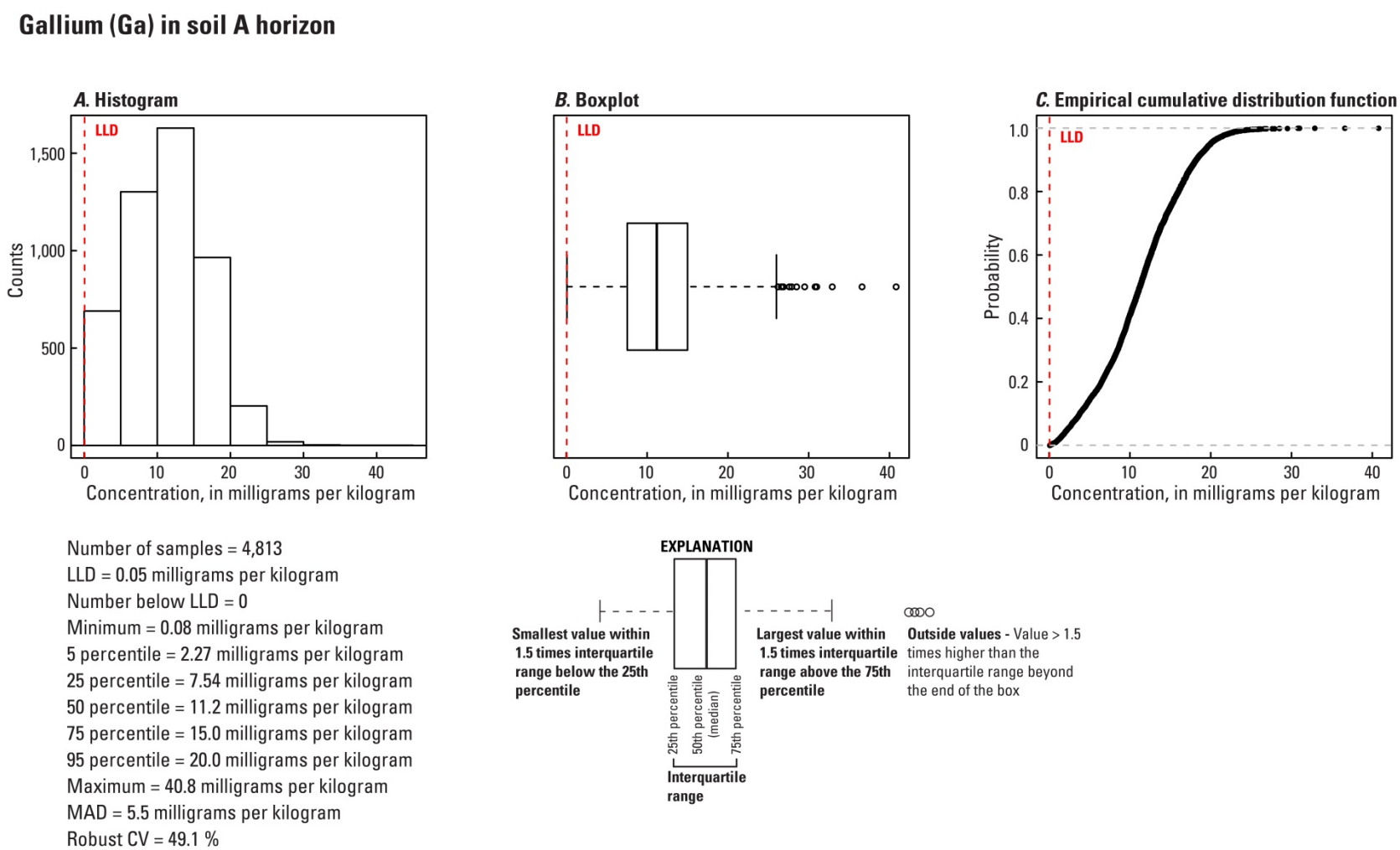


Figure 48. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gallium (Ga) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

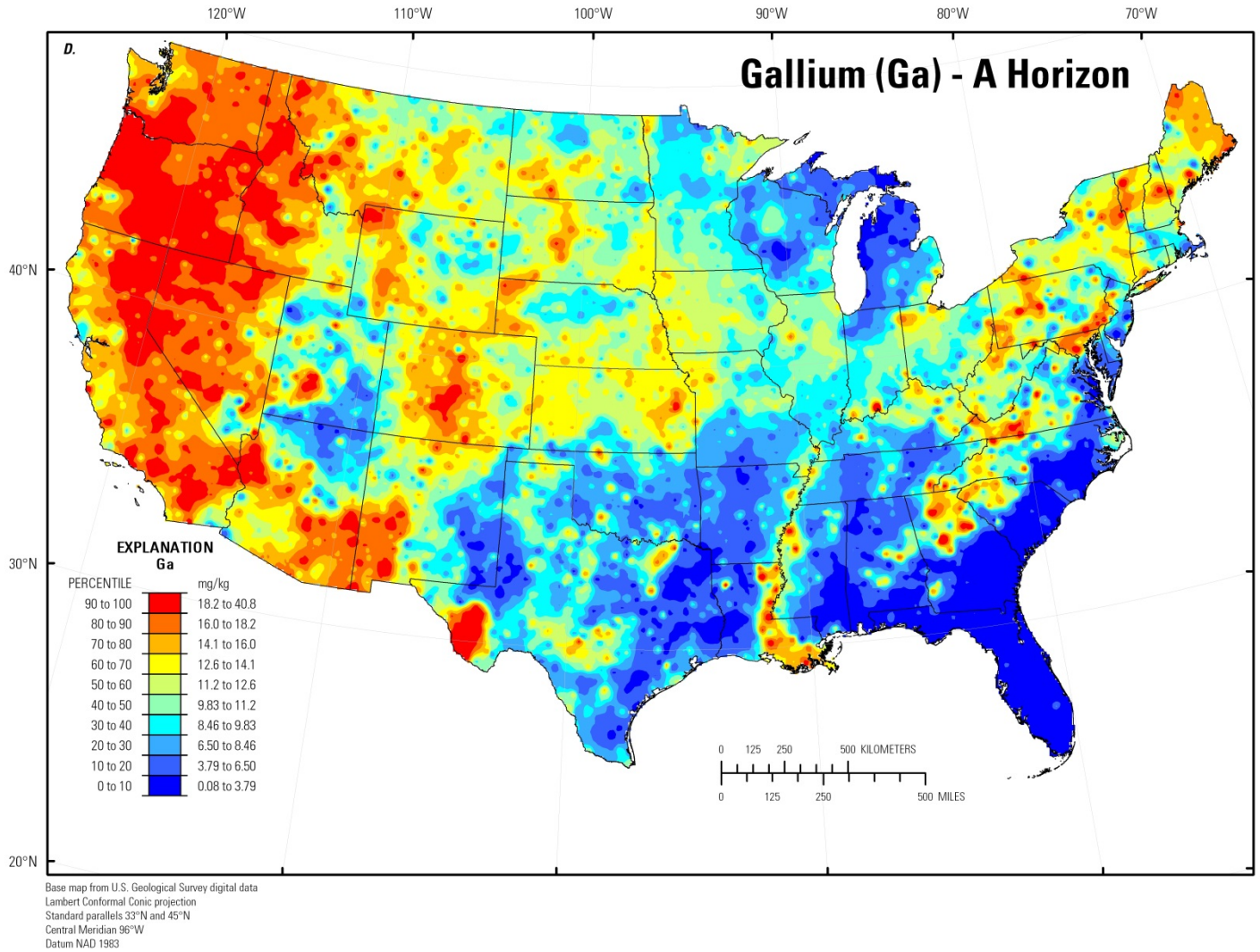


Figure 48. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gallium (Ga) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

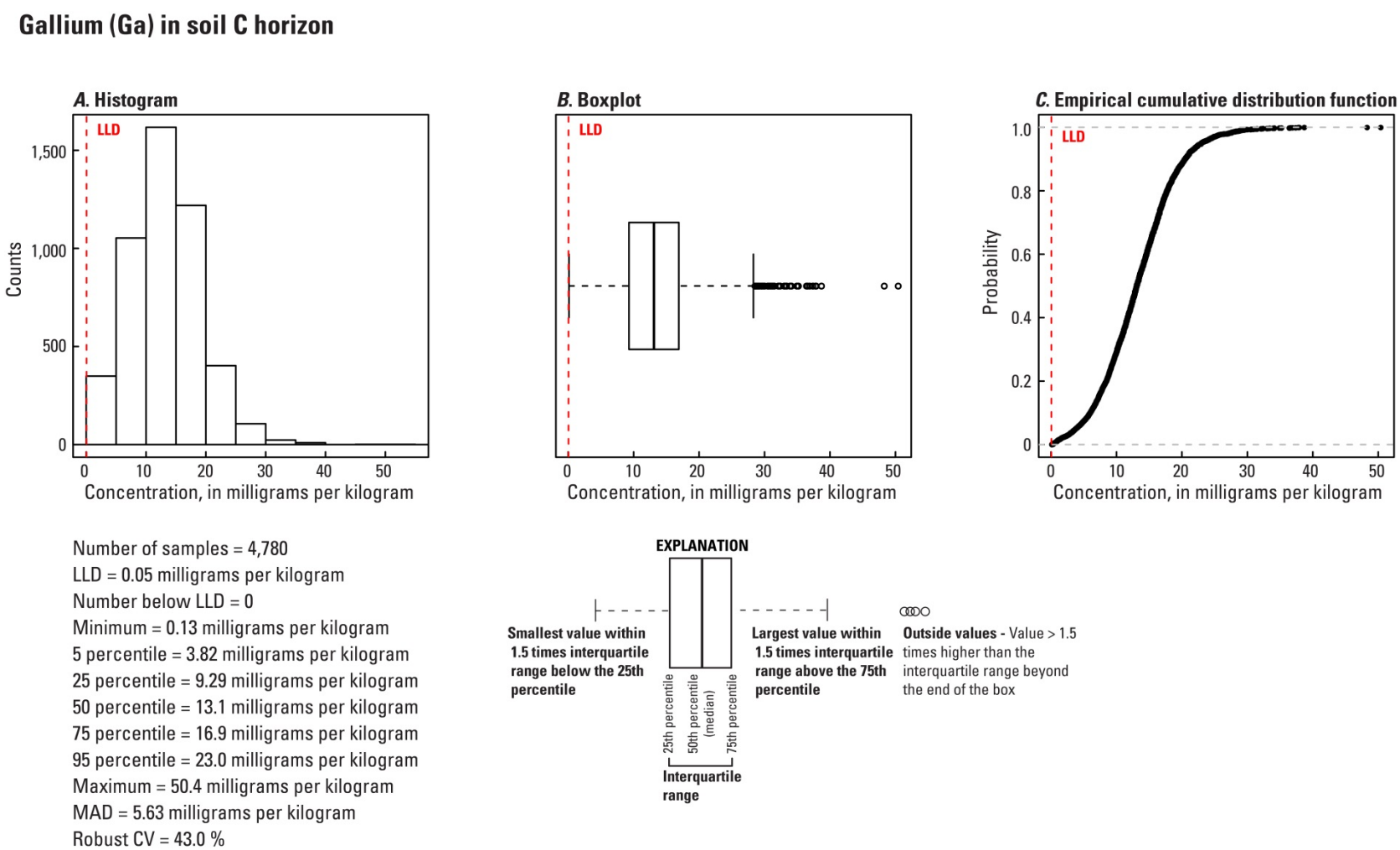


Figure 49. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gallium (Ga) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

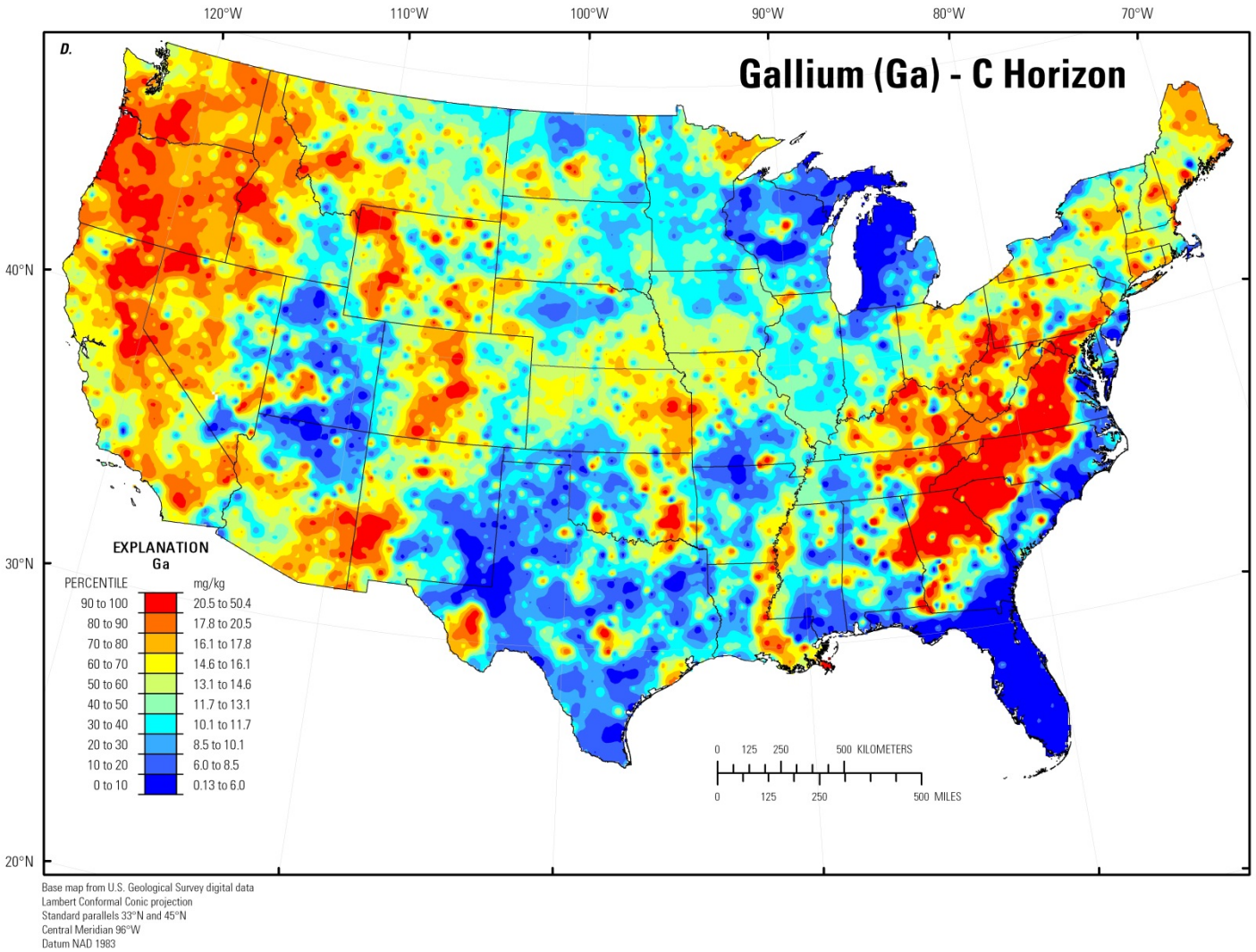
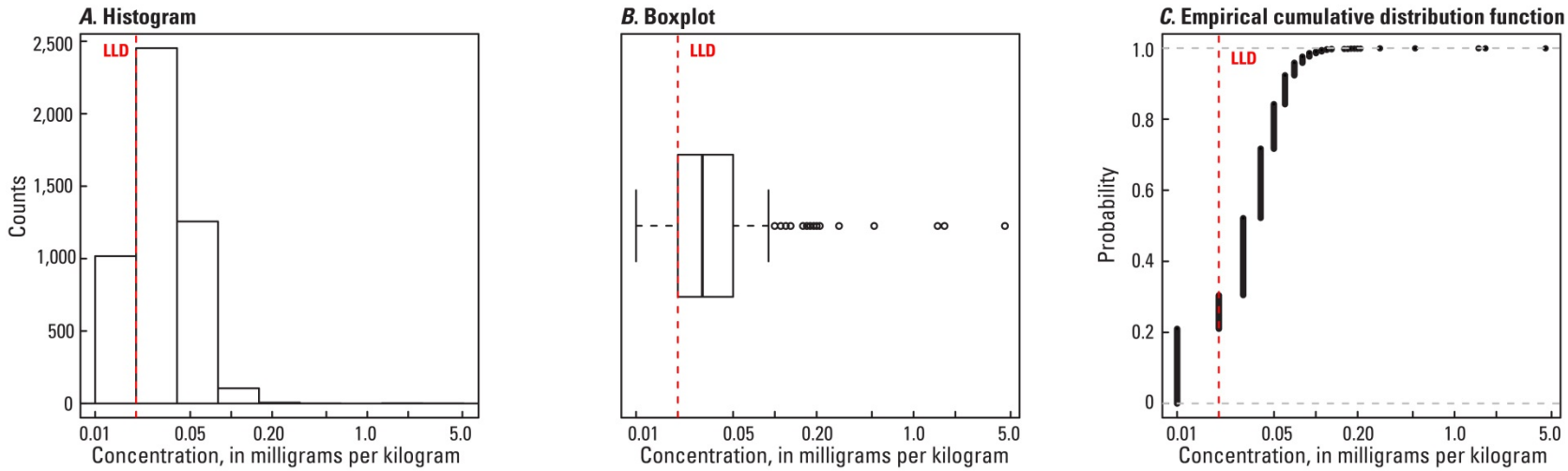


Figure 49. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gallium (Ga) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Indium (In) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.02 milligrams per kilogram
Number below LLD = 1,017
Minimum = <0.02 milligrams per kilogram
5 percentile = <0.02 milligrams per kilogram
25 percentile = 0.02 milligrams per kilogram
50 percentile = 0.03 milligrams per kilogram
75 percentile = 0.05 milligrams per kilogram
95 percentile = 0.07 milligrams per kilogram
Maximum = 4.54 milligrams per kilogram
MAD = ND
Robust CV = ND

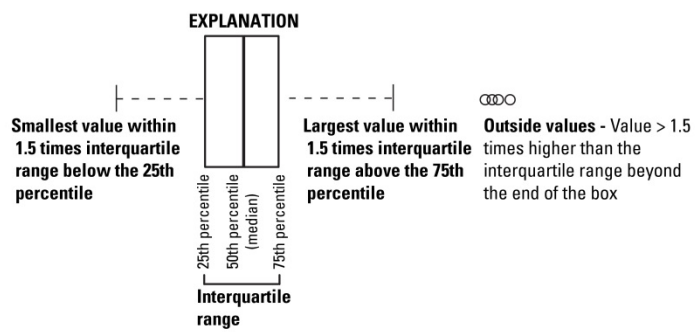


Figure 50. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of indium (In) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

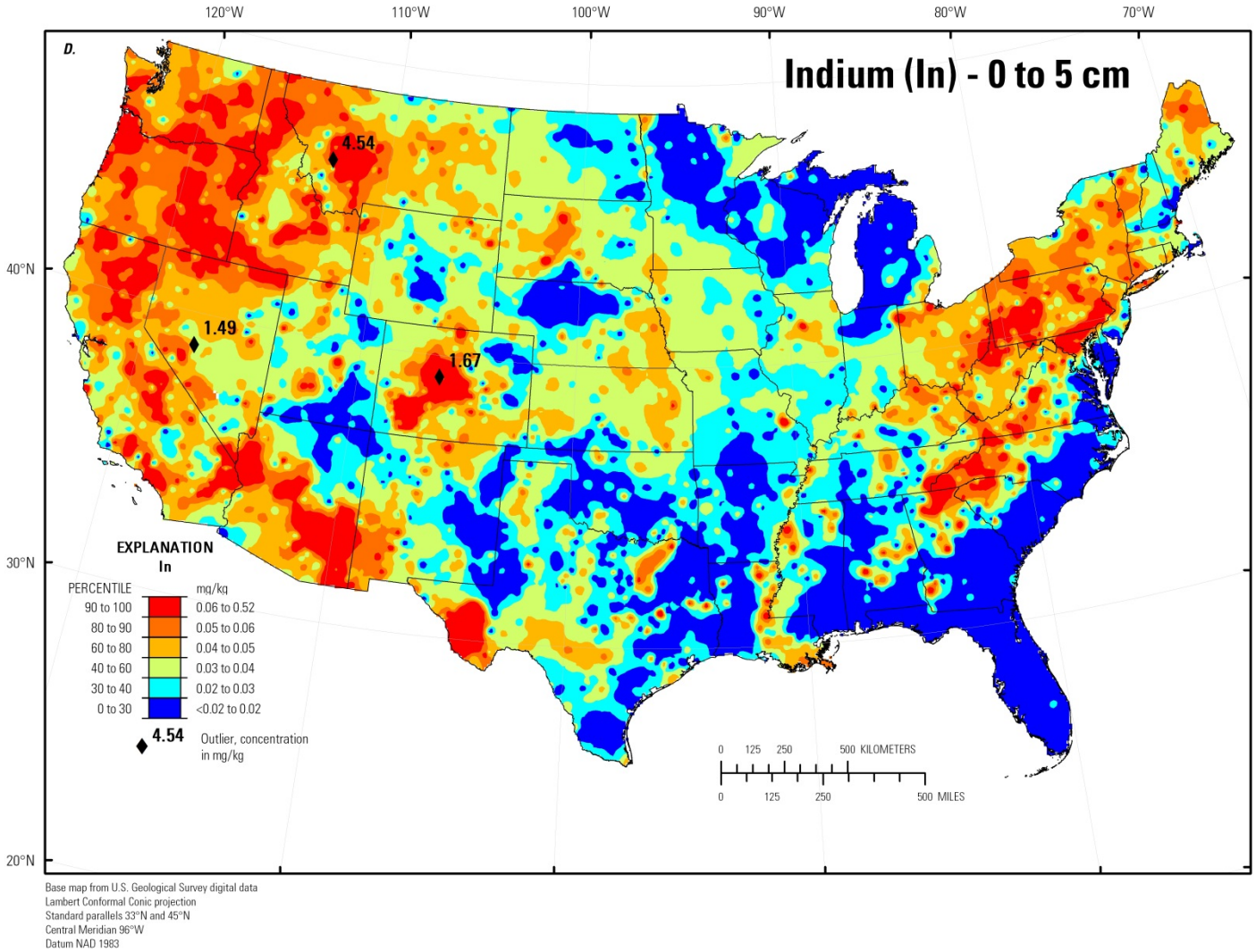
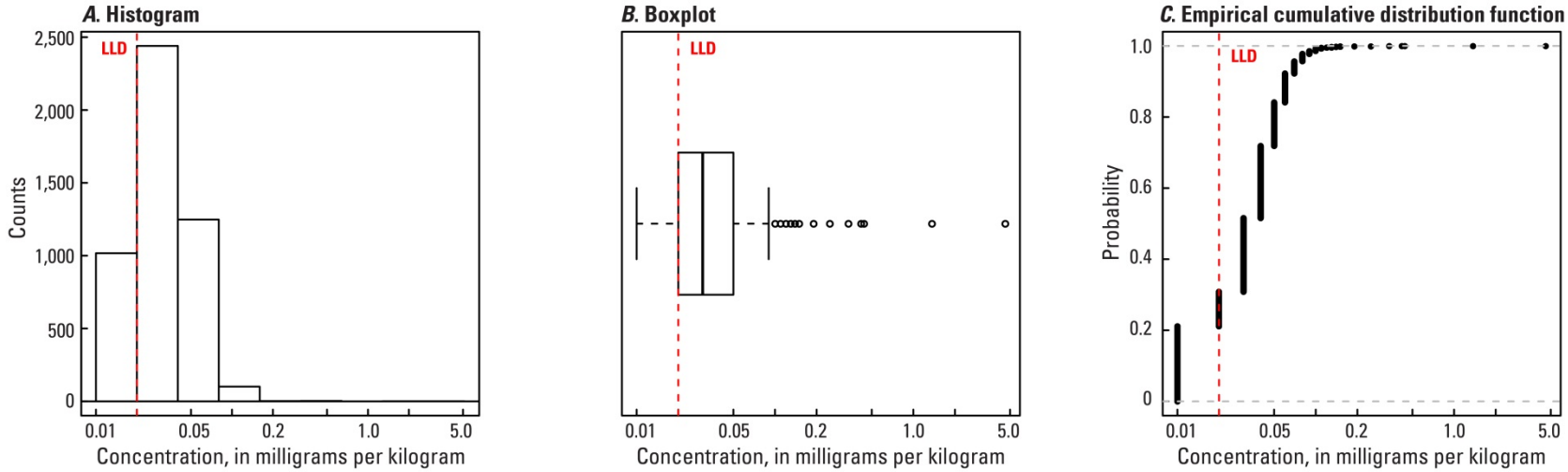


Figure 50. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of indium (In) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Indium (In) in soil A horizon



Number of samples = 4,813
LLD = 0.02 milligrams per kilogram
Number below LLD = 1,017
Minimum = <0.02 milligrams per kilogram
5 percentile = <0.02 milligrams per kilogram
25 percentile = 0.02 milligrams per kilogram
50 percentile = 0.03 milligrams per kilogram
75 percentile = 0.05 milligrams per kilogram
95 percentile = 0.07 milligrams per kilogram
Maximum = 4.61 milligrams per kilogram
MAD = ND
Robust CV = ND

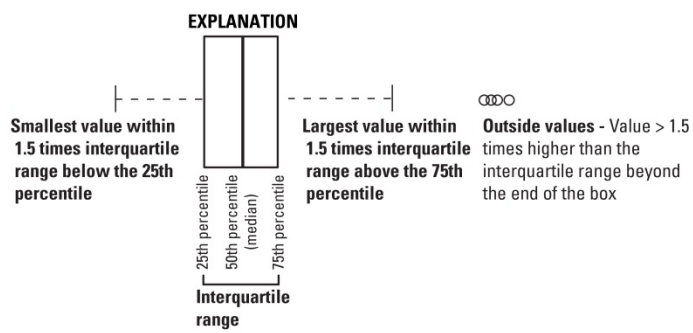


Figure 51. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of indium (In) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

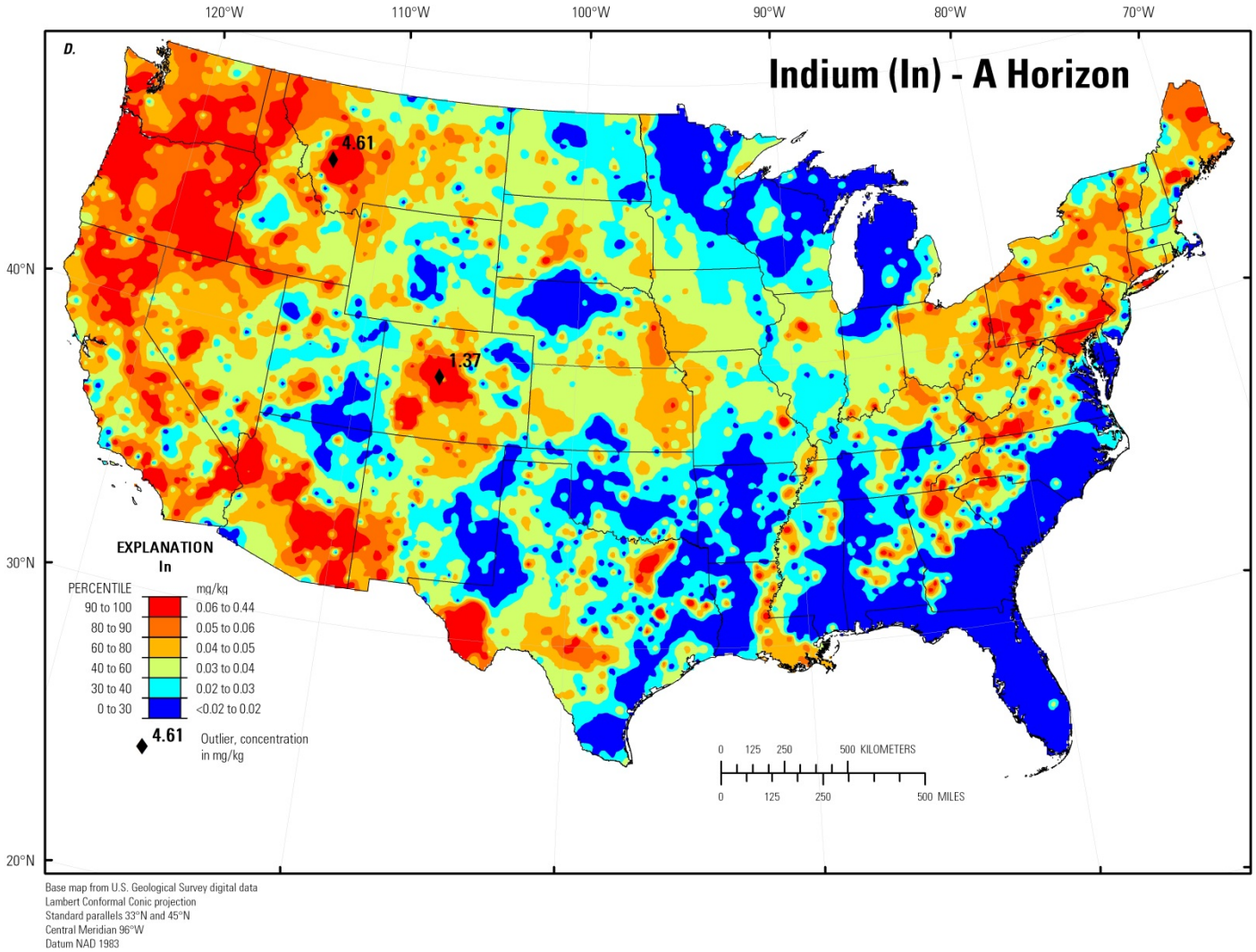


Figure 51. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of indium (In) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

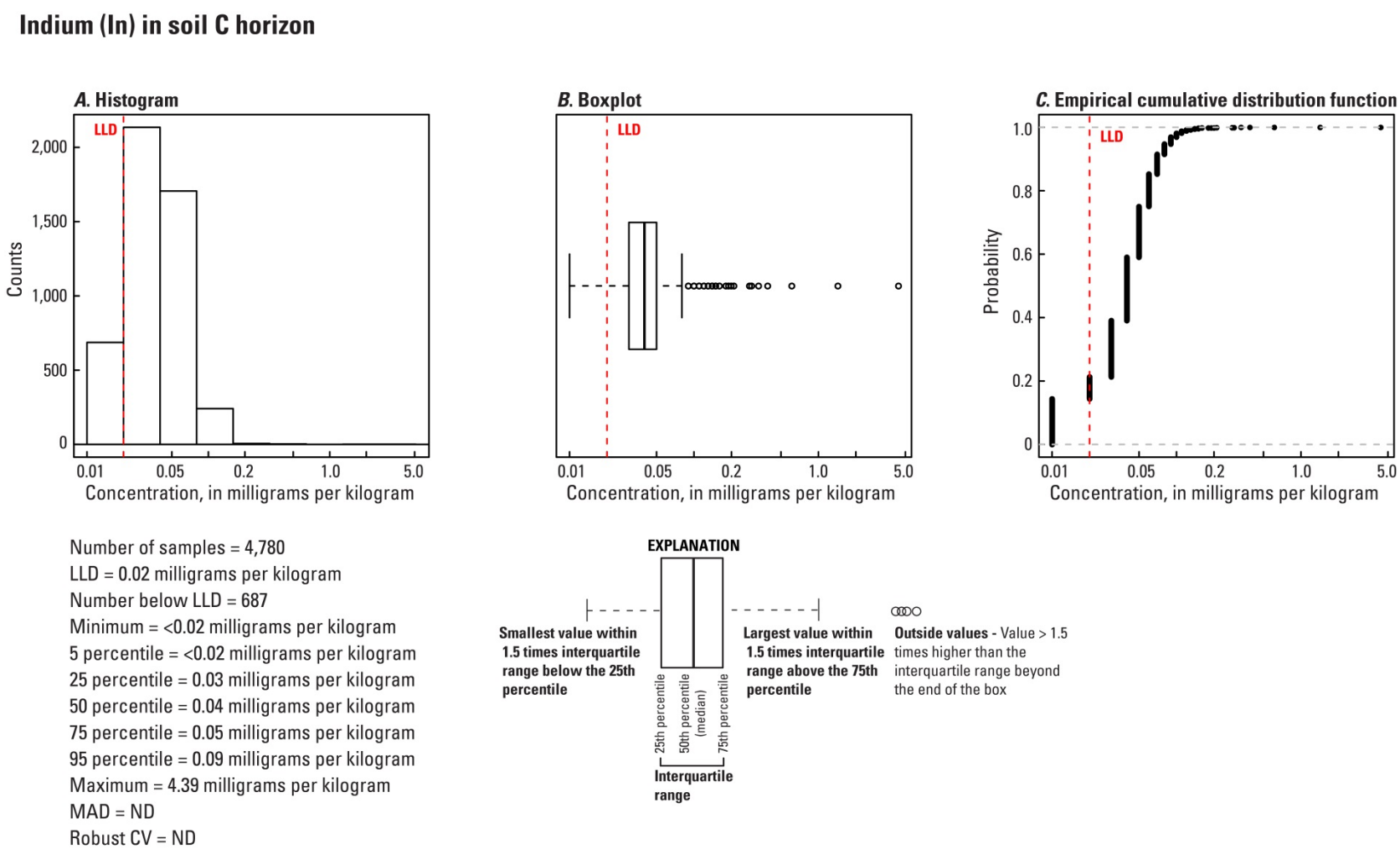


Figure 52. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of indium (In) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

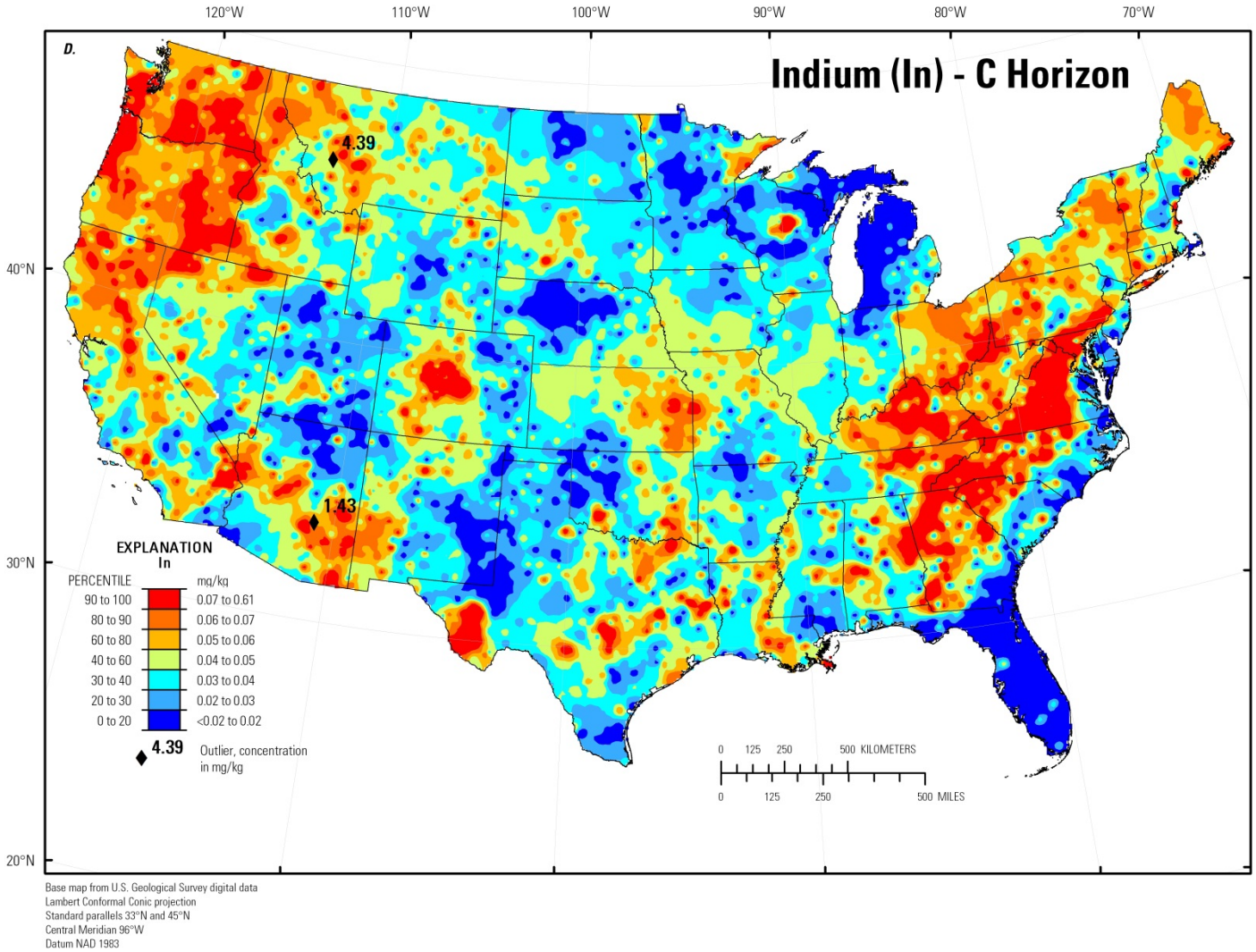
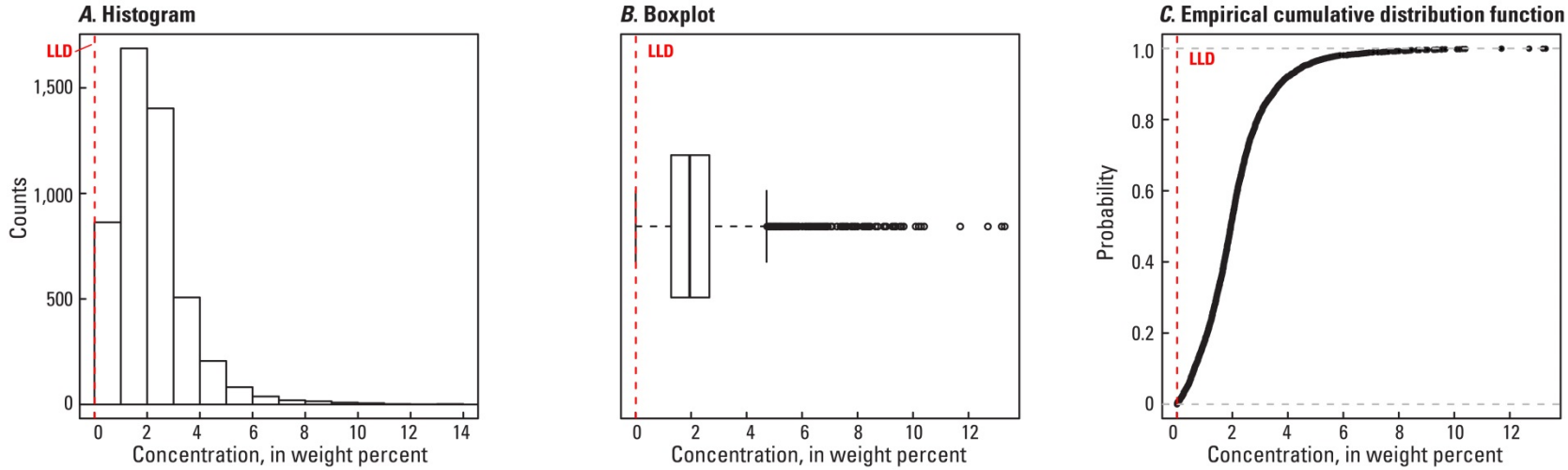


Figure 52. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of indium (In) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Iron (Fe) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.01 weight percent
Number below LLD = 8
Minimum = <0.01 weight percent
5 percentile = 0.38 weight percent
25 percentile = 1.28 weight percent
50 percentile = 1.95 weight percent
75 percentile = 2.66 weight percent
95 percentile = 4.56 weight percent
Maximum = 13.3 weight percent
MAD = 1.02 weight percent
Robust CV = 52.5 %

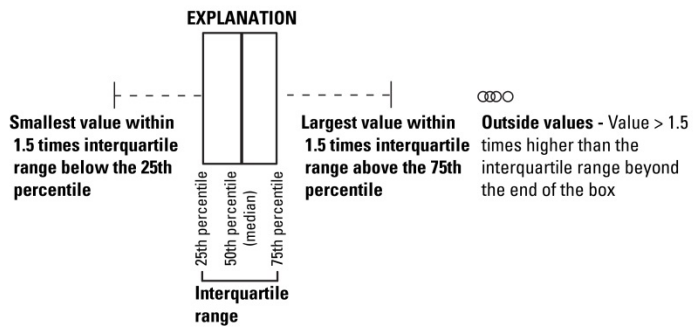


Figure 53. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of iron (Fe) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).

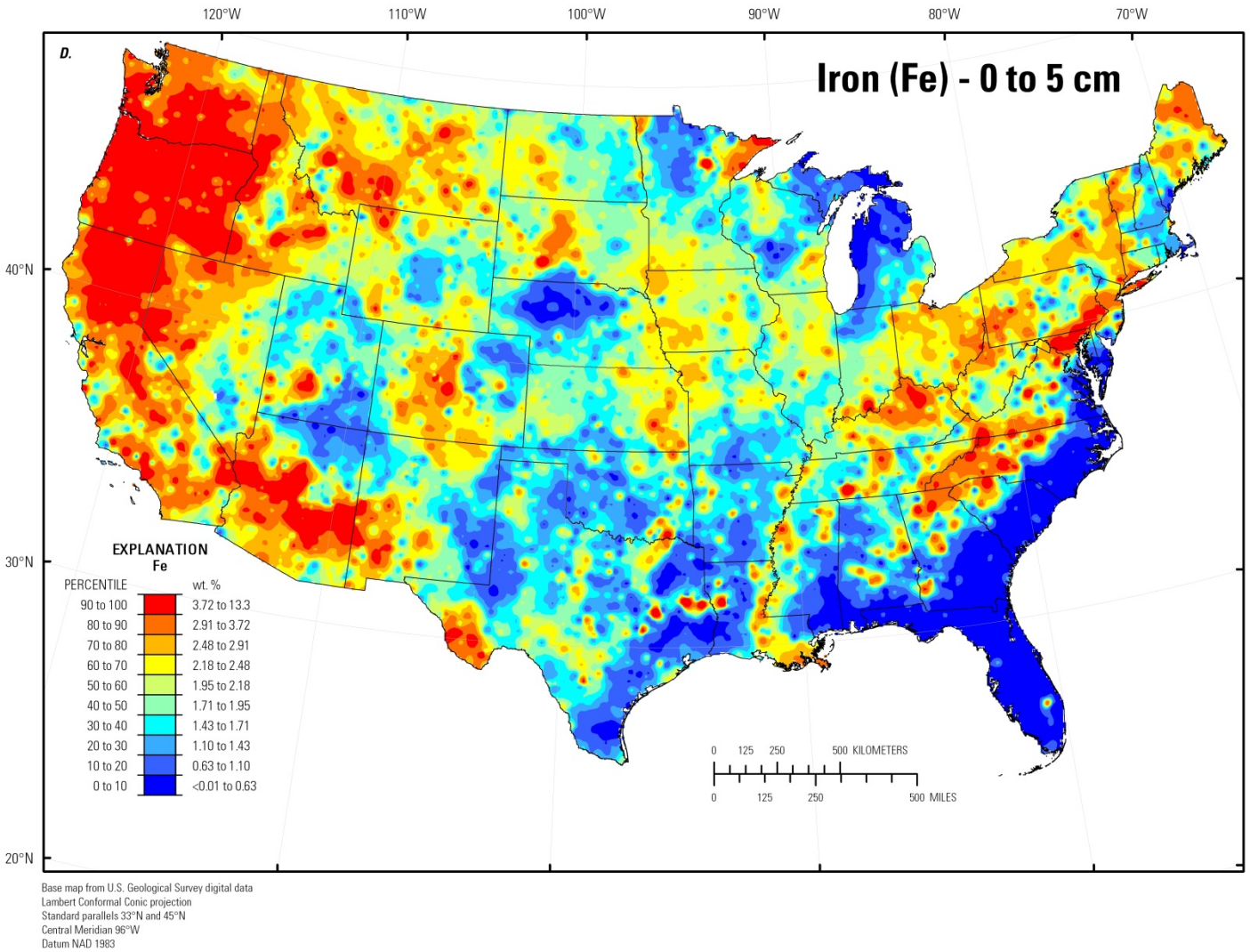
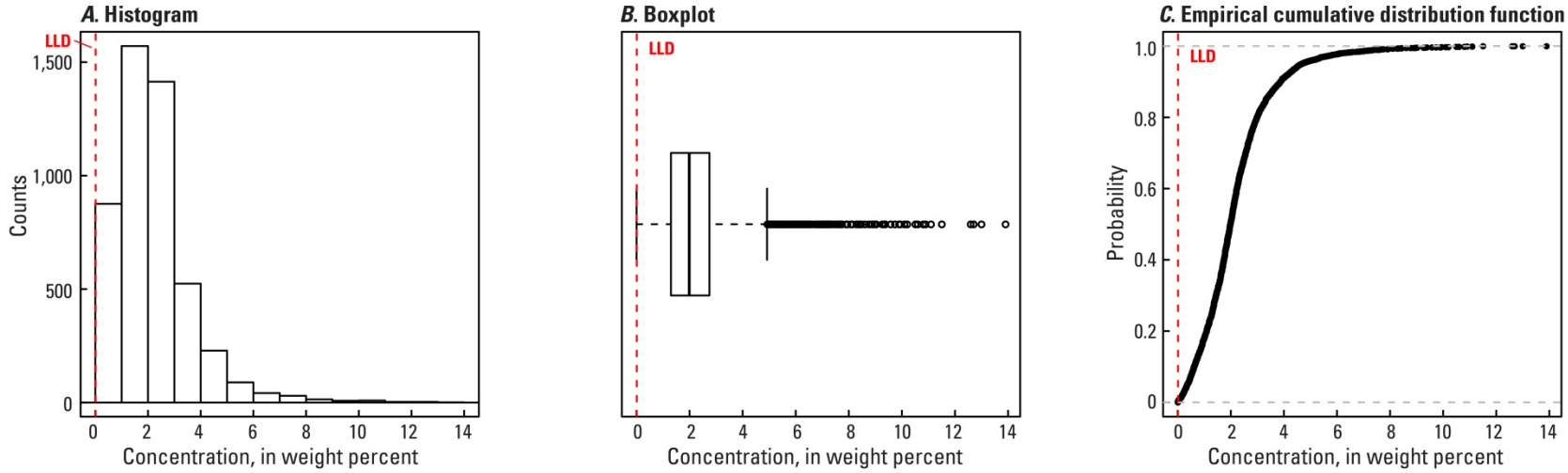


Figure 53. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of iron (Fe) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).—Continued

Iron (Fe) in soil A horizon



Number of samples = 4,813
LLD = 0.01 weight percent
Number below LLD = 6
Minimum = <0.01 weight percent
5 percentile = 0.36 weight percent
25 percentile = 1.30 weight percent
50 percentile = 1.99 weight percent
75 percentile = 2.75 weight percent
95 percentile = 4.67 weight percent
Maximum = 13.9 weight percent
MAD = 1.08 weight percent
Robust CV = 54.4 %

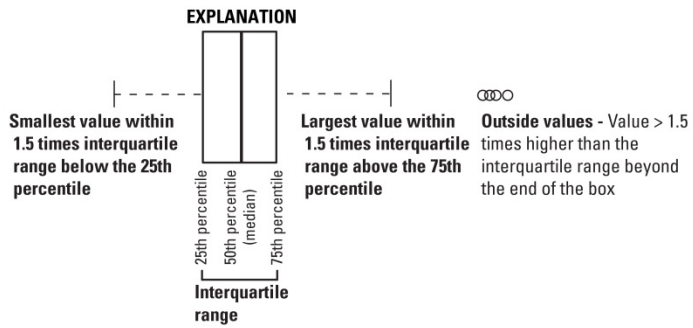


Figure 54. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of iron (Fe) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

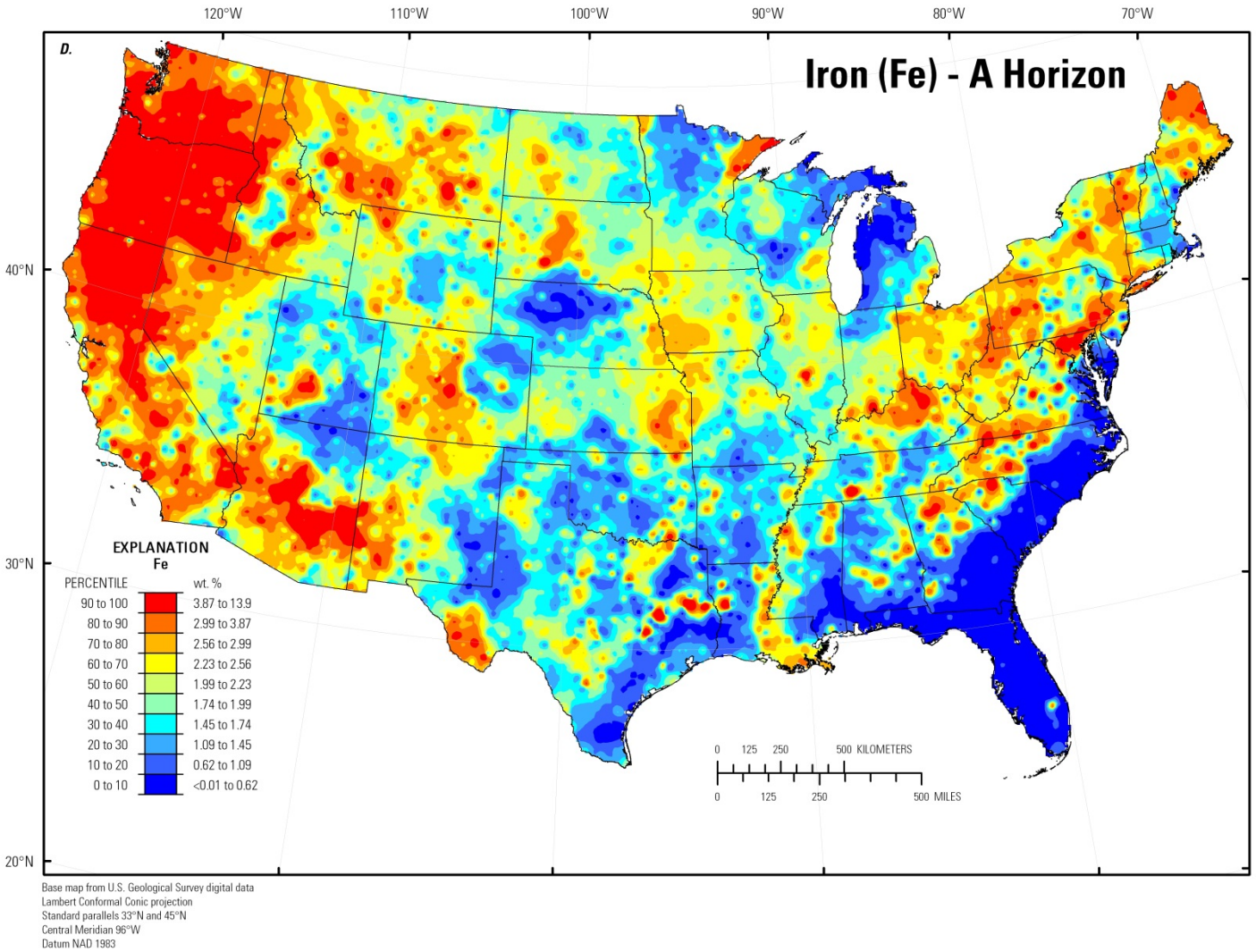
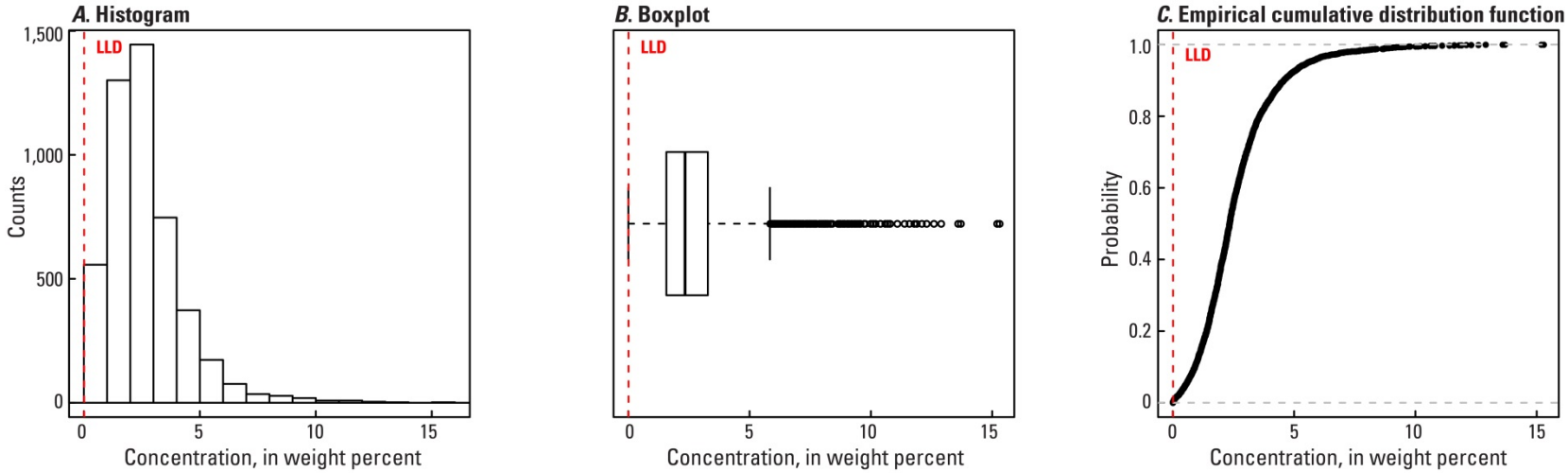


Figure 54. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of iron (Fe) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

Iron (Fe) in soil C horizon



Number of samples = 4,780
LLD = 0.01 weight percent
Number below LLD = 6
Minimum = <0.01 weight percent
5 percentile = 0.53 weight percent
25 percentile = 1.57 weight percent
50 percentile = 2.34 weight percent
75 percentile = 3.28 weight percent
95 percentile = 5.57 weight percent
Maximum = 15.30 weight percent
MAD = 1.25 weight percent
Robust CV = 53.2 %

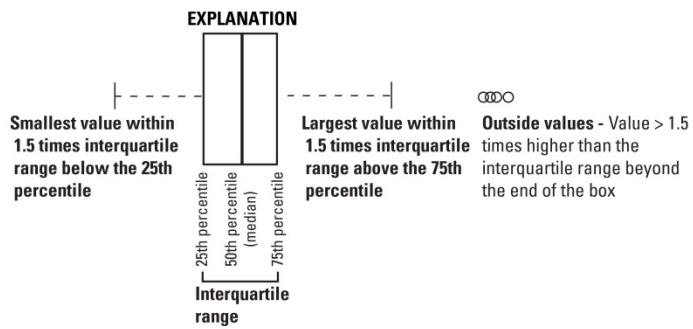


Figure 55. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of iron (Fe) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

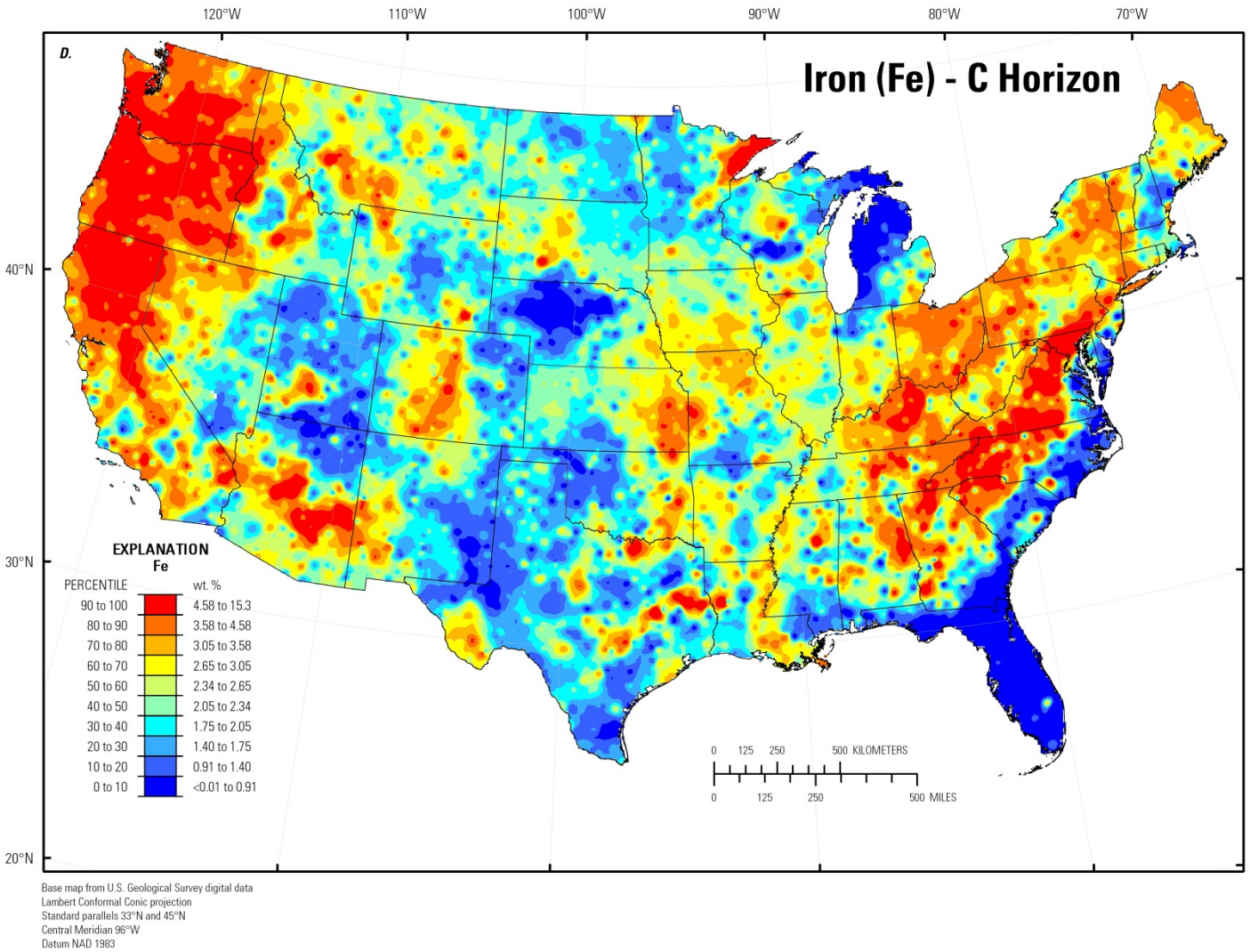
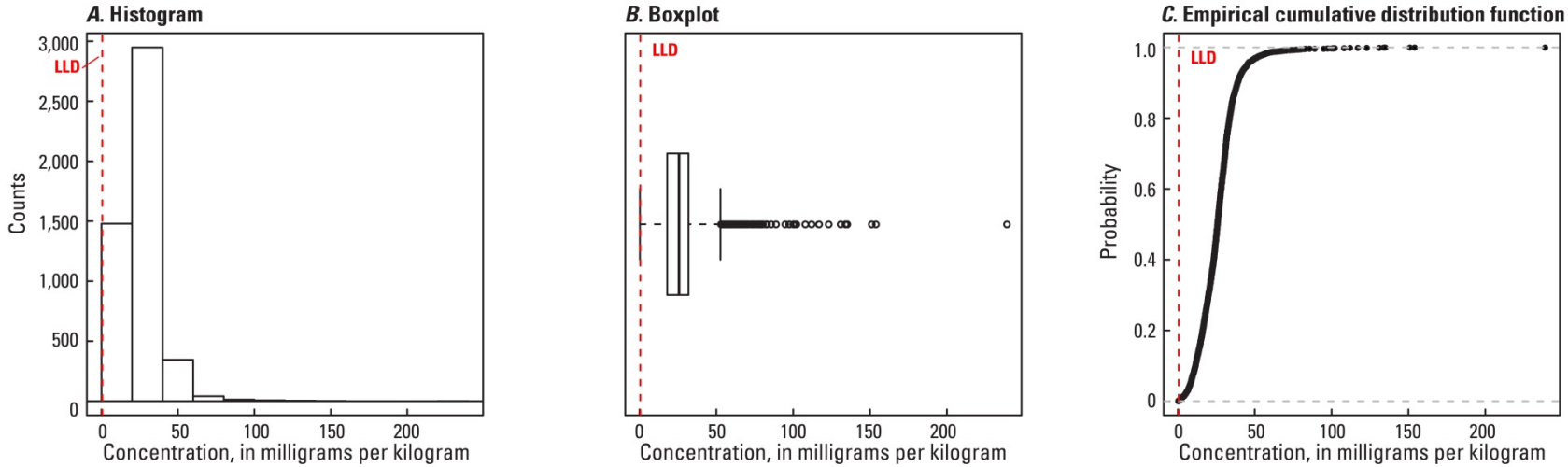


Figure 55. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of iron (Fe) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

Lanthanum (La) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.5 milligrams per kilogram
Number below LLD = 5
Minimum = <0.5 milligrams per kilogram
5 percentile = 8.2 milligrams per kilogram
25 percentile = 18.0 milligrams per kilogram
50 percentile = 25.7 milligrams per kilogram
75 percentile = 31.9 milligrams per kilogram
95 percentile = 44.9 milligrams per kilogram
Maximum = 239 milligrams per kilogram
MAD = 10.2 milligrams per kilogram
Robust CV = 39.8 %

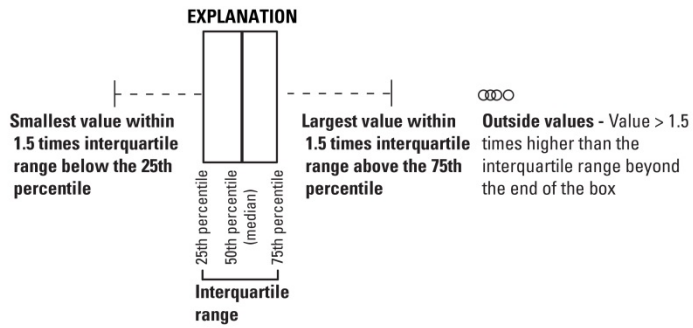


Figure 56. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lanthanum (La) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

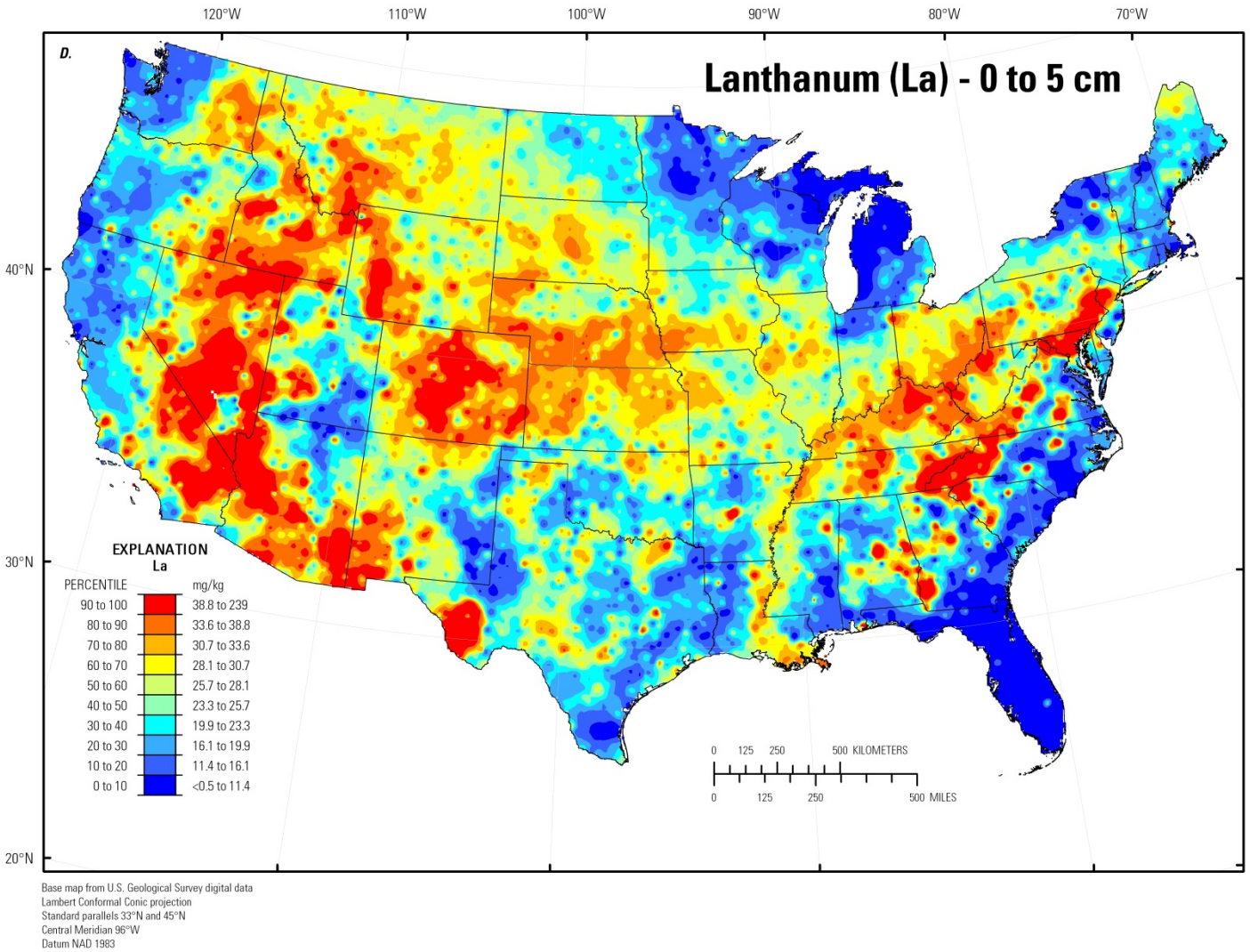
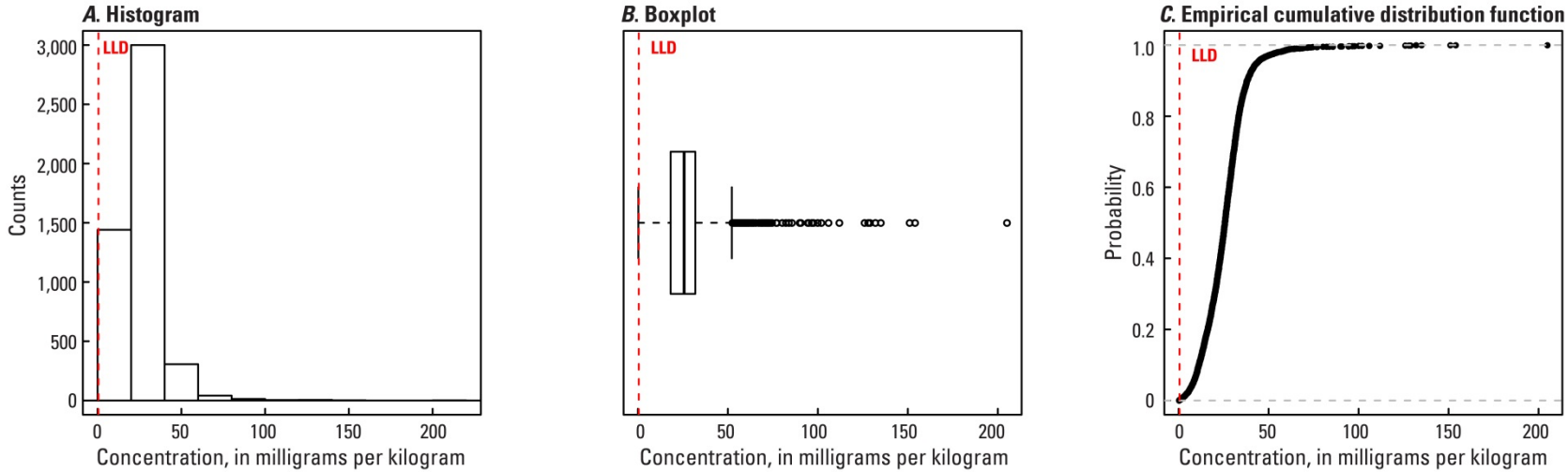


Figure 56. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lanthanum (La) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Lanthanum (La) in soil A horizon



Number of samples = 4,813
LLD = 0.5 milligrams per kilogram
Number below LLD = 4
Minimum = <0.5 milligrams per kilogram
5 percentile = 8.2 milligrams per kilogram
25 percentile = 18.2 milligrams per kilogram
50 percentile = 25.7 milligrams per kilogram
75 percentile = 31.9 milligrams per kilogram
95 percentile = 43.6 milligrams per kilogram
Maximum = 205 milligrams per kilogram
MAD = 10.1 milligrams per kilogram
Robust CV = 39.2 %

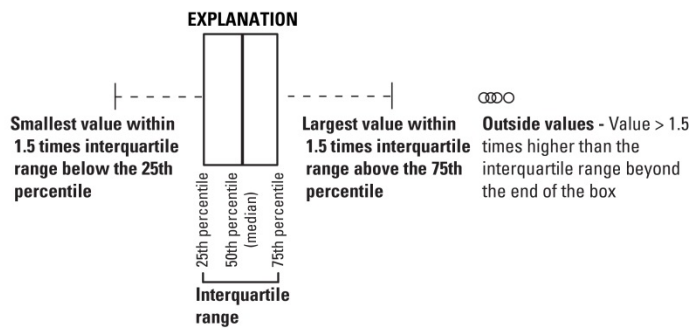


Figure 57. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lanthanum (La) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

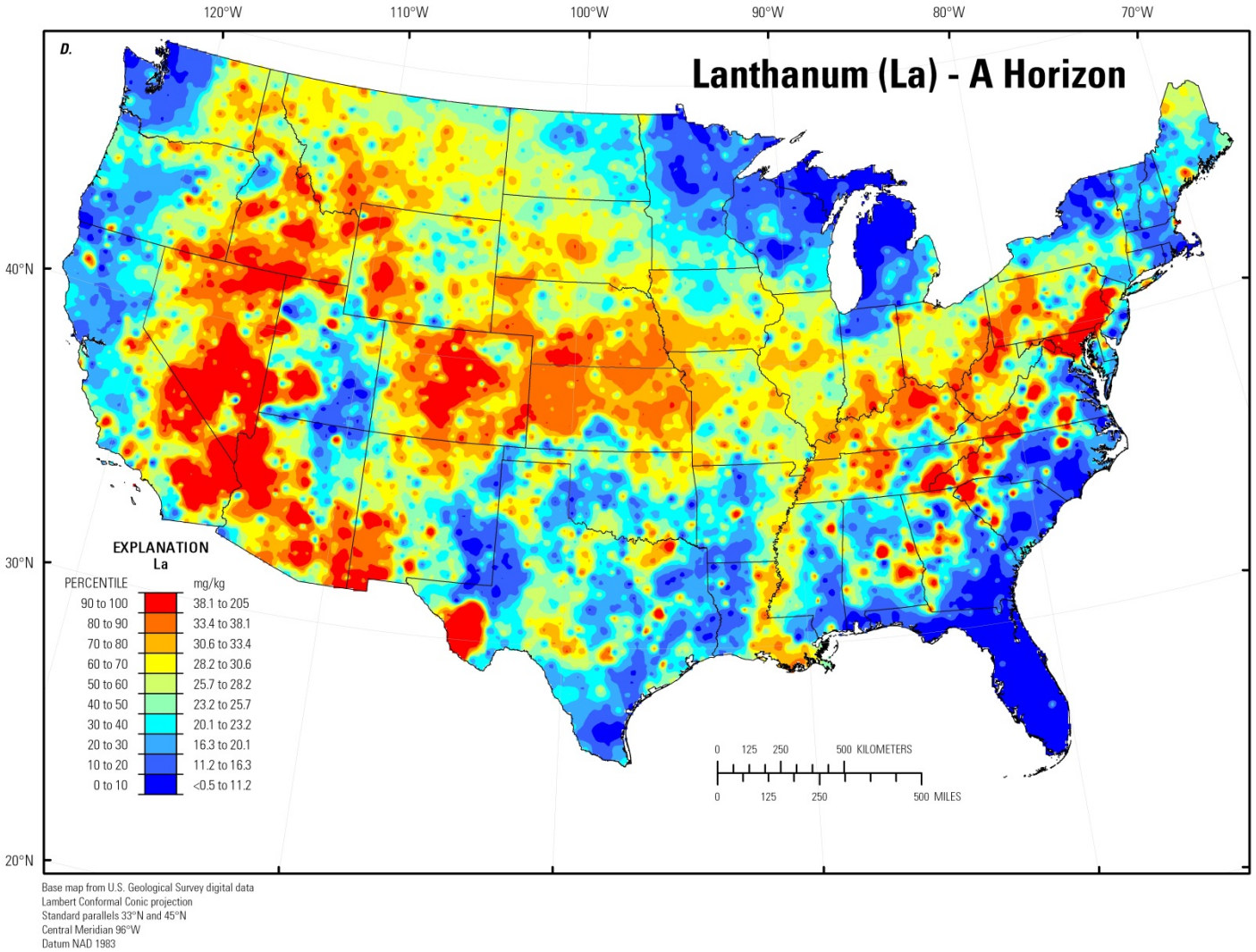
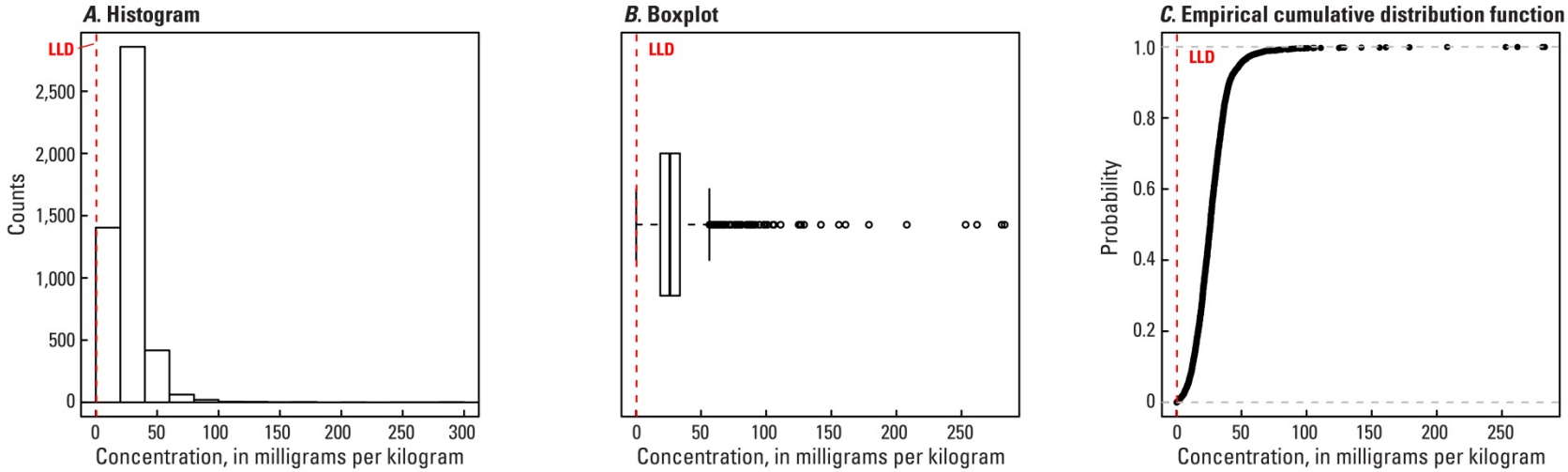


Figure 57. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lanthanum (La) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Lanthanum (La) in soil C horizon



Number of samples = 4,780
LLD = 0.5 milligrams per kilogram
Number below LLD = 4
Minimum = <0.5 milligrams per kilogram
5 percentile = 8.9 milligrams per kilogram
25 percentile = 18.7 milligrams per kilogram
50 percentile = 26.1 milligrams per kilogram
75 percentile = 33.8 milligrams per kilogram
95 percentile = 48.7 milligrams per kilogram
Maximum = 283 milligrams per kilogram
MAD = 11.3 milligrams per kilogram
Robust CV = 43.2 %

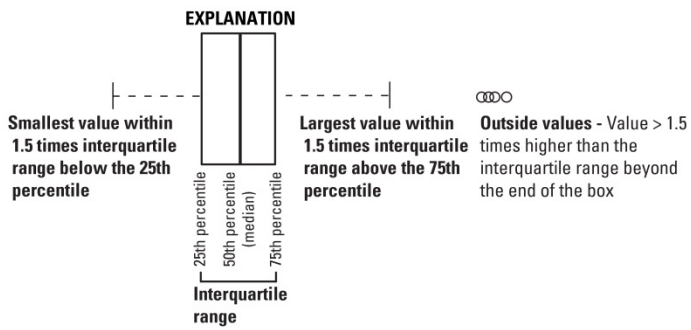


Figure 58. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lanthanum (La) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

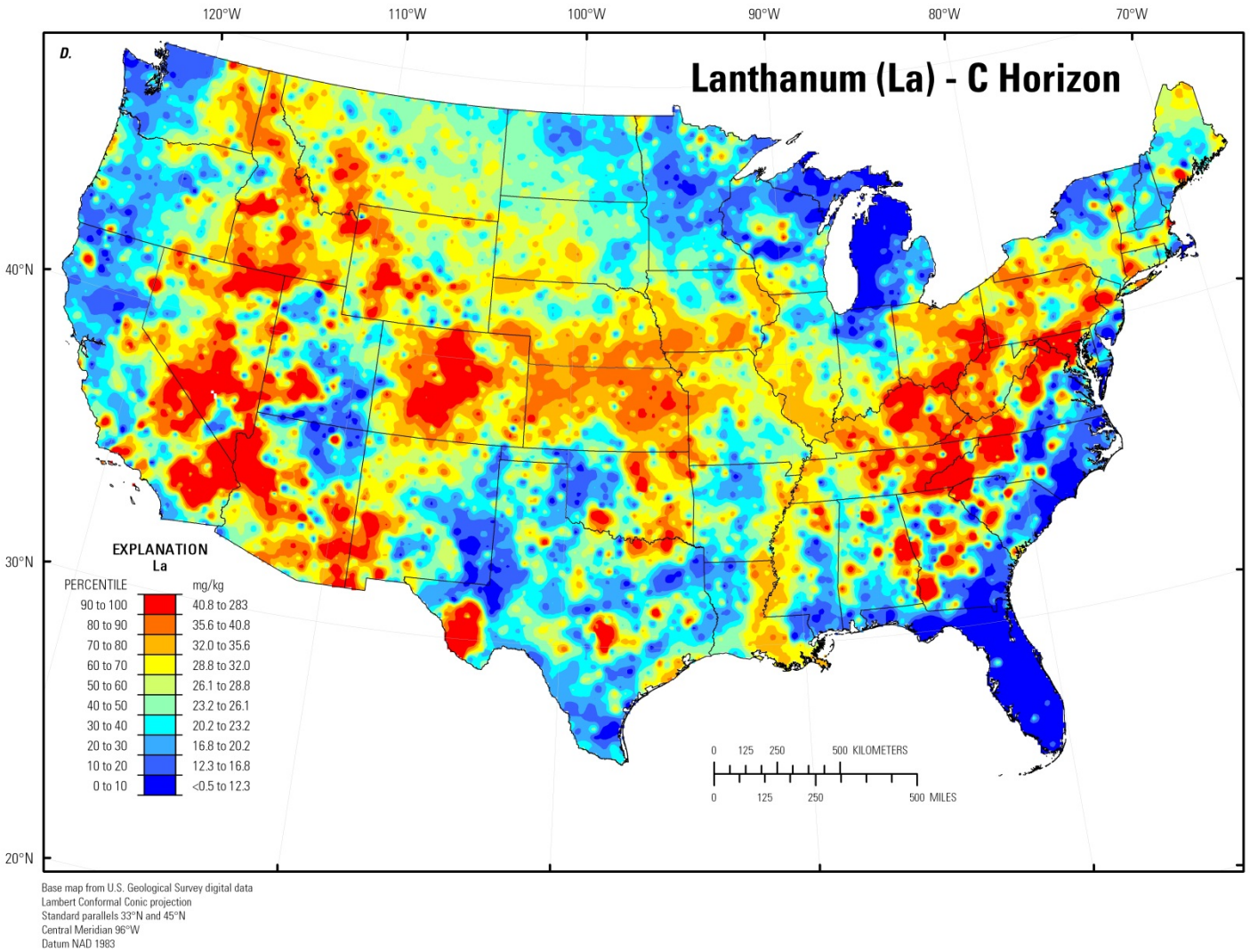
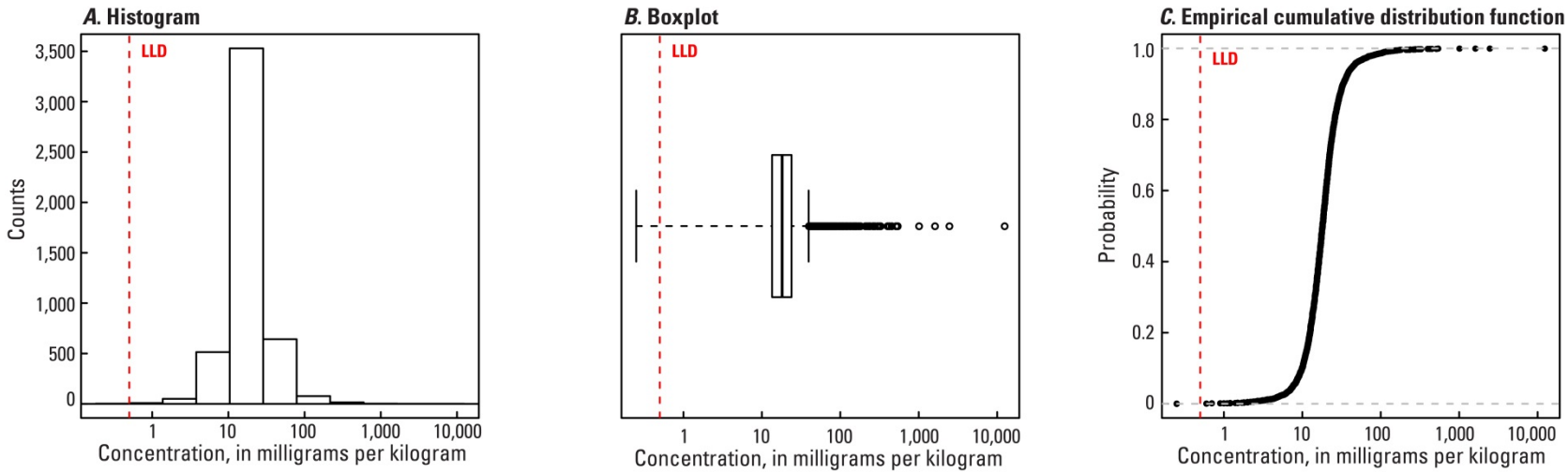


Figure 58. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lanthanum (La) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Lead (Pb) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.5 milligrams per kilogram
Number below LLD = 2
Minimum = <0.5 milligrams per kilogram
5 percentile = 7.6 milligrams per kilogram
25 percentile = 13.5 milligrams per kilogram
50 percentile = 18.1 milligrams per kilogram
75 percentile = 23.9 milligrams per kilogram
95 percentile = 44.5 milligrams per kilogram
Maximum = 12,400 milligrams per kilogram
MAD = 7.41 milligrams per kilogram
Robust CV = 41 %

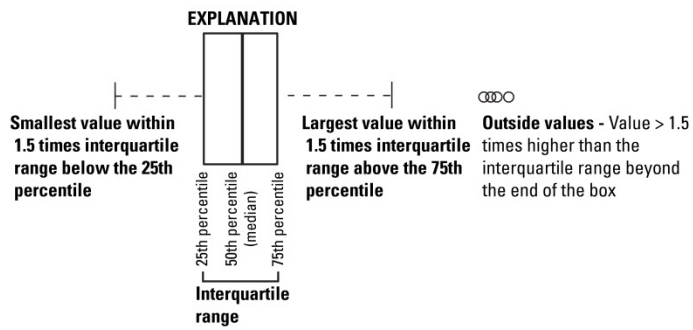


Figure 59. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lead (Pb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

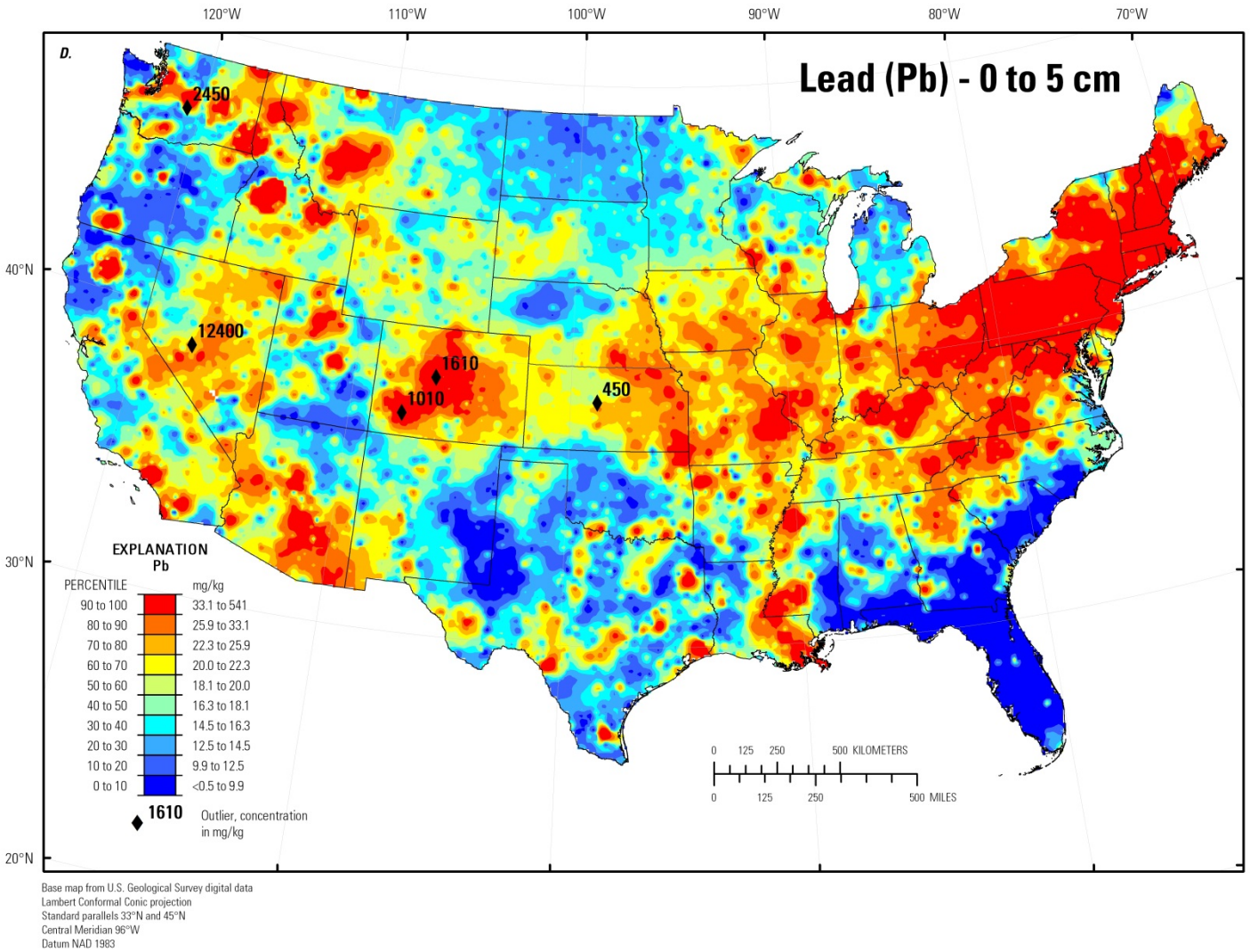


Figure 59. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lead (Pb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

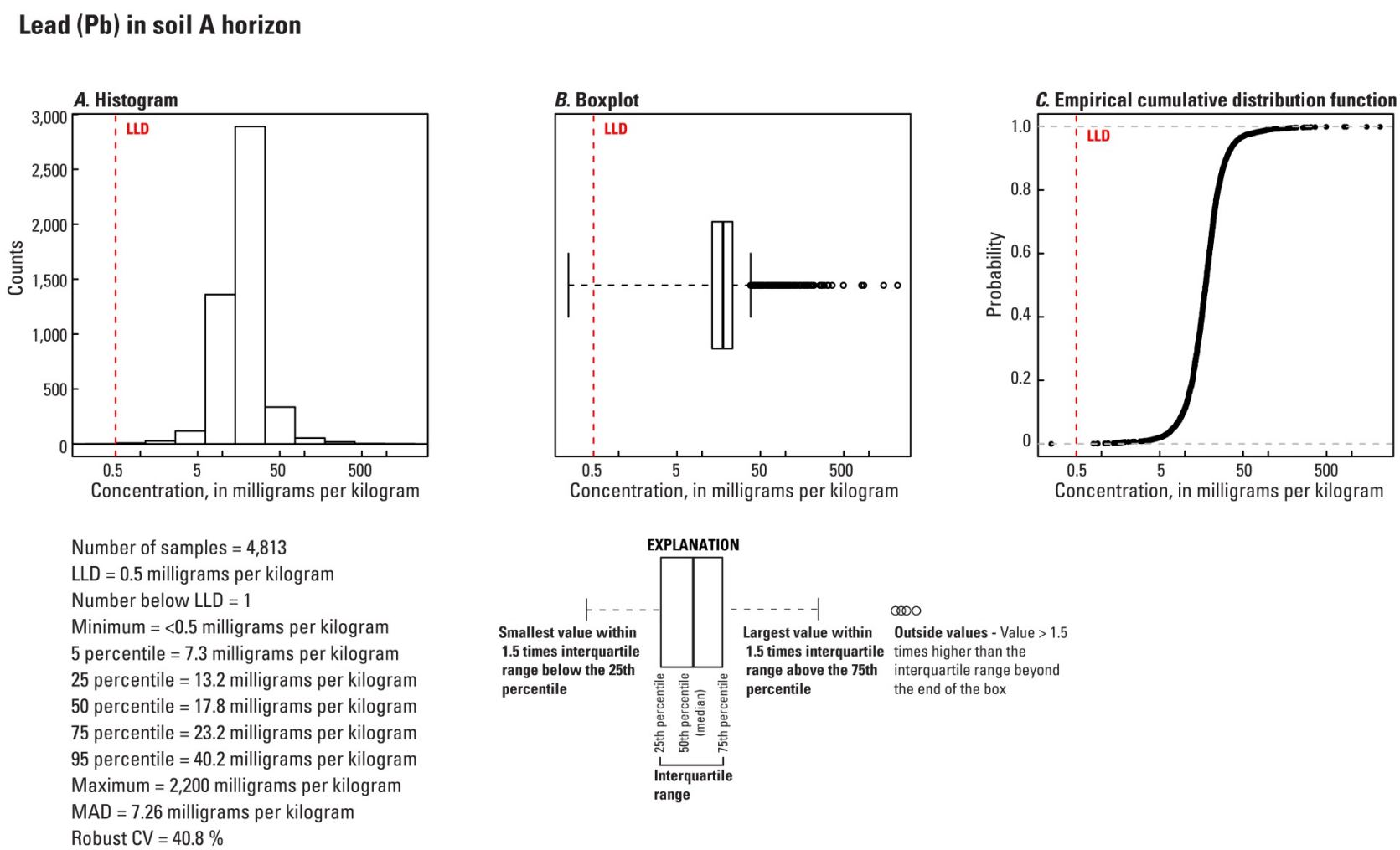


Figure 60. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lead (Pb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

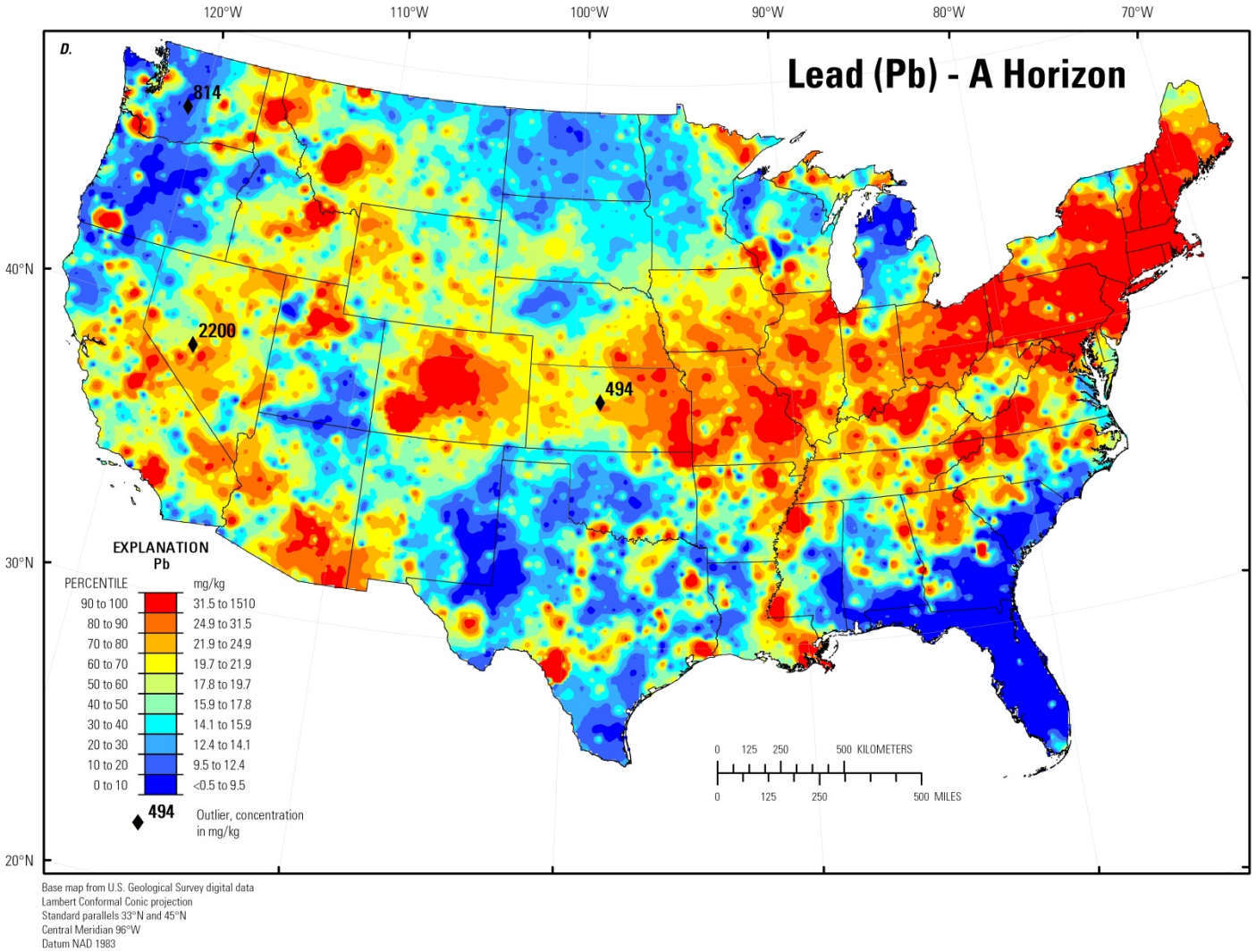
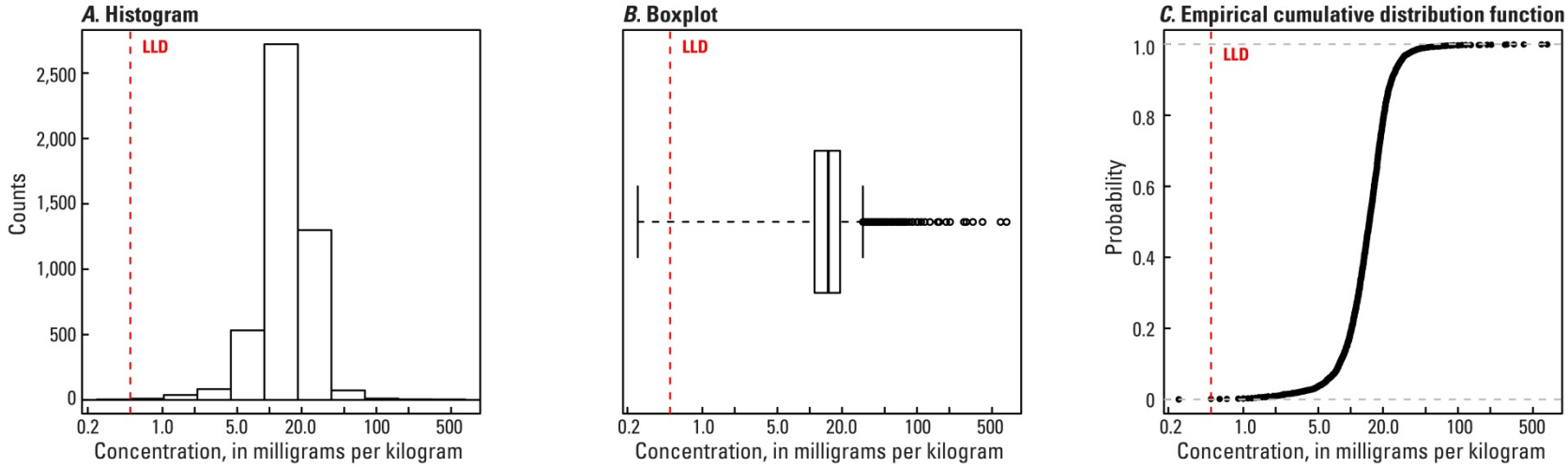


Figure 60. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lead (Pb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Lead (Pb) in soil C horizon



Number of samples = 4,780
LLD = 0.5 milligrams per kilogram
Number below LLD = 4
Minimum = <0.5 milligrams per kilogram
5 percentile = 5.8 milligrams per kilogram
25 percentile = 11.1 milligrams per kilogram
50 percentile = 14.9 milligrams per kilogram
75 percentile = 19.2 milligrams per kilogram
95 percentile = 28.9 milligrams per kilogram
Maximum = 681 milligrams per kilogram
MAD = 6.08 milligrams per kilogram
Robust CV = 40.8 %

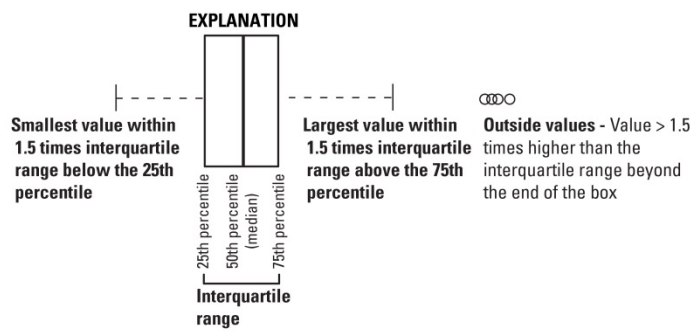


Figure 61. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lead (Pb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

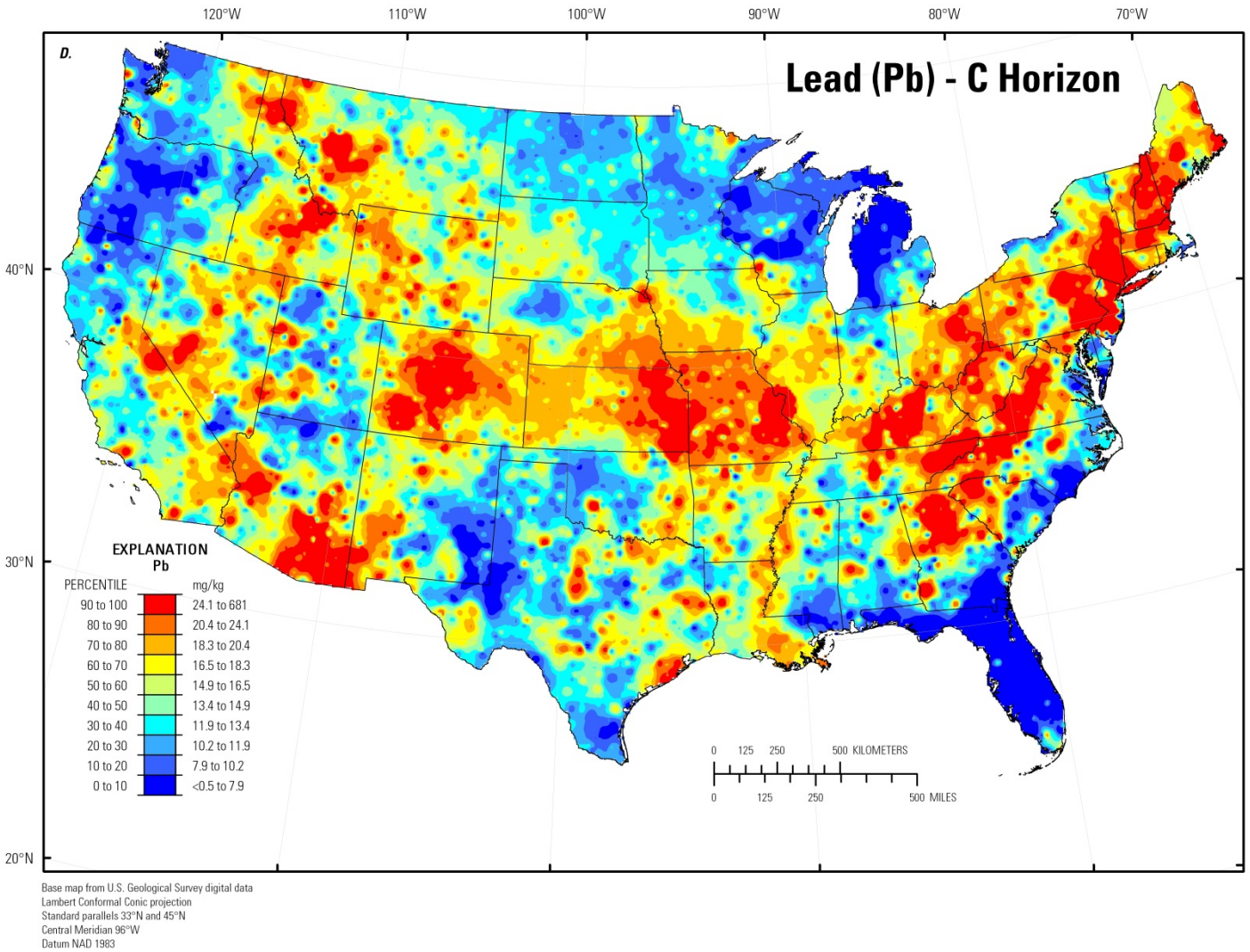
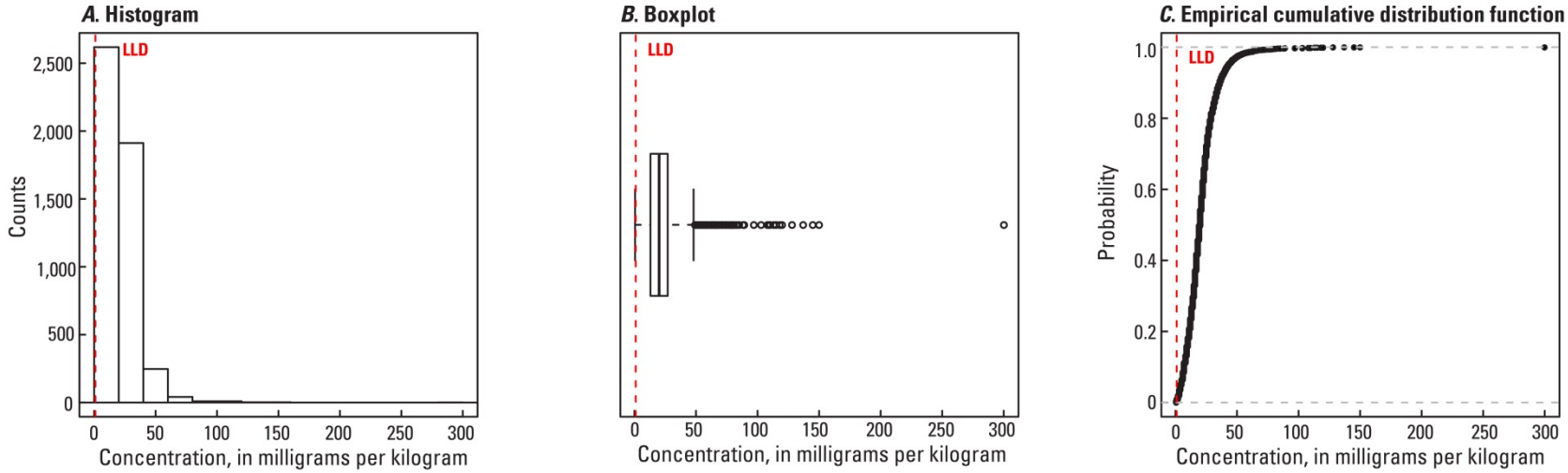


Figure 61. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lead (Pb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Lithium (Li) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 1 milligram per kilogram
Number below LLD = 18
Minimum = <1 milligram per kilogram
5 percentile = 5 milligrams per kilogram
25 percentile = 13 milligrams per kilogram
50 percentile = 20 milligrams per kilogram
75 percentile = 27 milligrams per kilogram
95 percentile = 43 milligrams per kilogram
Maximum = 300 milligrams per kilogram
MAD = 10.4 milligrams per kilogram
Robust CV = 51.9 %

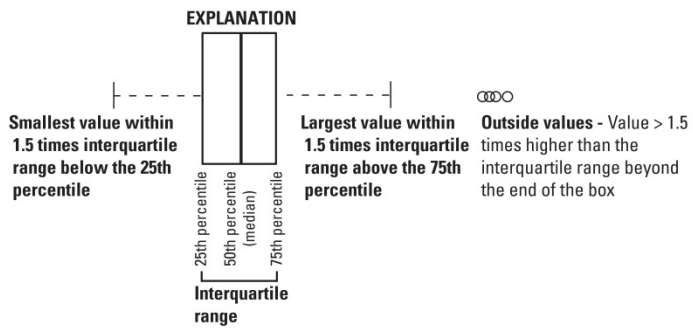


Figure 62. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lithium (Li) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

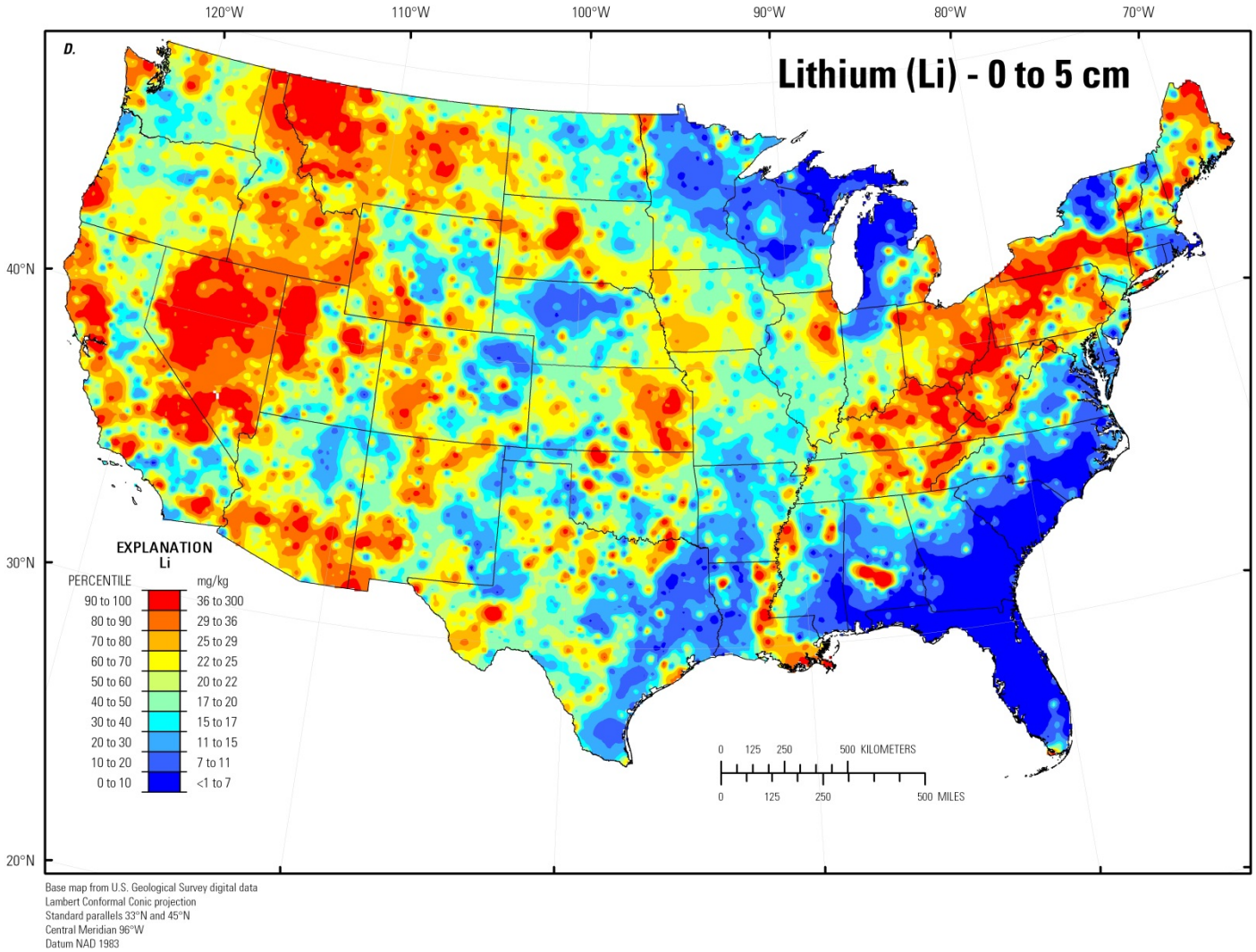
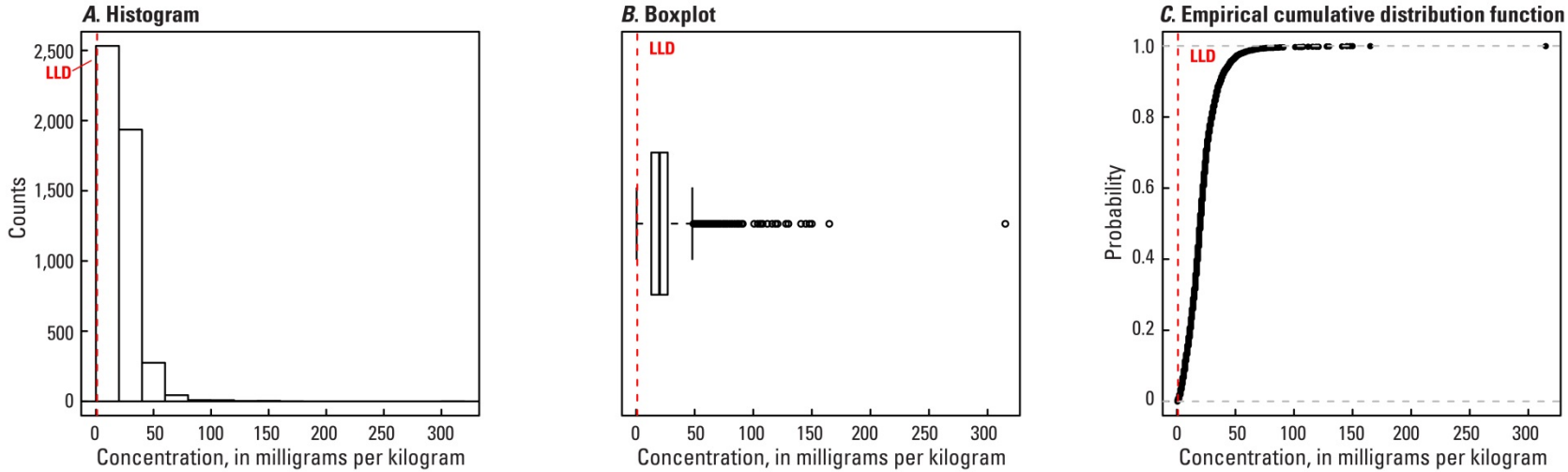


Figure 62. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lithium (Li) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Lithium (Li) in soil A horizon



Number of samples = 4,813
LLD = 1 milligram per kilogram
Number below LLD = 13
Minimum = <1 milligram per kilogram
5 percentile = 5 milligrams per kilogram
25 percentile = 13 milligrams per kilogram
50 percentile = 20 milligrams per kilogram
75 percentile = 27 milligrams per kilogram
95 percentile = 45 milligrams per kilogram
Maximum = 315 milligrams per kilogram
MAD = 10.4 milligrams per kilogram
Robust CV = 51.9 %

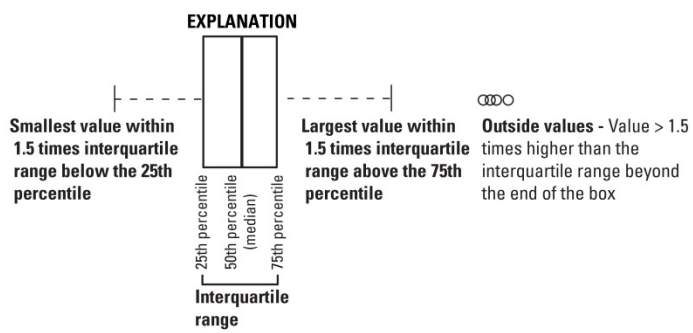


Figure 63. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lithium (Li) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

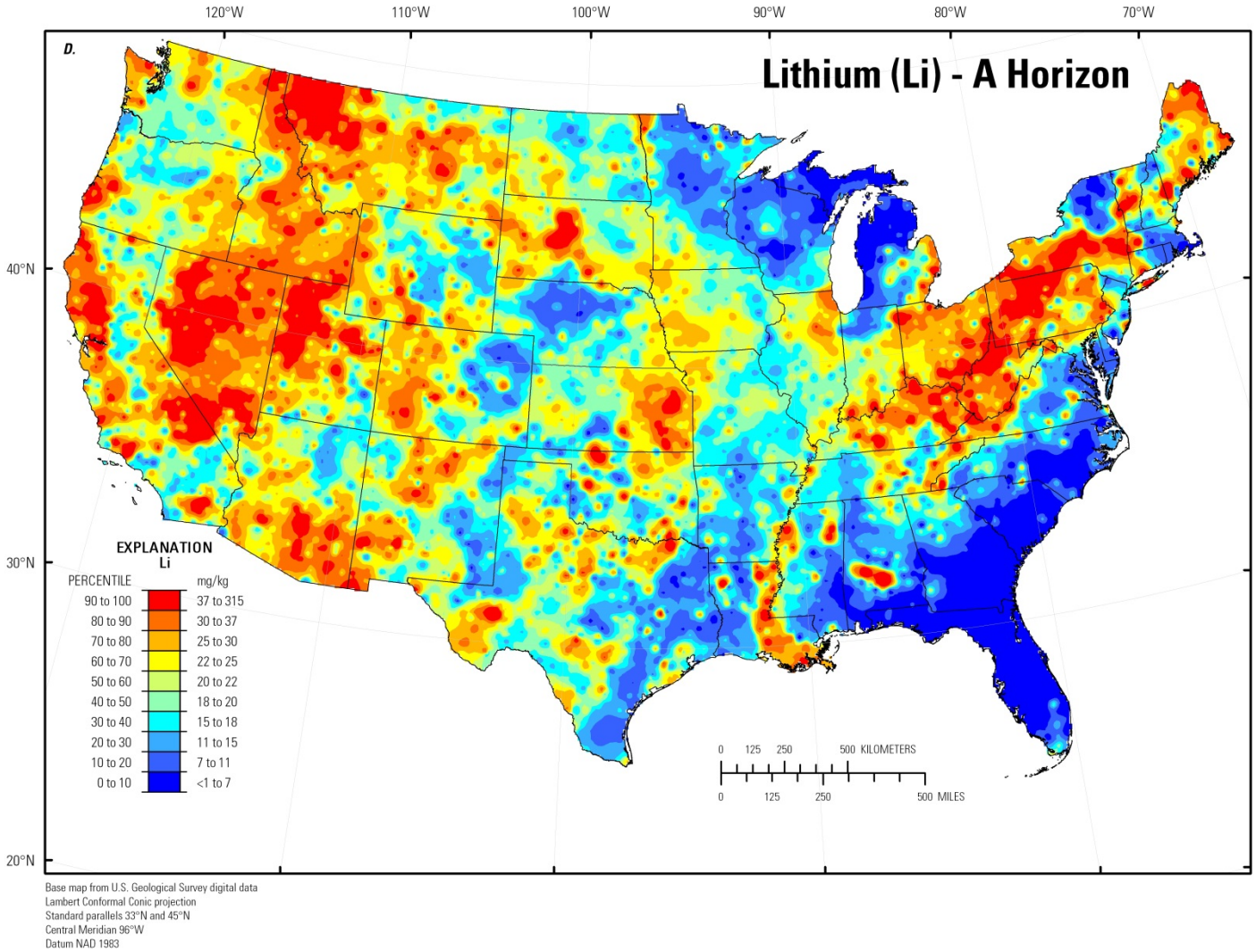
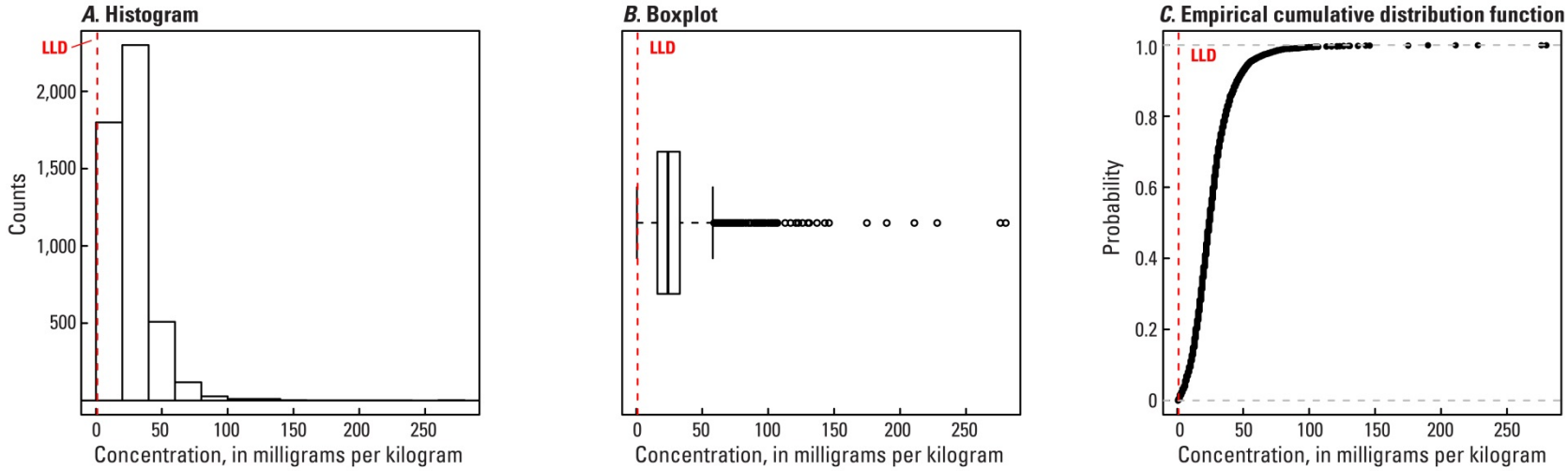


Figure 63. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lithium (Li) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Lithium (Li) in soil C horizon



Number of samples = 4,780
LLD = 1 milligram per kilogram
Number below LLD = 7
Minimum = <1 milligram per kilogram
5 percentile = 6 milligrams per kilogram
25 percentile = 16 milligrams per kilogram
50 percentile = 24 milligrams per kilogram
75 percentile = 33 milligrams per kilogram
95 percentile = 55 milligrams per kilogram
Maximum = 280 milligrams per kilogram
MAD = 11.9 milligrams per kilogram
Robust CV = 49.4 %

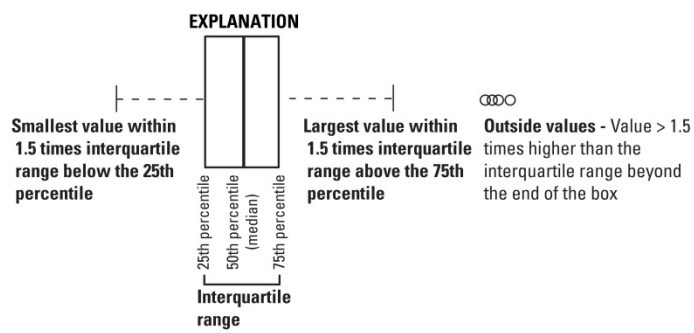


Figure 64. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lithium (Li) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

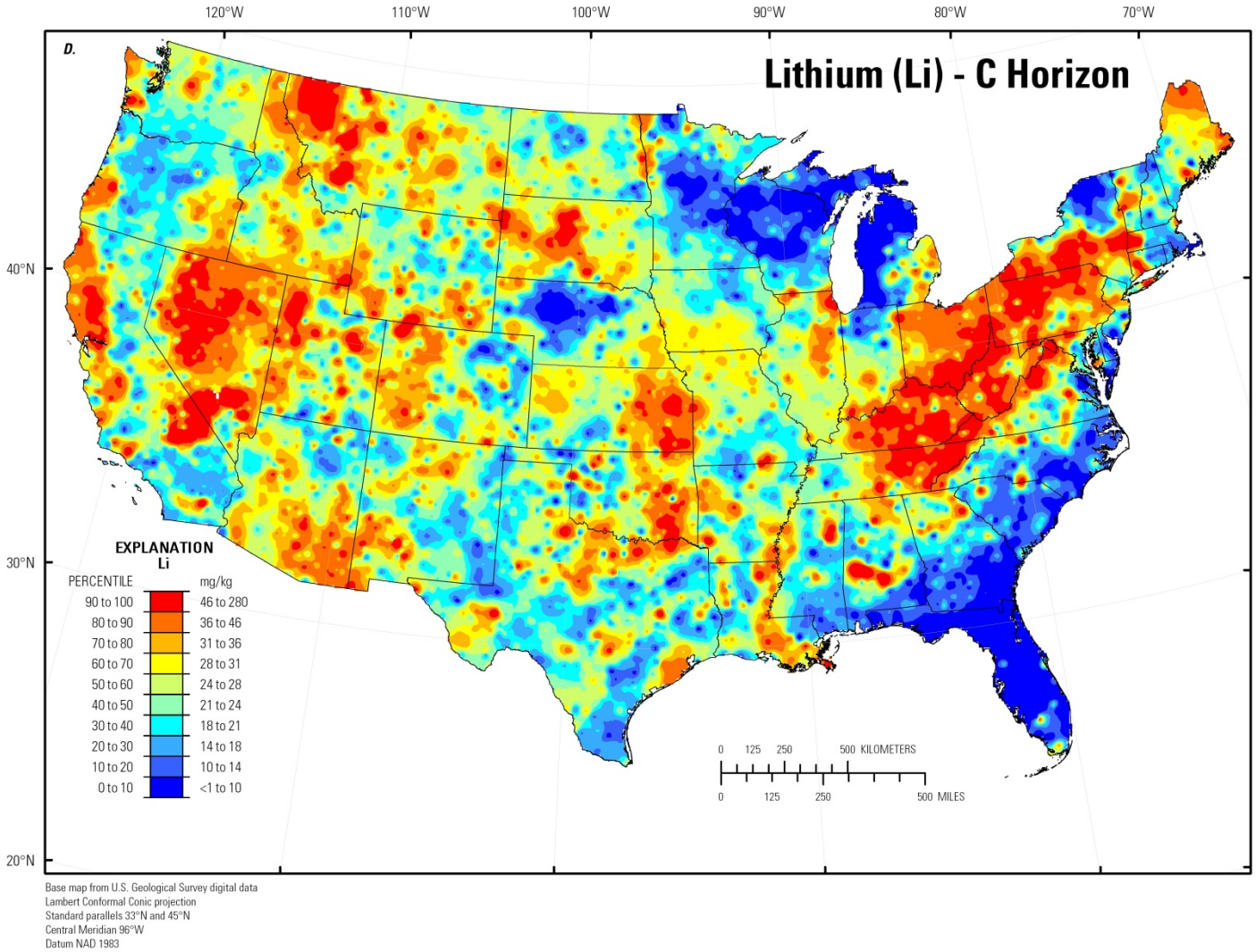


Figure 64. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of lithium (Li) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

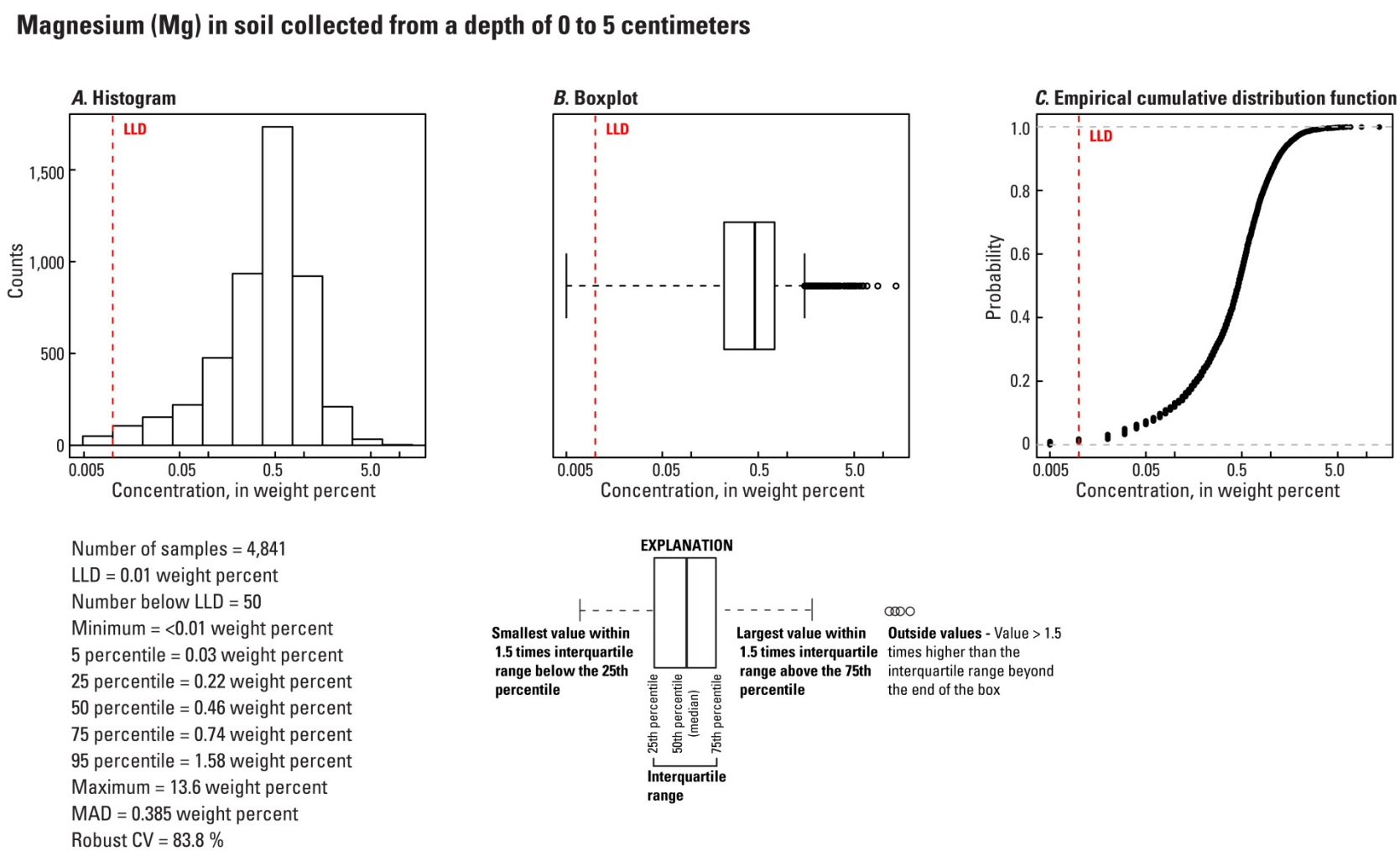


Figure 65. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of magnesium (Mg) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).

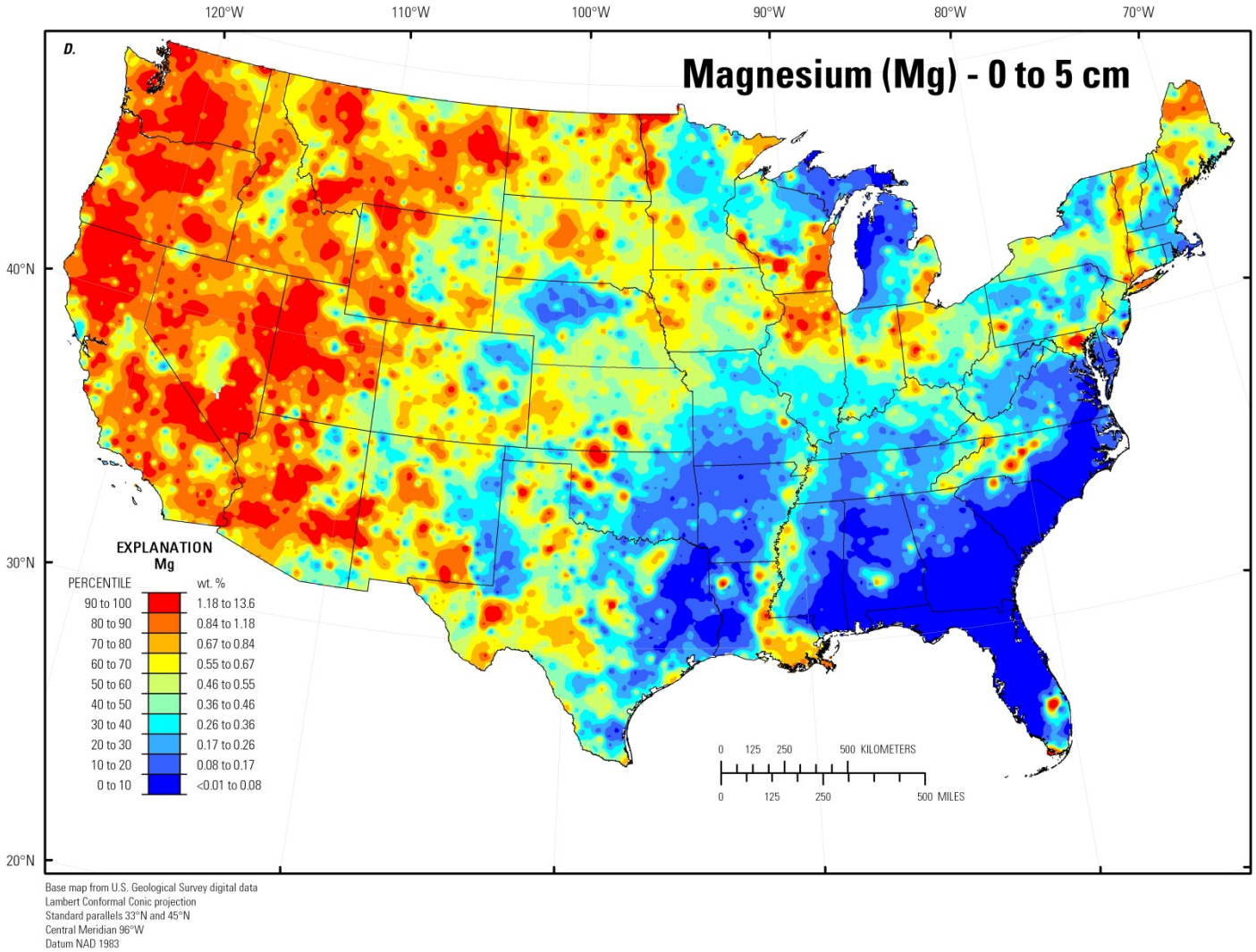


Figure 65. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of magnesium (Mg) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).—Continued

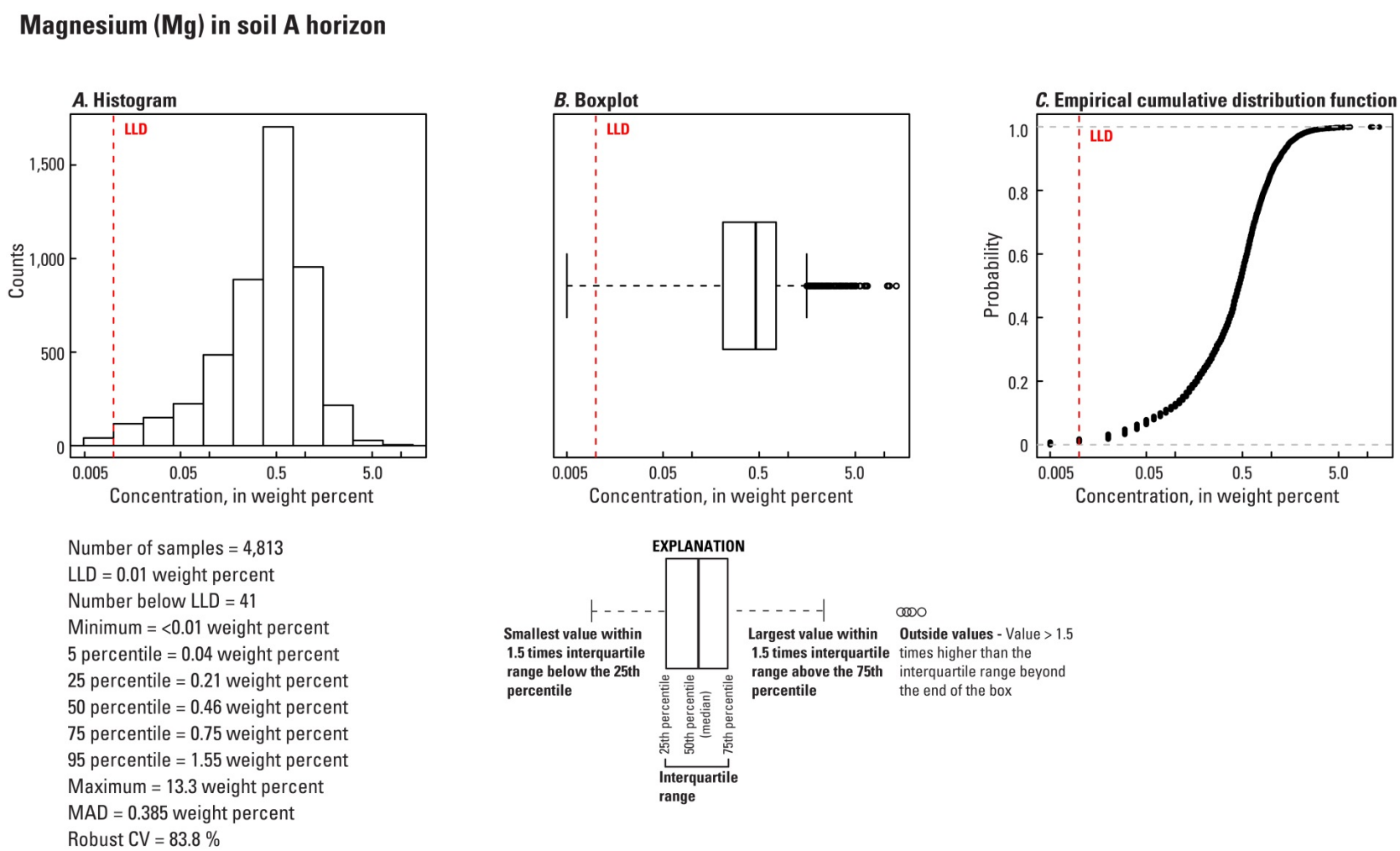


Figure 66. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of magnesium (Mg) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

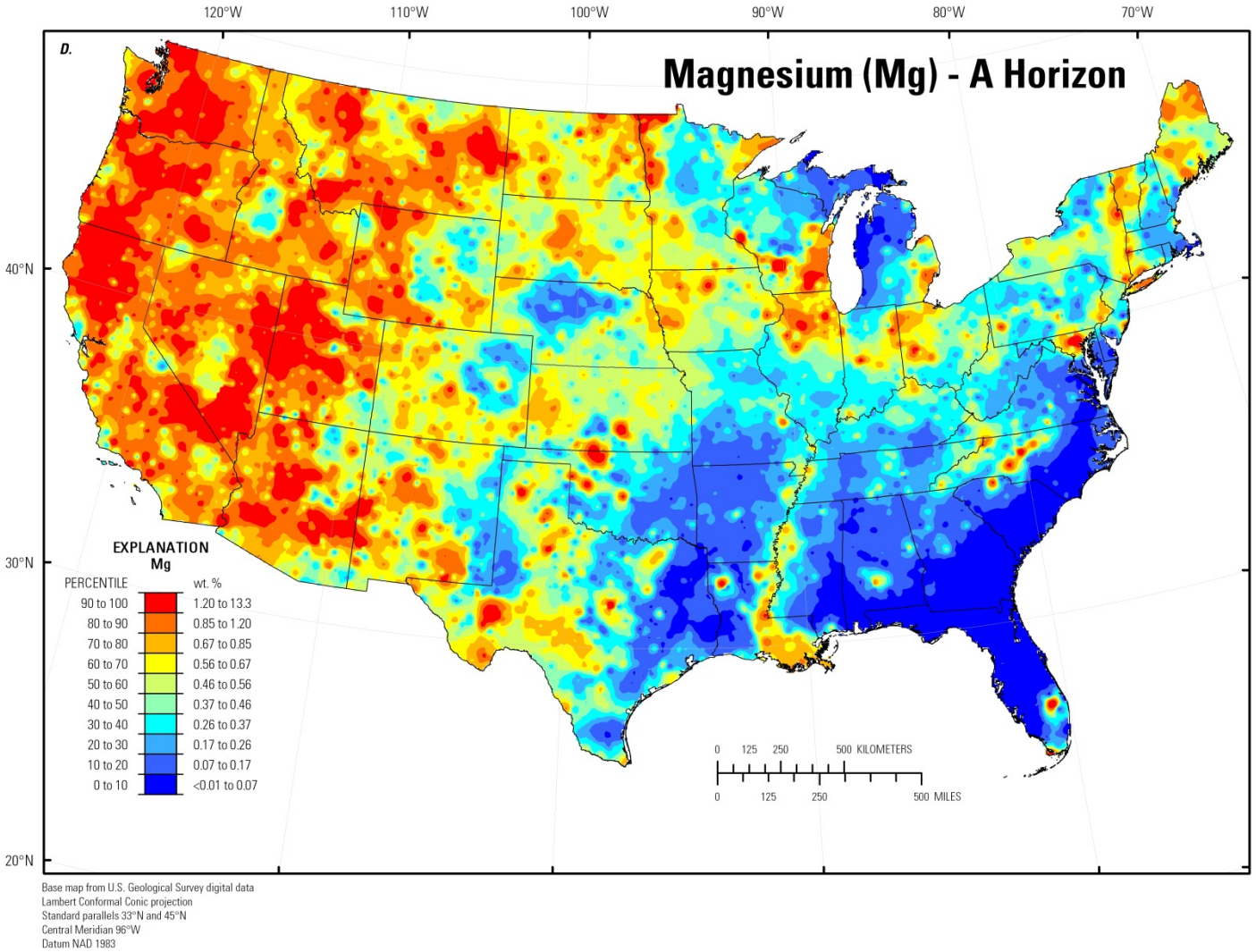


Figure 66. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of magnesium (Mg) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

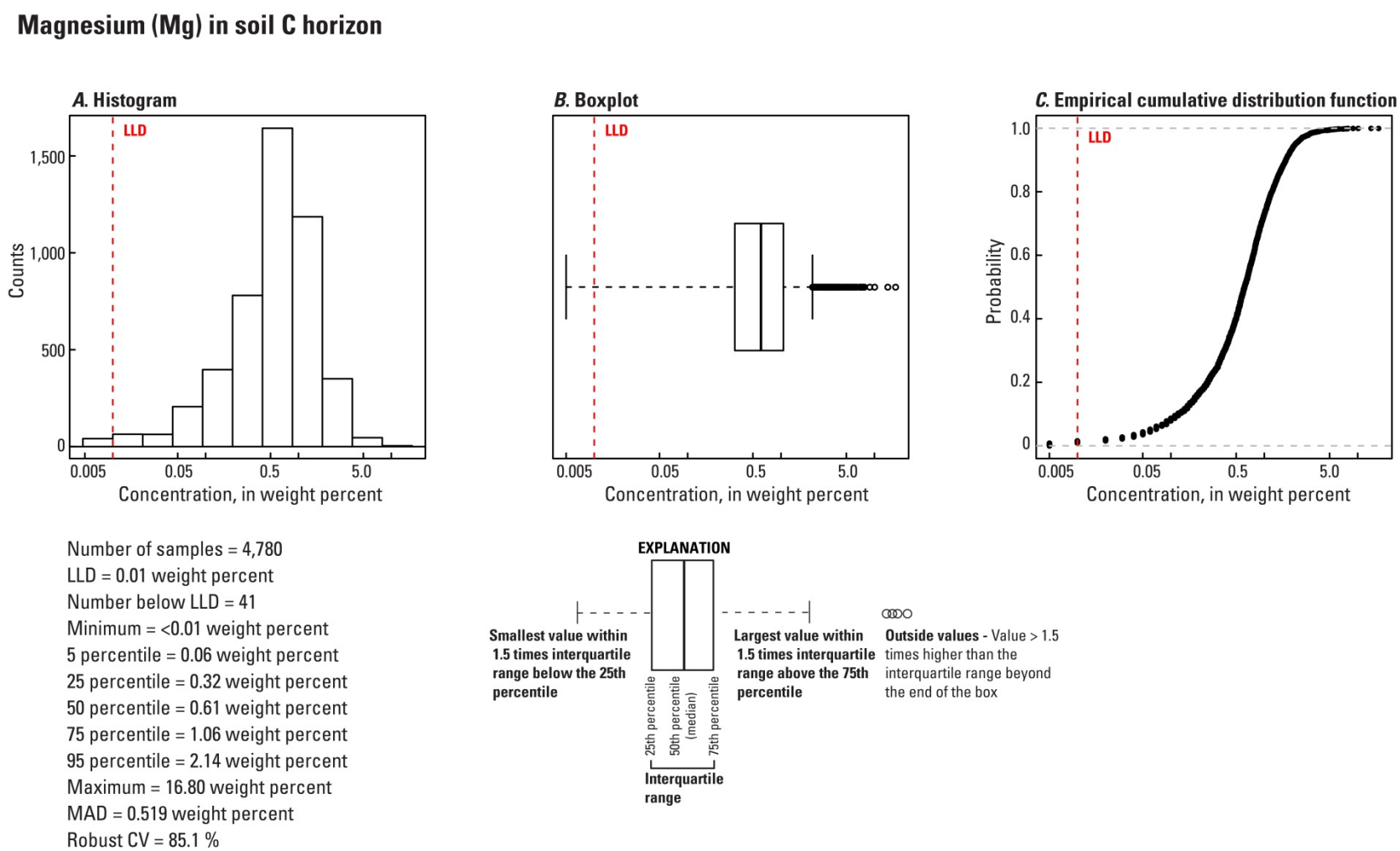


Figure 67. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of magnesium (Mg) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

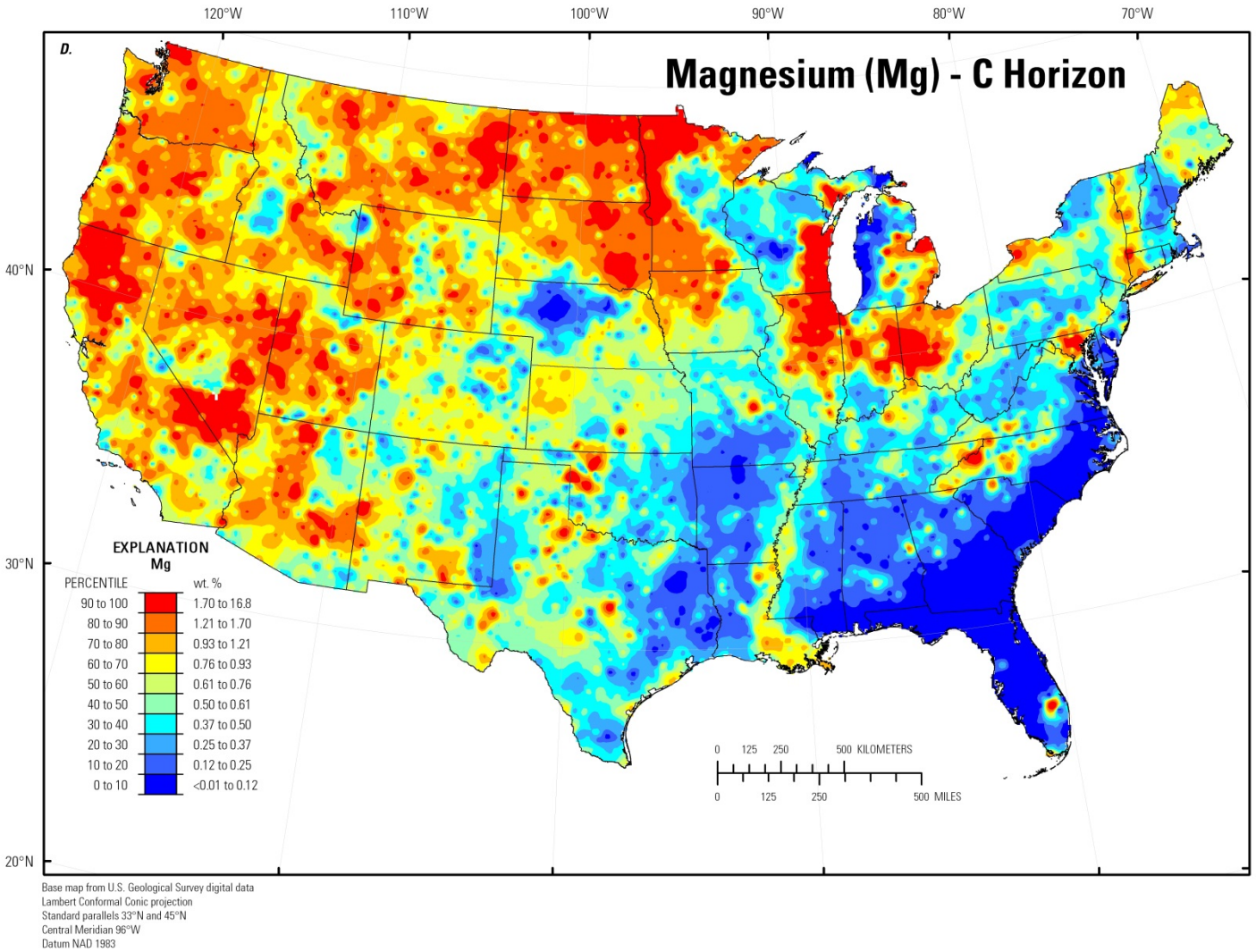


Figure 67. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of magnesium (Mg) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

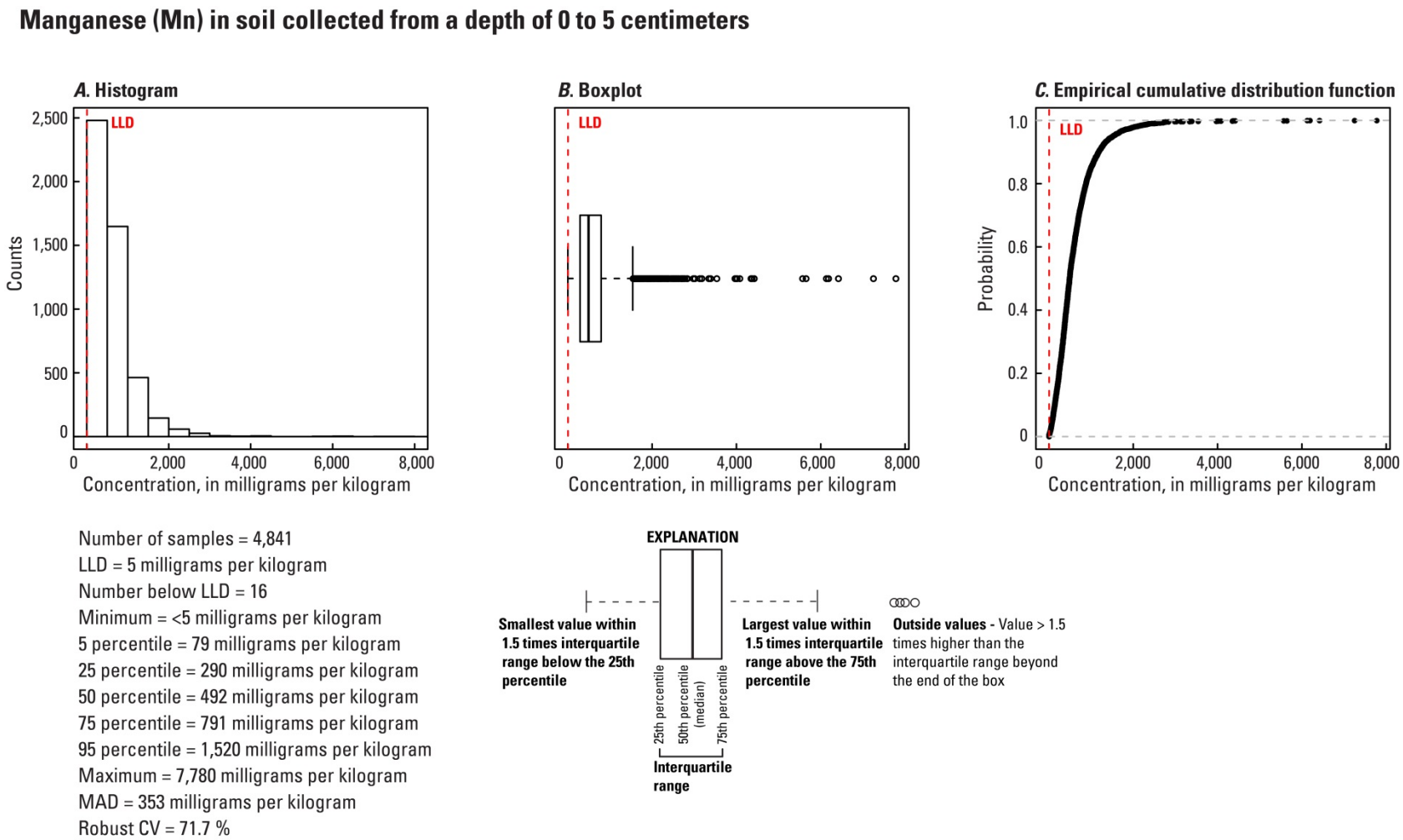


Figure 68. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of manganese (Mn) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

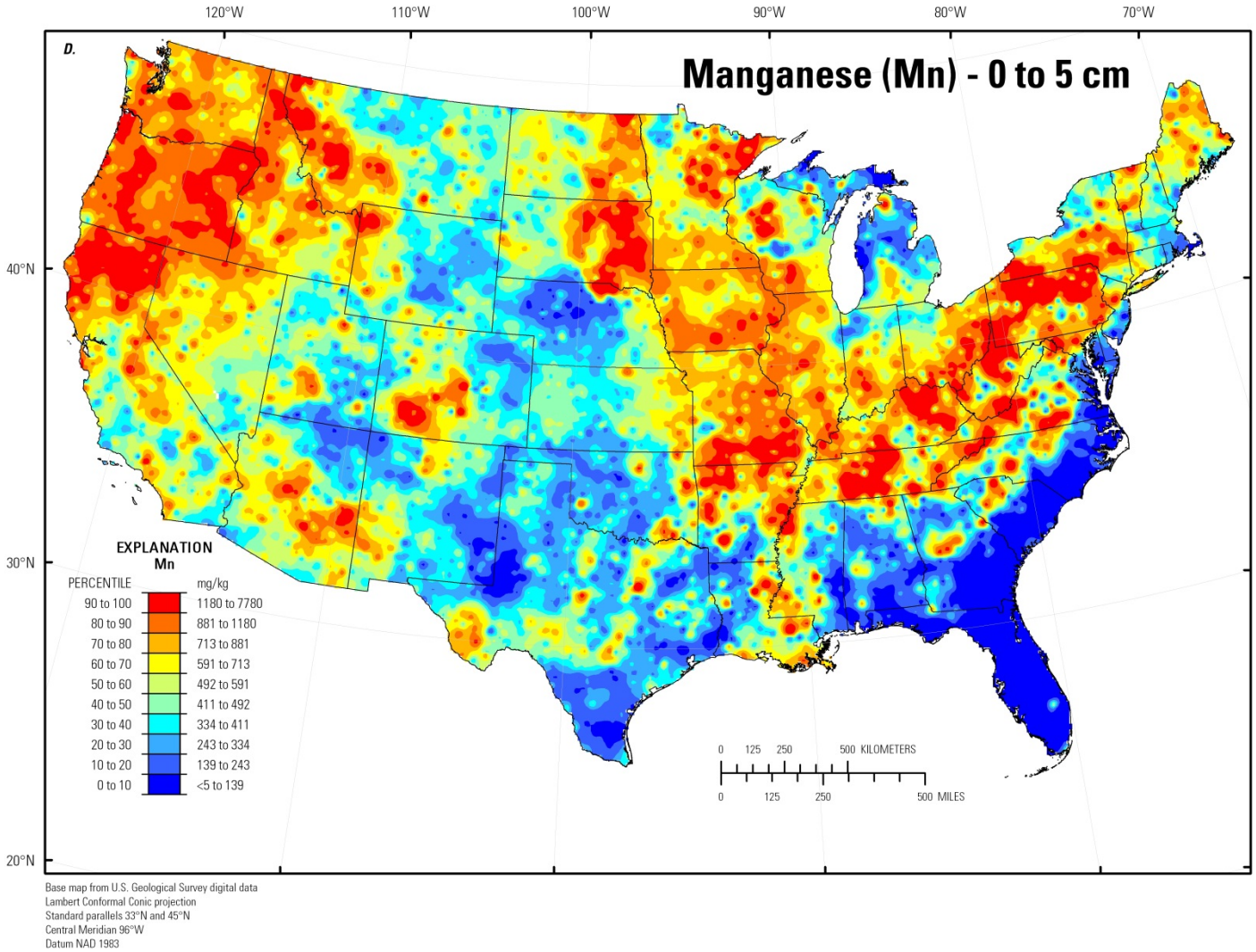


Figure 68. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of manganese (Mn) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

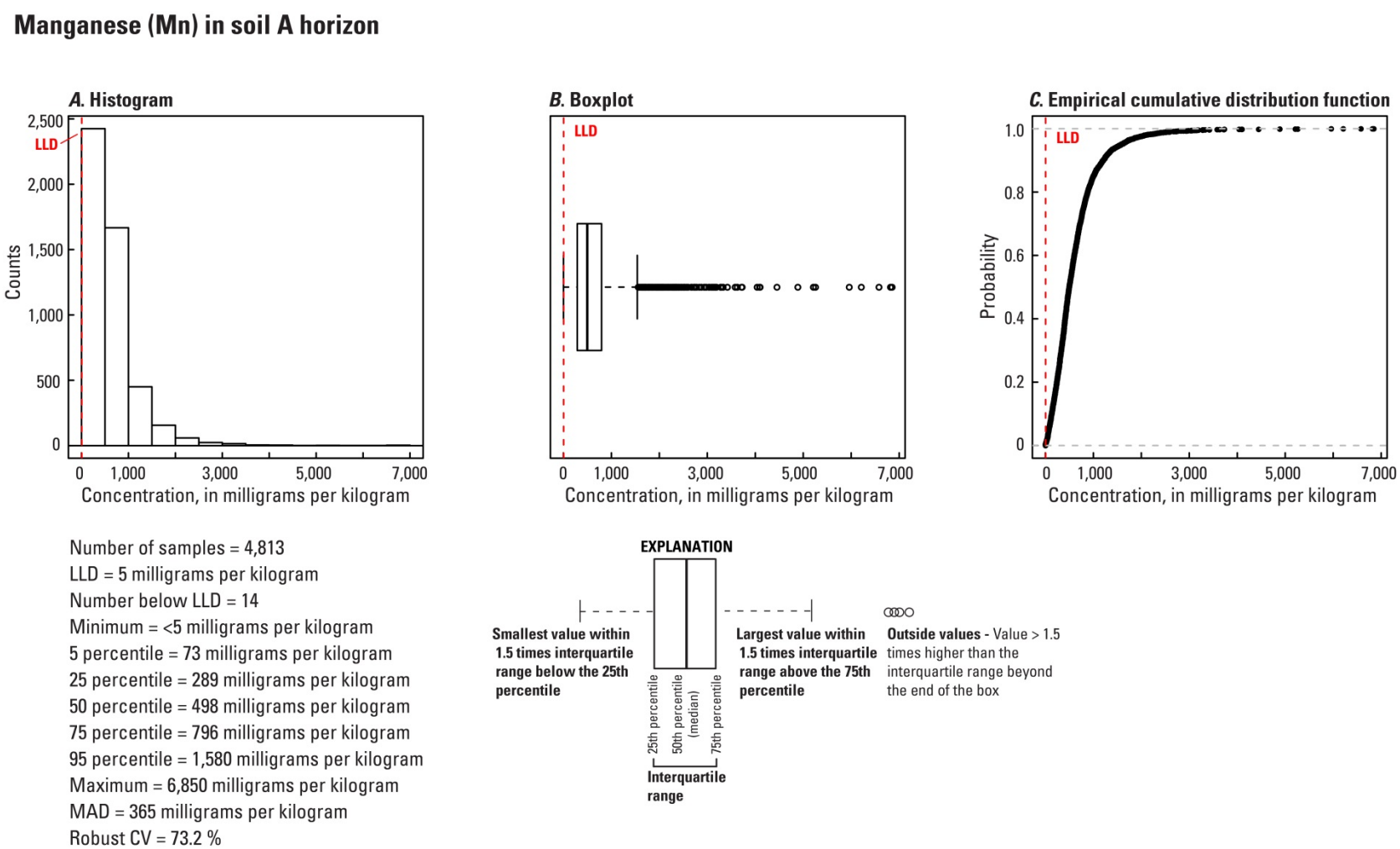


Figure 69. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of manganese (Mn) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

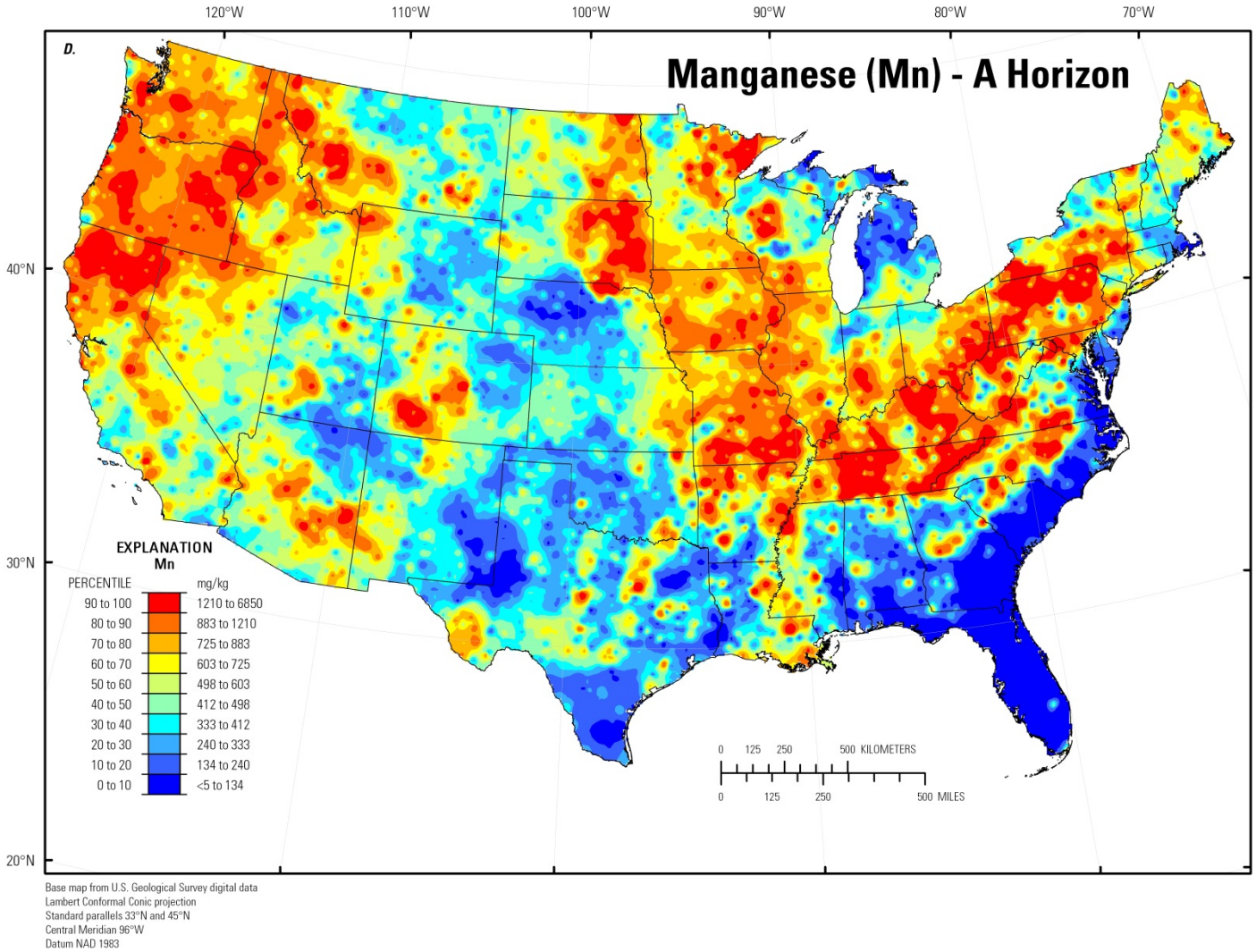


Figure 69. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of manganese (Mn) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

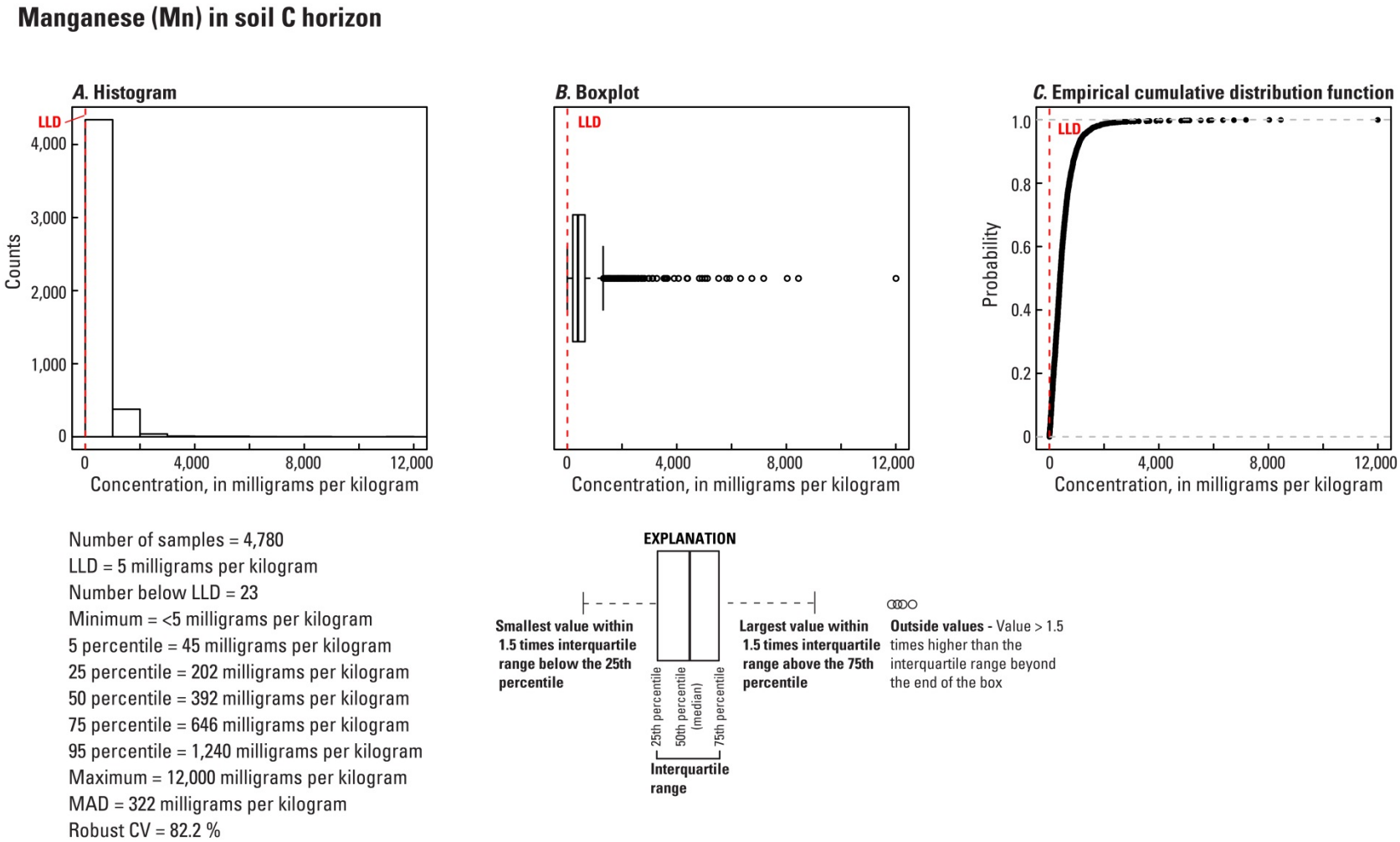


Figure 70. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of manganese (Mn) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

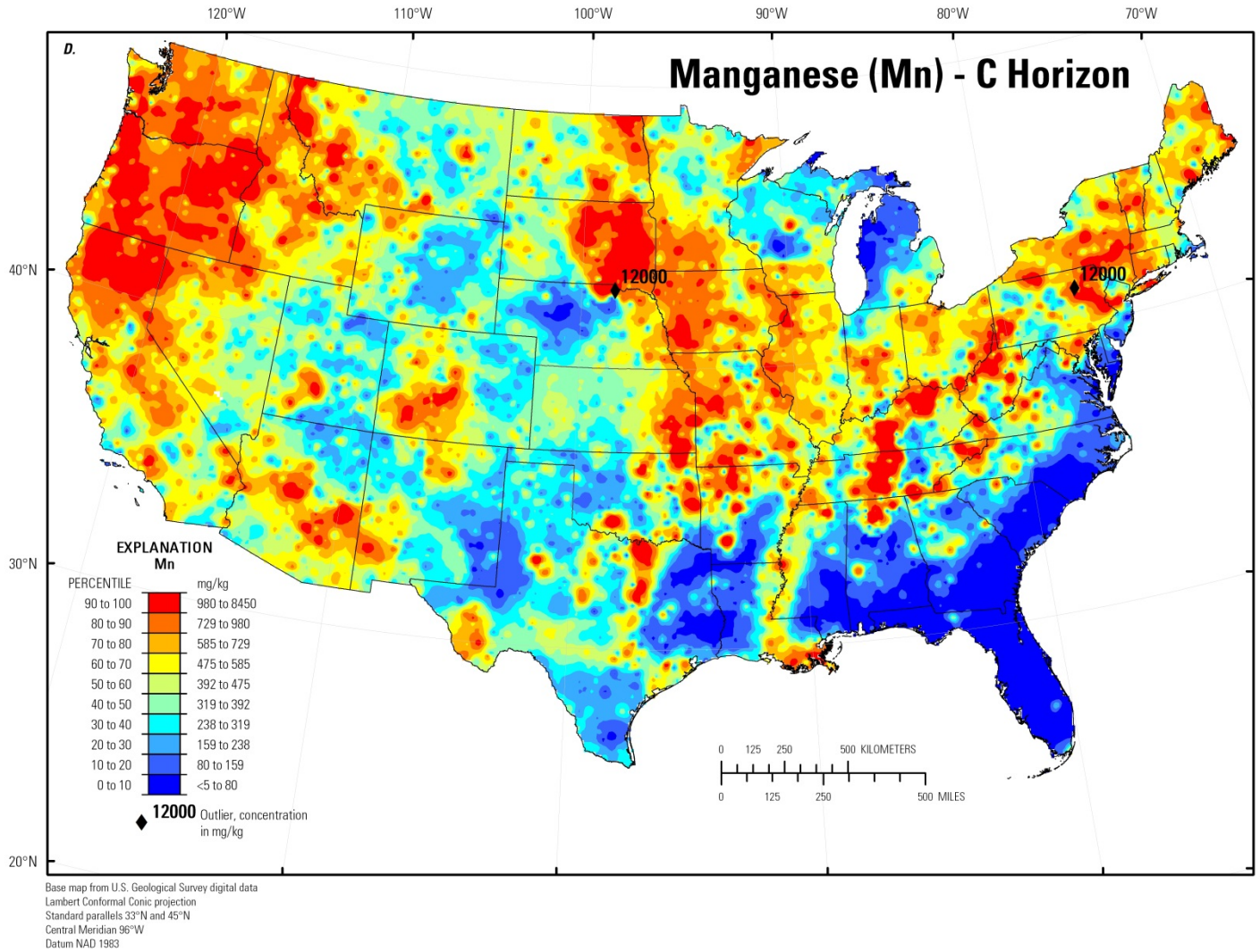
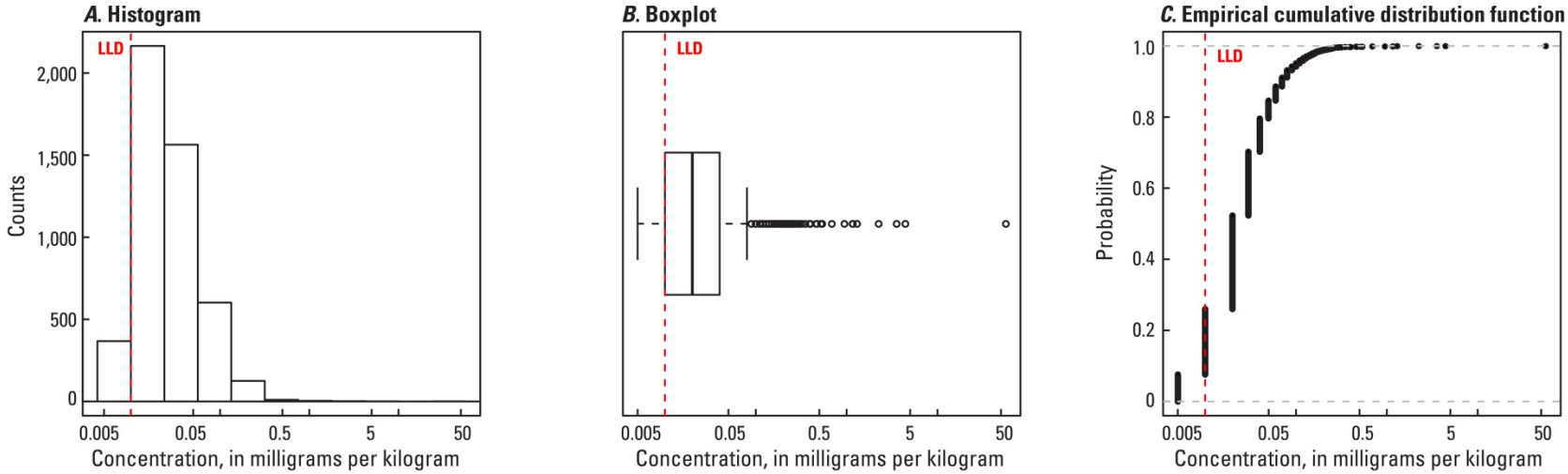


Figure 70. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of manganese (Mn) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Mercury (Hg) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.01 milligrams per kilogram
Number below LLD = 367
Minimum = <0.01 milligrams per kilogram
5 percentile = <0.01 milligrams per kilogram
25 percentile = 0.01 milligrams per kilogram
50 percentile = 0.02 milligrams per kilogram
75 percentile = 0.04 milligrams per kilogram
95 percentile = 0.10 milligrams per kilogram
Maximum = 56.4 milligrams per kilogram
MAD = ND
Robust CV = ND

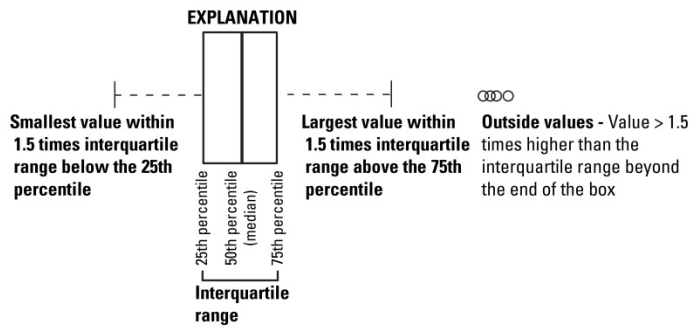


Figure 71. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of mercury (Hg) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

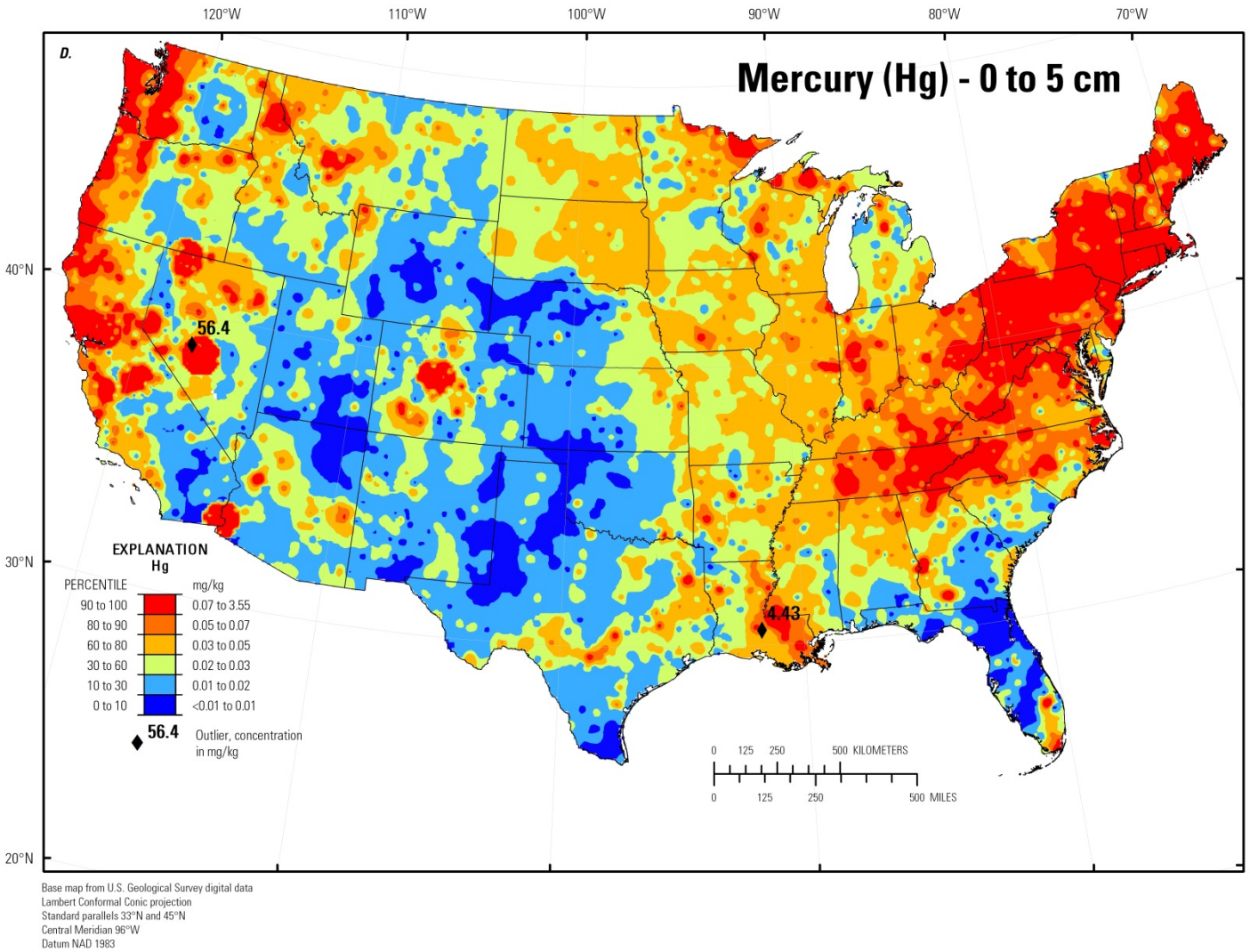
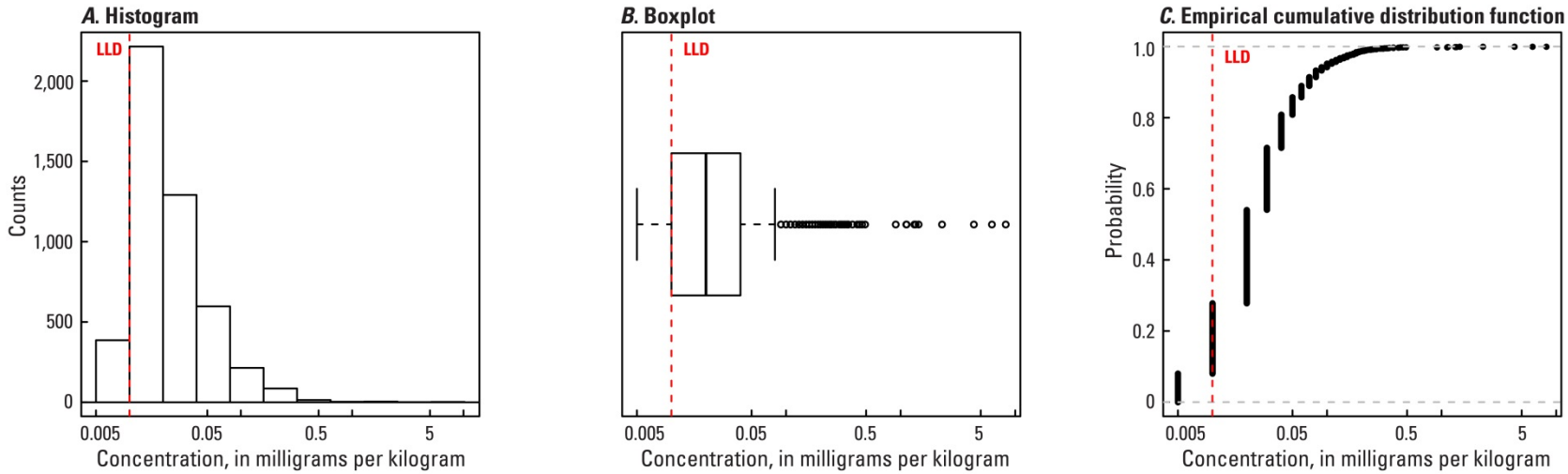


Figure 71. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of mercury (Hg) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Mercury (Hg) in soil A horizon



Number of samples = 4,813
LLD = 0.01 milligrams per kilogram
Number below LLD = 386
Minimum = <0.01 milligrams per kilogram
5 percentile = <0.01 milligrams per kilogram
25 percentile = 0.01 milligrams per kilogram
50 percentile = 0.02 milligrams per kilogram
75 percentile = 0.04 milligrams per kilogram
95 percentile = 0.10 milligrams per kilogram
Maximum = 8.24 milligrams per kilogram
MAD = ND
Robust CV = ND

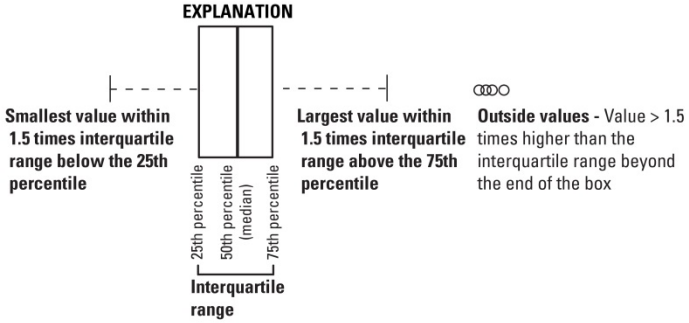


Figure 72. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of mercury (Hg) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

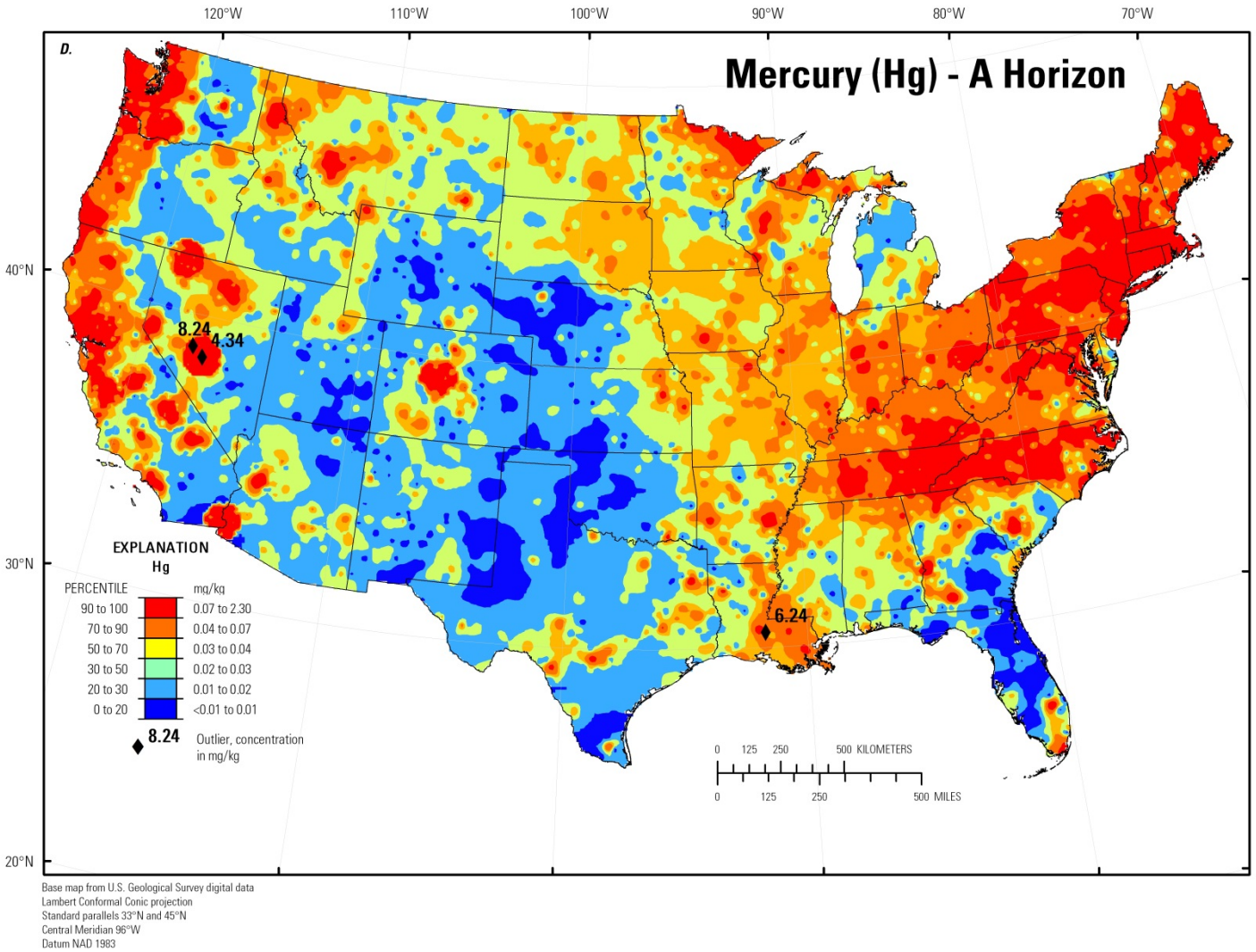


Figure 72. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of mercury (Hg) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

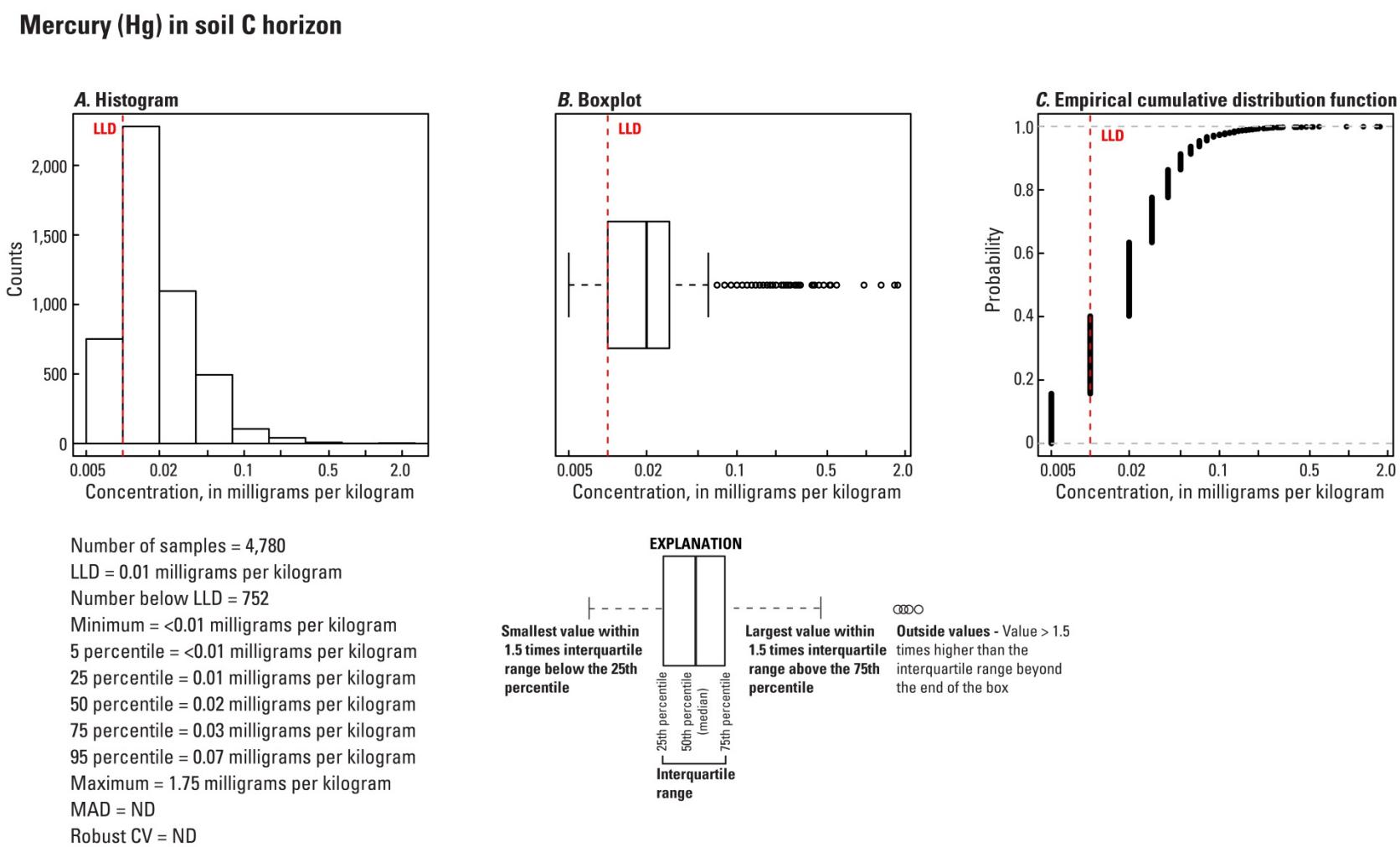


Figure 73. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of mercury (Hg) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

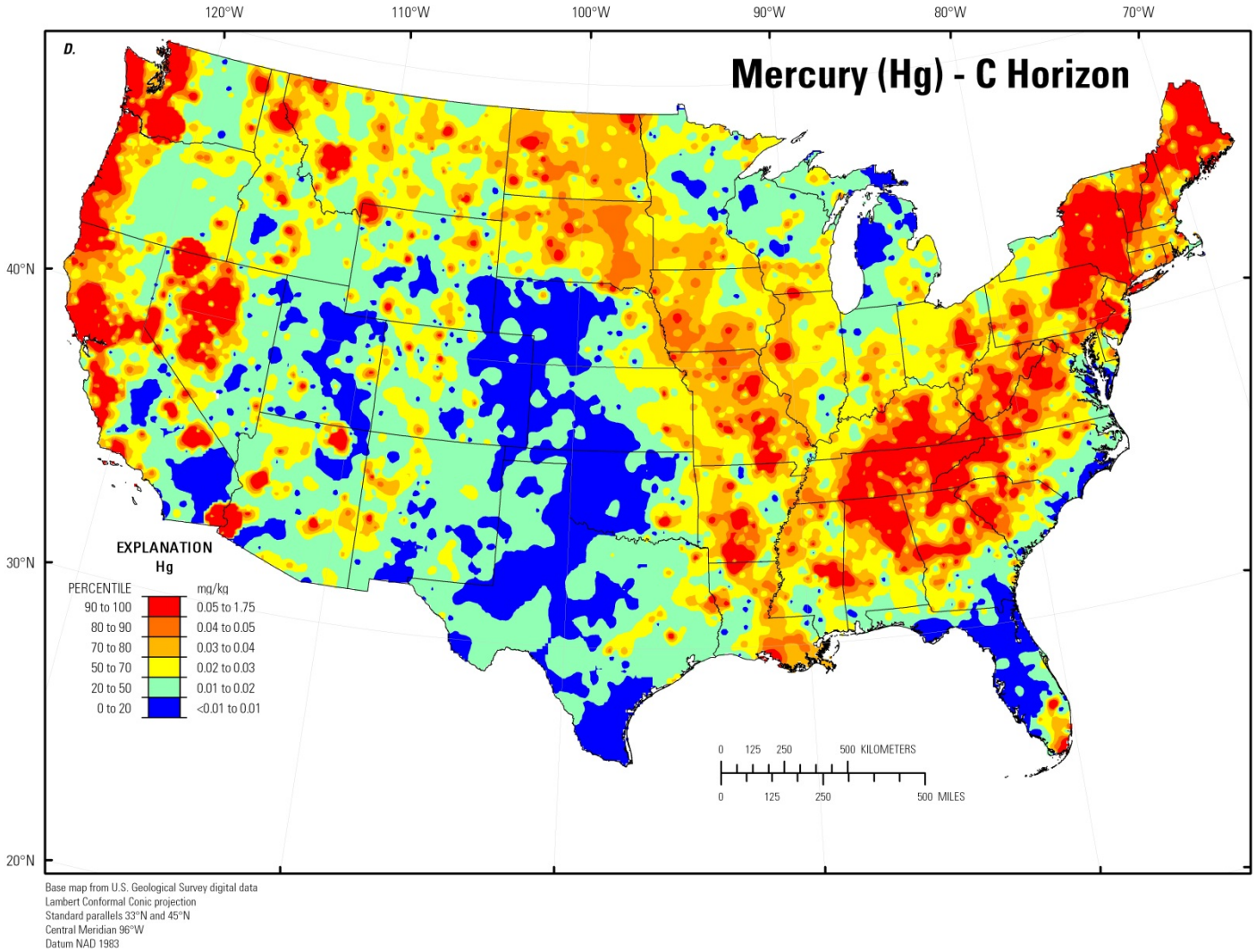


Figure 73. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of mercury (Hg) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

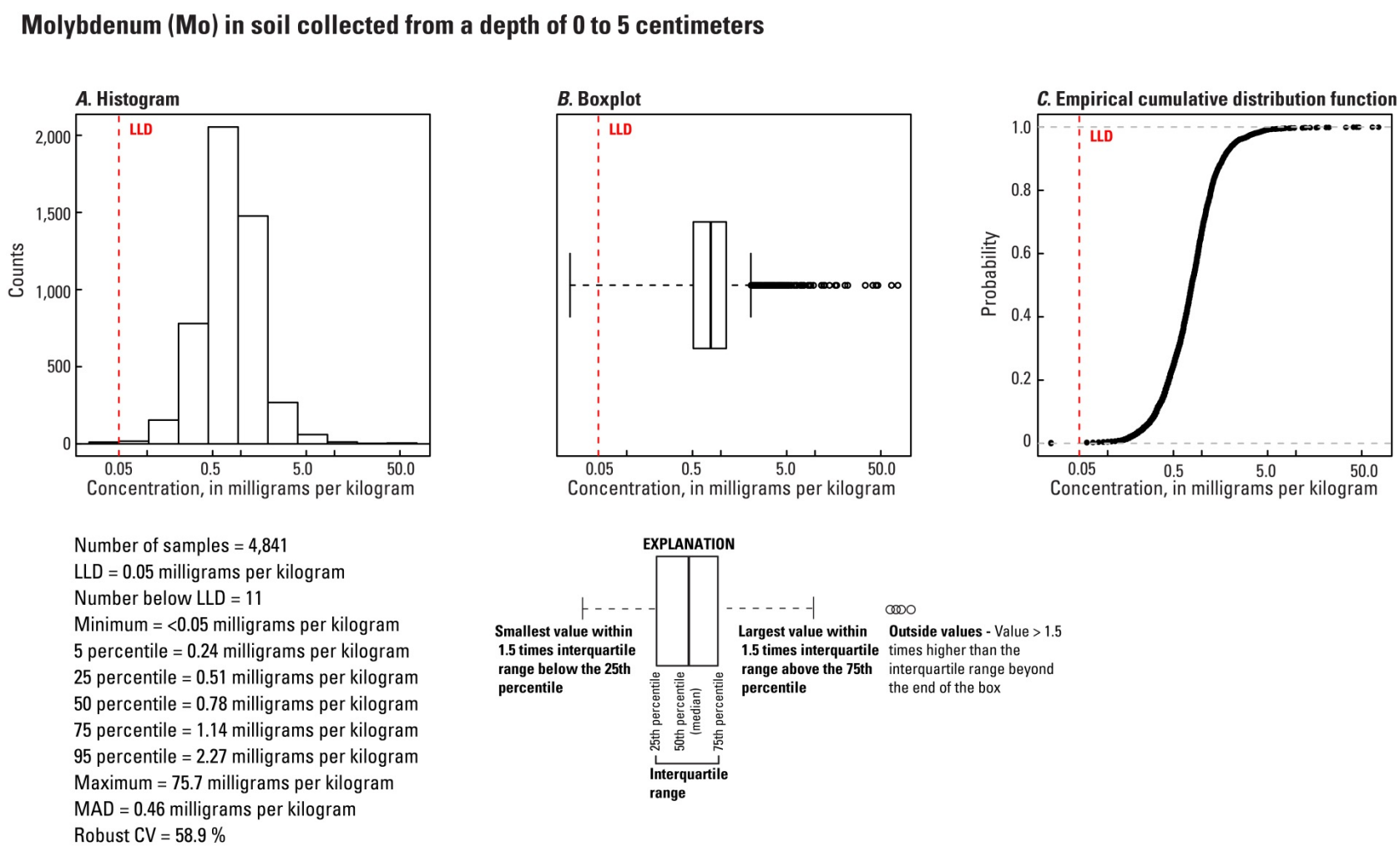


Figure 74. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of molybdenum (Mo) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

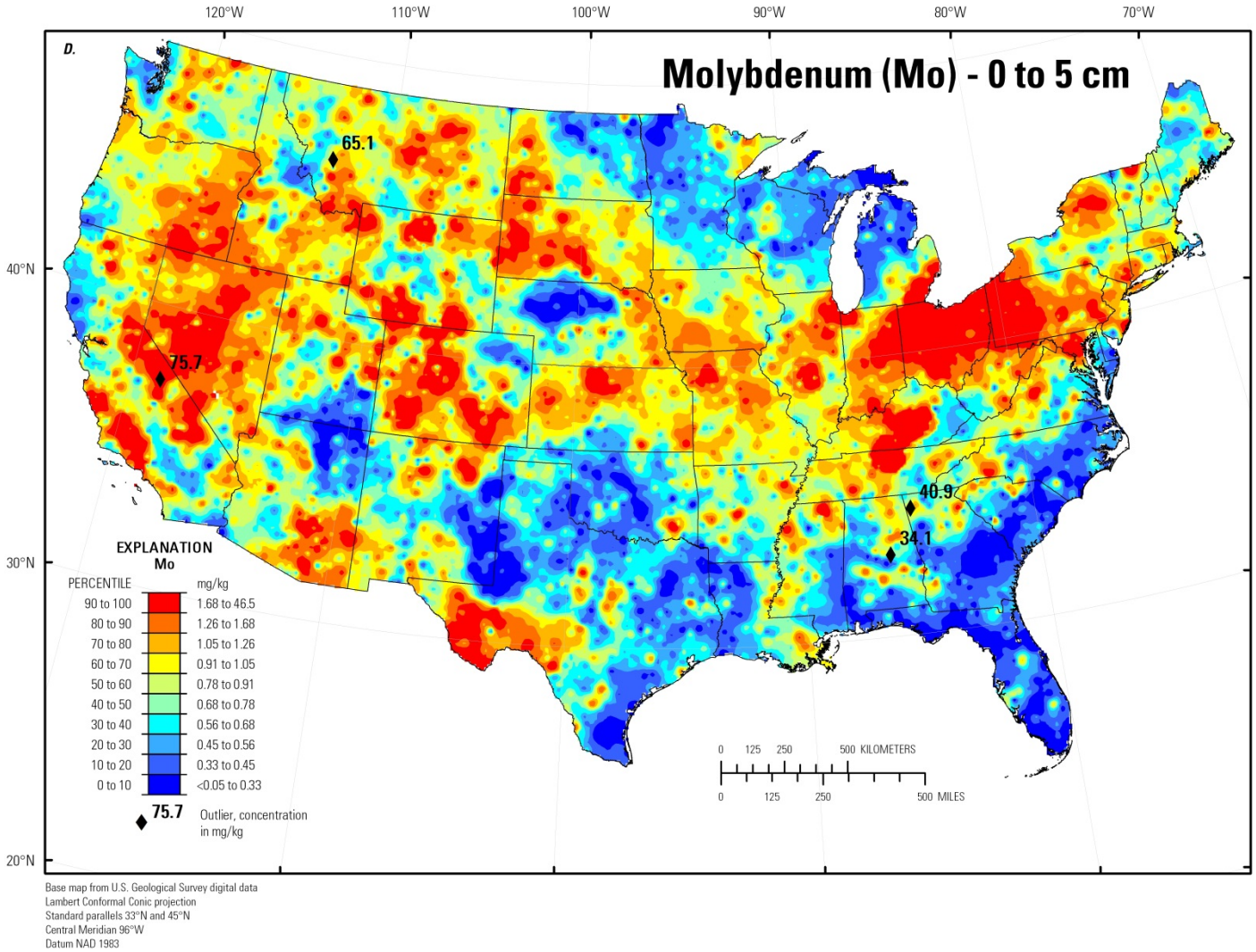


Figure 74. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of molybdenum (Mo) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

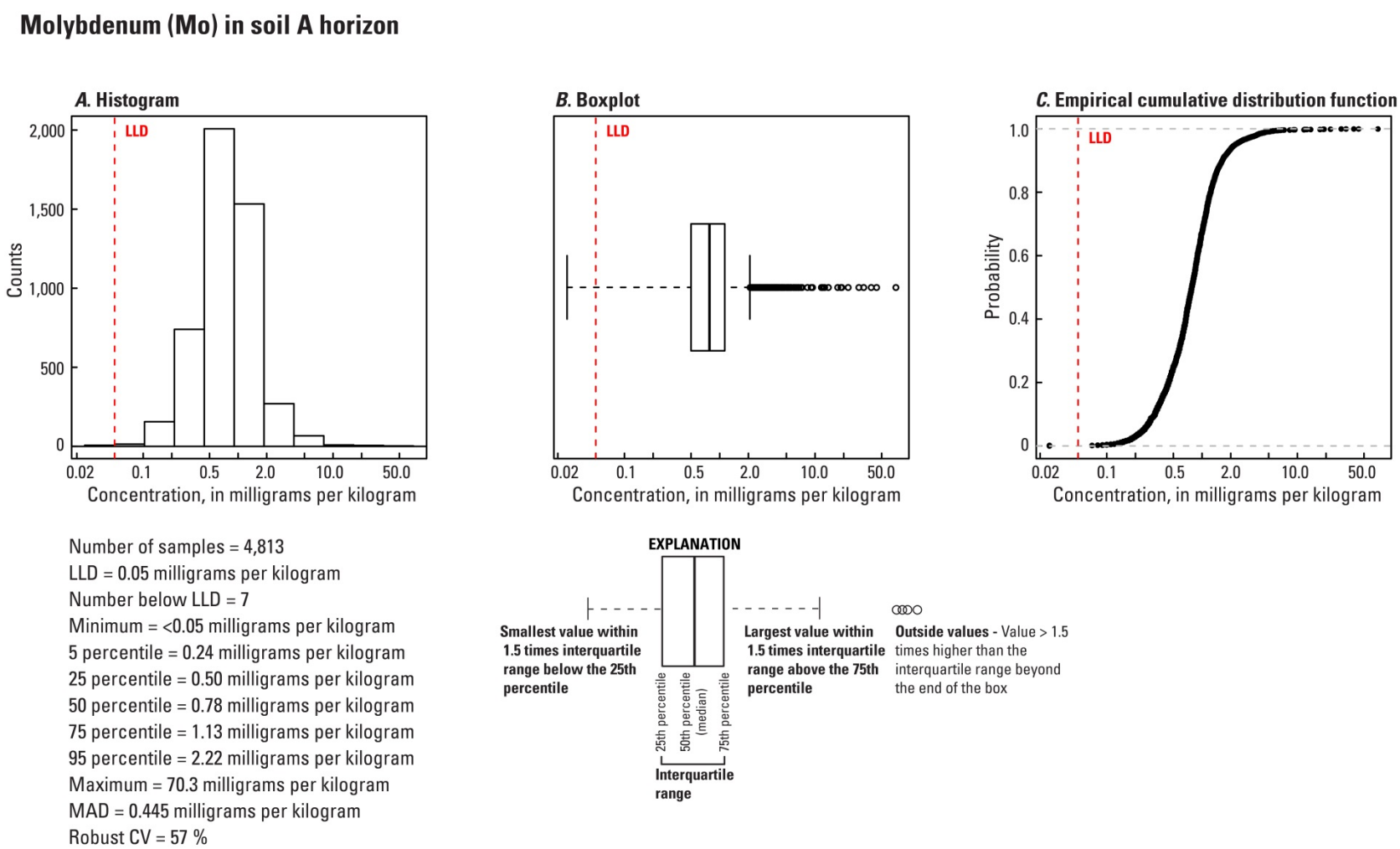


Figure 75. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of molybdenum (Mo) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

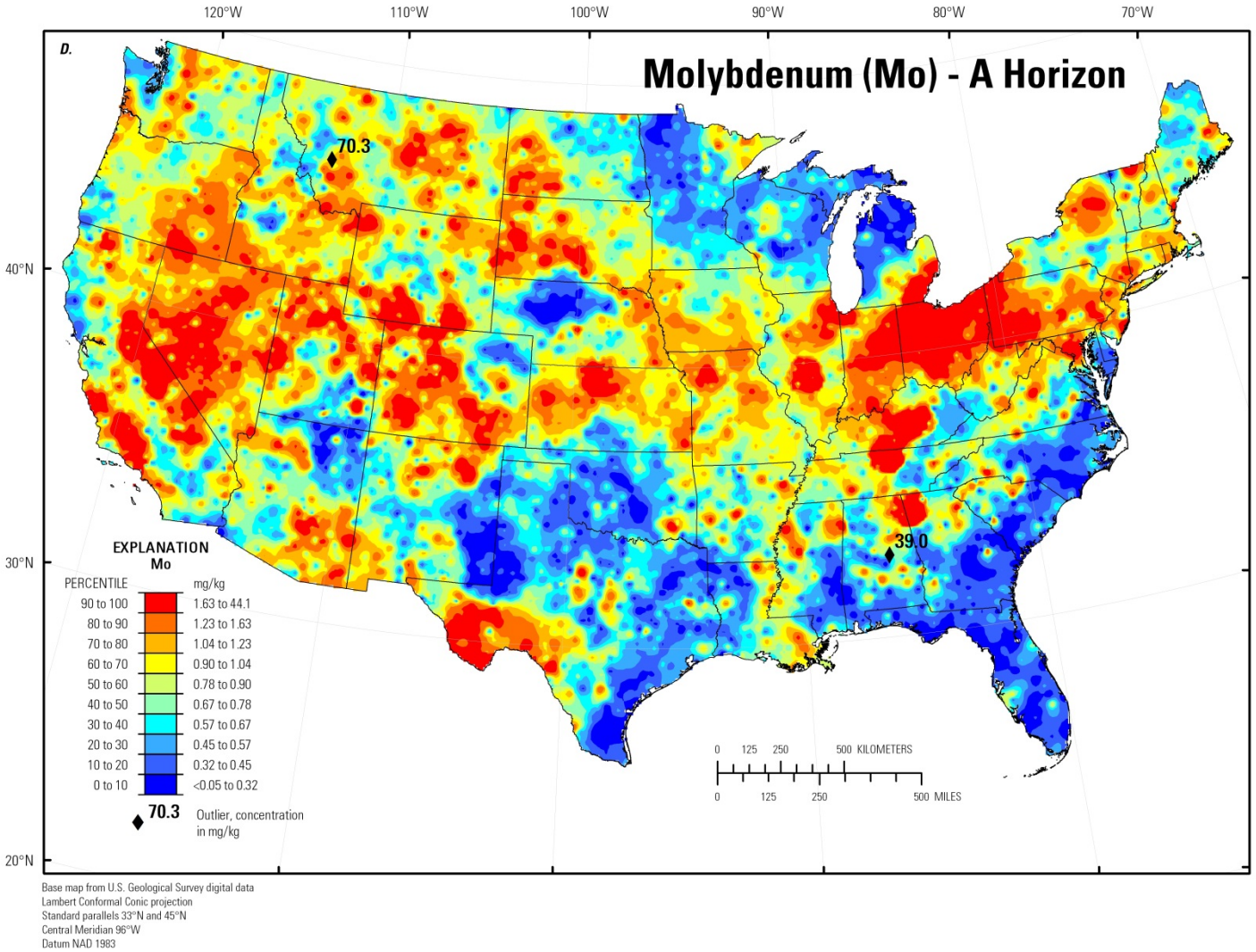


Figure 75. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of molybdenum (Mo) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

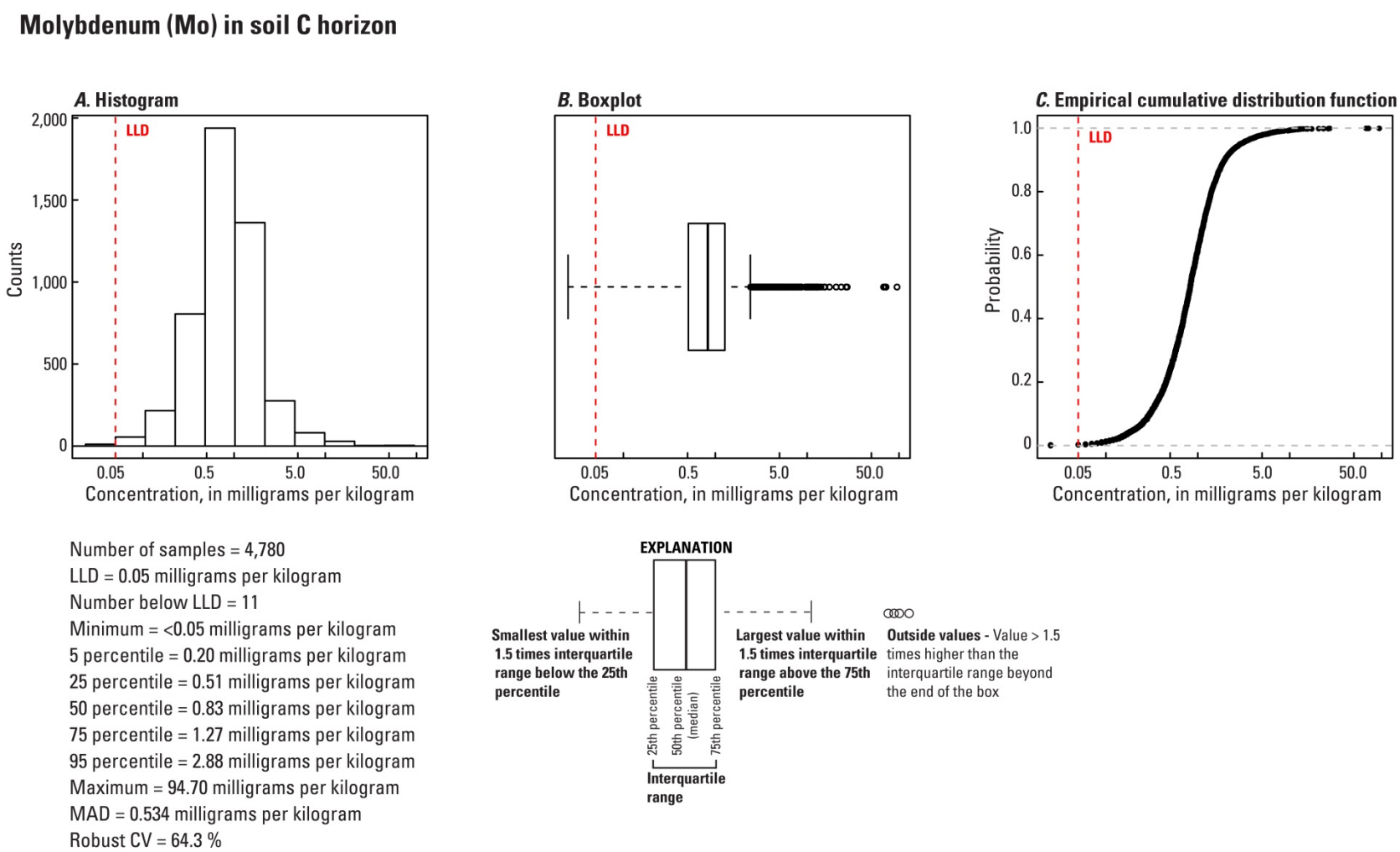


Figure 76. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of molybdenum (Mo) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

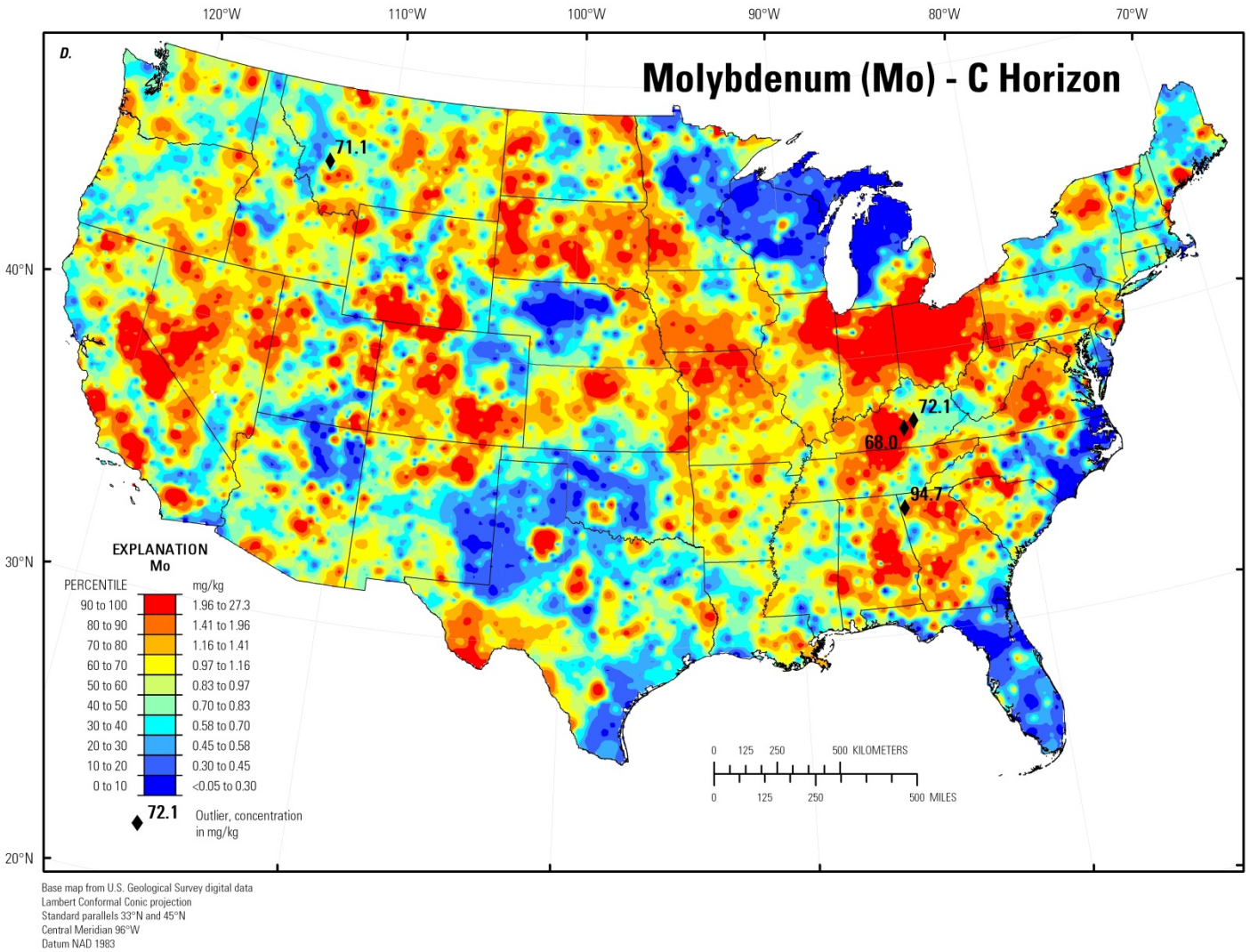
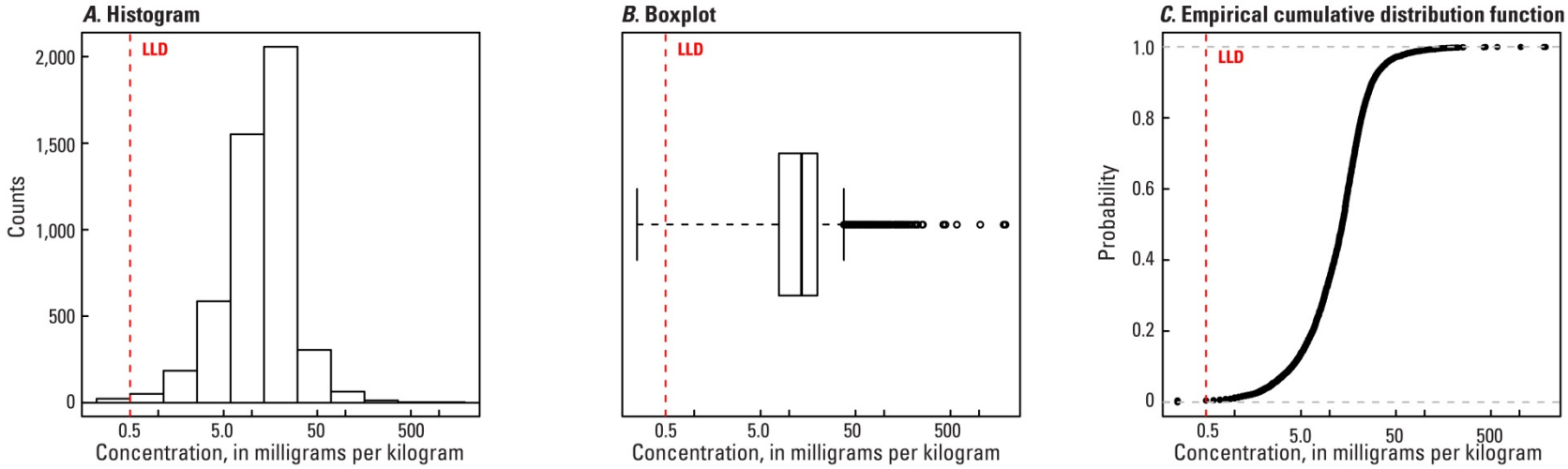


Figure 76. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of molybdenum (Mo) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Nickel (Ni) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.5 milligrams per kilogram
Number below LLD = 23
Minimum = <0.5 milligrams per kilogram
5 percentile = 2.5 milligrams per kilogram
25 percentile = 7.8 milligrams per kilogram
50 percentile = 13.5 milligrams per kilogram
75 percentile = 19.8 milligrams per kilogram
95 percentile = 38.5 milligrams per kilogram
Maximum = 1,890 milligrams per kilogram
MAD = 8.9 milligrams per kilogram
Robust CV = 65.9 %

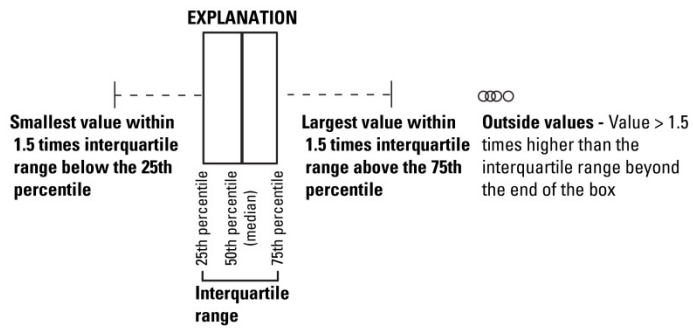


Figure 77. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of nickel (Ni) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

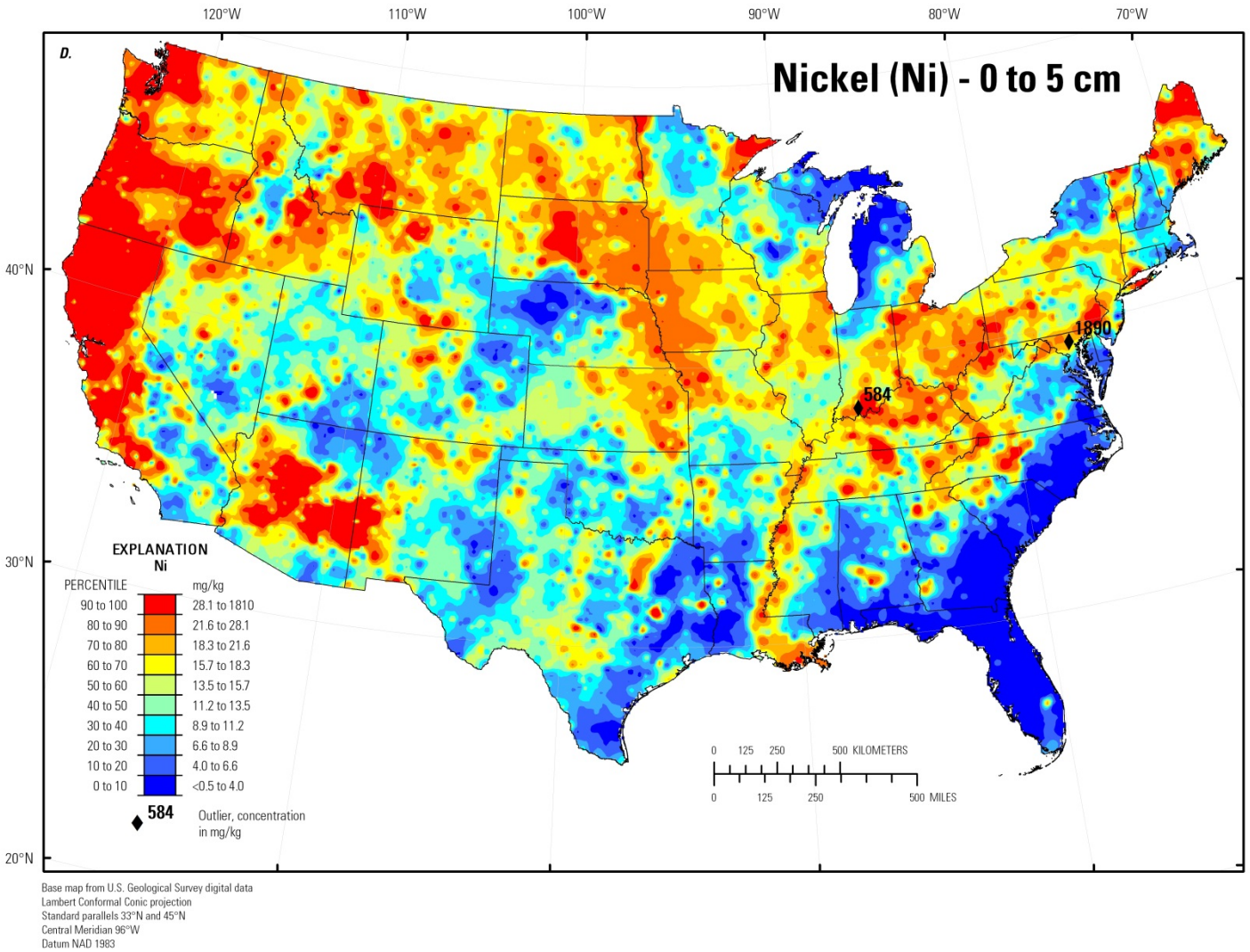
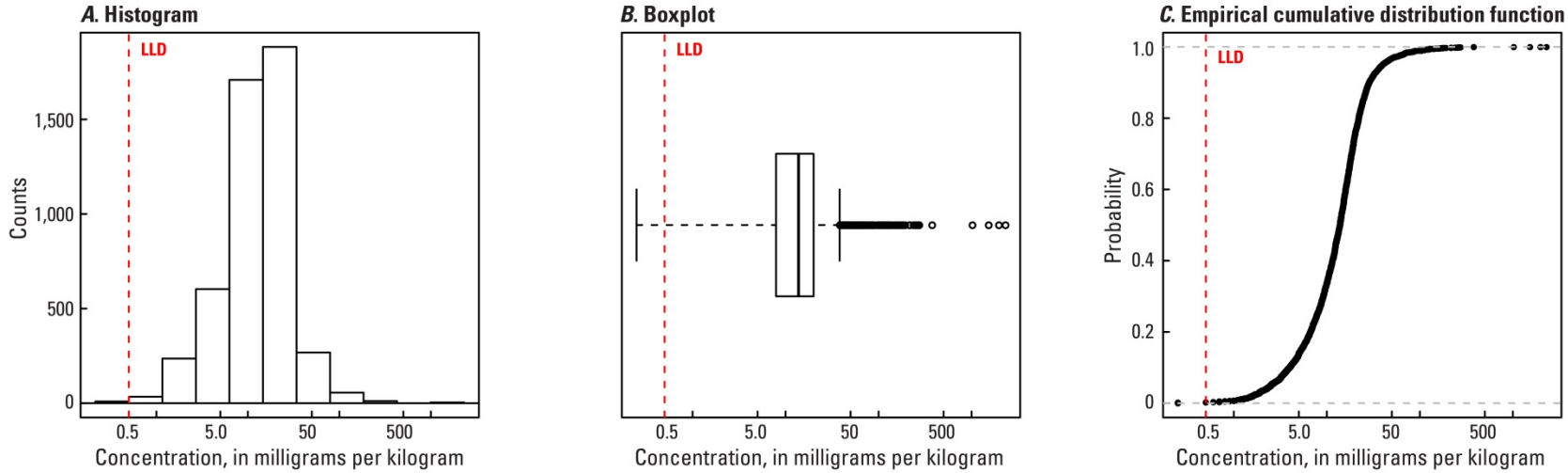


Figure 77. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of nickel (Ni) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Nickel (Ni) in soil A horizon



Number of samples = 4,813
LLD = 0.5 milligrams per kilogram
Number below LLD = 9
Minimum = <0.5 milligrams per kilogram
5 percentile = 2.5 milligrams per kilogram
25 percentile = 7.9 milligrams per kilogram
50 percentile = 13.8 milligrams per kilogram
75 percentile = 20.0 milligrams per kilogram
95 percentile = 39.9 milligrams per kilogram
Maximum = 2,310 milligrams per kilogram
MAD = 8.9 milligrams per kilogram
Robust CV = 64.5 %

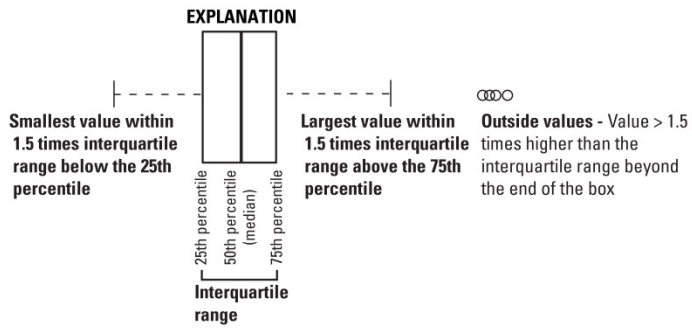


Figure 78. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of nickel (Ni) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

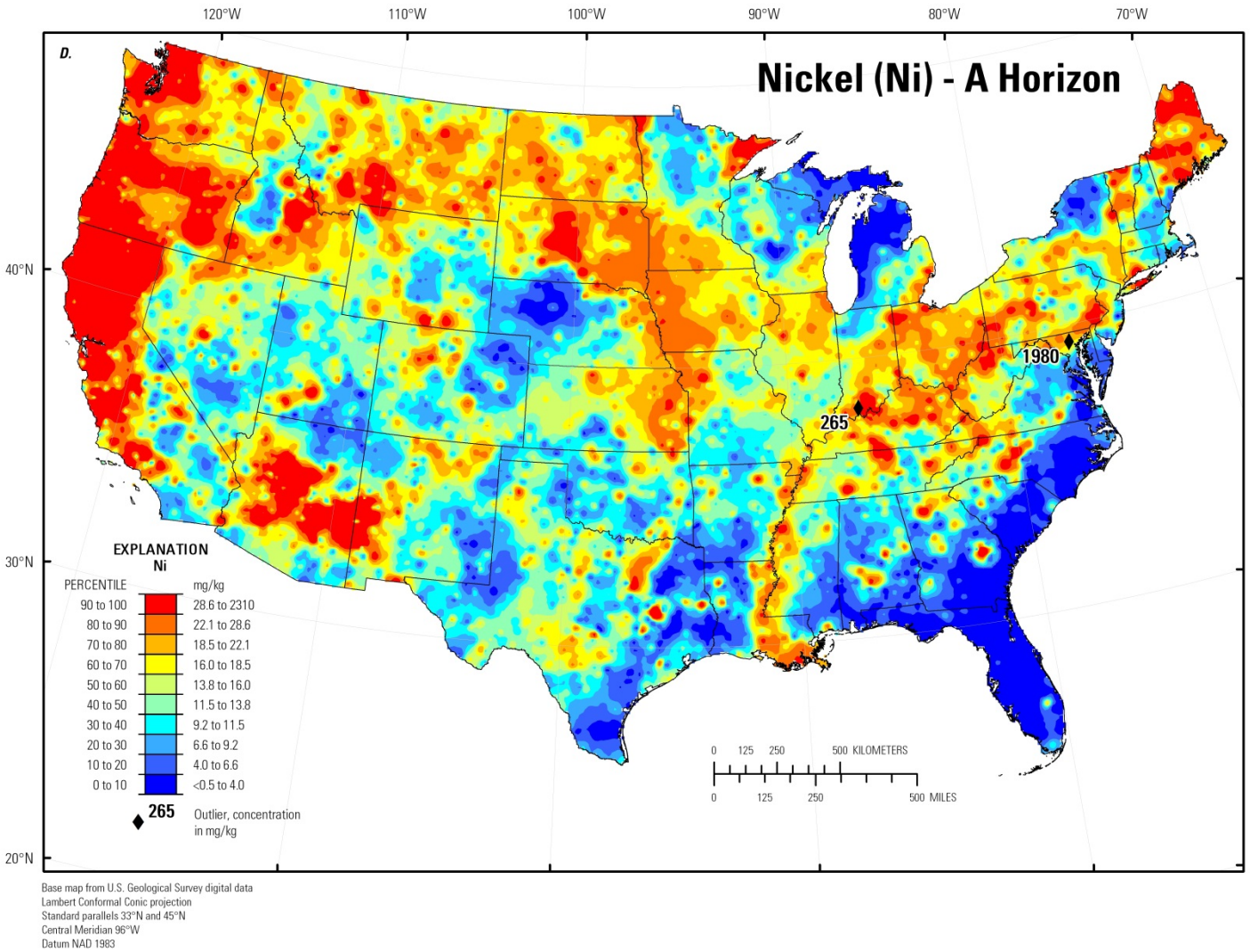
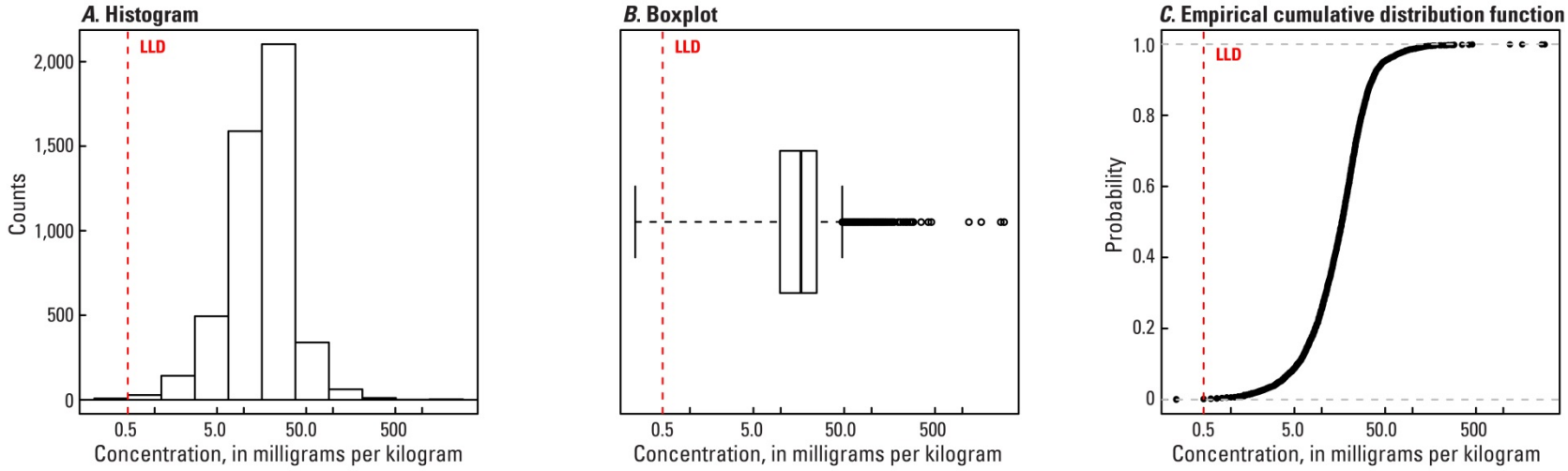


Figure 78. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of nickel (Ni) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Nickel (Ni) in soil C horizon



Number of samples = 4,780
LLD = 0.5 milligrams per kilogram
Number below LLD = 8
Minimum = <0.5 milligrams per kilogram
5 percentile = 3.4 milligrams per kilogram
25 percentile = 9.8 milligrams per kilogram
50 percentile = 16.7 milligrams per kilogram
75 percentile = 24.9 milligrams per kilogram
95 percentile = 47.5 milligrams per kilogram
Maximum = 2,870 milligrams per kilogram
MAD = 10.9 milligrams per kilogram
Robust CV = 65.3 %

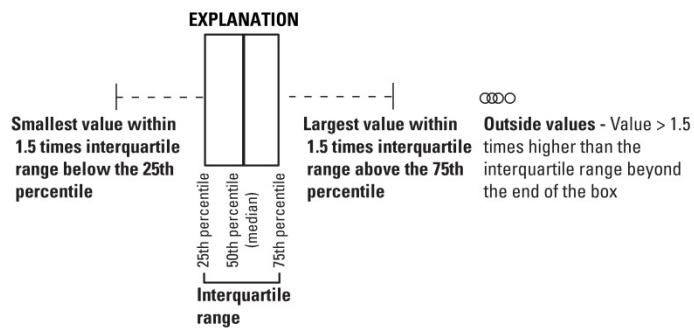


Figure 79. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of nickel (Ni) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

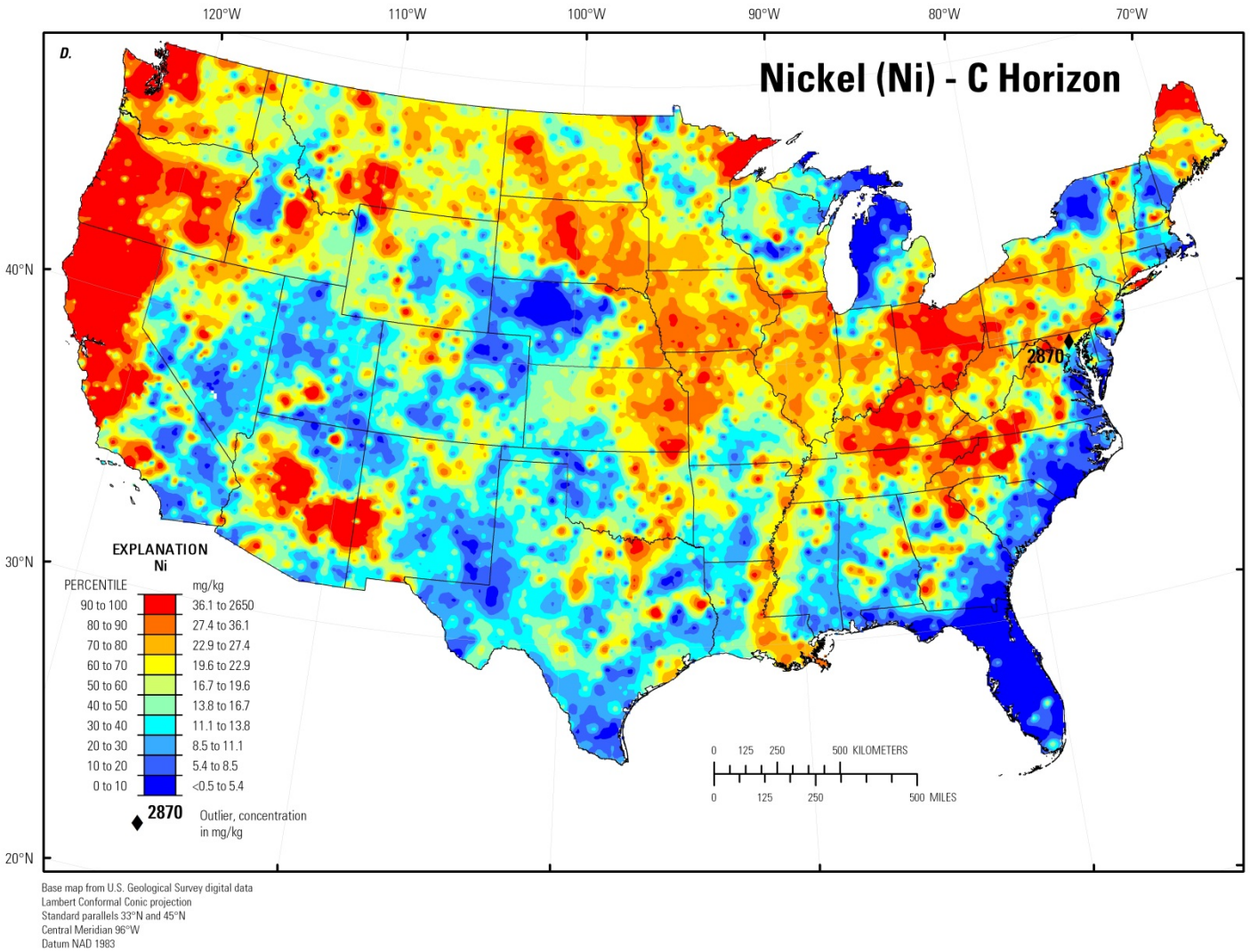
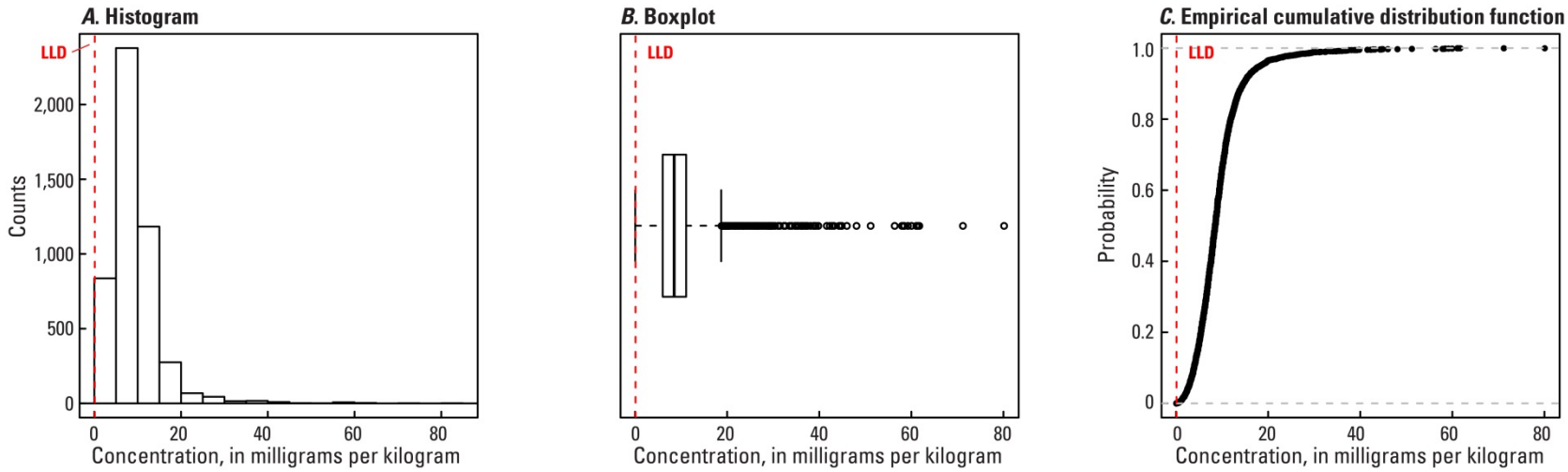


Figure 79. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of nickel (Ni) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Niobium (Nb) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.1 milligrams per kilogram
Number below LLD = 2
Minimum = <0.1 milligrams per kilogram
5 percentile = 2.8 milligrams per kilogram
25 percentile = 6.0 milligrams per kilogram
50 percentile = 8.5 milligrams per kilogram
75 percentile = 11.1 milligrams per kilogram
95 percentile = 18.3 milligrams per kilogram
Maximum = 80.1 milligrams per kilogram
MAD = 3.71 milligrams per kilogram
Robust CV = 43.6 %

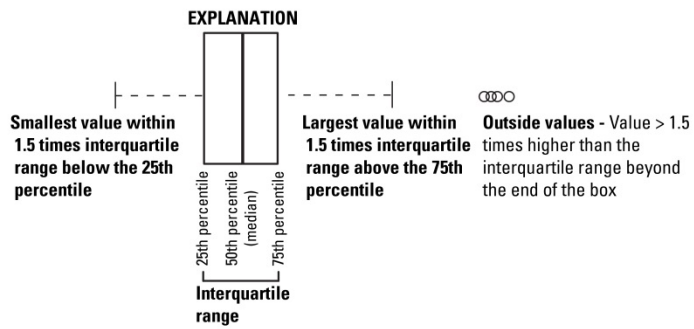


Figure 80. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of niobium (Nb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

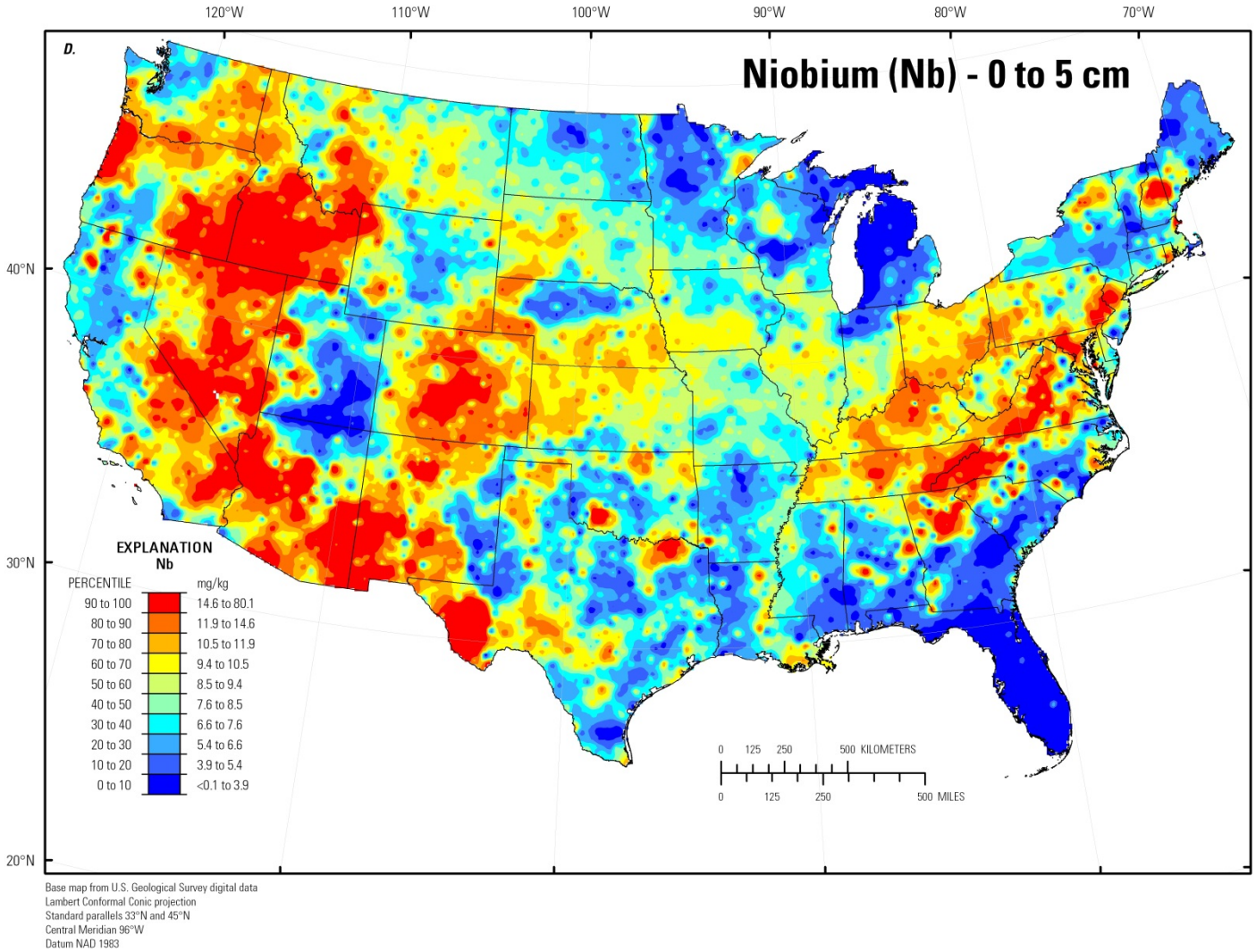
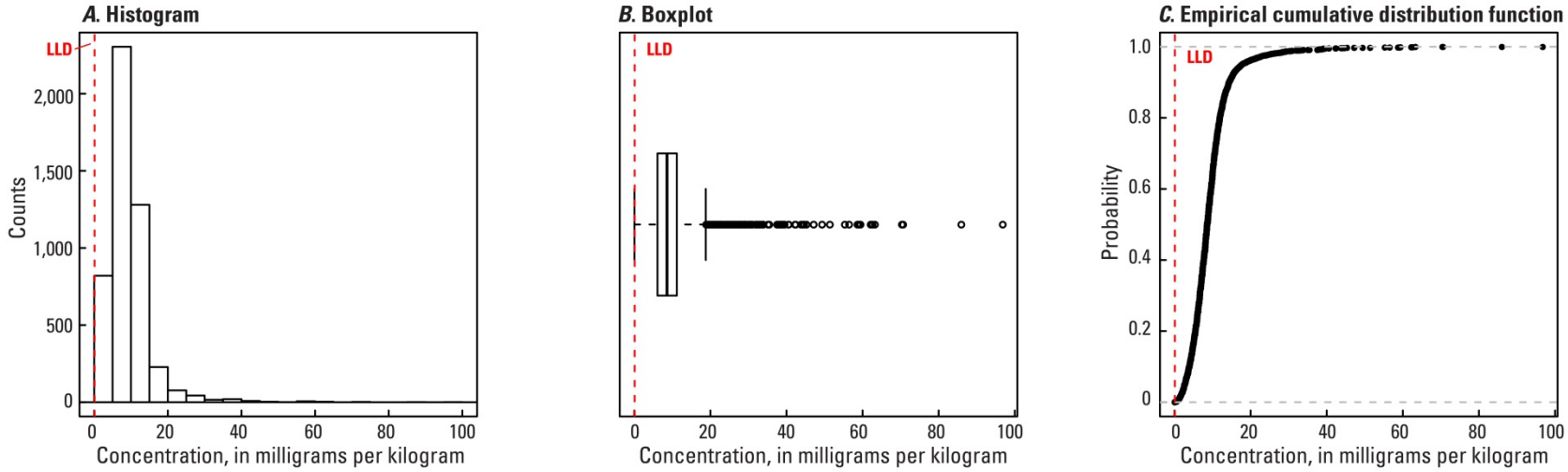


Figure 80. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of niobium (Nb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Niobium (Nb) in soil A horizon



Number of samples = 4,813
LLD = 0.1 milligrams per kilogram
Number below LLD = 1
Minimum = <0.1 milligrams per kilogram
5 percentile = 2.7 milligrams per kilogram
25 percentile = 6.1 milligrams per kilogram
50 percentile = 8.6 milligrams per kilogram
75 percentile = 11.2 milligrams per kilogram
95 percentile = 17.7 milligrams per kilogram
Maximum = 96.8 milligrams per kilogram
MAD = 3.71 milligrams per kilogram
Robust CV = 43.1 %

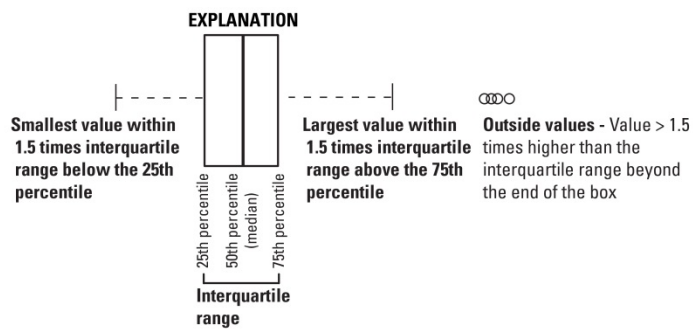


Figure 81. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of niobium (Nb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

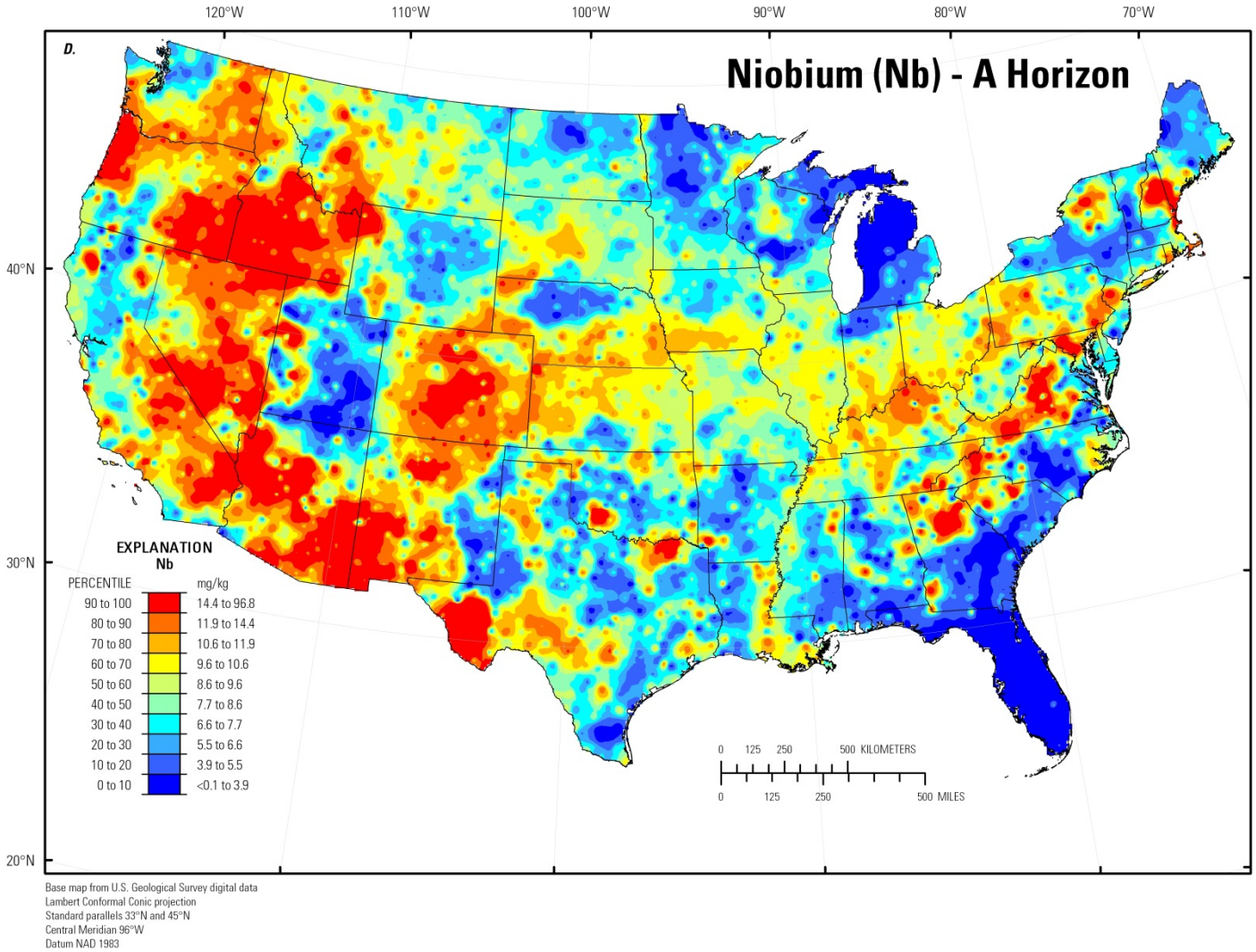
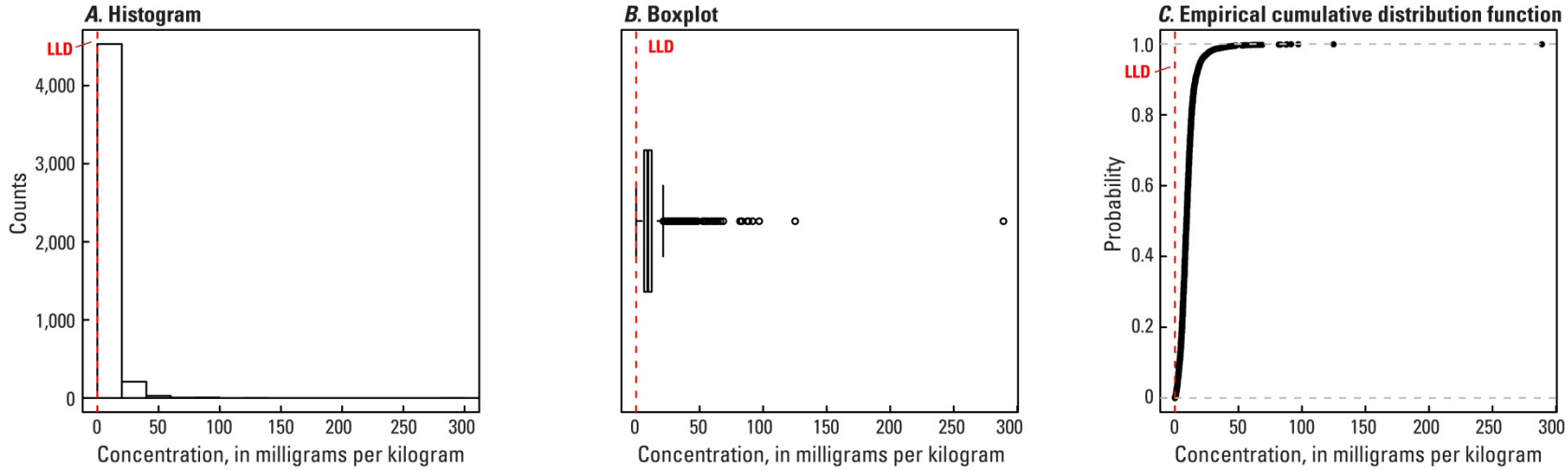


Figure 81. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of niobium (Nb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Niobium (Nb) in soil C horizon



Number of samples = 4,780
LLD = 0.1 milligrams per kilogram
Number below LLD = 2
Minimum = <0.1 milligrams per kilogram
5 percentile = 2.3 milligrams per kilogram
25 percentile = 6.3 milligrams per kilogram
50 percentile = 9.2 milligrams per kilogram
75 percentile = 12.3 milligrams per kilogram
95 percentile = 20.3 milligrams per kilogram
Maximum = 289 milligrams per kilogram
MAD = 4.45 milligrams per kilogram
Robust CV = 48.3 %

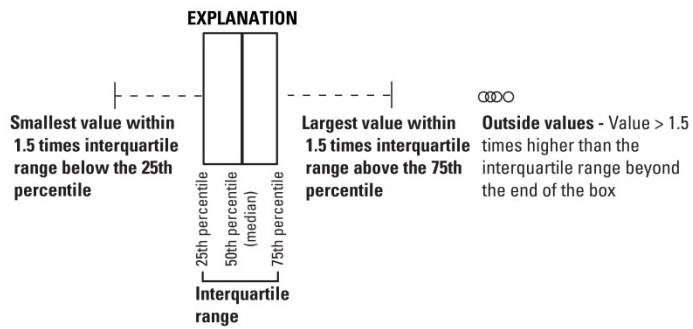


Figure 82. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of niobium (Nb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

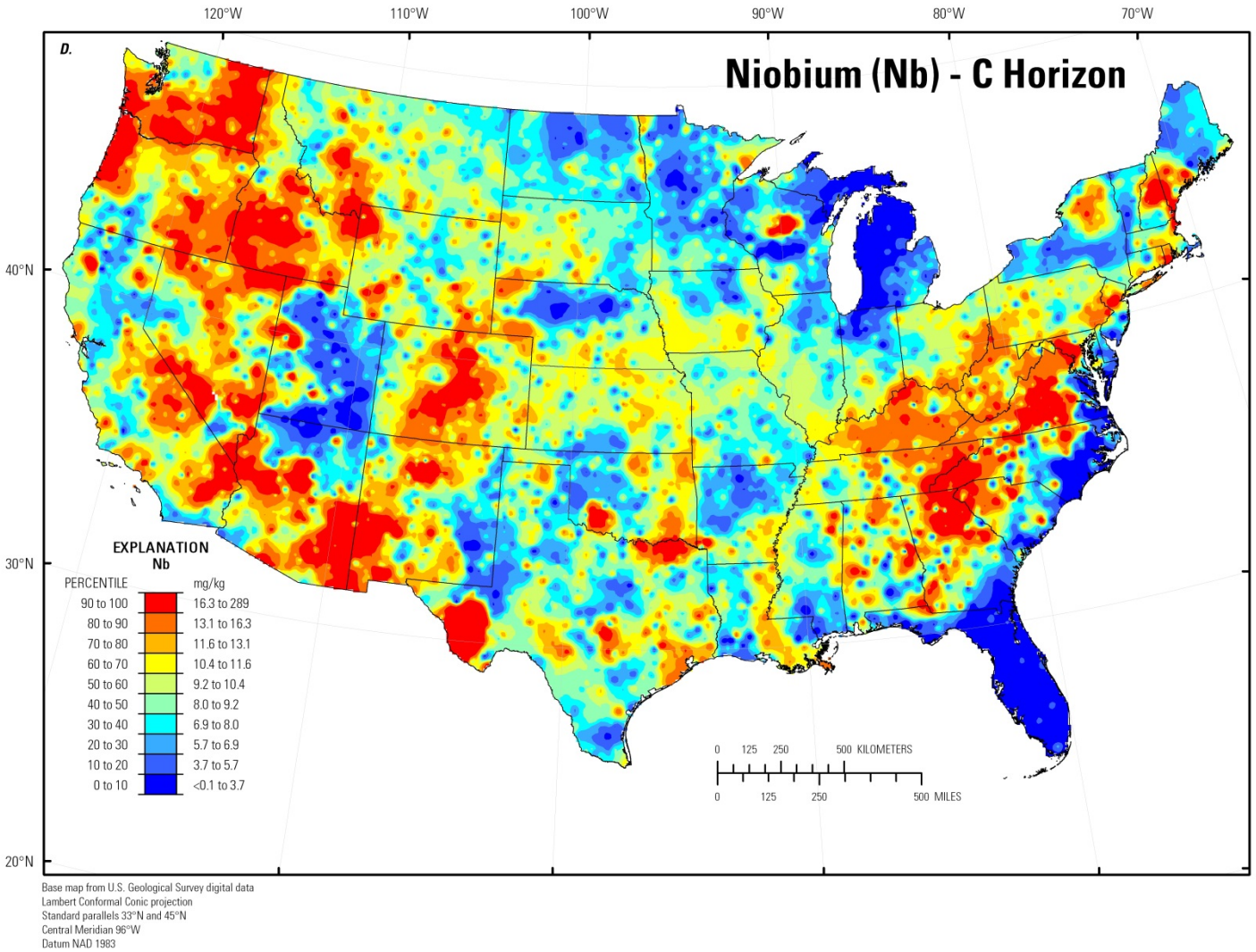


Figure 82. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of niobium (Nb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

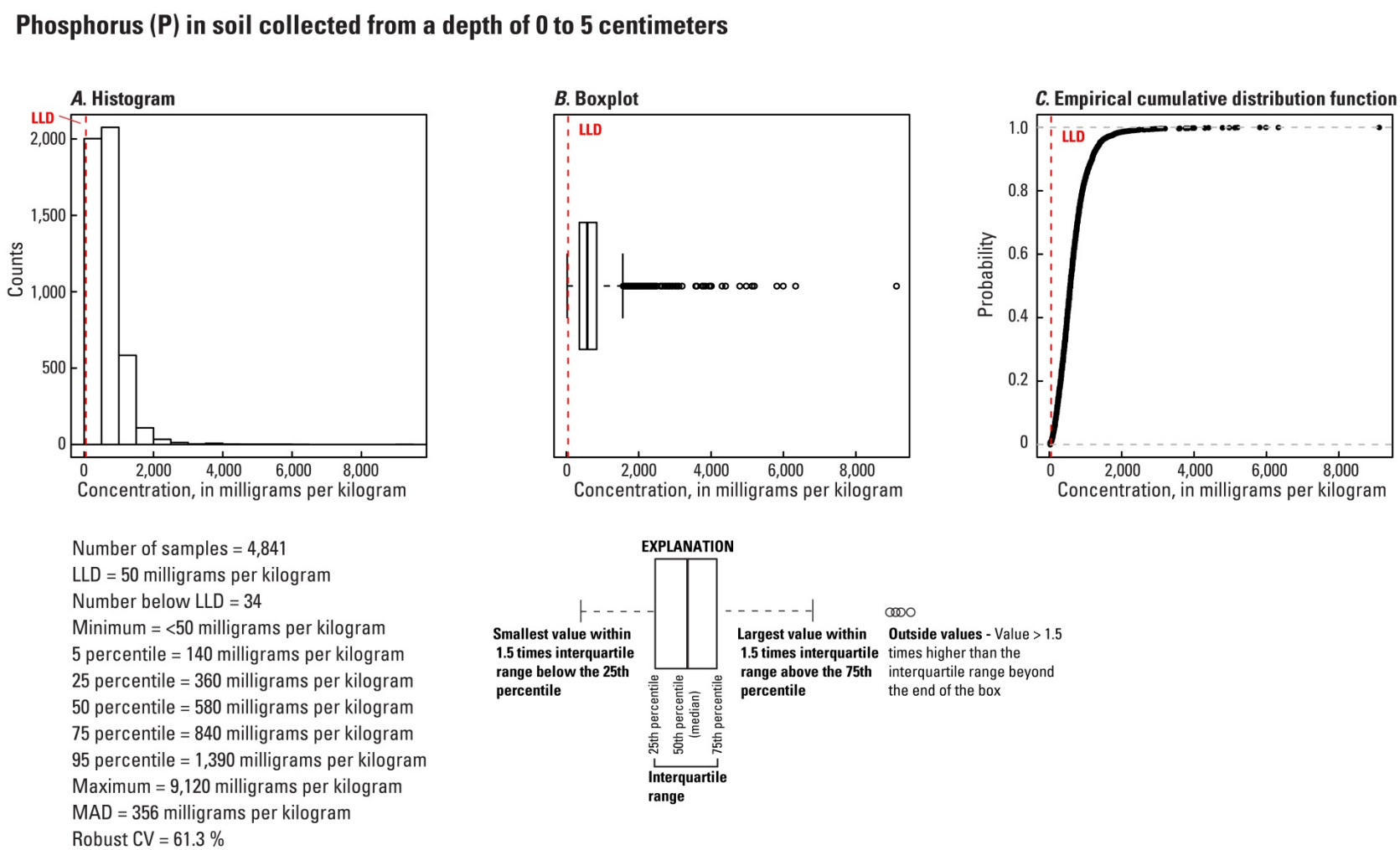


Figure 83. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of phosphorus (P) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

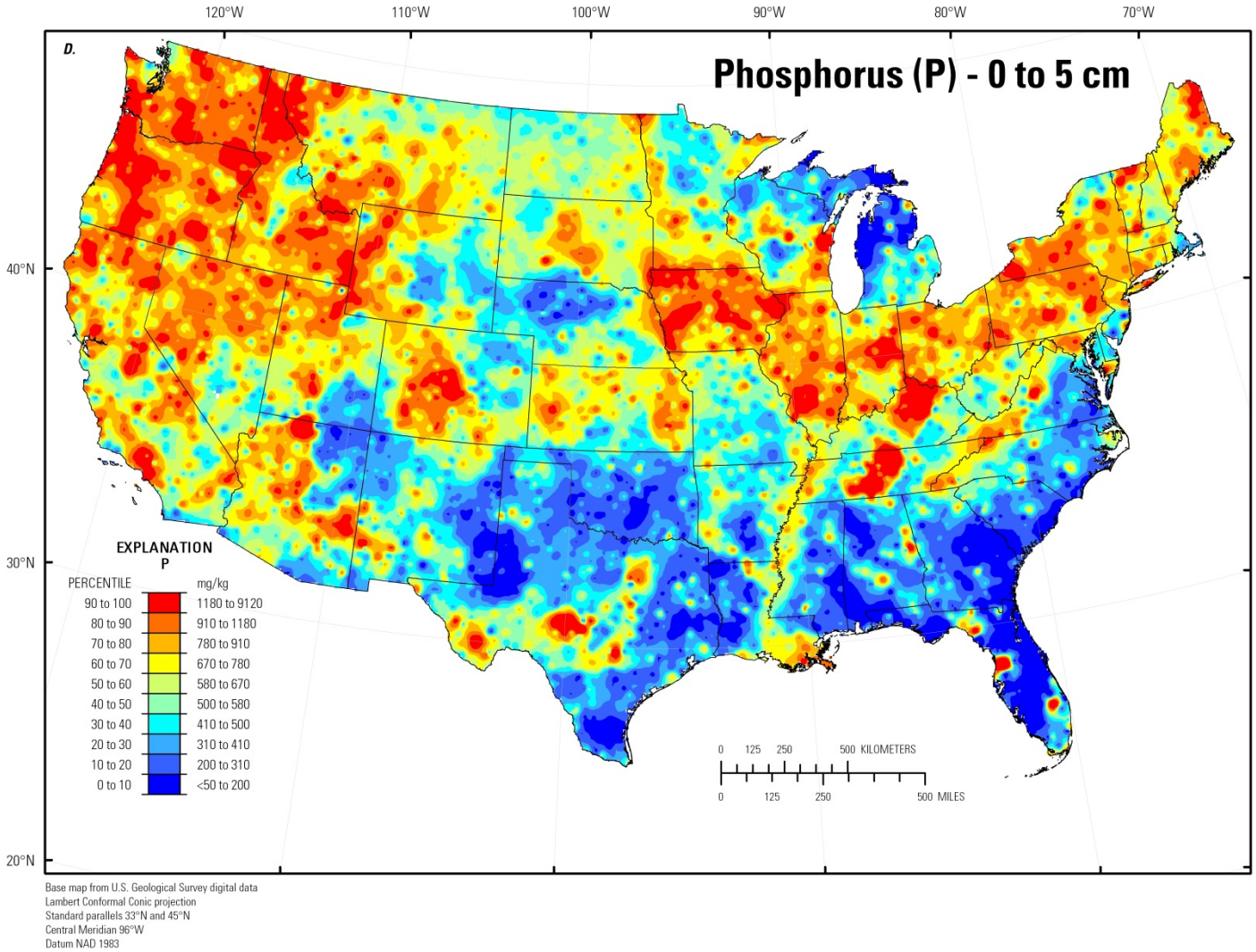


Figure 83. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of phosphorus (P) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

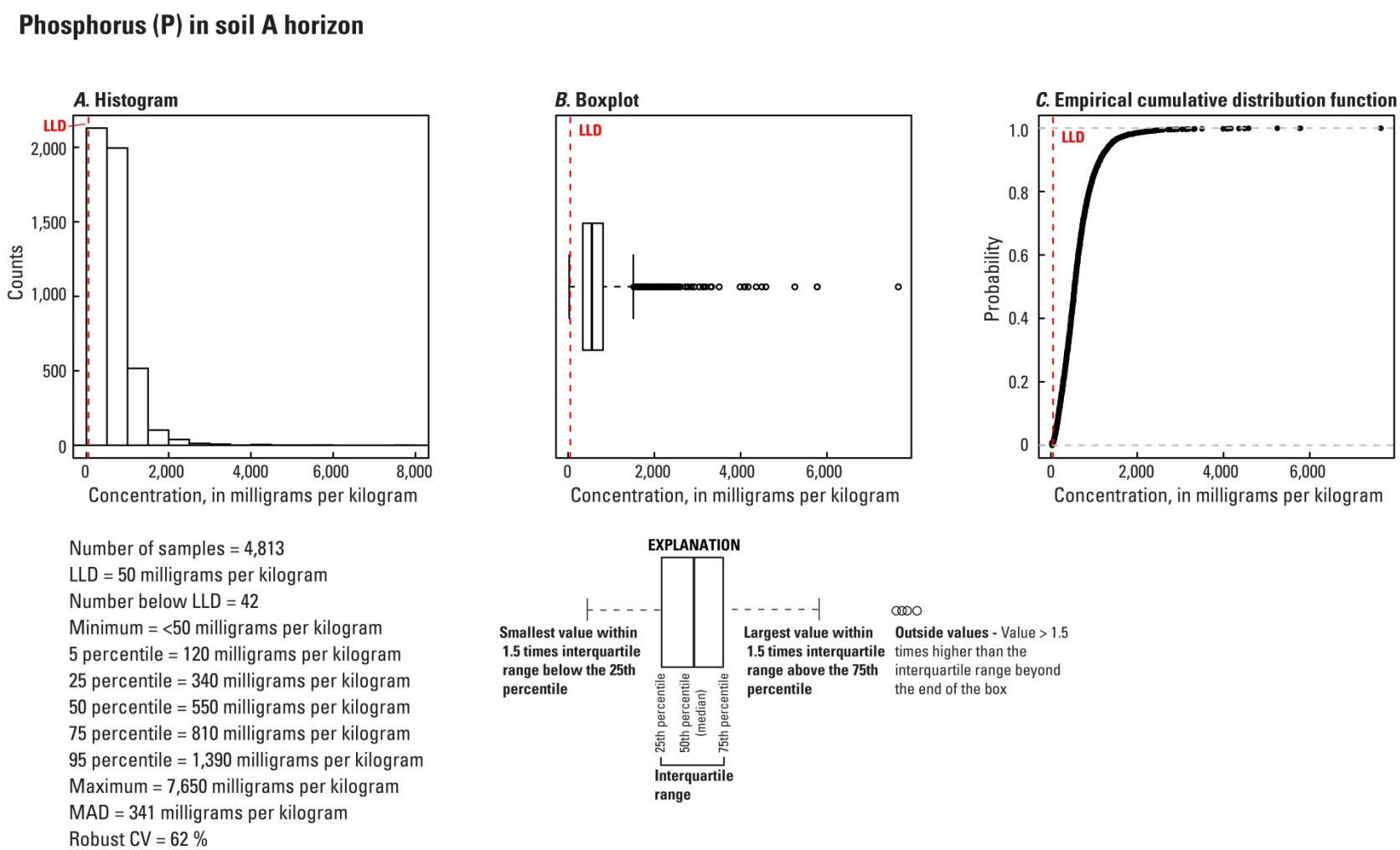


Figure 84. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of phosphorus (P) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

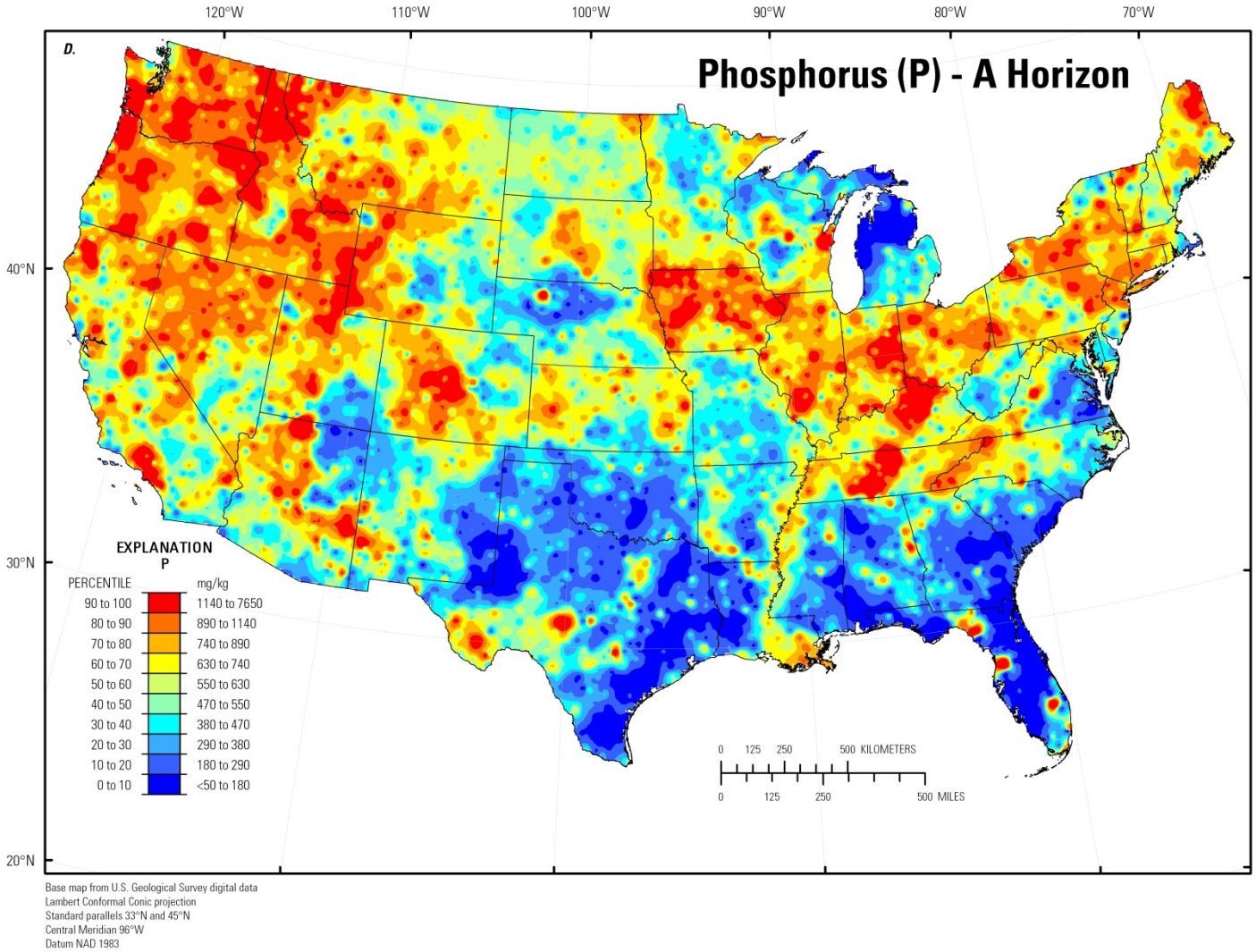
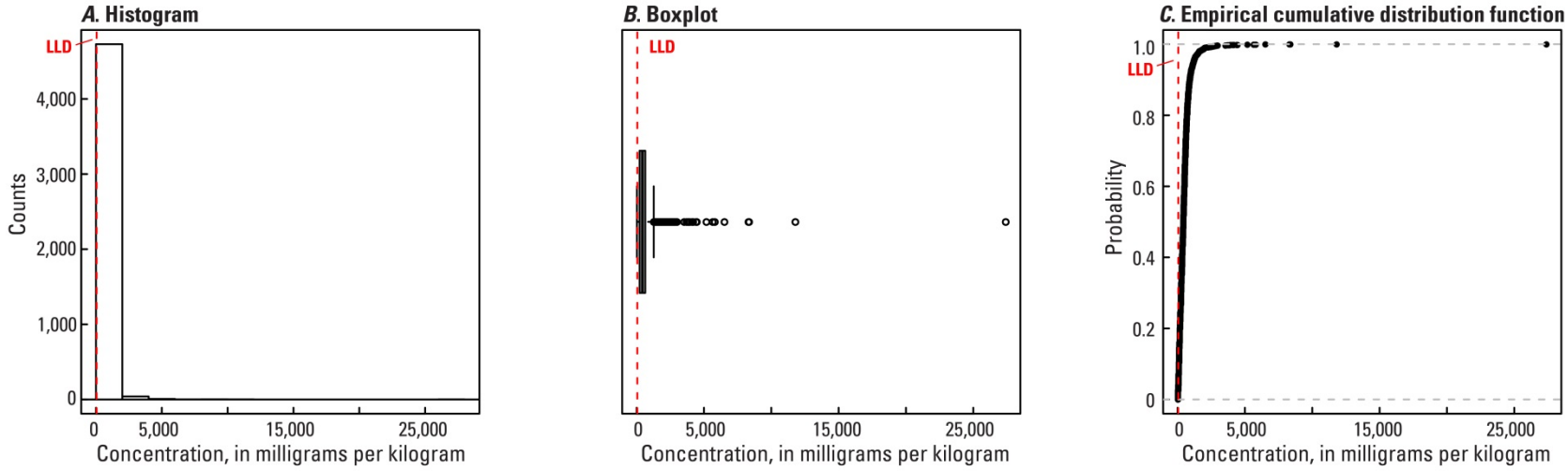


Figure 84. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of phosphorus (P) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Phosphorus (P) in soil C horizon



Number of samples = 4,780
LLD = 50 milligrams per kilogram
Number below LLD = 119
Minimum = <50 milligrams per kilogram
5 percentile = 70 milligrams per kilogram
25 percentile = 220 milligrams per kilogram
50 percentile = 430 milligrams per kilogram
75 percentile = 640 milligrams per kilogram
95 percentile = 1,190 milligrams per kilogram
Maximum = 27,400 milligrams per kilogram
MAD = 311 milligrams per kilogram
Robust CV = 72.4 %

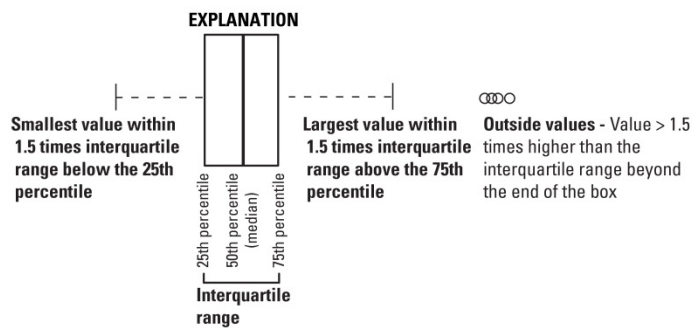


Figure 85. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of phosphorus (P) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

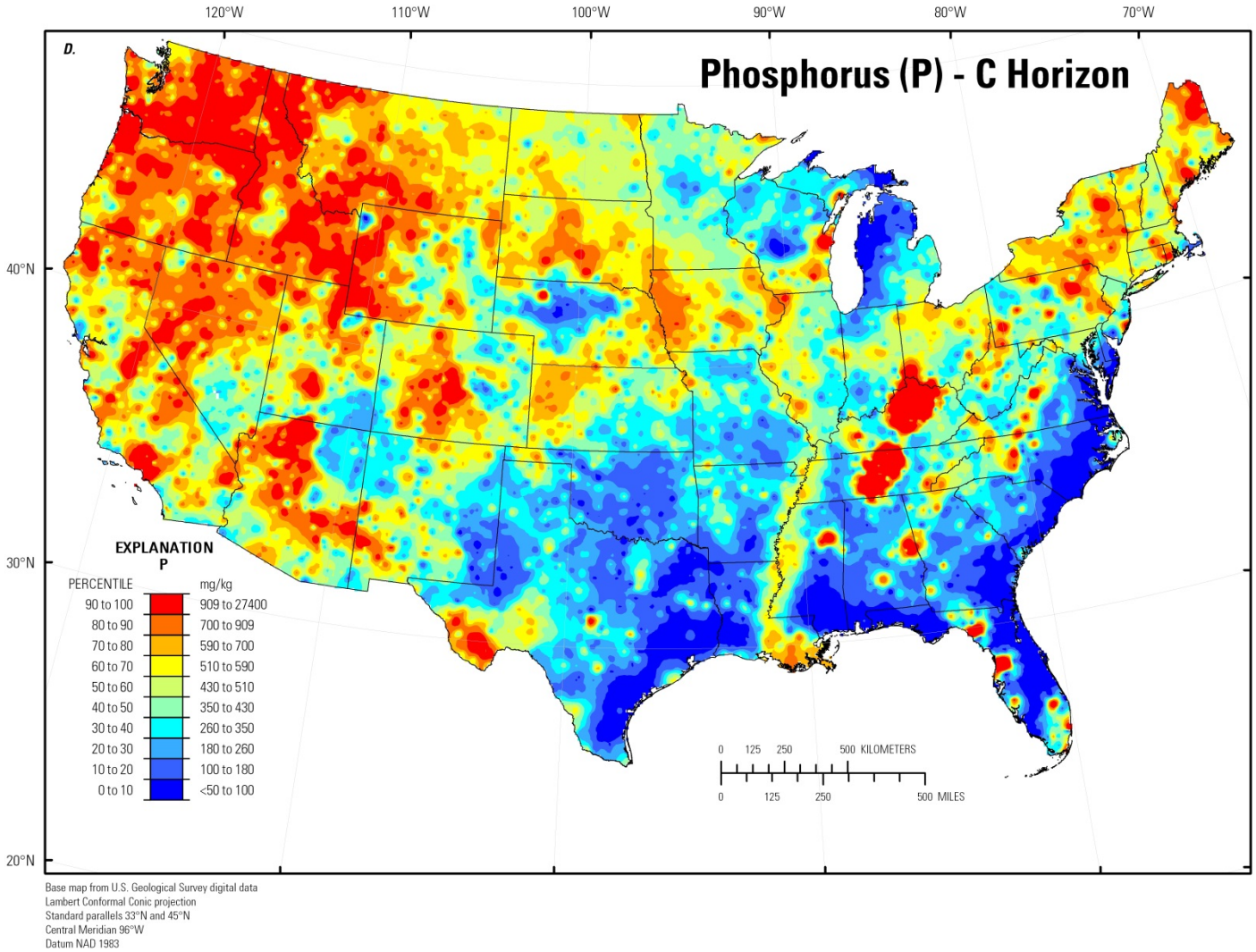


Figure 85. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of phosphorus (P) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

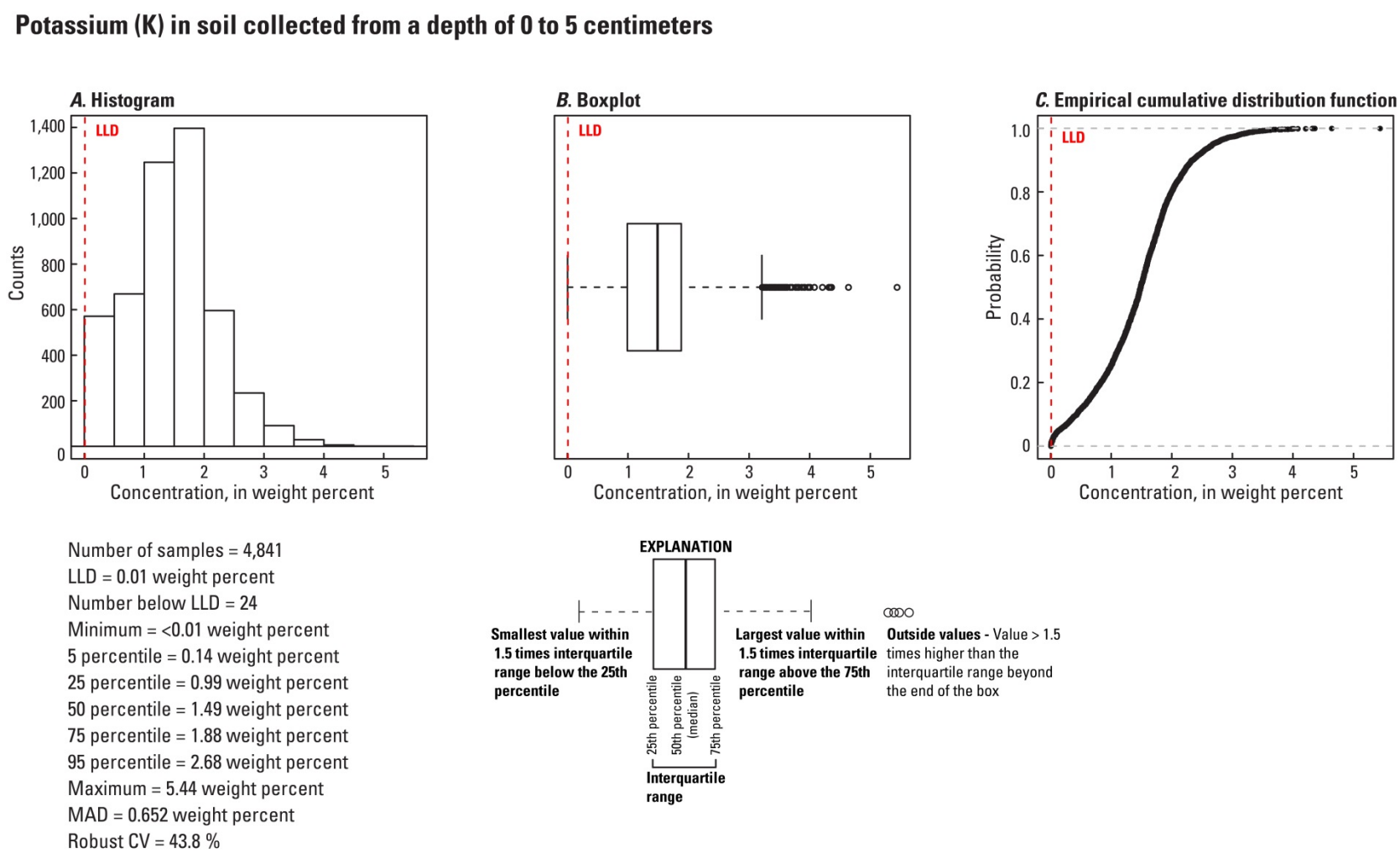


Figure 86. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of potassium (K) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).

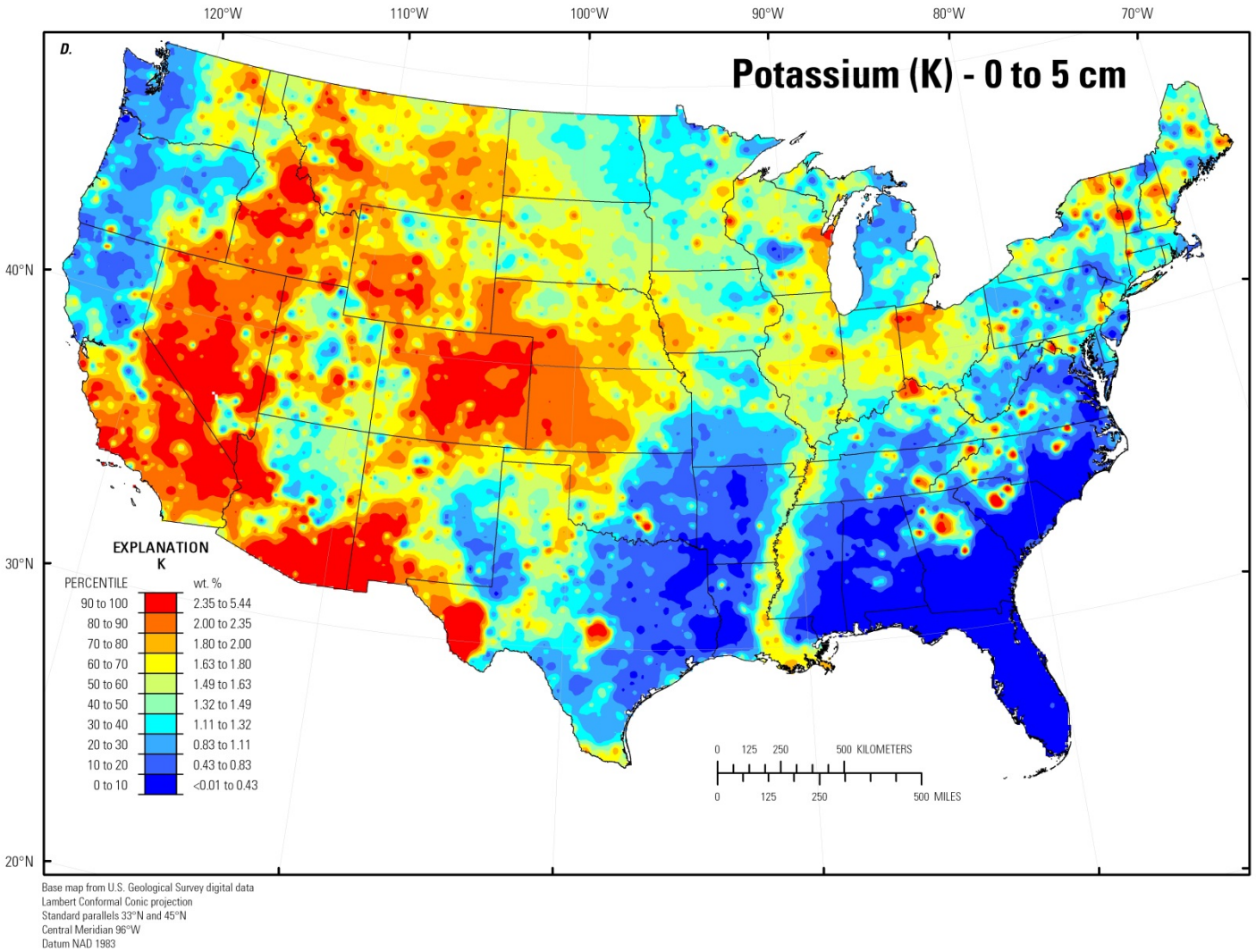


Figure 86. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of potassium (K) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).—Continued

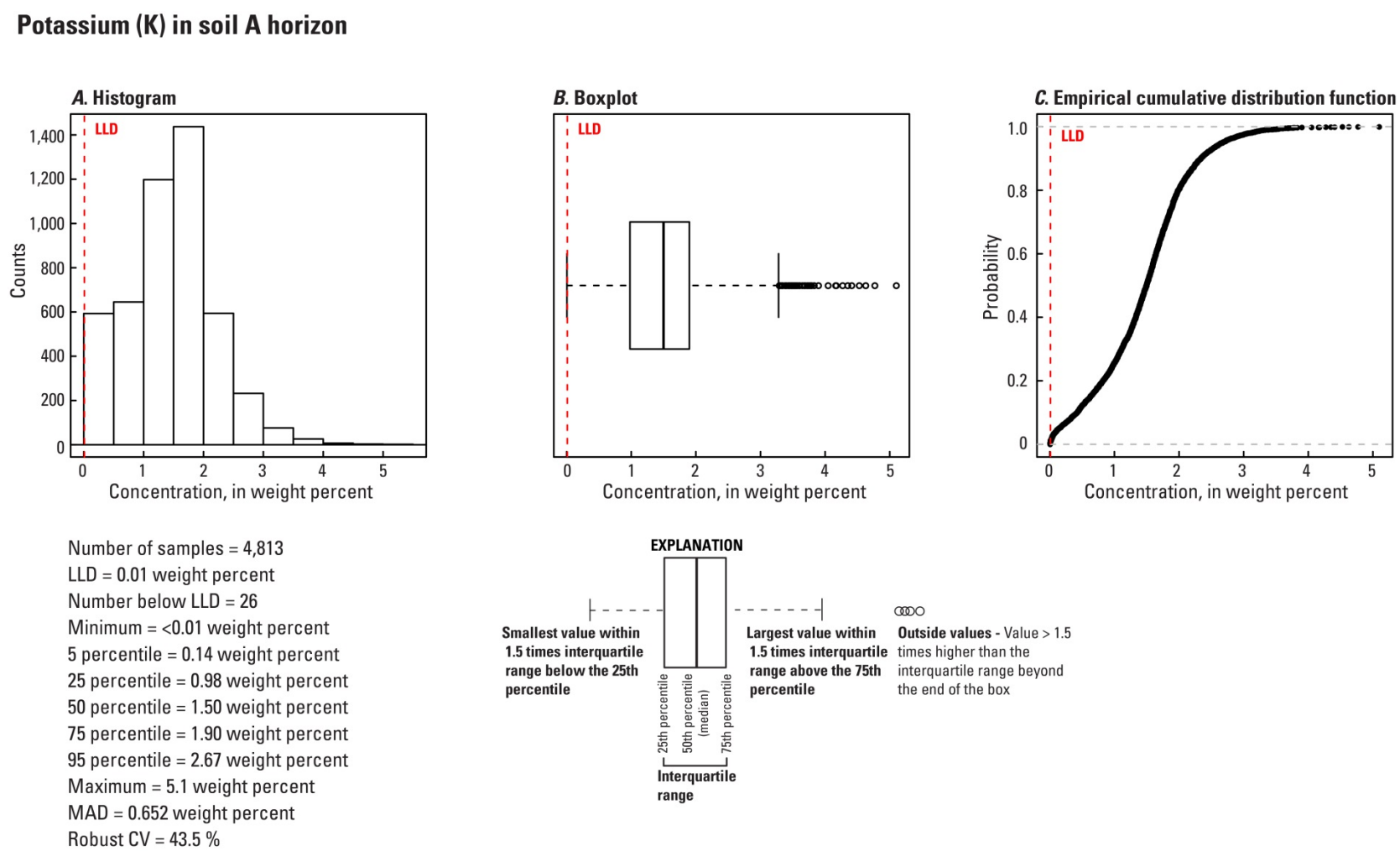


Figure 87. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of potassium (K) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

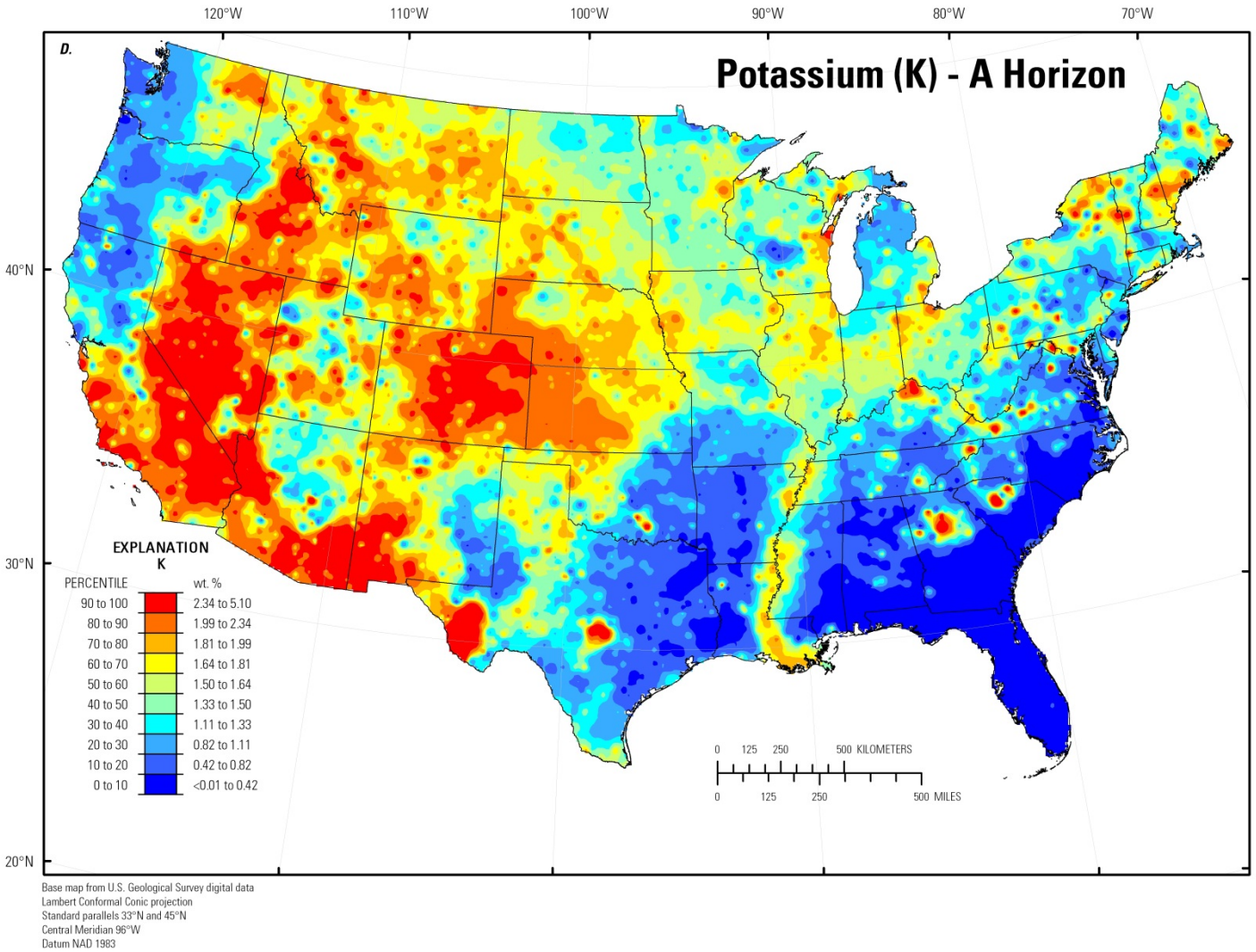
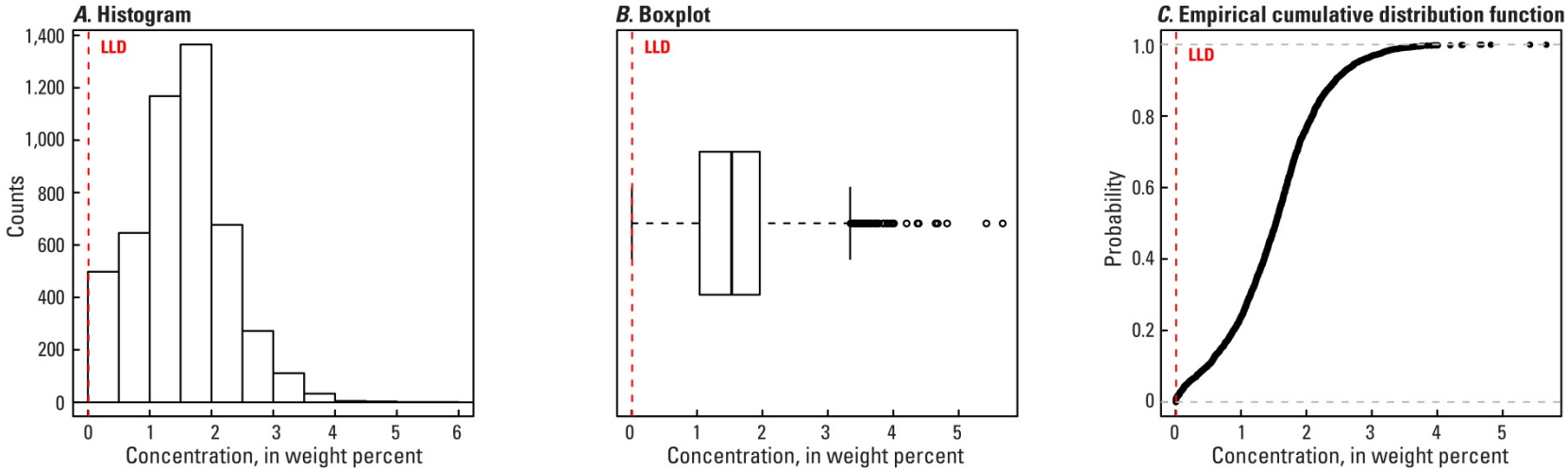


Figure 87. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of potassium (K) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

Potassium (K) in soil C horizon



Number of samples = 4,780
LLD = 0.01 weight percent
Number below LLD = 34
Minimum = <0.01 weight percent
5 percentile = 0.17 weight percent
25 percentile = 1.04 weight percent
50 percentile = 1.53 weight percent
75 percentile = 1.96 weight percent
95 percentile = 2.78 weight percent
Maximum = 5.67 weight percent
MAD = 0.682 weight percent
Robust CV = 44.6 %

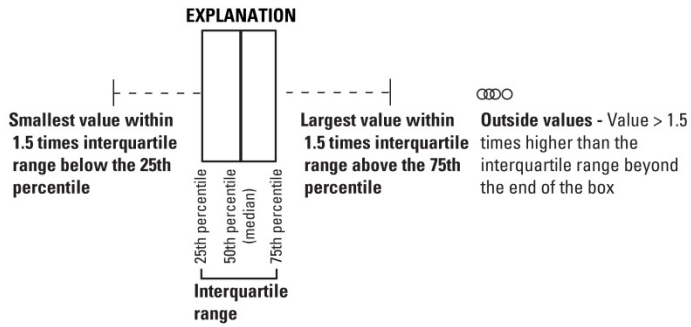


Figure 88. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of potassium (K) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

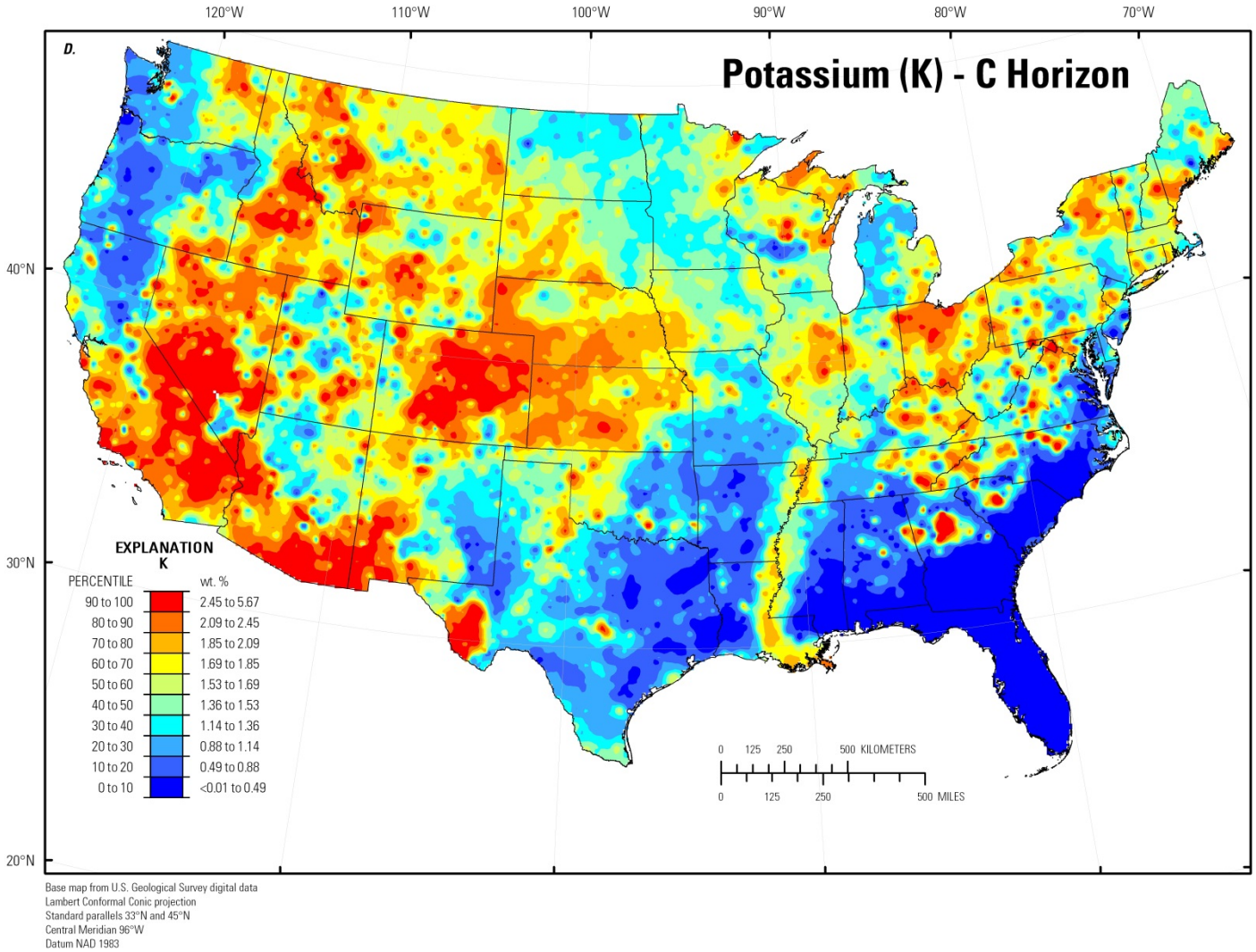


Figure 88. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of potassium (K) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

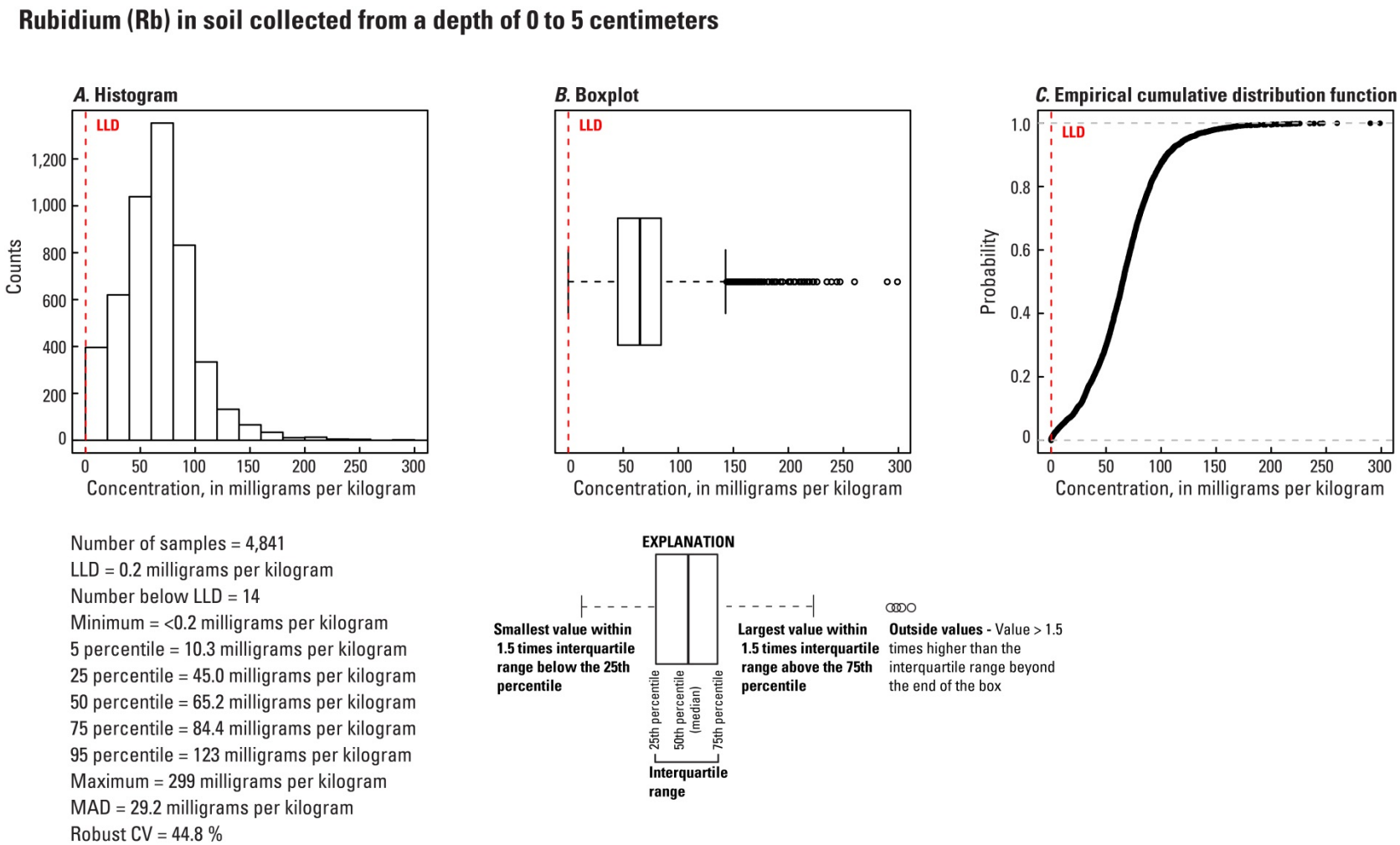


Figure 89. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of rubidium (Rb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

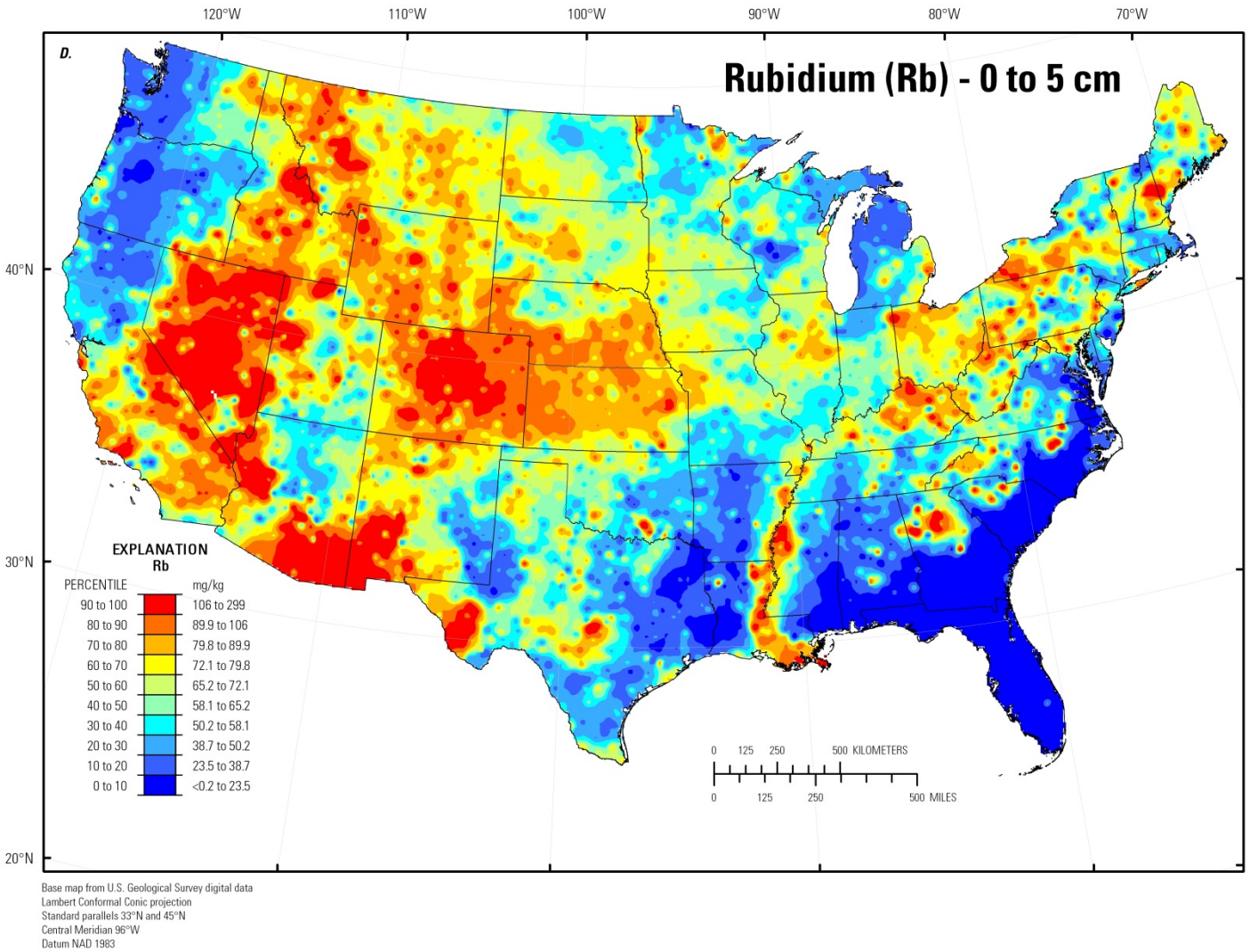
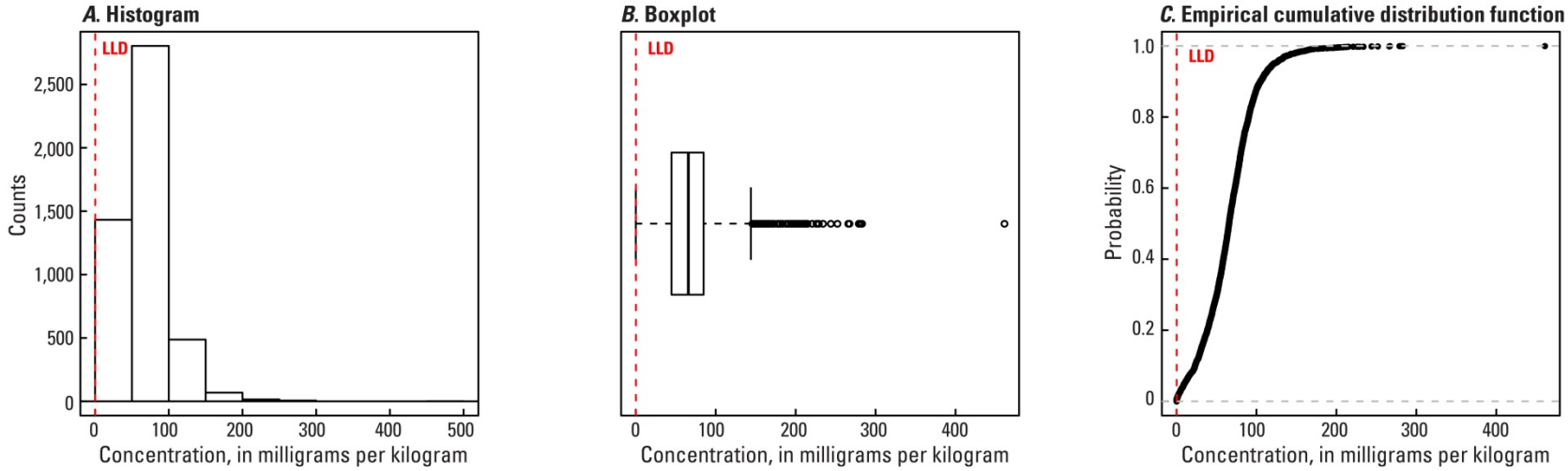


Figure 89. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of rubidium (Rb) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Rubidium (Rb) in soil A horizon



Number of samples = 4,813
LLD = 0.2 milligrams per kilogram
Number below LLD = 14
Minimum = <0.2 milligrams per kilogram
5 percentile = 10.0 milligrams per kilogram
25 percentile = 44.7 milligrams per kilogram
50 percentile = 65.8 milligrams per kilogram
75 percentile = 84.8 milligrams per kilogram
95 percentile = 122 milligrams per kilogram
Maximum = 461 milligrams per kilogram
MAD = 29.7 milligrams per kilogram
Robust CV = 45.1 %

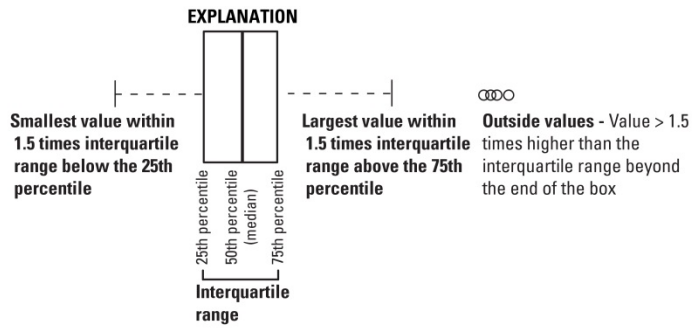


Figure 90. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of rubidium (Rb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

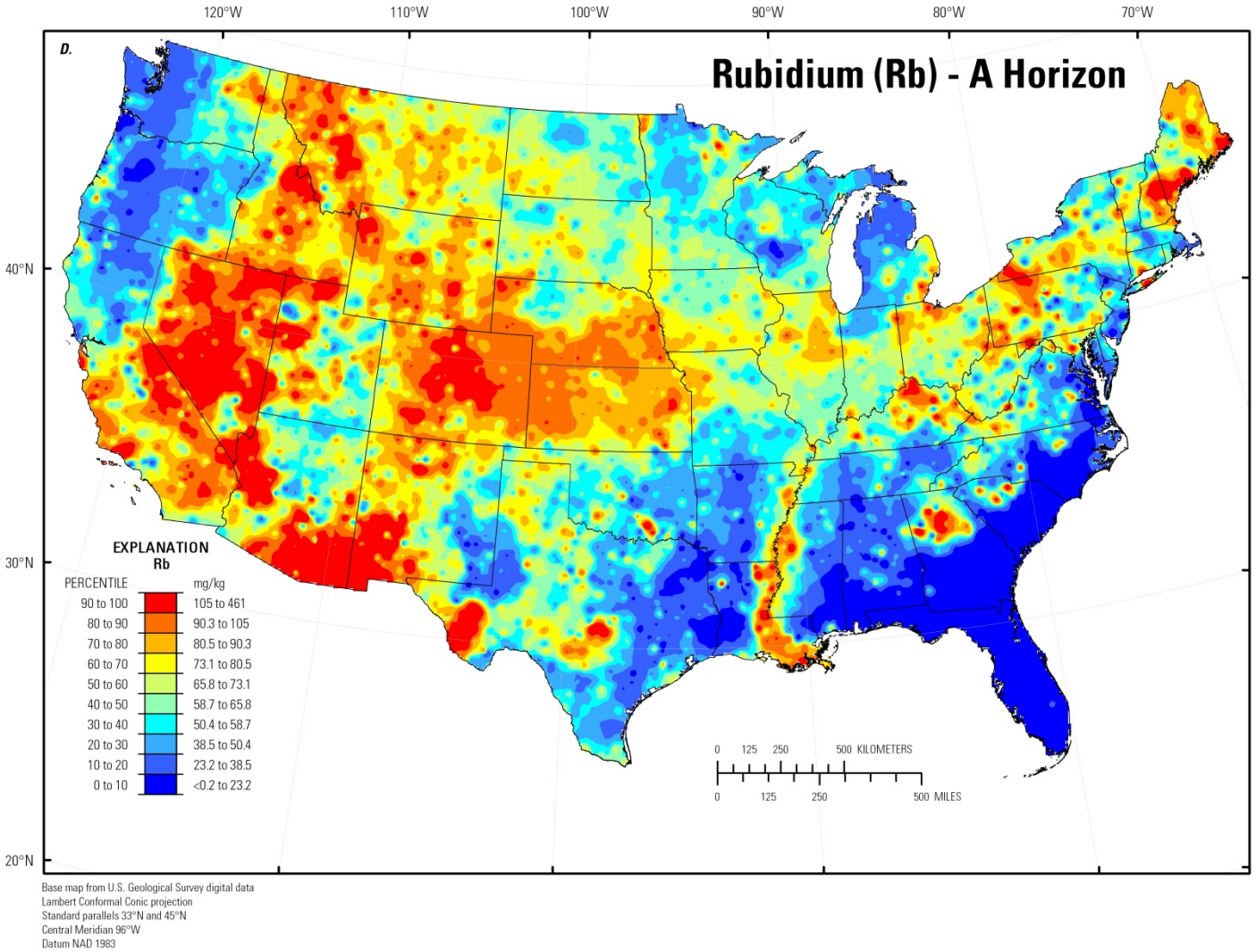


Figure 90. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of rubidium (Rb) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

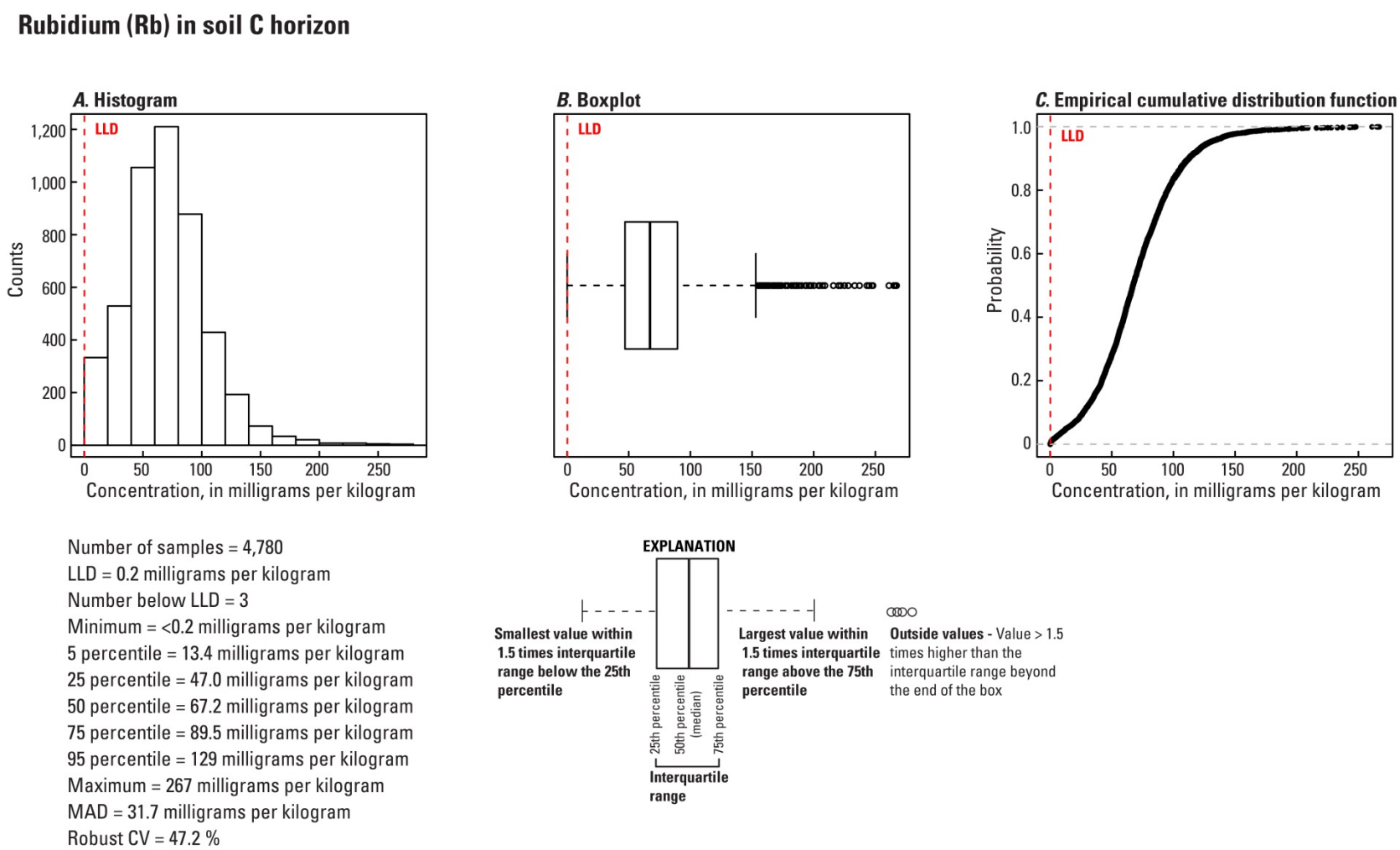


Figure 91. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of rubidium (Rb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

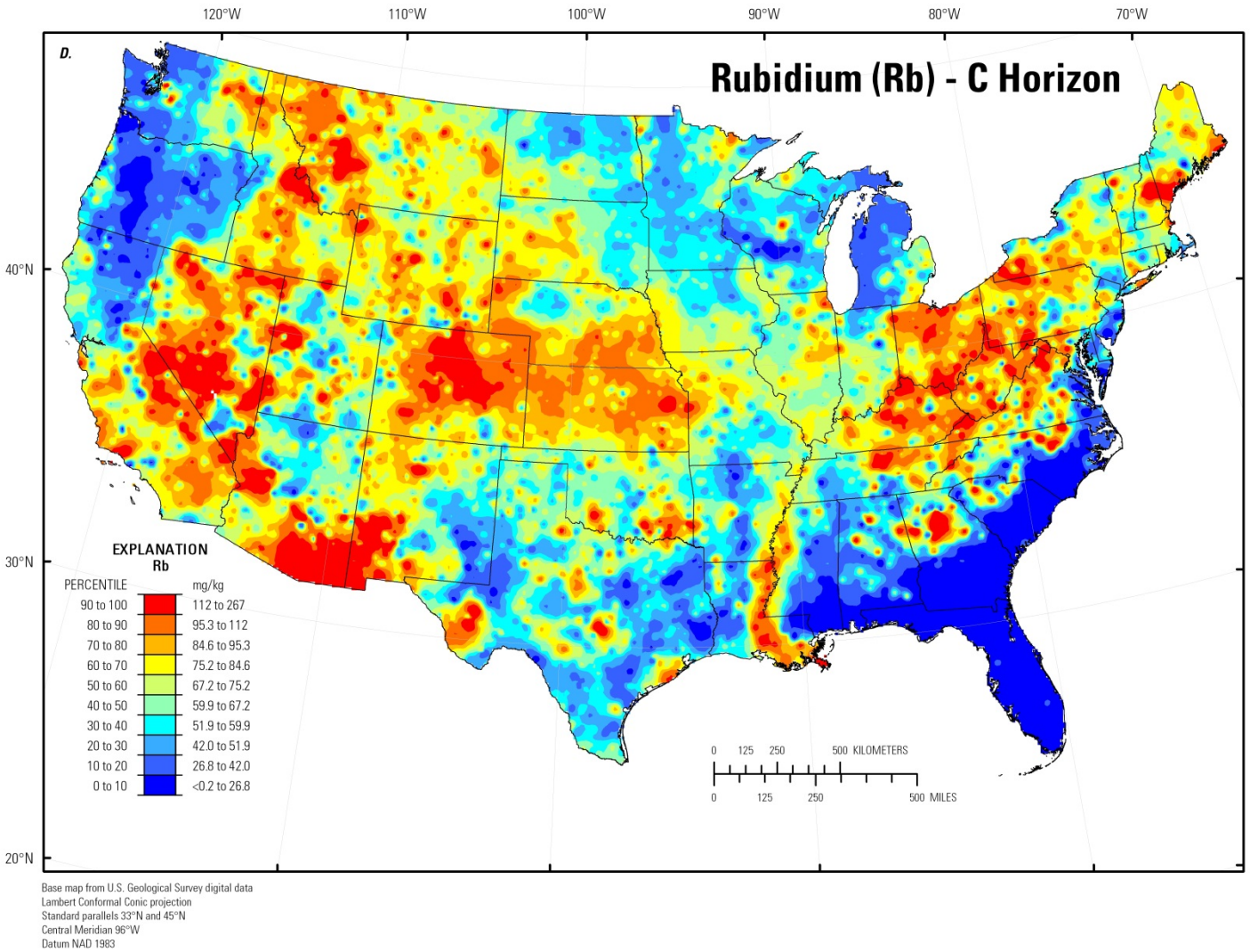
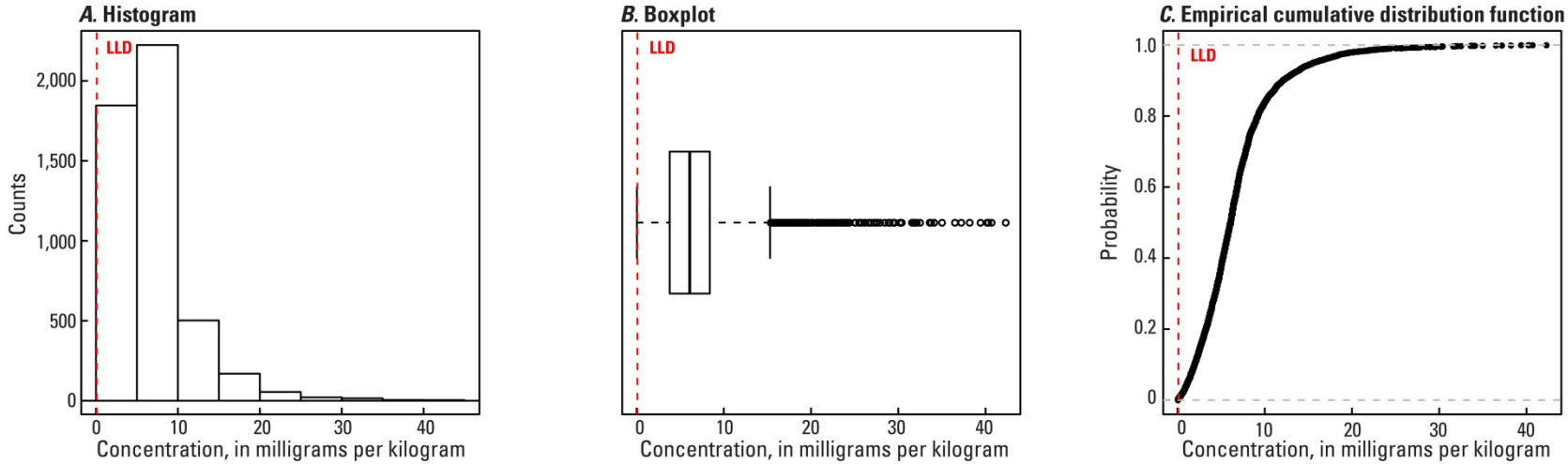


Figure 91. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of rubidium (Rb) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Scandium (Sc) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.1 milligrams per kilogram
Number below LLD = 20
Minimum = <0.1 milligrams per kilogram
5 percentile = 1.2 milligrams per kilogram
25 percentile = 3.8 milligrams per kilogram
50 percentile = 6.1 milligrams per kilogram
75 percentile = 8.4 milligrams per kilogram
95 percentile = 15.6 milligrams per kilogram
Maximum = 42.3 milligrams per kilogram
MAD = 3.41 milligrams per kilogram
Robust CV = 55.9 %

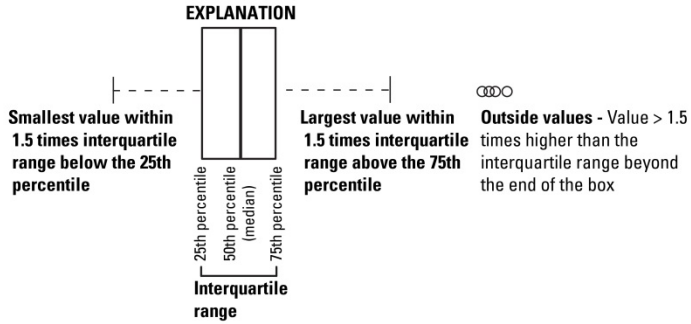


Figure 92. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of scandium (Sc) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

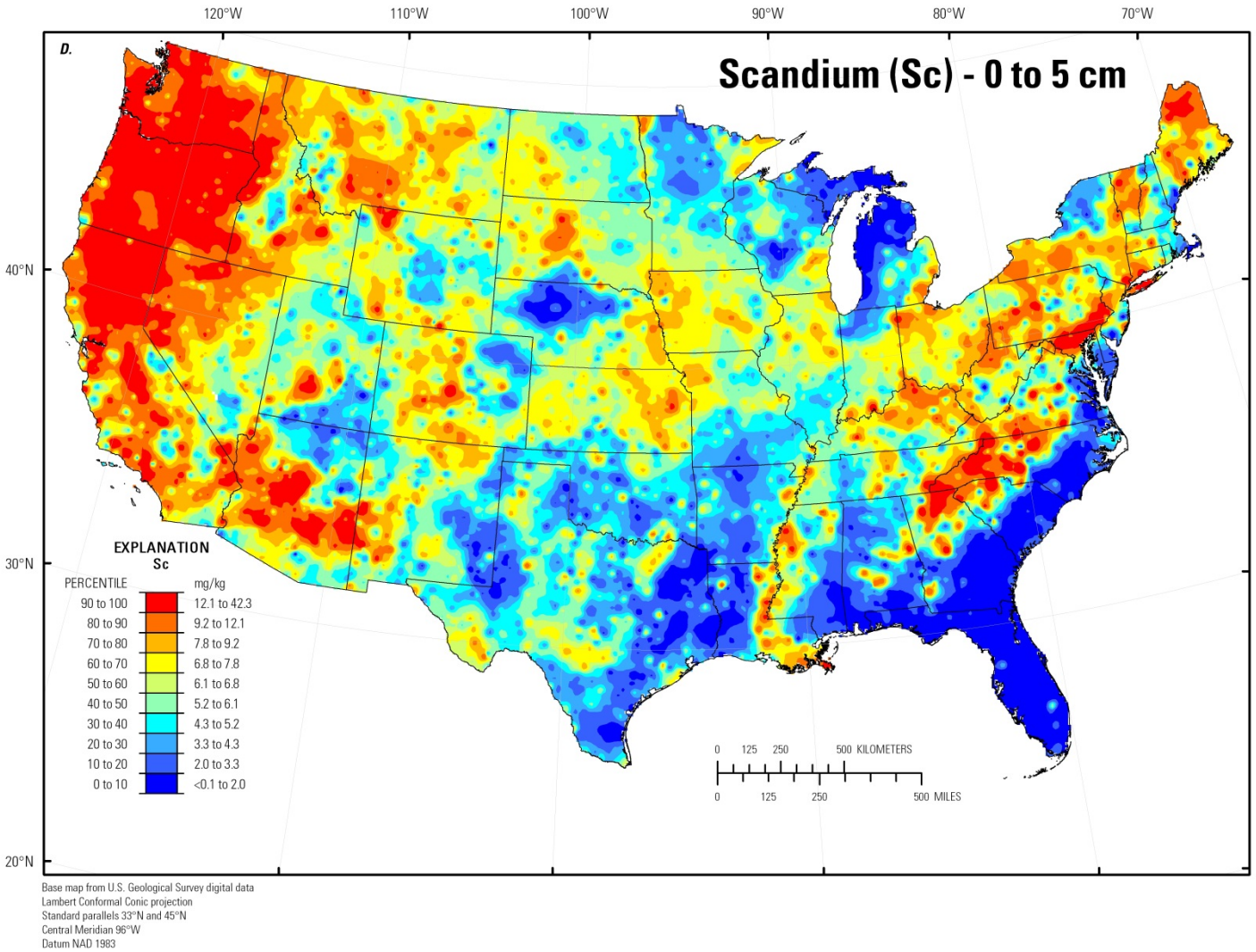
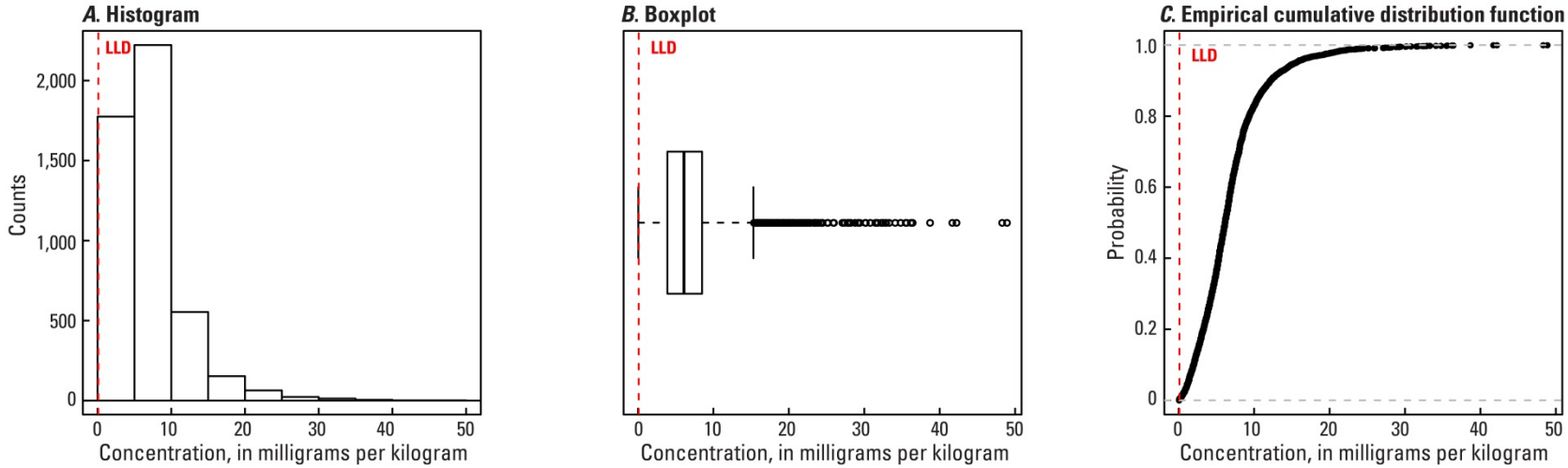


Figure 92. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of scandium (Sc) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Scandium (Sc) in soil A horizon



Number of samples = 4,813
LLD = 0.1 milligrams per kilogram
Number below LLD = 10
Minimum = <0.1 milligrams per kilogram
5 percentile = 1.3 milligrams per kilogram
25 percentile = 3.9 milligrams per kilogram
50 percentile = 6.1 milligrams per kilogram
75 percentile = 8.5 milligrams per kilogram
95 percentile = 15.5 milligrams per kilogram
Maximum = 48.9 milligrams per kilogram
MAD = 3.41 milligrams per kilogram
Robust CV = 55.9 %

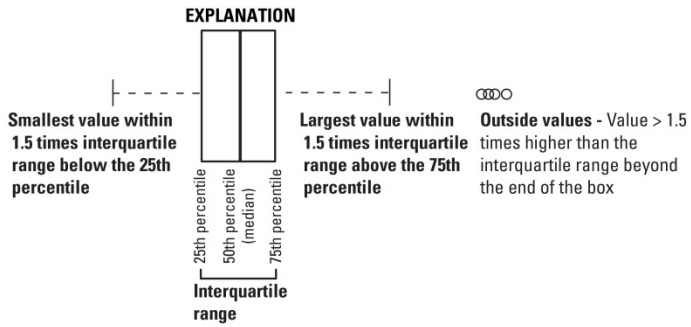


Figure 93. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of scandium (Sc) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

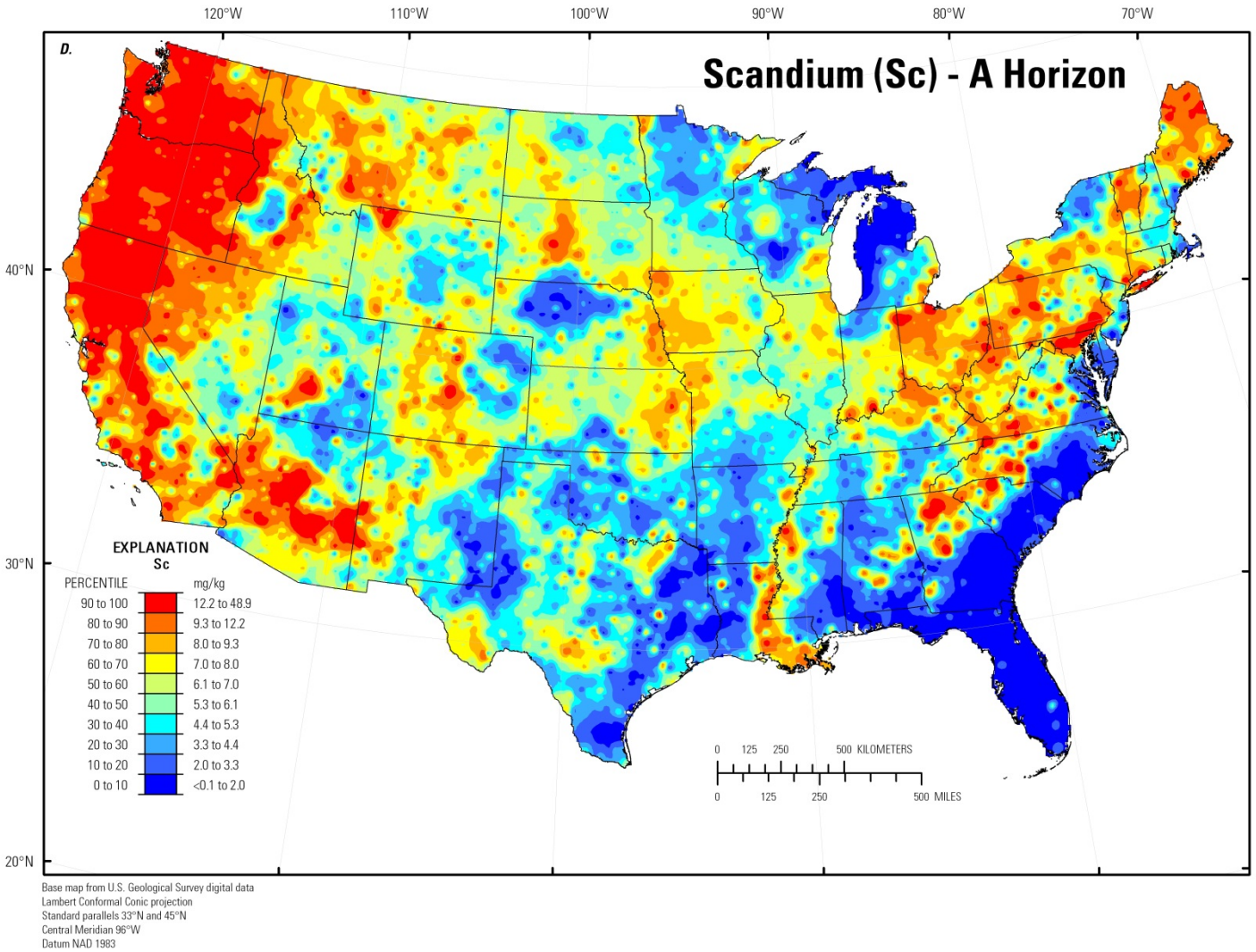
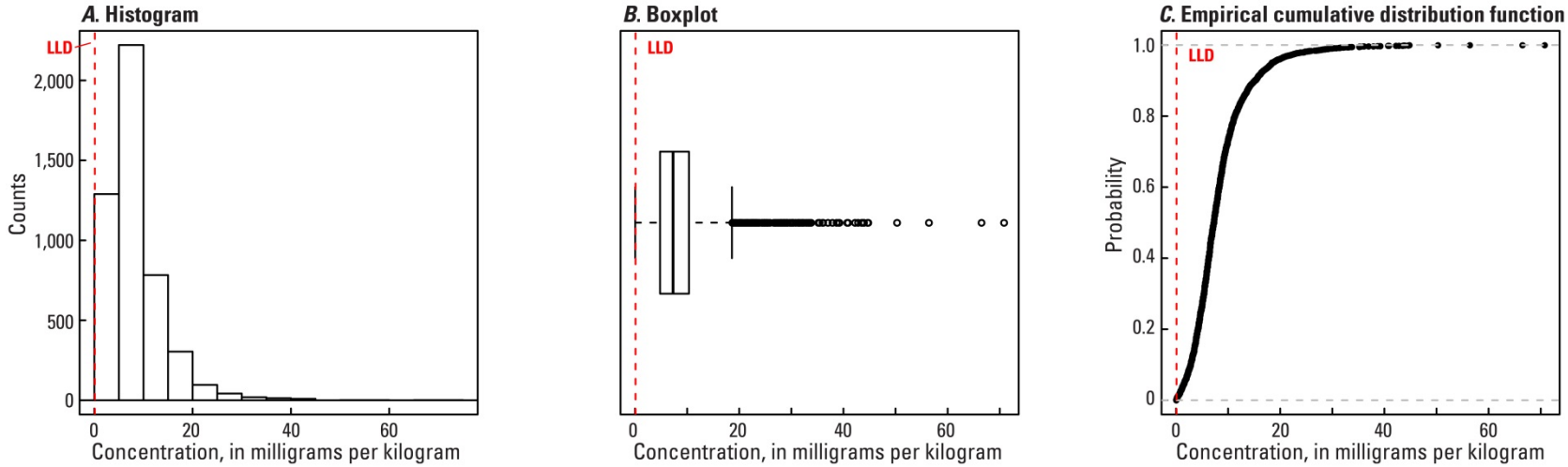


Figure 93. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of scandium (Sc) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Scandium (Sc) in soil C horizon



Number of samples = 4,780
LLD = 0.1 milligrams per kilogram
Number below LLD = 9
Minimum = <0.1 milligrams per kilogram
5 percentile = 1.6 milligrams per kilogram
25 percentile = 4.8 milligrams per kilogram
50 percentile = 7.3 milligrams per kilogram
75 percentile = 10.3 milligrams per kilogram
95 percentile = 18.4 milligrams per kilogram
Maximum = 70.8 milligrams per kilogram
MAD = 4 milligrams per kilogram
Robust CV = 54.8 %

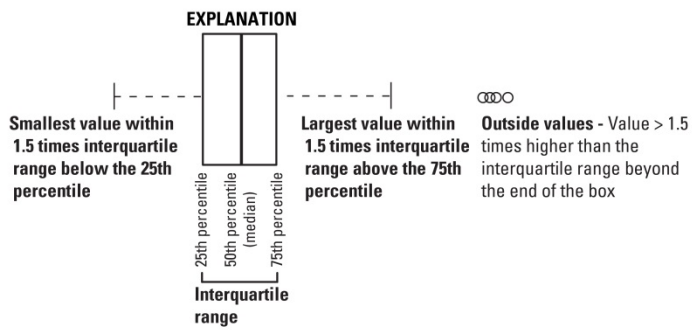


Figure 94. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of scandium (Sc) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

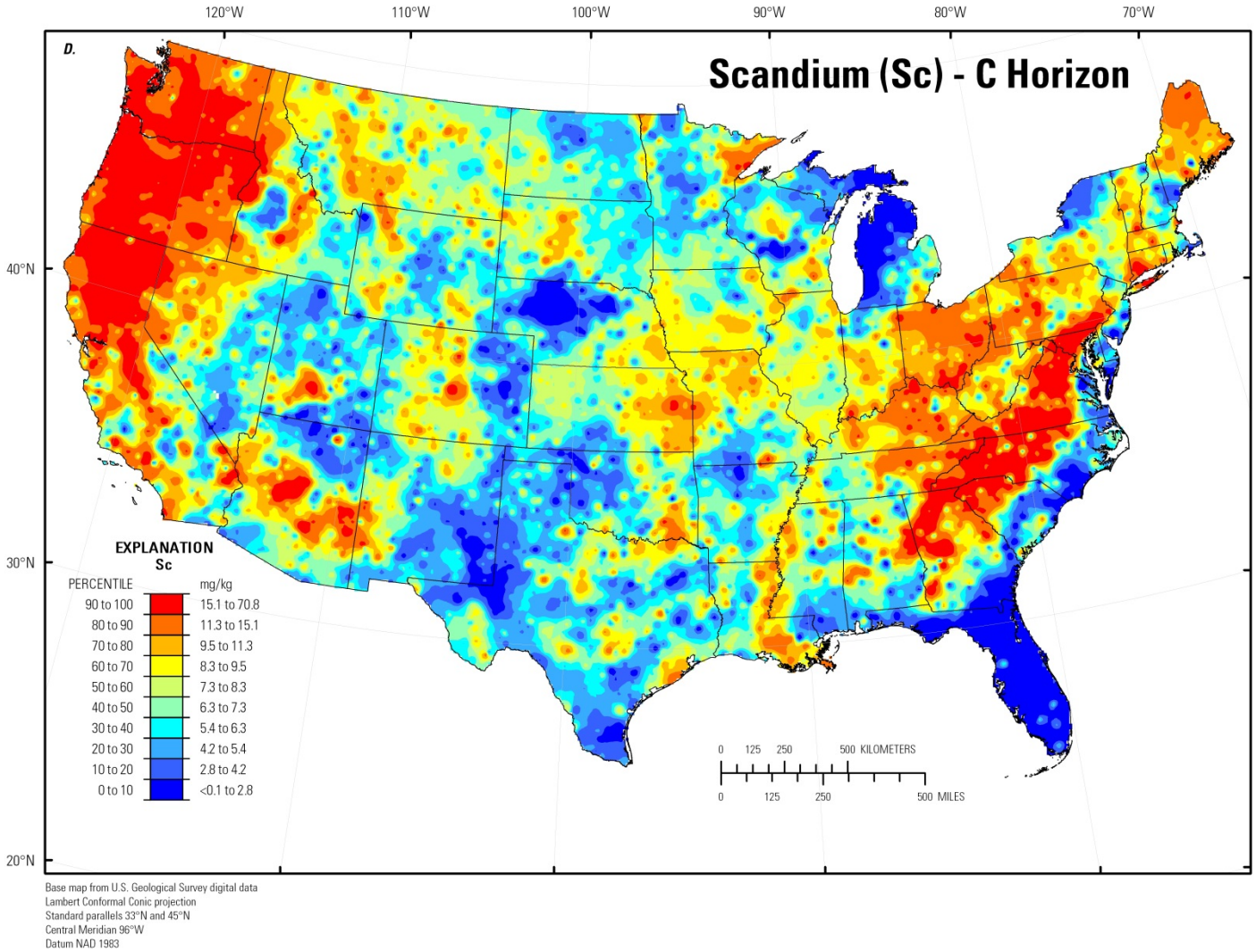


Figure 94. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of scandium (Sc) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

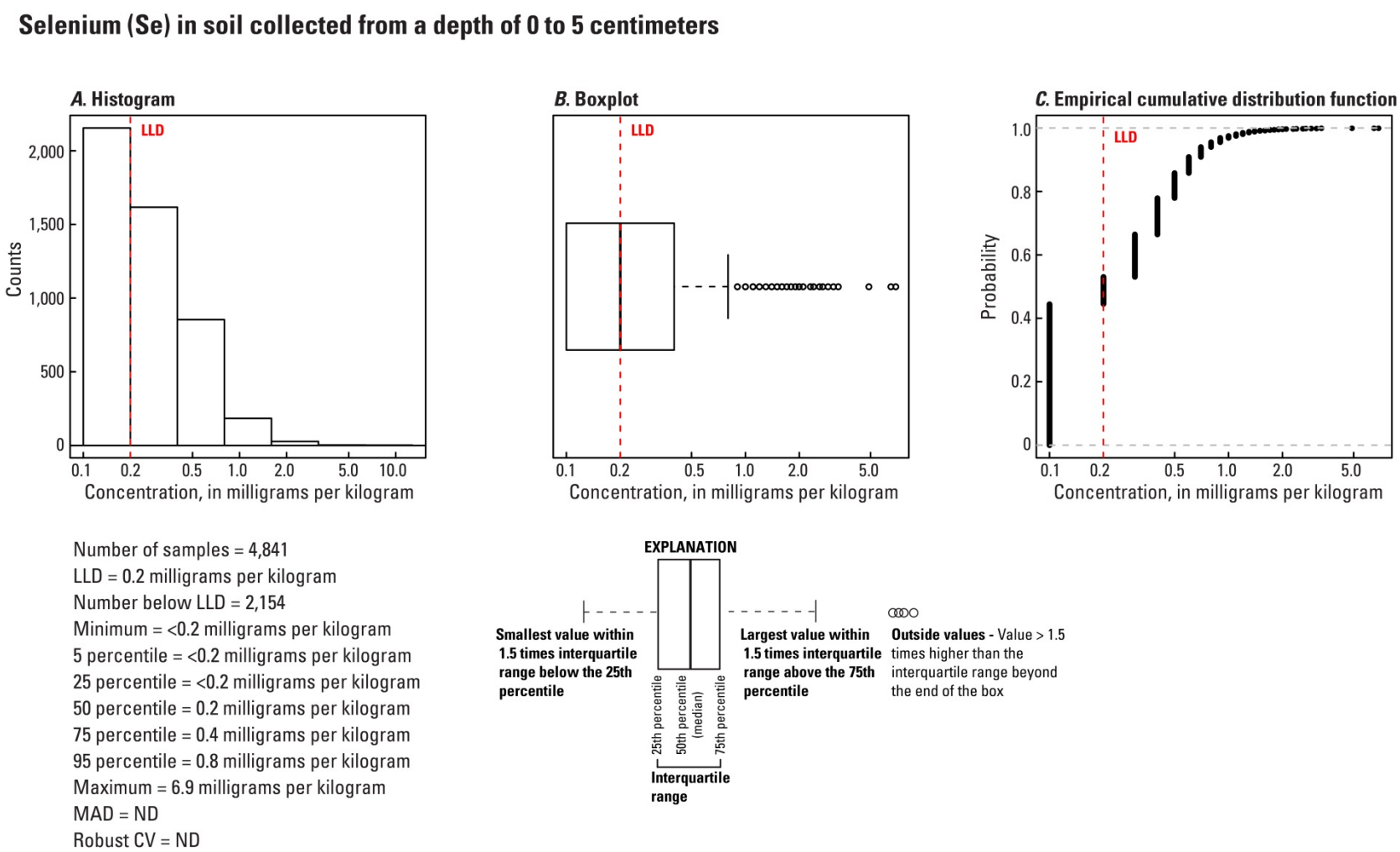


Figure 95. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of selenium (Se) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

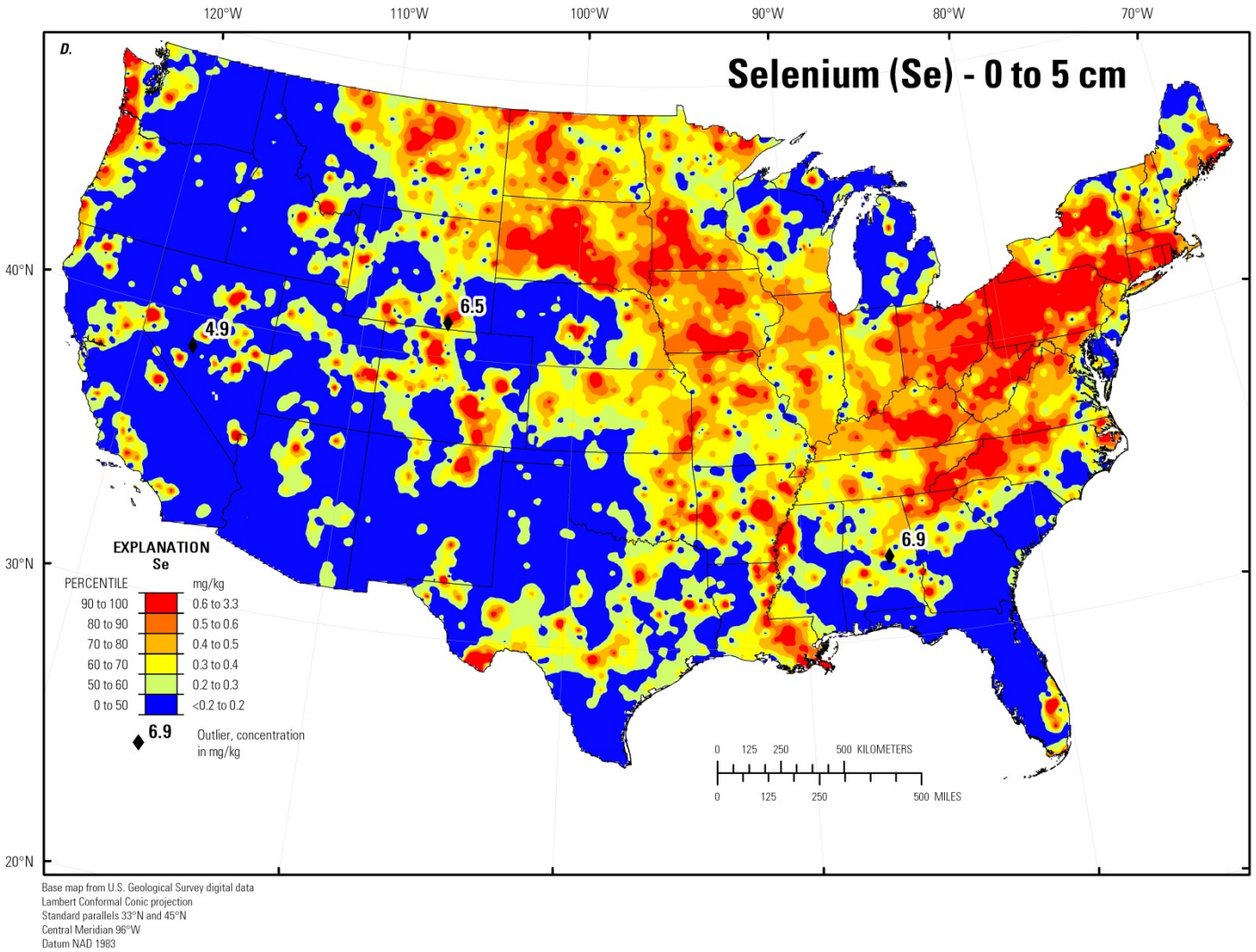
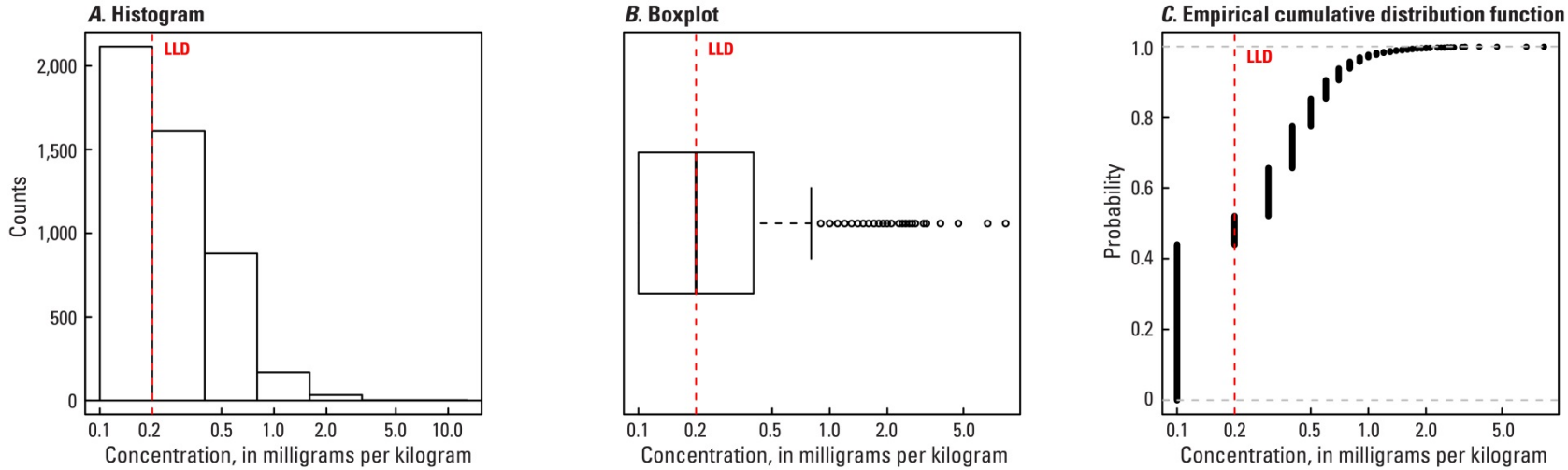


Figure 95. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of selenium (Se) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Selenium (Se) in soil A horizon



Number of samples = 4,813
LLD = 0.2 milligrams per kilogram
Number below LLD = 2,116
Minimum = <0.2 milligrams per kilogram
5 percentile = <0.2 milligrams per kilogram
25 percentile = <0.2 milligrams per kilogram
50 percentile = 0.2 milligrams per kilogram
75 percentile = 0.4 milligrams per kilogram
95 percentile = 0.8 milligrams per kilogram
Maximum = 8.3 milligrams per kilogram
MAD = ND
Robust CV = ND

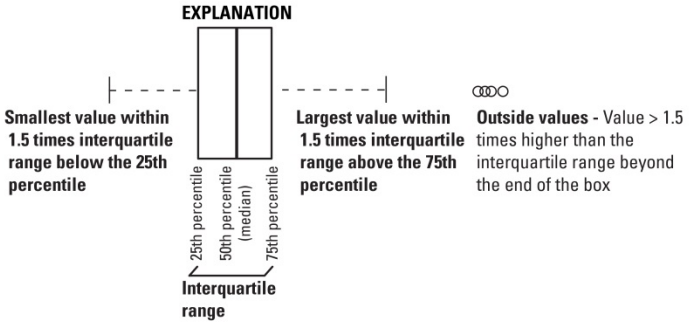


Figure 96. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of selenium (Se) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

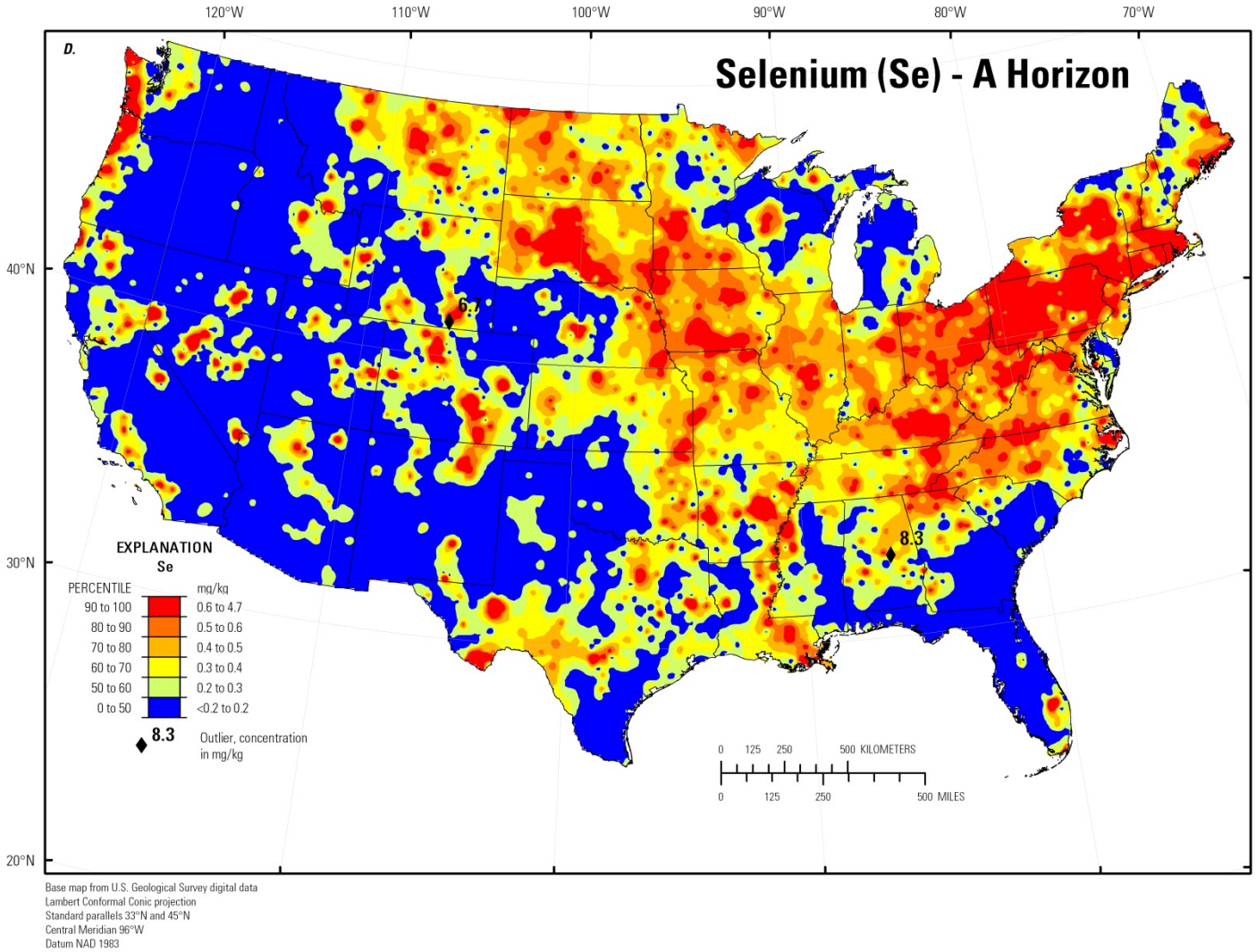
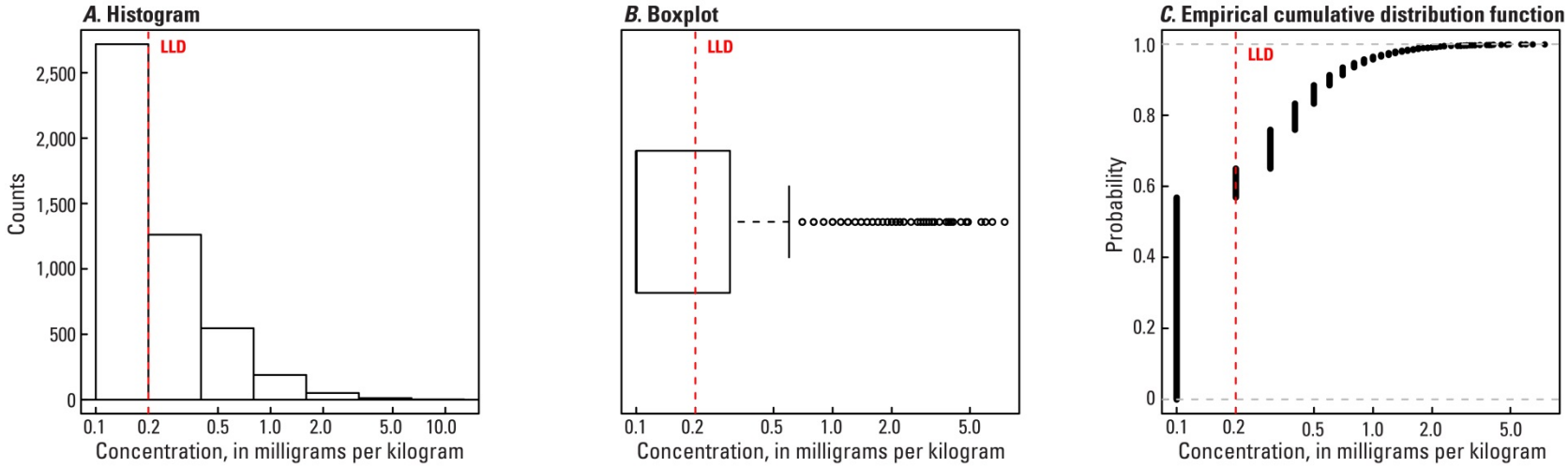


Figure 96. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of selenium (Se) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Selenium (Se) in soil C horizon



Number of samples = 4,780
LLD = 0.2 milligrams per kilogram
Number below LLD = 2,718
Minimum = <0.2 milligrams per kilogram
5 percentile = <0.2 milligrams per kilogram
25 percentile = <0.2 milligrams per kilogram
50 percentile = <0.2 milligrams per kilogram
75 percentile = 0.3 milligrams per kilogram
95 percentile = 0.9 milligrams per kilogram
Maximum = 7.5 milligrams per kilogram
MAD = ND
Robust CV = ND

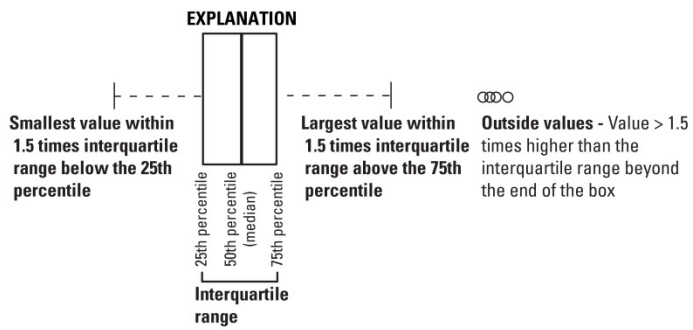


Figure 97. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of selenium (Se) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

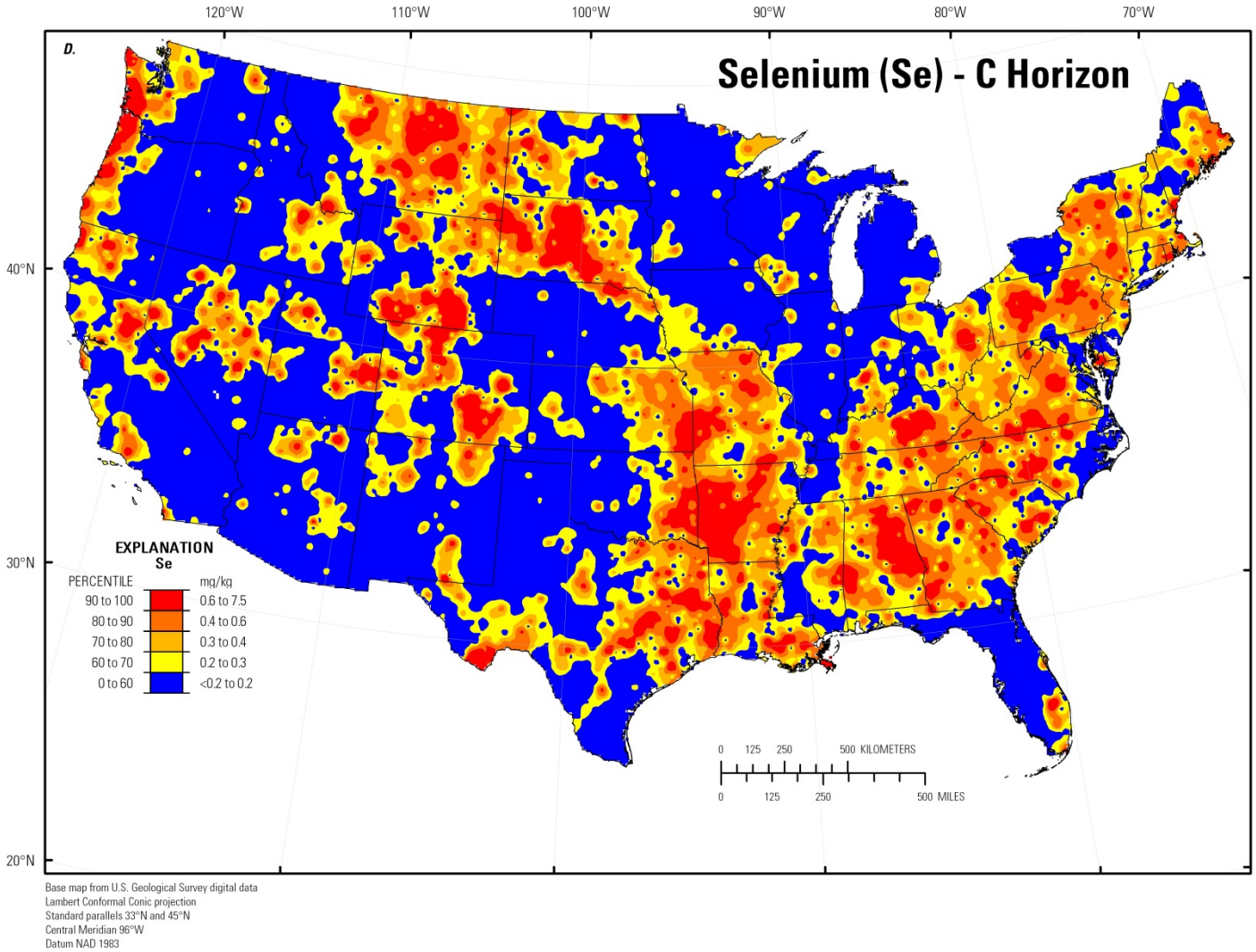
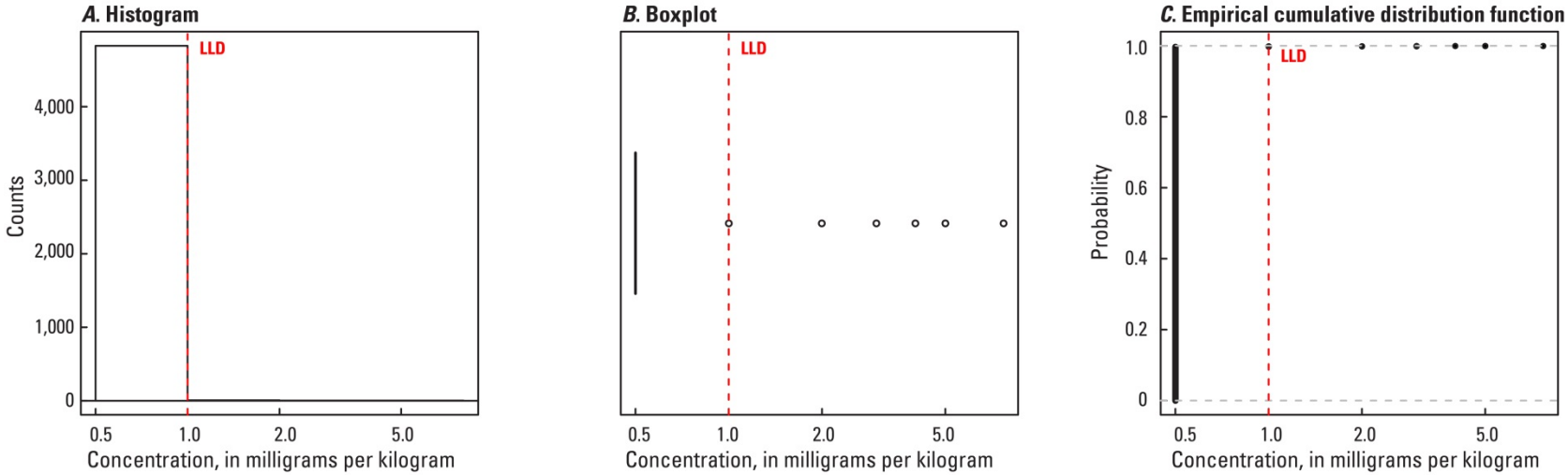


Figure 97. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of selenium (Se) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Silver (Ag) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 1 milligram per kilogram
Number below LLD = 4,828
Minimum = <1 milligram per kilogram
5 percentile = <1 milligram per kilogram
25 percentile = <1 milligram per kilogram
50 percentile = <1 milligram per kilogram
75 percentile = <1 milligram per kilogram
95 percentile = <1 milligram per kilogram
Maximum = 7.7 milligrams per kilogram
MAD = ND
Robust CV = ND

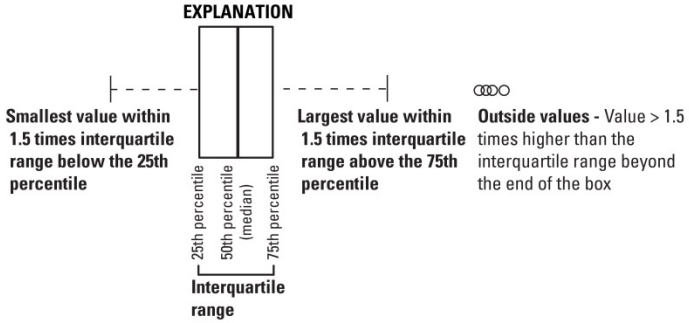


Figure 98. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of silver (Ag) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

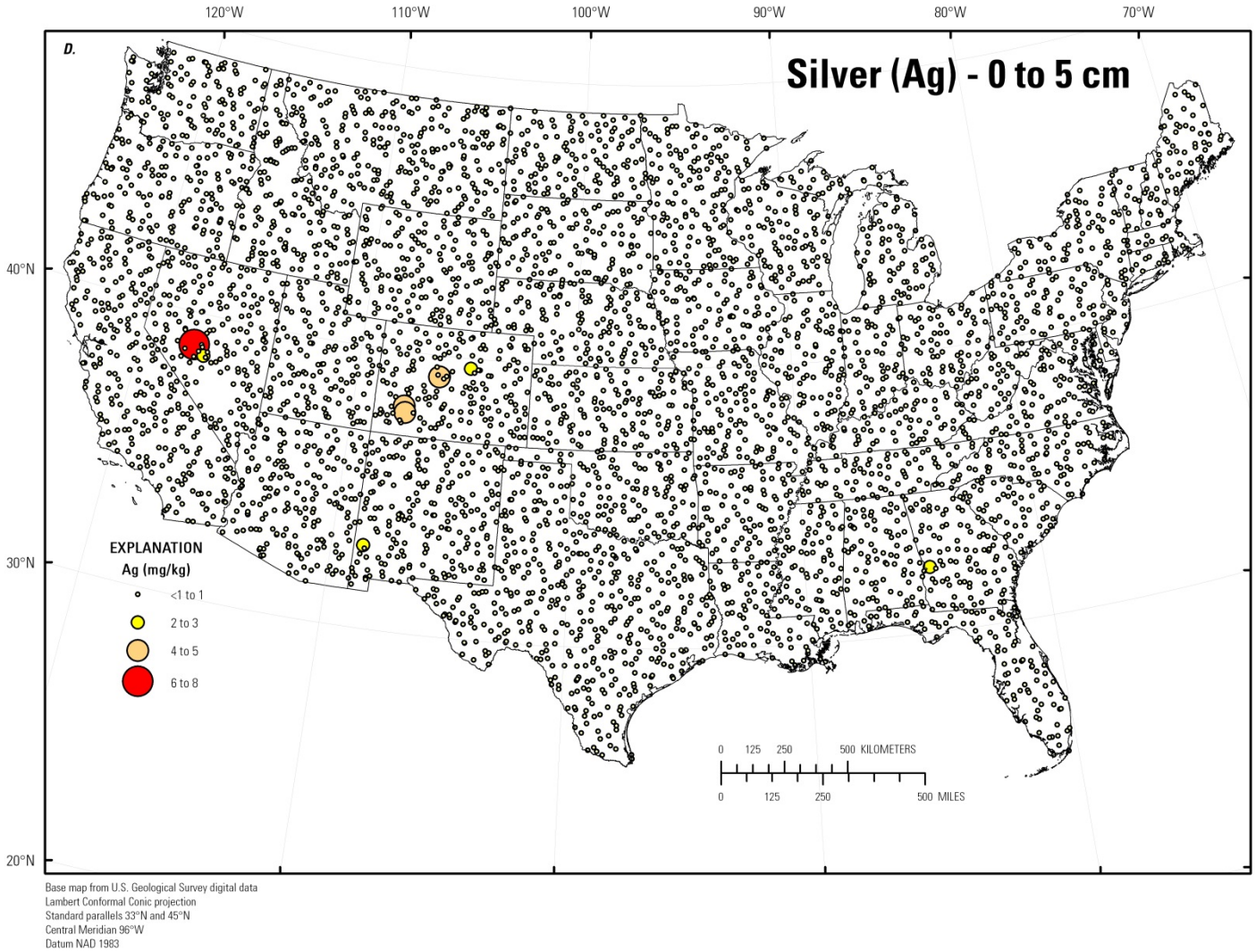
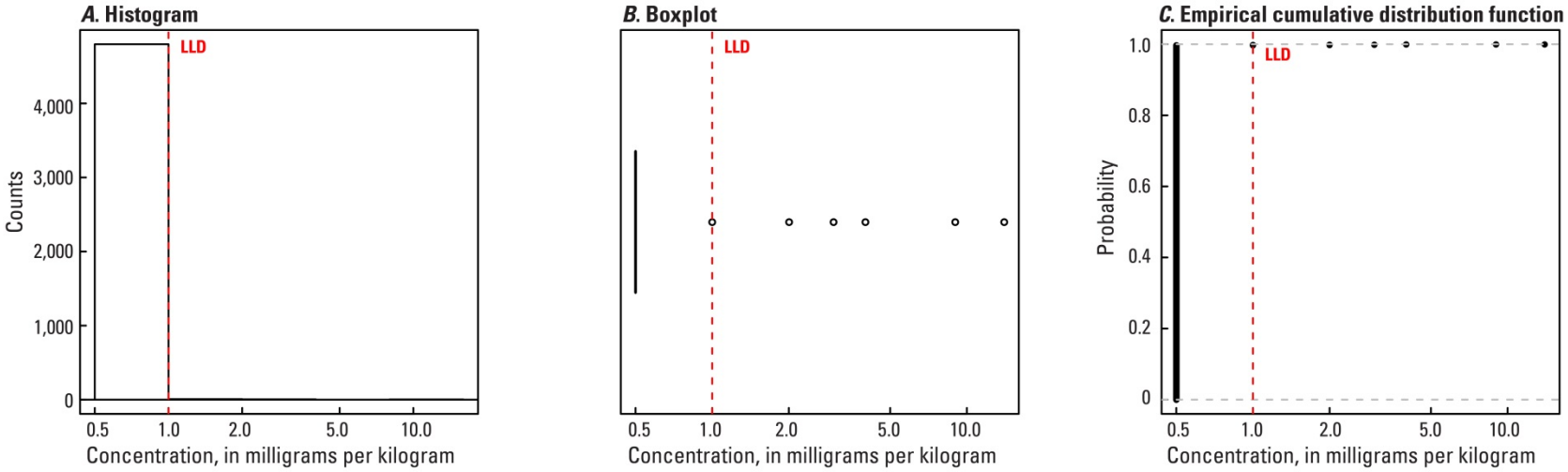


Figure 98. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of silver (Ag) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Silver (Ag) in soil A horizon



Number of samples = 4,813
LLD = 1 milligram per kilogram
Number below LLD = 4,799
Minimum = <1 milligram per kilogram
5 percentile = <1 milligram per kilogram
25 percentile = <1 milligram per kilogram
50 percentile = <1 milligram per kilogram
75 percentile = <1 milligram per kilogram
95 percentile = <1 milligram per kilogram
Maximum = 14 milligrams per kilogram
MAD = ND
Robust CV = ND

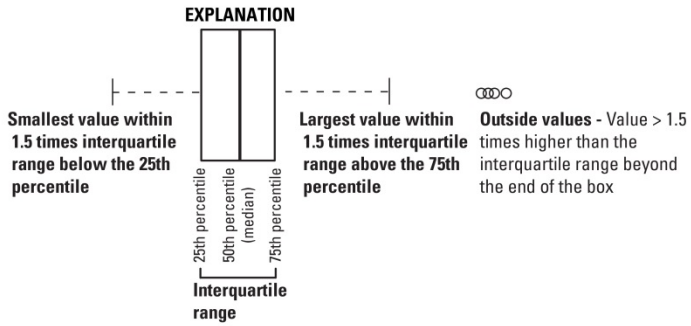


Figure 99. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of silver (Ag) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

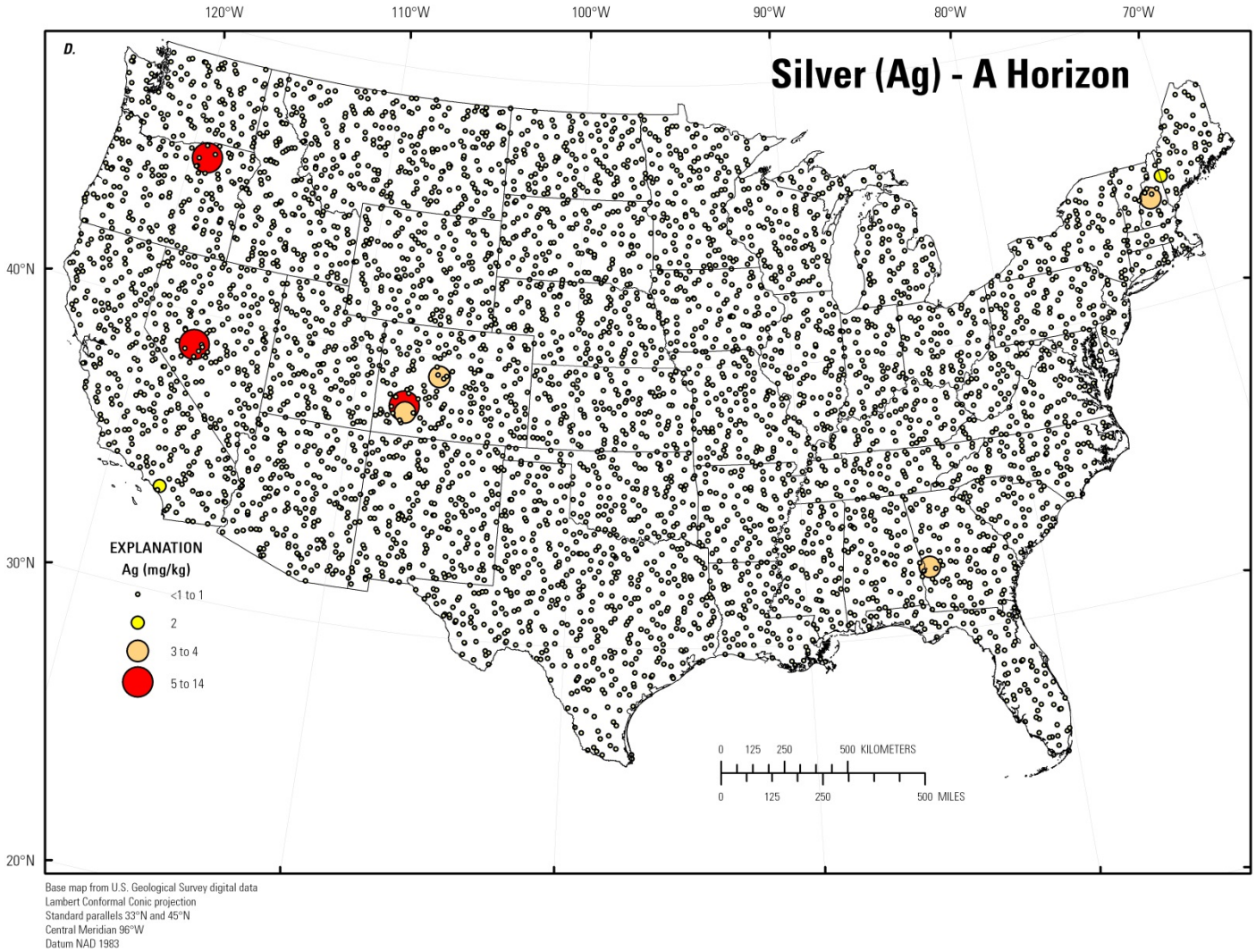
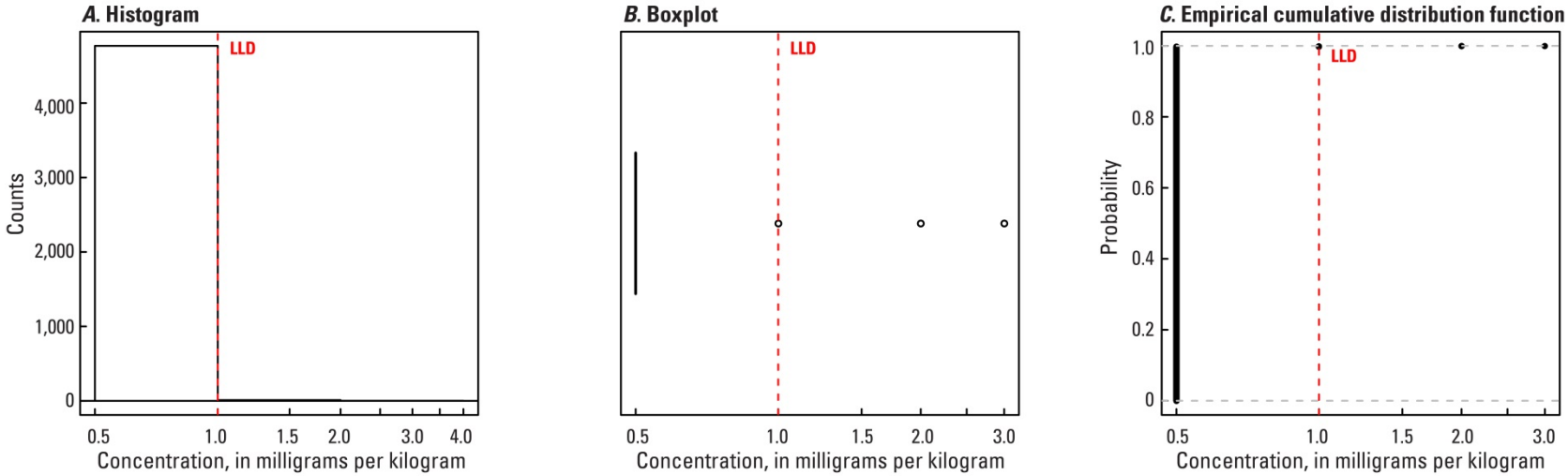


Figure 99. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of silver (Ag) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Silver (Ag) in soil C horizon



Number of samples = 4,780
LLD = 1 milligram per kilogram
Number below LLD = 4,769
Minimum = <1 milligram per kilogram
5 percentile = <1 milligram per kilogram
25 percentile = <1 milligram per kilogram
50 percentile = <1 milligram per kilogram
75 percentile = <1 milligram per kilogram
95 percentile = <1 milligram per kilogram
Maximum = 3 milligrams per kilogram
MAD = ND
Robust CV = ND

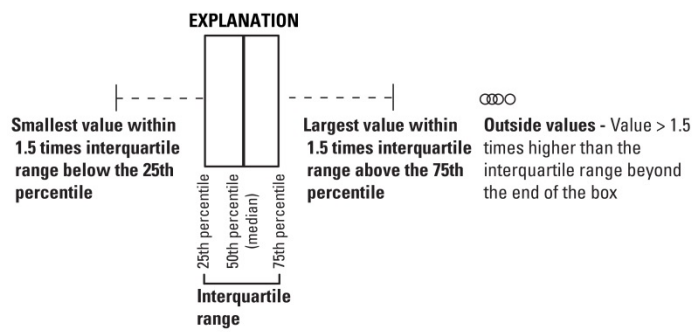


Figure 100. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of silver (Ag) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

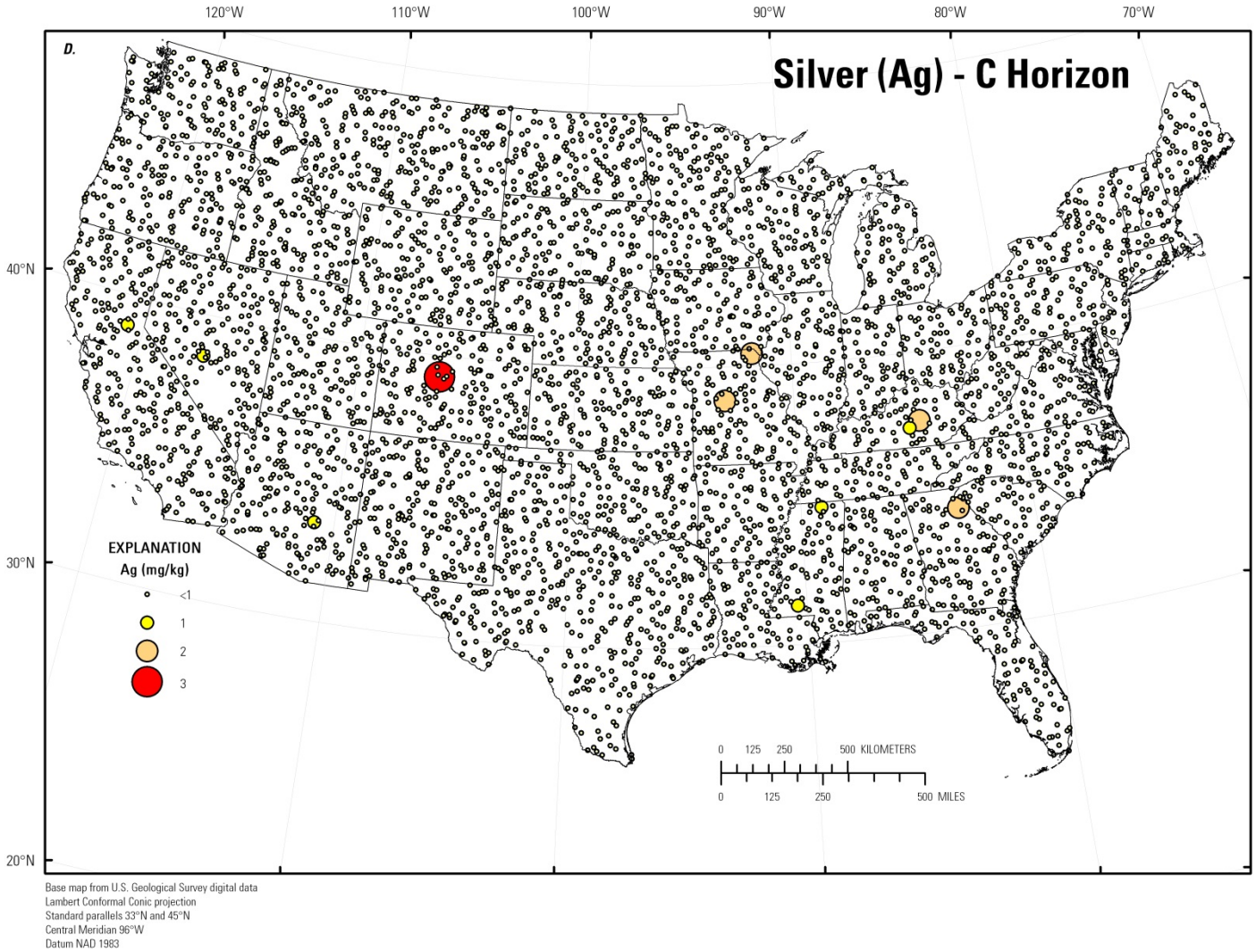
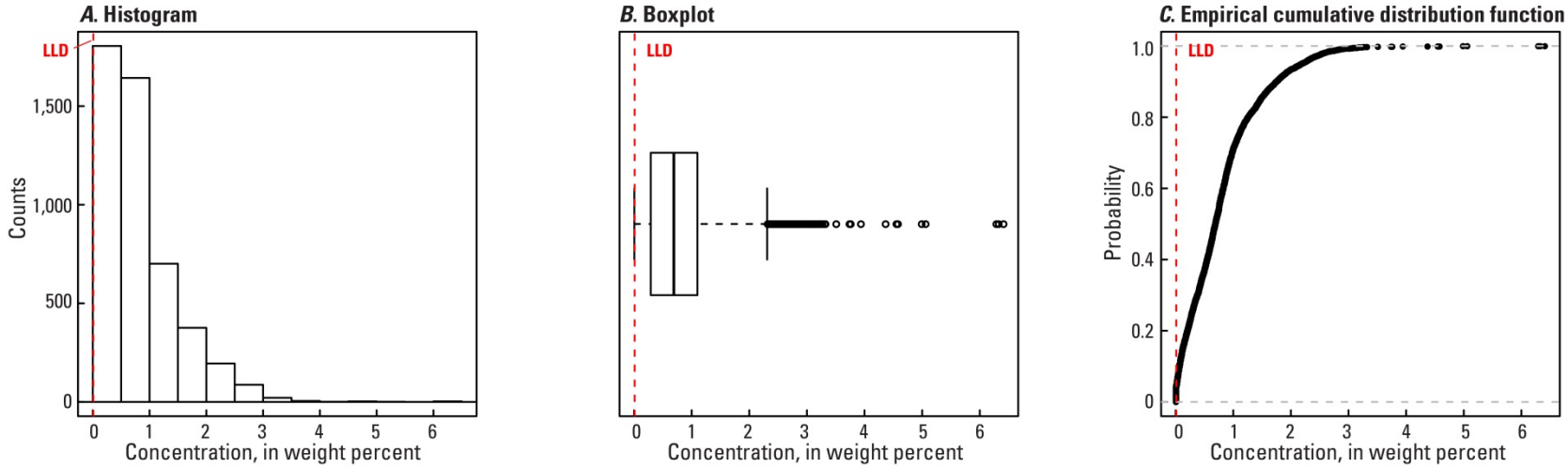


Figure 100. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of silver (Ag) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Sodium (Na) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.01 weight percent
Number below LLD = 200
Minimum = <0.01 weight percent
5 percentile = 0.02 weight percent
25 percentile = 0.29 weight percent
50 percentile = 0.69 weight percent
75 percentile = 1.10 weight percent
95 percentile = 2.19 weight percent
Maximum = 6.41 weight percent
MAD = 0.608 weight percent
Robust CV = 88.1 %

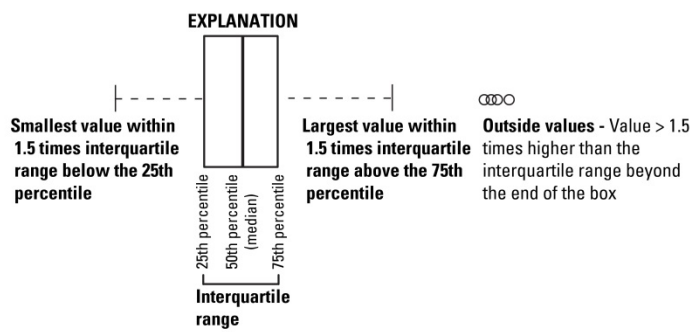


Figure 101. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sodium (Na) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).

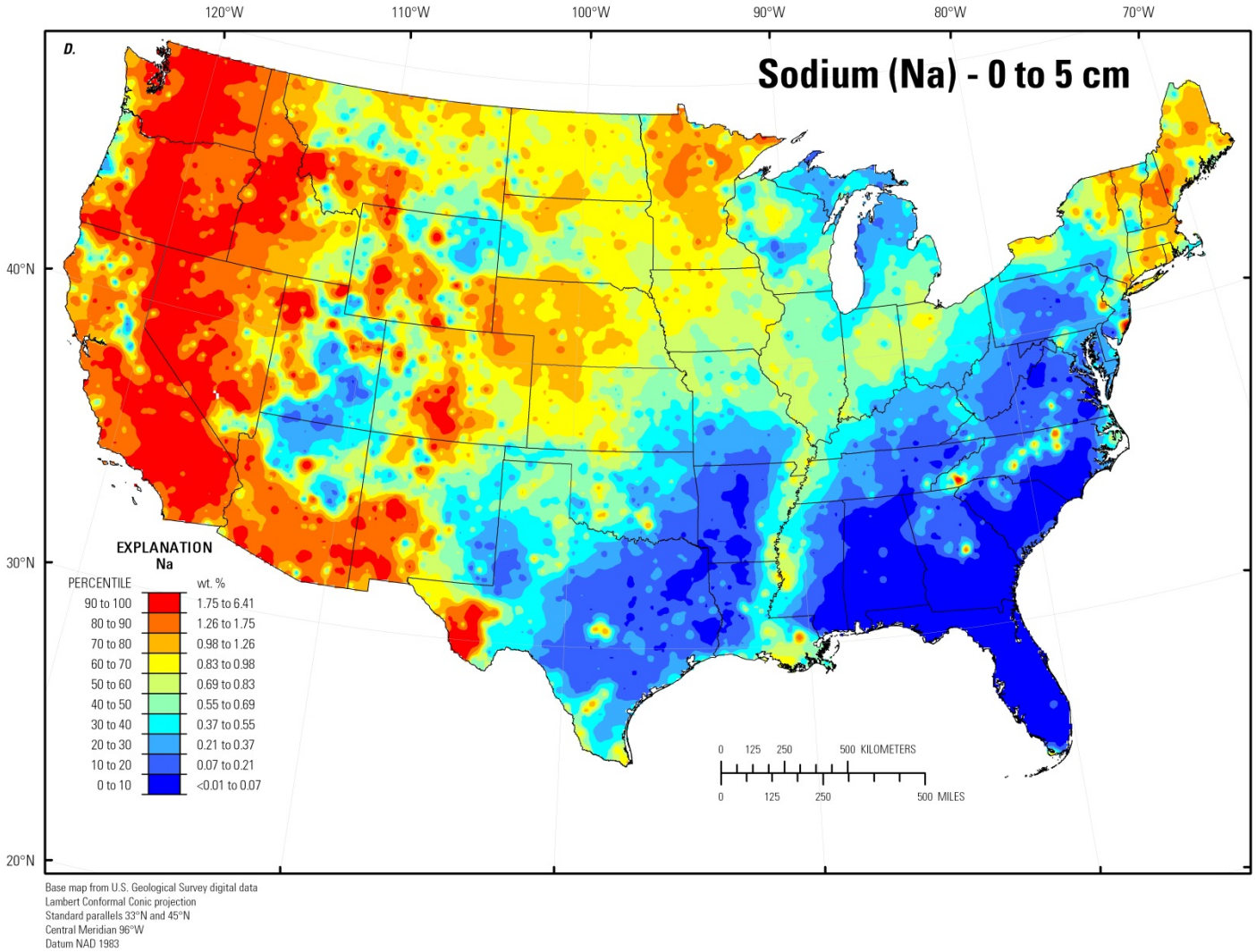
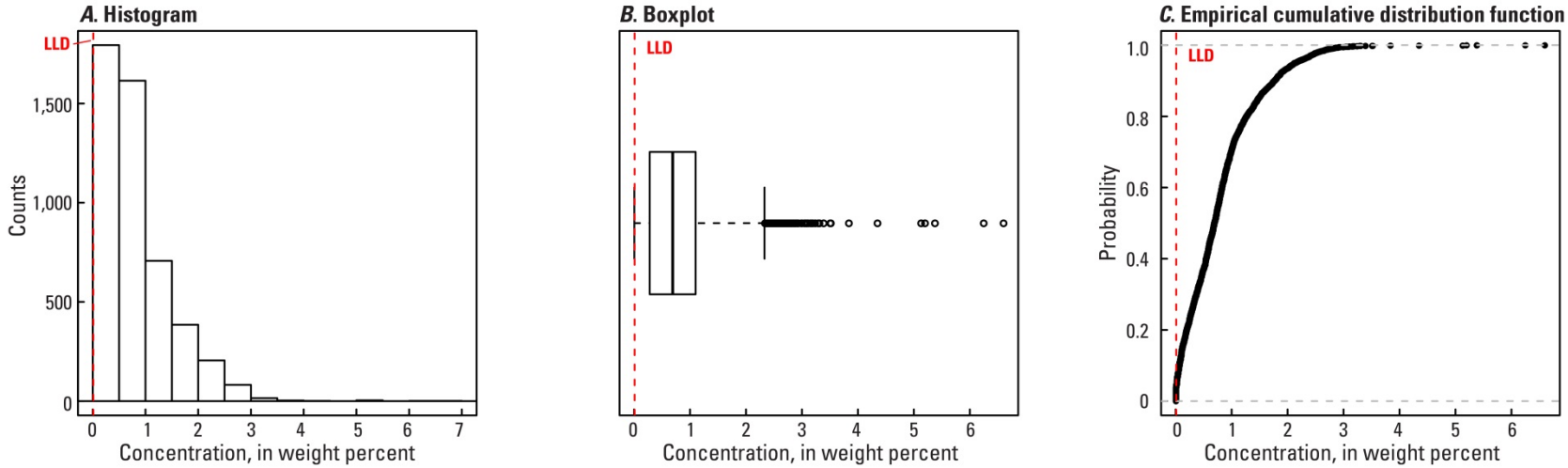


Figure 101. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sodium (Na) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).—Continued

Sodium (Na) in soil A horizon



Number of samples = 4,813
LLD = 0.01 weight percent
Number below LLD = 182
Minimum = <0.01 weight percent
5 percentile = 0.02 weight percent
25 percentile = 0.28 weight percent
50 percentile = 0.69 weight percent
75 percentile = 1.10 weight percent
95 percentile = 2.13 weight percent
Maximum = 6.6 weight percent
MAD = 0.593 weight percent
Robust CV = 85.9 %

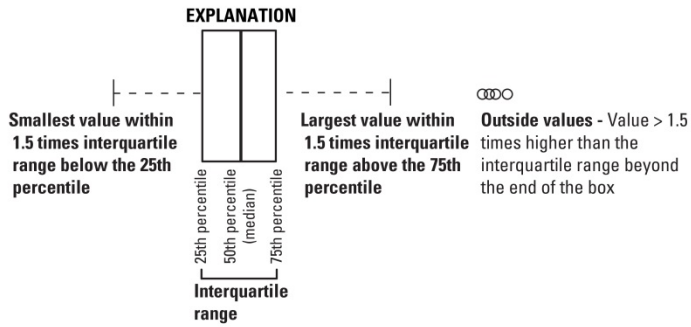


Figure 102. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sodium (Na) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

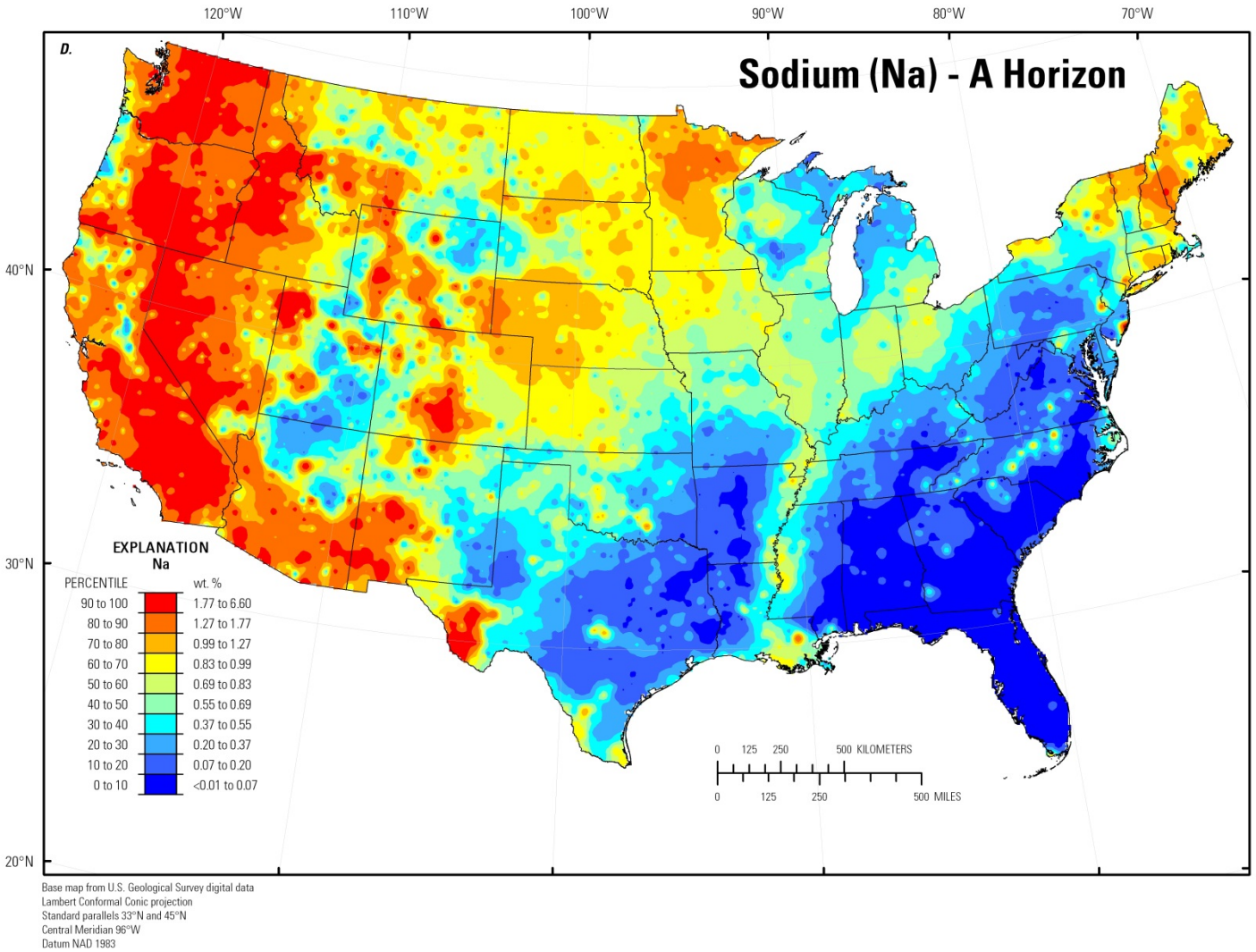
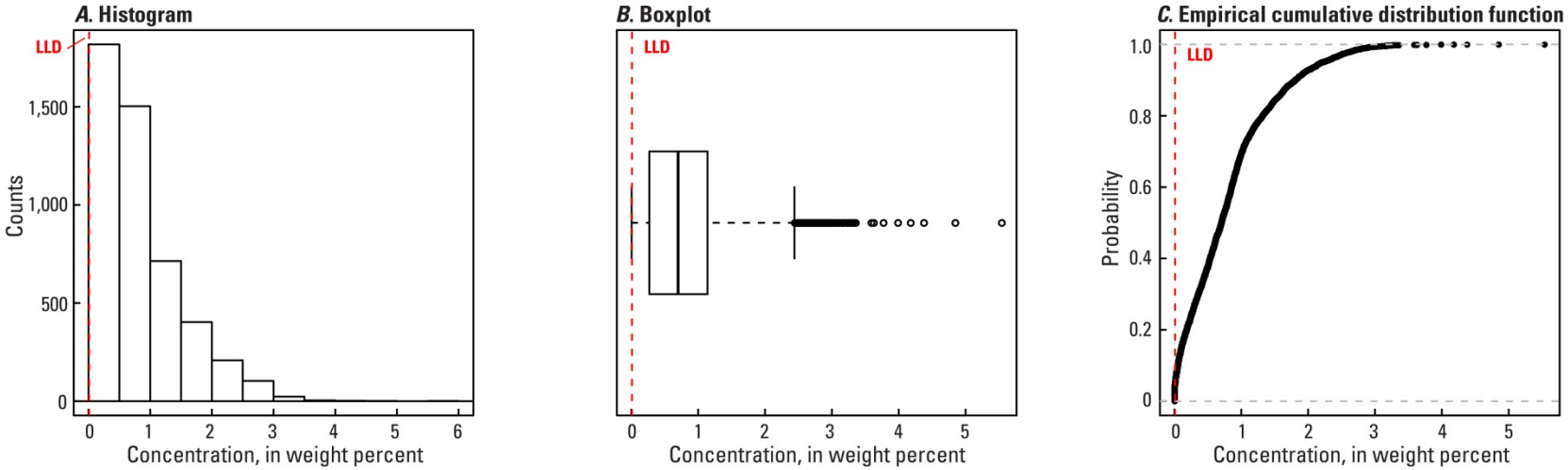


Figure 102. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sodium (Na) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

Sodium (Na) in soil C horizon



Number of samples = 4,780
LLD = 0.01 weight percent
Number below LLD = 214
Minimum = <0.01 weight percent
5 percentile = 0.01 weight percent
25 percentile = 0.27 weight percent
50 percentile = 0.70 weight percent
75 percentile = 1.14 weight percent
95 percentile = 2.21 weight percent
Maximum = 5.54 weight percent
MAD = 0.623 weight percent
Robust CV = 89 %

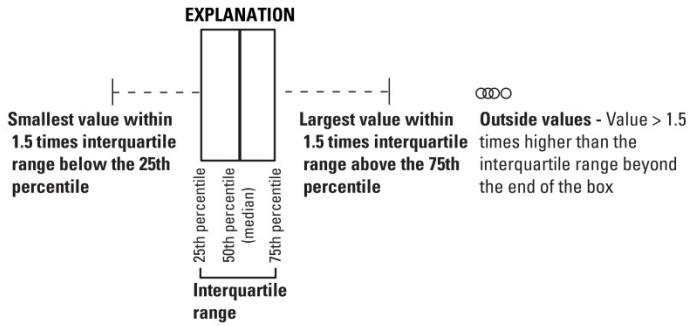


Figure 103. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sodium (Na) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

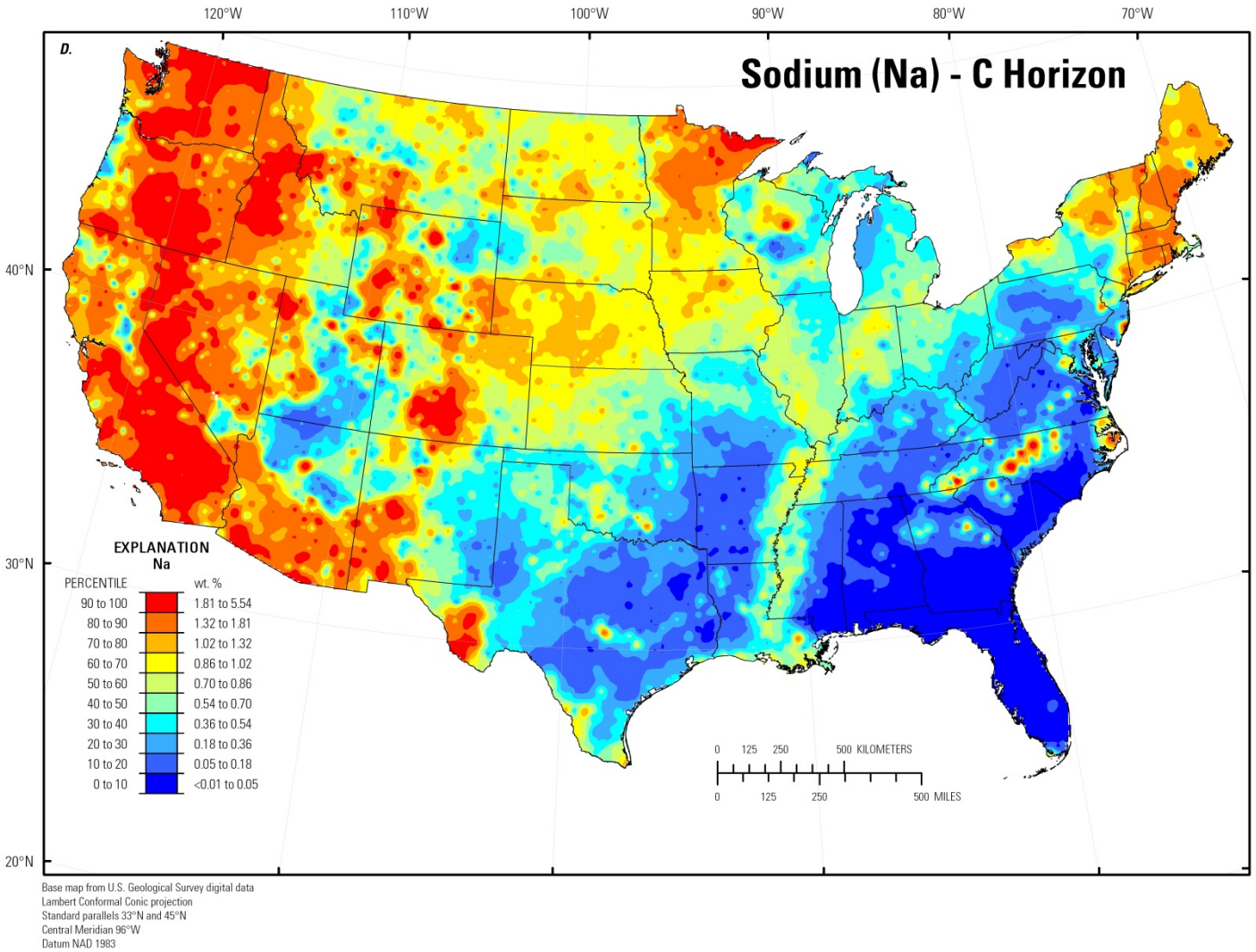


Figure 103. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sodium (Na) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

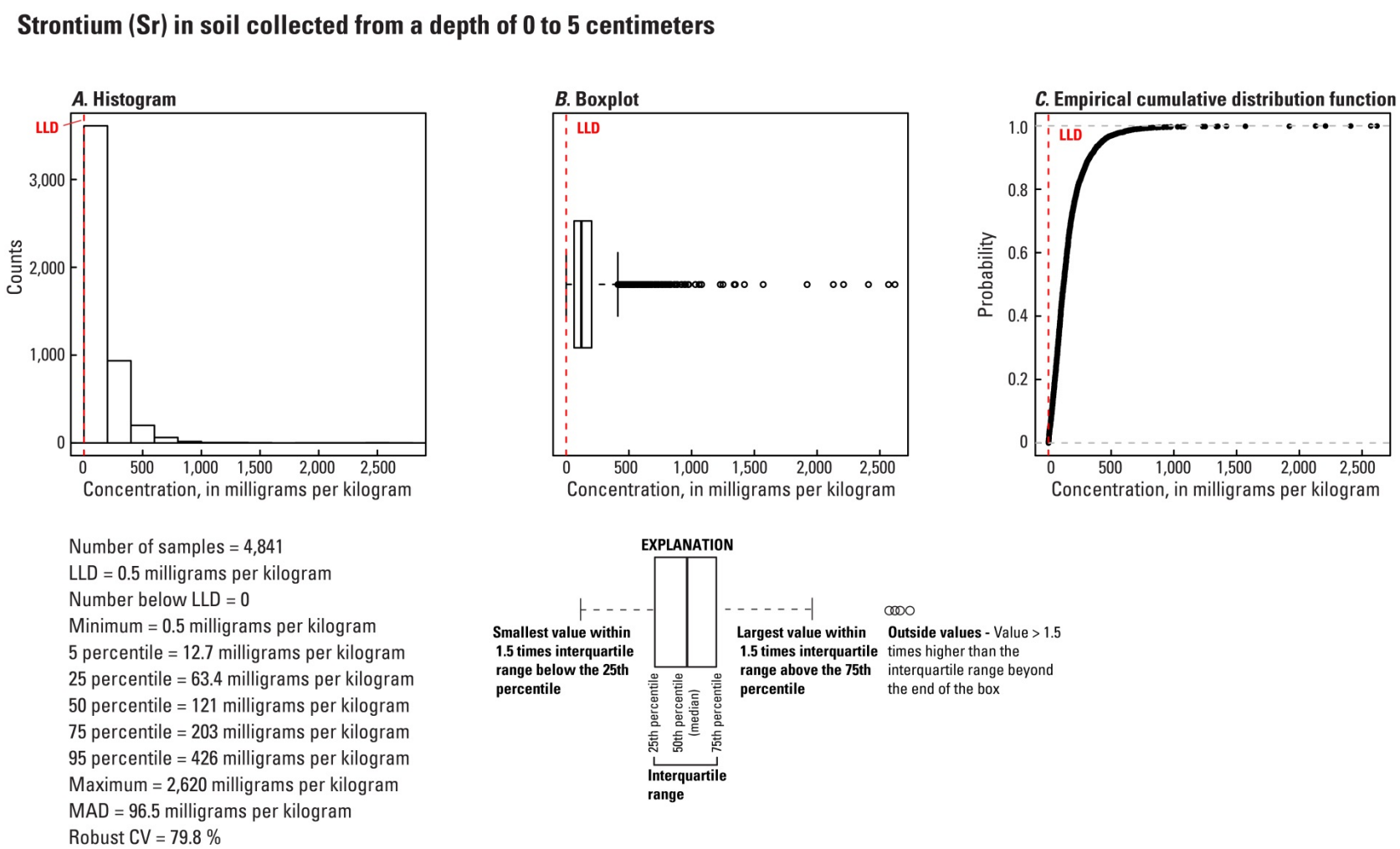


Figure 104. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of strontium (Sr) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

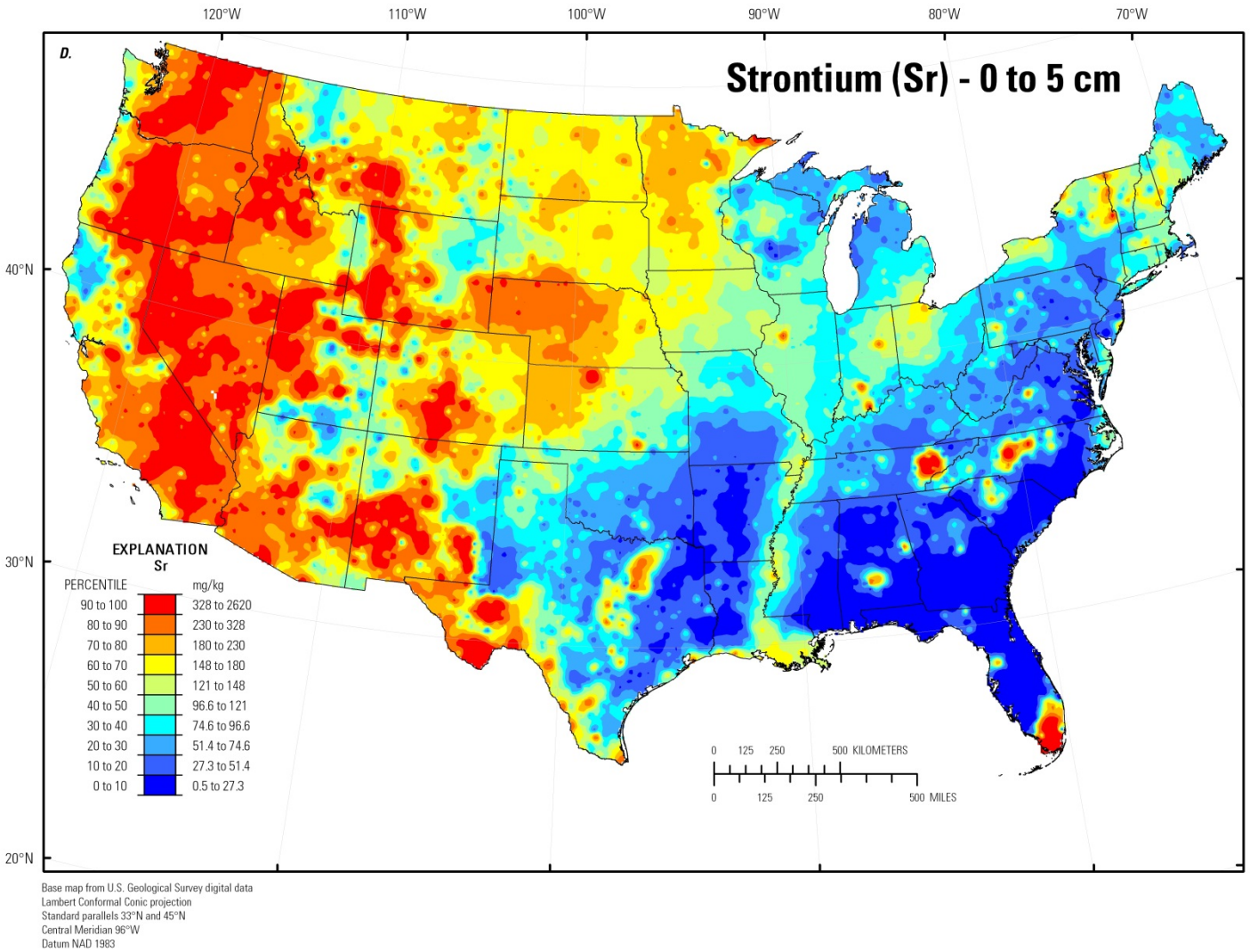
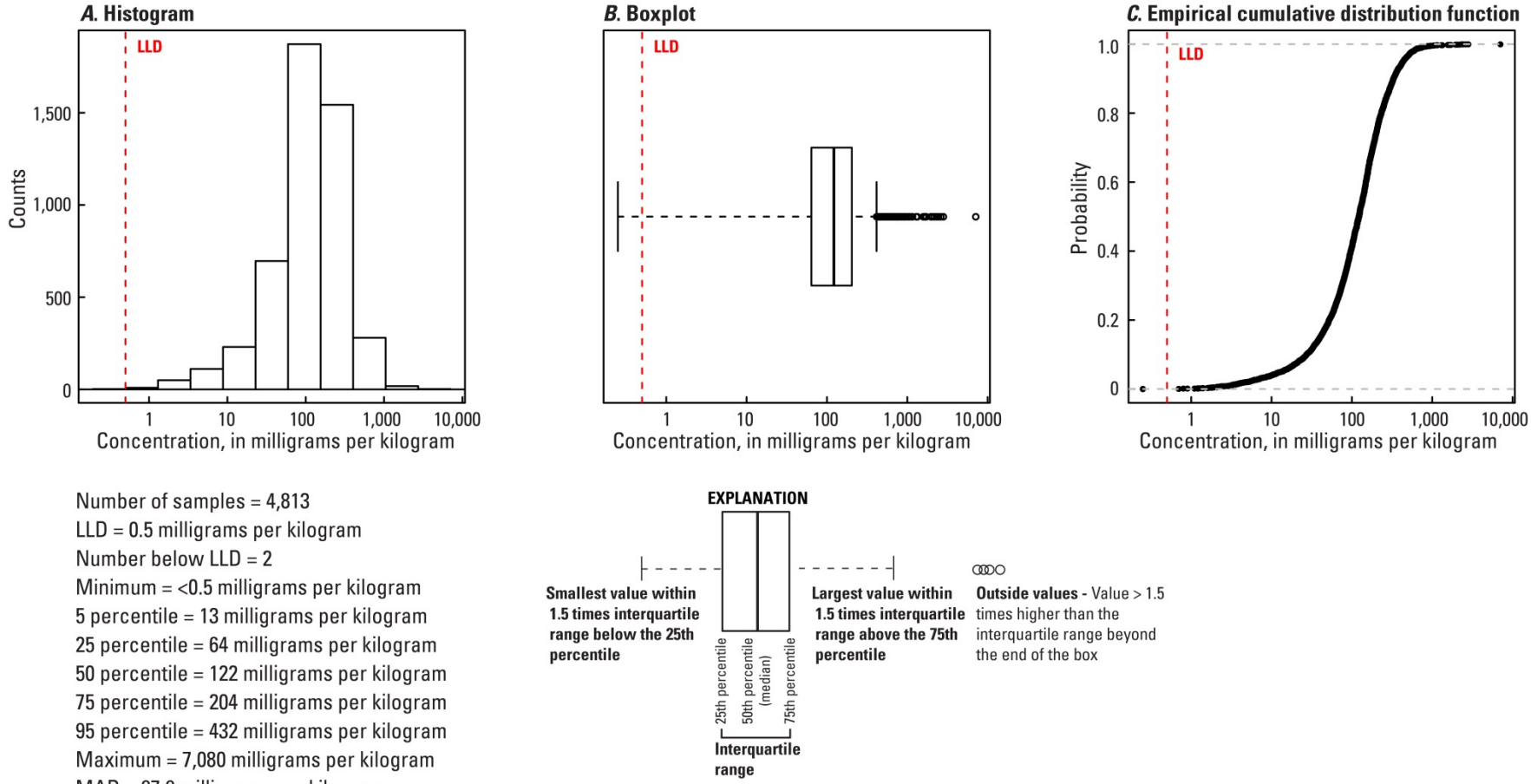


Figure 104. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of strontium (Sr) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Strontium (Sr) in soil A horizon



Number of samples = 4,813
LLD = 0.5 milligrams per kilogram
Number below LLD = 2
Minimum = <0.5 milligrams per kilogram
5 percentile = 13 milligrams per kilogram
25 percentile = 64 milligrams per kilogram
50 percentile = 122 milligrams per kilogram
75 percentile = 204 milligrams per kilogram
95 percentile = 432 milligrams per kilogram
Maximum = 7,080 milligrams per kilogram
MAD = 97.9 milligrams per kilogram
Robust CV = 80.2 %

Figure 105. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of strontium (Sr) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

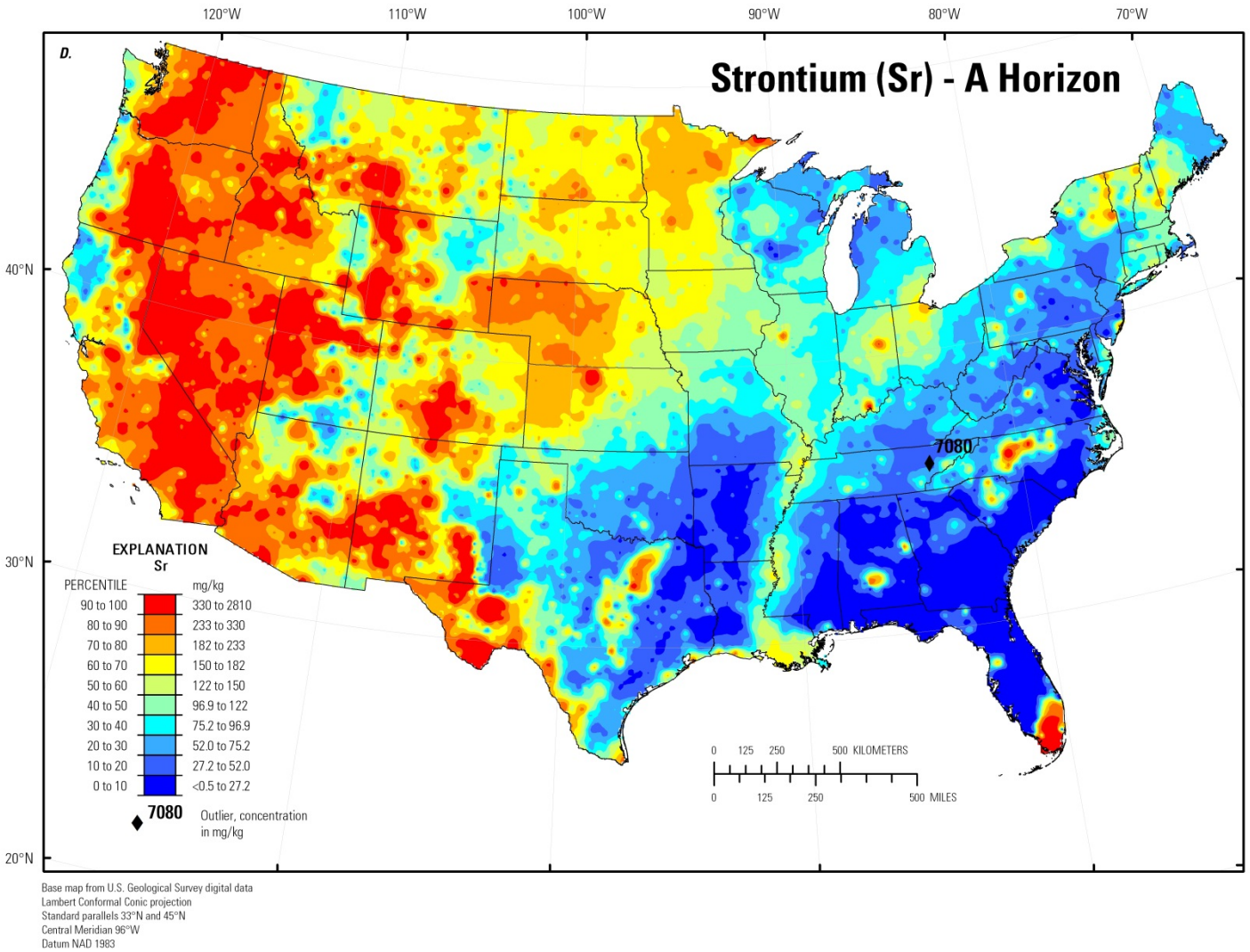


Figure 105. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of strontium (Sr) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

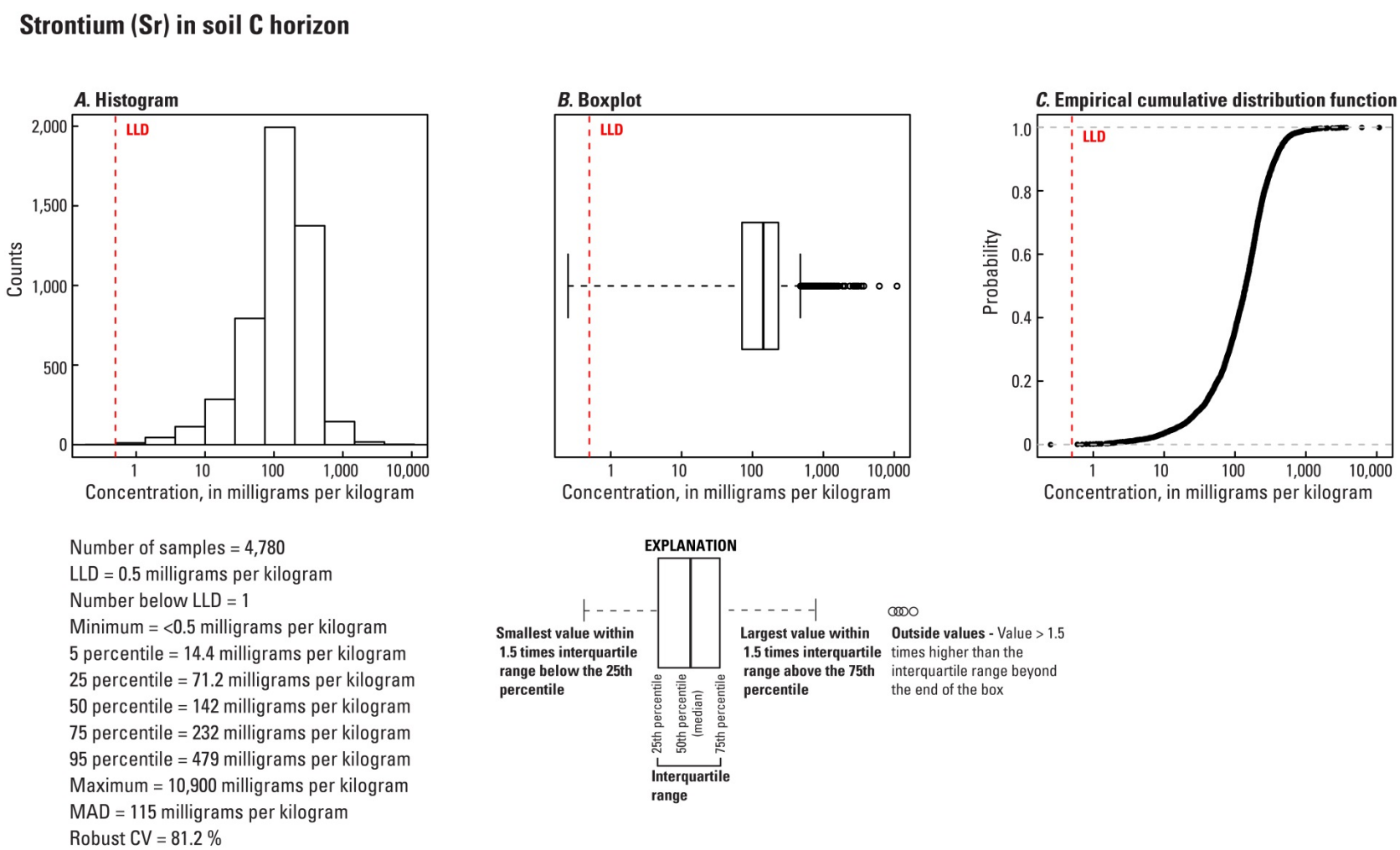


Figure 106. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of strontium (Sr) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

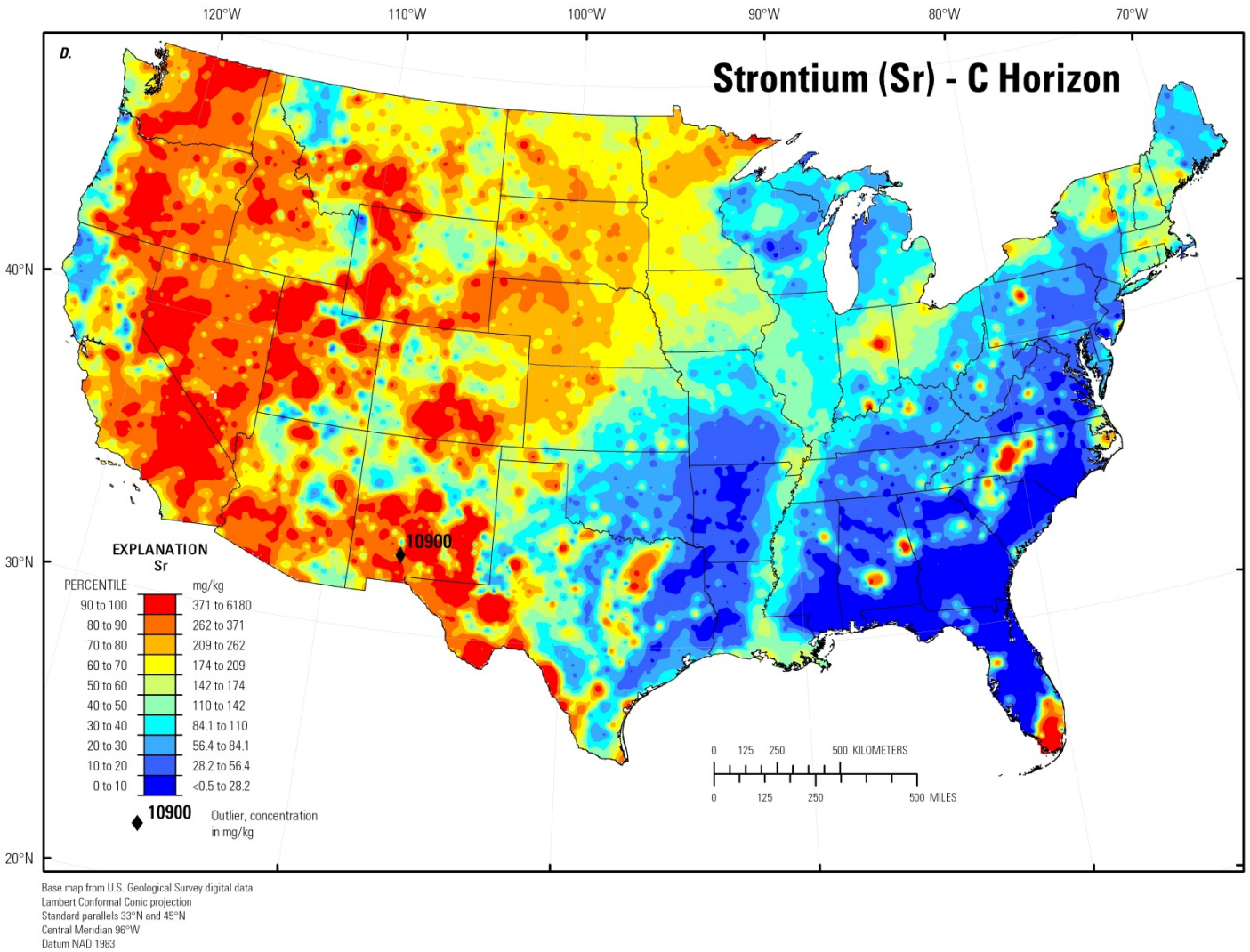
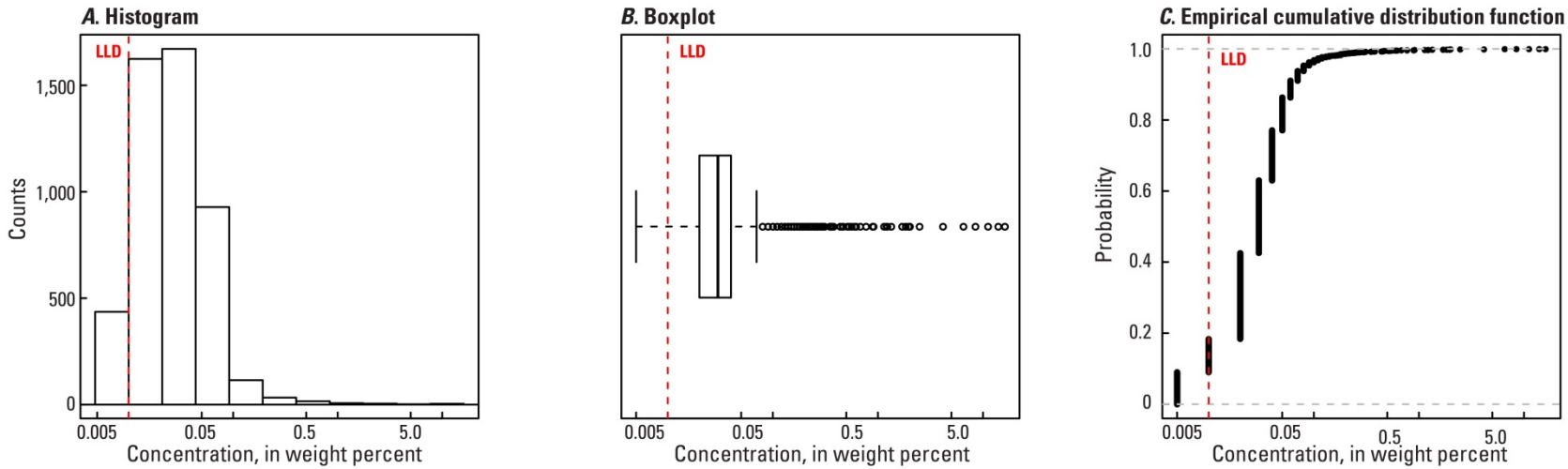


Figure 106. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of strontium (Sr) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Sulfur (S) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.01 weight percent
Number below LLD = 436
Minimum = <0.01 weight percent
5 percentile = <0.01 weight percent
25 percentile = 0.02 weight percent
50 percentile = 0.03 weight percent
75 percentile = 0.04 weight percent
95 percentile = 0.08 weight percent
Maximum = 16.1 weight percent
MAD = ND
Robust CV = ND

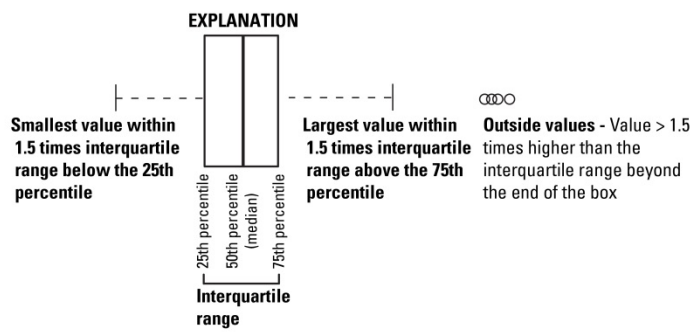


Figure 107. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sulfur (S) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent; cm, centimeters).

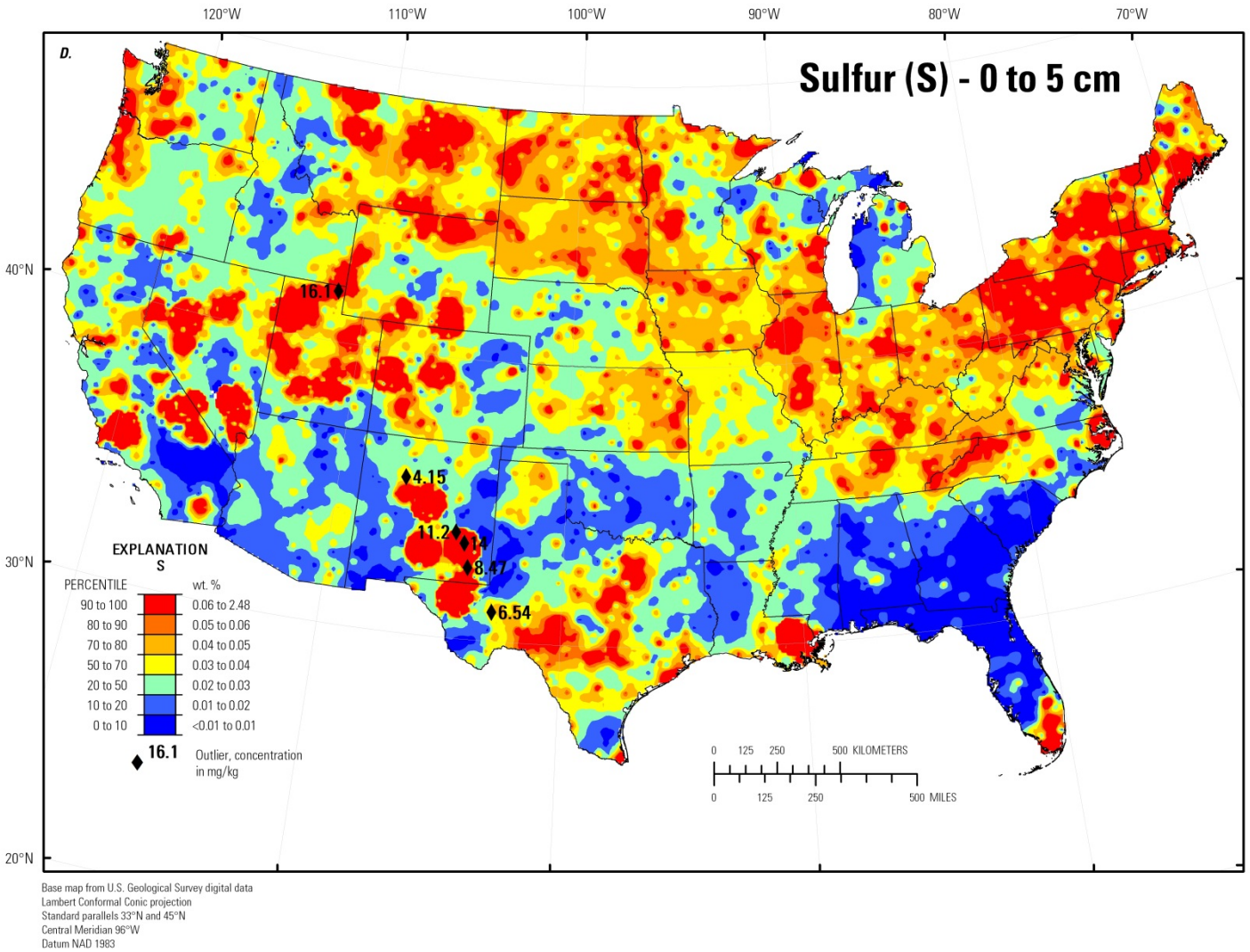


Figure 107. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sulfur (S) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent; cm, centimeters).—Continued

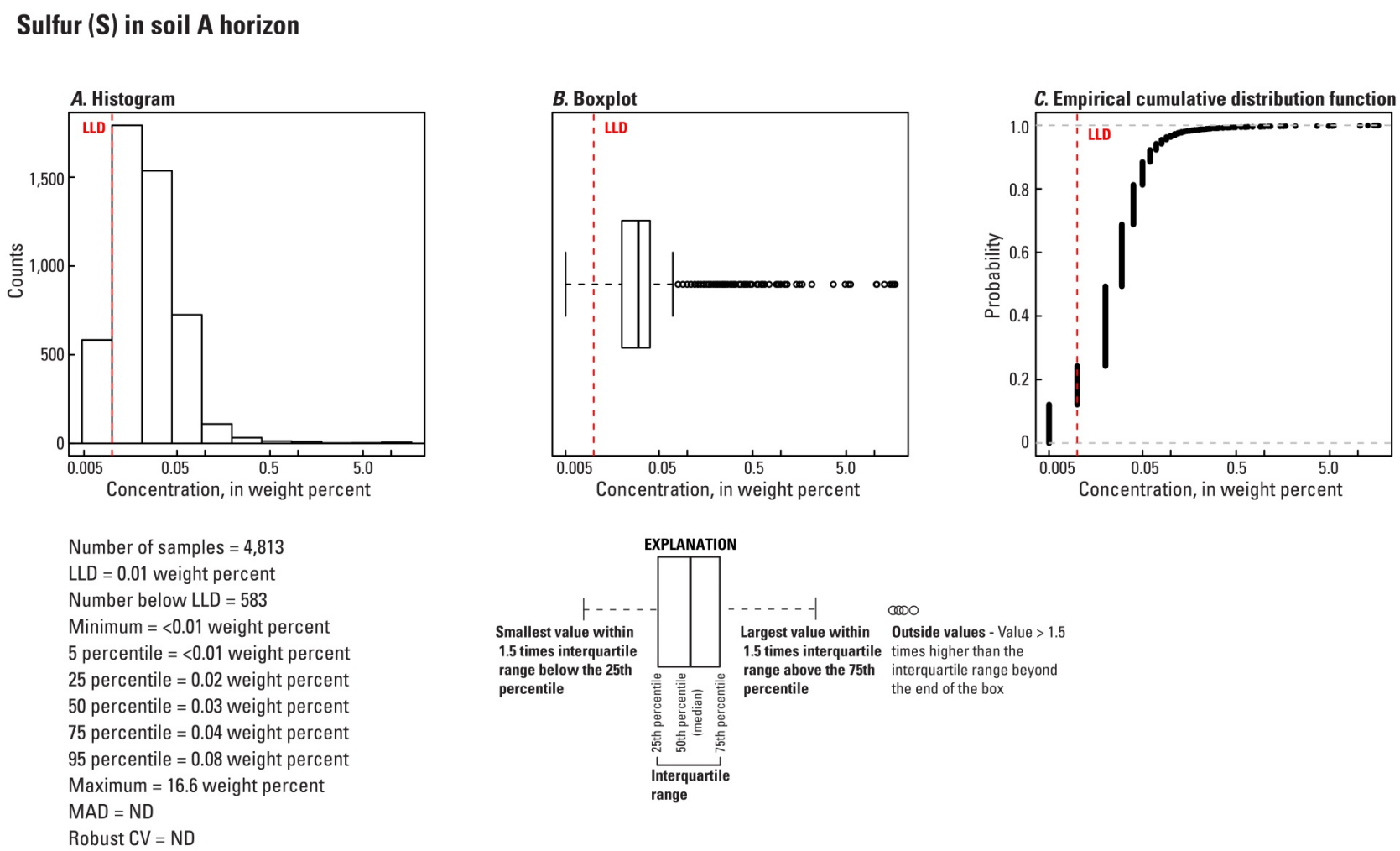


Figure 108. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sulfur (S) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).

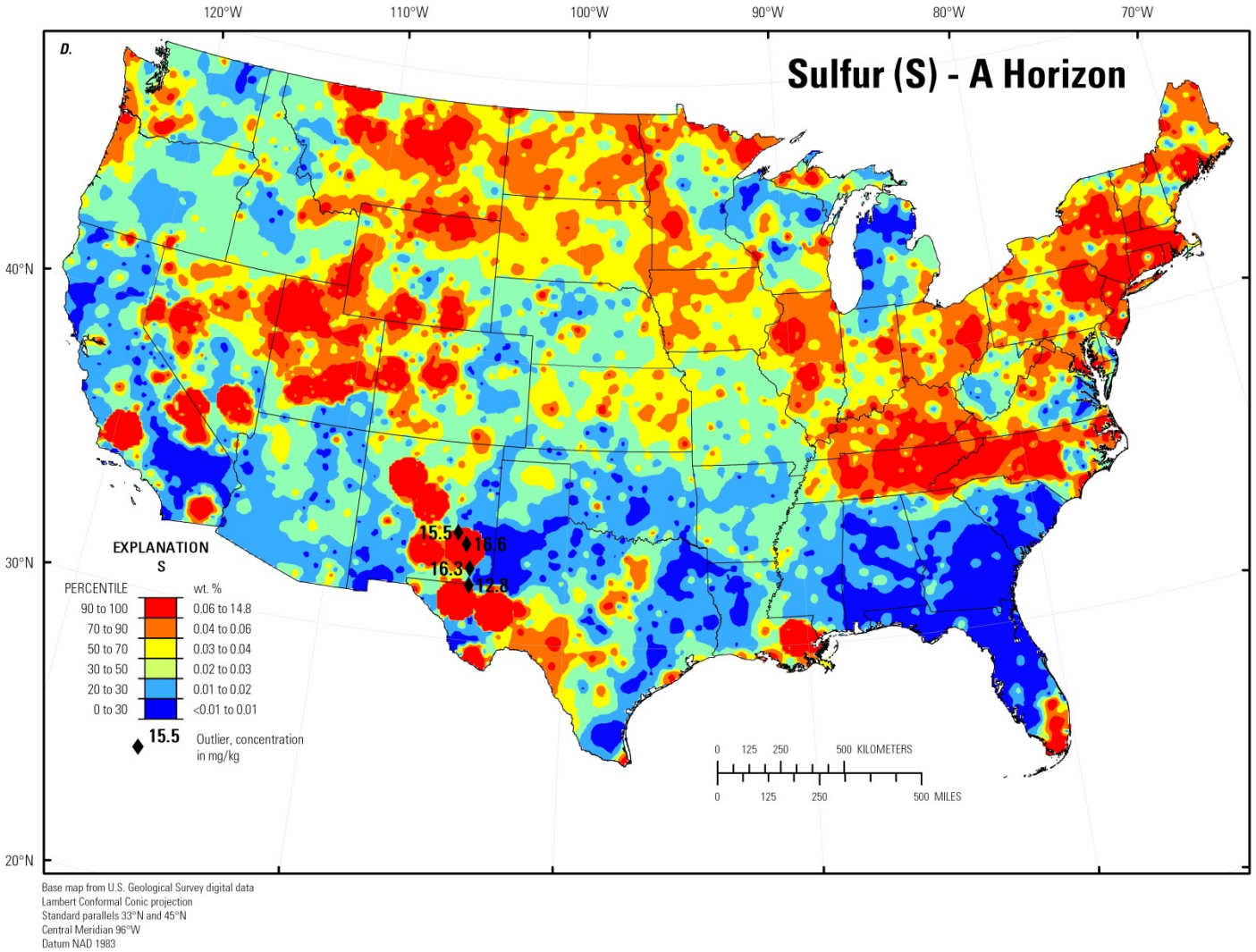


Figure 108. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sulfur (S) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).—Continued

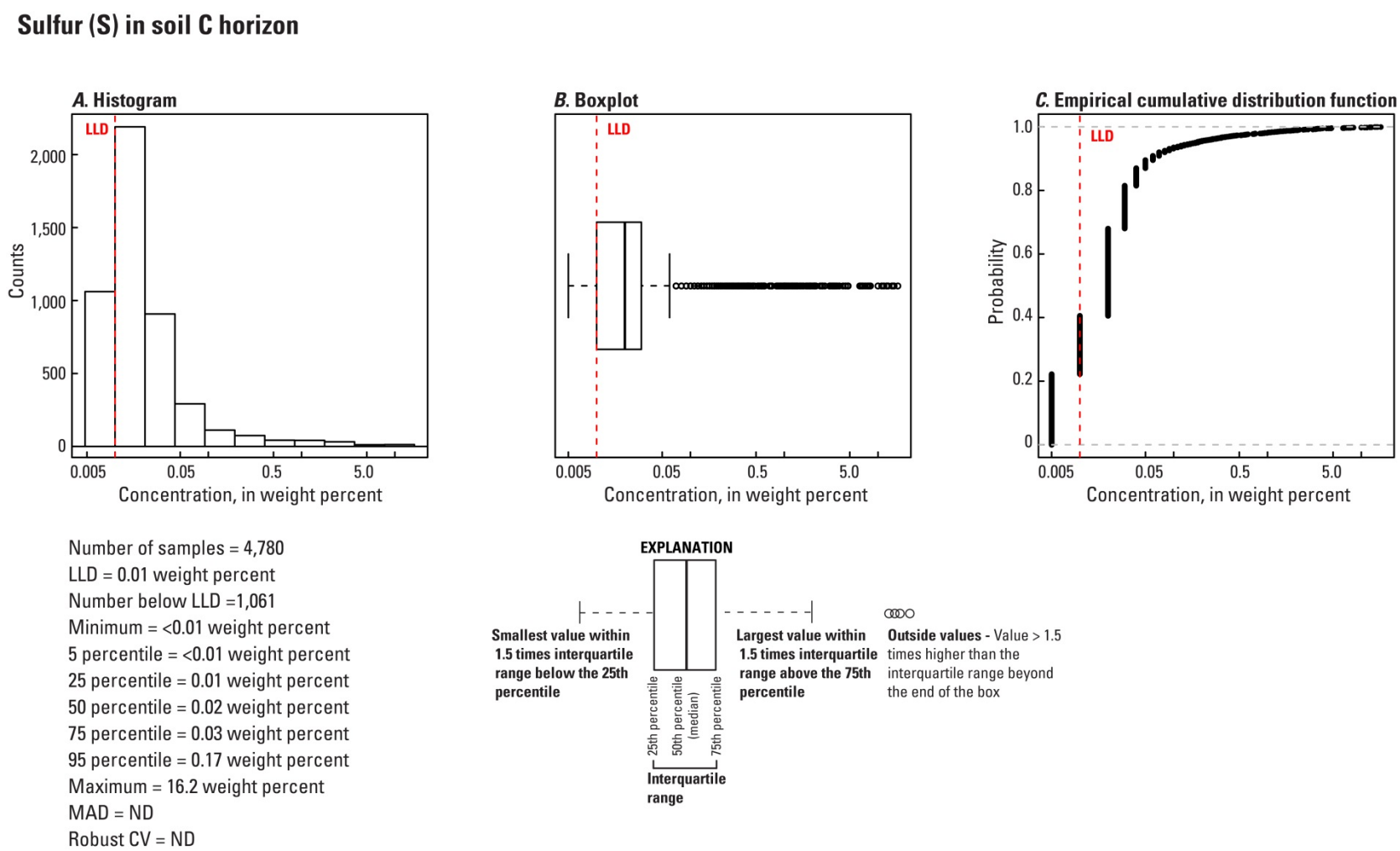


Figure 109. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sulfur (S) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).

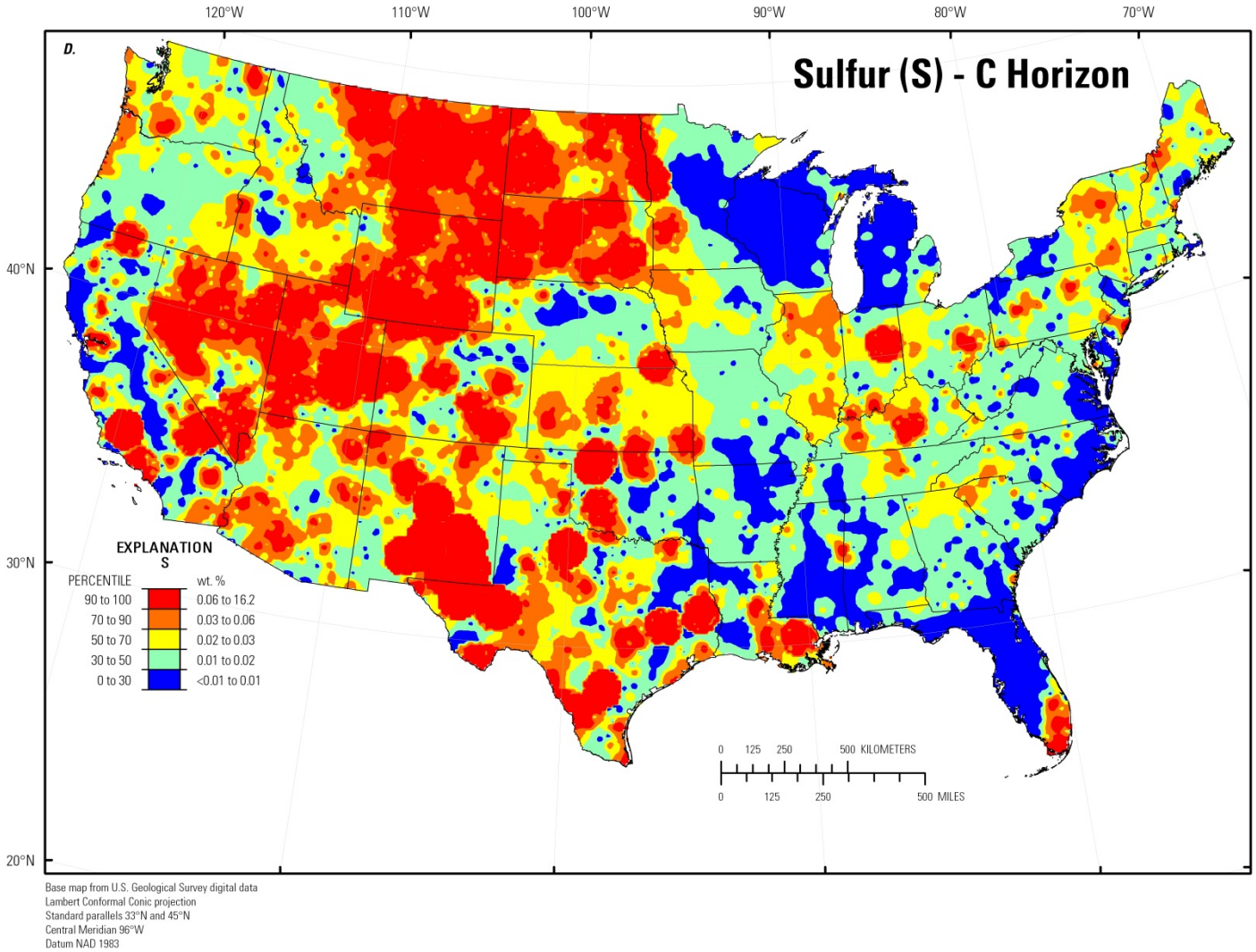
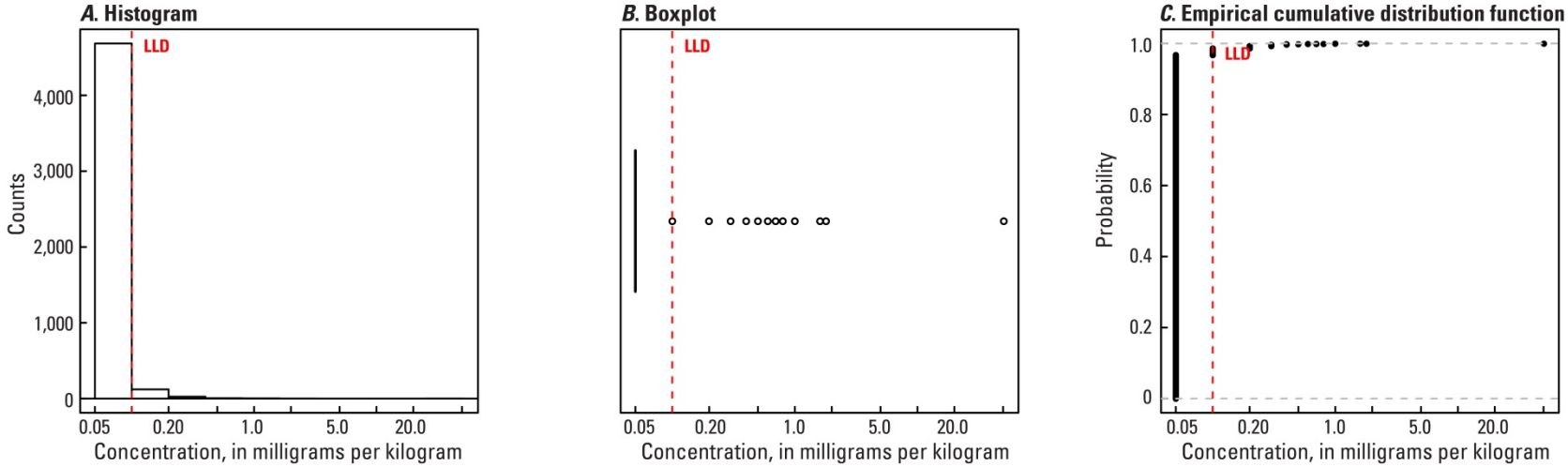


Figure 109. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of sulfur (S) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; wt. %, weight percent).—Continued

Tellurium (Te) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.1 milligrams per kilogram
Number below LLD = 4,684
Minimum = <0.1 milligrams per kilogram
5 percentile = <0.1 milligrams per kilogram
25 percentile = <0.1 milligrams per kilogram
50 percentile = <0.1 milligrams per kilogram
75 percentile = <0.1 milligrams per kilogram
95 percentile = <0.1 milligrams per kilogram
Maximum = 50.5 milligrams per kilogram
MAD = ND
Robust CV = ND

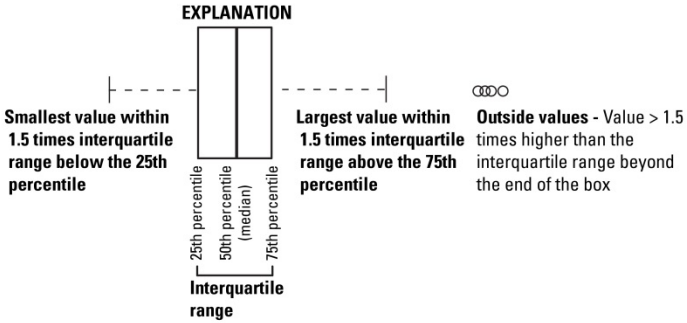


Figure 110. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tellurium (Te) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

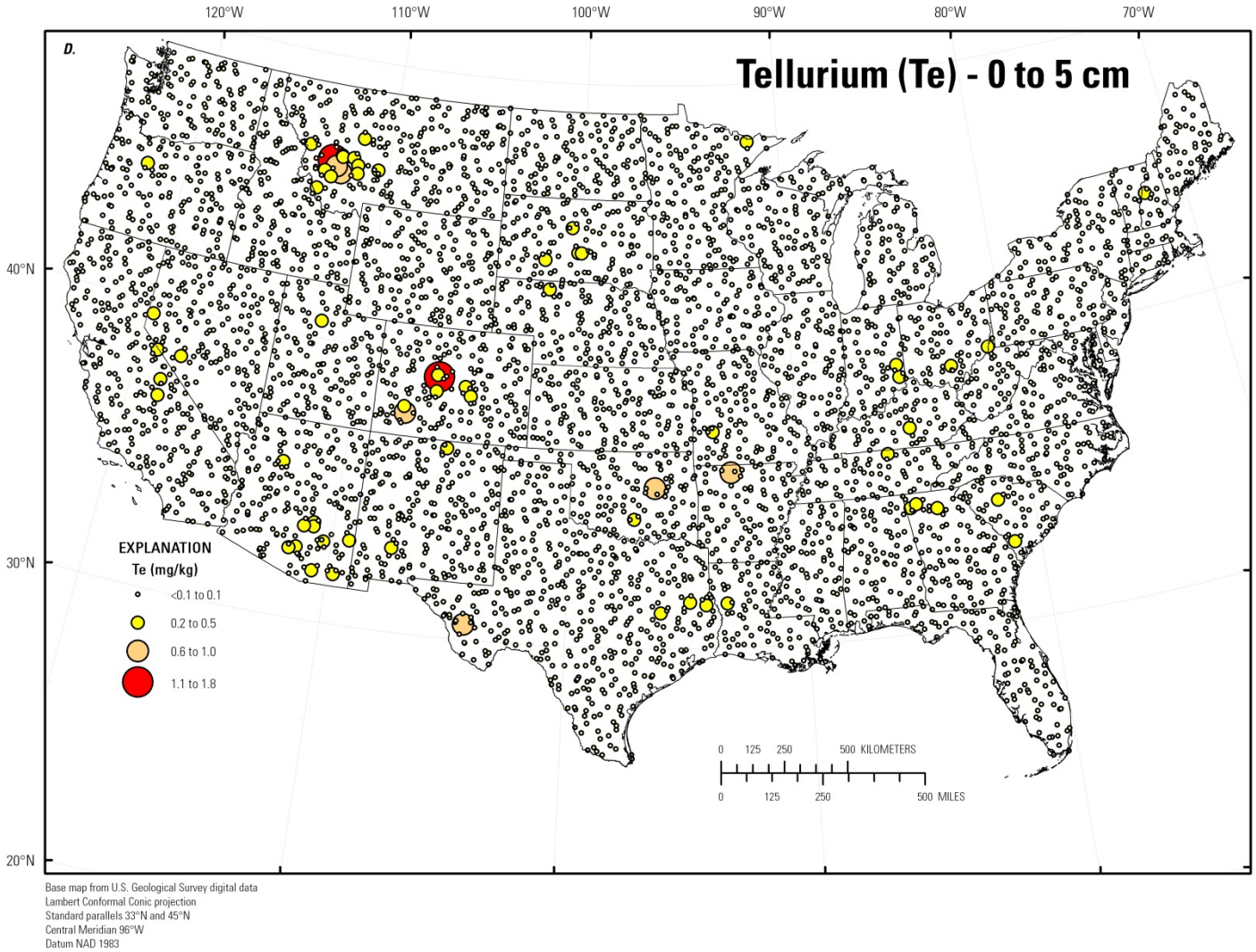
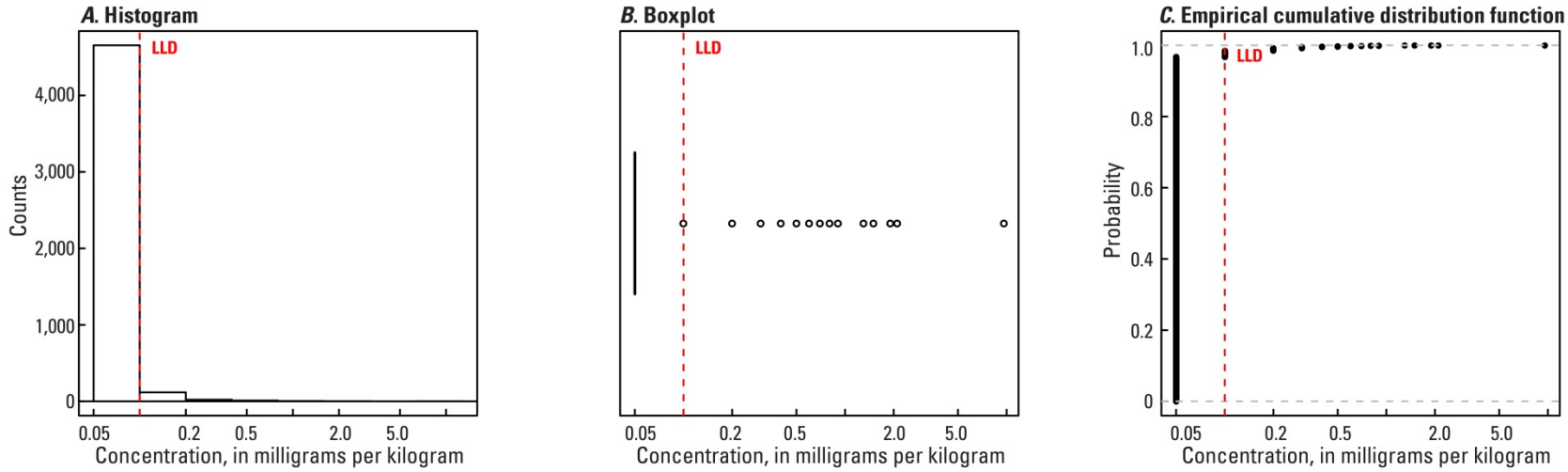


Figure 110. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tellurium (Te) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Tellurium (Te) in soil A horizon



Number of samples = 4,813
LLD = 0.1 milligrams per kilogram
Number below LLD = 4,655
Minimum = <0.1 milligrams per kilogram
5 percentile = <0.1 milligrams per kilogram
25 percentile = <0.1 milligrams per kilogram
50 percentile = <0.1 milligrams per kilogram
75 percentile = <0.1 milligrams per kilogram
95 percentile = <0.1 milligrams per kilogram
Maximum = 9.6 milligrams per kilogram
MAD = ND
Robust CV = ND

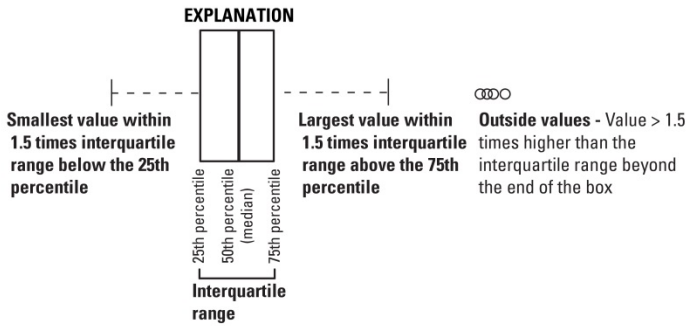


Figure 111. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tellurium (Te) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

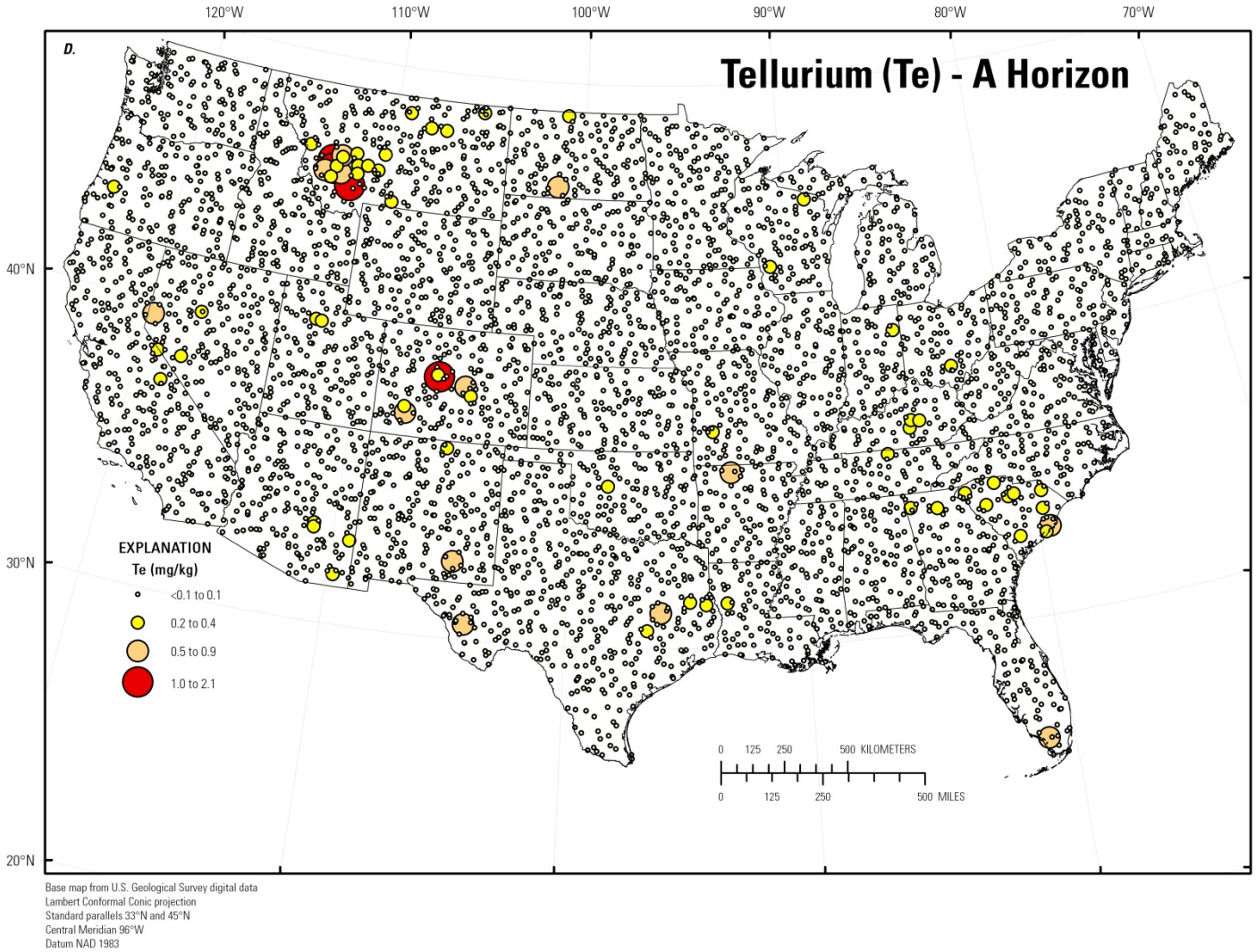
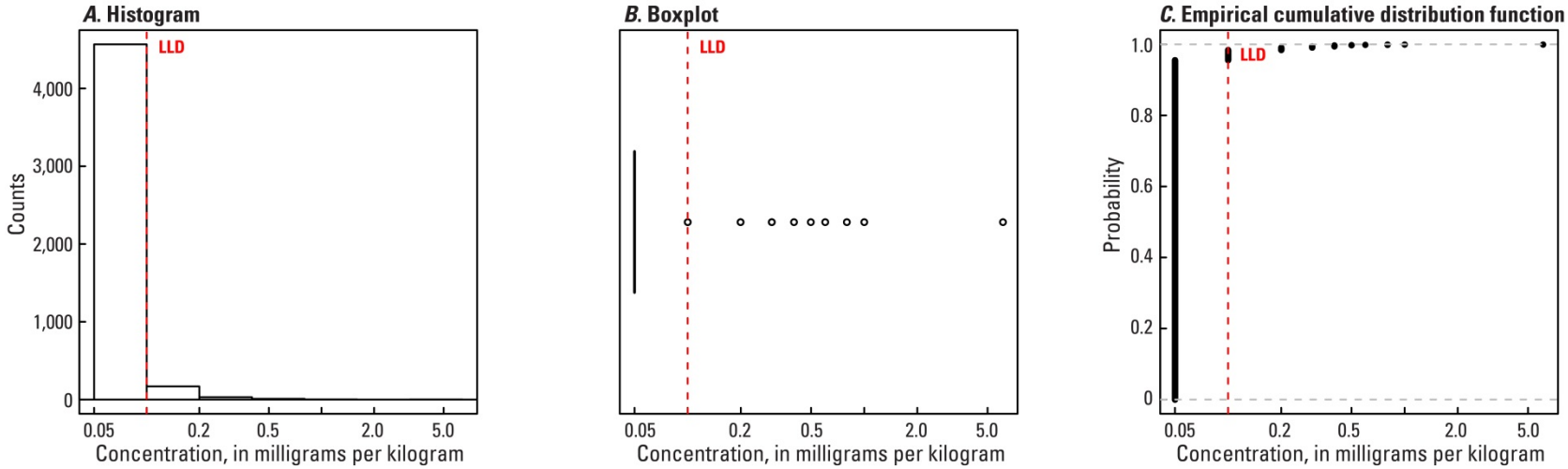


Figure 111. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tellurium (Te) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Tellurium (Te) in soil C horizon



Number of samples = 4,780
LLD = 0.1 milligrams per kilogram
Number below LLD = 4,567
Minimum = <0.1 milligrams per kilogram
5 percentile = <0.1 milligrams per kilogram
25 percentile = <0.1 milligrams per kilogram
50 percentile = <0.1 milligrams per kilogram
75 percentile = <0.1 milligrams per kilogram
95 percentile = <0.1 milligrams per kilogram
Maximum = 6.1 milligrams per kilogram
MAD = ND
Robust CV = ND

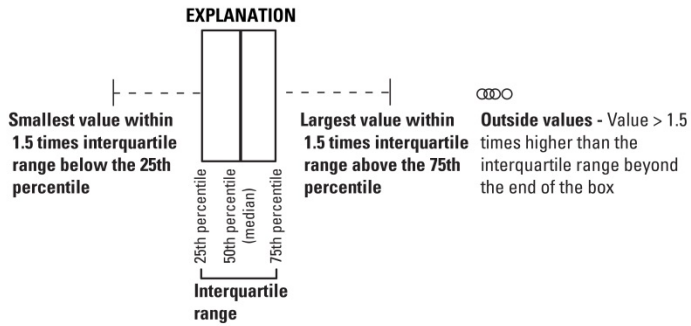


Figure 112. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tellurium (Te) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

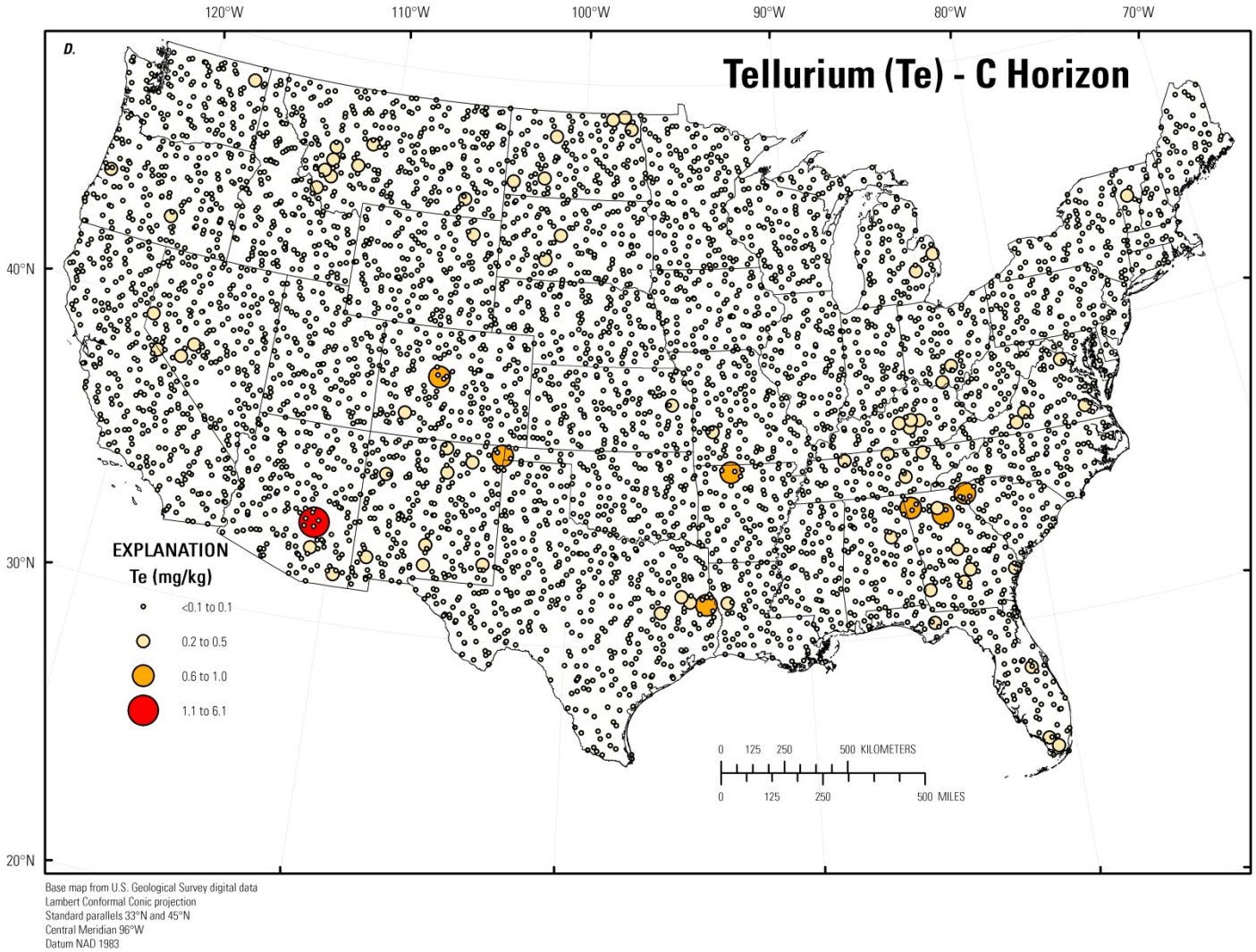


Figure 112. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tellurium (Te) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

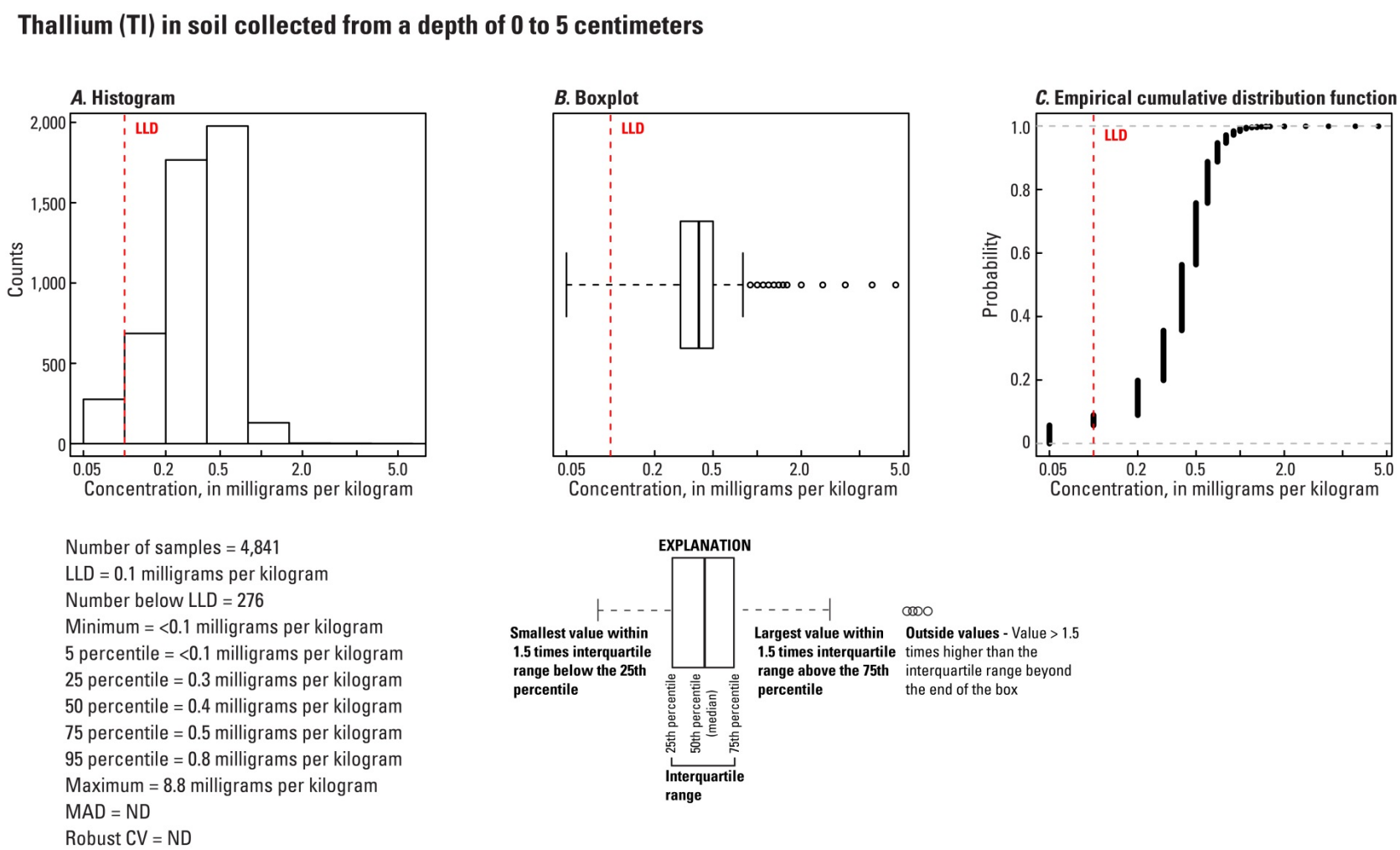


Figure 113. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thallium (Tl) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).

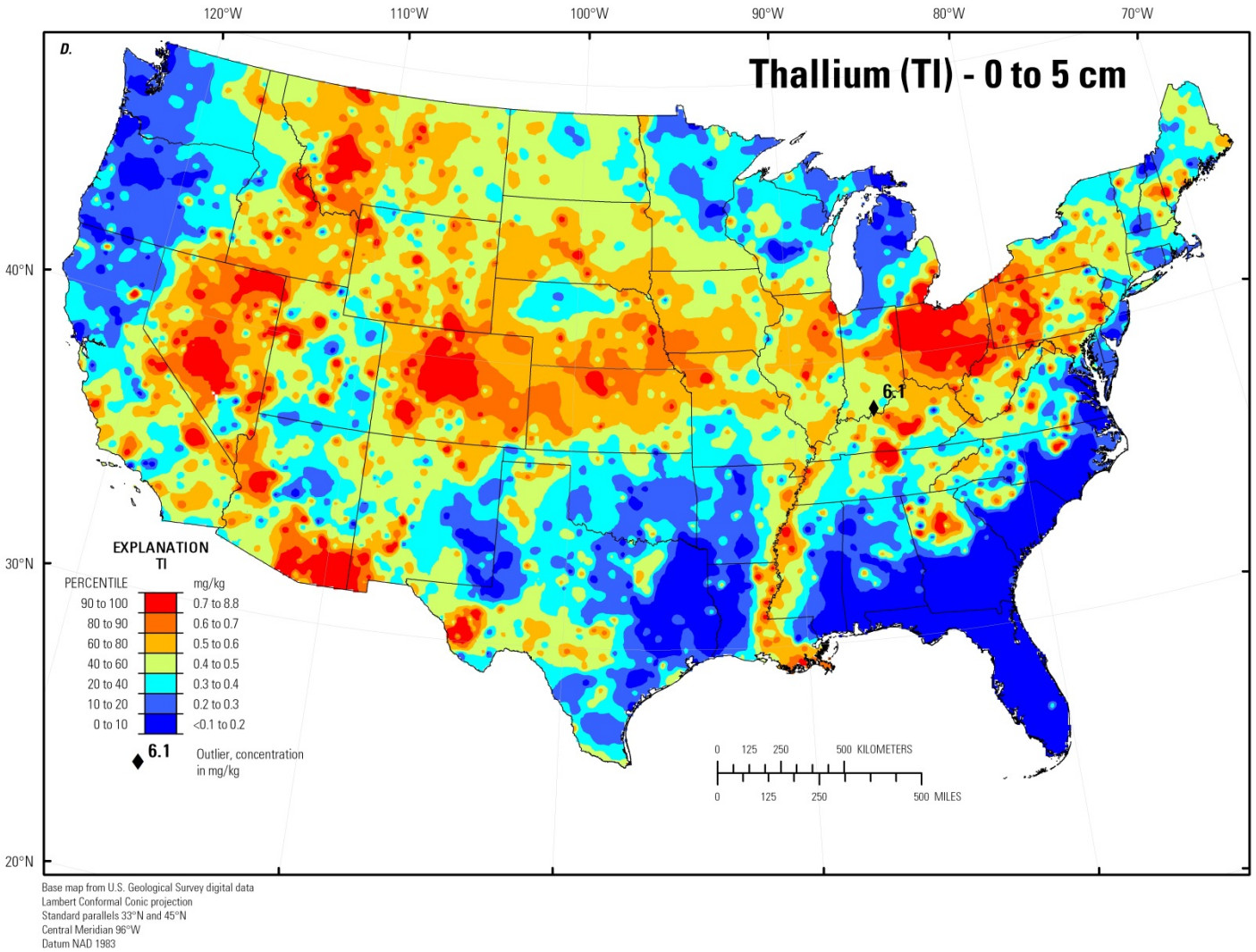


Figure 113. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thallium (Tl) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

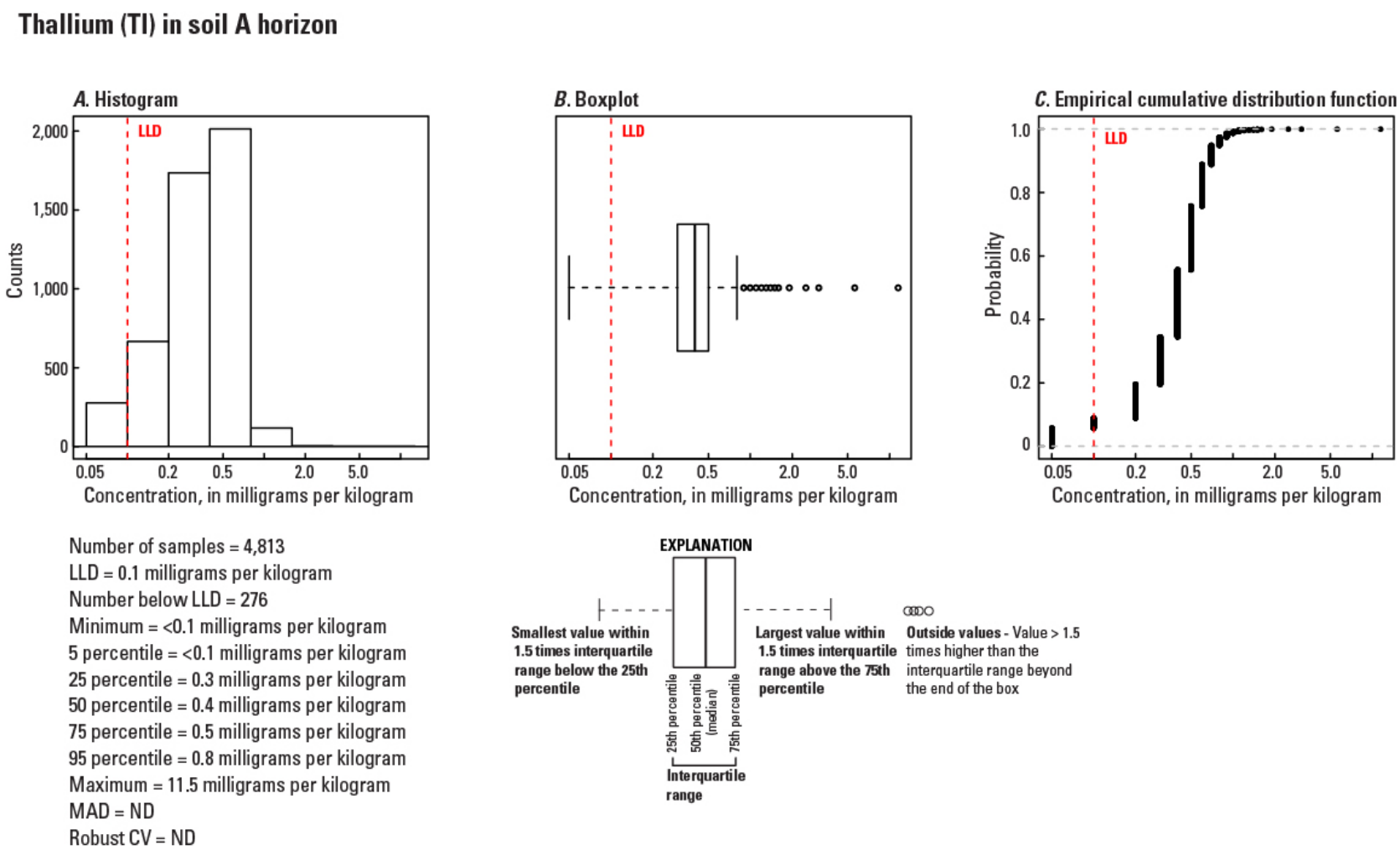


Figure 114. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thallium (Tl) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

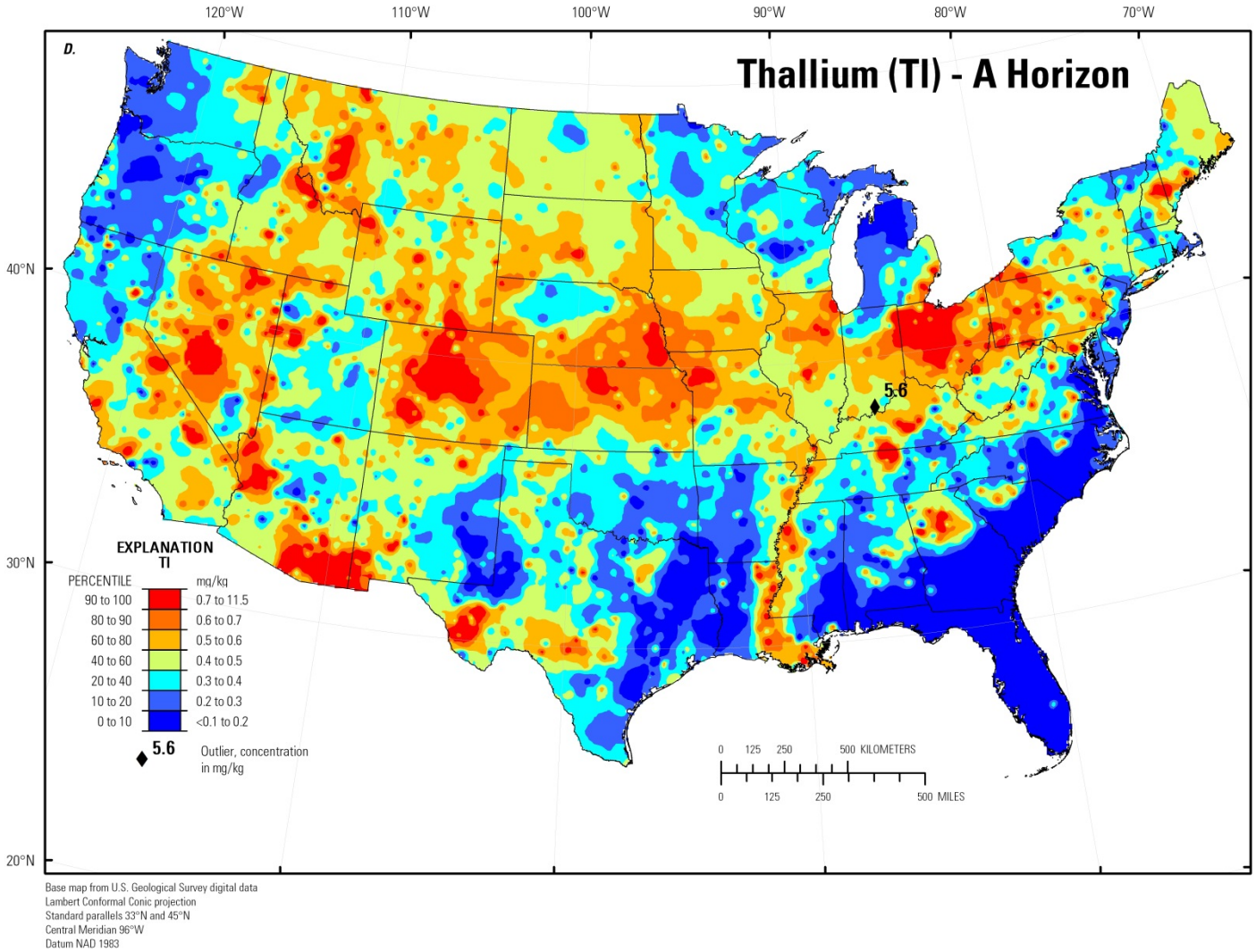


Figure 114. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thallium (Tl) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

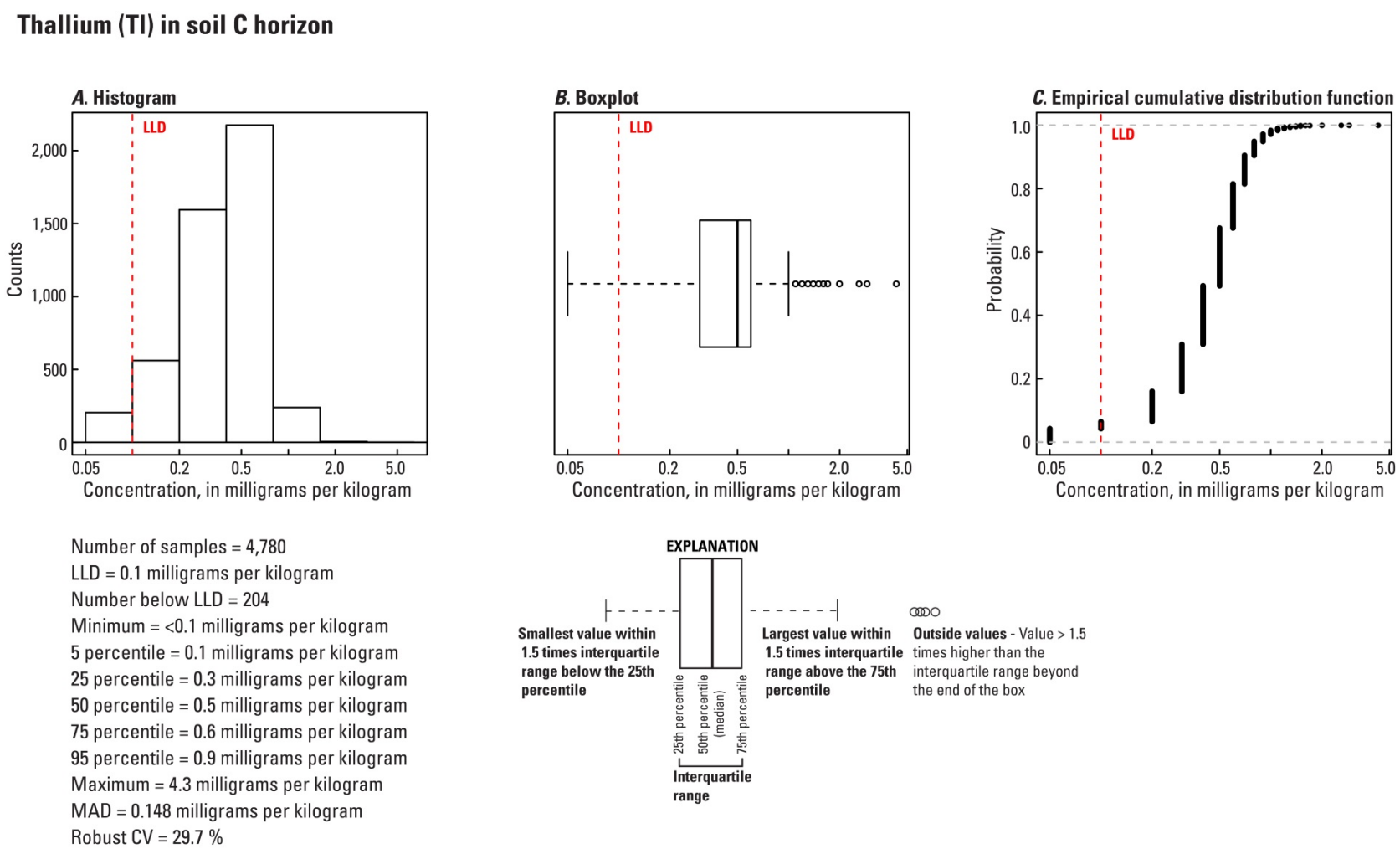


Figure 115. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thallium (Tl) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).

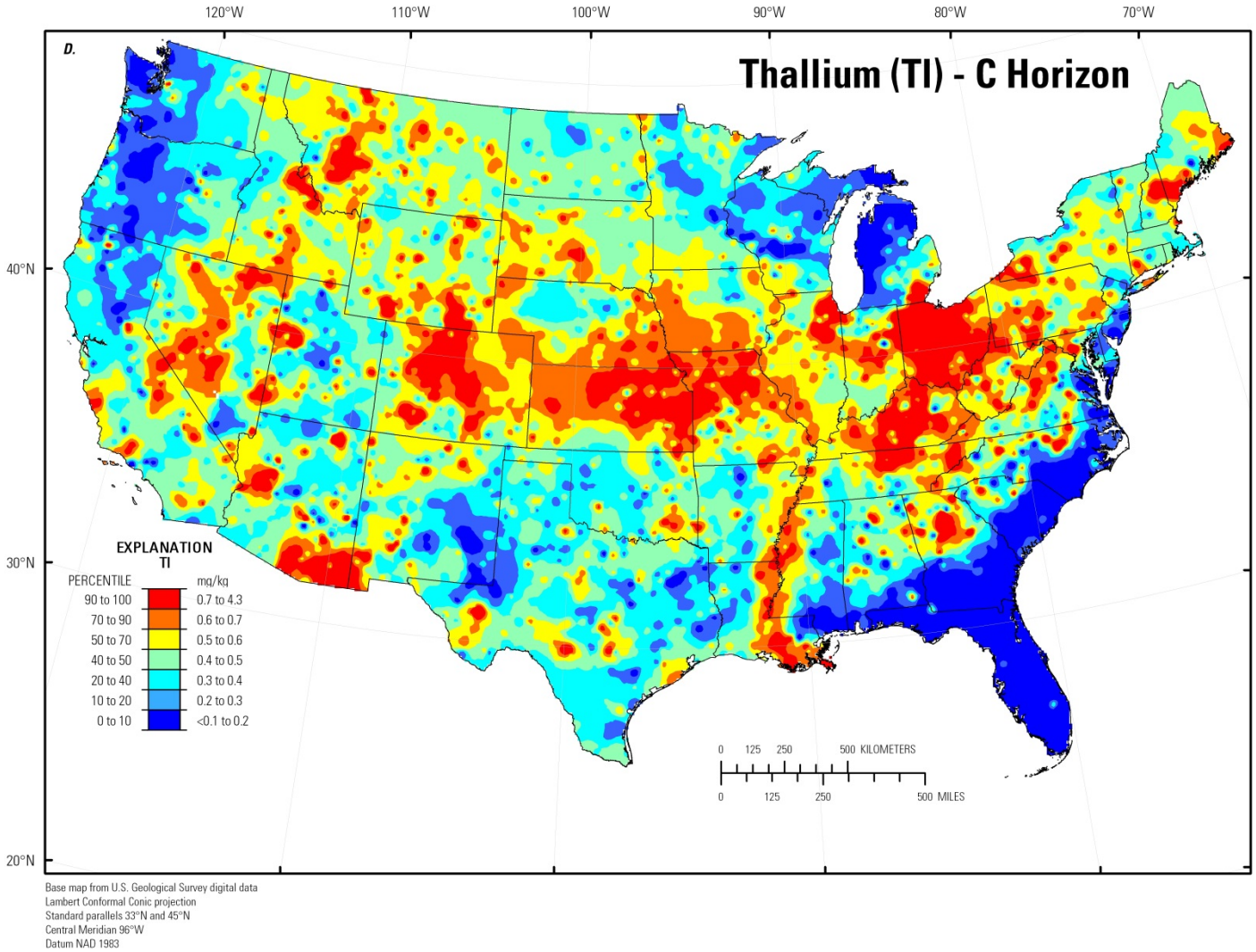
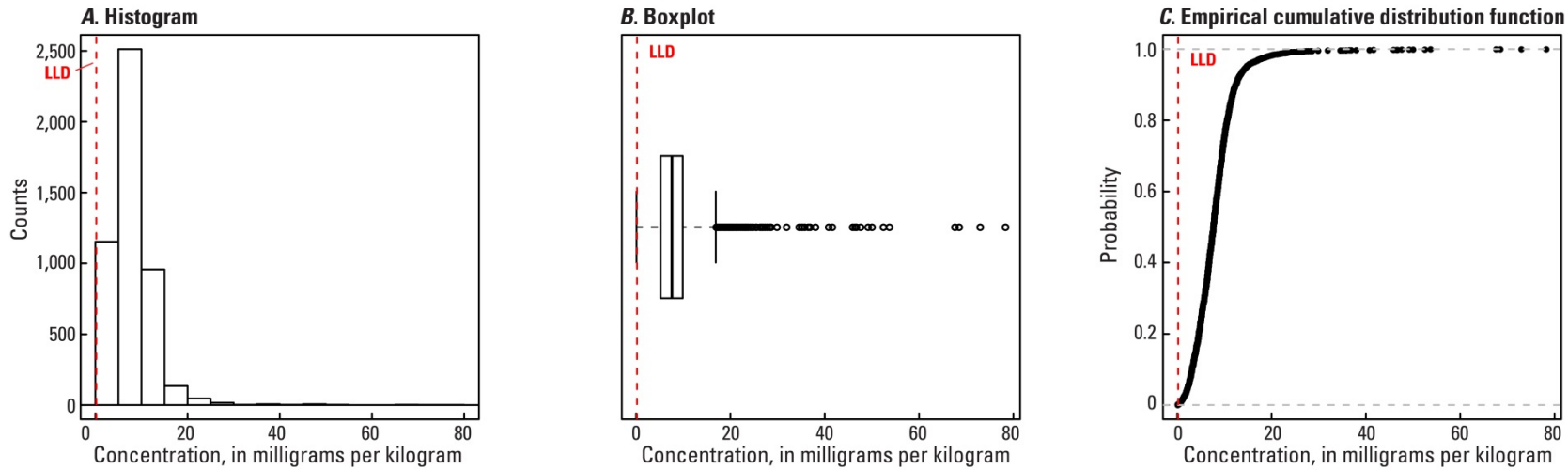


Figure 115. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thallium (Tl) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; ND, not determined; mg/kg, milligrams per kilogram).—Continued

Thorium (Th) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.2 milligrams per kilogram
Number below LLD = 6
Minimum = <0.2 milligrams per kilogram
5 percentile = 2.3 milligrams per kilogram
25 percentile = 5.2 milligrams per kilogram
50 percentile = 7.6 milligrams per kilogram
75 percentile = 9.9 milligrams per kilogram
95 percentile = 14.7 milligrams per kilogram
Maximum = 78.3 milligrams per kilogram
MAD = 3.56 milligrams per kilogram
Robust CV = 46.8 %

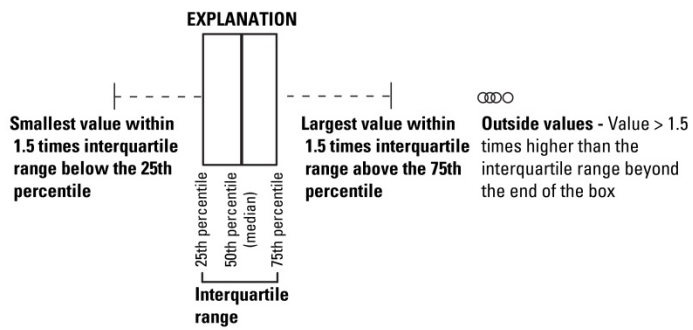


Figure 116. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thorium (Th) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

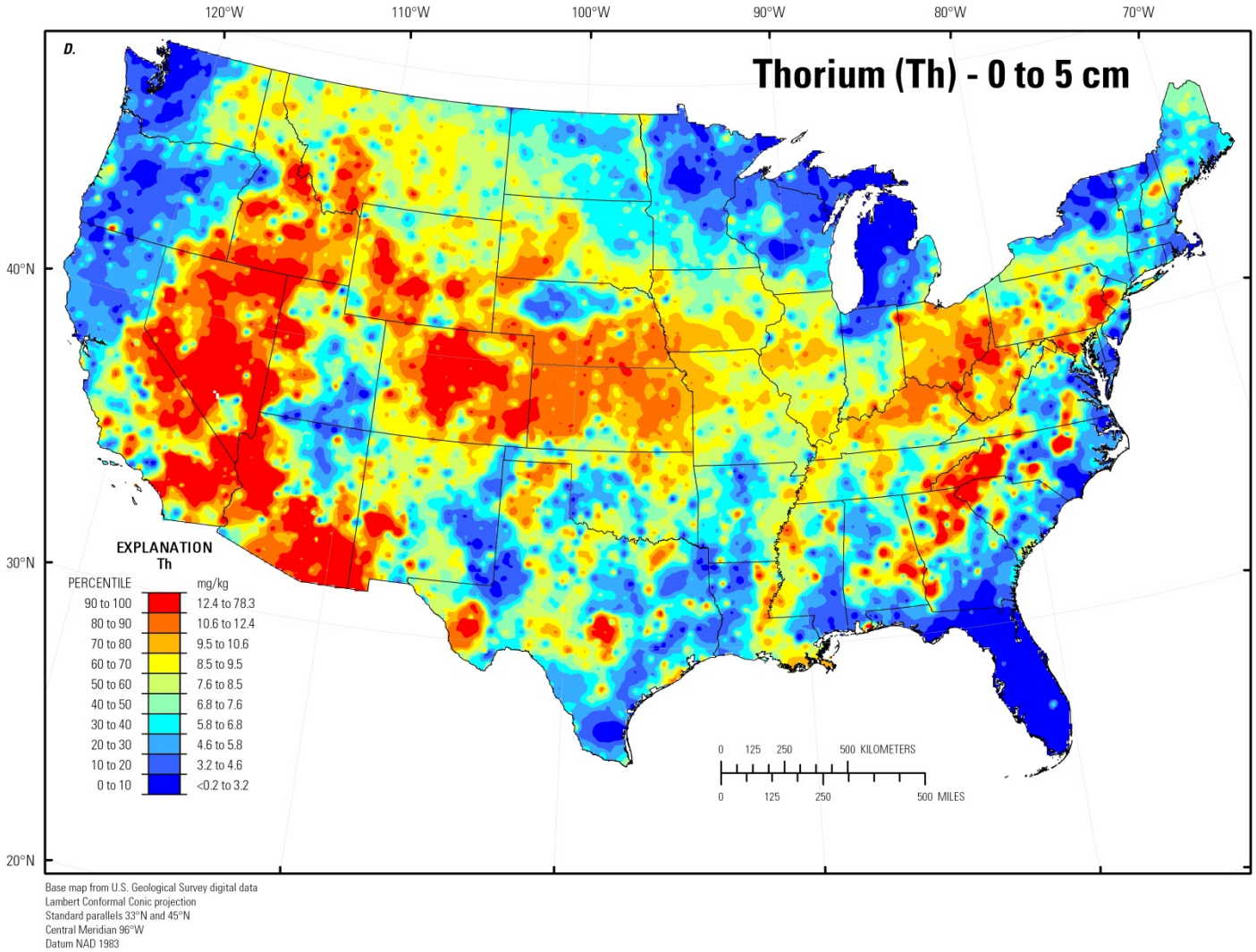
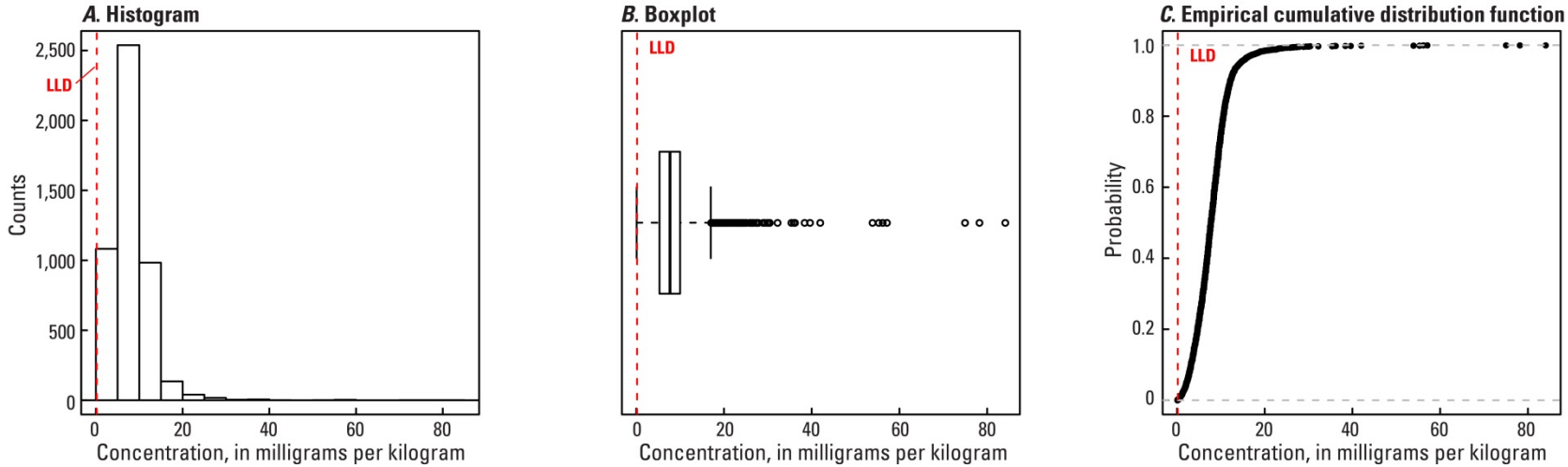


Figure 116. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thorium (Th) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Thorium (Th) in soil A horizon



Number of samples = 4,813
LLD = 0.2 milligrams per kilogram
Number below LLD = 6
Minimum = <0.2 milligrams per kilogram
5 percentile = 2.2 milligrams per kilogram
25 percentile = 5.3 milligrams per kilogram
50 percentile = 7.7 milligrams per kilogram
75 percentile = 10.0 milligrams per kilogram
95 percentile = 14.4 milligrams per kilogram
Maximum = 84.1 milligrams per kilogram
MAD = 3.41 milligrams per kilogram
Robust CV = 44.3 %

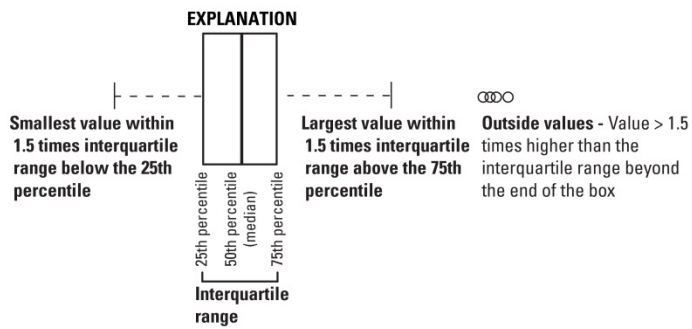


Figure 117. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thorium (Th) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

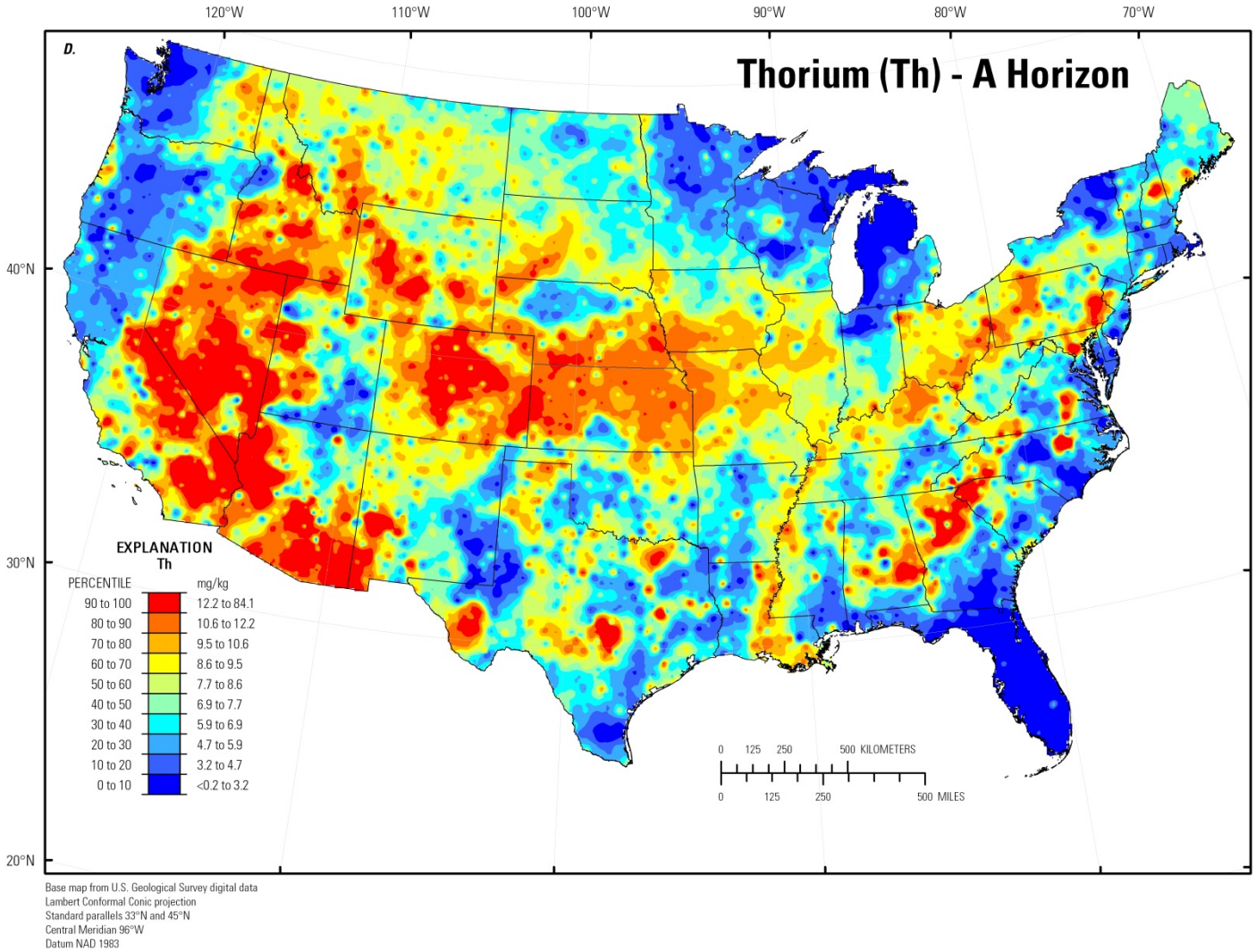


Figure 117. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thorium (Th) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

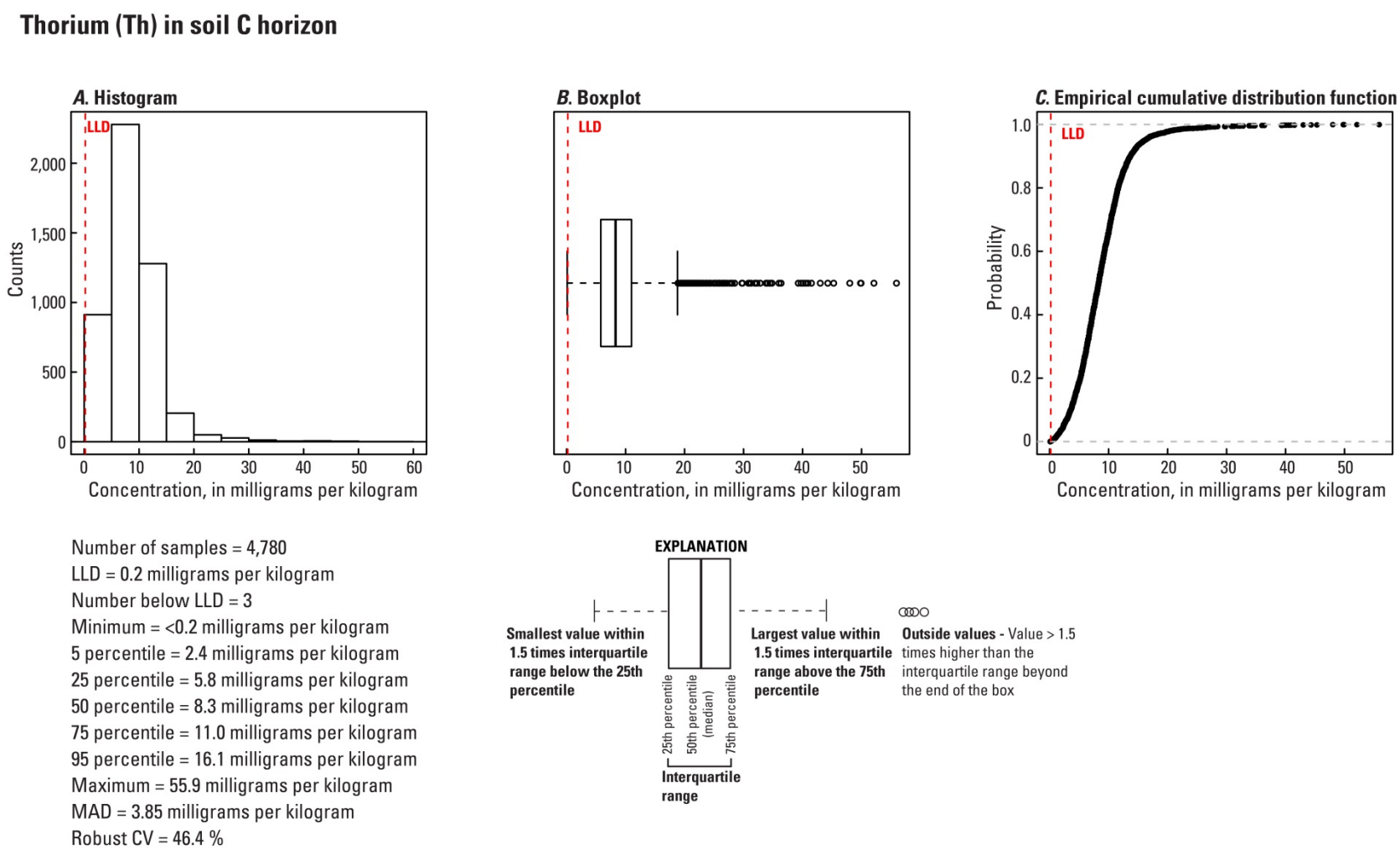


Figure 118. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thorium (Th) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

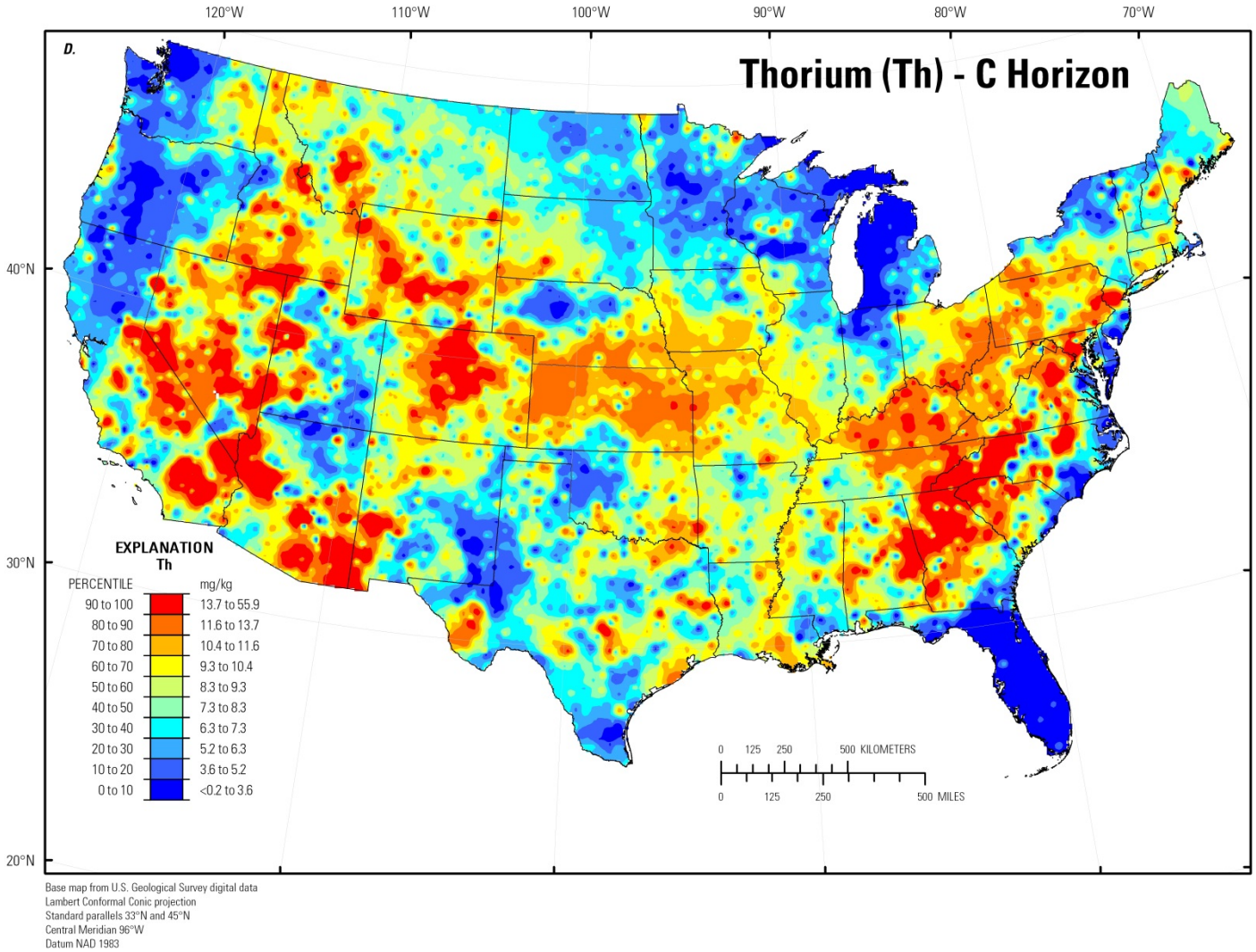
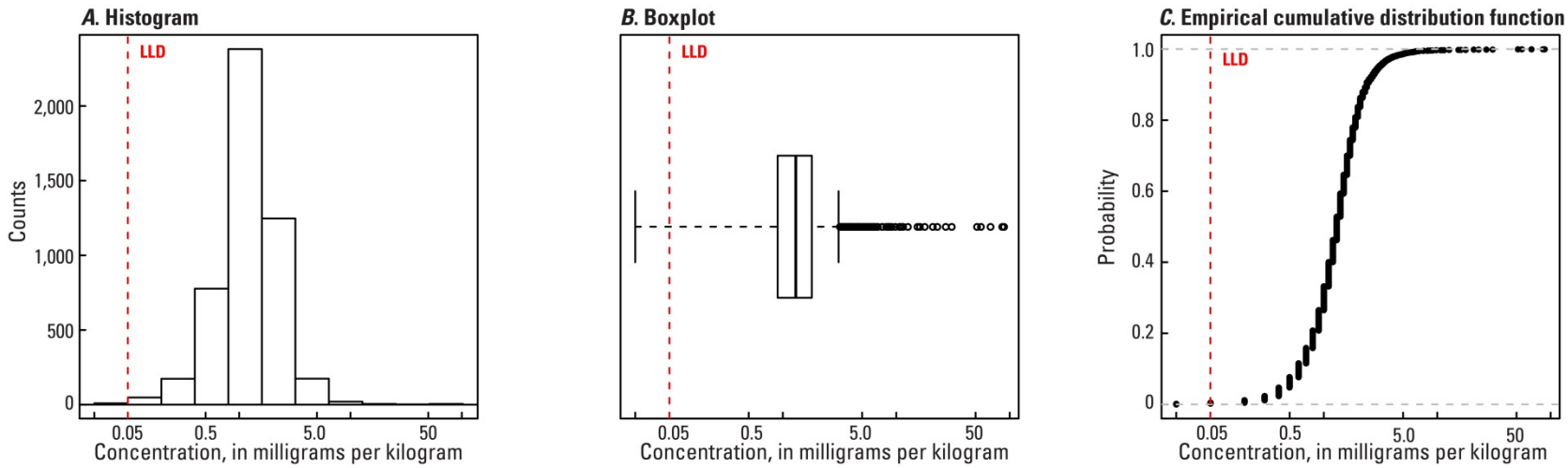


Figure 118. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of thorium (Th) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Tin (Sn) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 0.1 milligrams per kilogram
Number below LLD = 9
Minimum = <0.1 milligrams per kilogram
5 percentile = 0.5 milligrams per kilogram
25 percentile = 0.9 milligrams per kilogram
50 percentile = 1.3 milligrams per kilogram
75 percentile = 1.8 milligrams per kilogram
95 percentile = 3.1 milligrams per kilogram
Maximum = 88.9 milligrams per kilogram
MAD = 0.593 milligrams per kilogram
Robust CV = 45.6 %

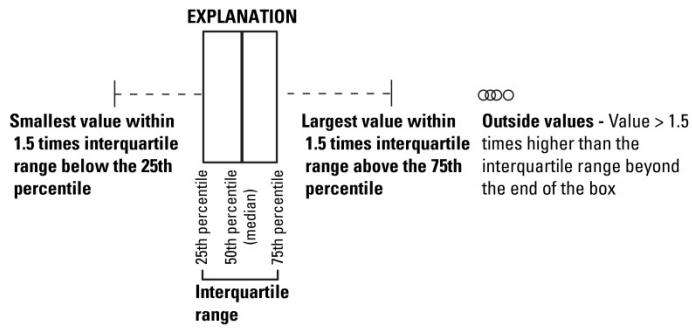


Figure 119. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tin (Sn) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

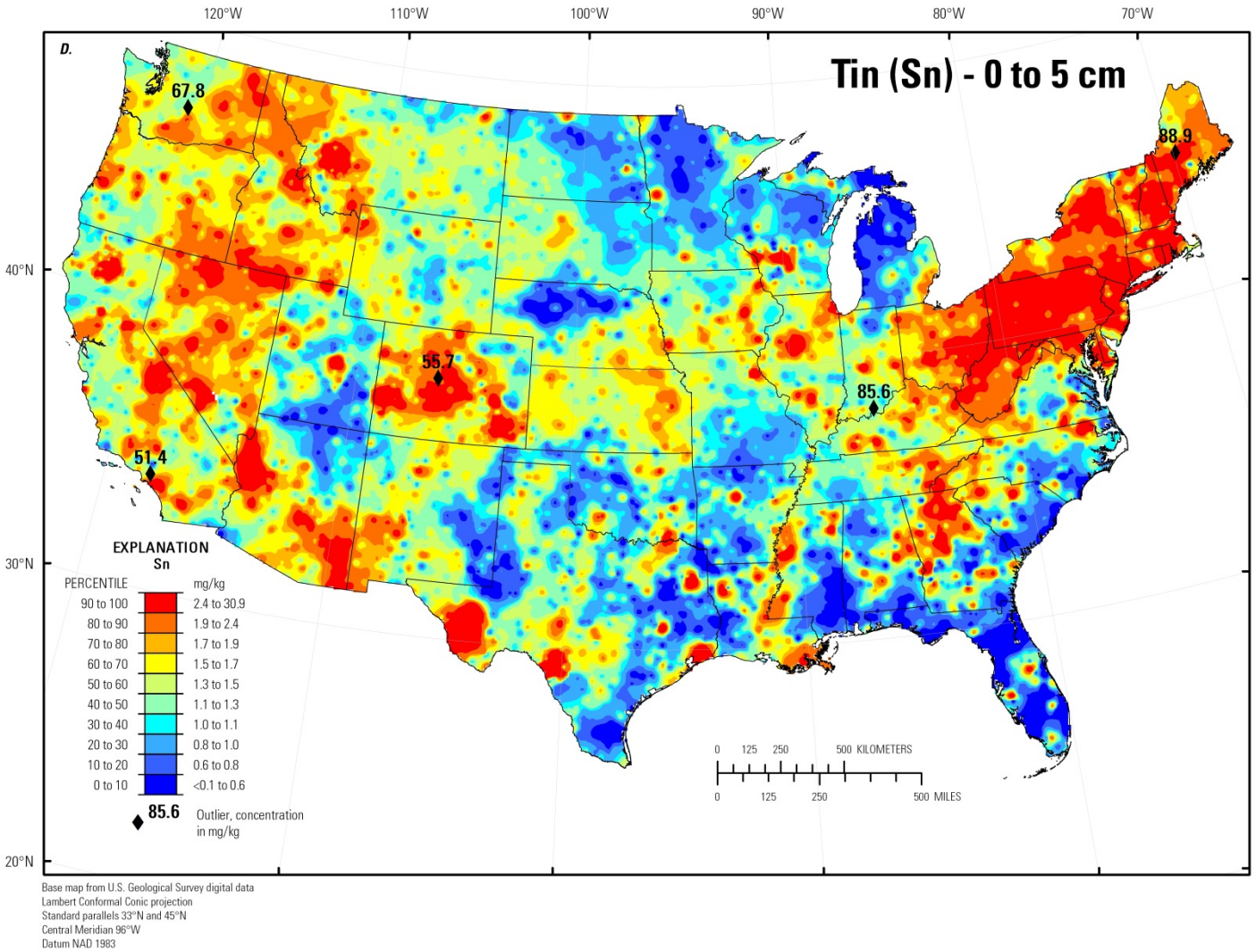
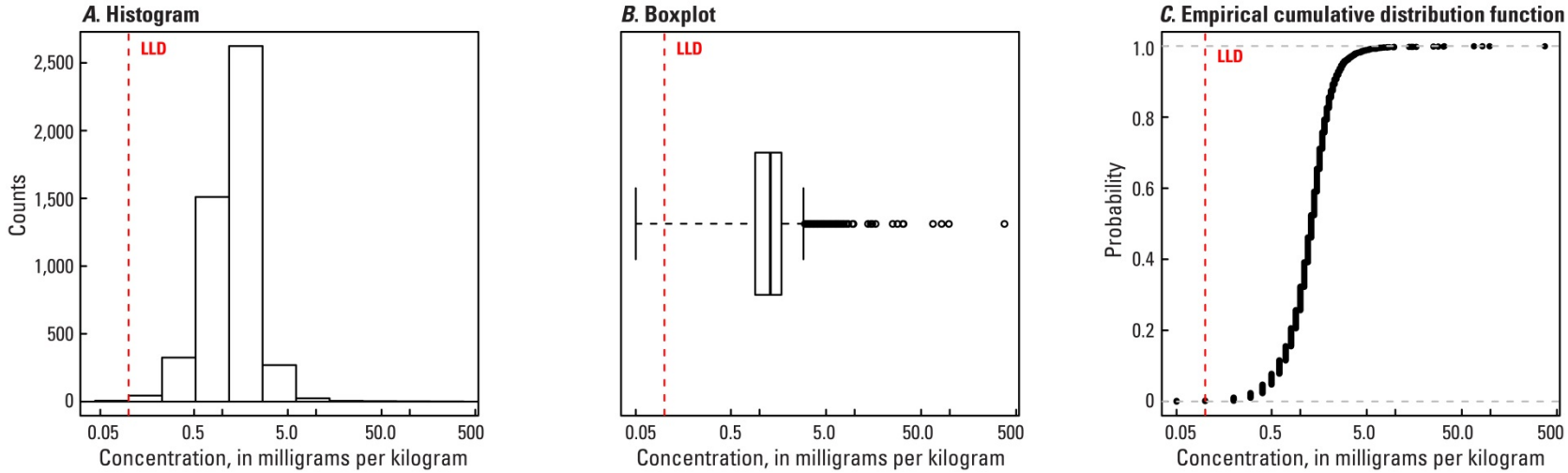


Figure 119. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tin (Sn) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Tin (Sn) in soil A horizon



Number of samples = 4,813
LLD = 0.1 milligrams per kilogram
Number below LLD = 6
Minimum = <0.1 milligrams per kilogram
5 percentile = 0.5 milligrams per kilogram
25 percentile = 0.9 milligrams per kilogram
50 percentile = 1.3 milligrams per kilogram
75 percentile = 1.7 milligrams per kilogram
95 percentile = 2.8 milligrams per kilogram
Maximum = 375 milligrams per kilogram
MAD = 0.593 milligrams per kilogram
Robust CV = 45.6 %

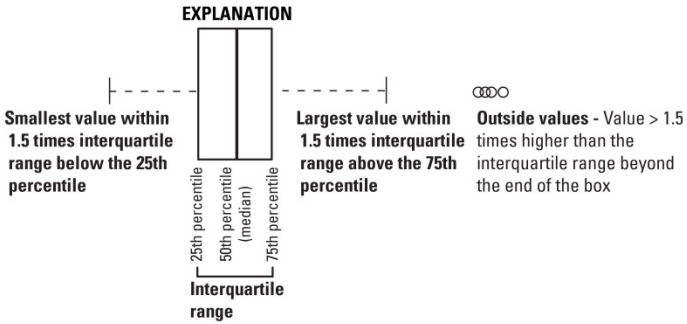


Figure 120. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tin (Sn) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

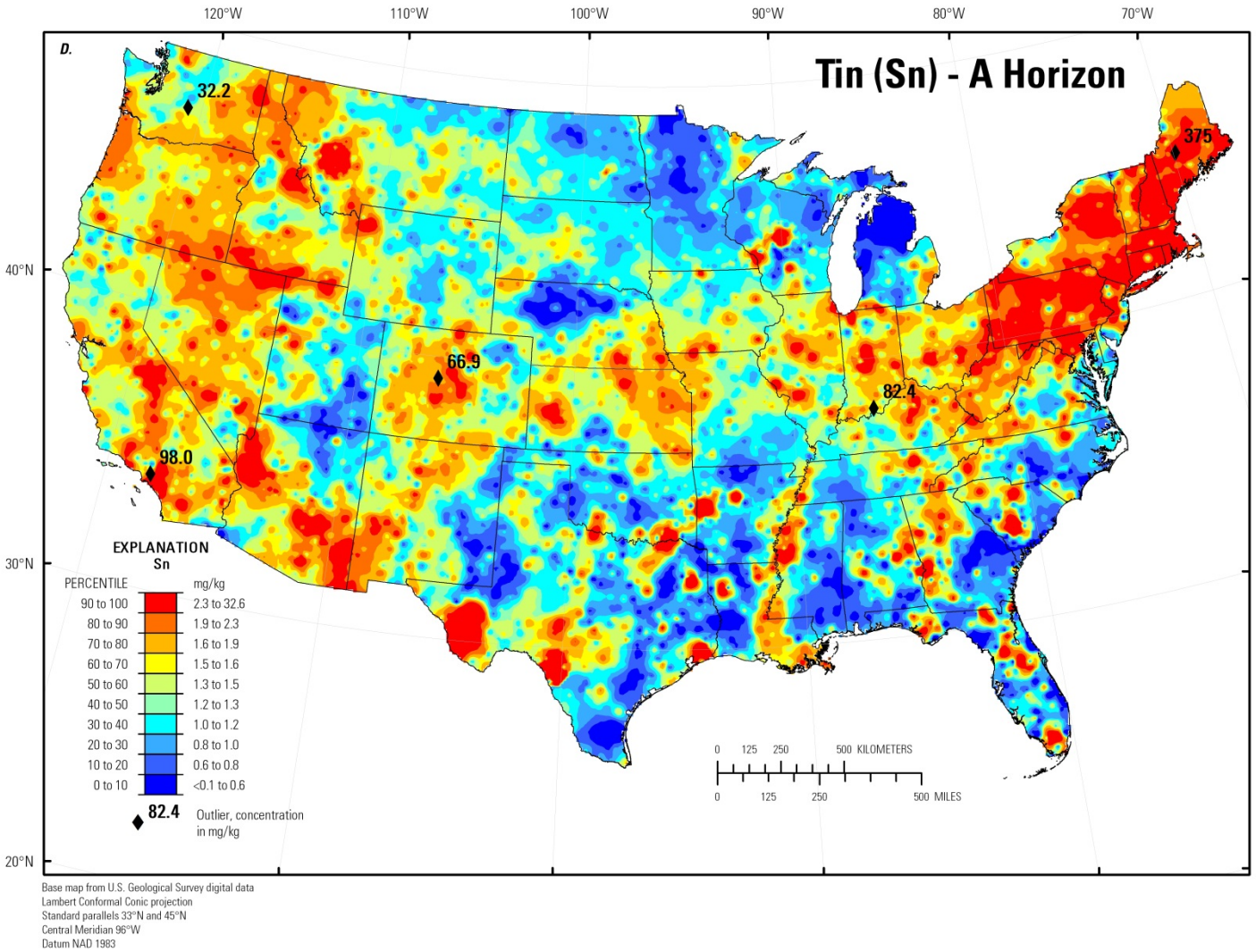
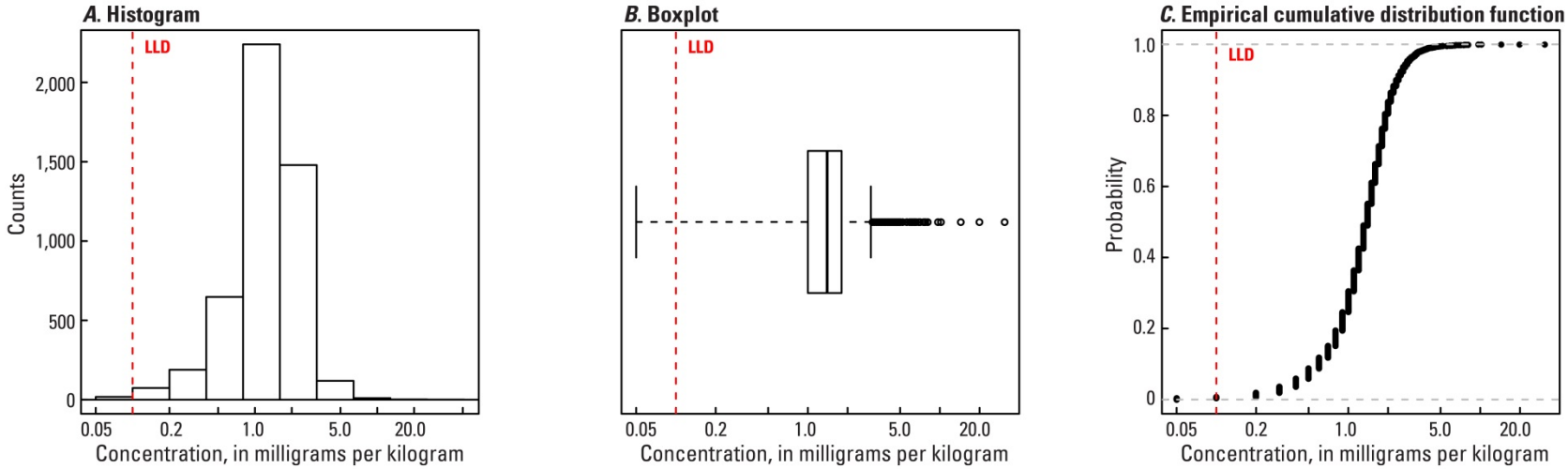


Figure 120. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tin (Sn) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Tin (Sn) in soil C horizon



Number of samples = 4,780
LLD = 0.1 milligrams per kilogram
Number below LLD = 18
Minimum = <0.1 milligrams per kilogram
5 percentile = 0.4 milligrams per kilogram
25 percentile = 1.0 milligram per kilogram
50 percentile = 1.4 milligrams per kilogram
75 percentile = 1.8 milligrams per kilogram
95 percentile = 2.8 milligrams per kilogram
Maximum = 30.9 milligrams per kilogram
MAD = 0.593 milligrams per kilogram
Robust CV = 42.4 %

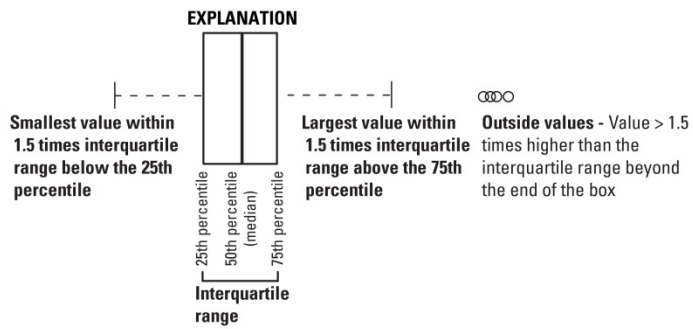


Figure 121. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tin (Sn) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

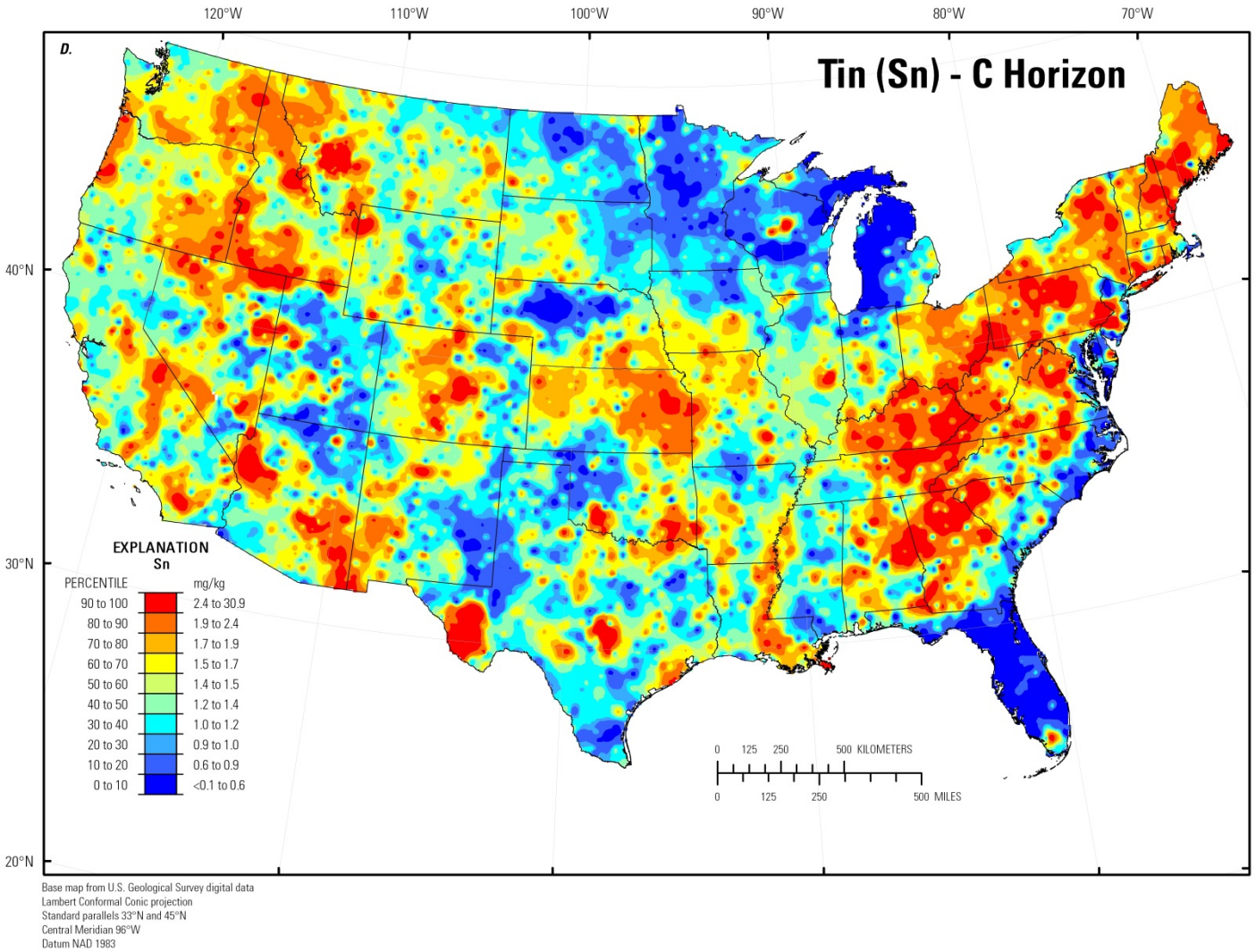


Figure 121. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tin (Sn) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

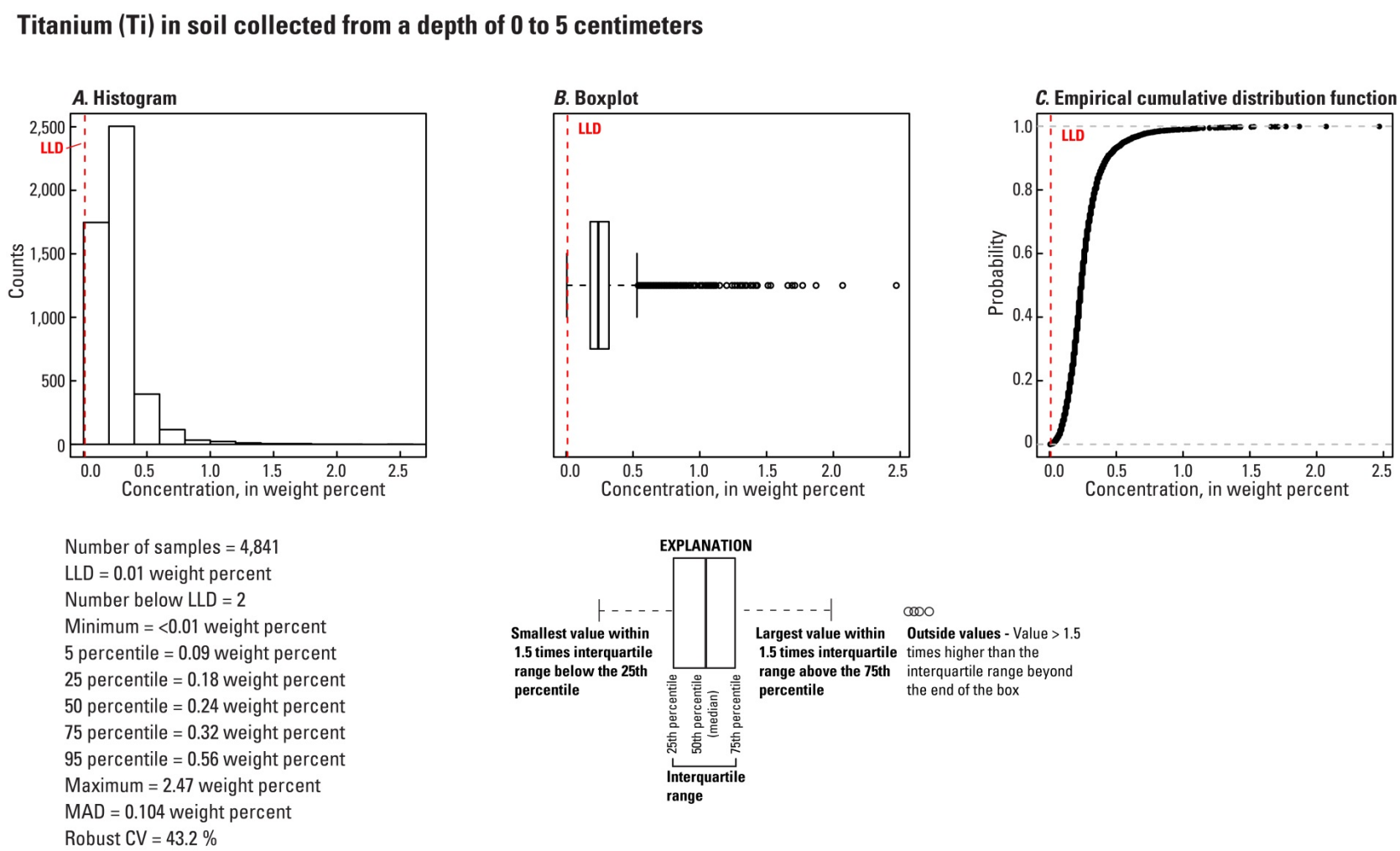


Figure 122. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of titanium (Ti) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).

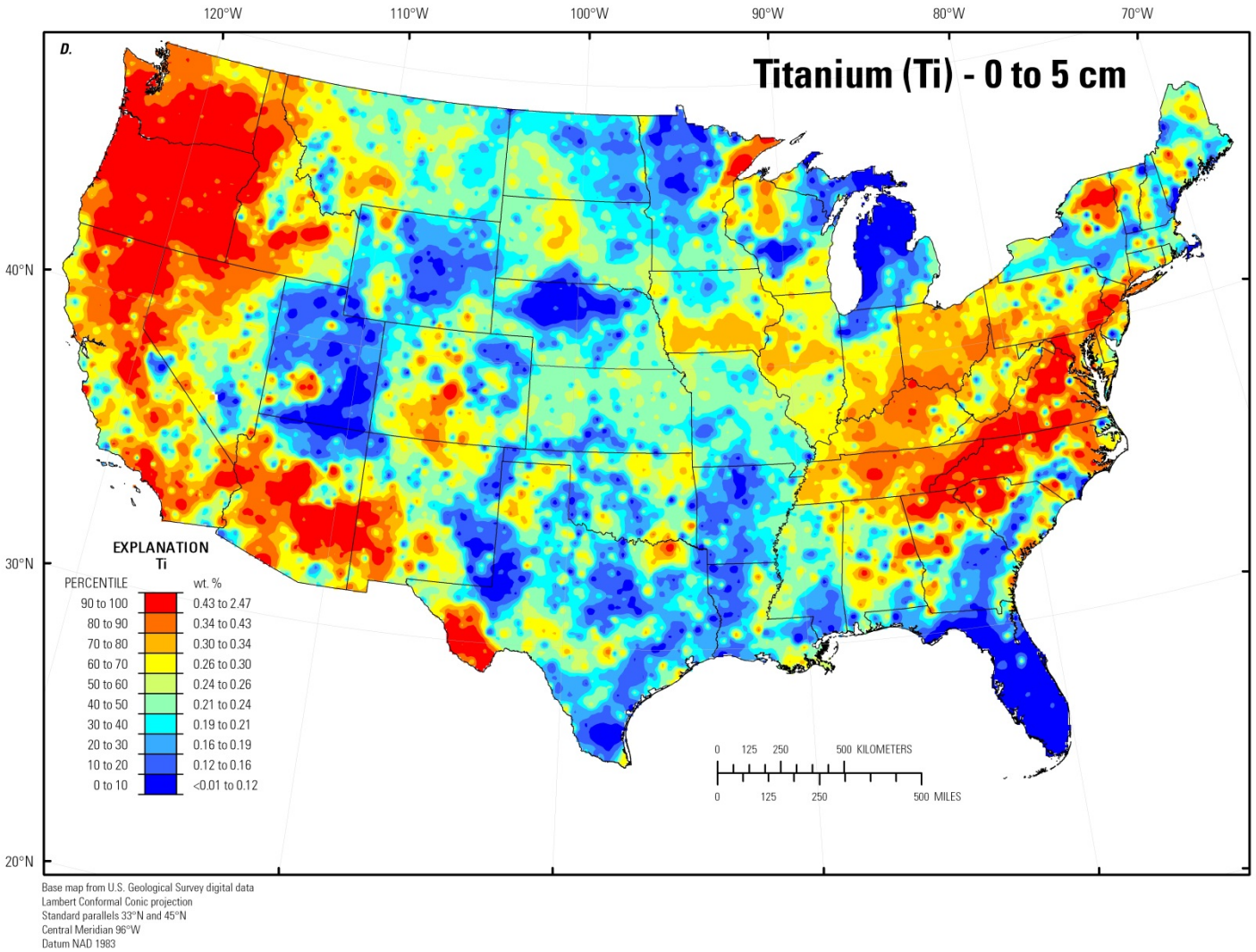


Figure 122. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of titanium (Ti) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent; cm, centimeters).—Continued

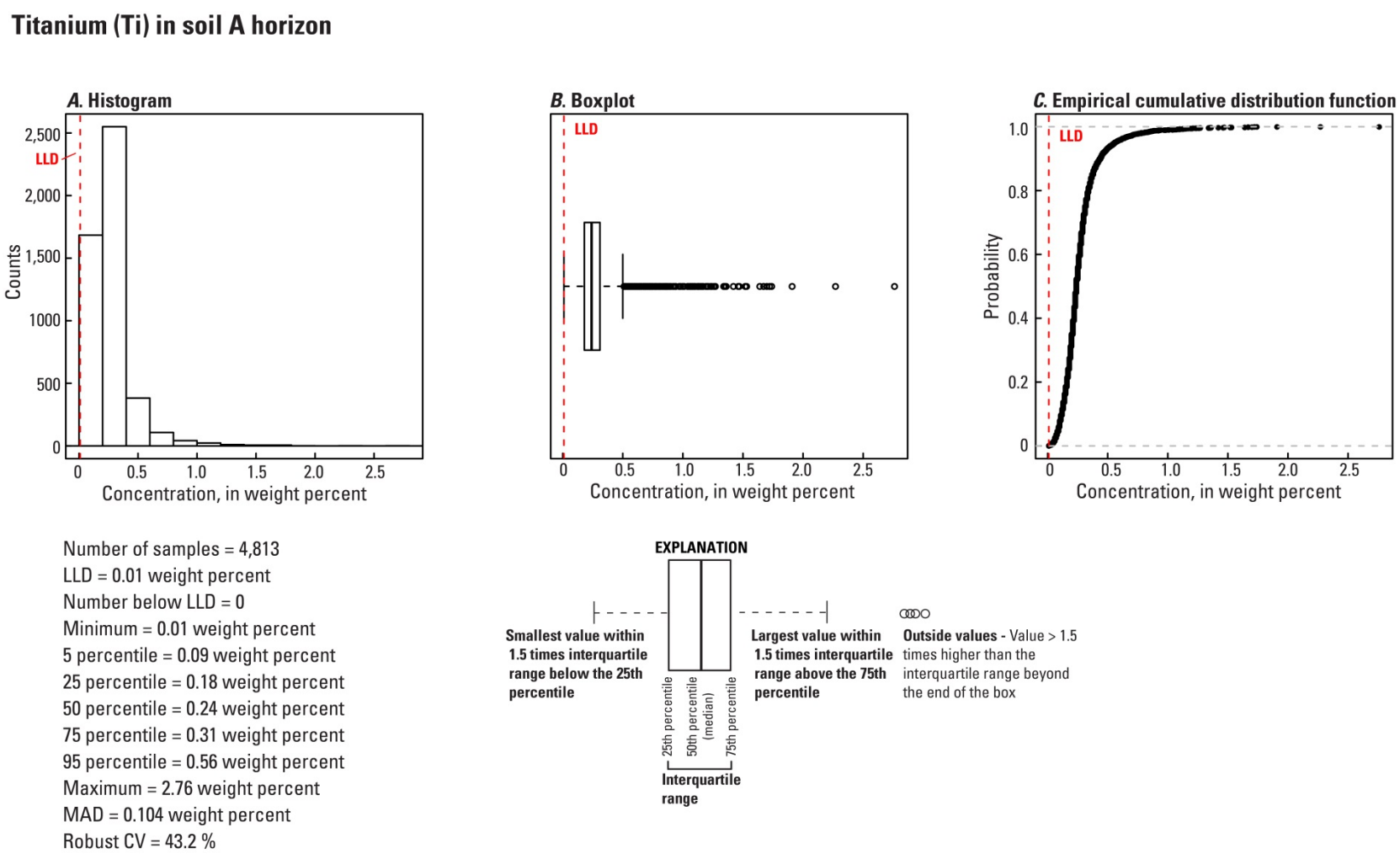


Figure 123. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of titanium (Ti) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

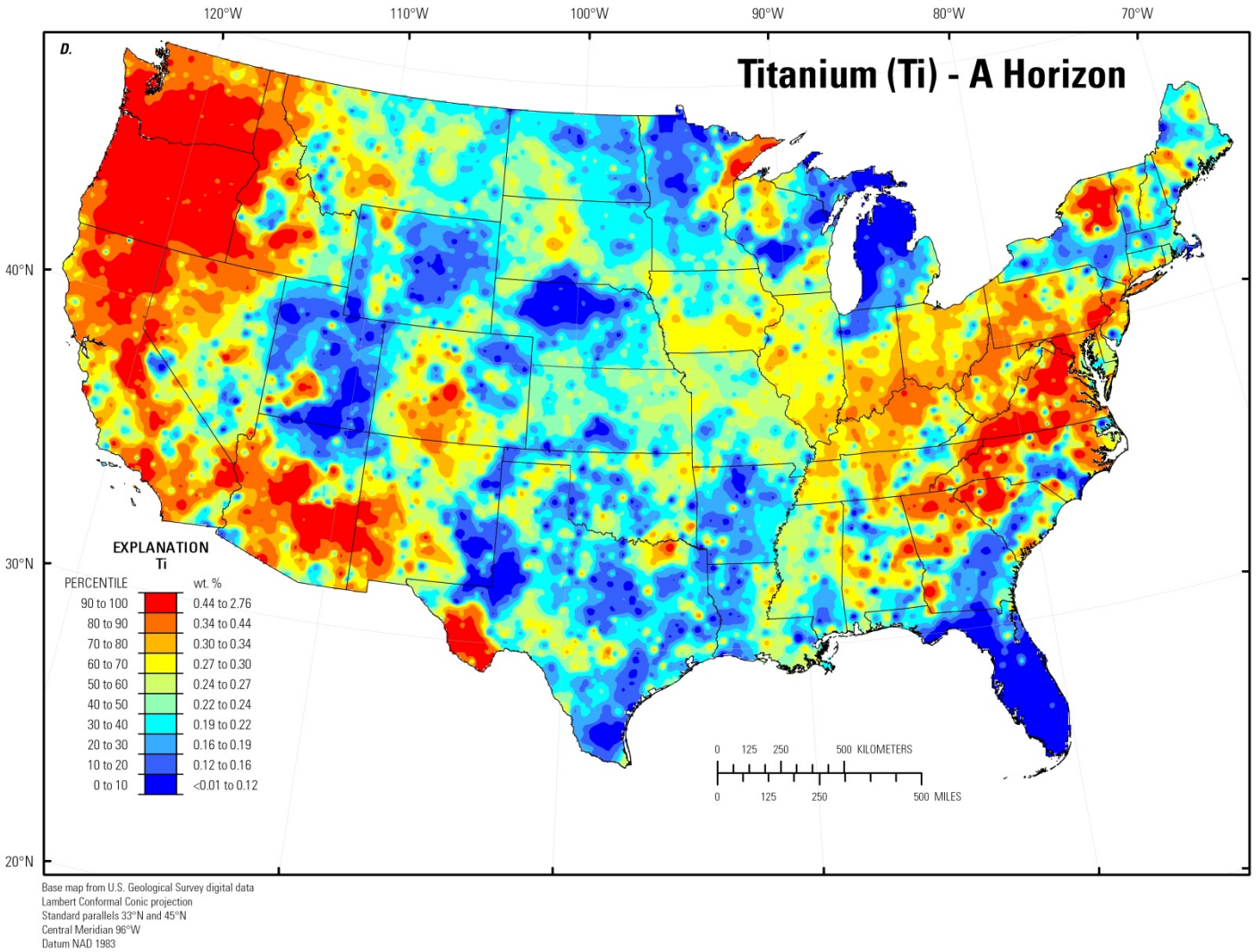


Figure 123. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of titanium (Ti) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

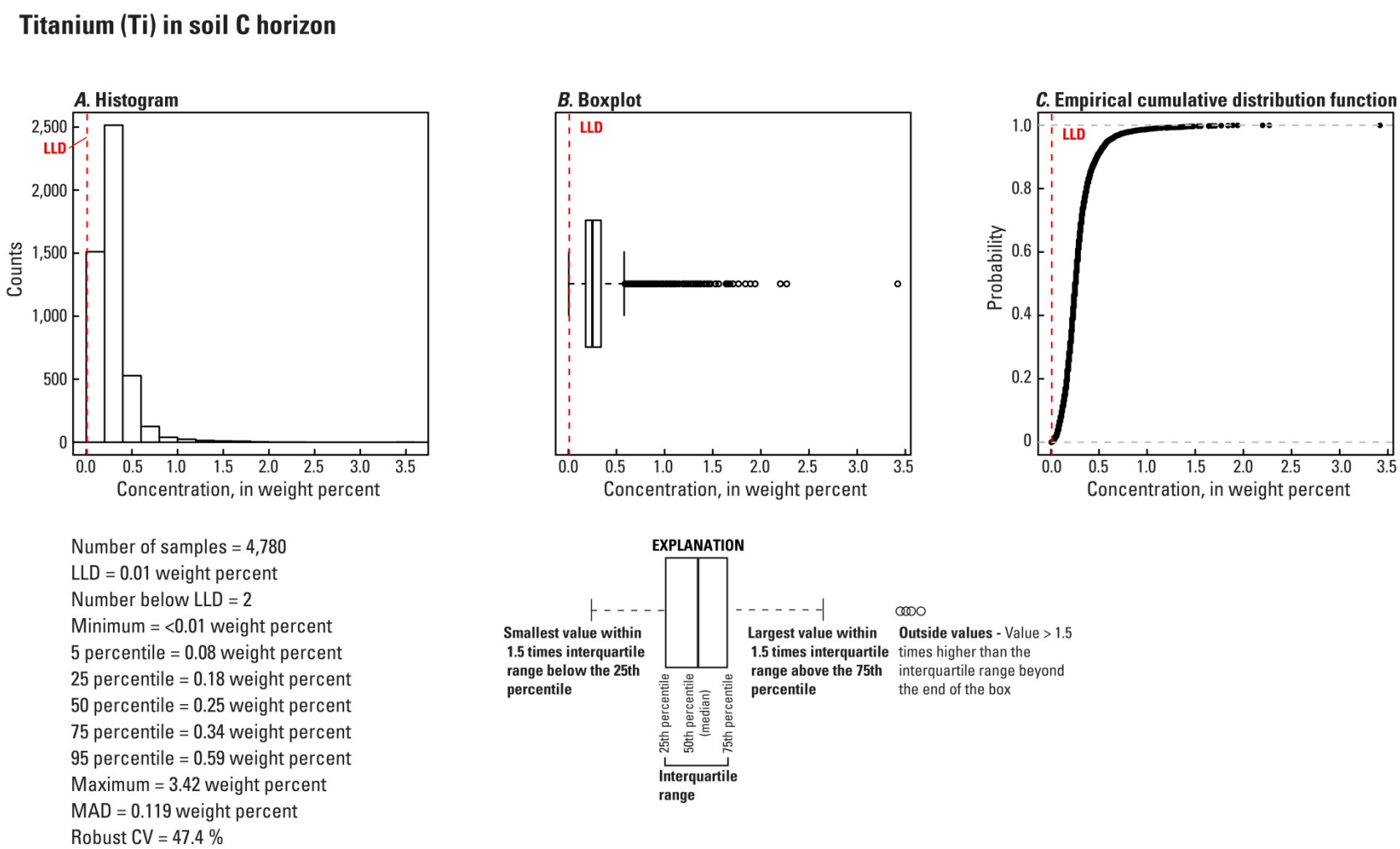


Figure 124. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of titanium (Ti) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).

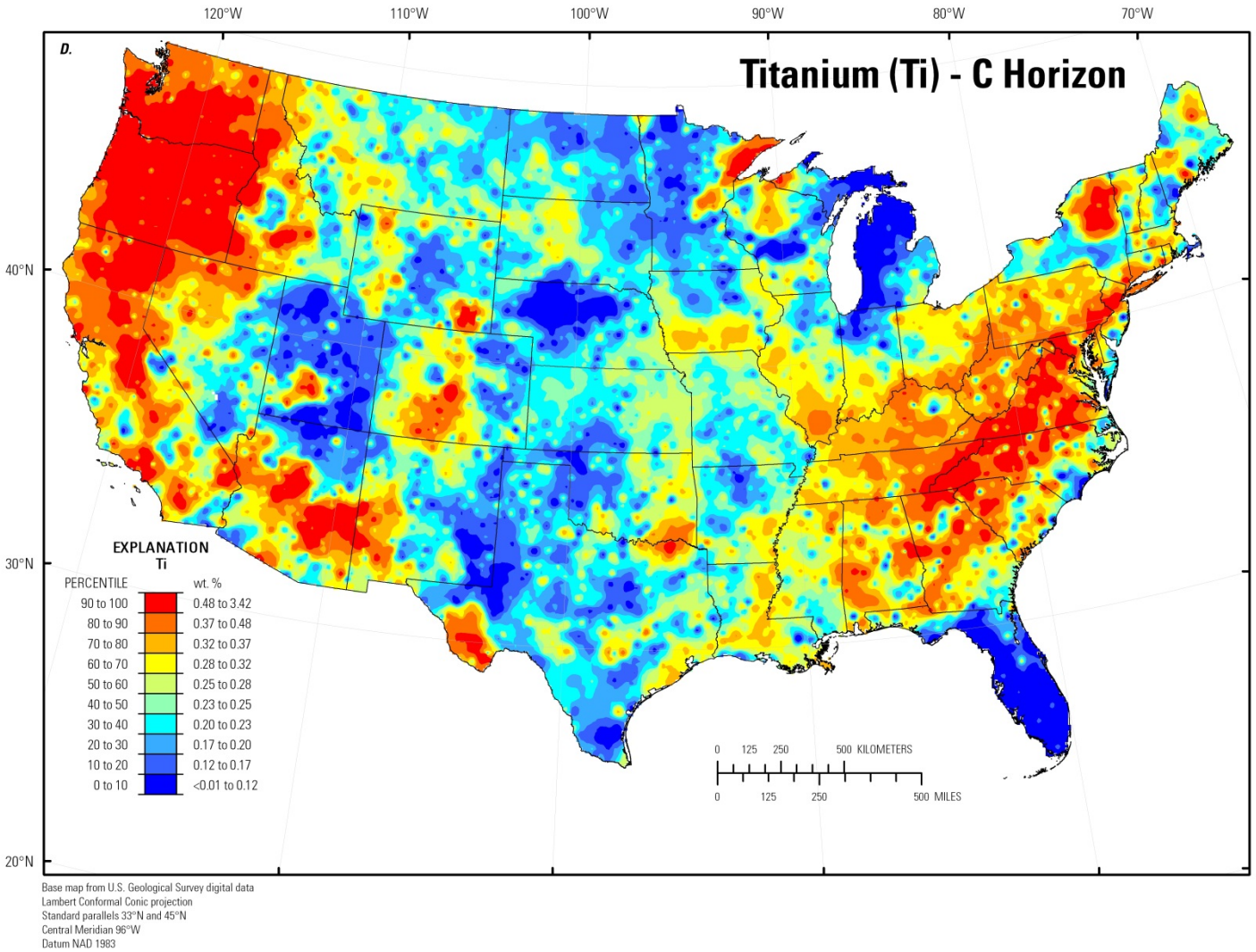


Figure 124. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of titanium (Ti) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; wt. %, weight percent).—Continued

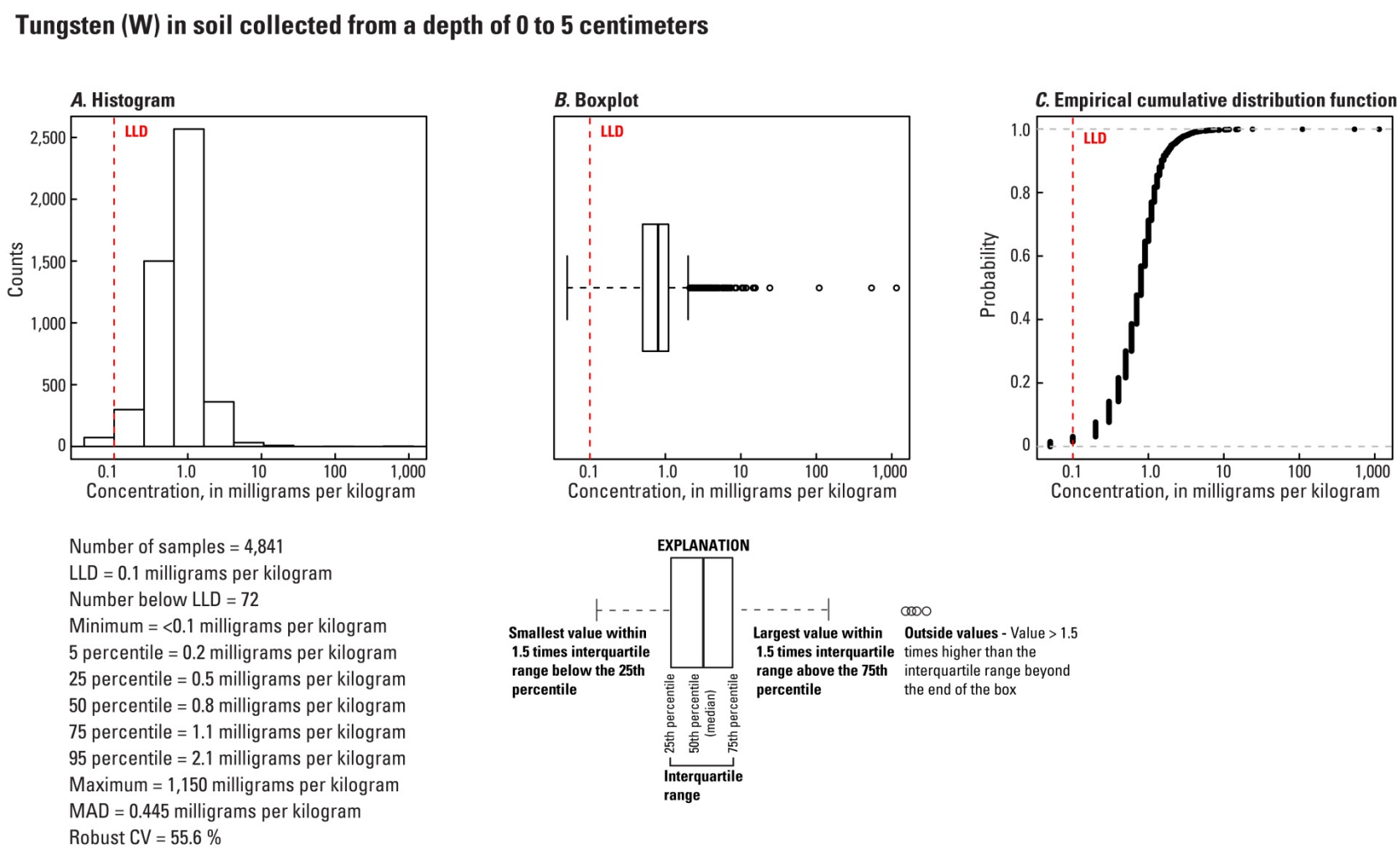


Figure 125. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tungsten (W) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

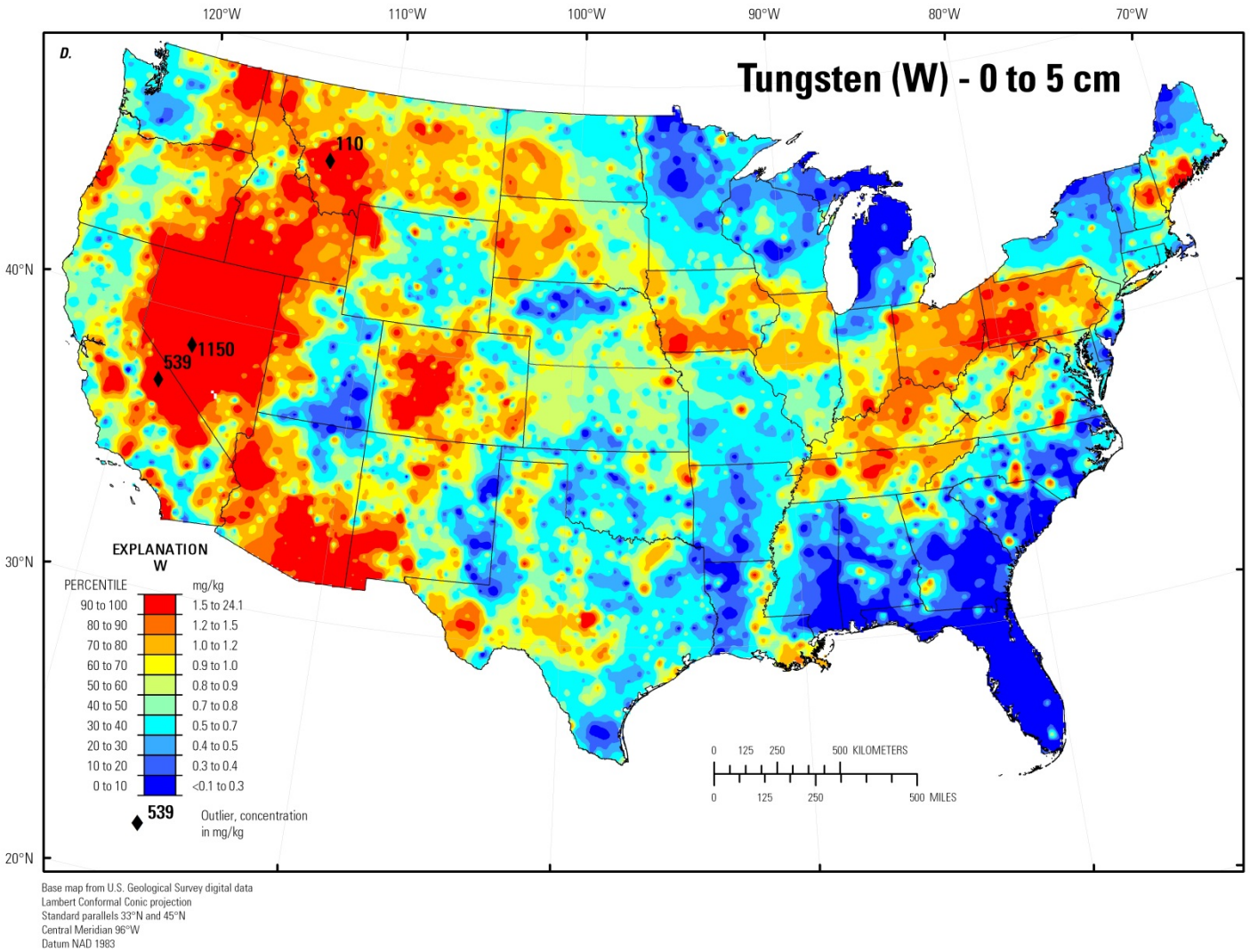


Figure 125. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tungsten (W) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

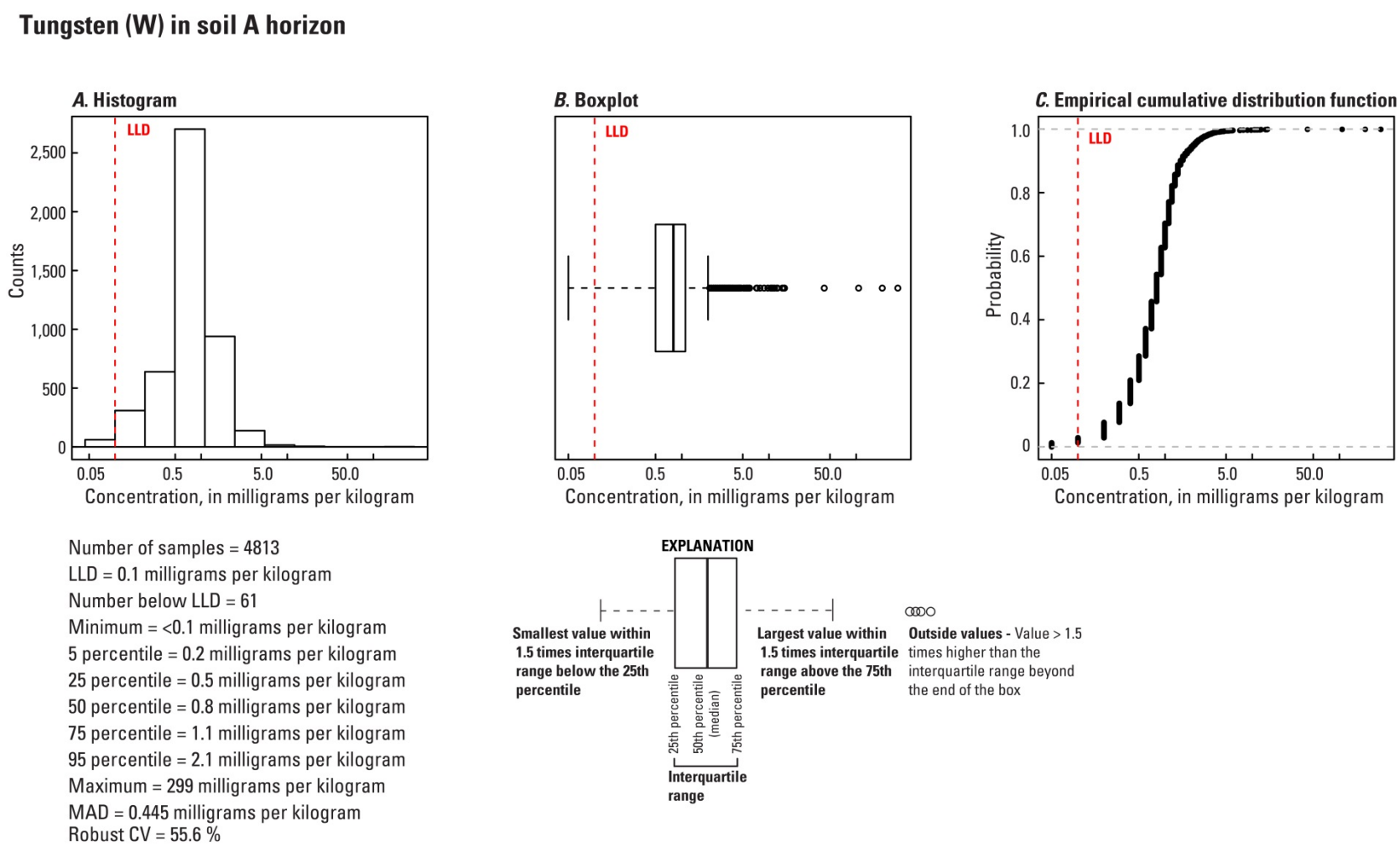


Figure 126. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tungsten (W) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

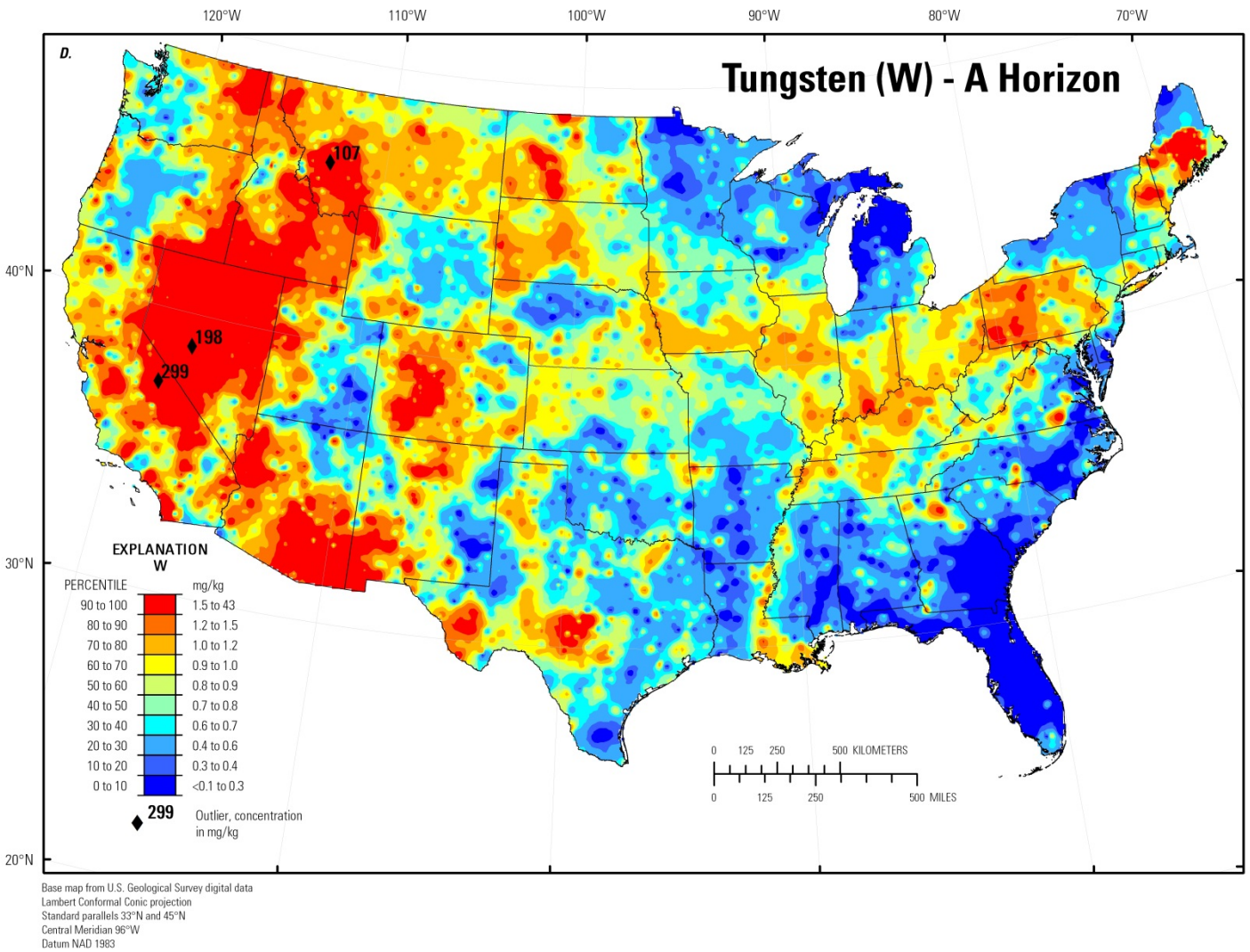
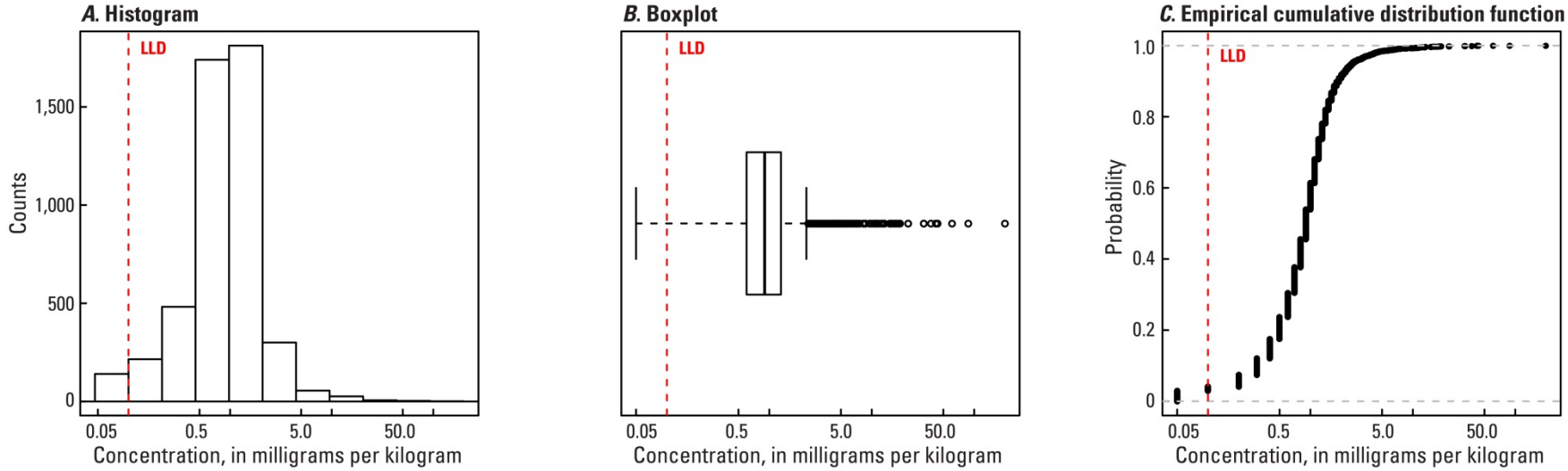


Figure 126. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tungsten (W) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Tungsten (W) in soil C horizon



Number of samples = 4,780
LLD = 0.1 milligrams per kilogram
Number below LLD = 140
Minimum = <0.1 milligrams per kilogram
5 percentile = 0.2 milligrams per kilogram
25 percentile = 0.6 milligrams per kilogram
50 percentile = 0.9 milligrams per kilogram
75 percentile = 1.3 milligrams per kilogram
95 percentile = 2.6 milligrams per kilogram
Maximum = 199 milligrams per kilogram
MAD = 0.445 milligrams per kilogram
Robust CV = 49.4 %

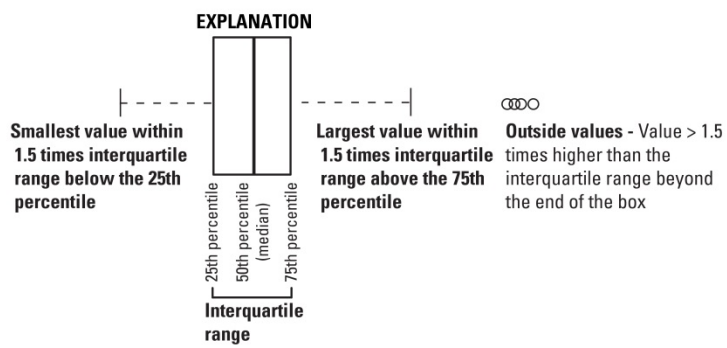


Figure 127. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tungsten (W) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

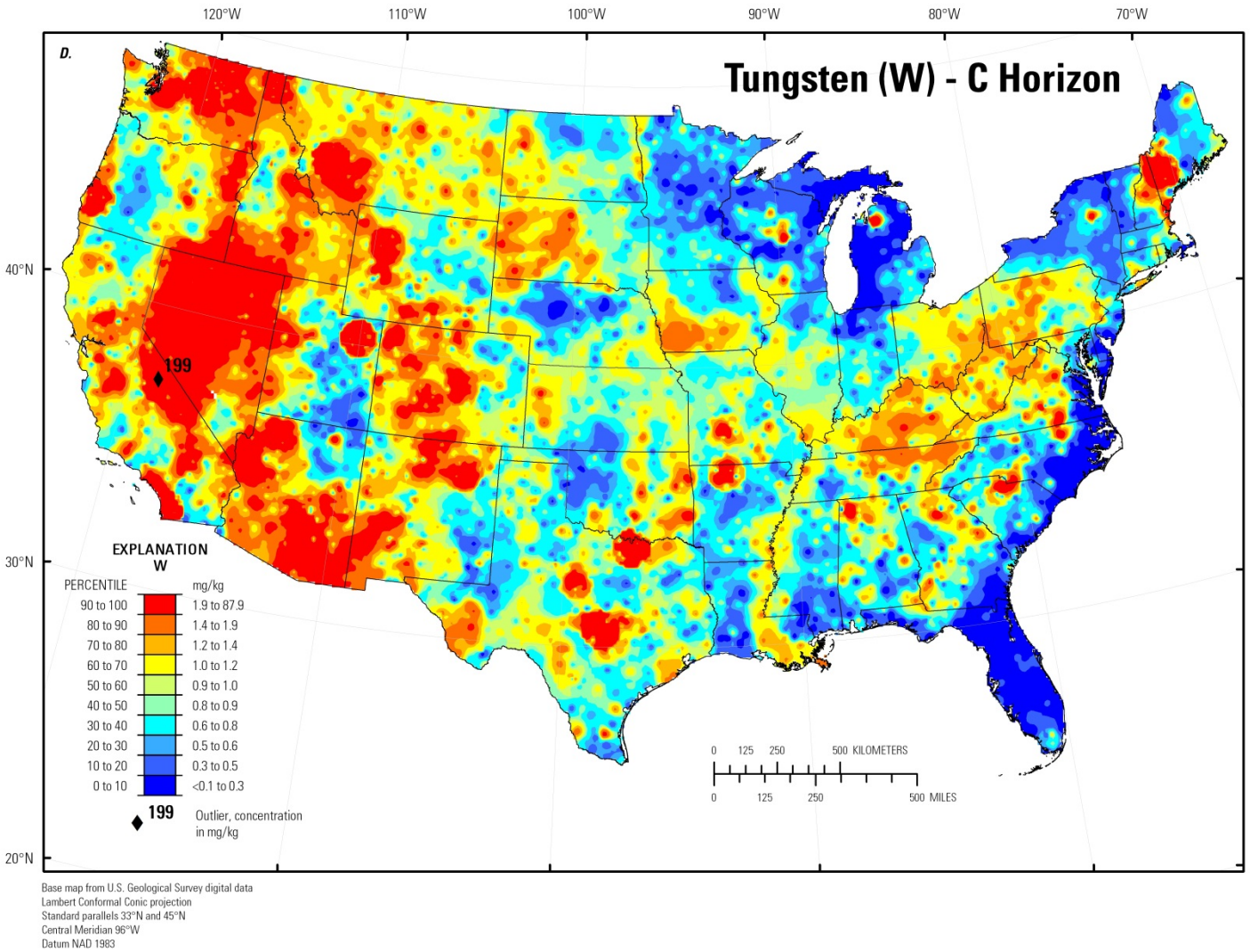


Figure 127. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of tungsten (W) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

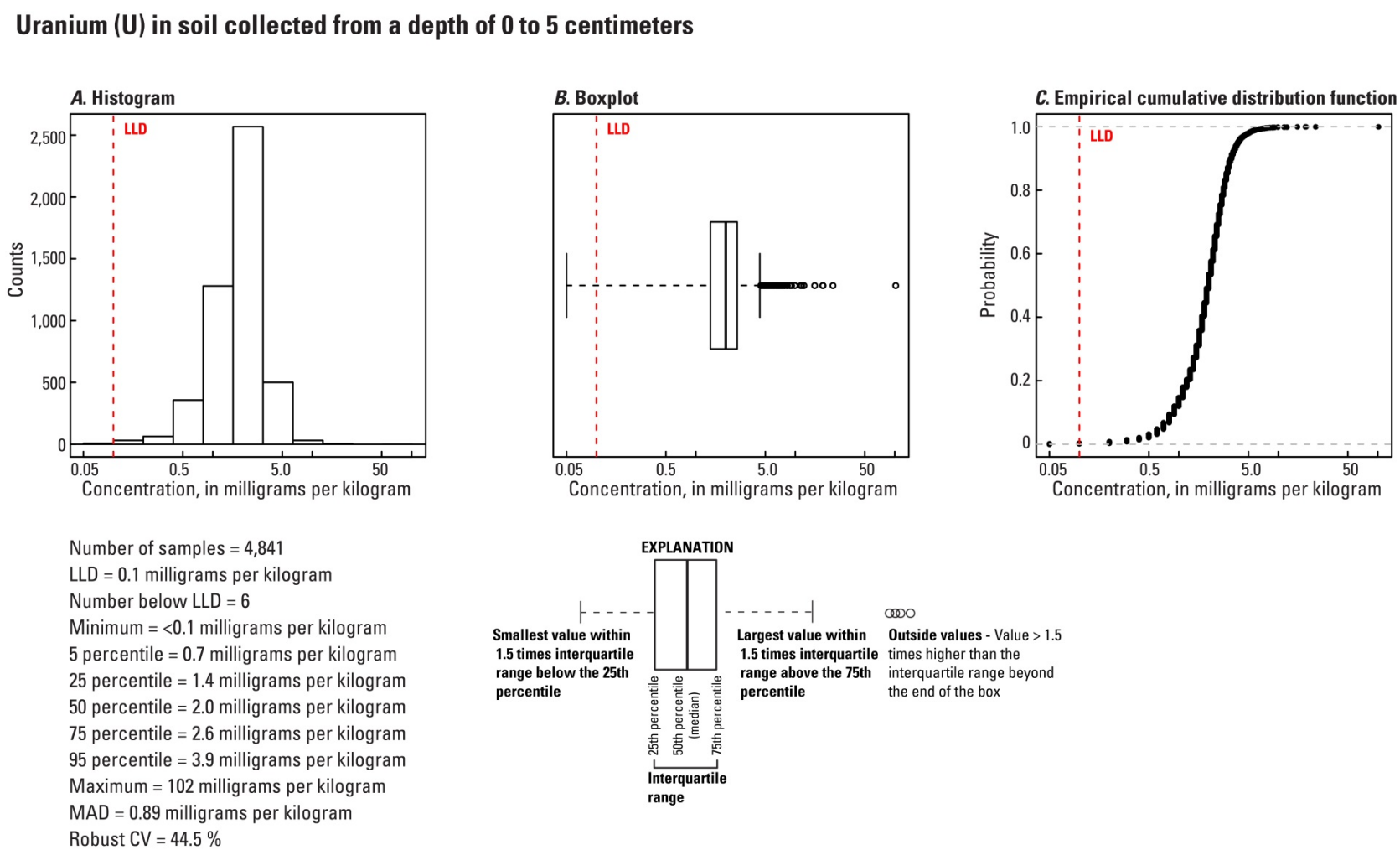


Figure 128. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of uranium (U) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

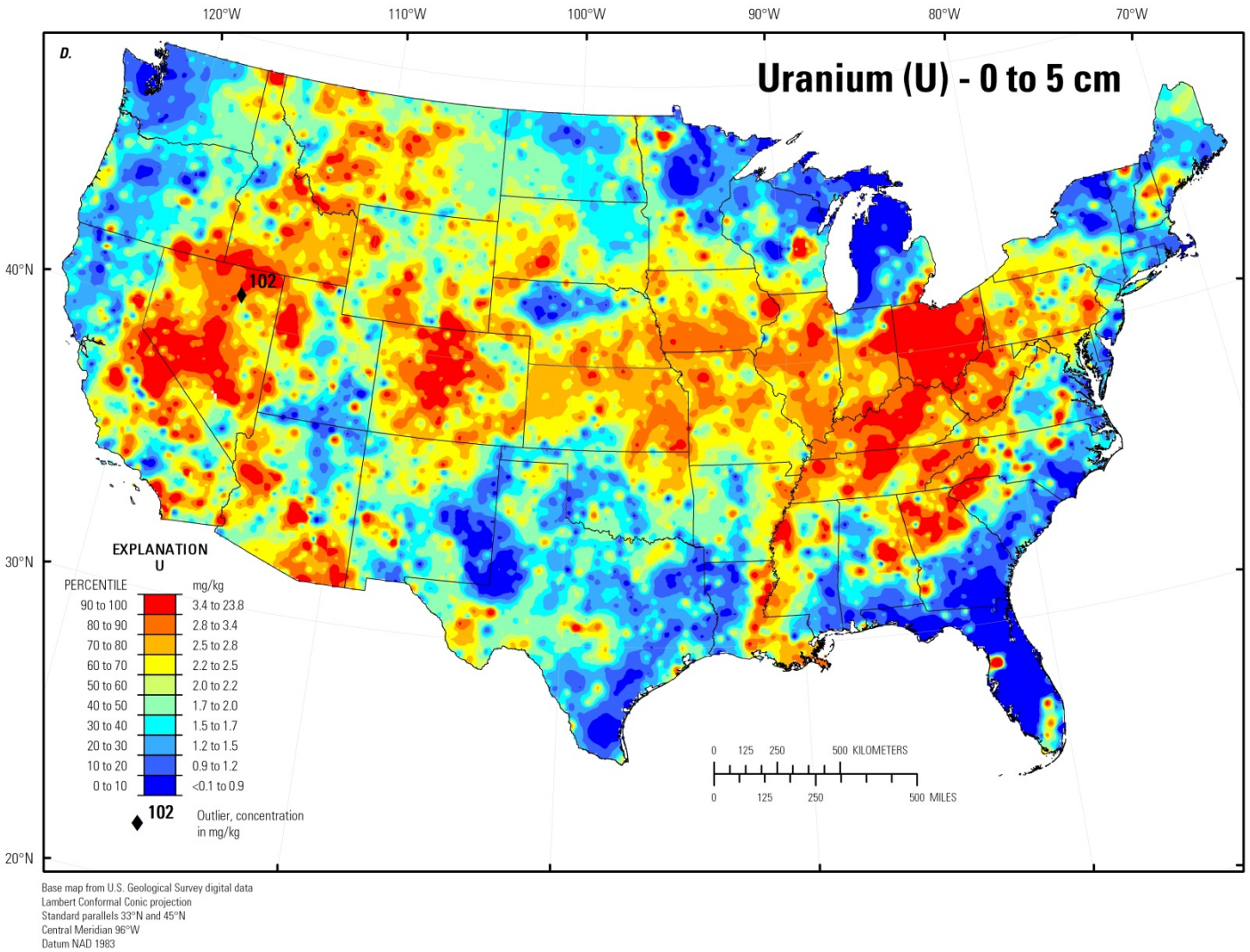


Figure 128. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of uranium (U) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

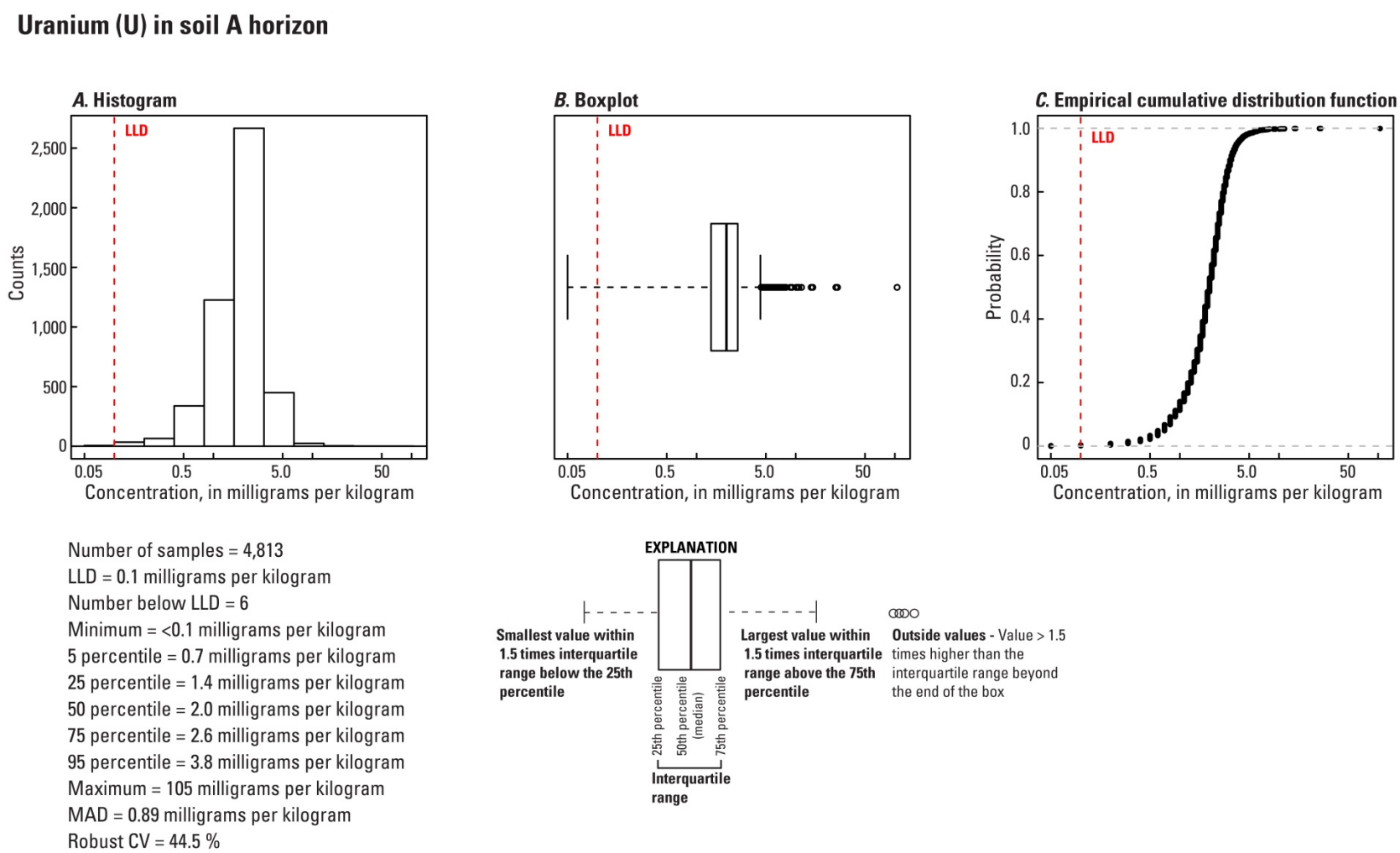


Figure 129. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of uranium (U) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

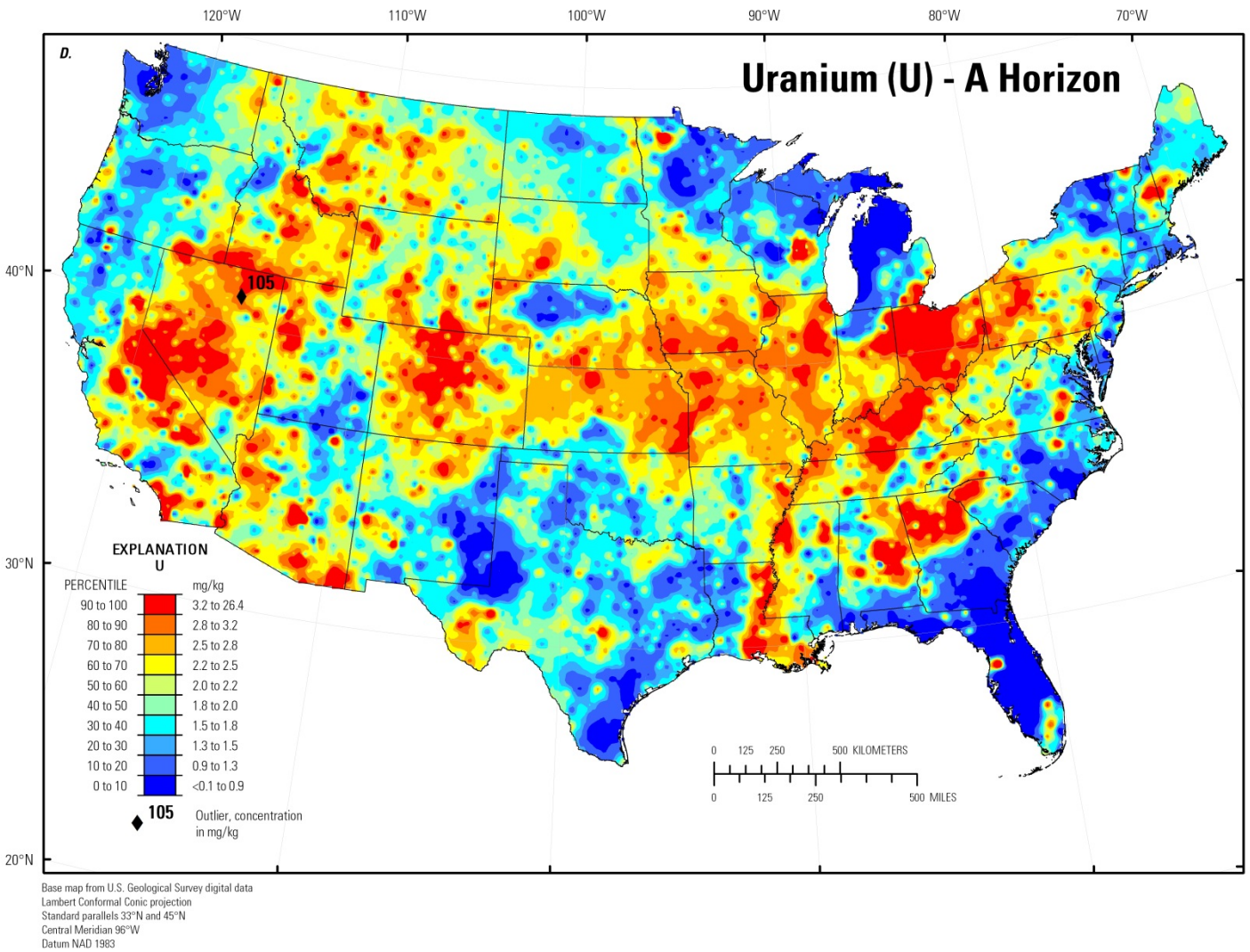
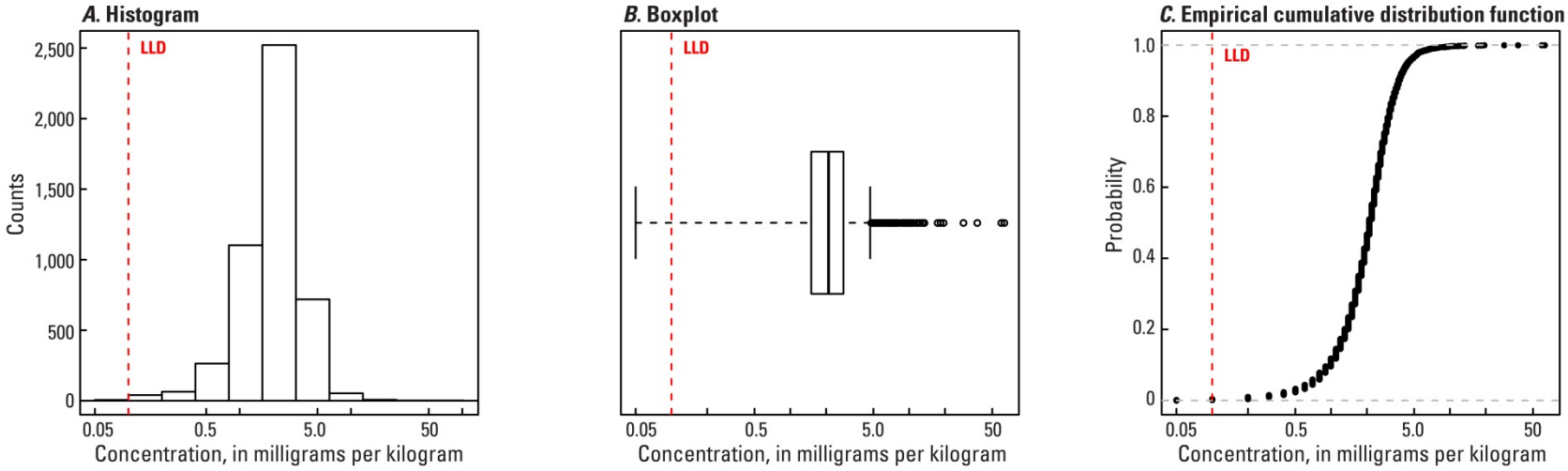


Figure 129. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of uranium (U) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Uranium (U) in soil C horizon



Number of samples = 4,780
LLD = 0.1 milligrams per kilogram
Number below LLD = 6
Minimum = <0.1 milligrams per kilogram
5 percentile = 0.7 milligrams per kilogram
25 percentile = 1.5 milligrams per kilogram
50 percentile = 2.1 milligrams per kilogram
75 percentile = 2.8 milligrams per kilogram
95 percentile = 4.4 milligrams per kilogram
Maximum = 63 milligrams per kilogram
MAD = 1.04 milligrams per kilogram
Robust CV = 49.4 %

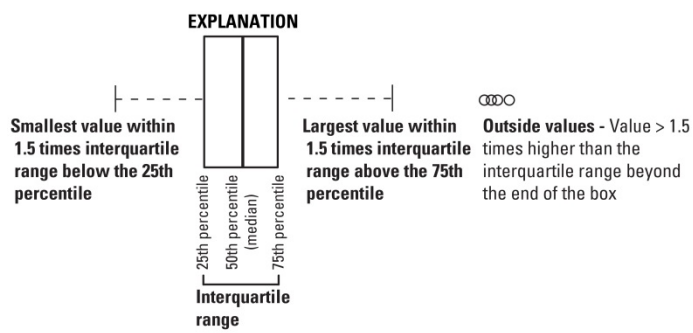


Figure 130. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of uranium (U) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

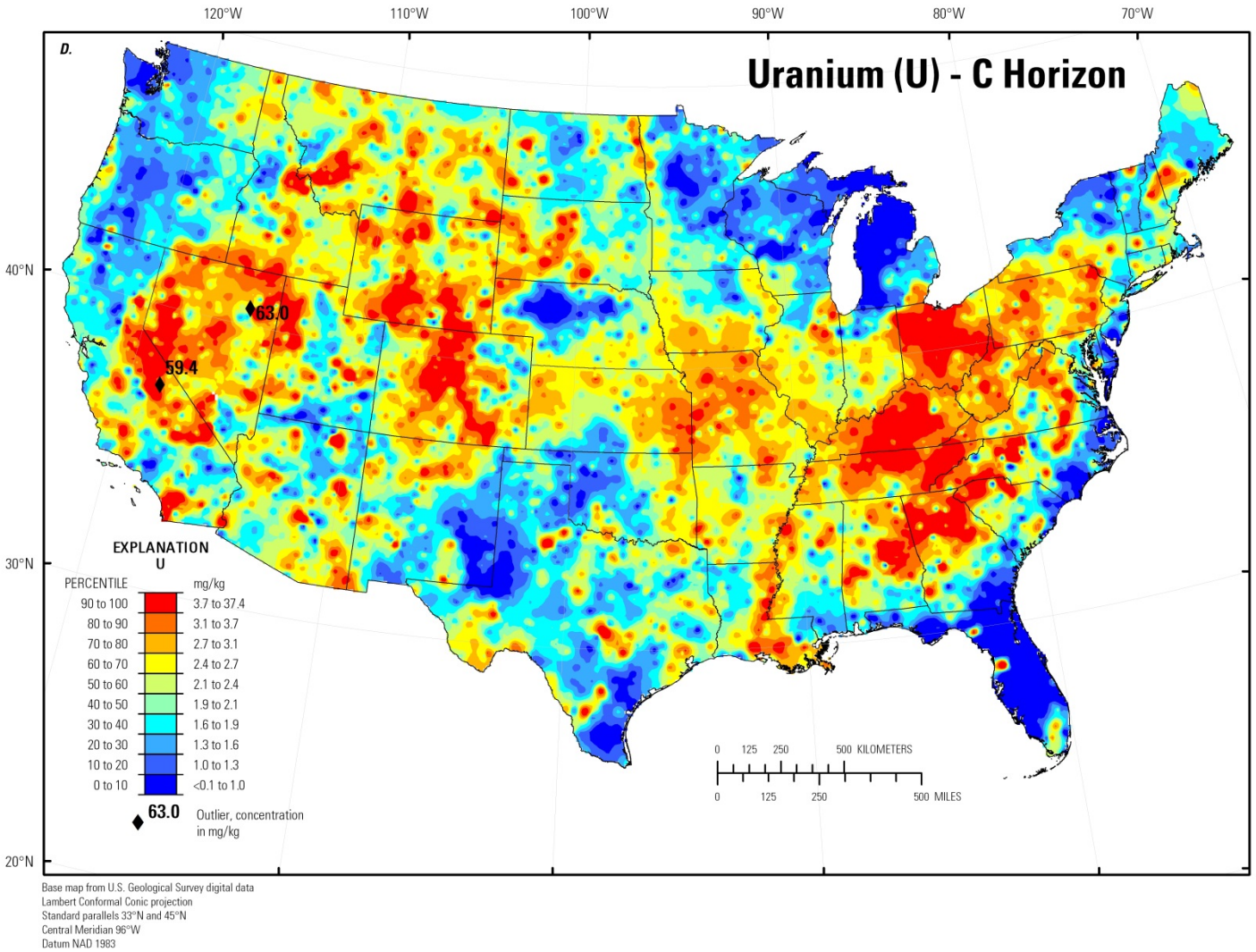
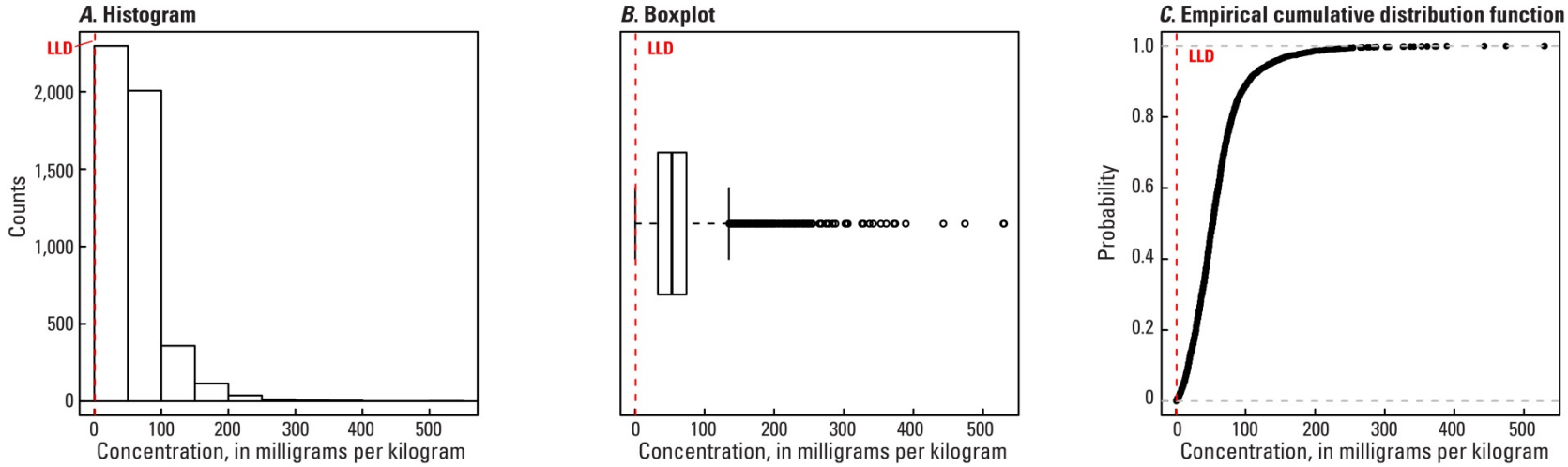


Figure 130. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of uranium (U) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Vanadium (V) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841
LLD = 1 milligram per kilogram
Number below LLD = 12
Minimum = <1 milligram per kilogram
5 percentile = 11 milligrams per kilogram
25 percentile = 33 milligrams per kilogram
50 percentile = 53 milligrams per kilogram
75 percentile = 74 milligrams per kilogram
95 percentile = 136 milligrams per kilogram
Maximum = 530 milligrams per kilogram
MAD = 31.1 milligrams per kilogram
Robust CV = 58.7 %

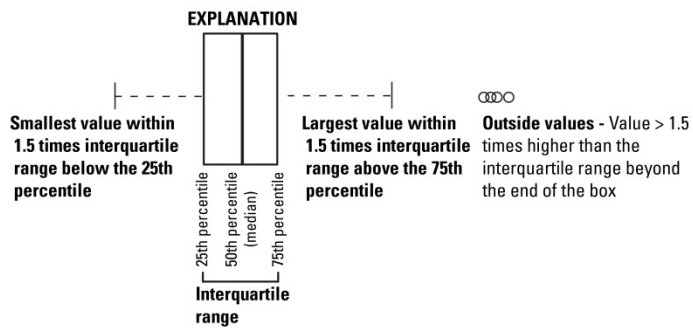


Figure 131. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of vanadium (V) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

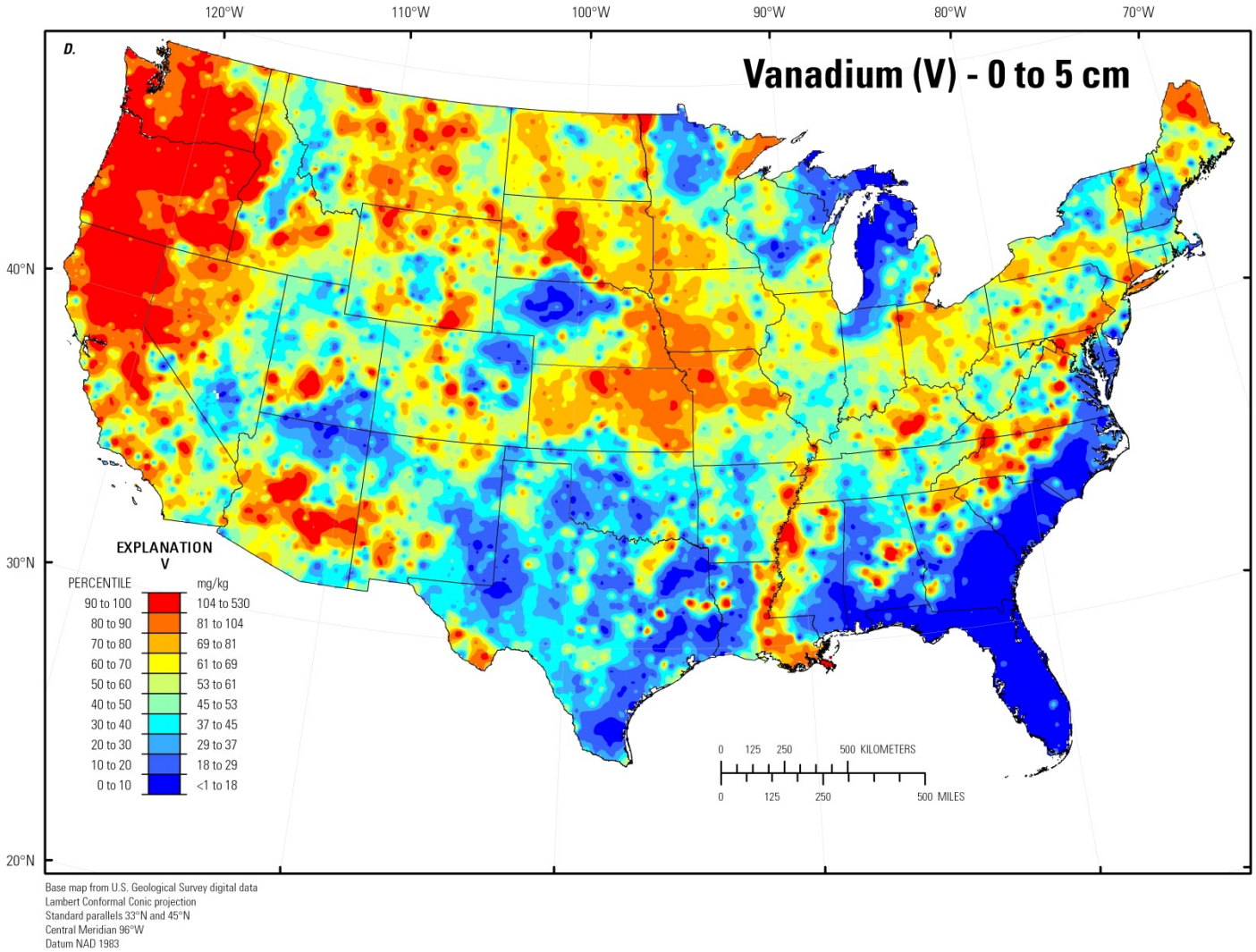
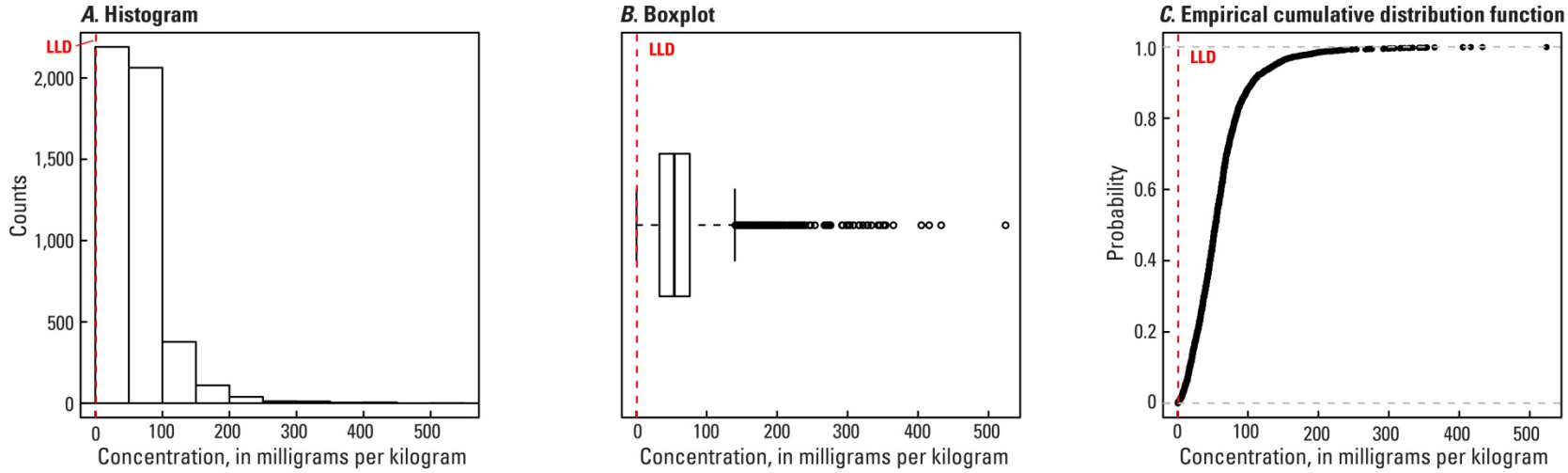


Figure 131. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of vanadium (V) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

Vanadium (V) in soil A horizon



Number of samples = 4,813
LLD = 1 milligram per kilogram
Number below LLD = 10
Minimum = <1 milligram per kilogram
5 percentile = 11 milligrams per kilogram
25 percentile = 33 milligrams per kilogram
50 percentile = 54 milligrams per kilogram
75 percentile = 76 milligrams per kilogram
95 percentile = 139 milligrams per kilogram
Maximum = 524 milligrams per kilogram
MAD = 31.1 milligrams per kilogram
Robust CV = 57.7 %

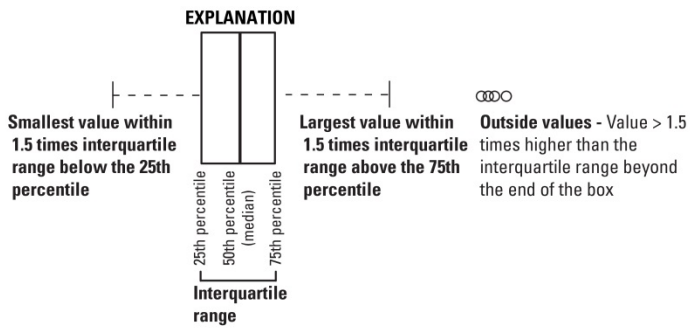


Figure 132. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of vanadium (V) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

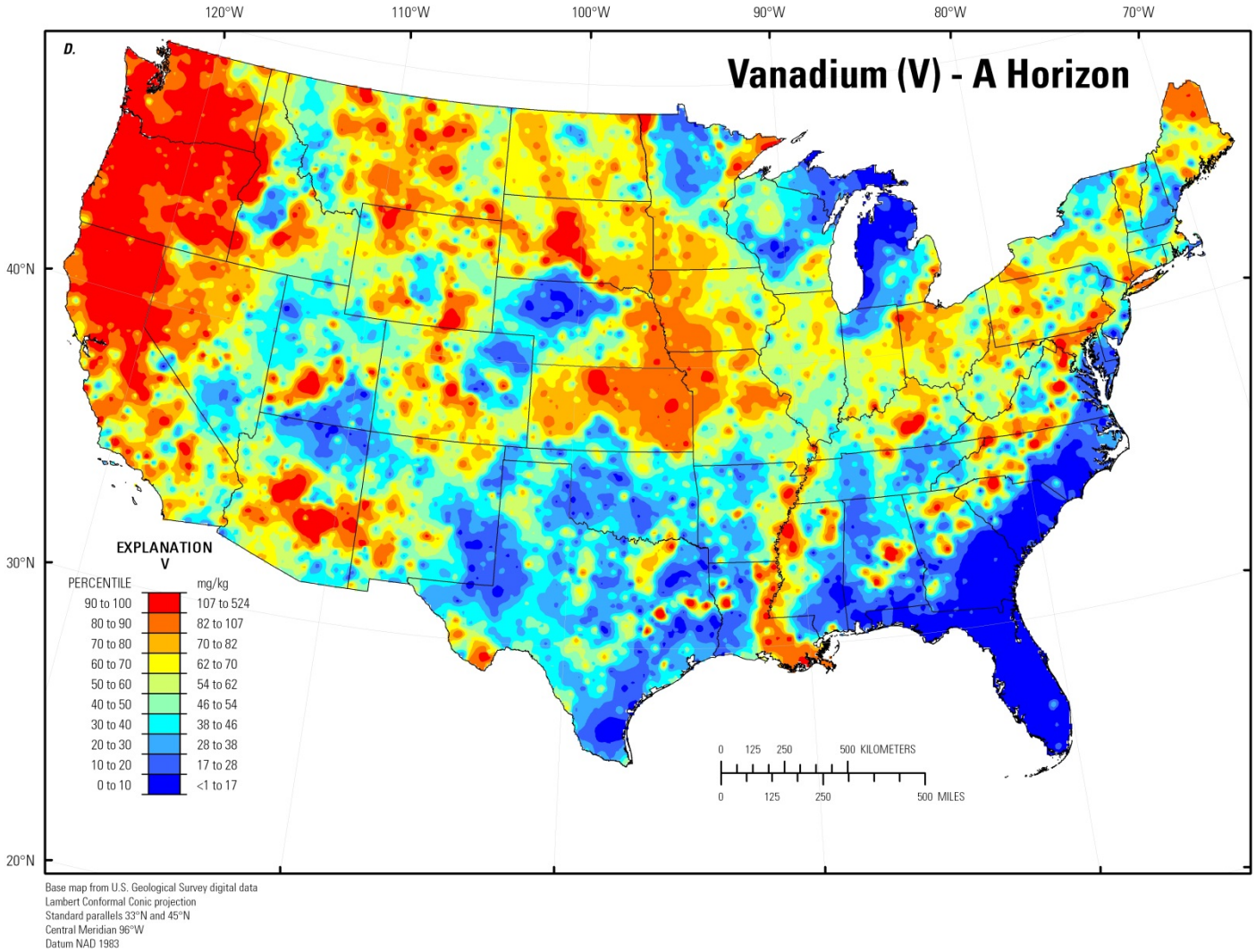


Figure 132. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of vanadium (V) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

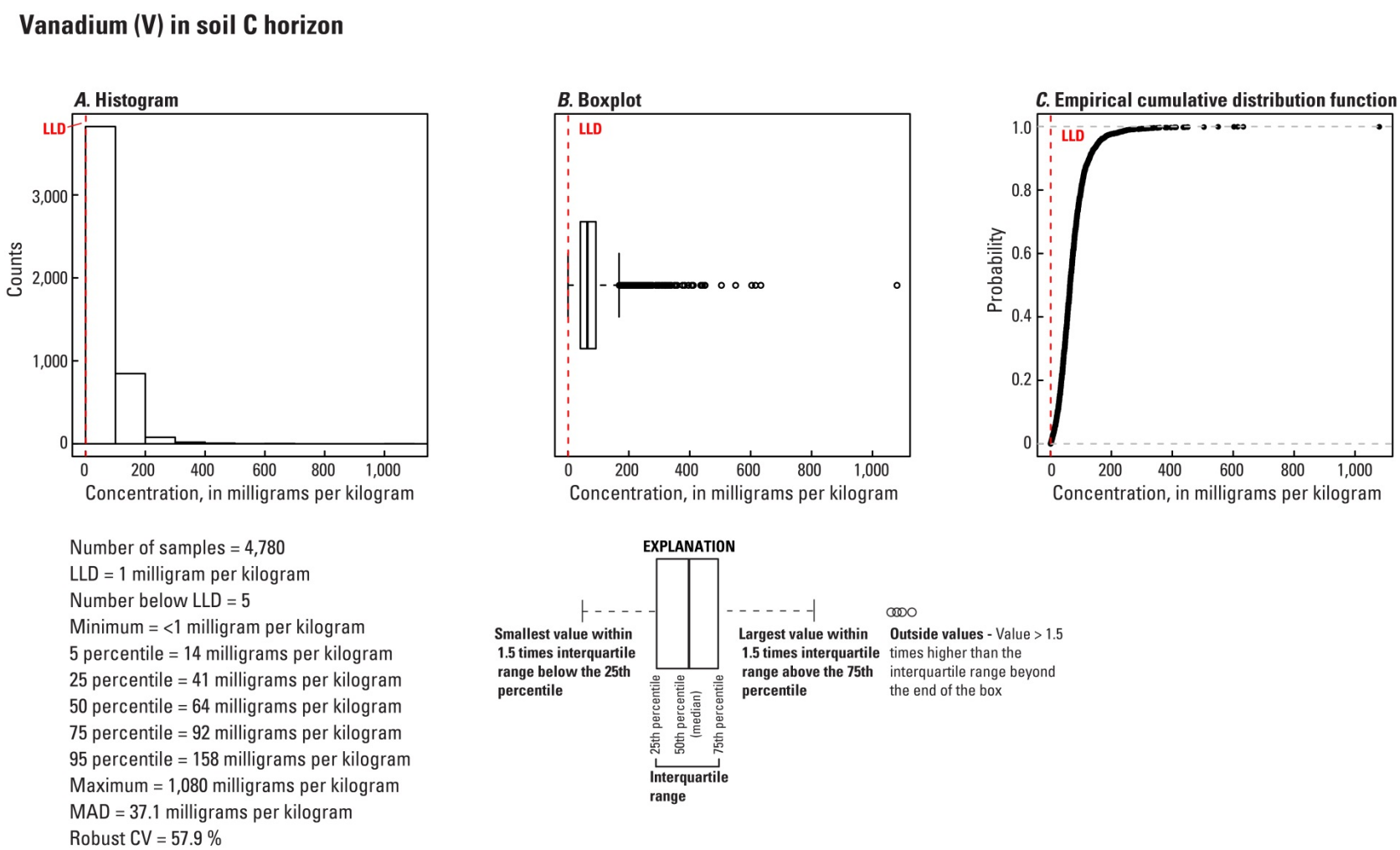


Figure 133. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of vanadium (V) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

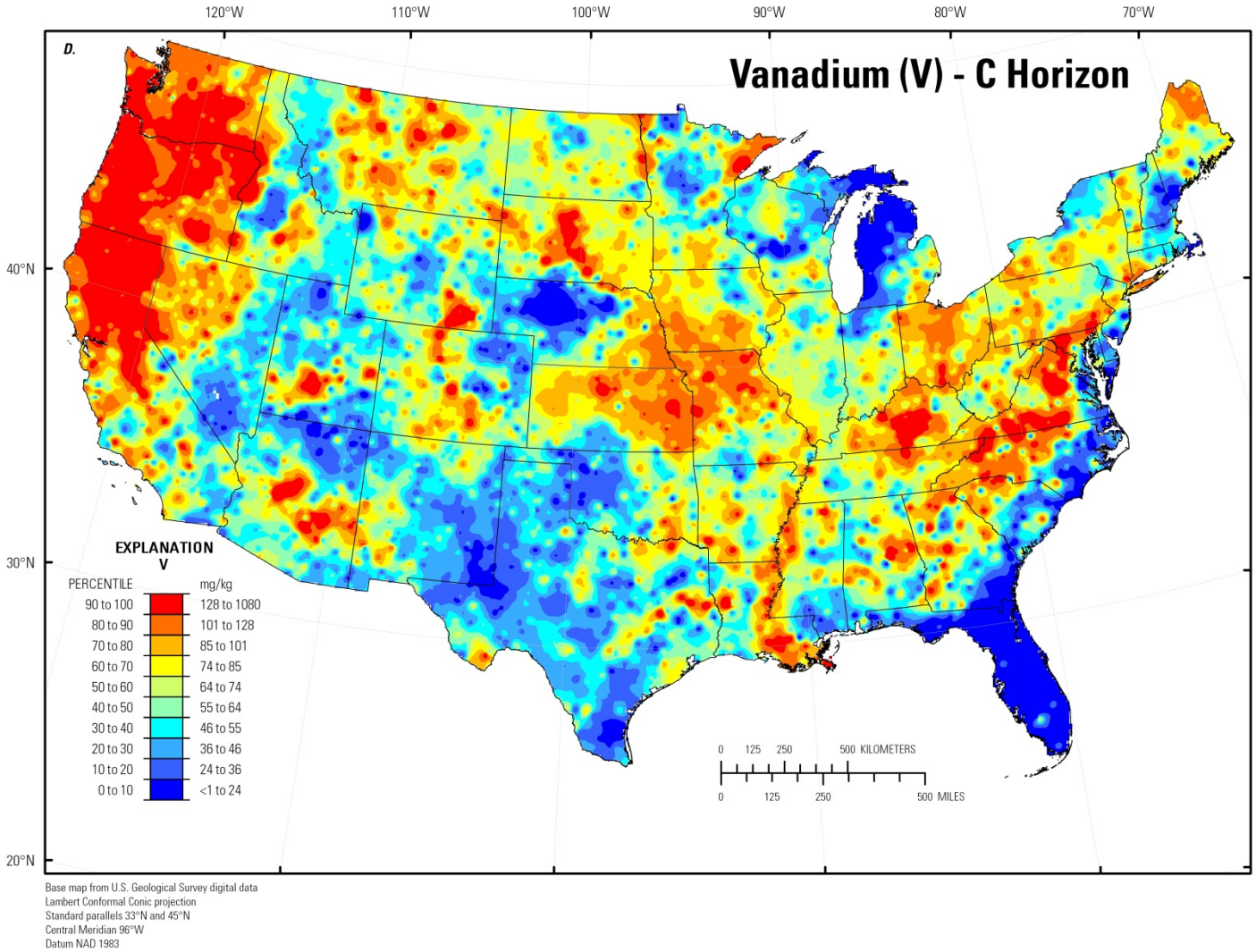


Figure 133. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of vanadium (V) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

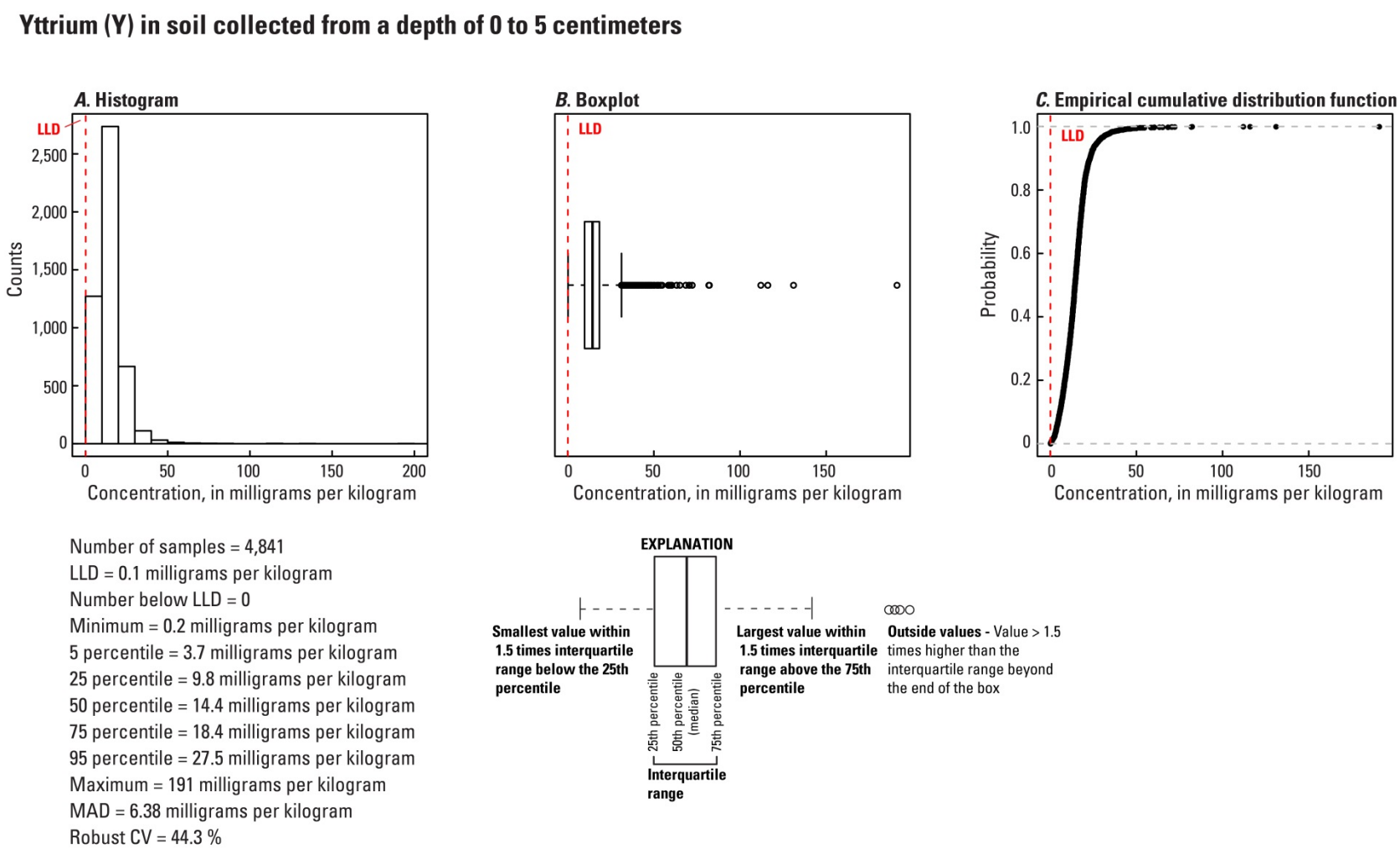


Figure 134. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of yttrium (Y) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

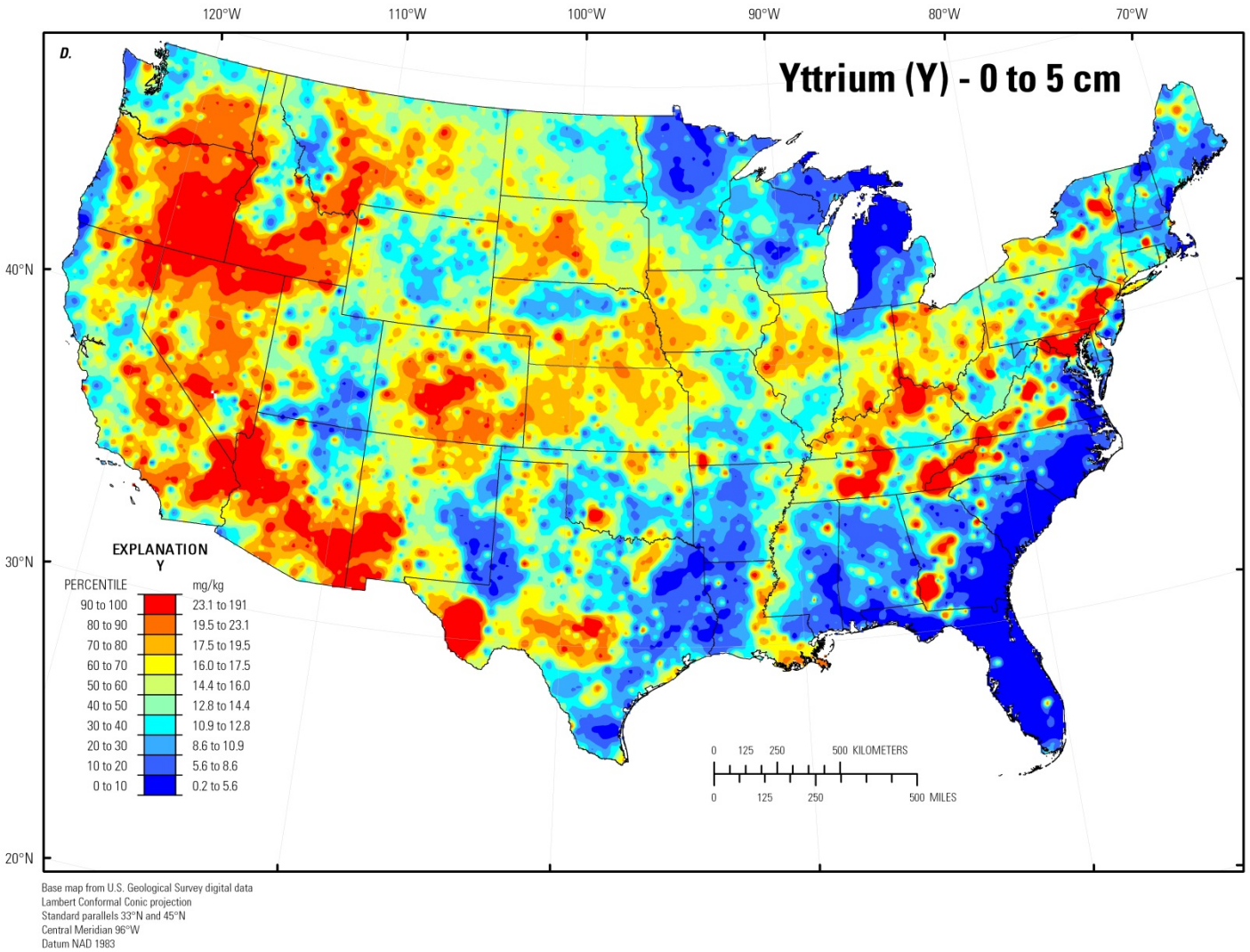


Figure 134. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of yttrium (Y) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

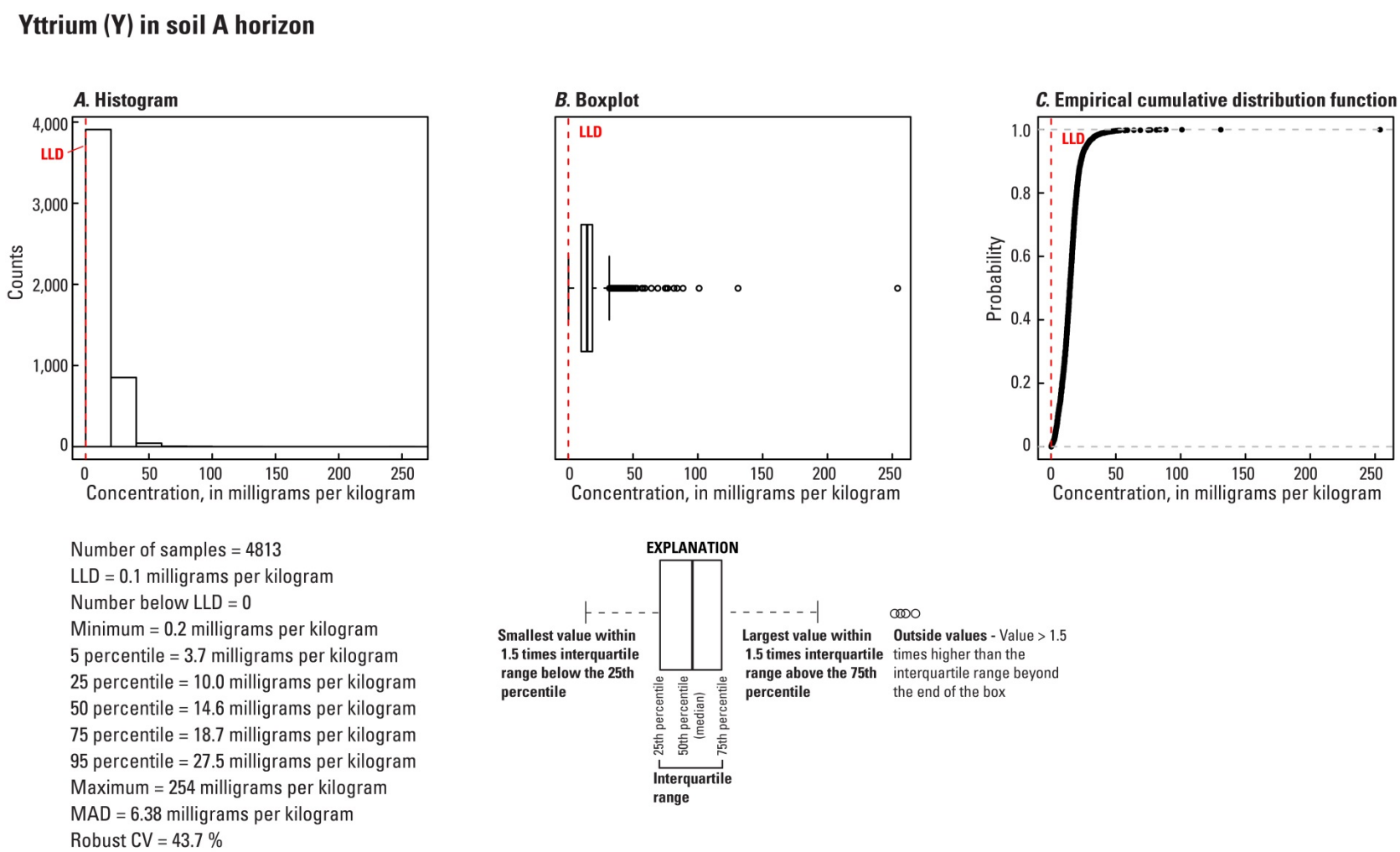


Figure 135. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of yttrium (Y) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

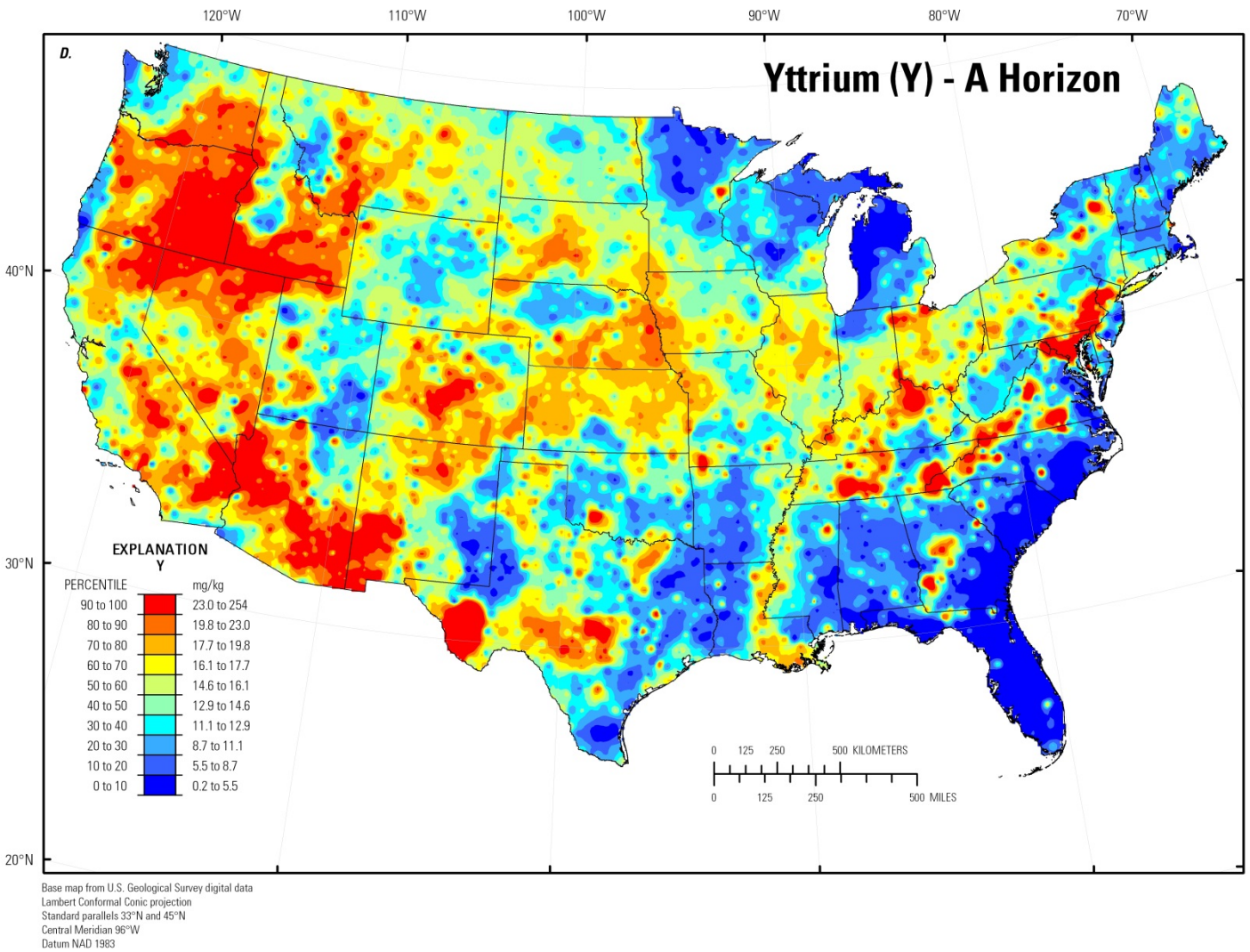


Figure 135. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of yttrium (Y) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

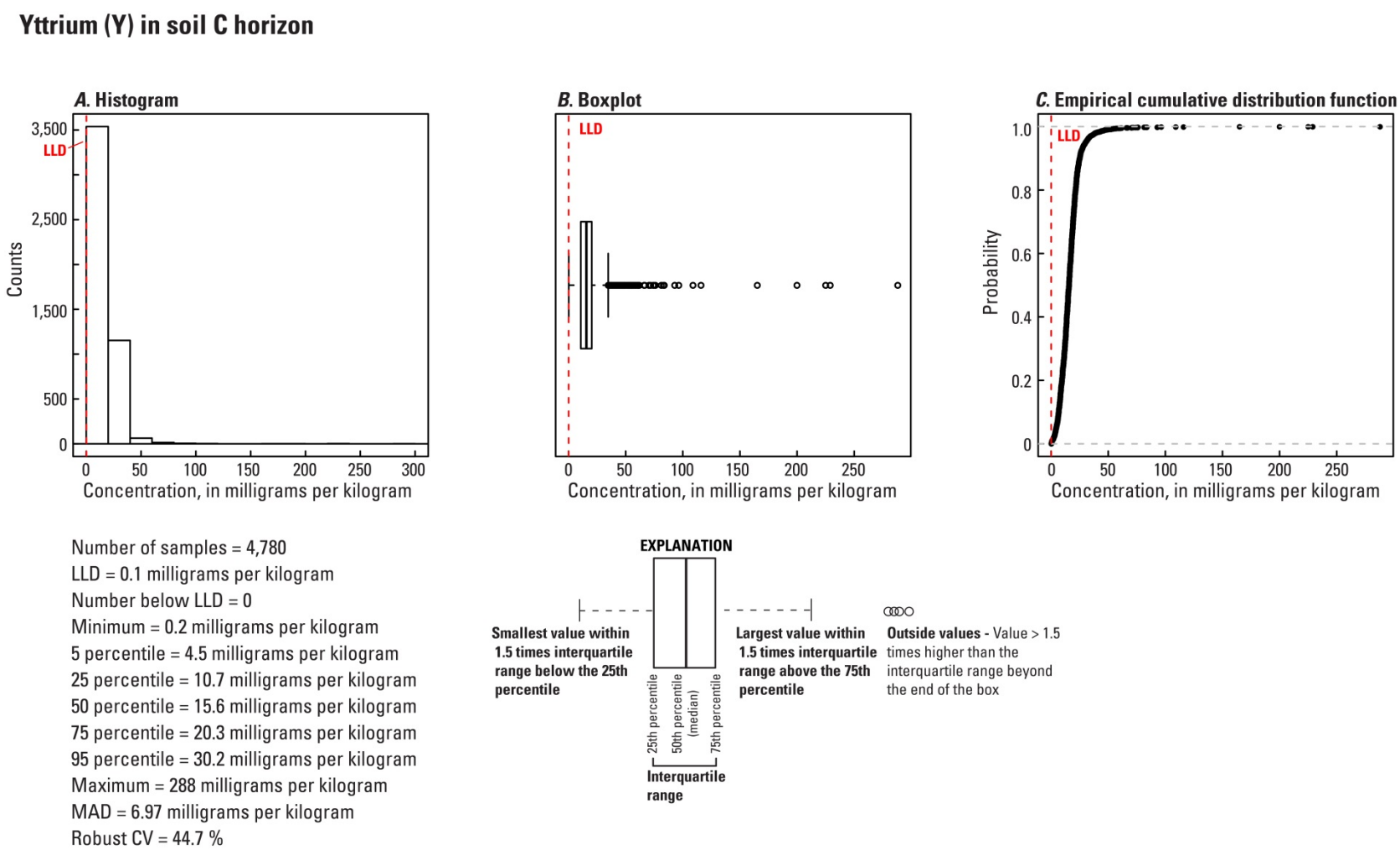


Figure 136. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of yttrium (Y) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

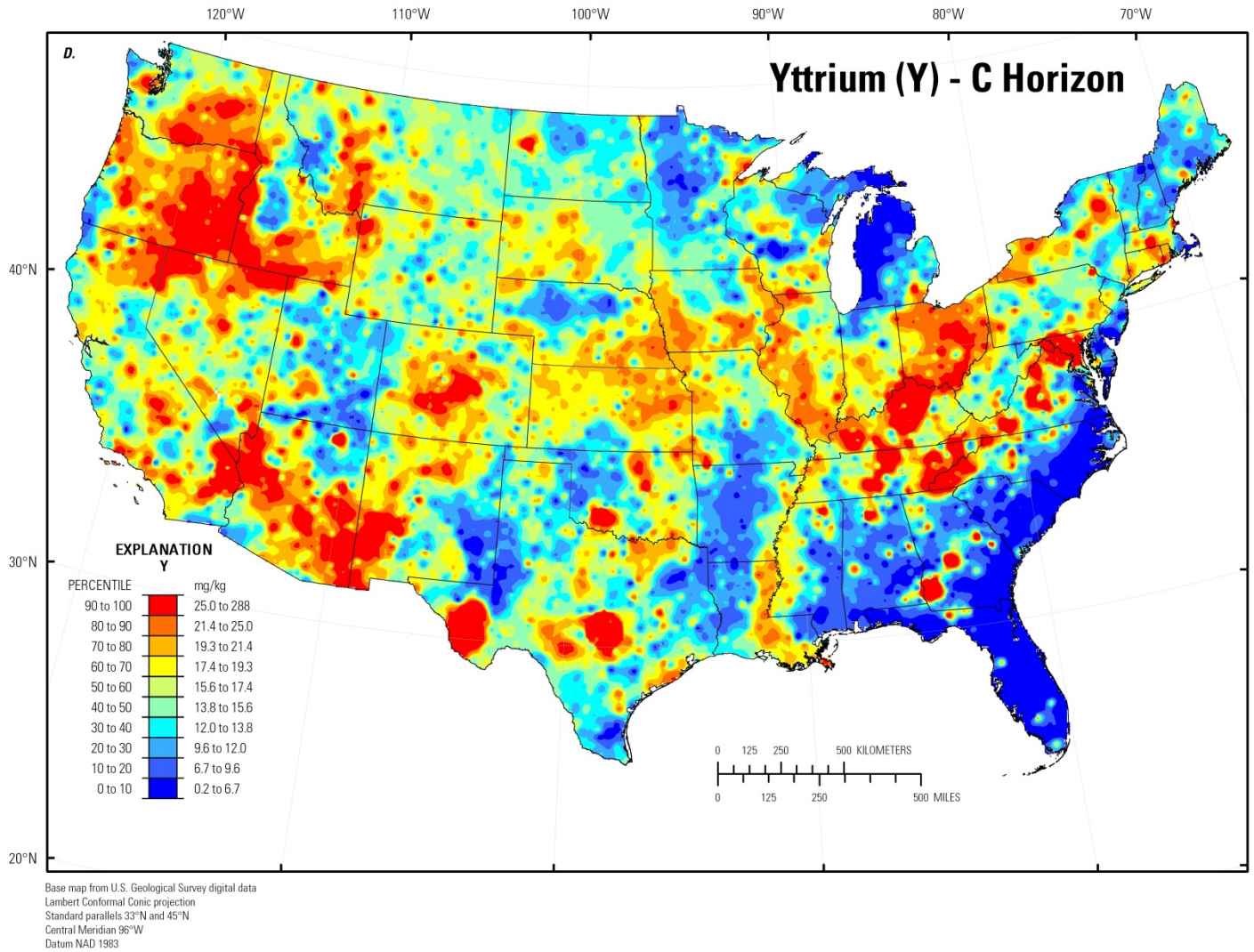


Figure 136. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of yttrium (Y) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

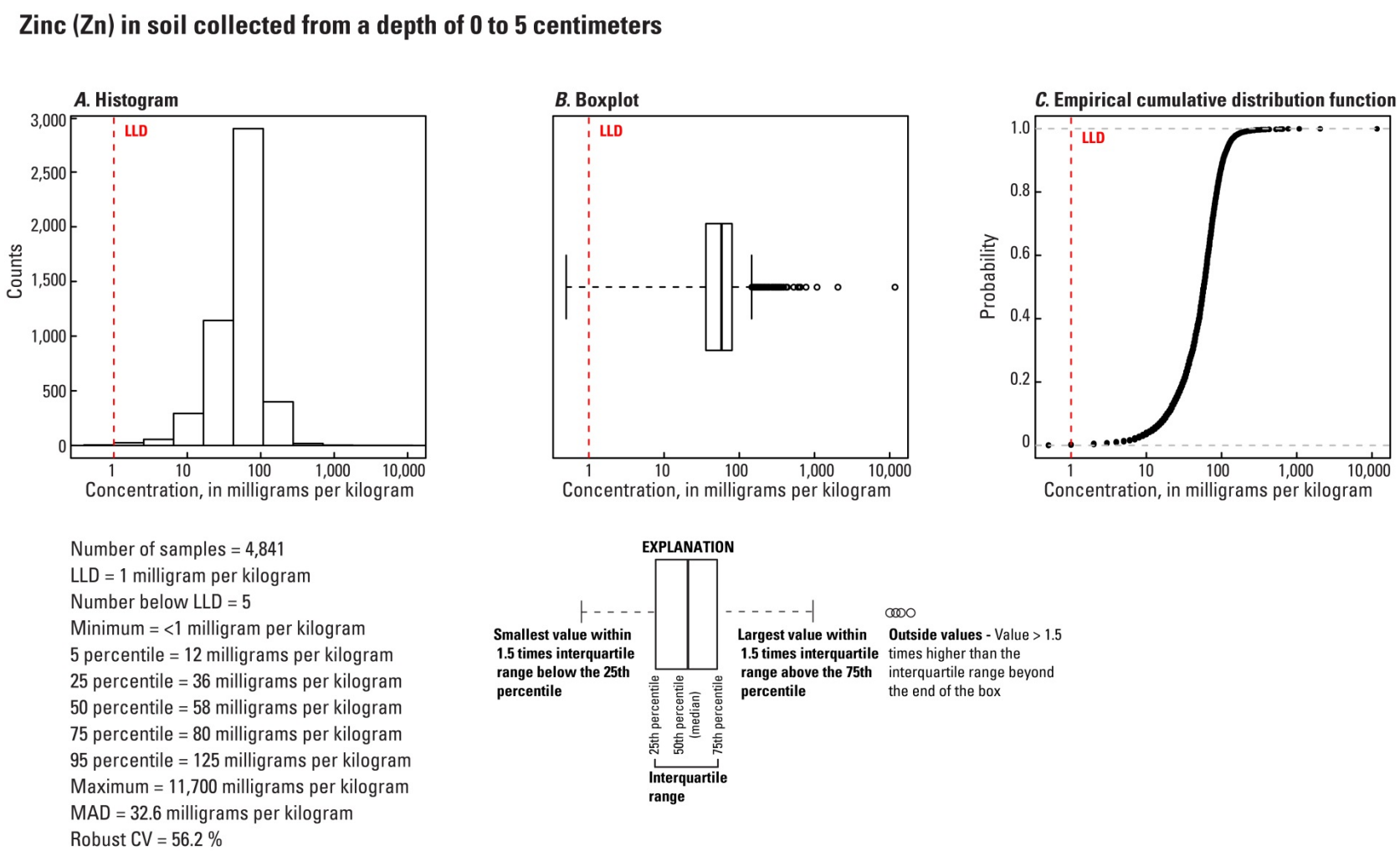


Figure 137. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of zinc (Zn) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

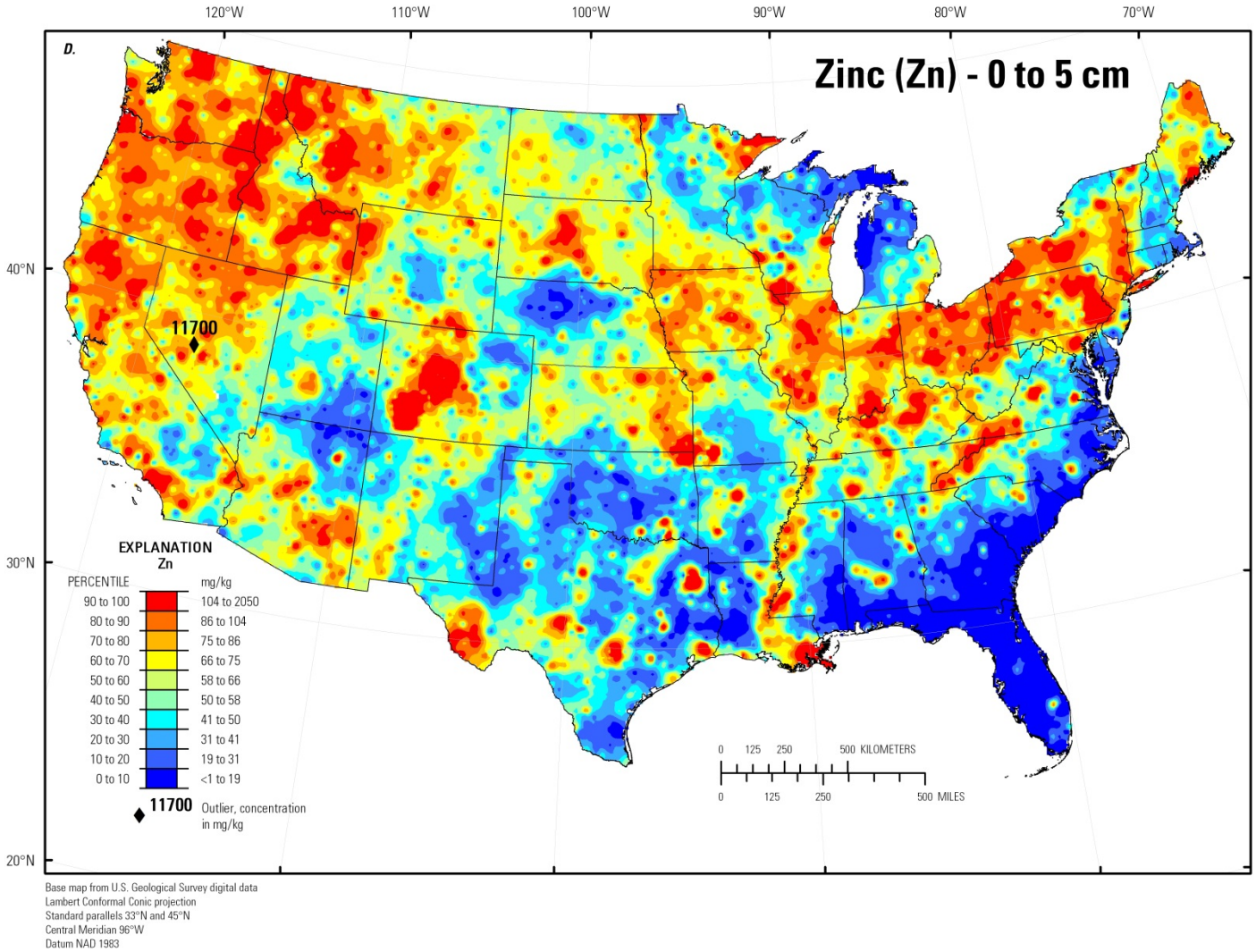


Figure 137. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of zinc (Zn) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

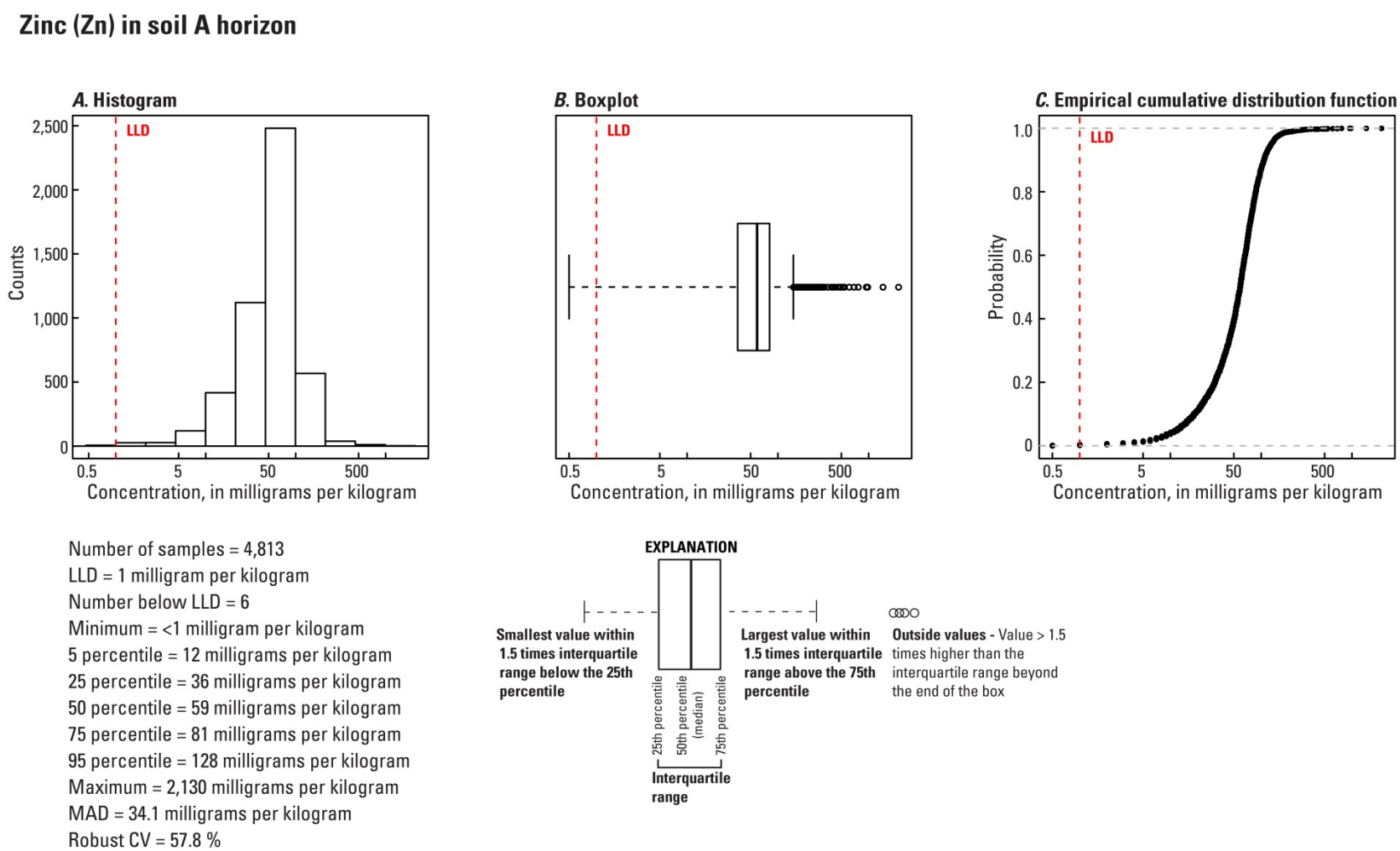


Figure 138. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of zinc (Zn) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

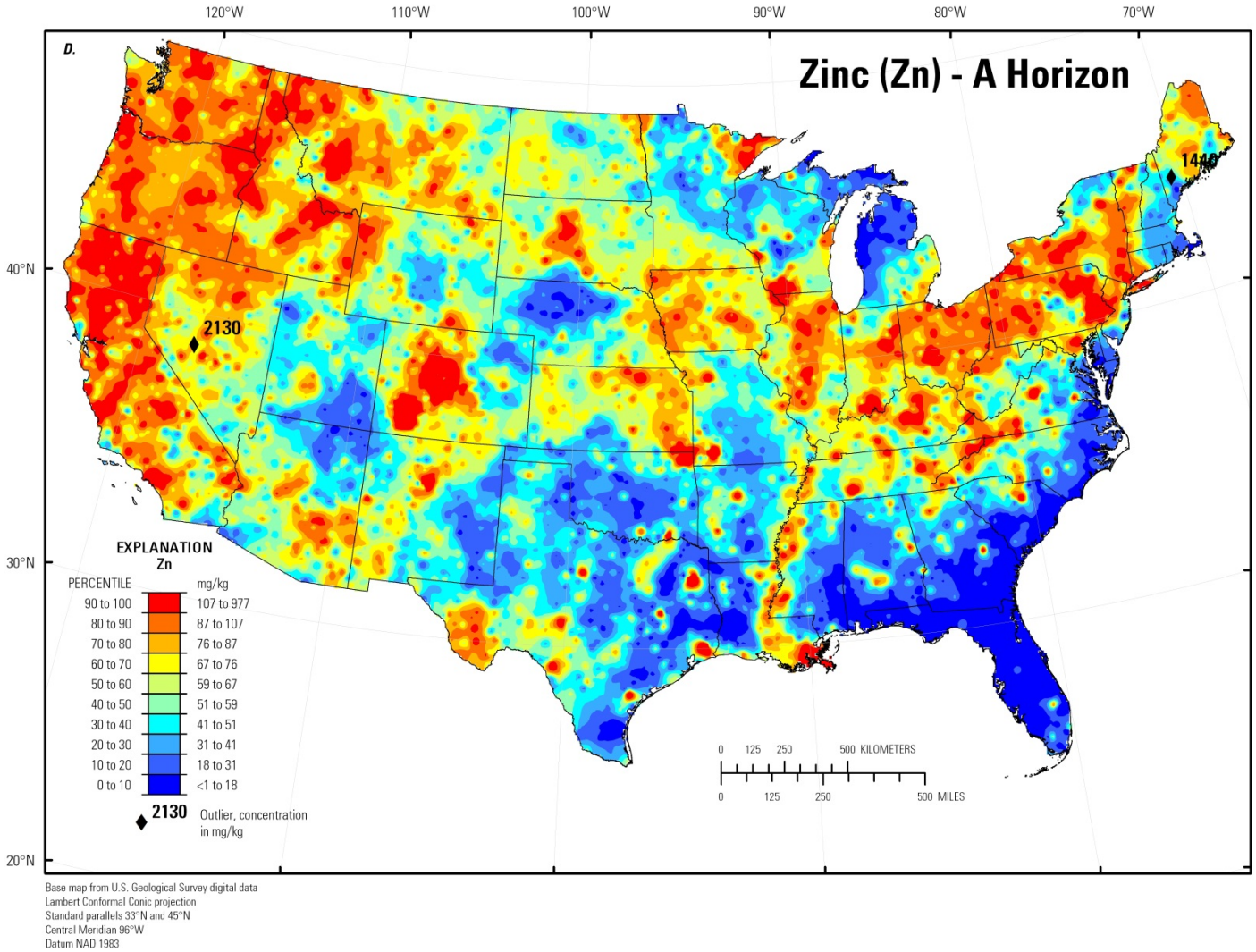
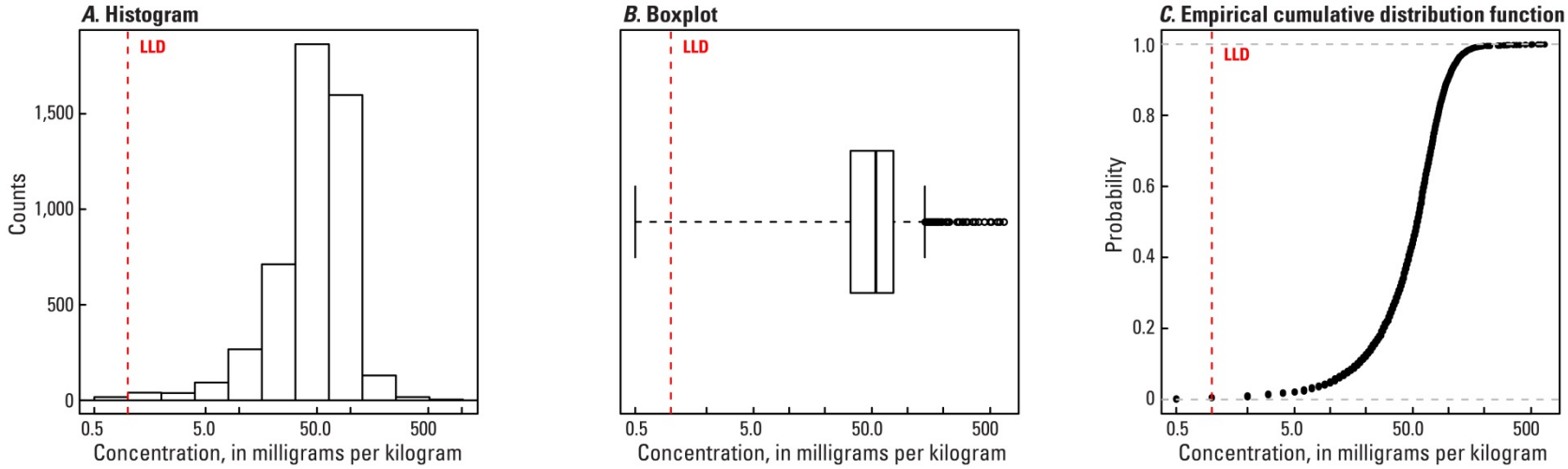


Figure 138. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of zinc (Zn) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

Zinc (Zn) in soil C horizon



Number of samples = 4,780
LLD = 1 milligram per kilogram
Number below LLD = 17
Minimum = <1 milligram per kilogram
5 percentile = 10 milligrams per kilogram
25 percentile = 33 milligrams per kilogram
50 percentile = 54 milligrams per kilogram
75 percentile = 76 milligrams per kilogram
95 percentile = 117 milligrams per kilogram
Maximum = 653 milligrams per kilogram
MAD = 31.1 milligrams per kilogram
Robust CV = 57.7 %

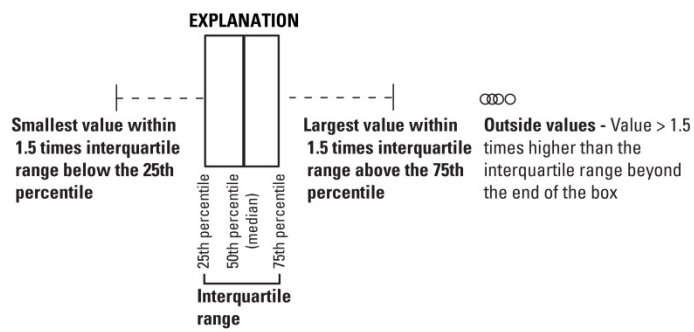


Figure 139. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of zinc (Zn) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).

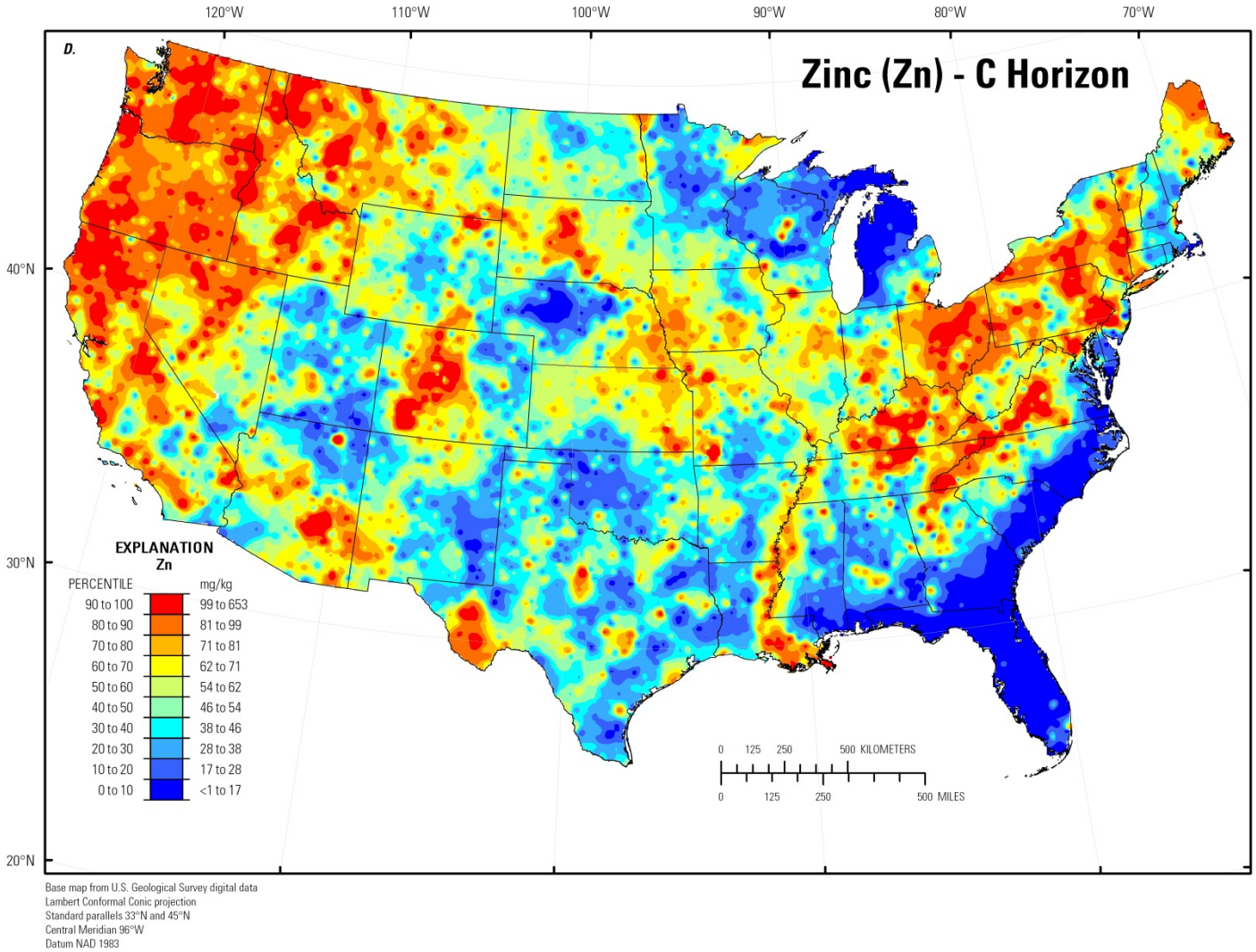


Figure 139. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of zinc (Zn) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

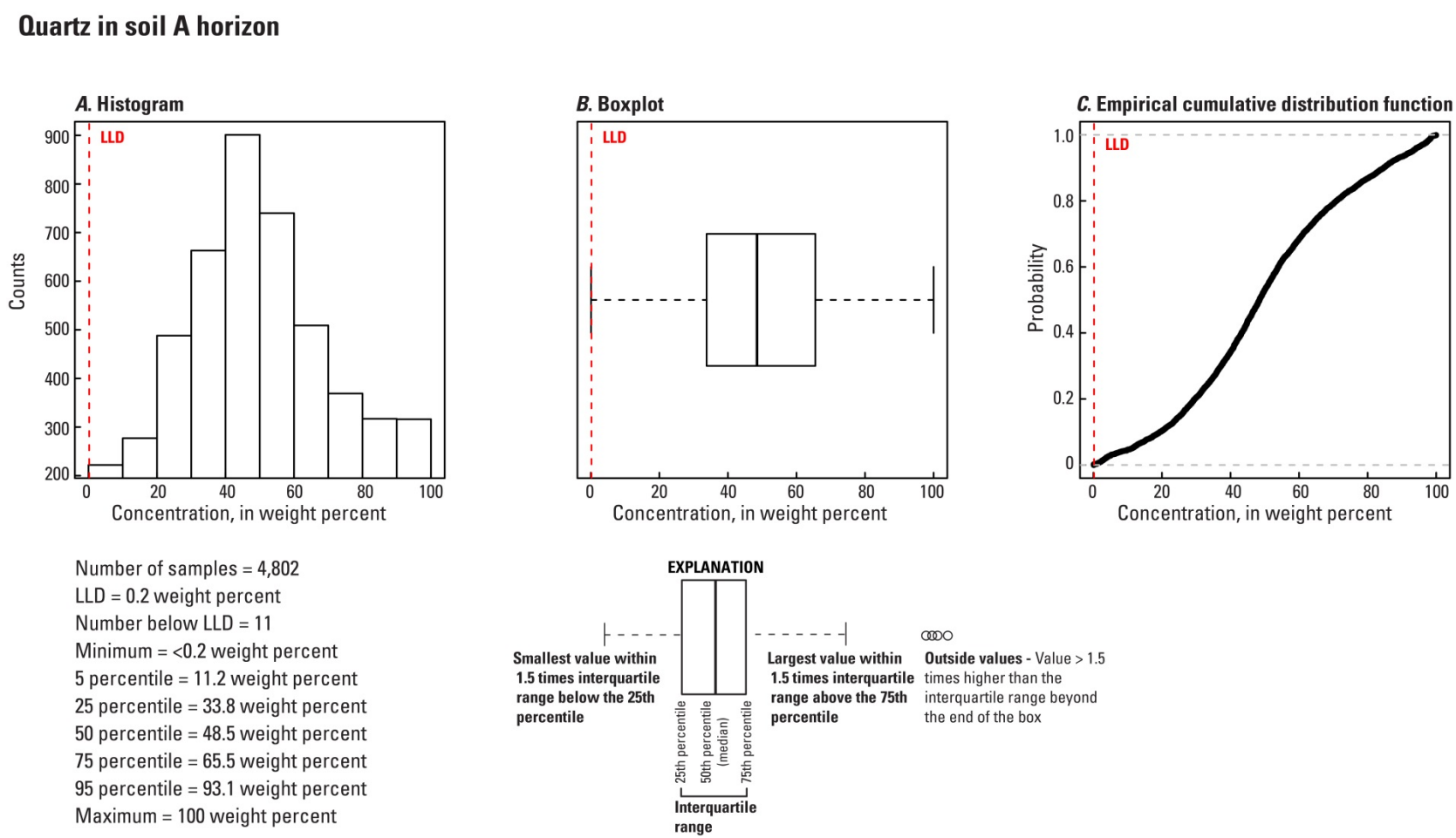


Figure 140. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of quartz in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

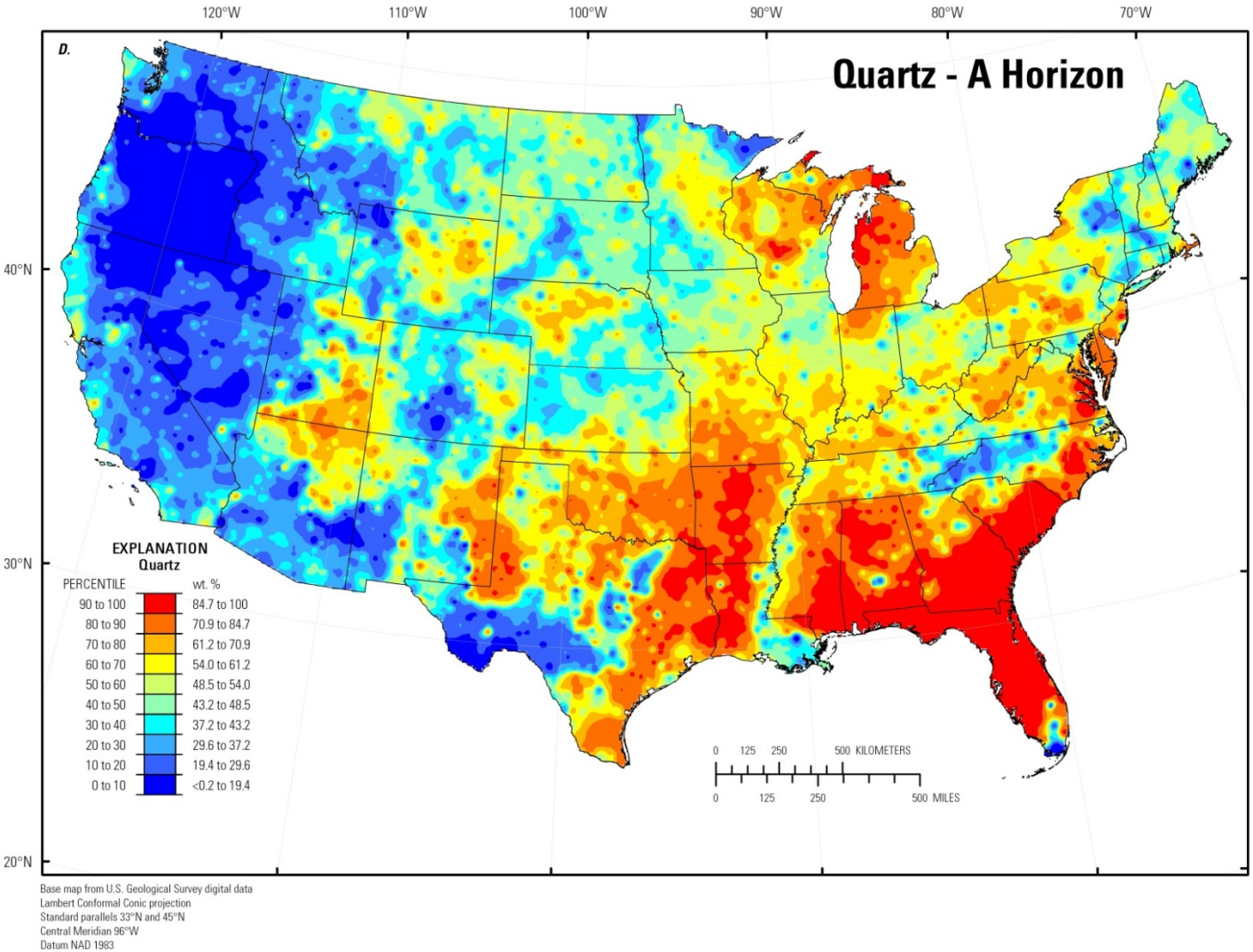


Figure 140. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of quartz in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

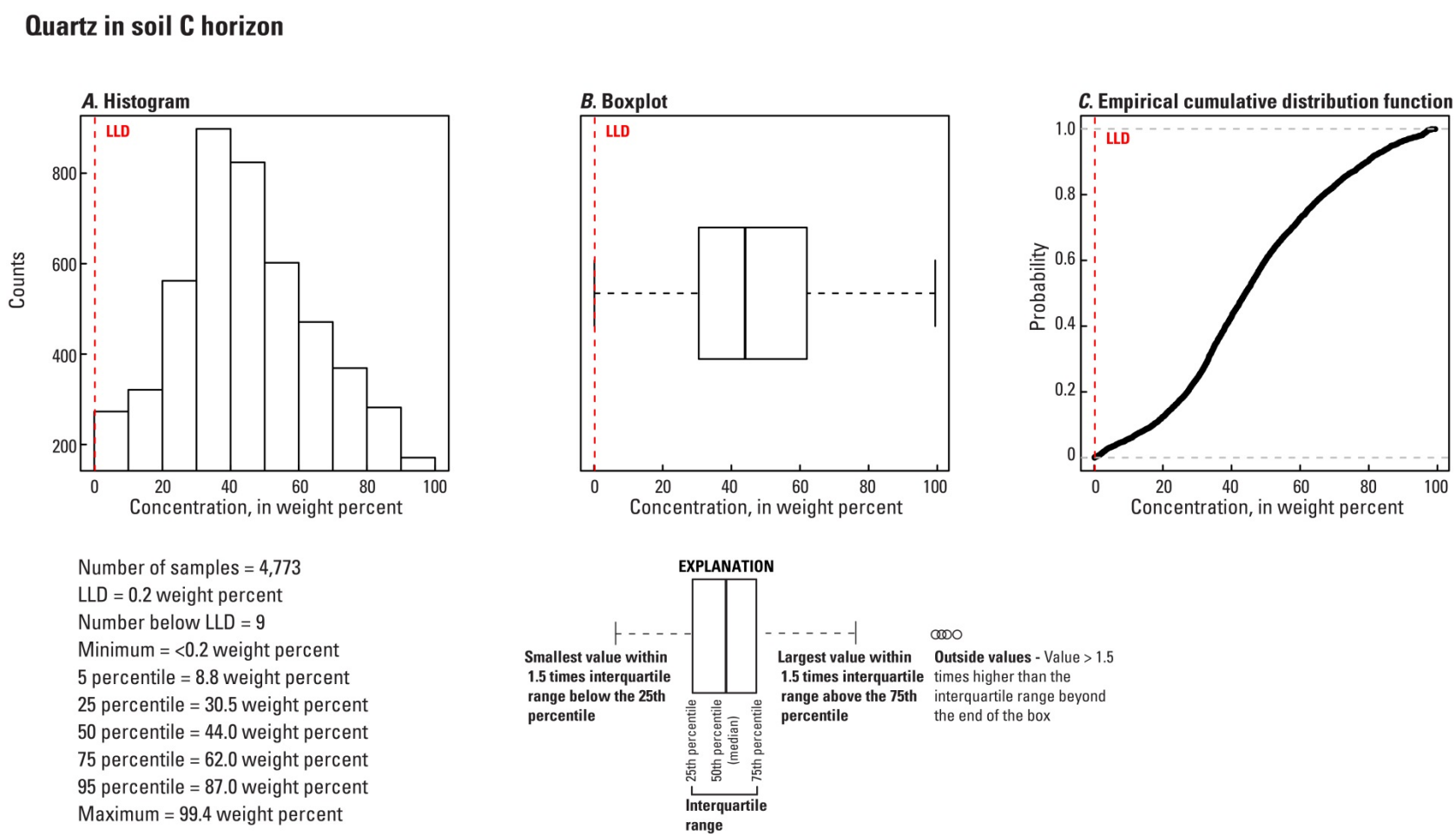


Figure 141. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of quartz in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

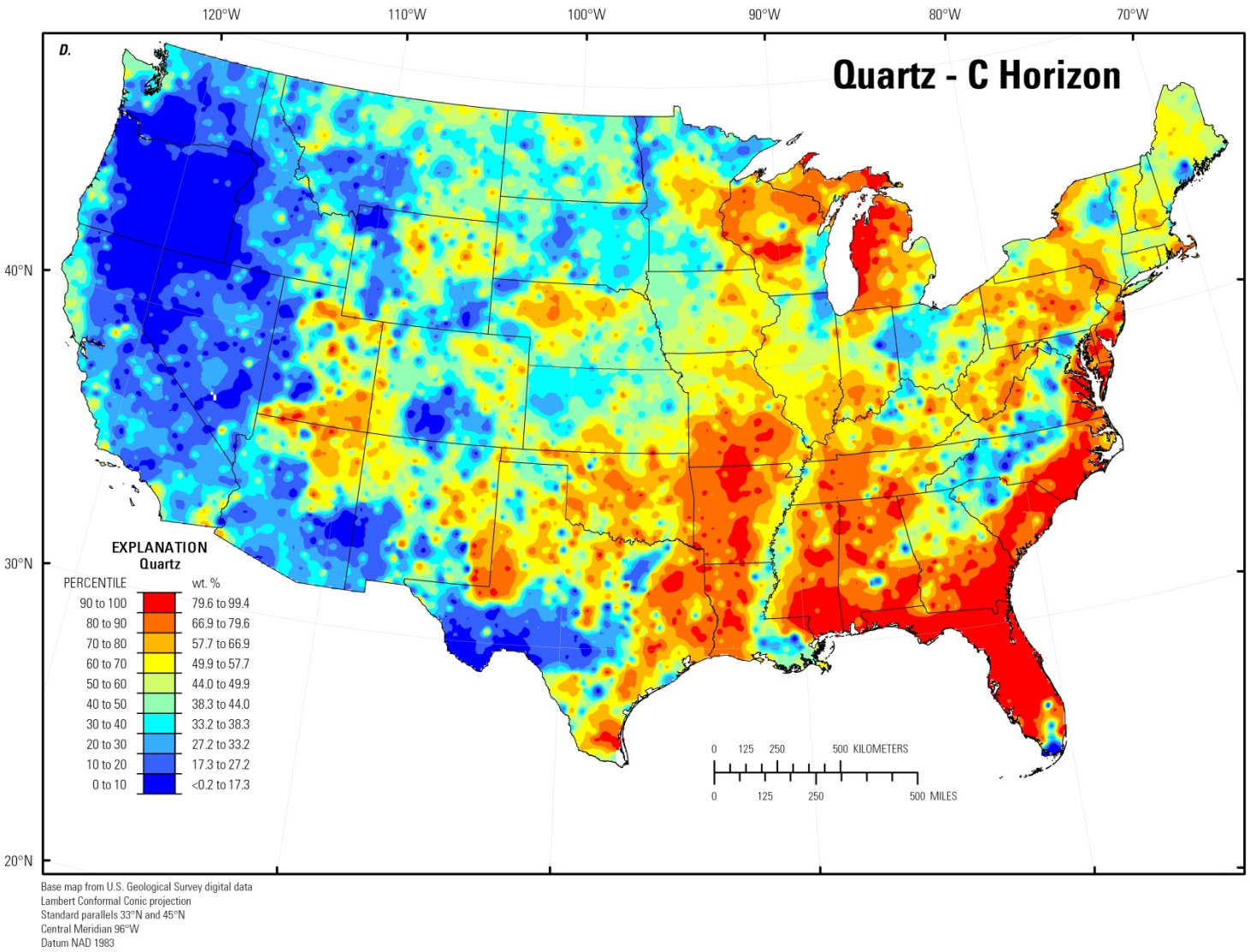


Figure 141. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of quartz in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Total potassium feldspar (K-feldspar) in soil A horizon

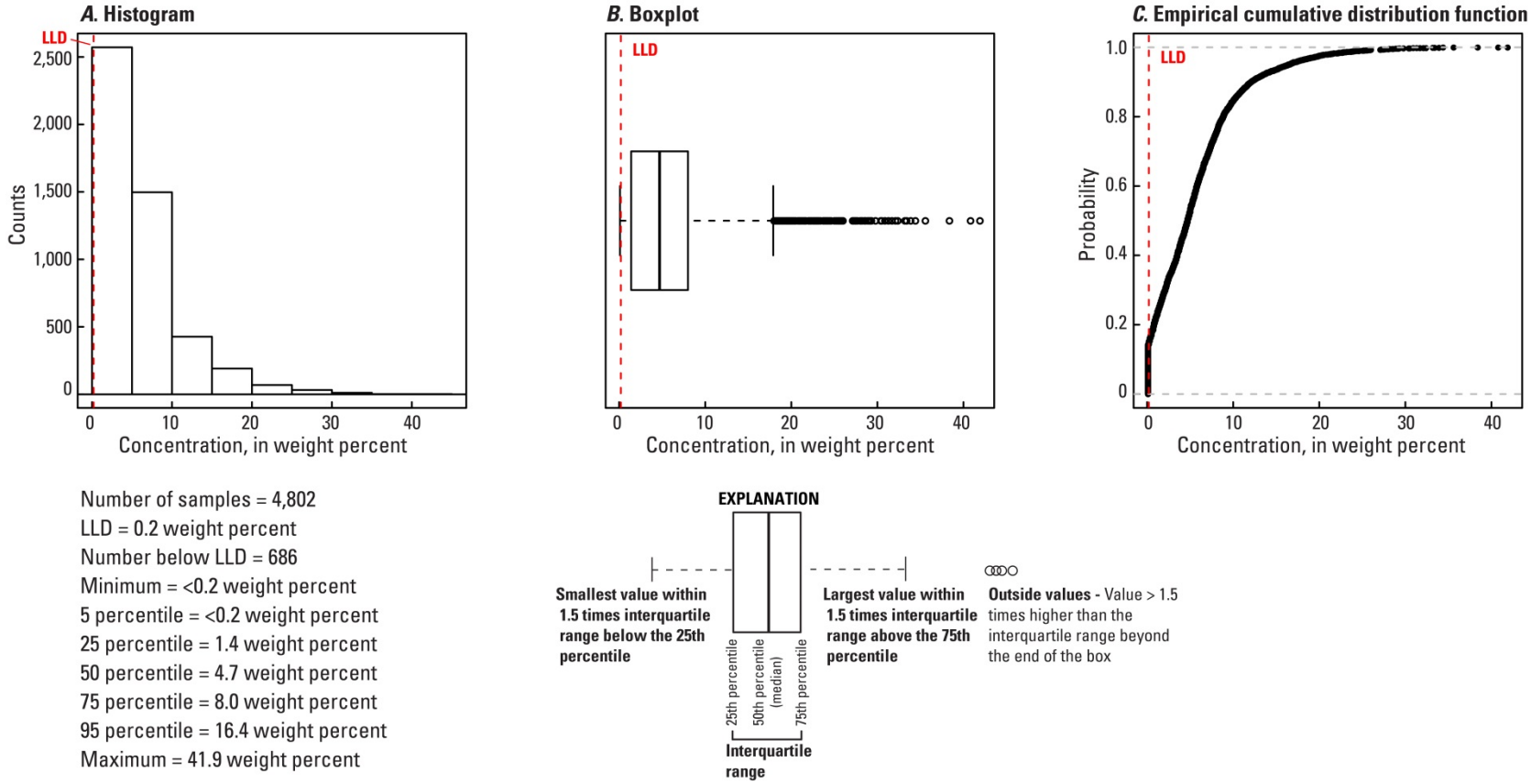


Figure 142. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total potassium feldspar (K-feldspar) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

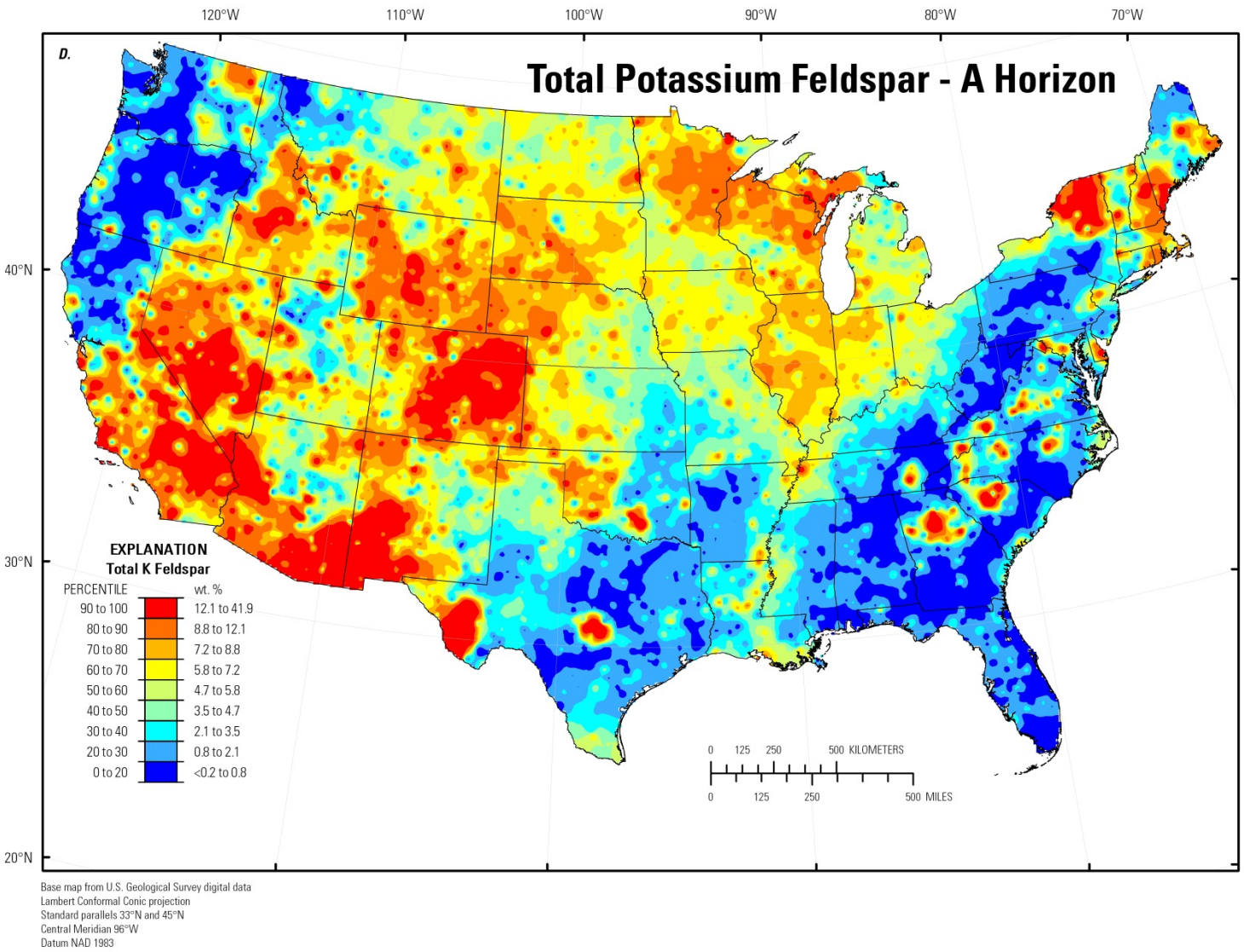


Figure 142. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total potassium feldspar (K-feldspar) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

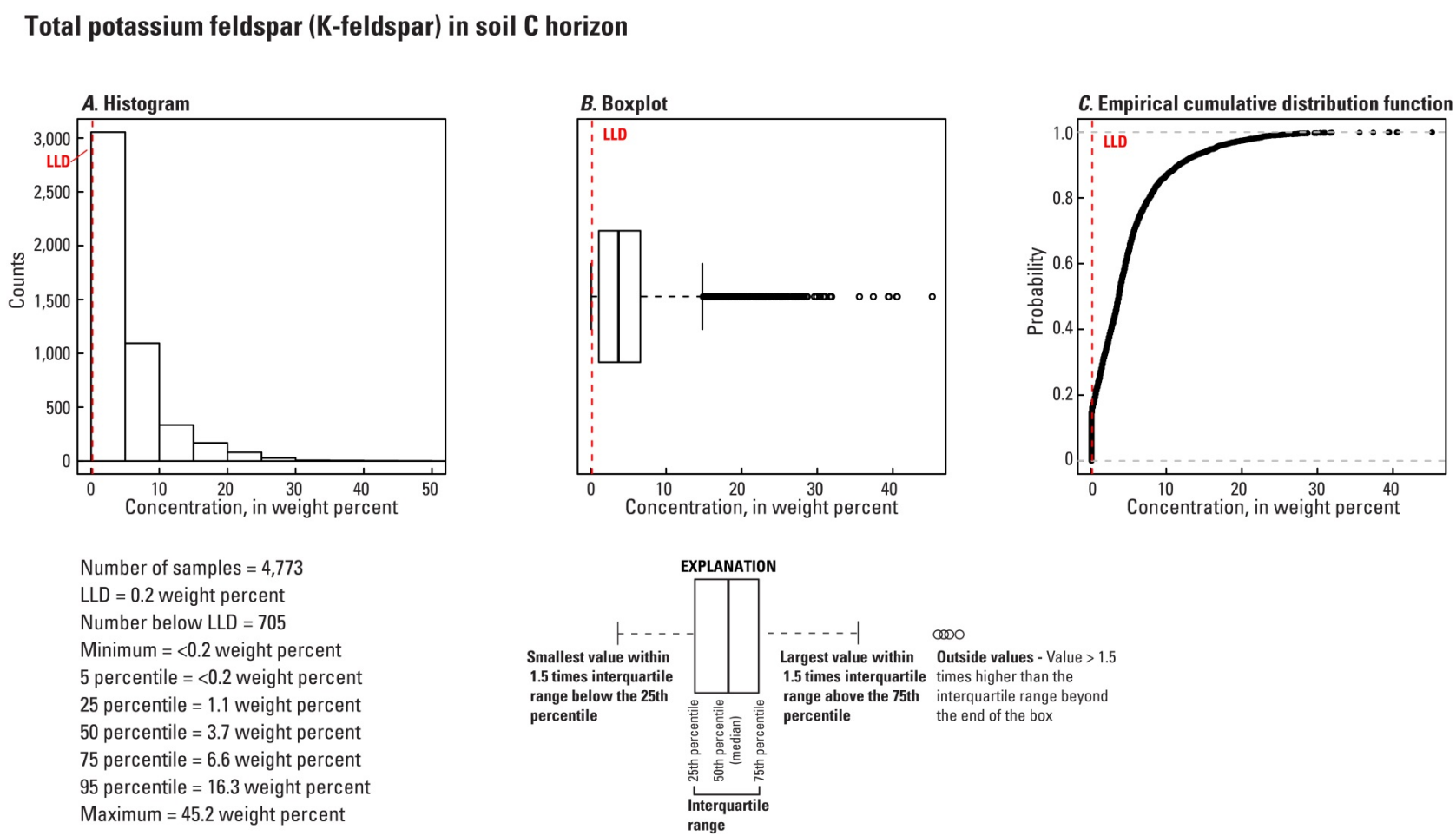


Figure 143. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total potassium feldspar (K-feldspar) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

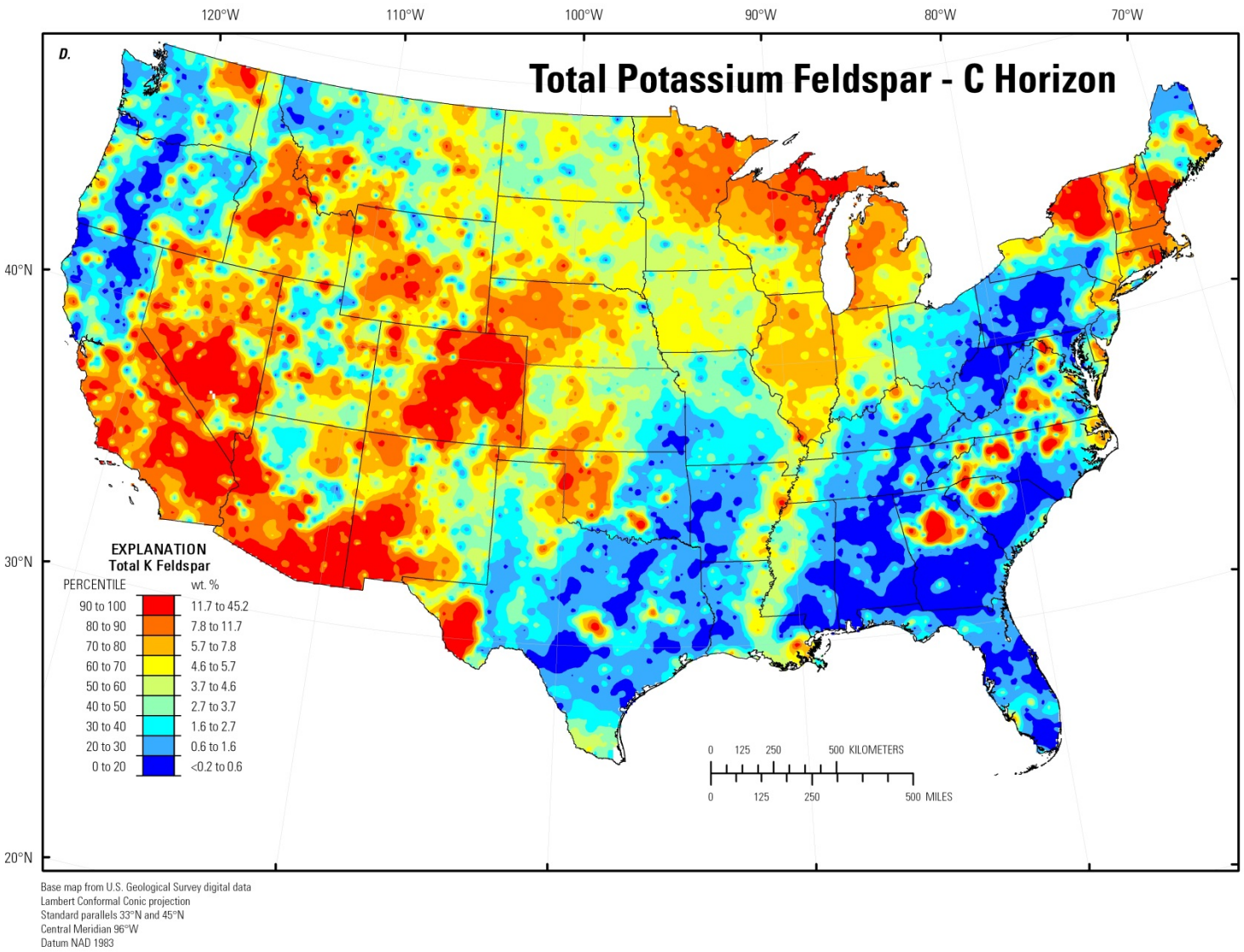


Figure 143. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total potassium feldspar (K-feldspar) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

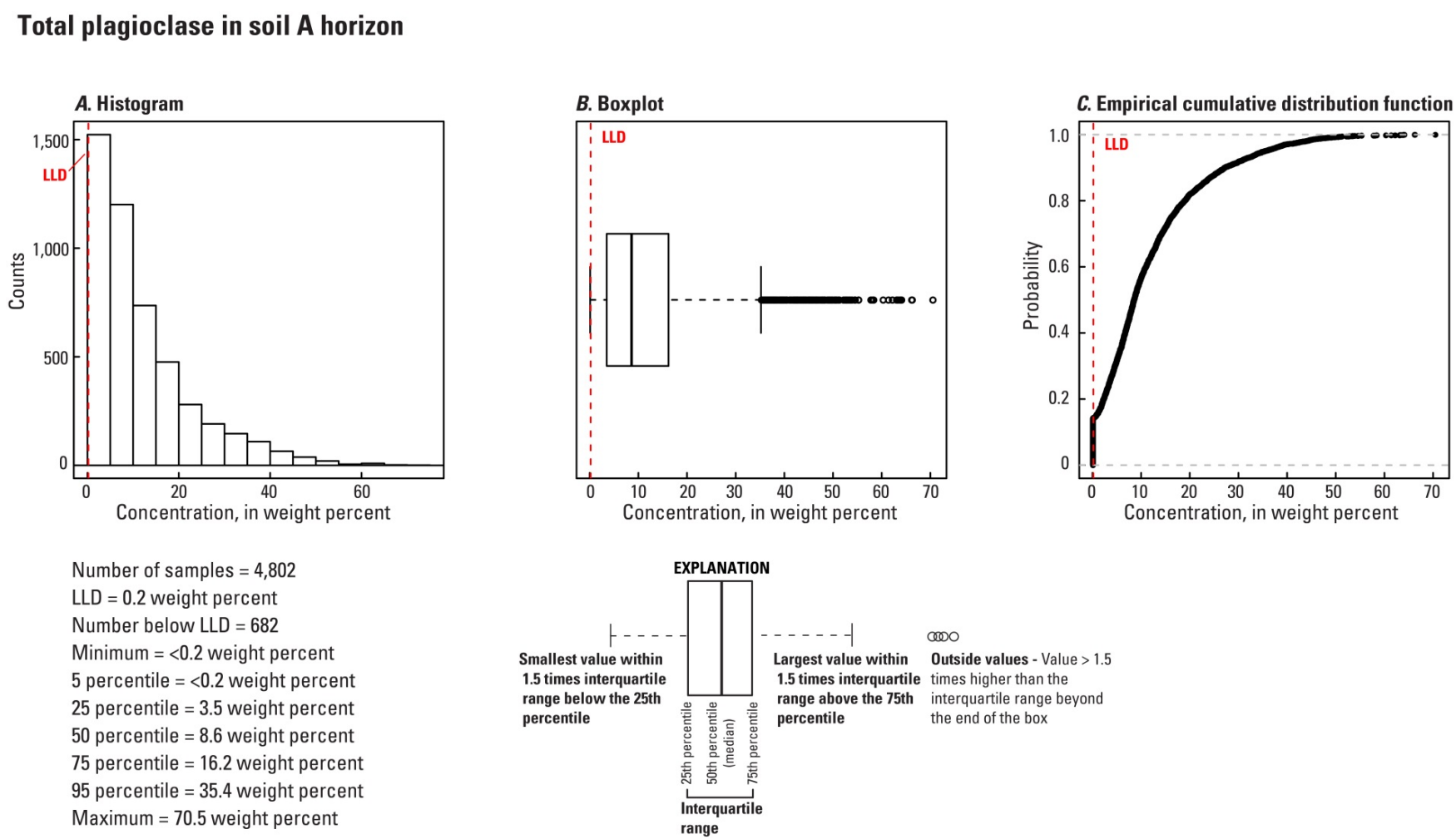


Figure 144. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total plagioclase in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

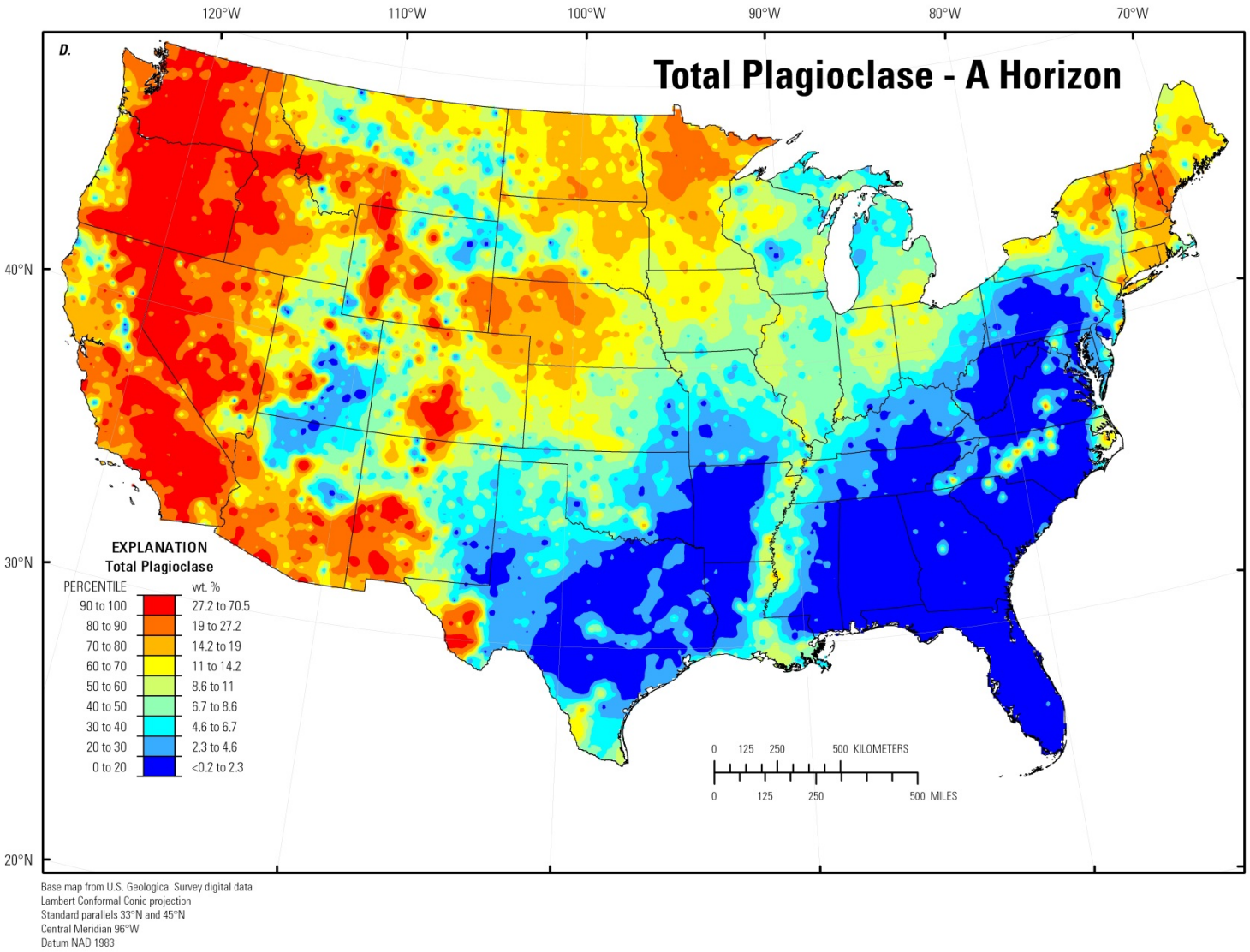


Figure 144. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total plagioclase in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

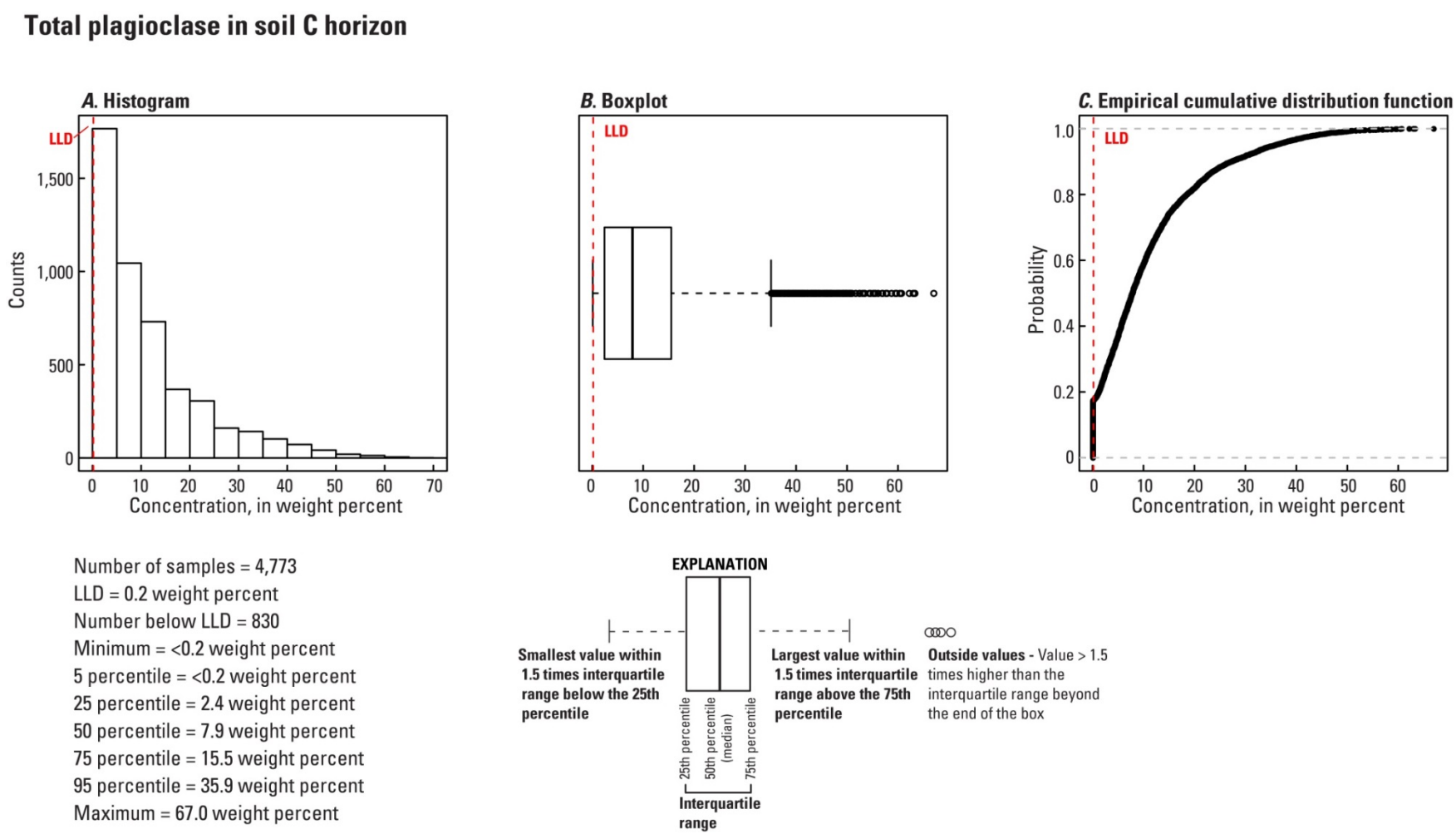


Figure 145. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total plagioclase in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

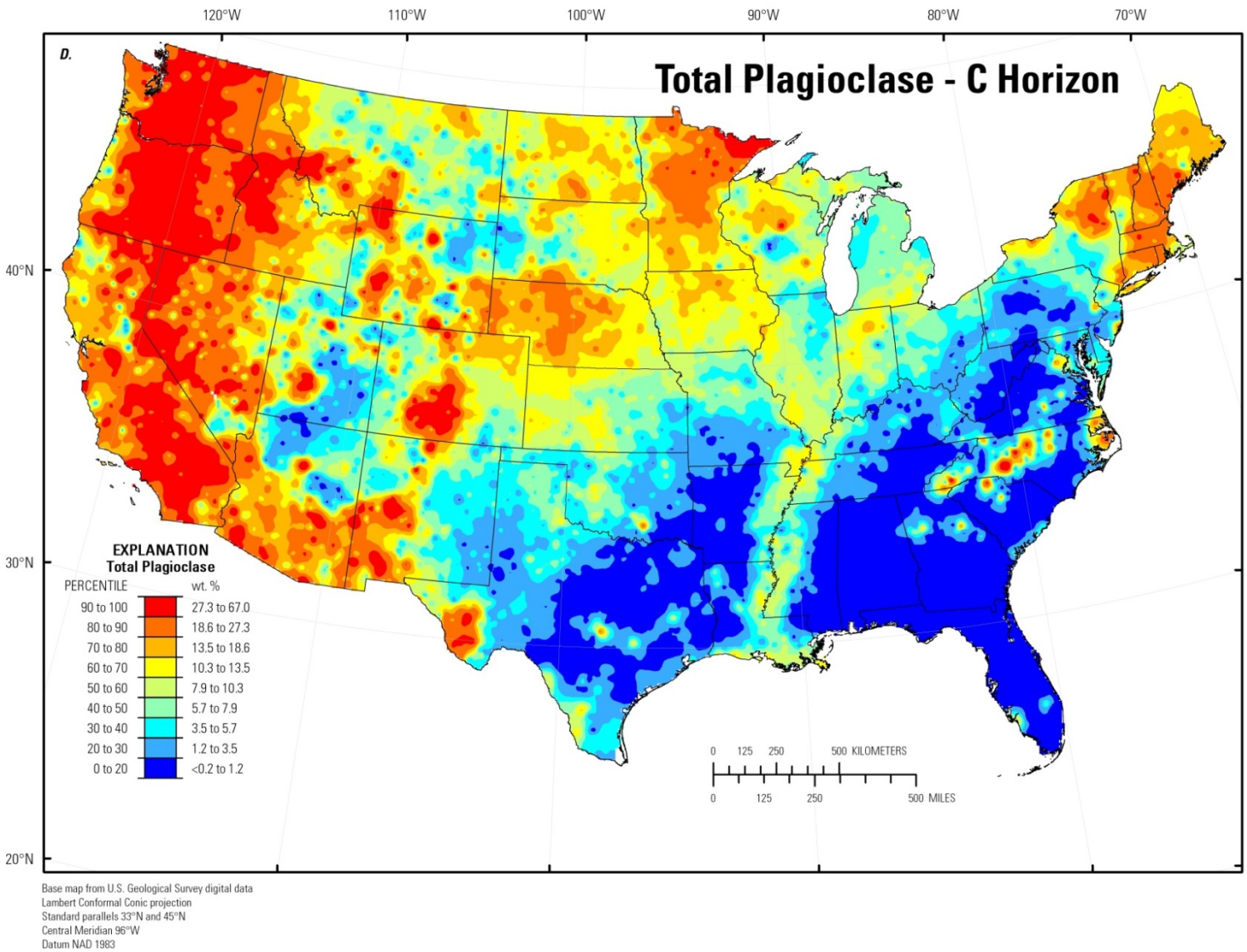


Figure 145. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total plagioclase in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Total feldspar in soil A horizon

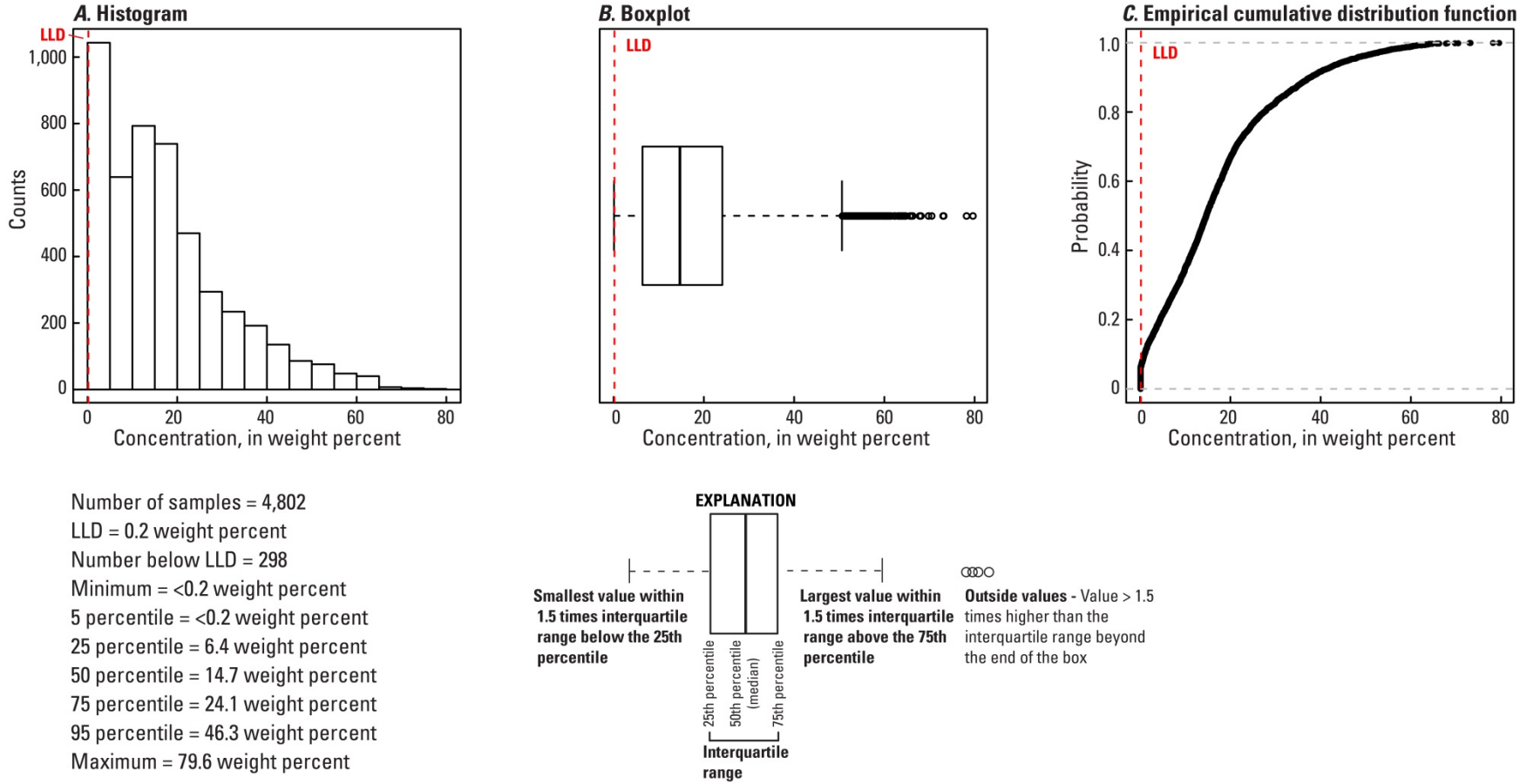


Figure 146. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total feldspar (total potassium feldspar + total plagioclase) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

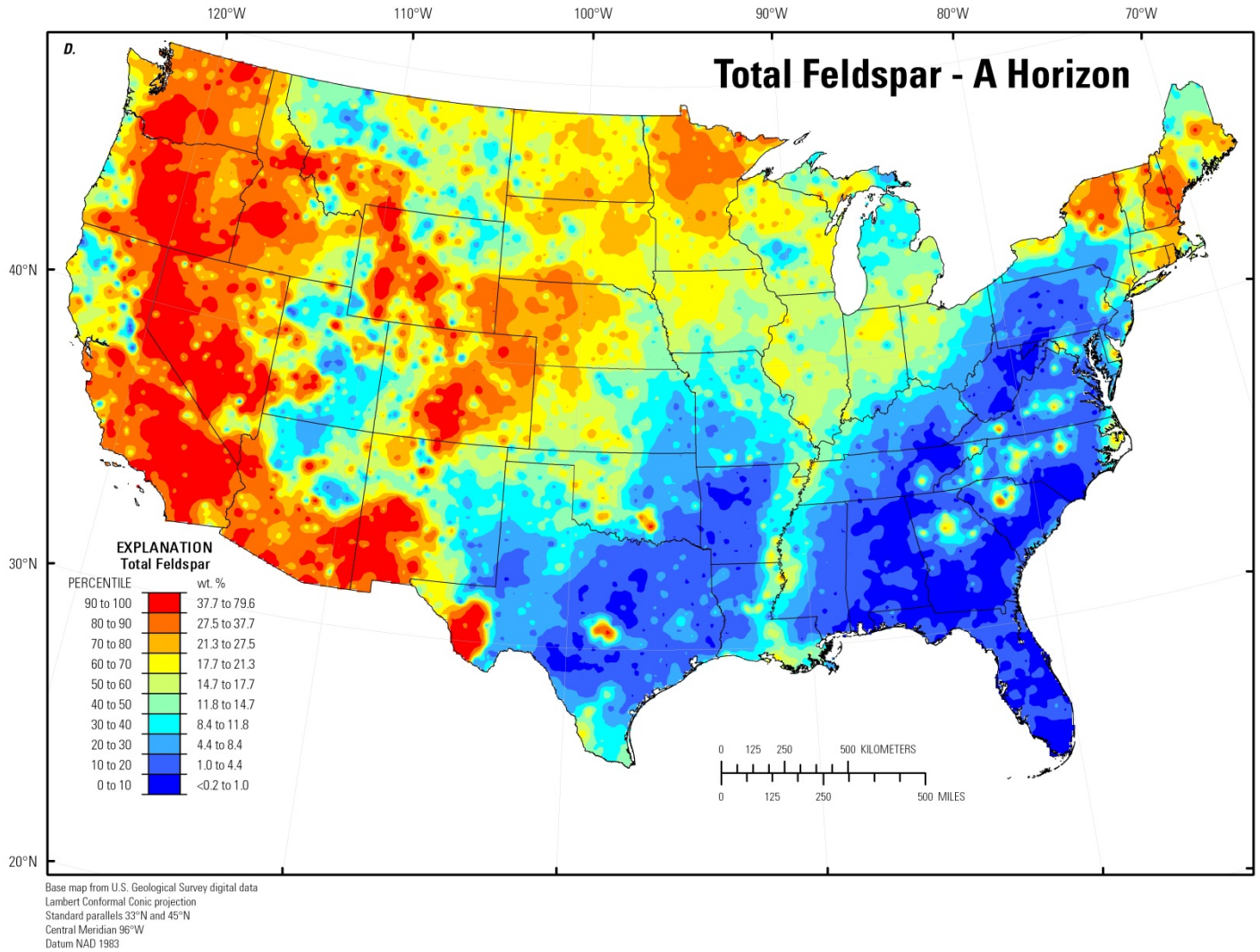


Figure 146. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total feldspar (total potassium feldspar + total plagioclase) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Total feldspar in soil C horizon

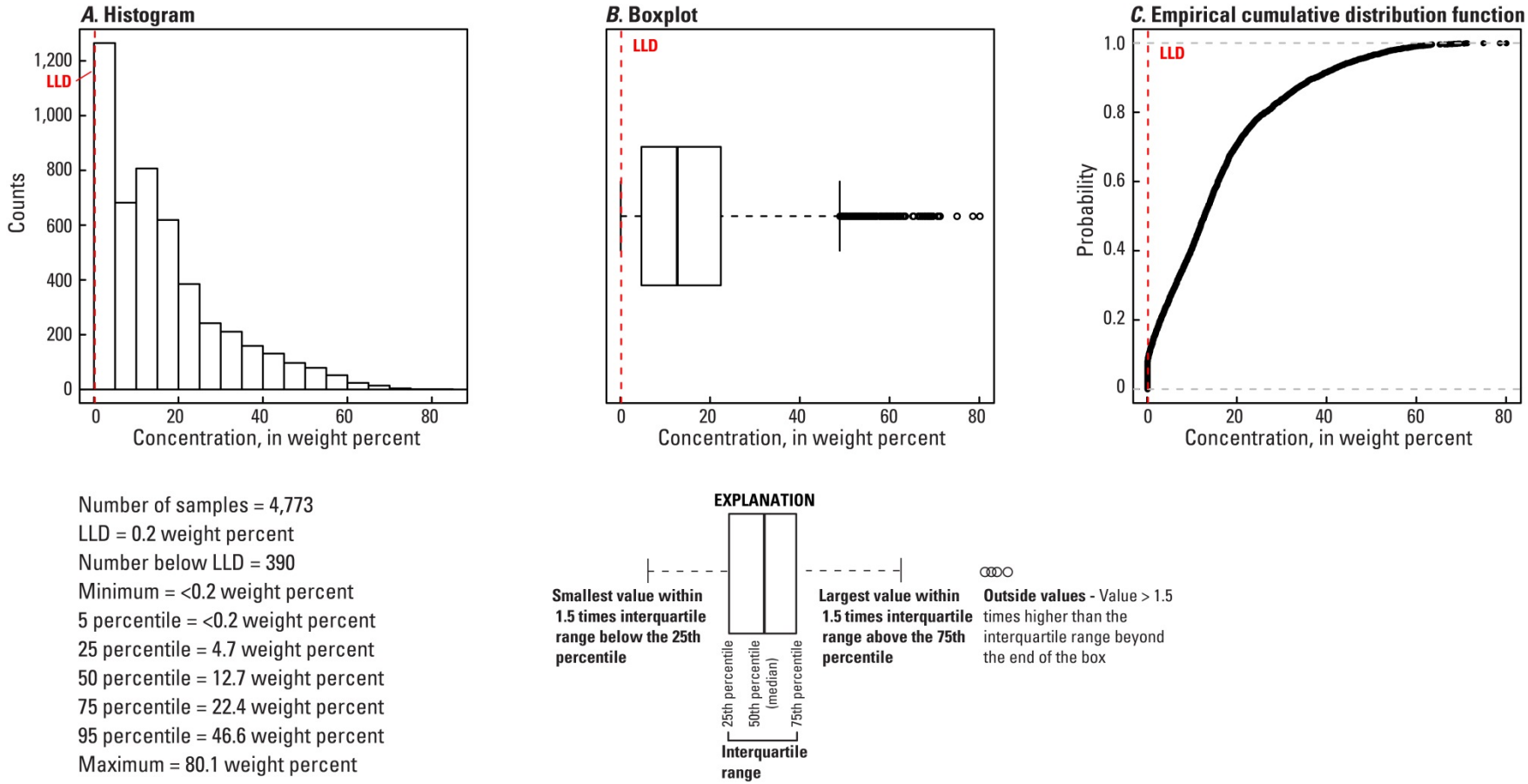


Figure 147. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total feldspar (total potassium feldspar + total plagioclase) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

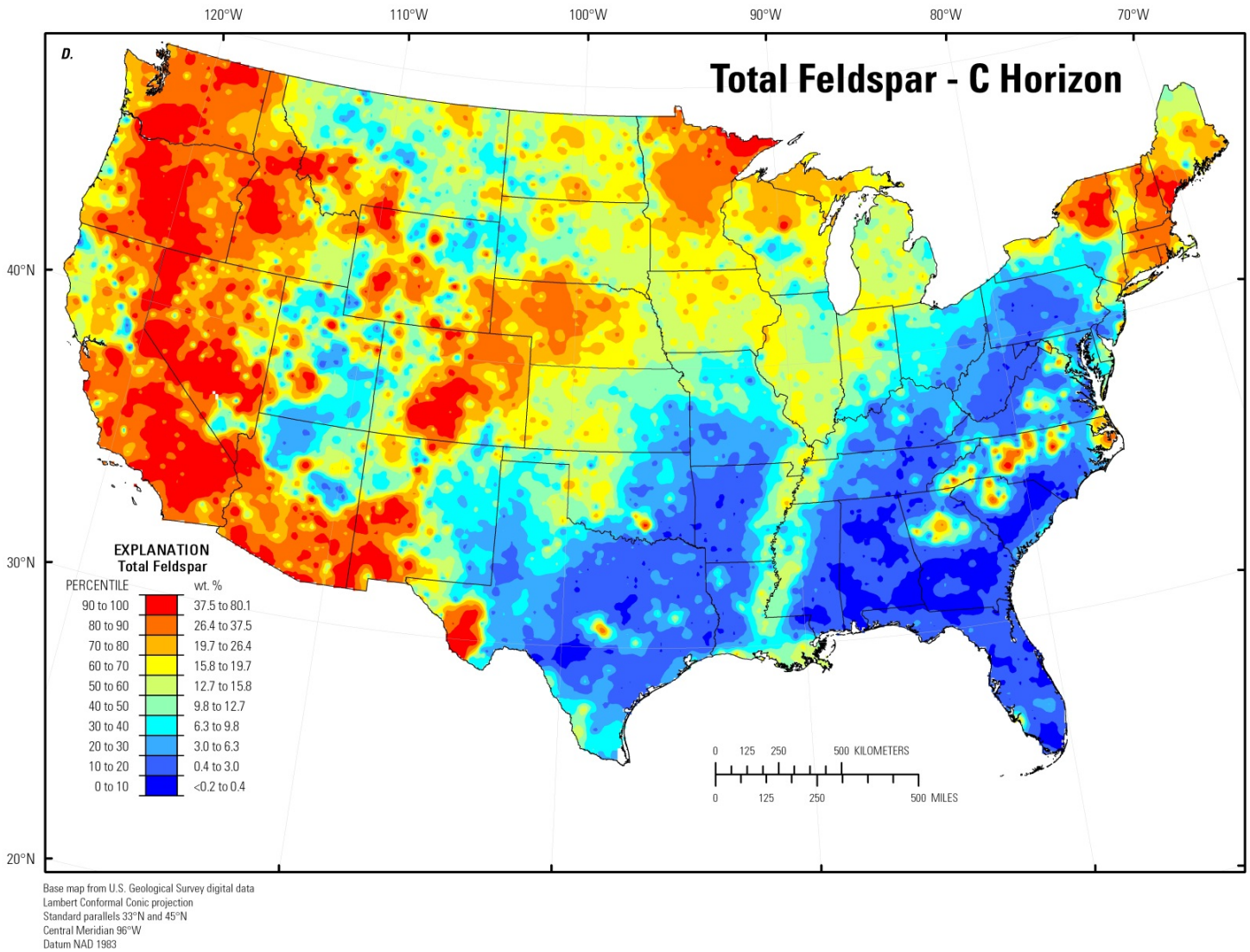


Figure 147. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total feldspar (total potassium feldspar + total plagioclase) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

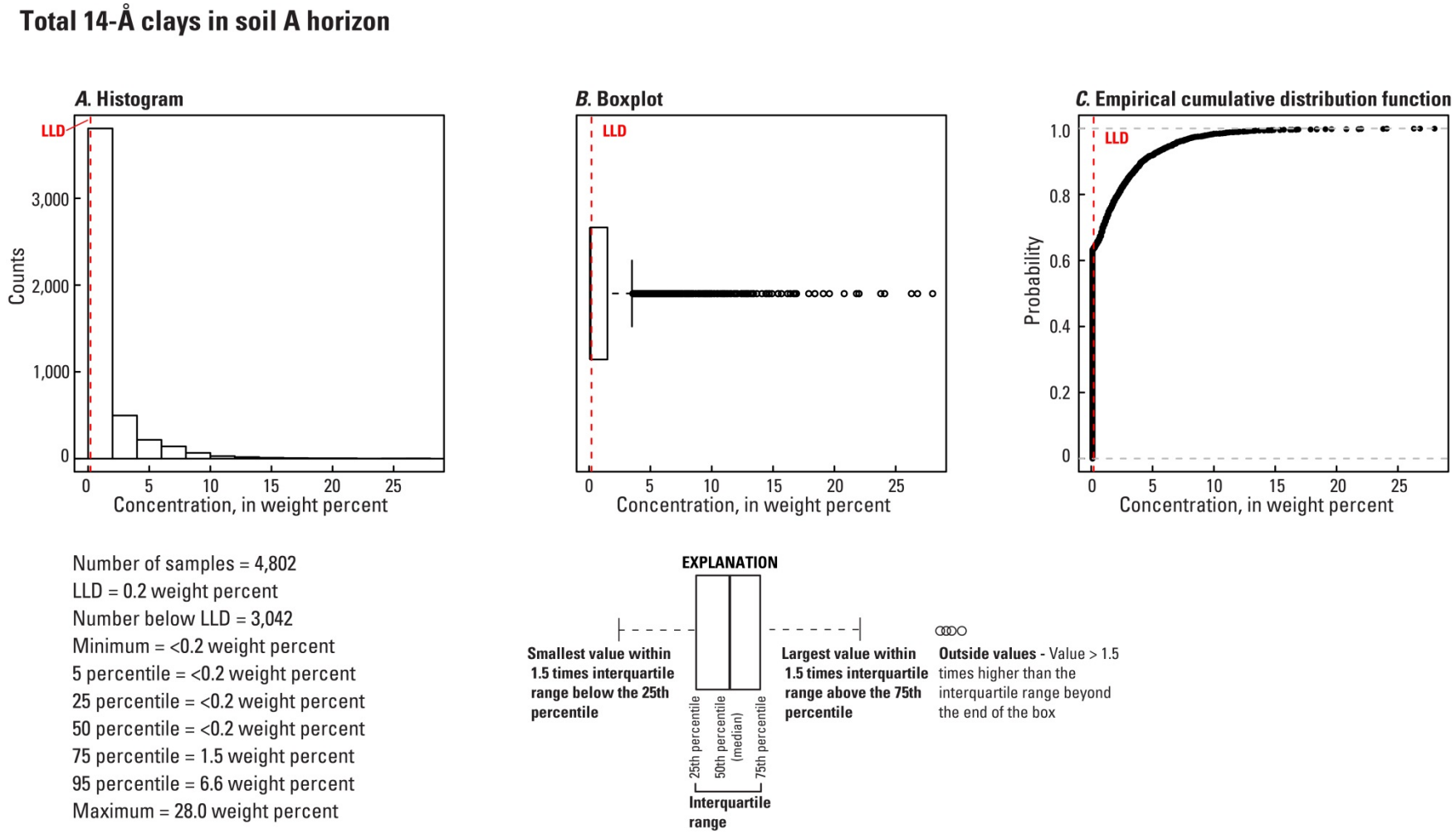


Figure 148. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 14-Å clays in the soil A horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).

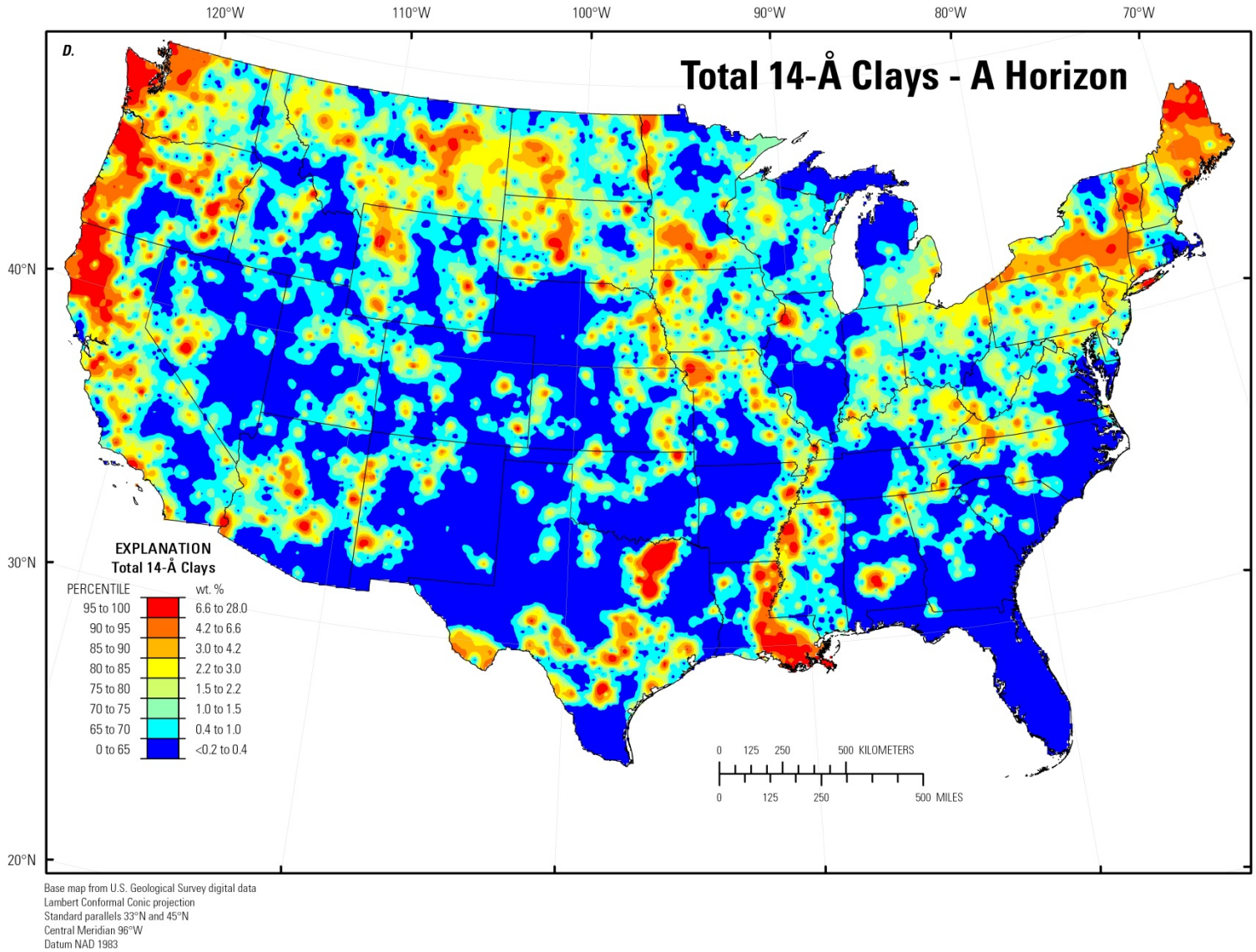


Figure 148. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 14-Å clays in the soil A horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).—Continued

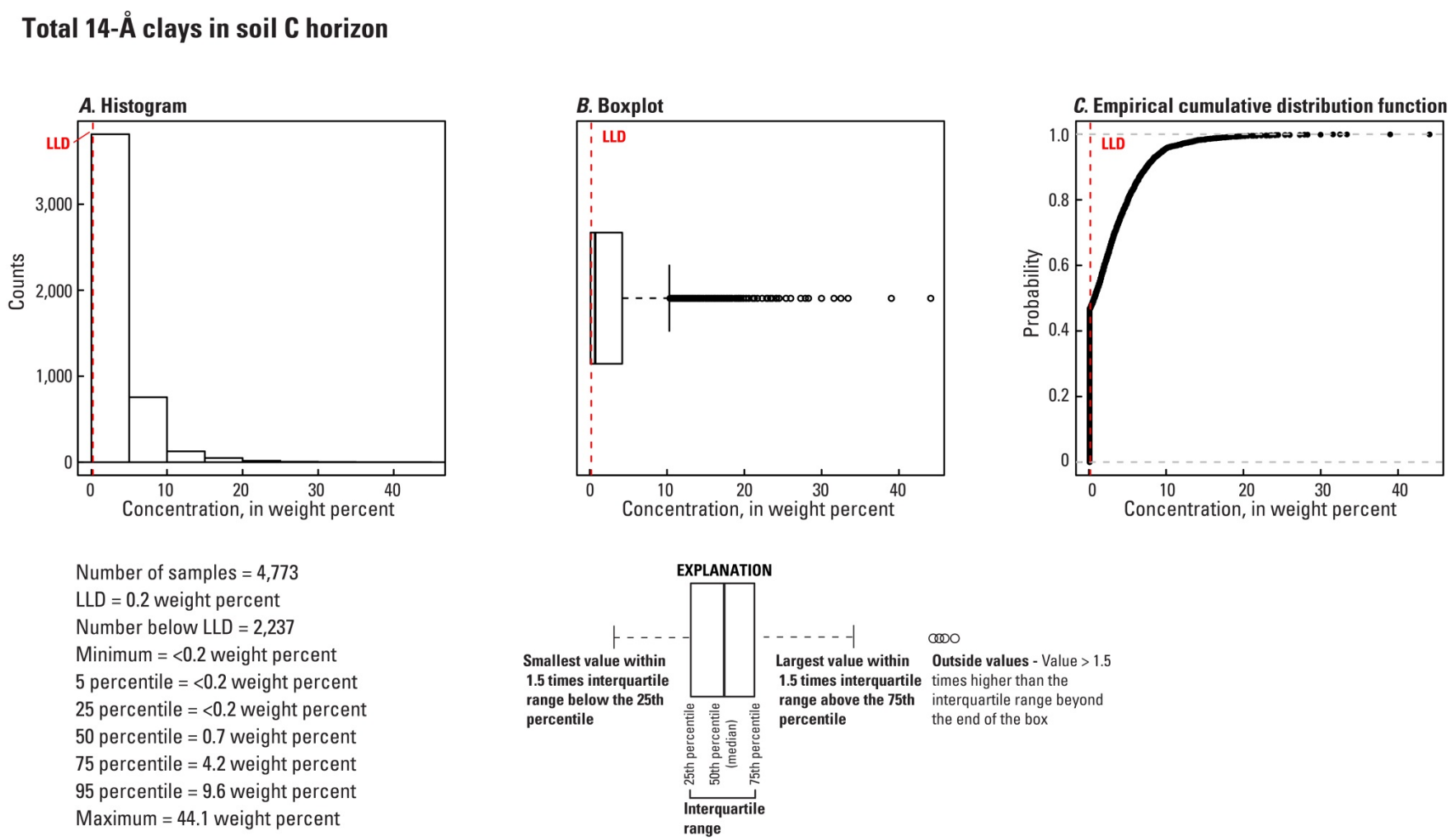


Figure 149. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 14-Å clays in the soil C horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).

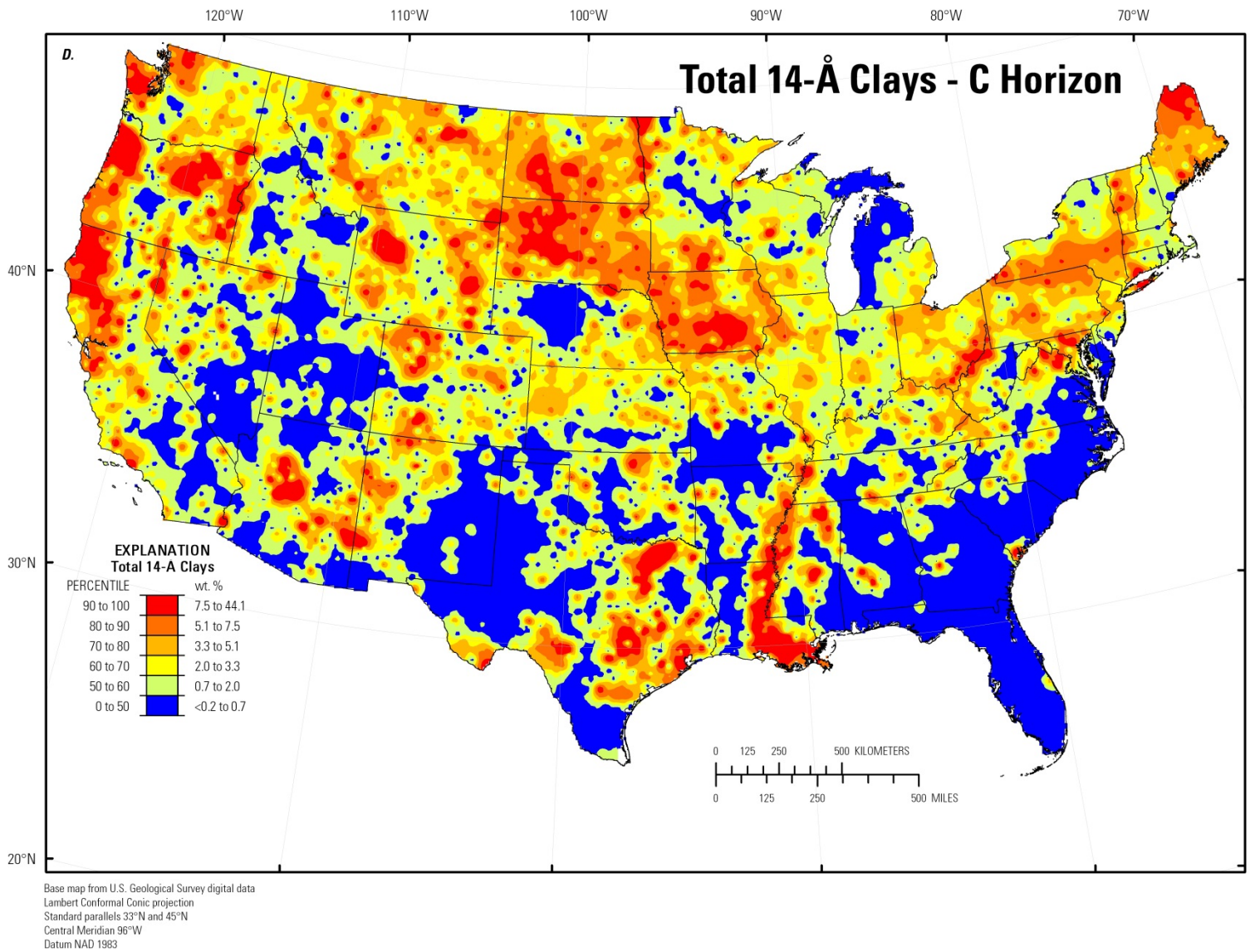


Figure 149. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 14-Å clays in the soil C horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).—Continued

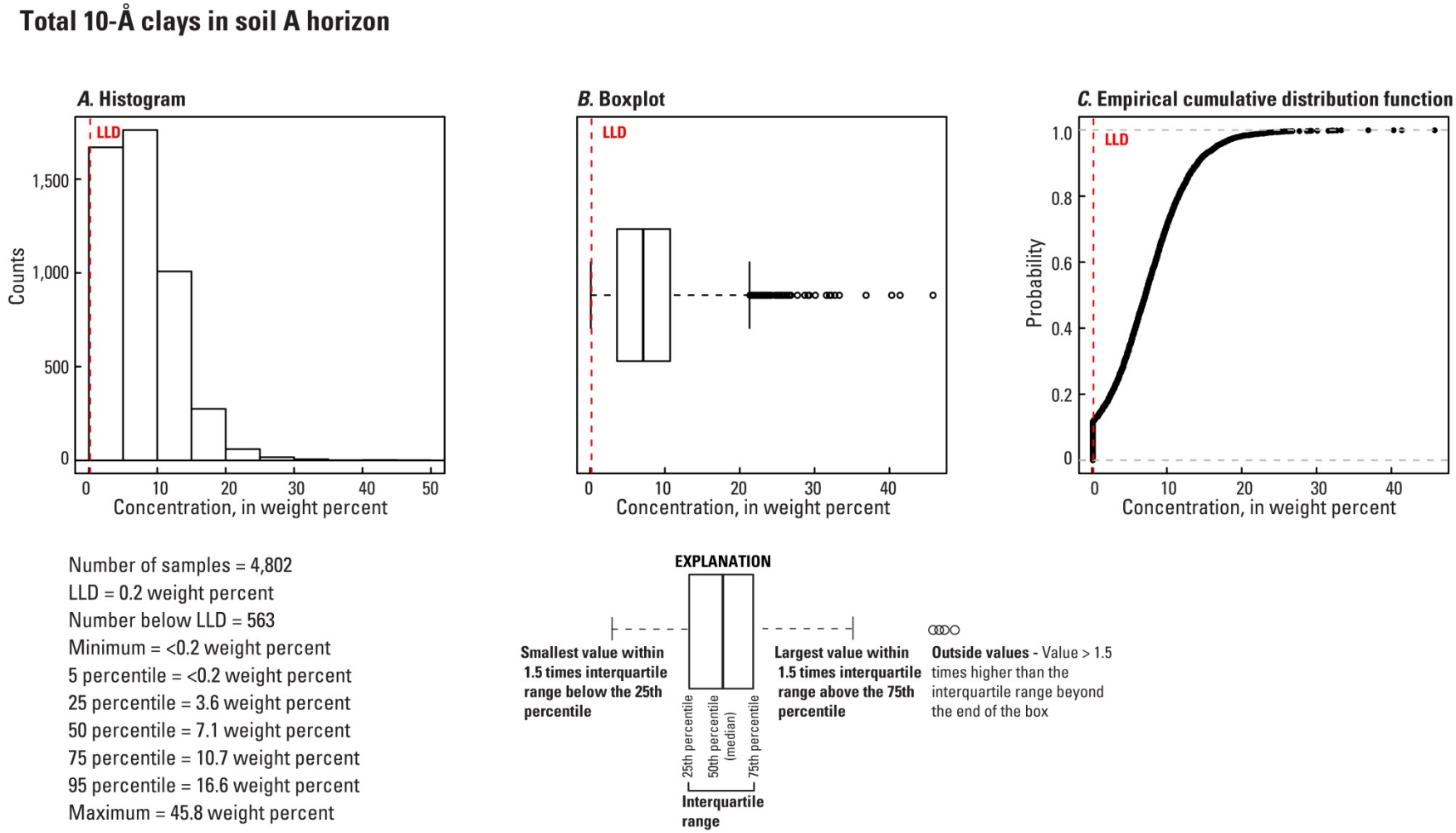


Figure 150. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 10-Å clays in the soil A horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).

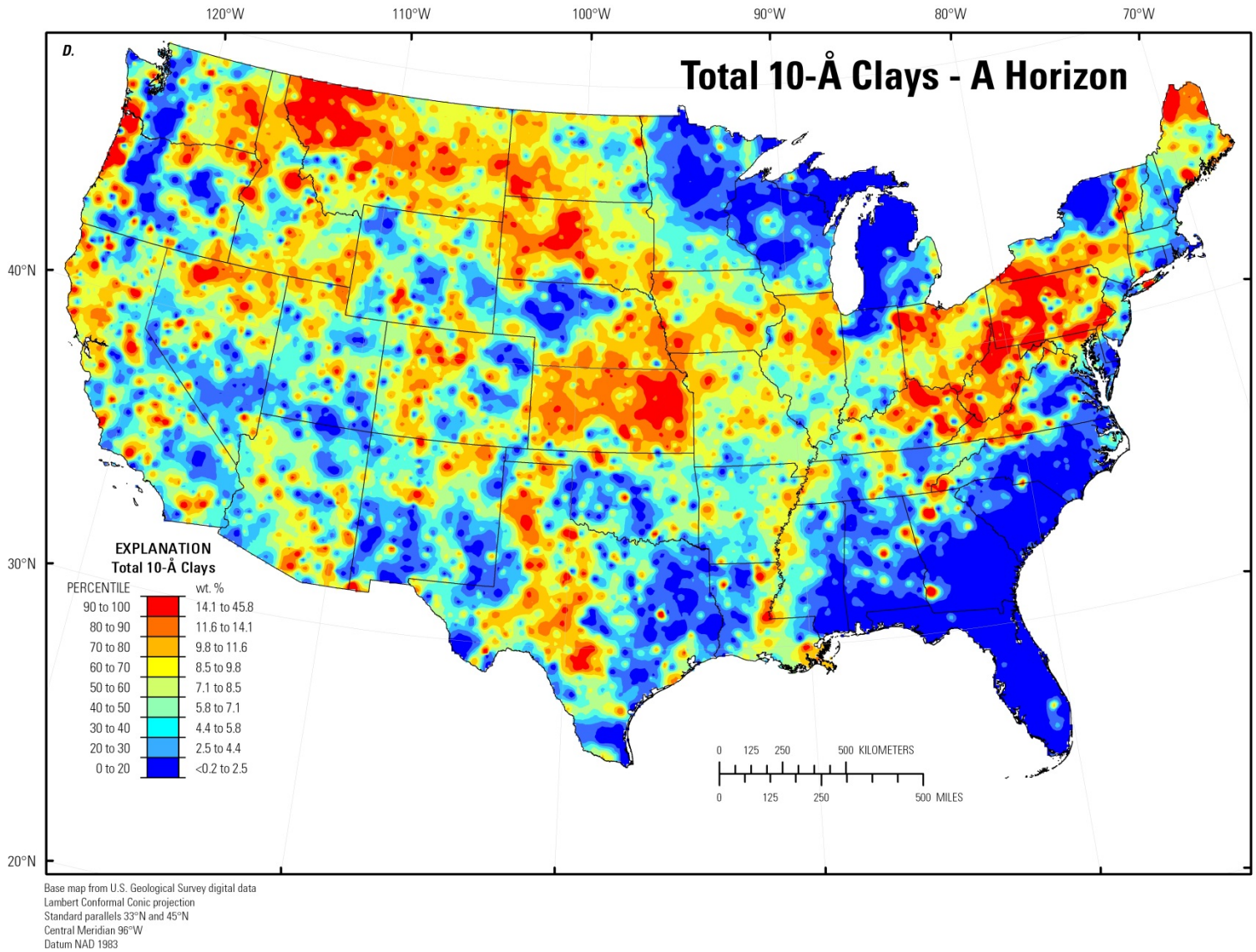
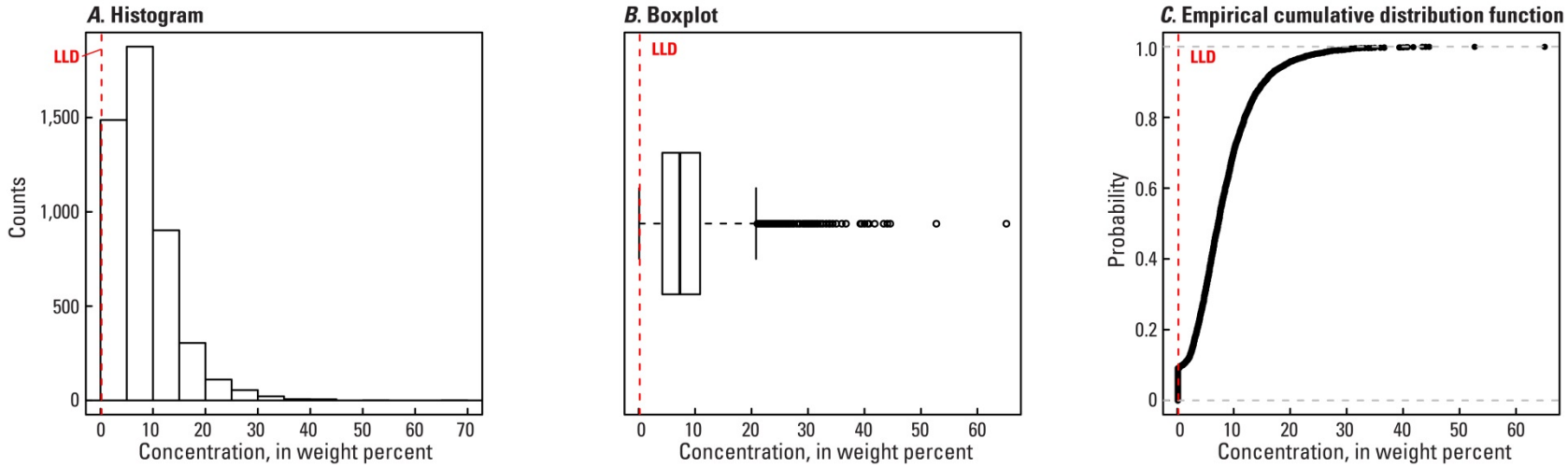


Figure 150. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 10-Å clays in the soil A horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).—Continued

Total 10-Å clays in soil C horizon



Number of samples = 4,773
LLD = 0.2 weight percent
Number below LLD = 436
Minimum = <0.2 weight percent
5 percentile = <0.2 weight percent
25 percentile = 4.2 weight percent
50 percentile = 7.3 weight percent
75 percentile = 10.9 weight percent
95 percentile = 19.2 weight percent
Maximum = 65.1 weight percent

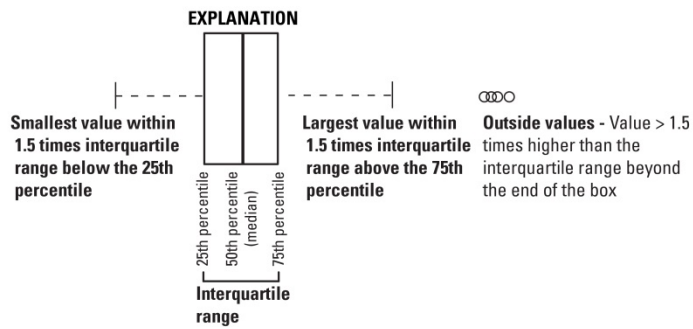


Figure 151. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 10-Å clays in the soil C horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom). MAD, median absolute deviation; ND, not determined; CV, coefficient of variation; mg/kg, milligrams per kilogram.

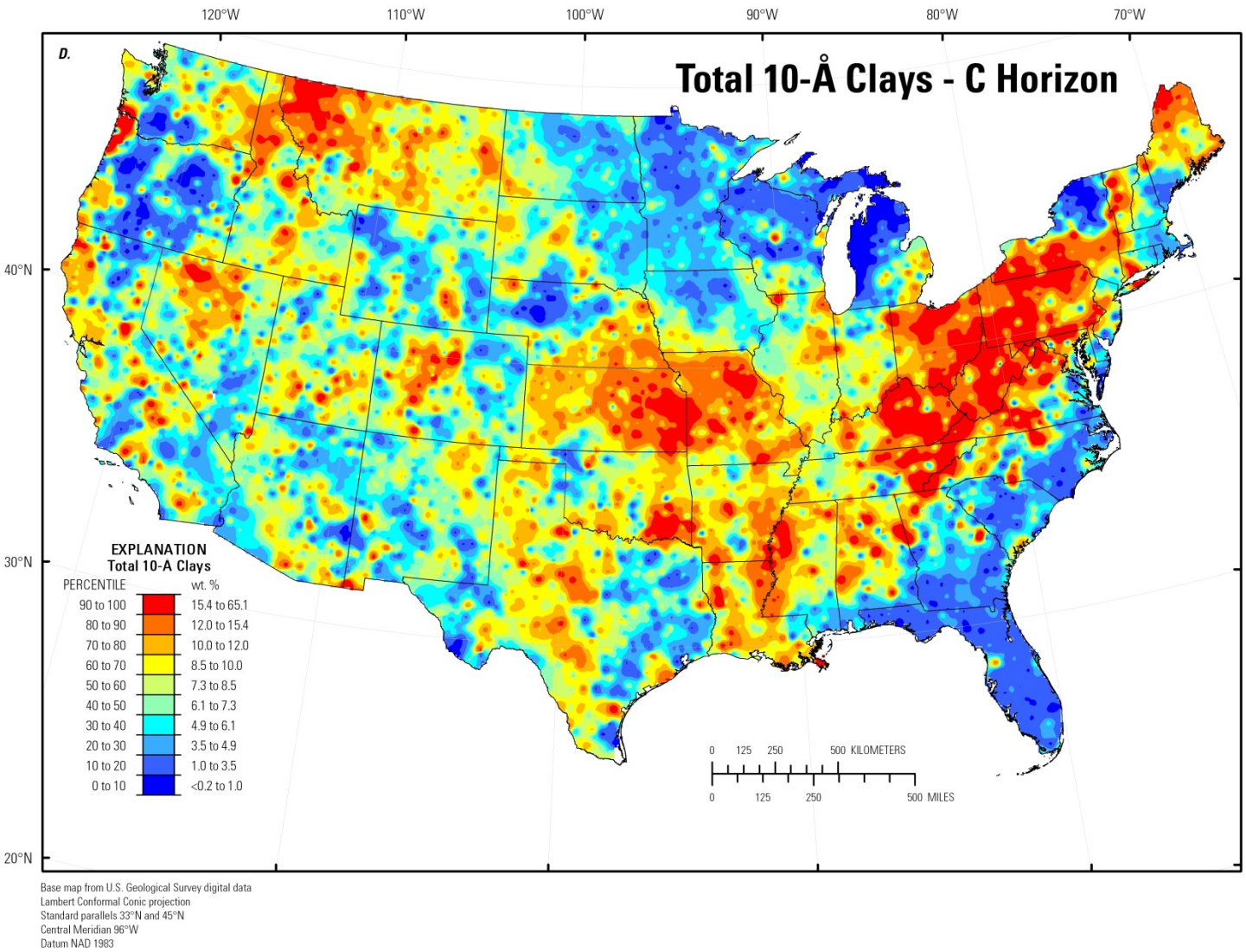


Figure 151. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total 10-Å clays in the soil C horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom). MAD, median absolute deviation; ND, not determined; CV, coefficient of variation; mg/kg, milligrams per kilogram.—Continued

Kaolinite in soil A horizon

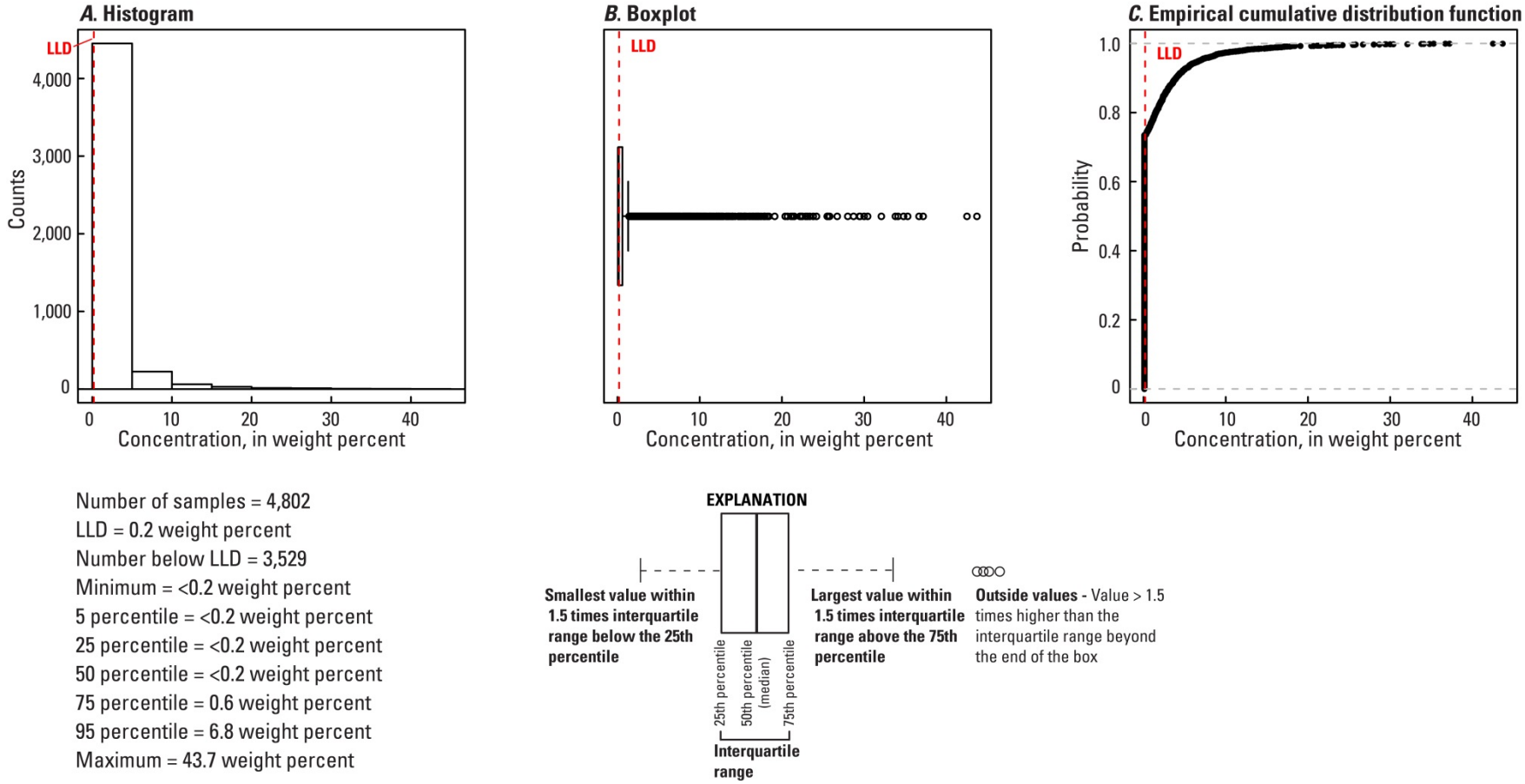


Figure 152. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of kaolinite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

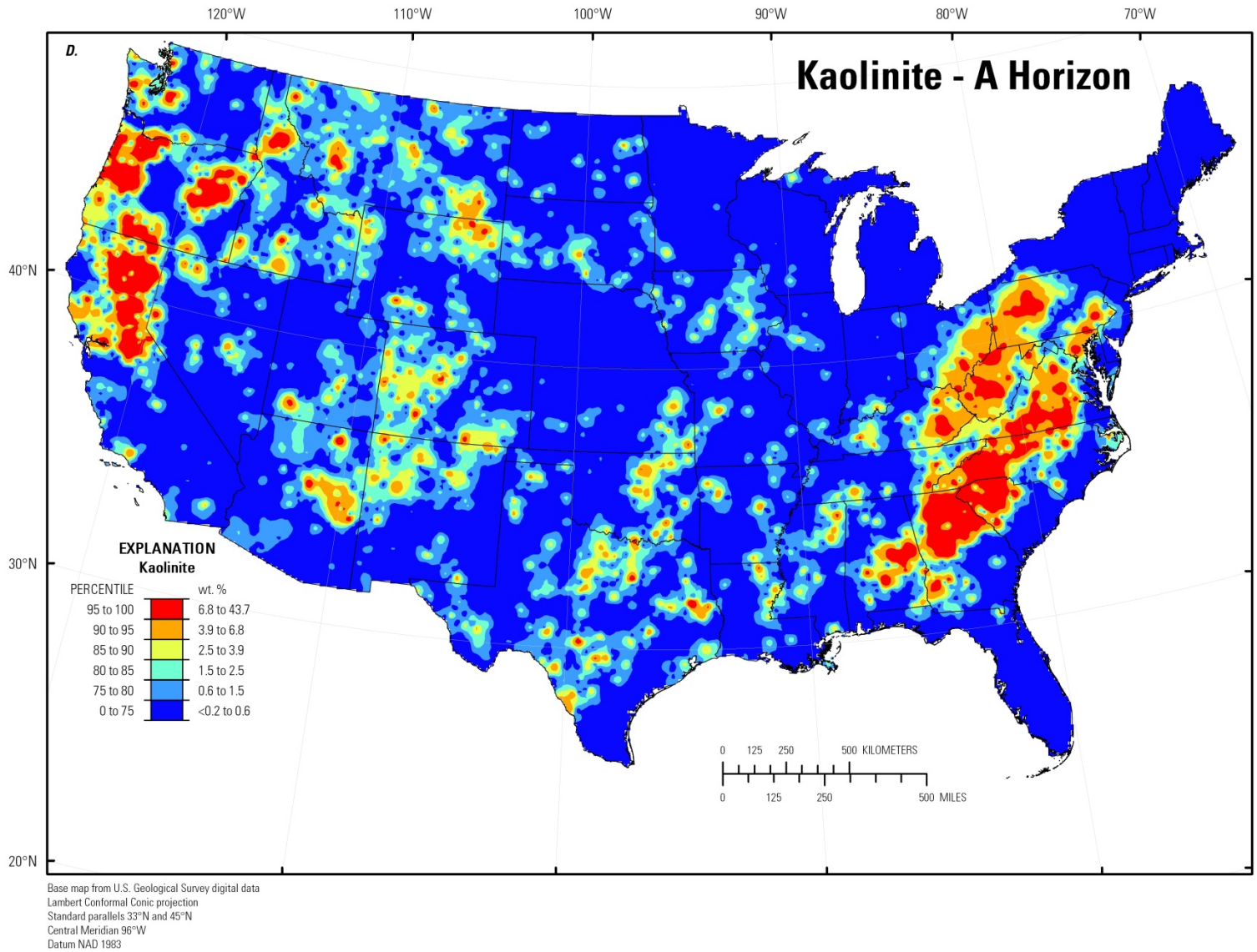


Figure 152. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of kaolinite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Kaolinite in soil C horizon

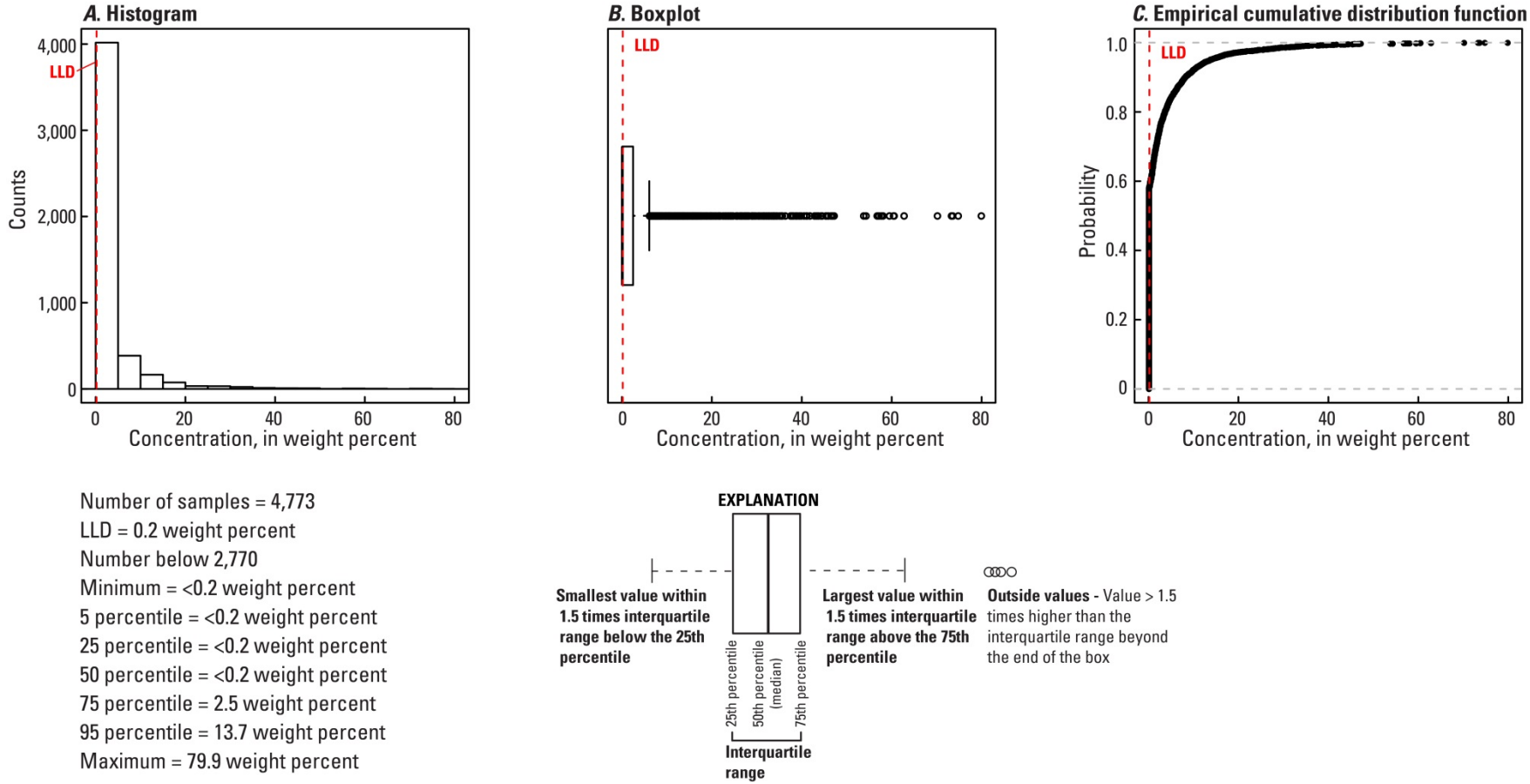


Figure 153. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of kaolinite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

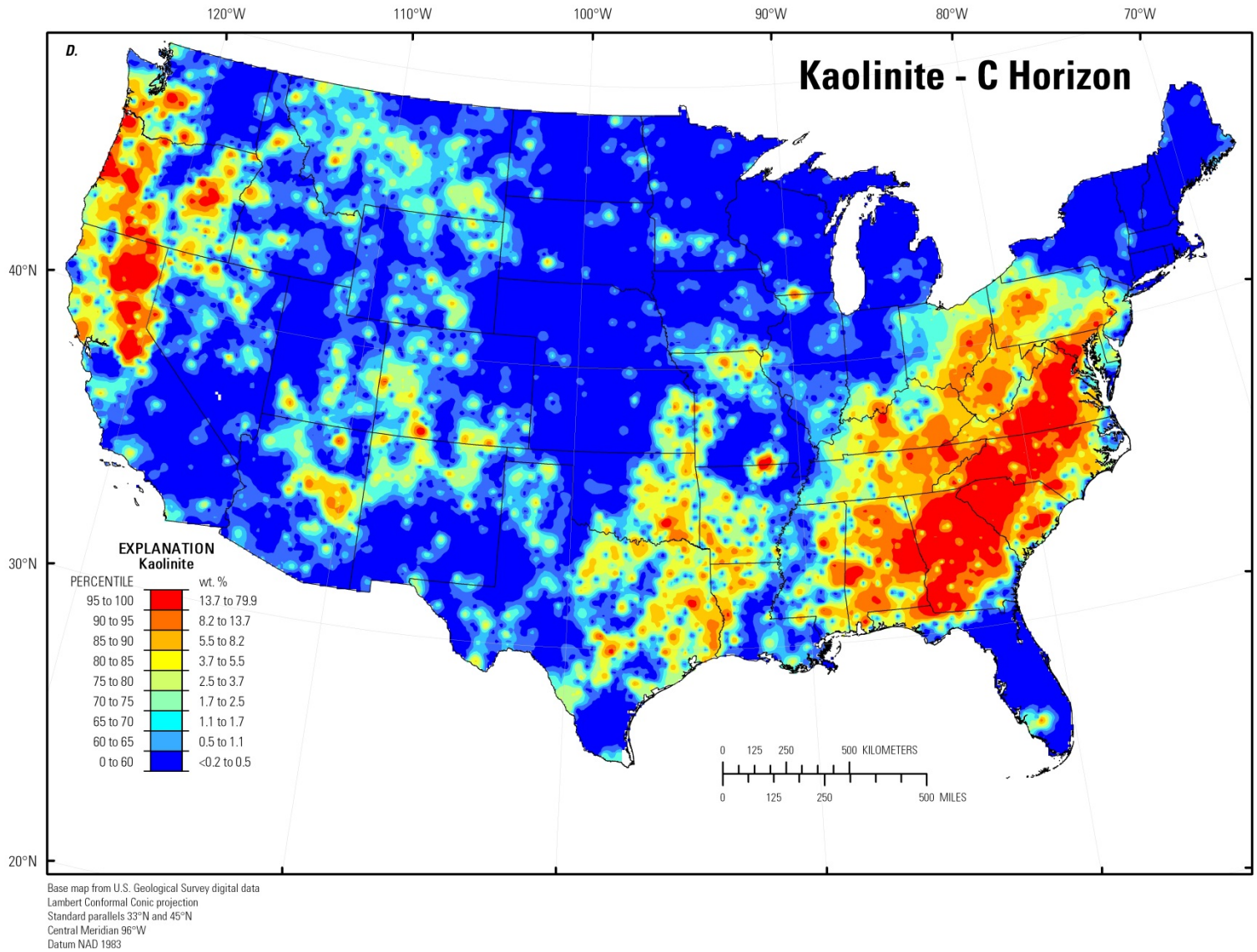


Figure 153. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of kaolinite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Total clay in soil A horizon

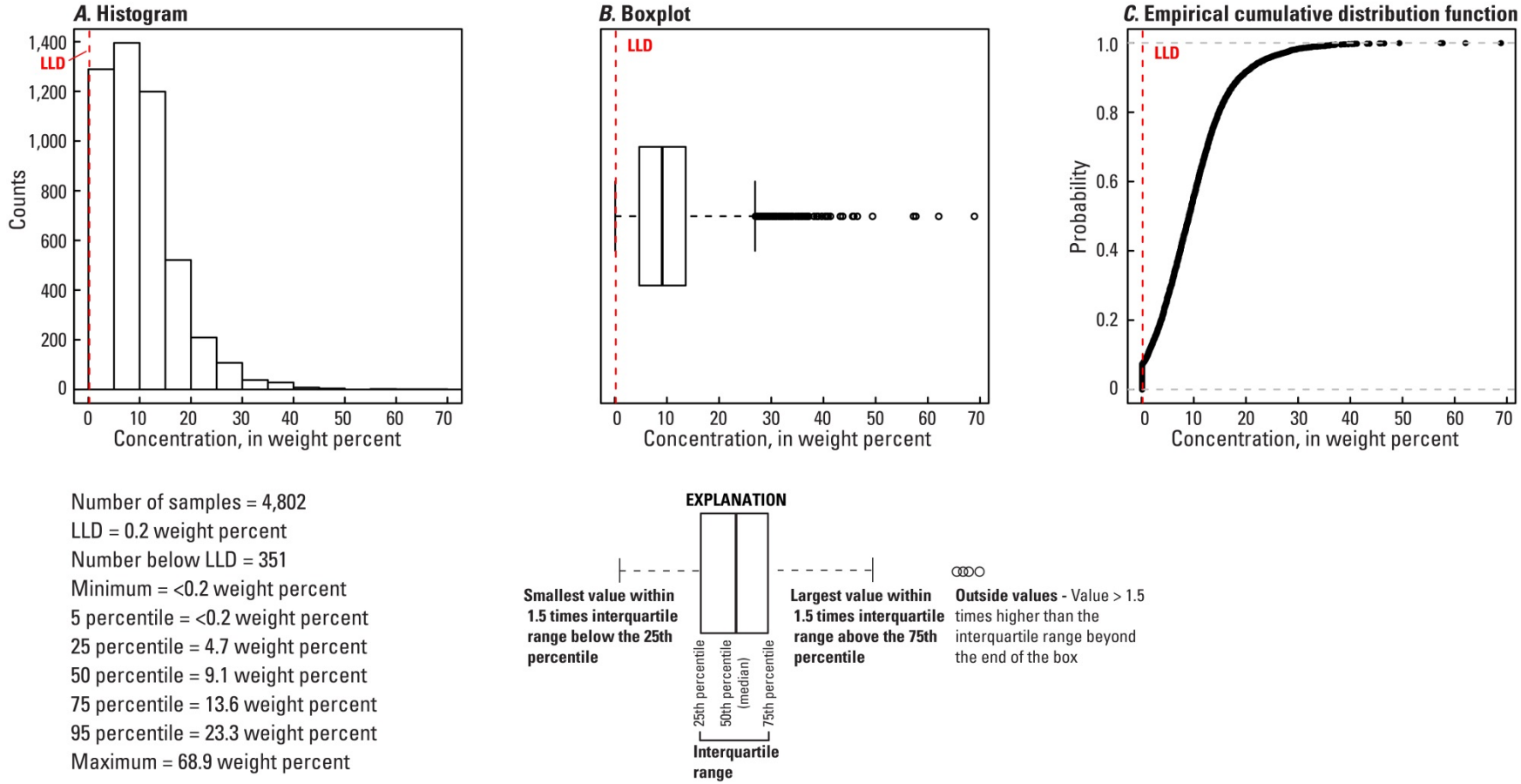


Figure 154. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total clay (total 14-Å clays + total 10-Å clays + kaolinite) in the soil A horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).

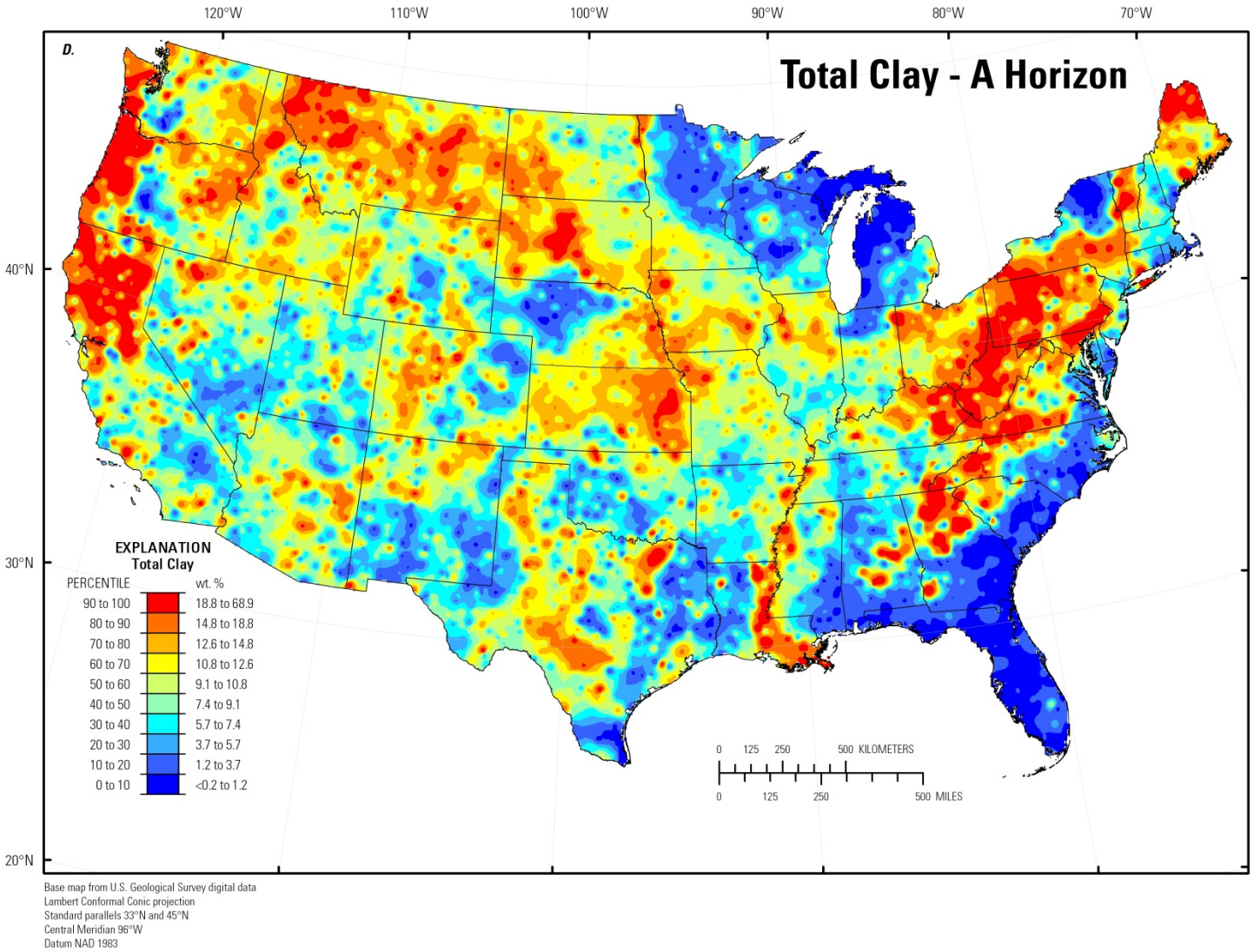


Figure 154. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total clay (total 14-Å clays + total 10-Å clays + kaolinite) in the soil A horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).—Continued

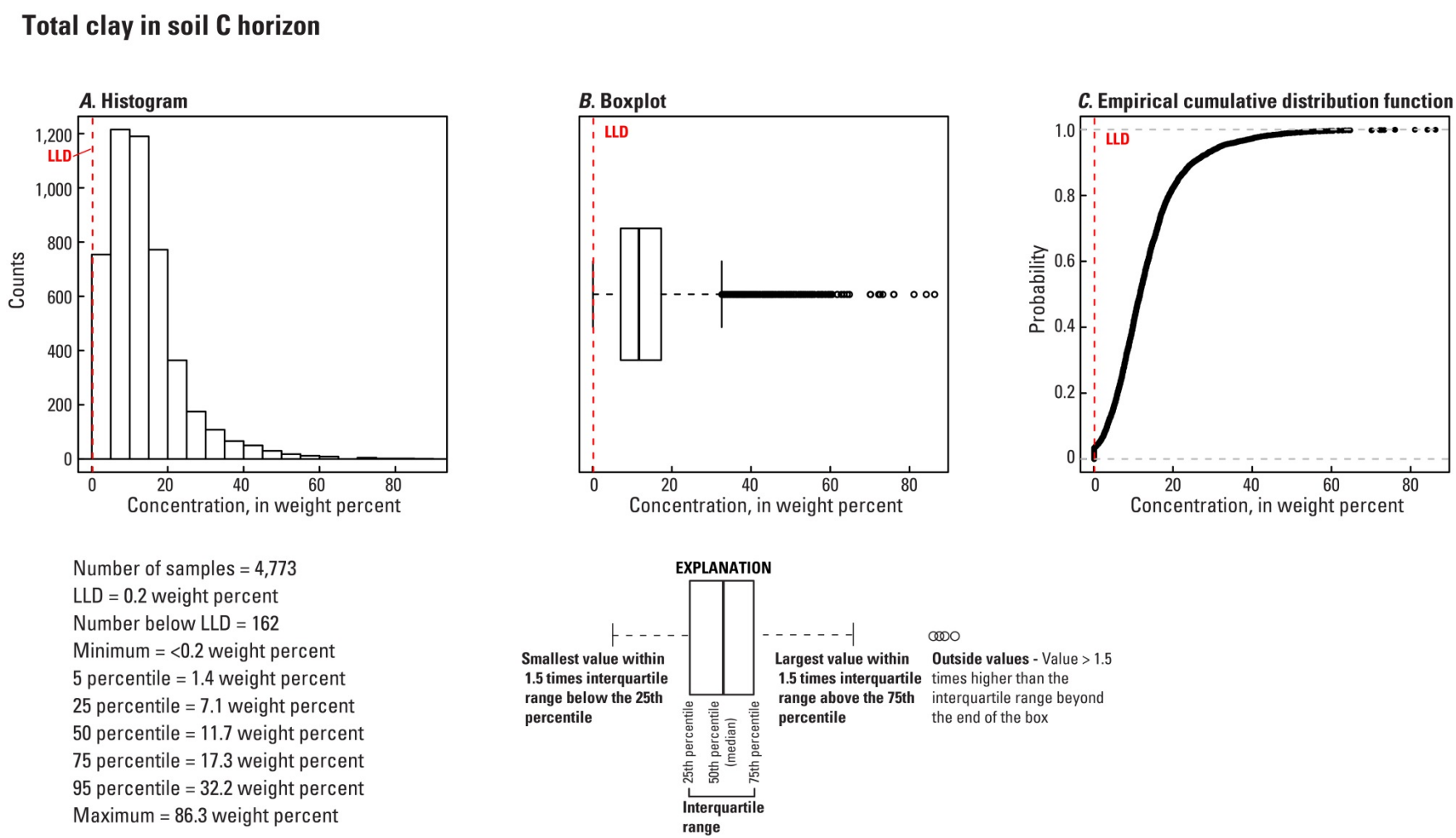


Figure 155. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total clay (total 14-Å clays + total 10-Å clays + kaolinite) in the soil C horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).

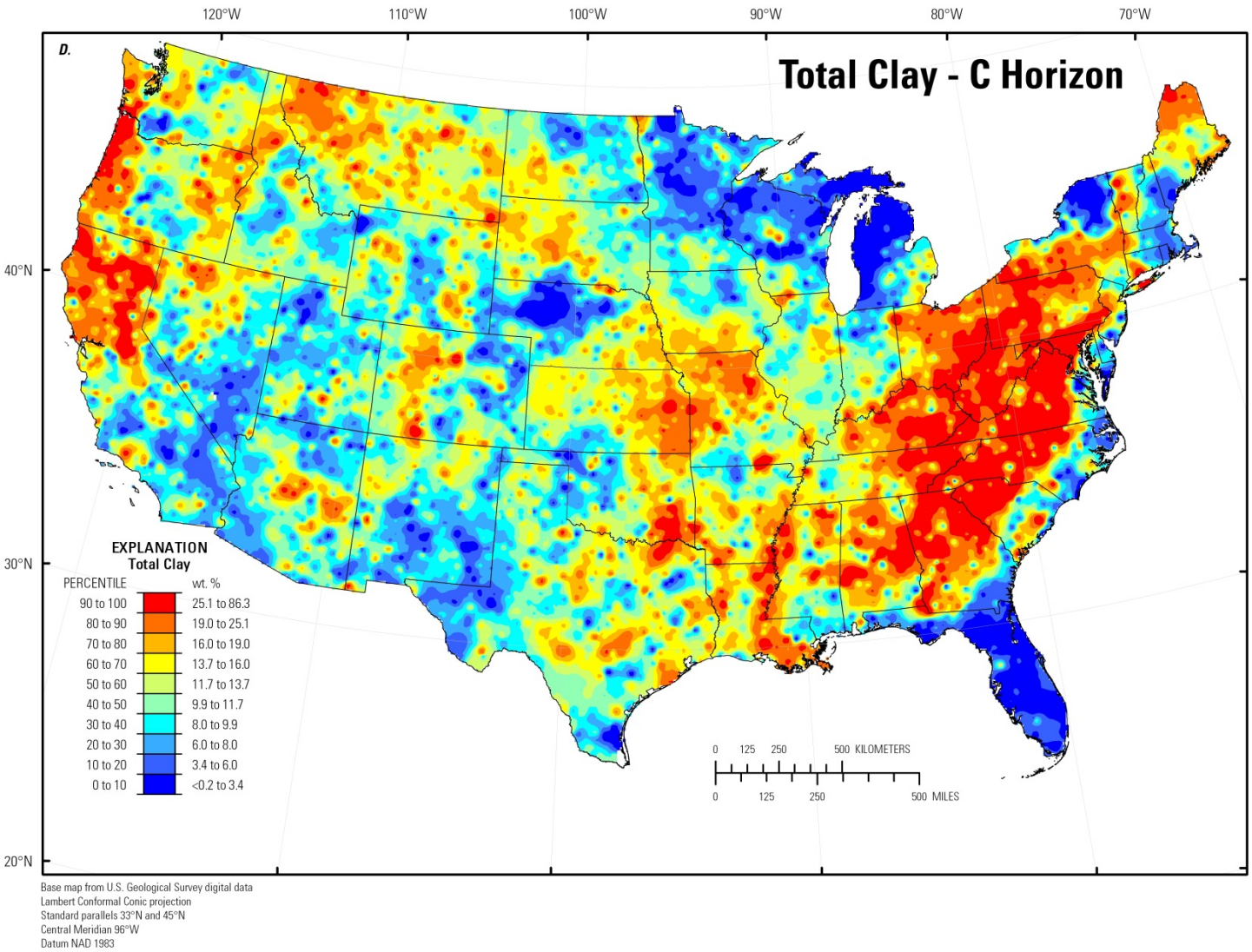


Figure 155. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total clay (total 14-Å clays + total 10-Å clays + kaolinite) in the soil C horizon, conterminous United States (LLD, lower limit of determination; Å, angstrom; wt. %, weight percent).—Continued

Gibbsite in soil A horizon

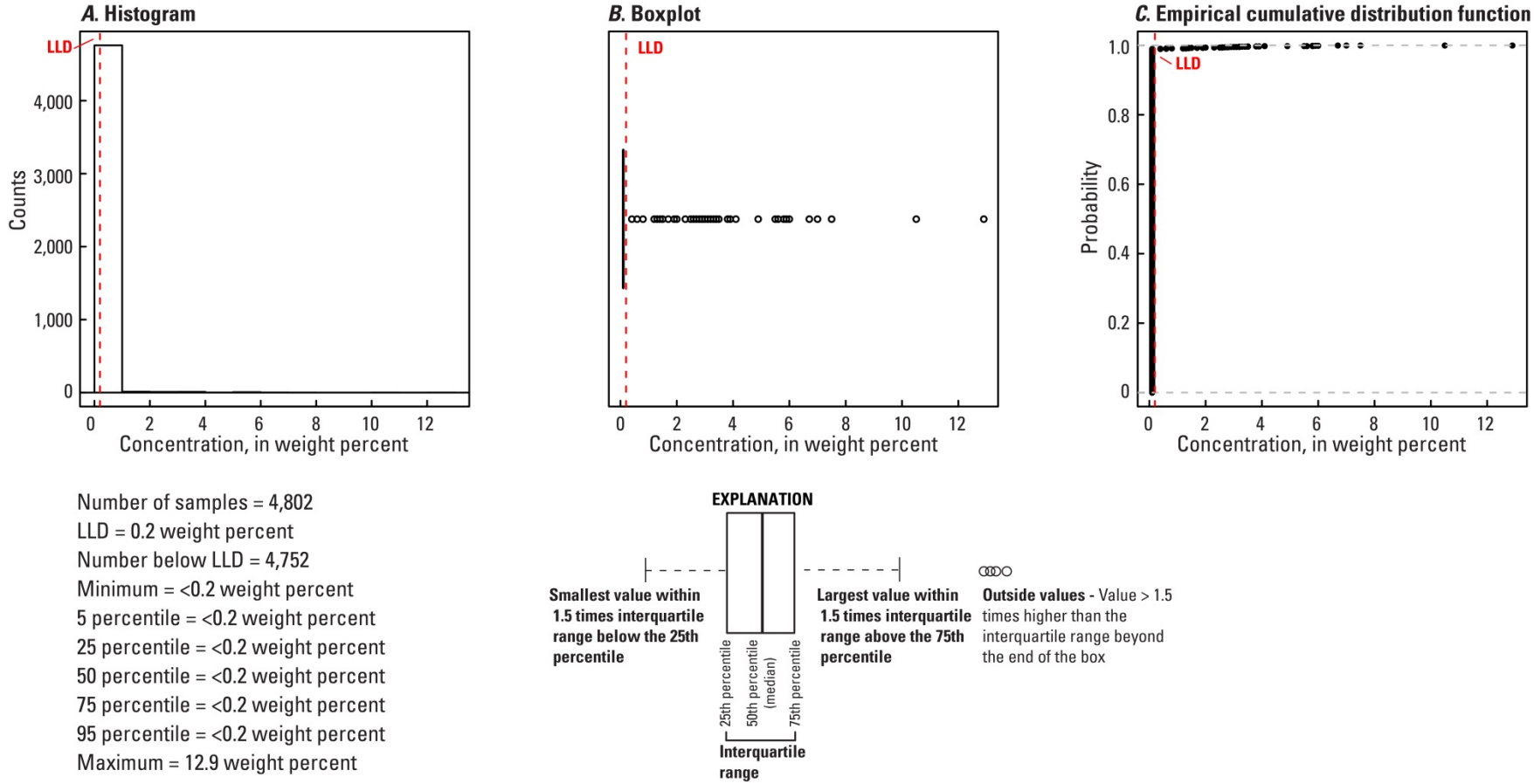


Figure 156. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gibbsite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

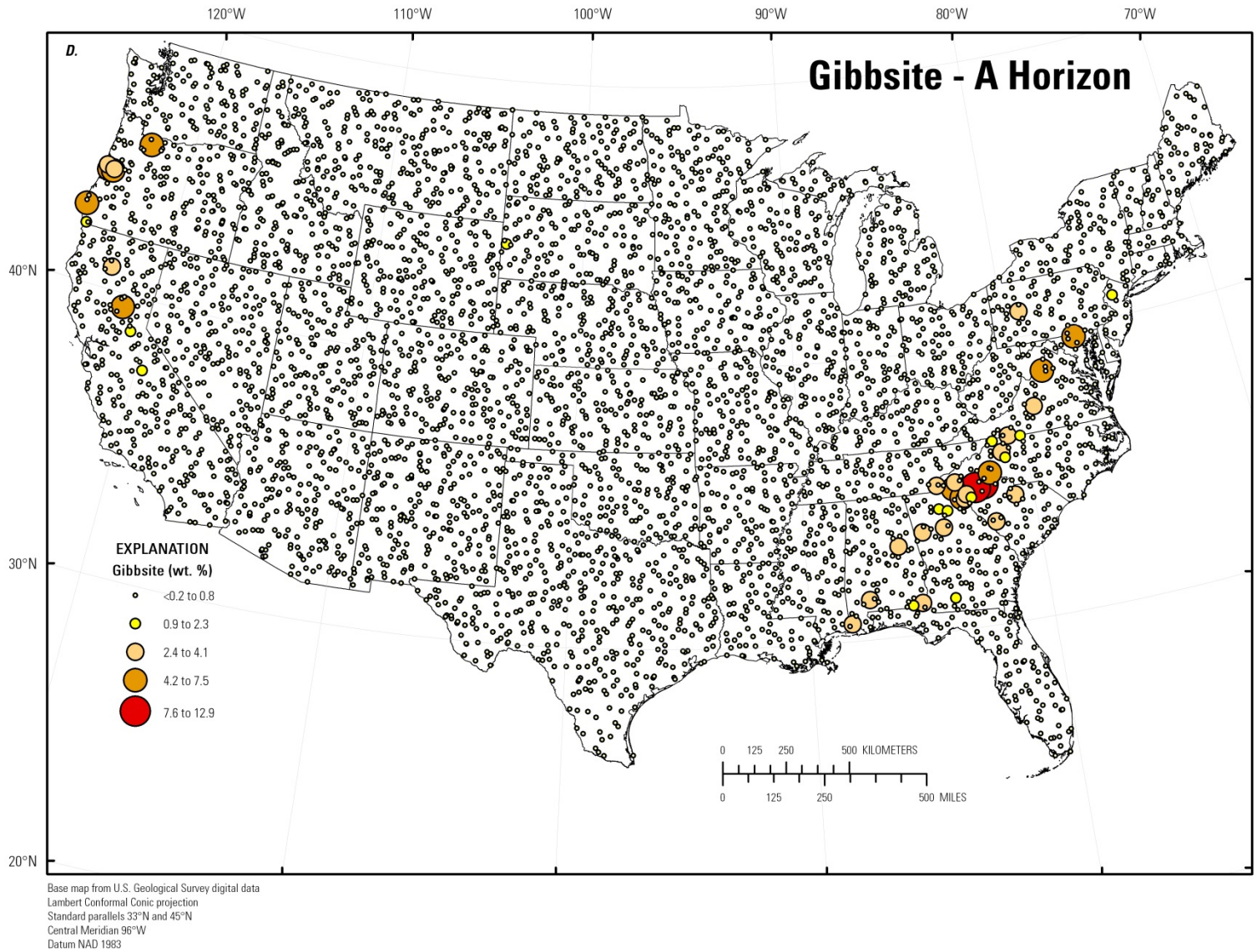


Figure 156. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gibbsite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Gibbsite in soil C horizon

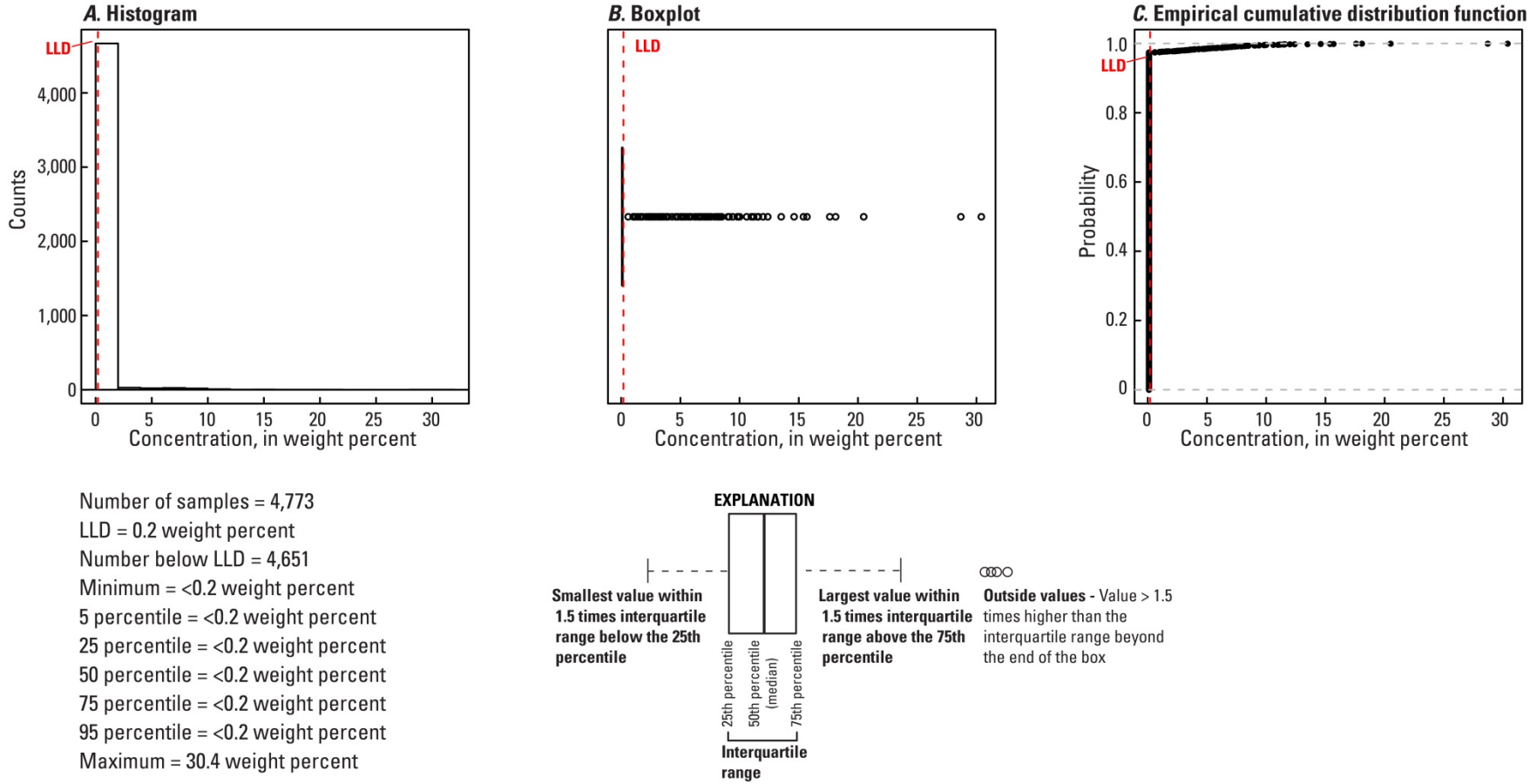


Figure 157. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gibbsite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

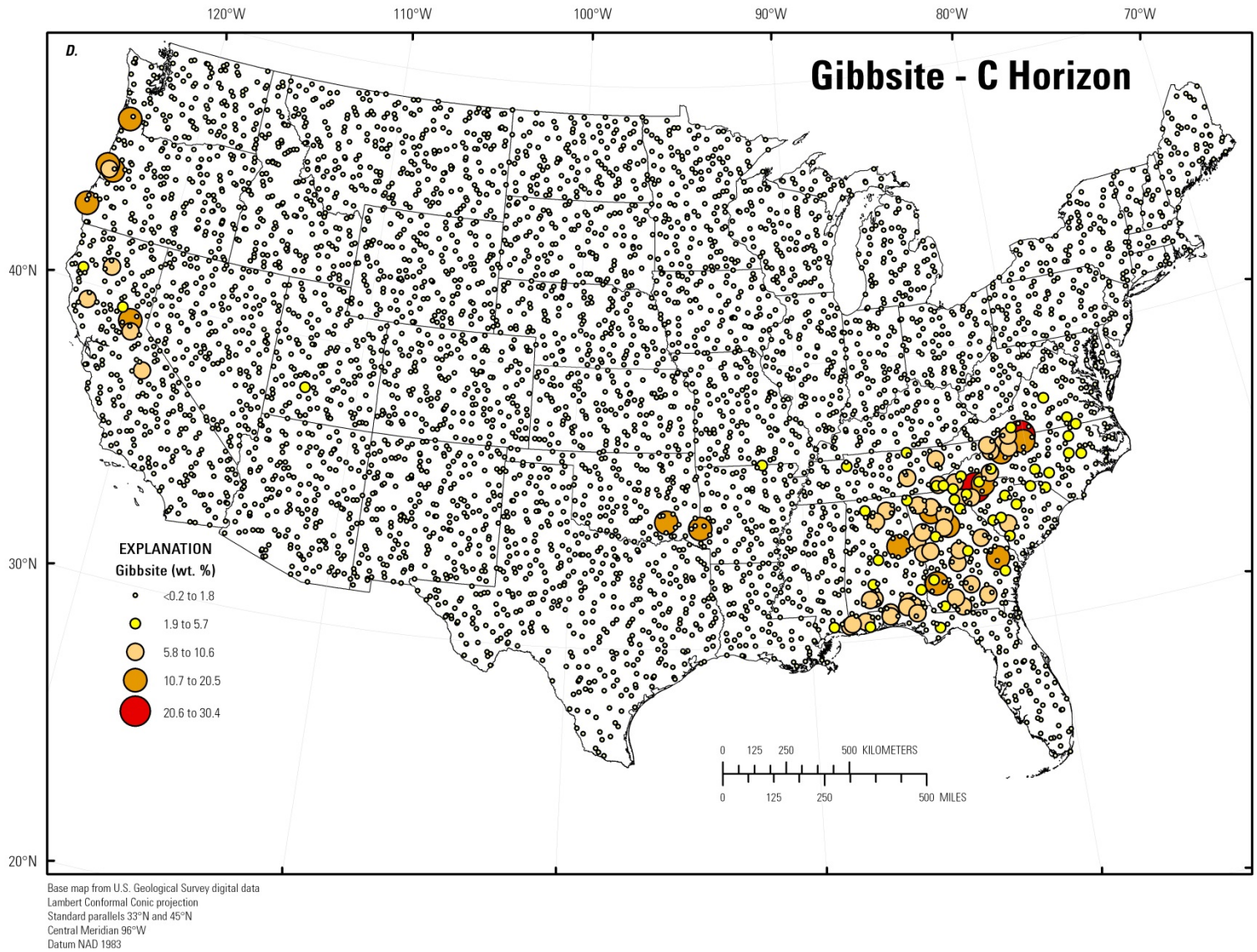
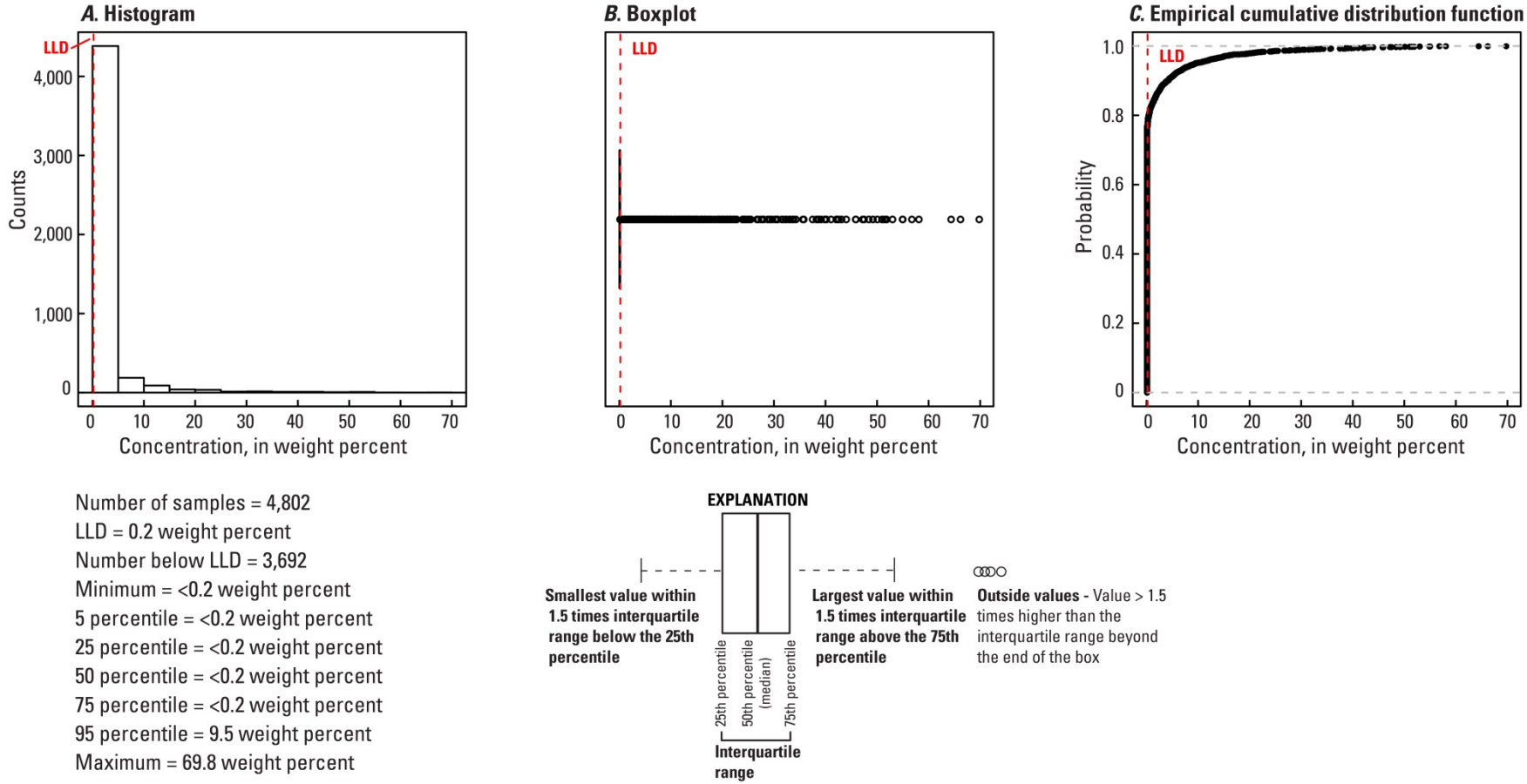


Figure 157. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gibbsite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Calcite in soil A horizon



Number of samples = 4,802
LLD = 0.2 weight percent
Number below LLD = 3,692
Minimum = <0.2 weight percent
5 percentile = <0.2 weight percent
25 percentile = <0.2 weight percent
50 percentile = <0.2 weight percent
75 percentile = <0.2 weight percent
95 percentile = 9.5 weight percent
Maximum = 69.8 weight percent

Figure 158. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

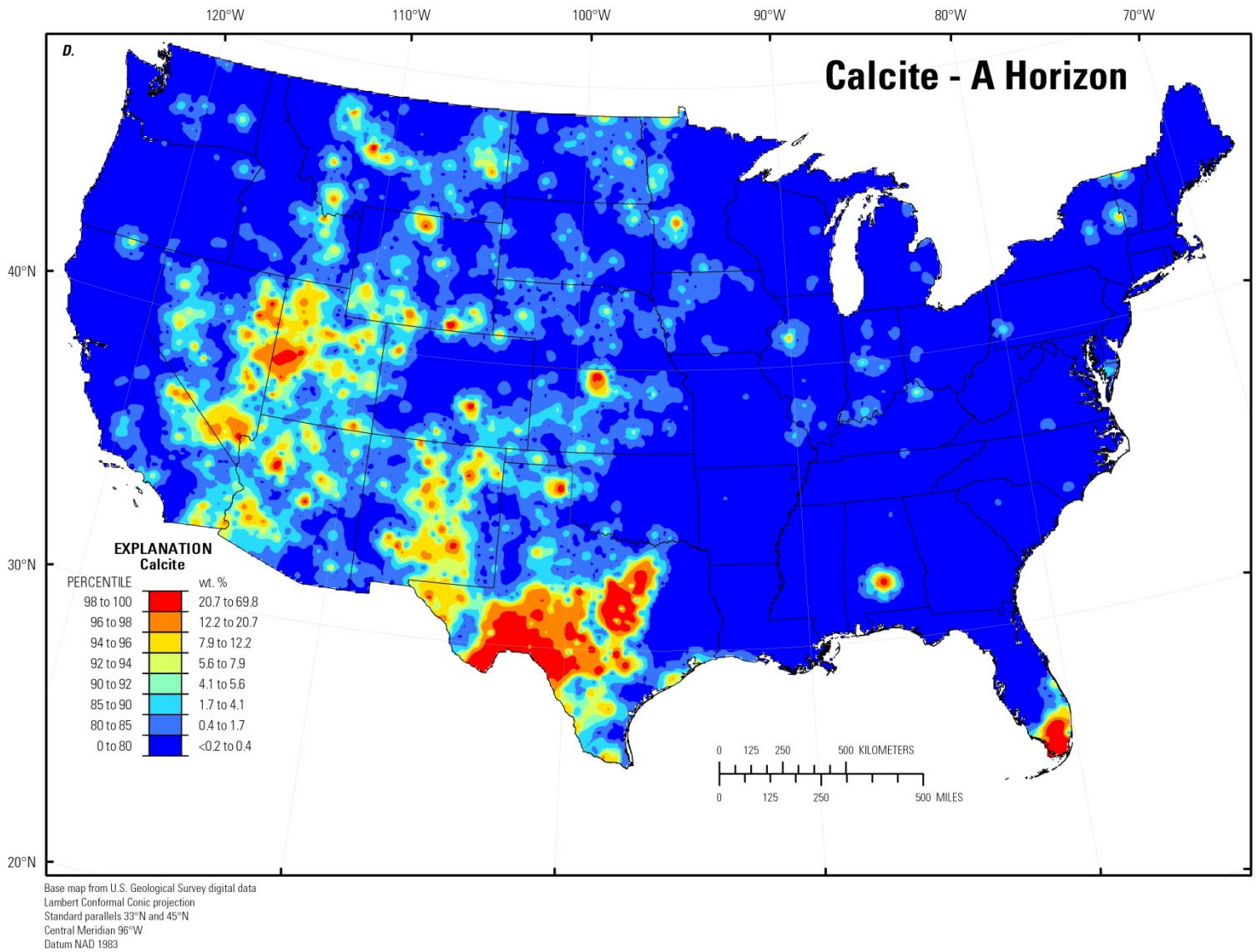


Figure 158. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Calcite in soil C horizon

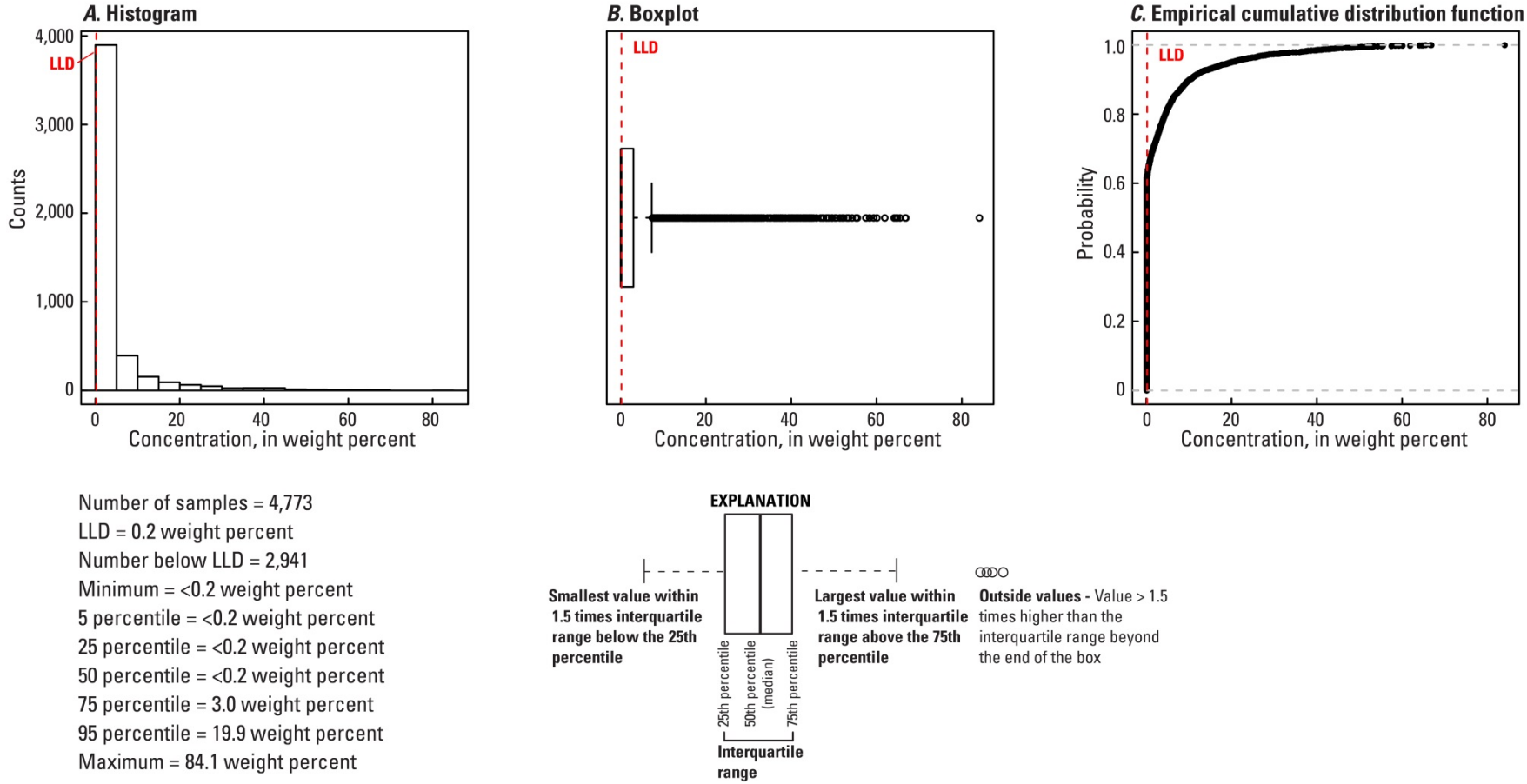


Figure 159. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

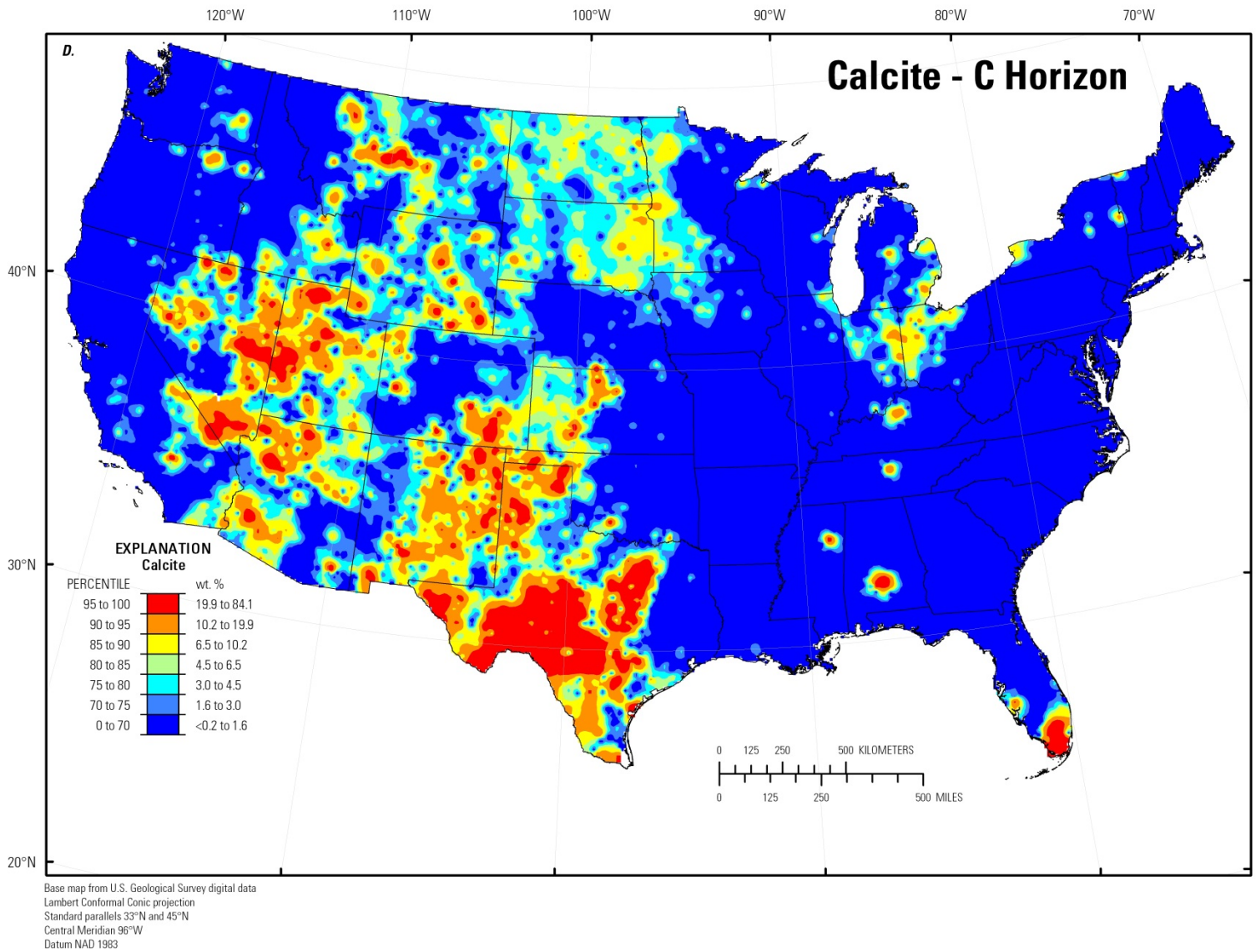


Figure 159. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of calcite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

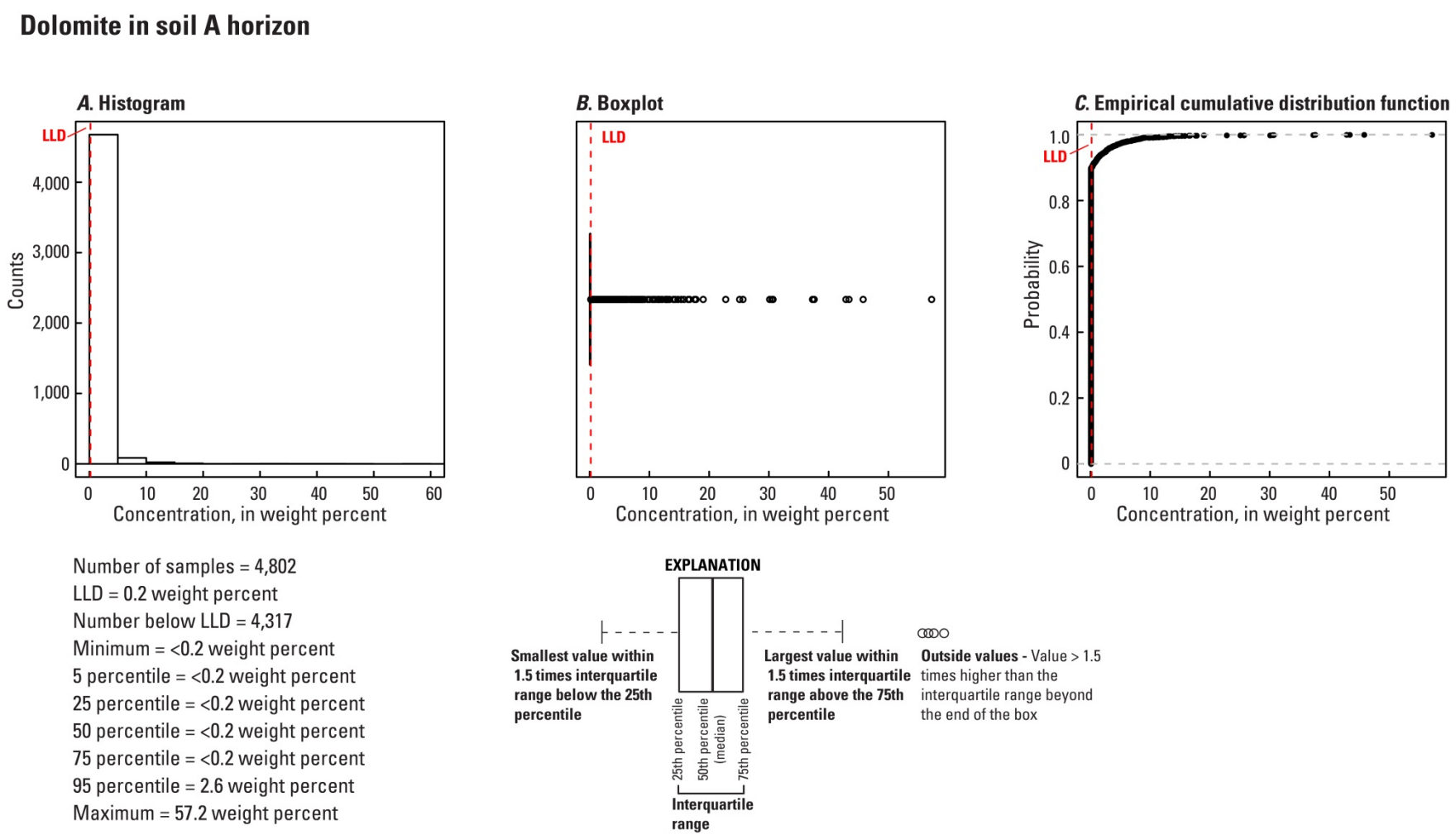


Figure 160. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of dolomite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

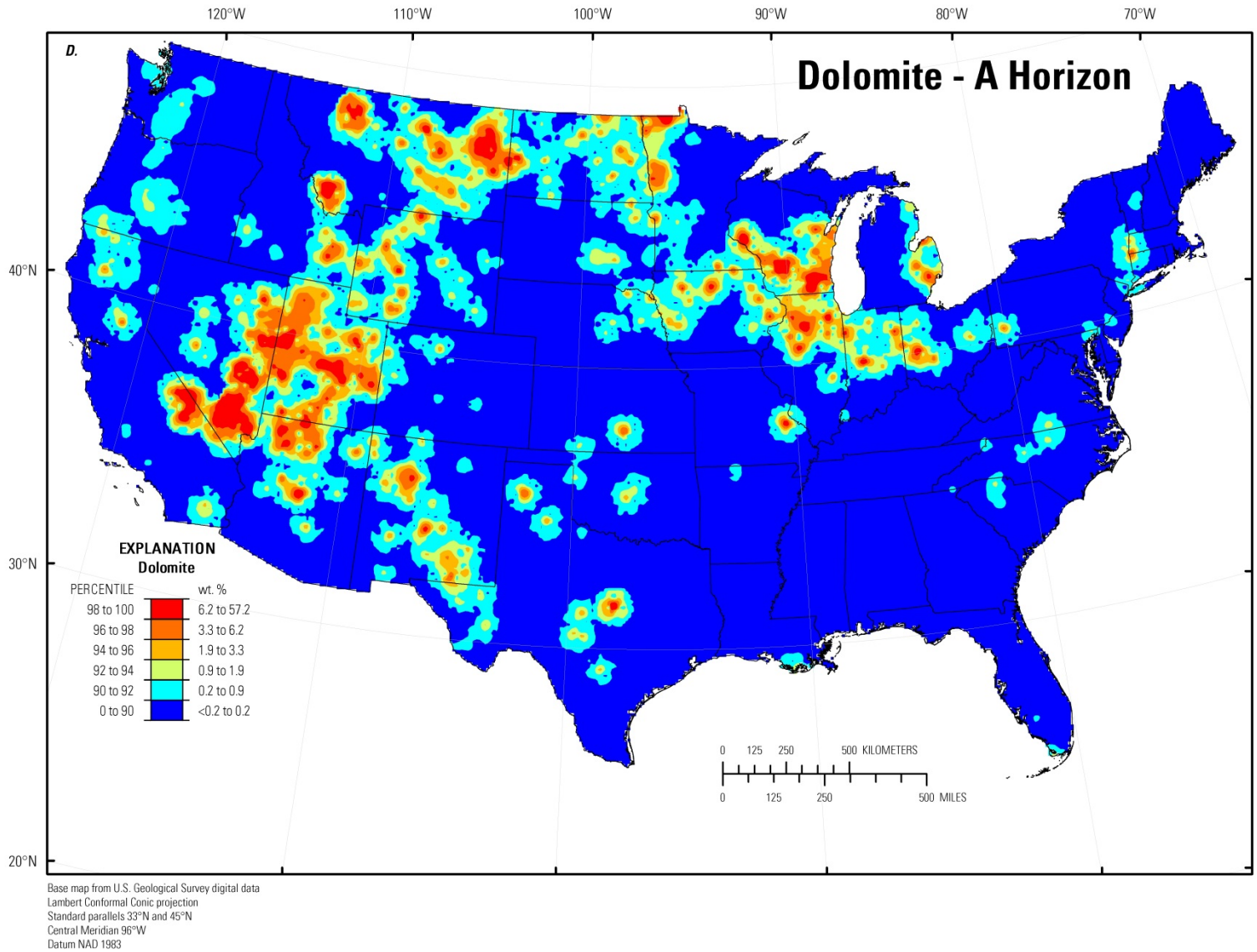
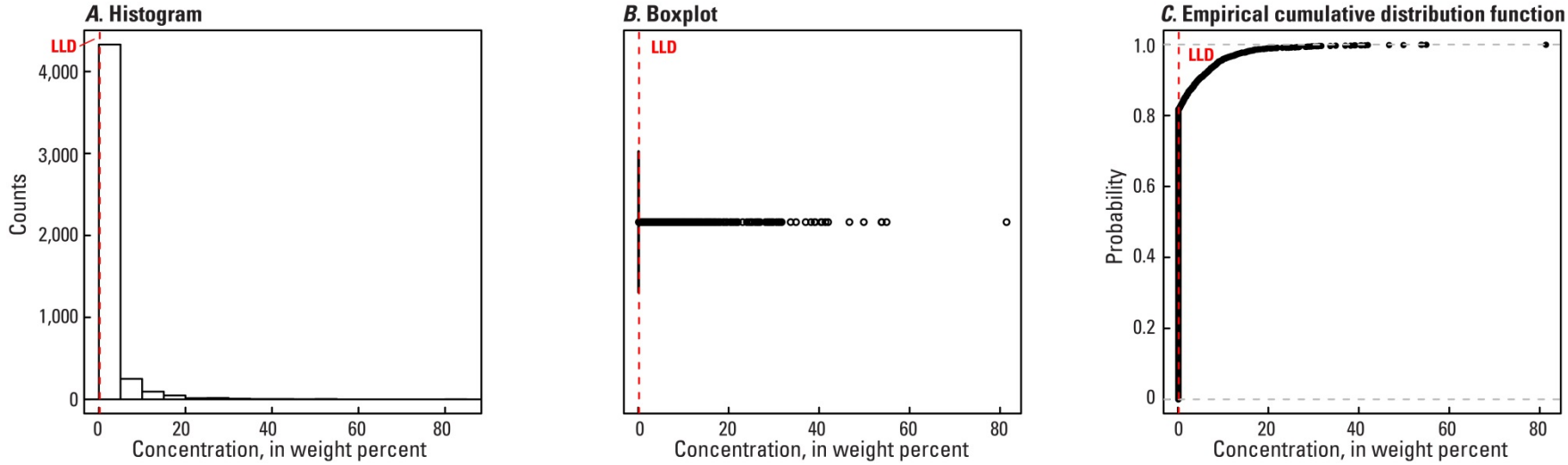


Figure 160. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of dolomite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Dolomite in soil C horizon



Number of samples = 4,773
LLD = 0.2 weight percent
Number below LLD = 3,902
Minimum = <0.2 weight percent
5 percentile = <0.2 weight percent
25 percentile = <0.2 weight percent
50 percentile = <0.2 weight percent
75 percentile = <0.2 weight percent
95 percentile = 8.9 weight percent
Maximum = 81.4 weight percent

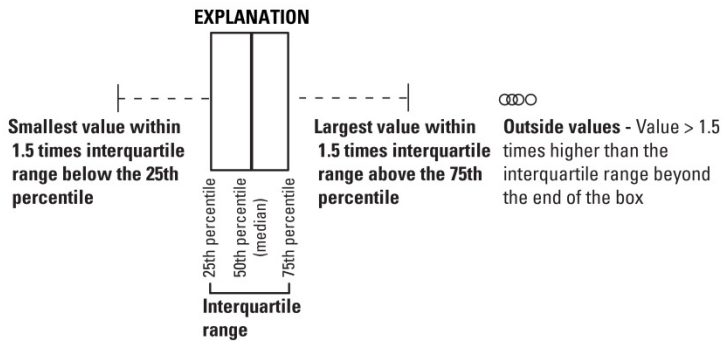


Figure 161. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of dolomite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

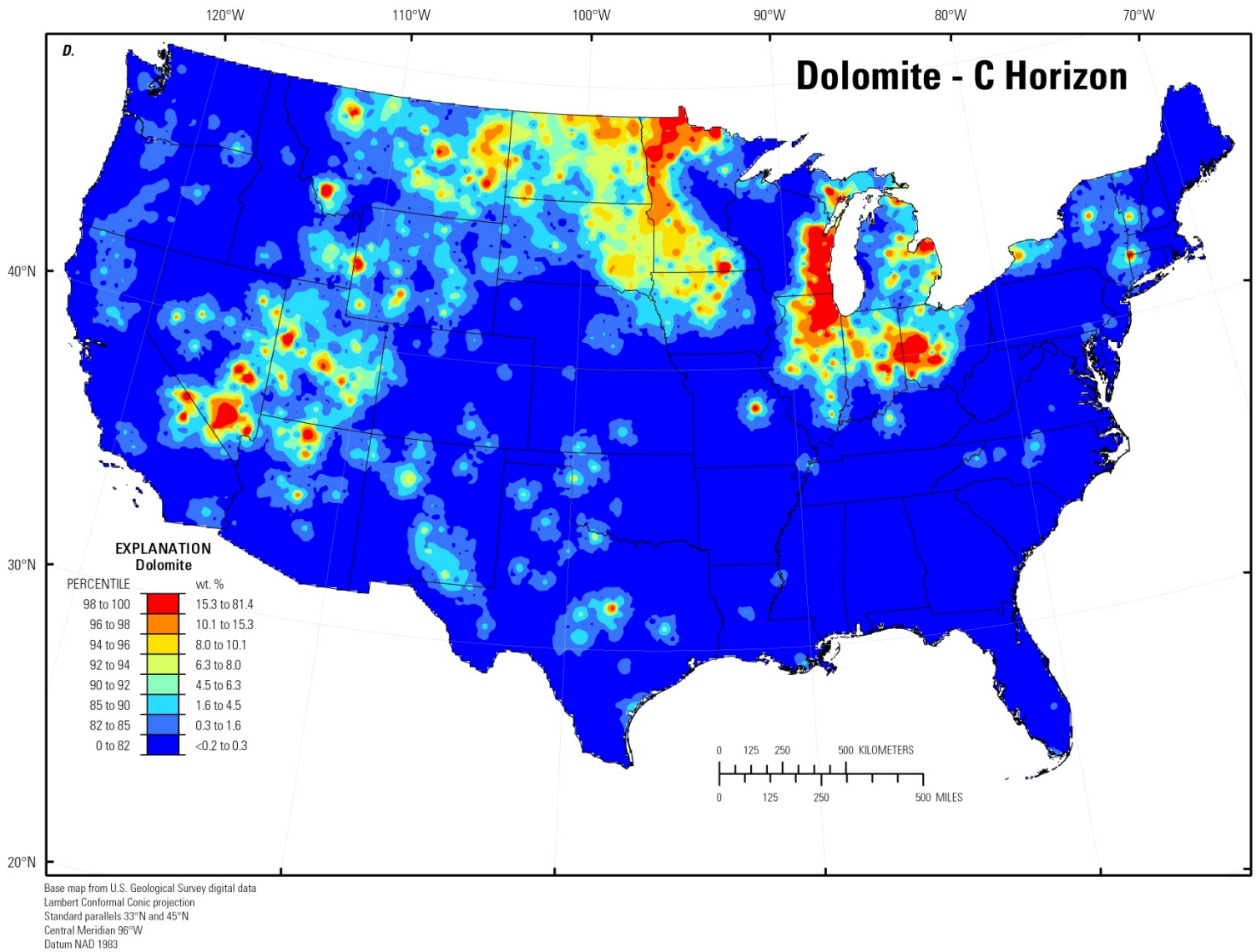


Figure 161. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of dolomite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

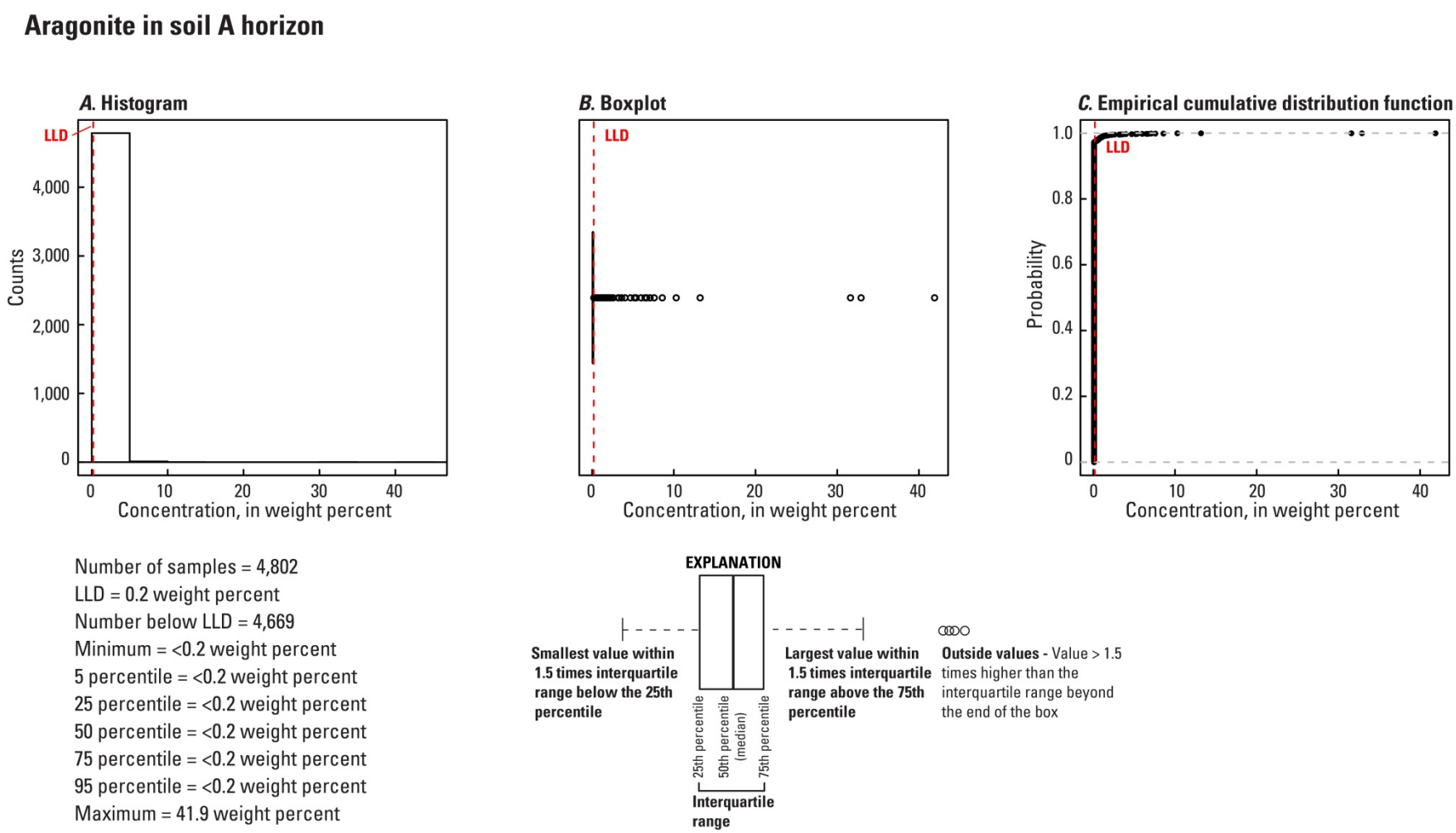


Figure 162. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aragonite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

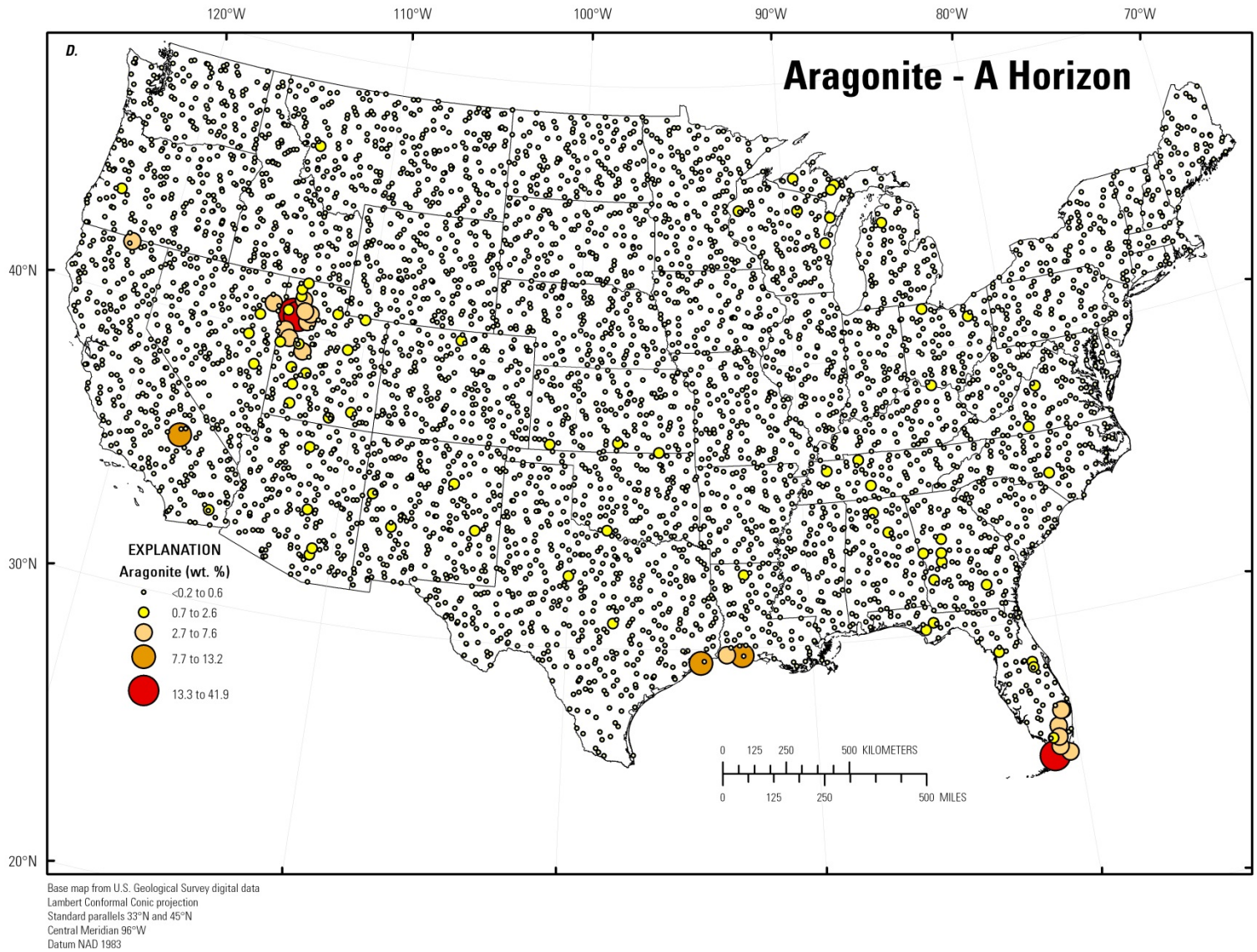


Figure 162. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aragonite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Aragonite in soil C horizon

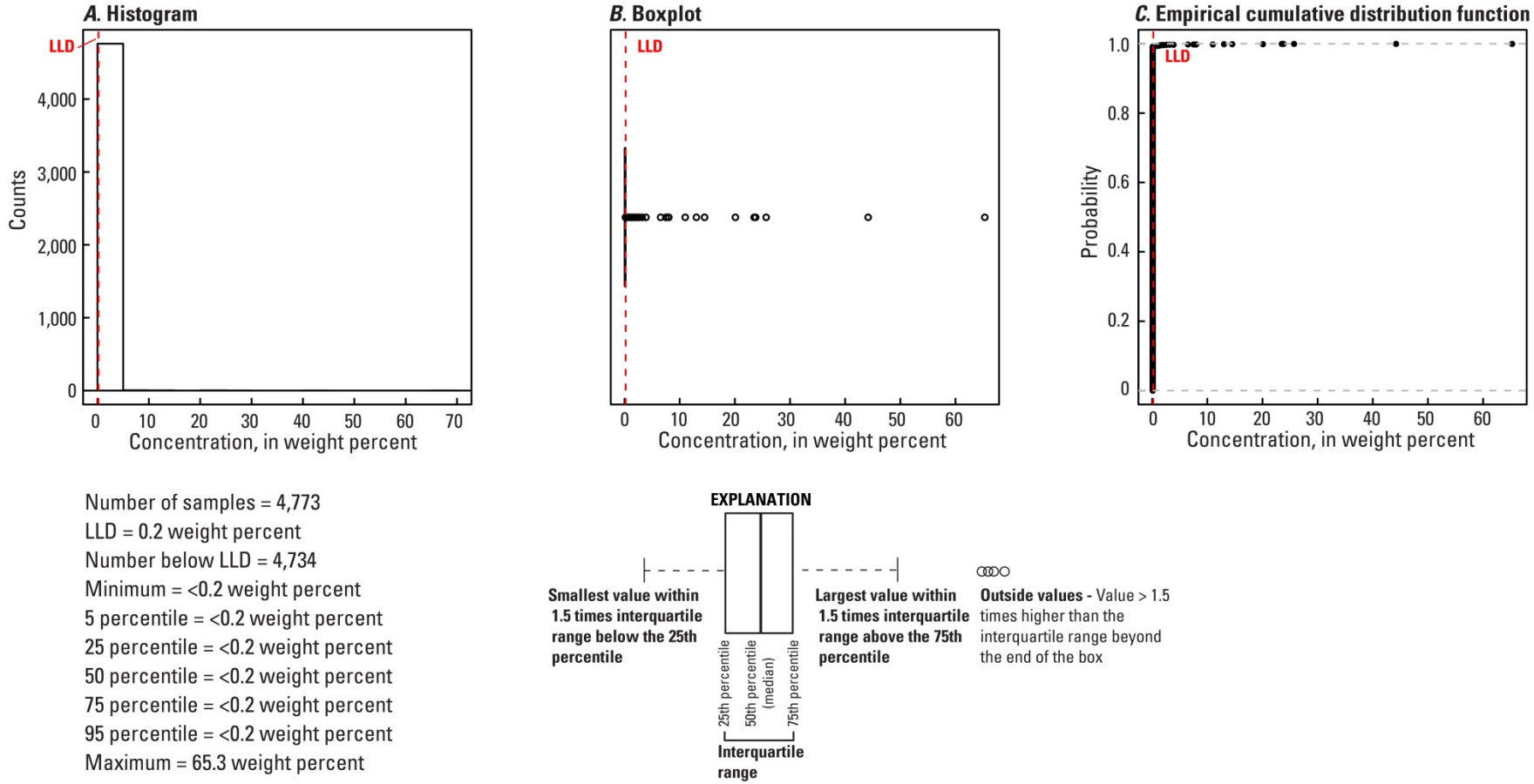


Figure 163. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aragonite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

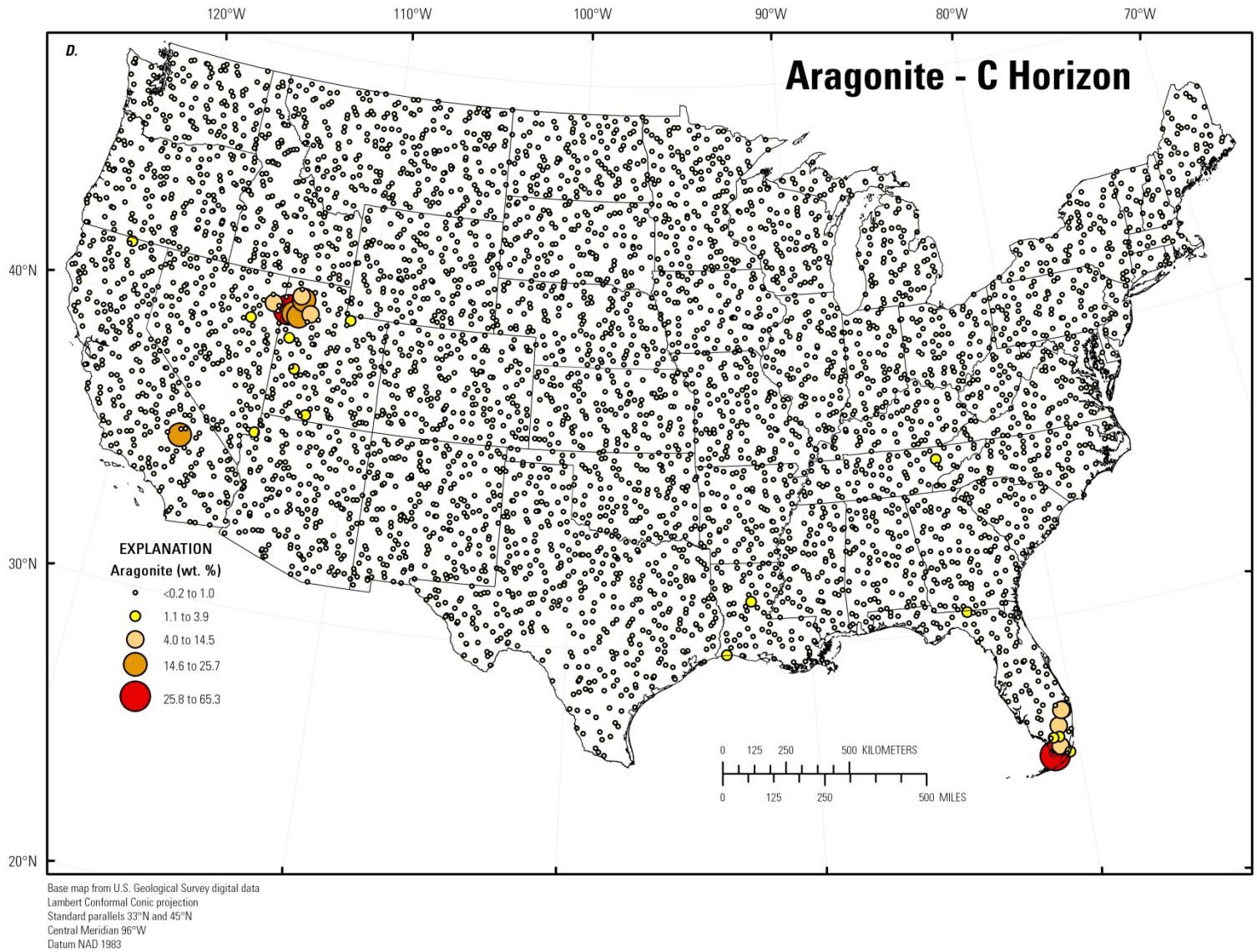


Figure 163. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of aragonite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Total carbonates in soil A horizon

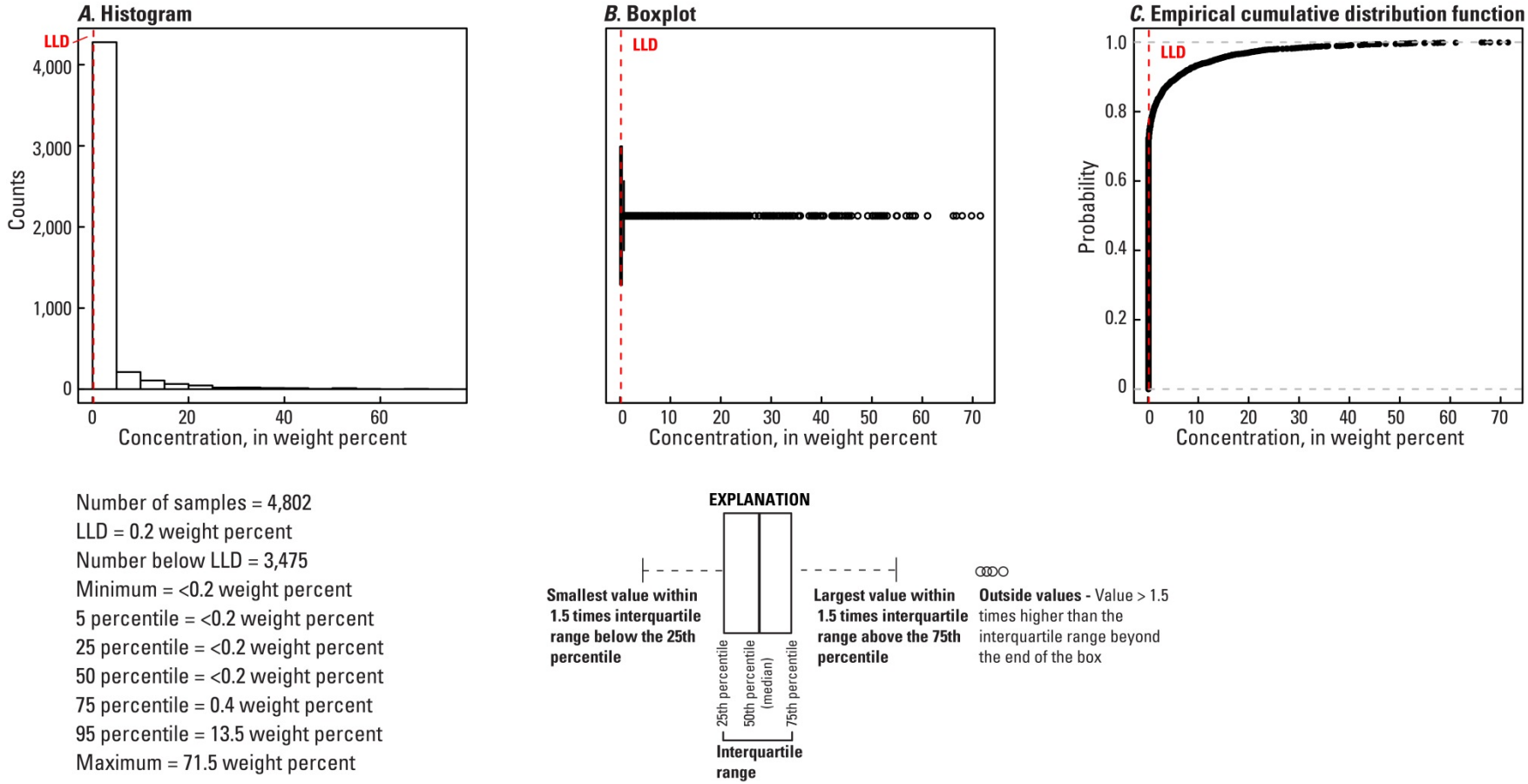


Figure 164. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbonate (calcite + dolomite + aragonite) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

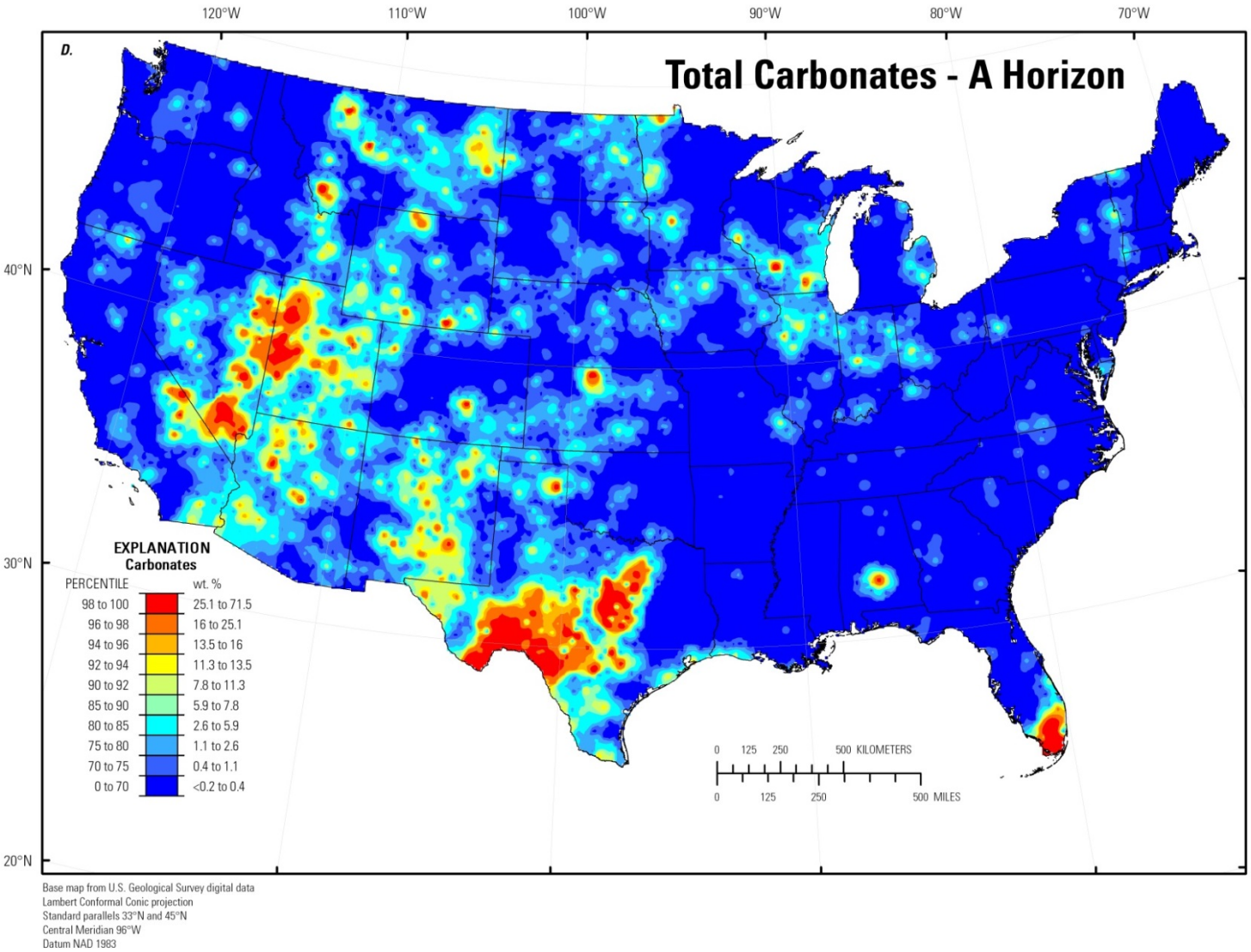


Figure 164. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbonate (calcite + dolomite + aragonite) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

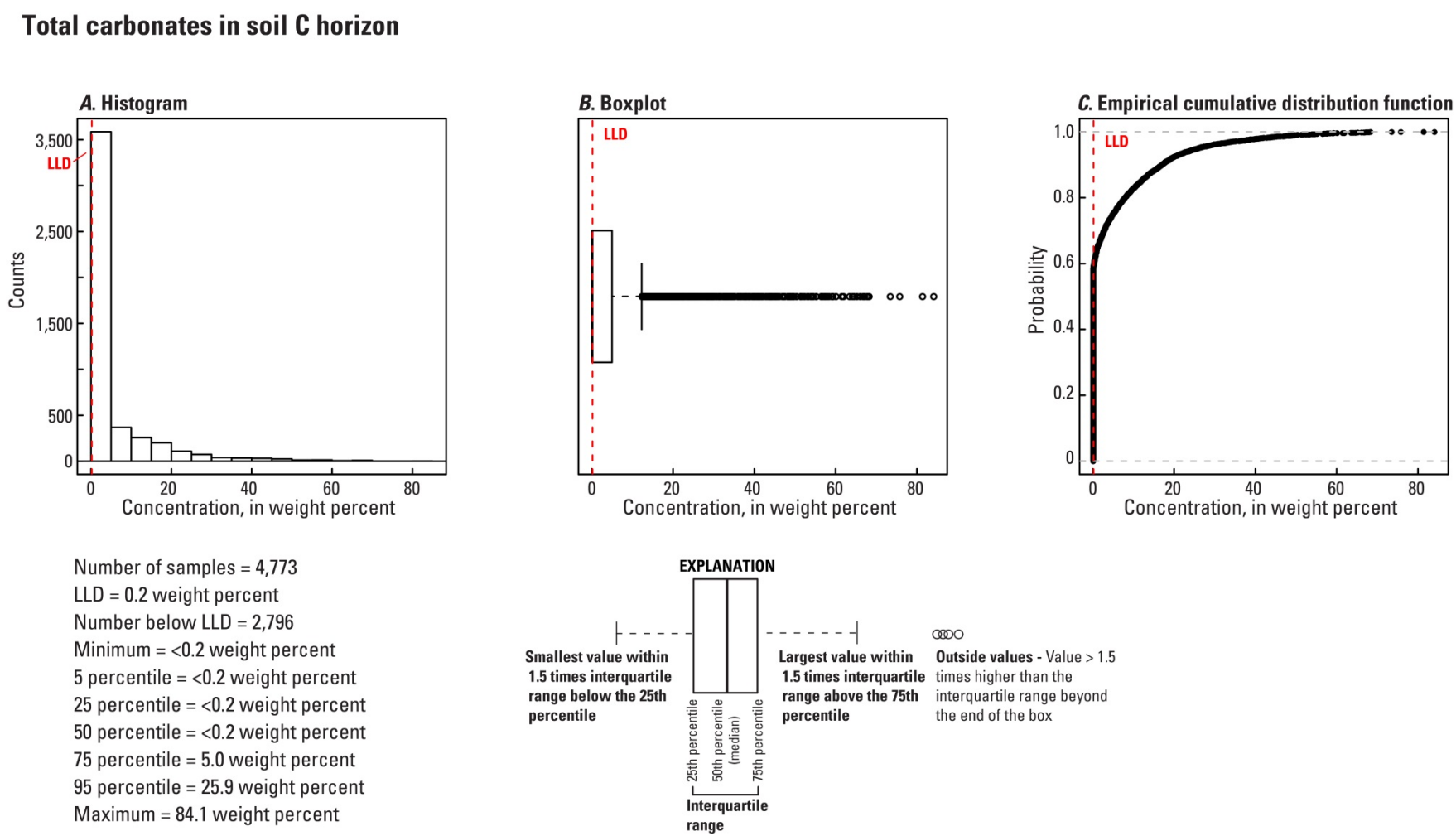


Figure 165. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbonate (calcite + dolomite + aragonite) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

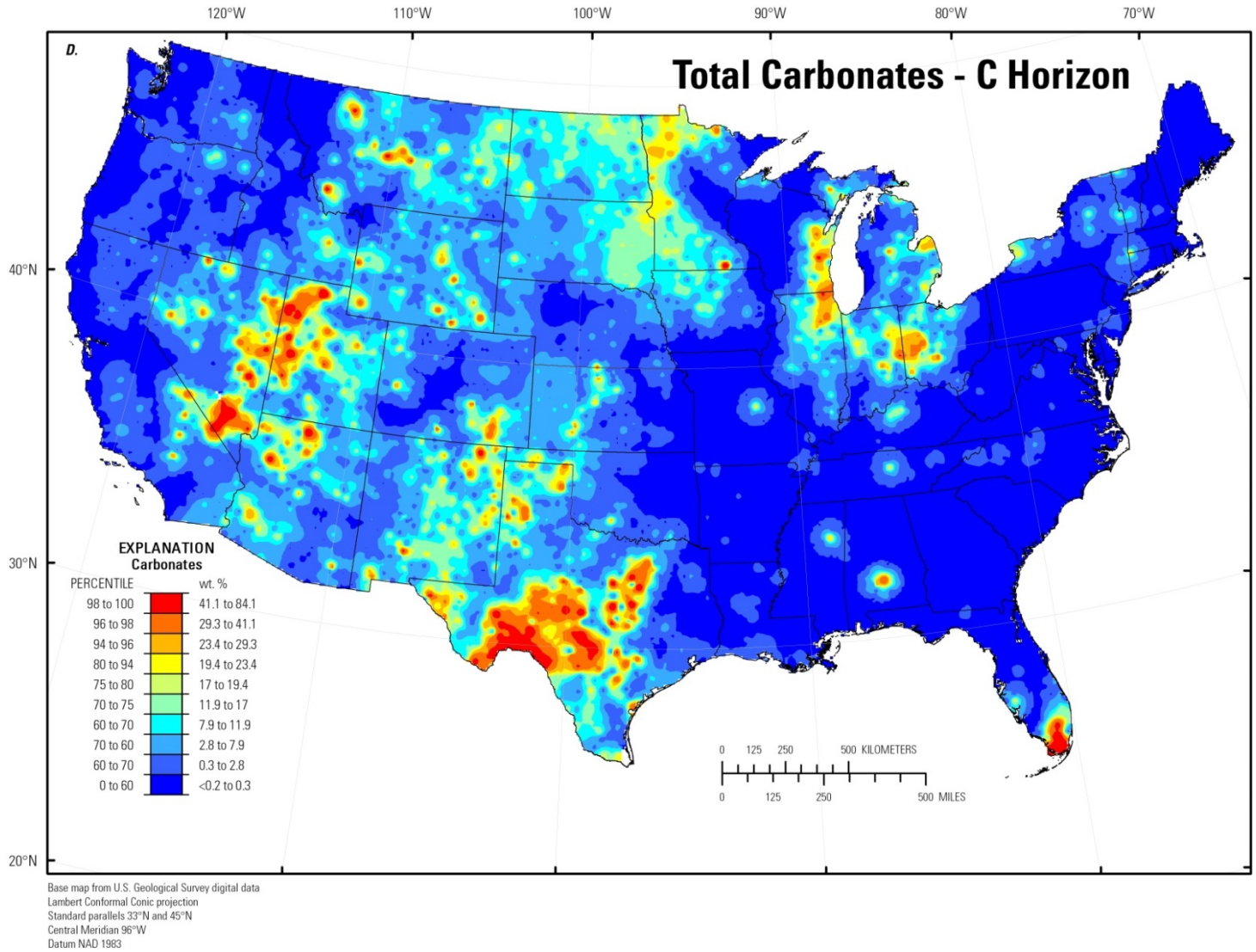


Figure 165. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total carbonate (calcite + dolomite + aragonite) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Analcime in soil A horizon

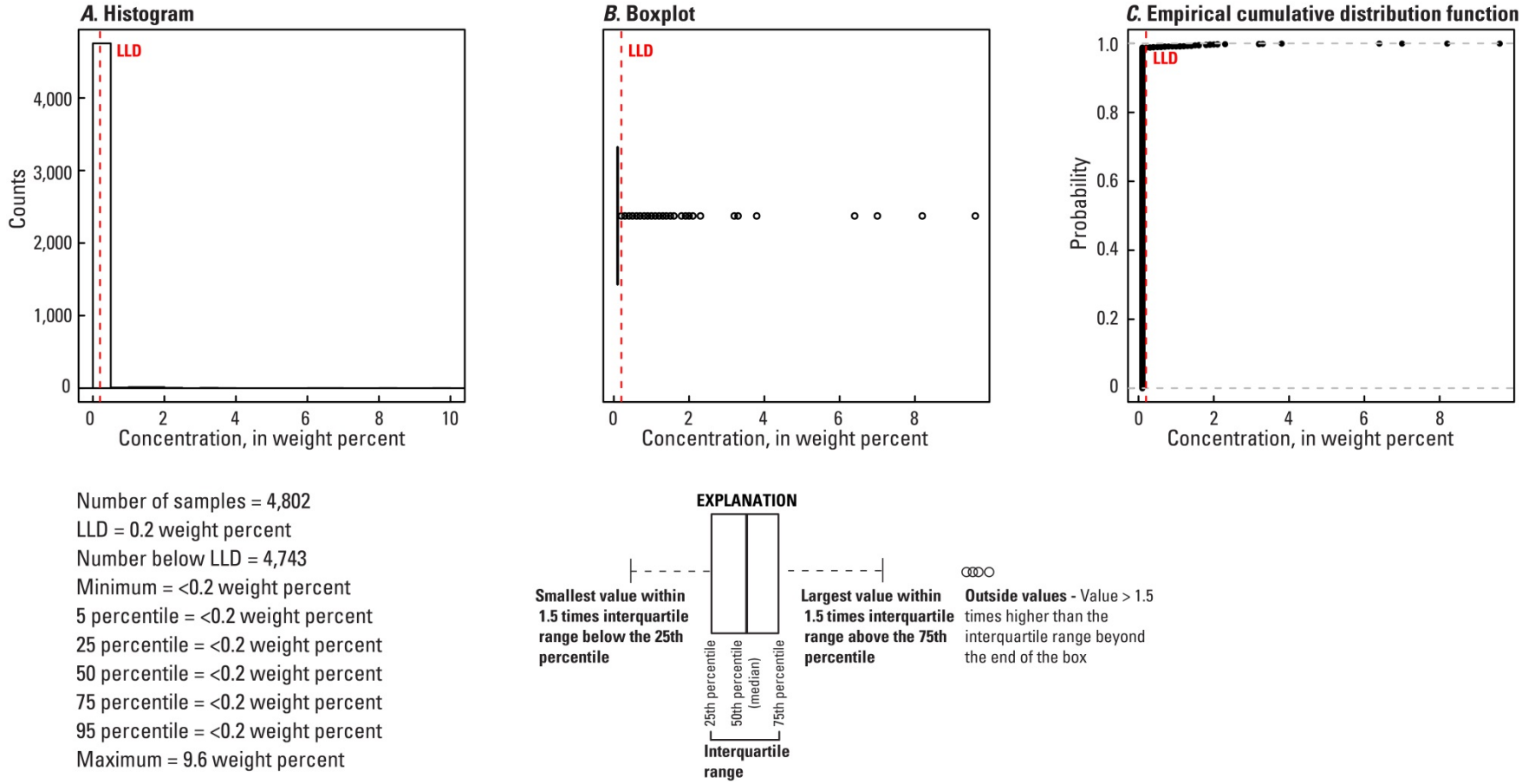


Figure 166. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of analcime in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

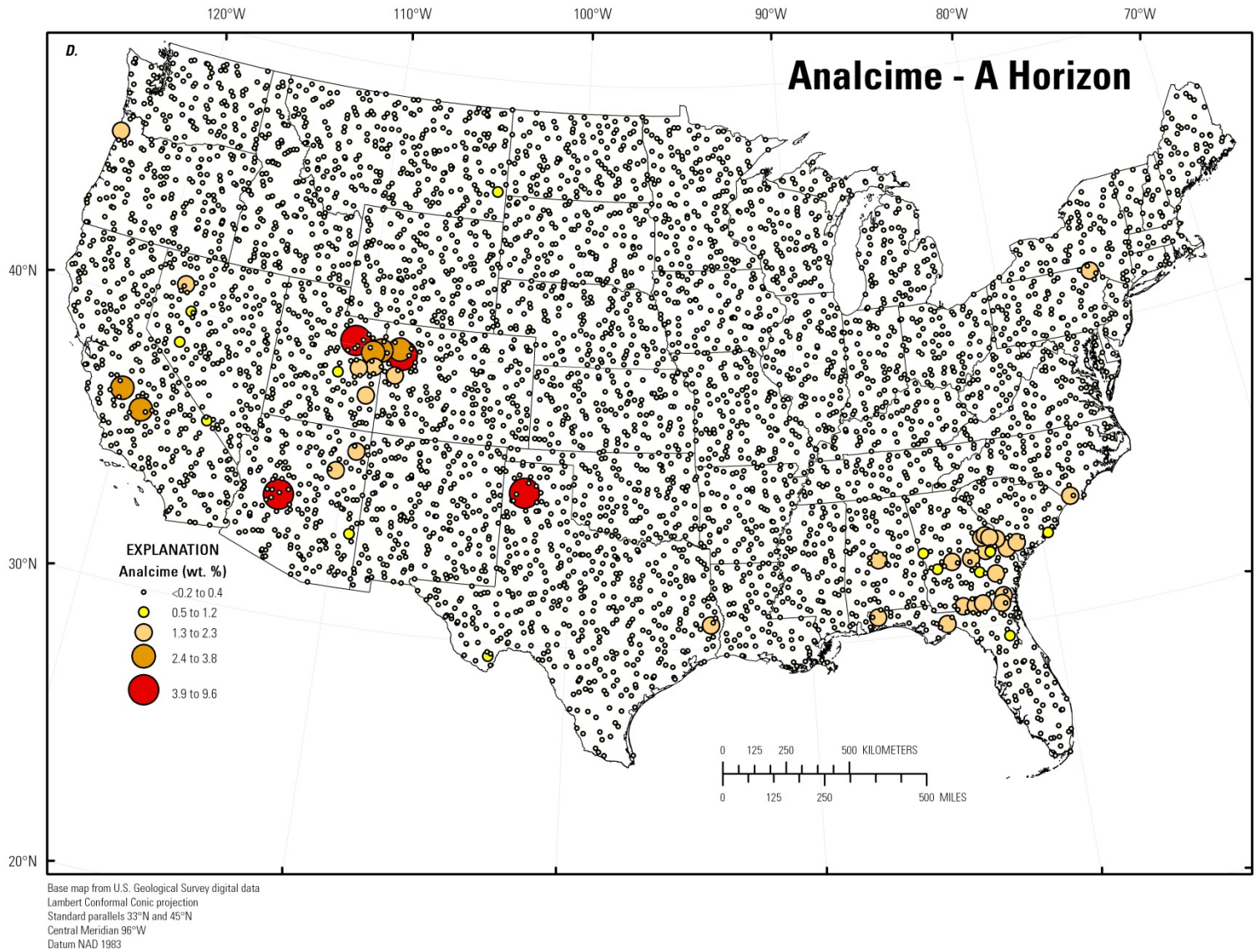


Figure 166. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of analcime in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Analcime in soil C horizon

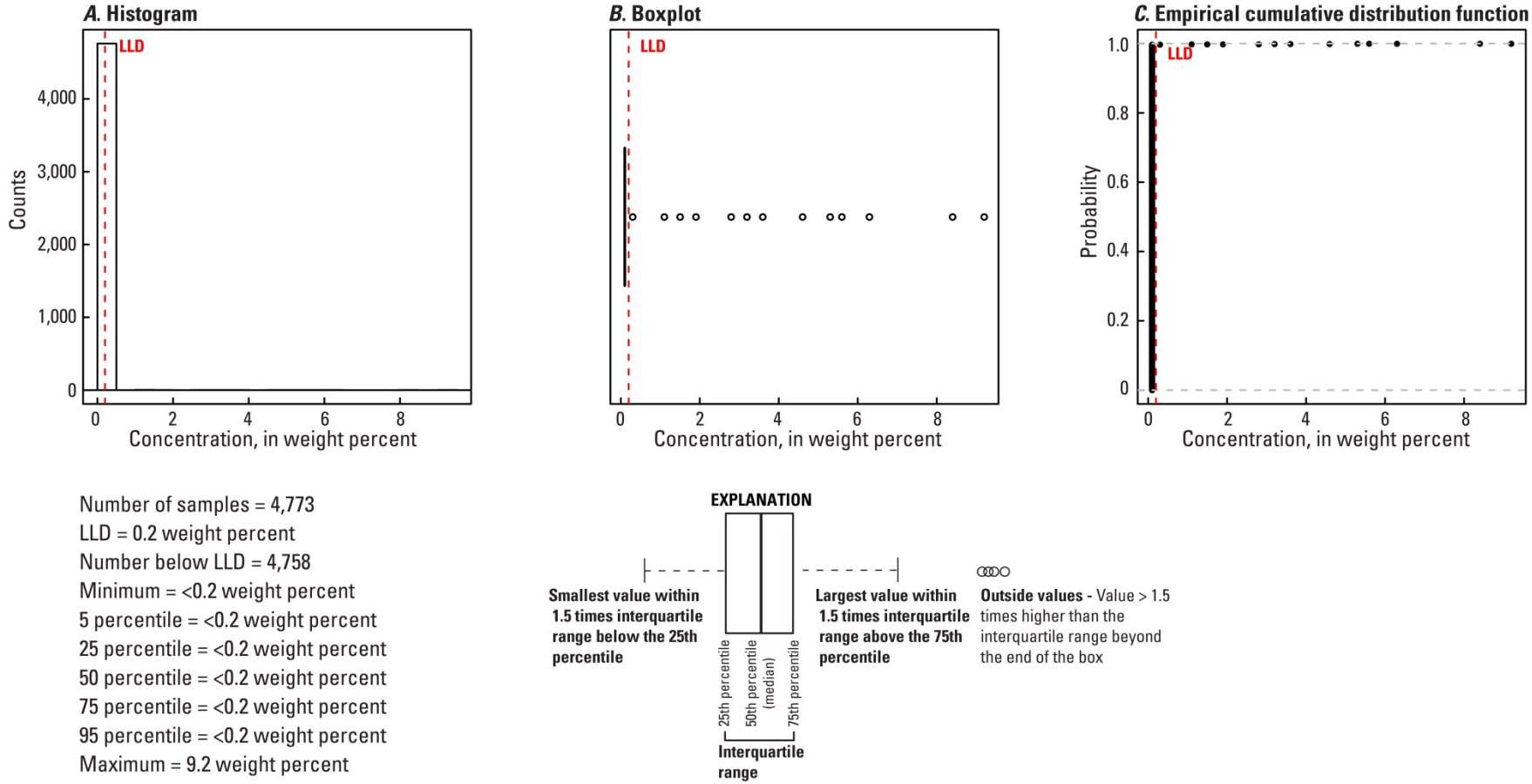


Figure 167. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of analcime in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

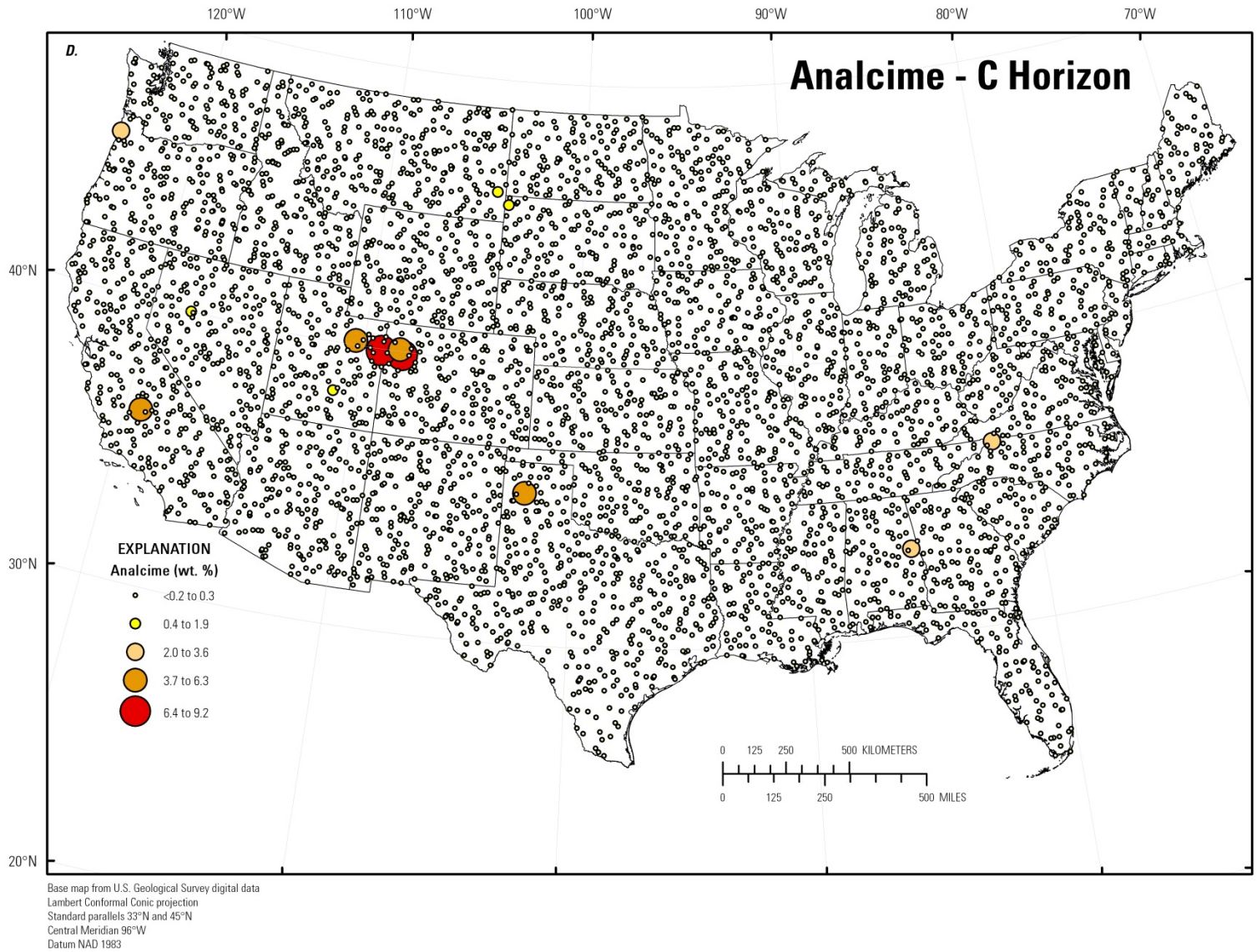


Figure 167. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of analcime in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Heulandite in soil A horizon

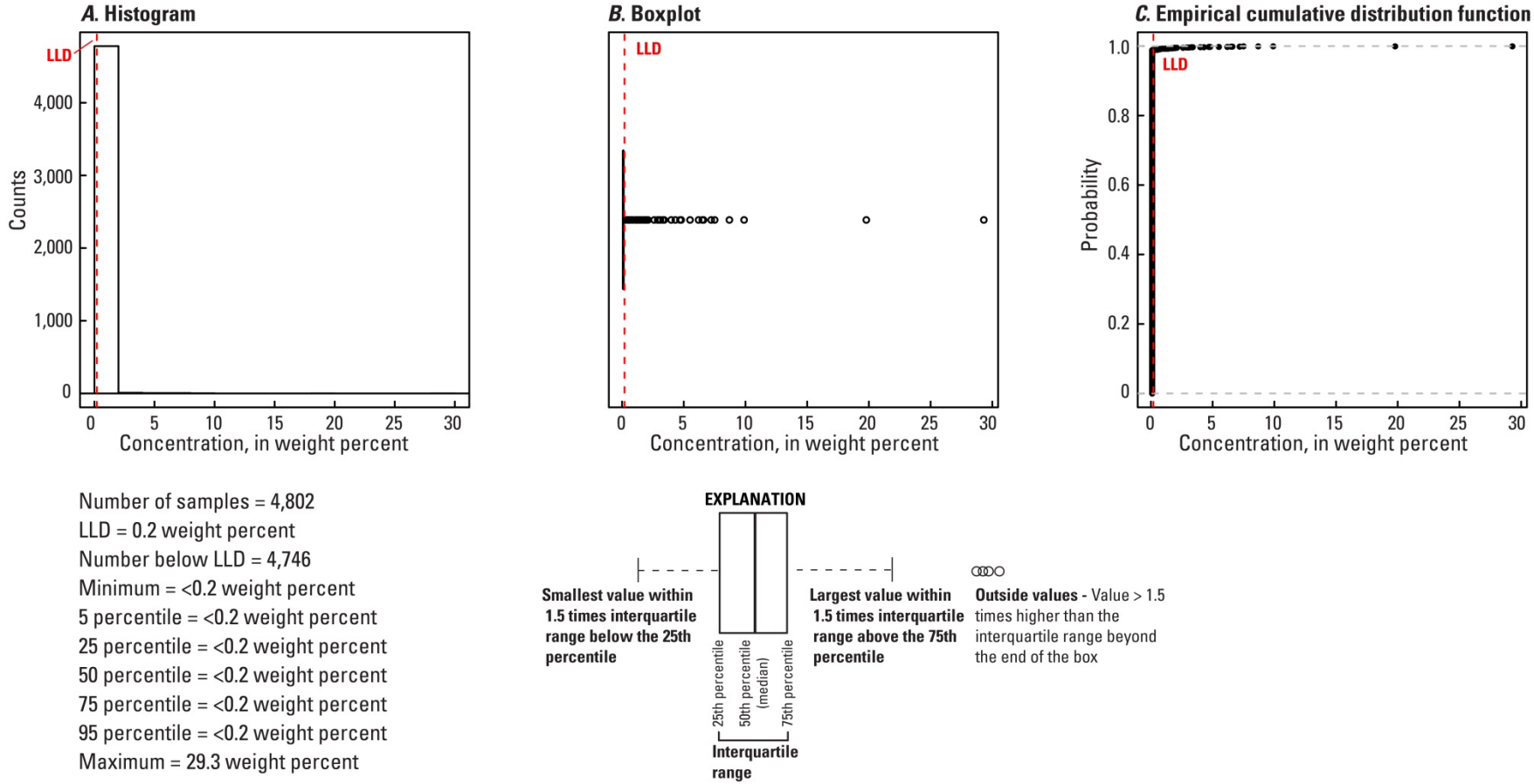


Figure 168. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of heulandite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

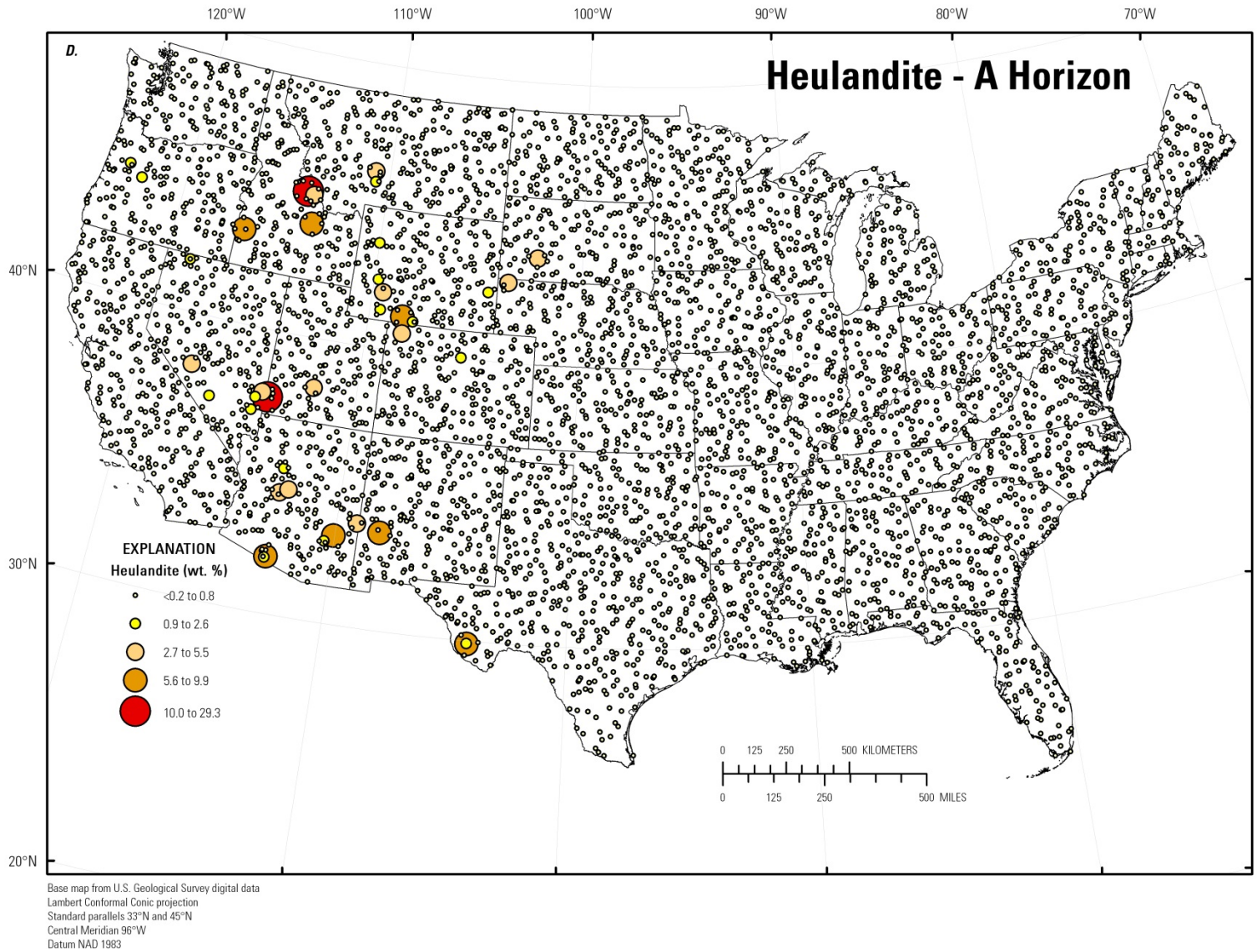


Figure 168. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of heulandite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Heulandite in soil C horizon

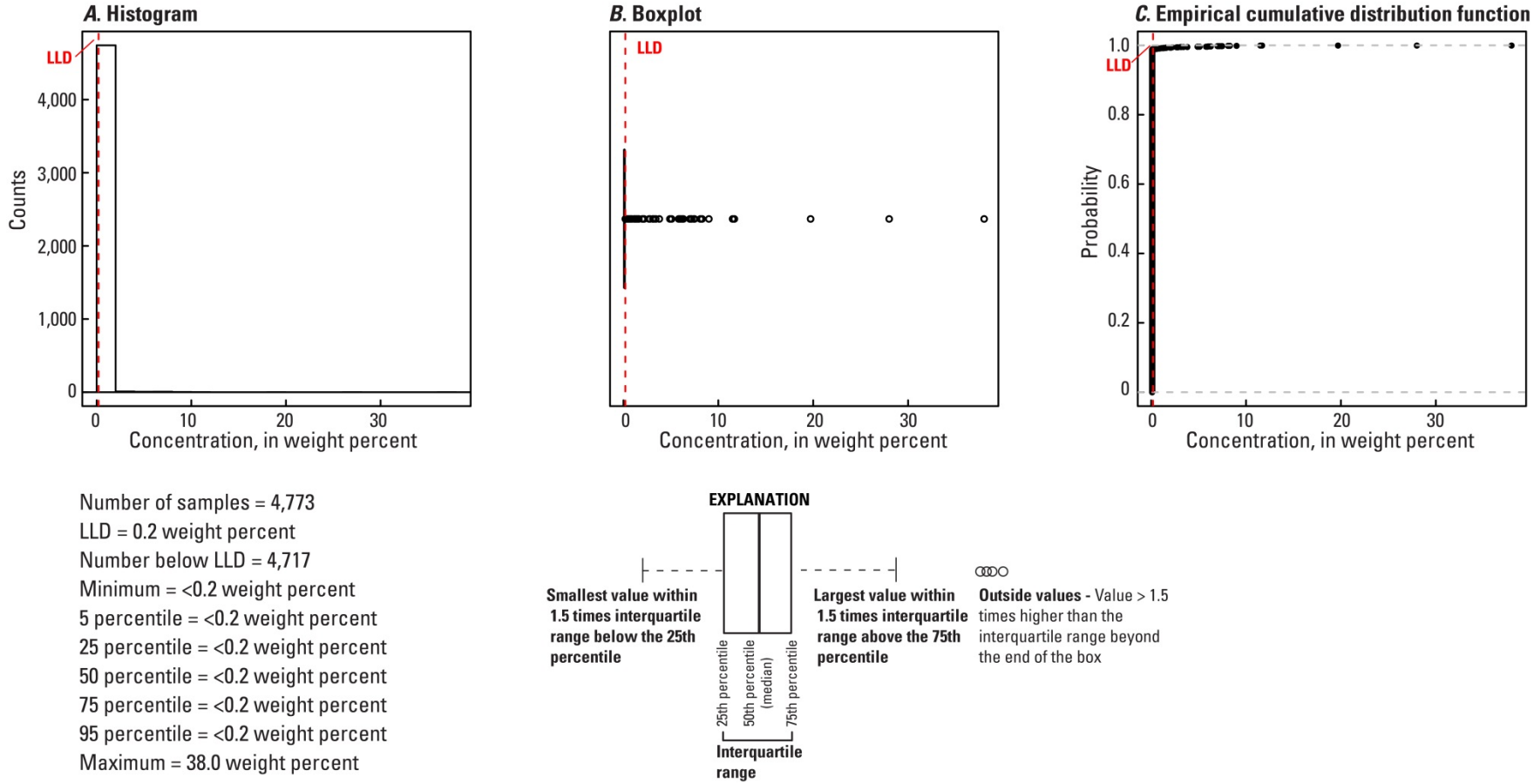


Figure 169. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of heulandite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

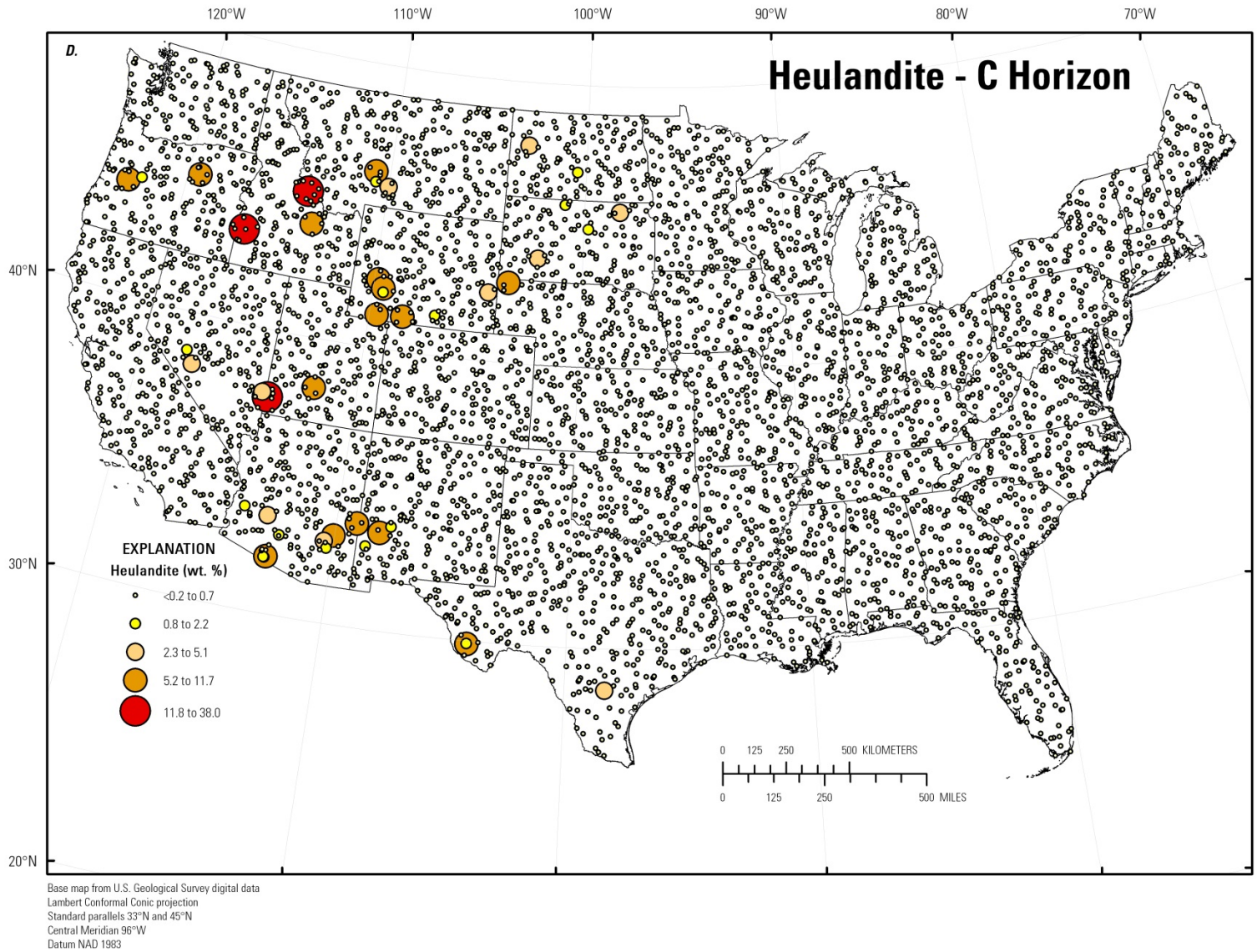


Figure 169. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of heulandite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

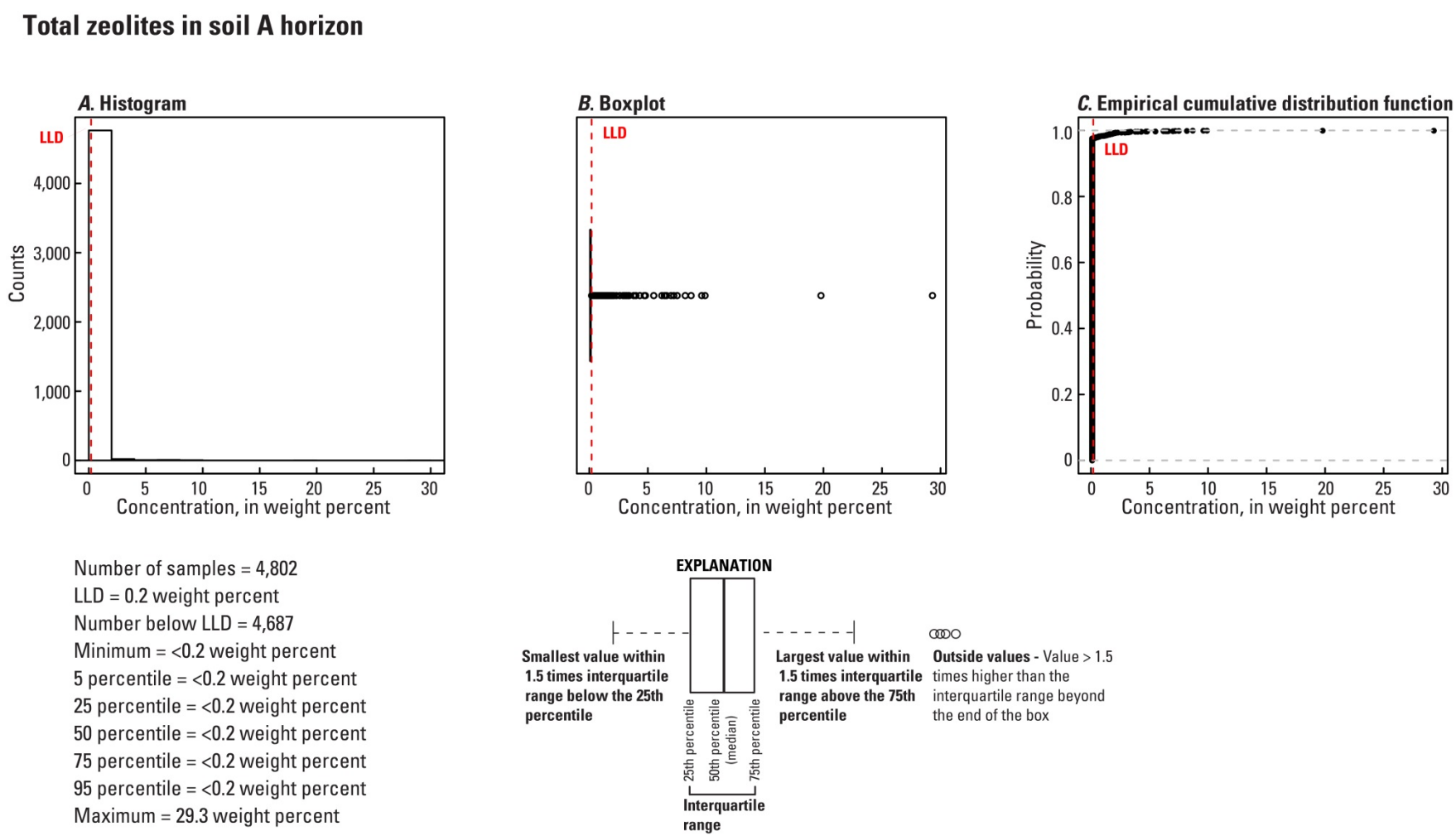


Figure 170. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total zeolites (analcime + heulandite) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

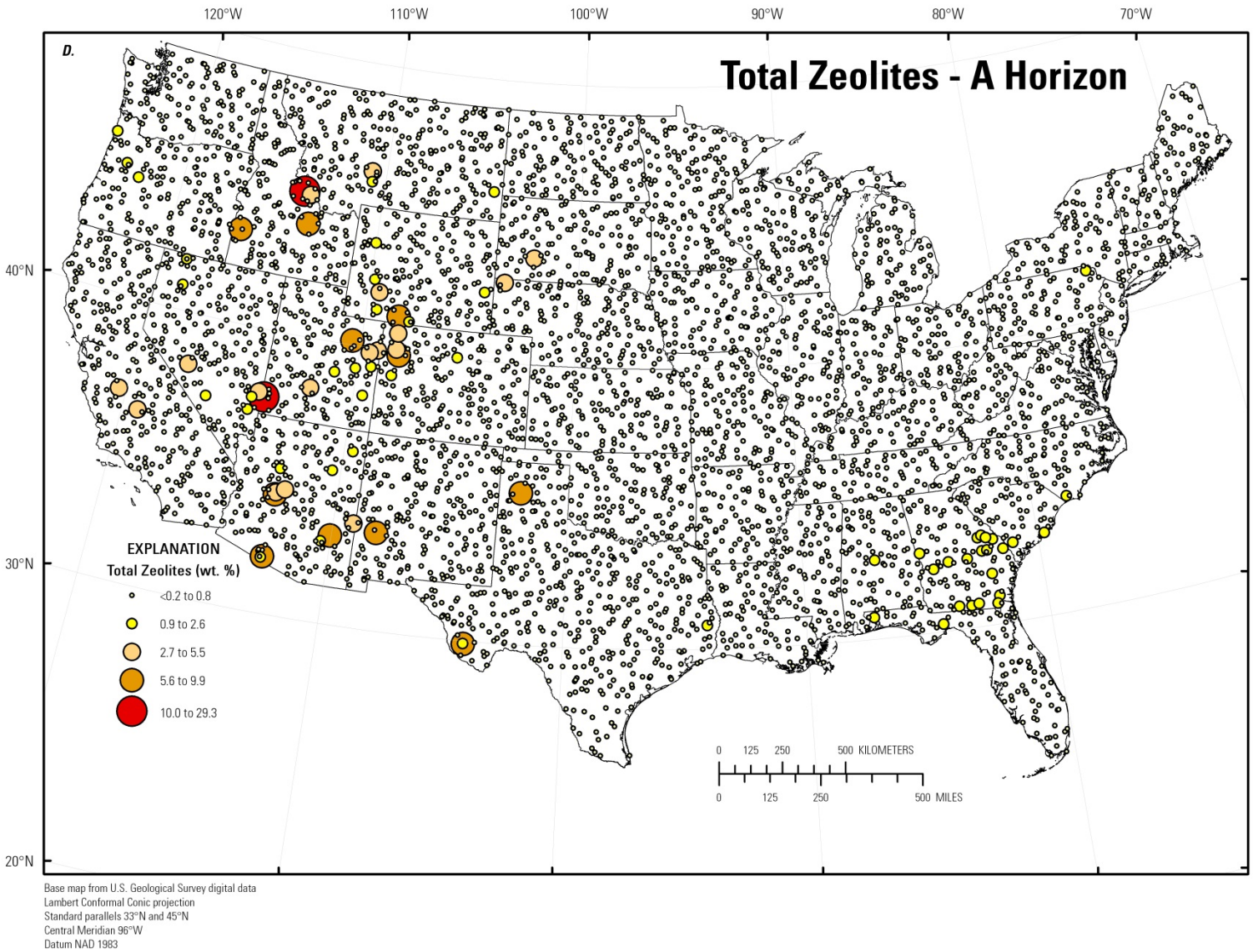


Figure 170. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total zeolites (analcime + heulandite) in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

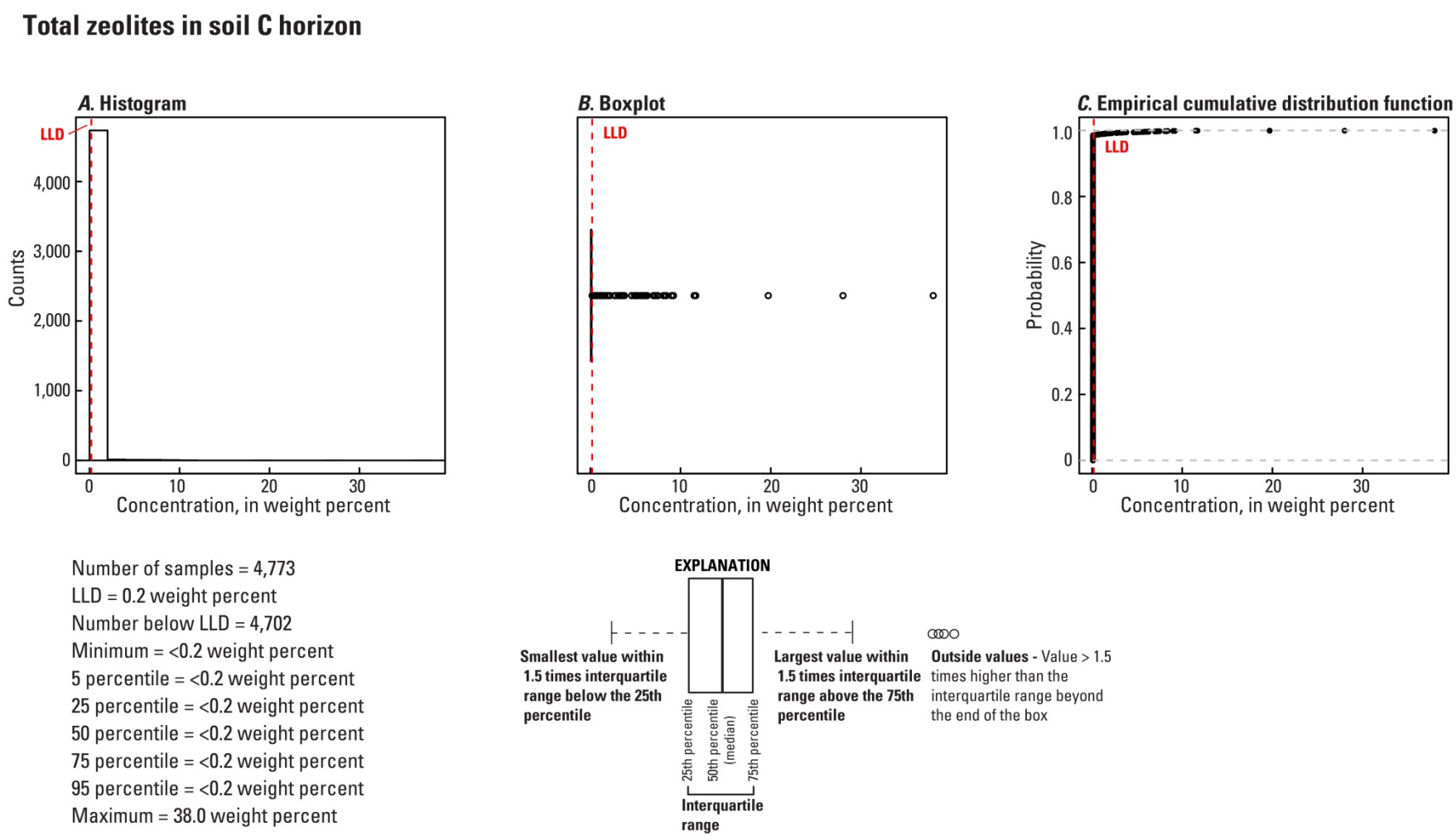


Figure 171. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total zeolites (analcime + heulandite) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

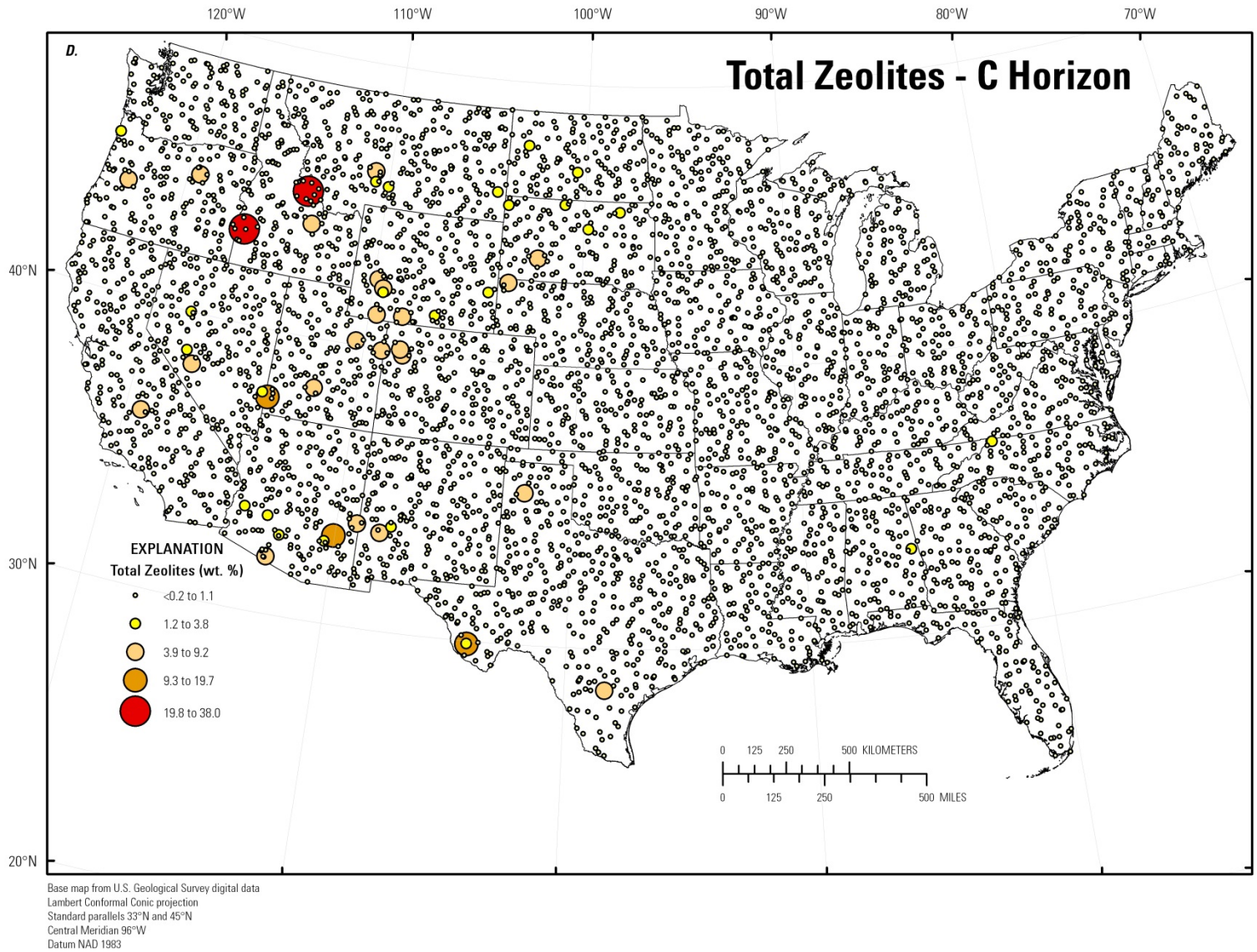


Figure 171. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of total zeolites (analcime + heulandite) in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Gypsum in soil A horizon

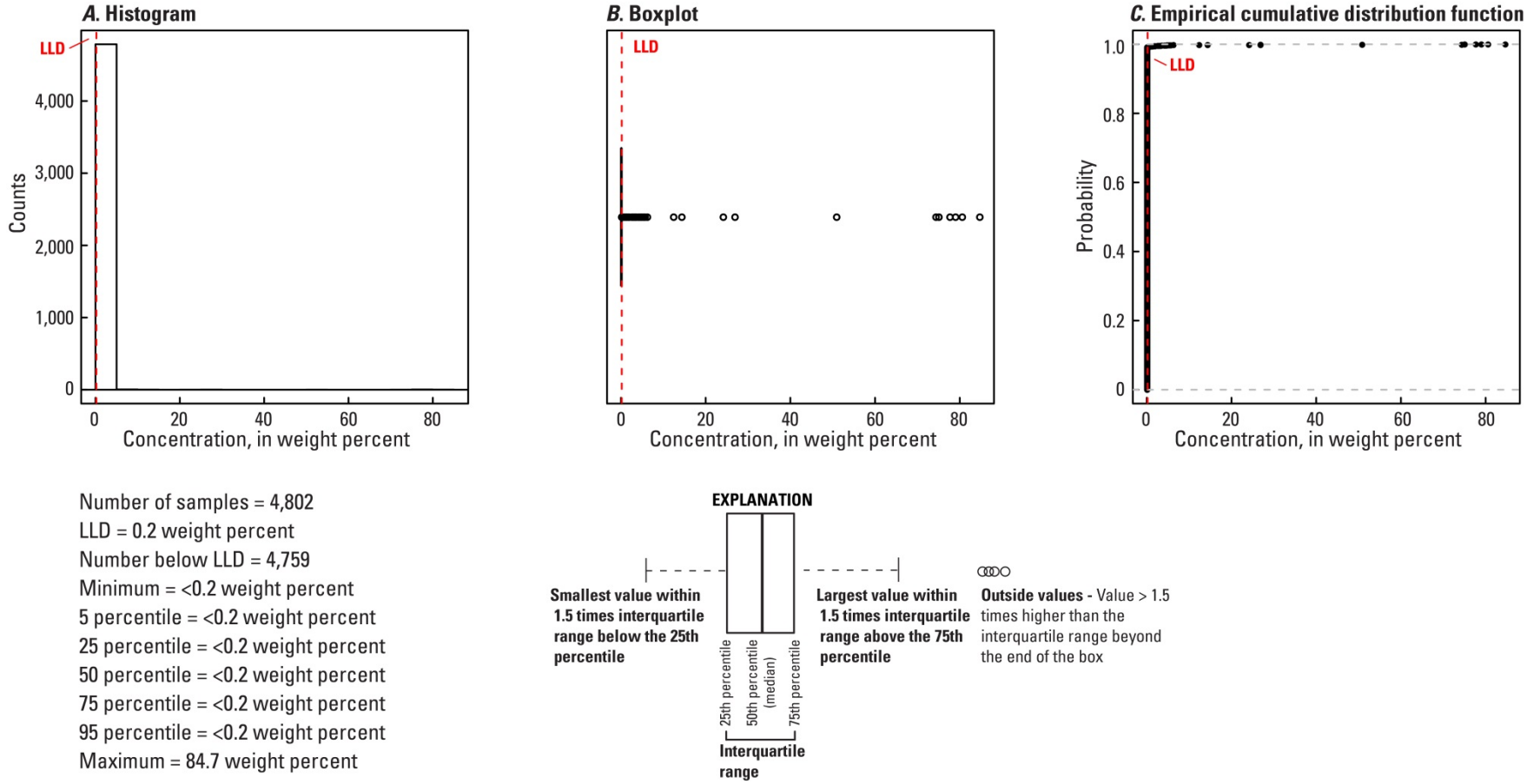


Figure 172. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gypsum in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

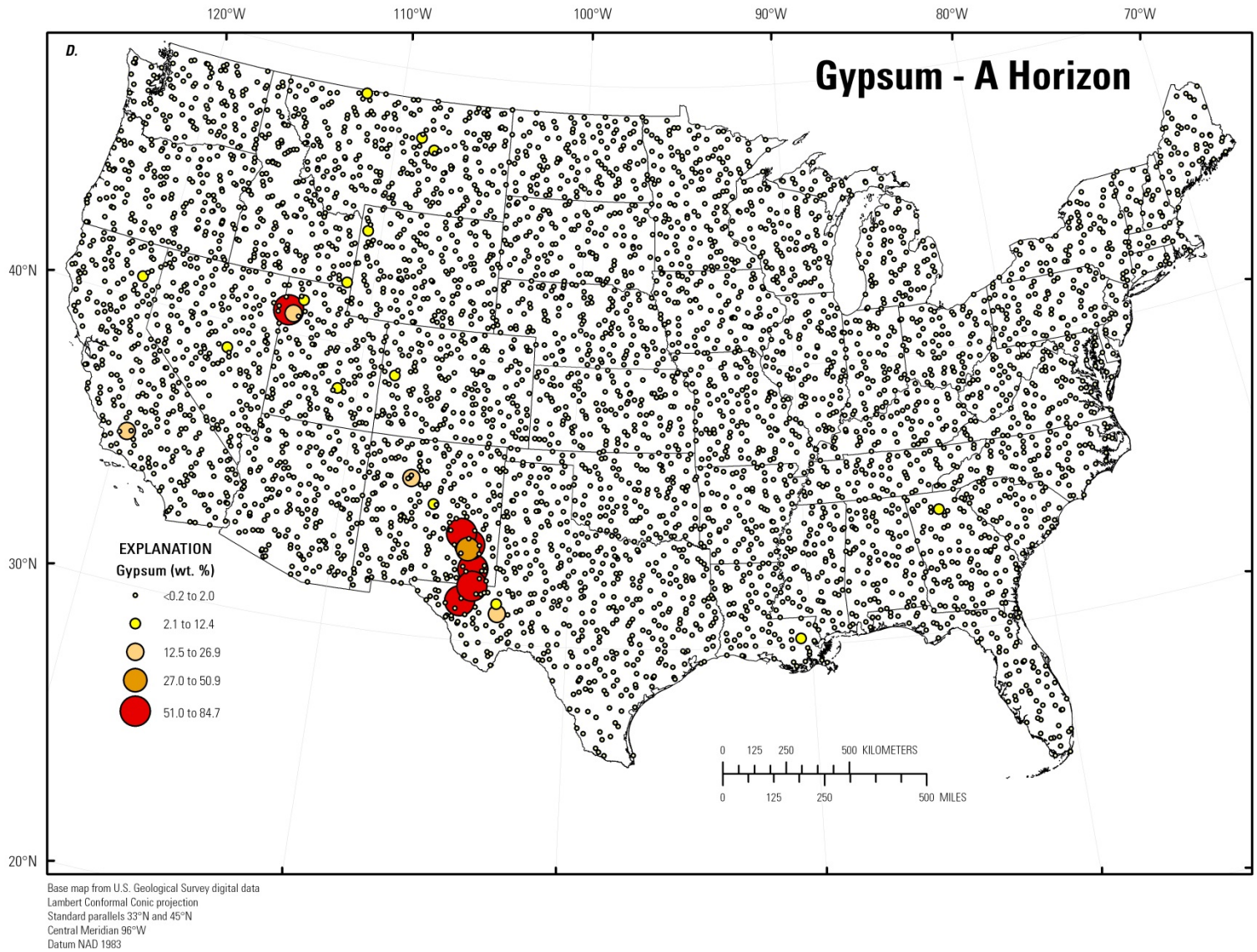


Figure 172. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gypsum in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Gypsum in soil C horizon

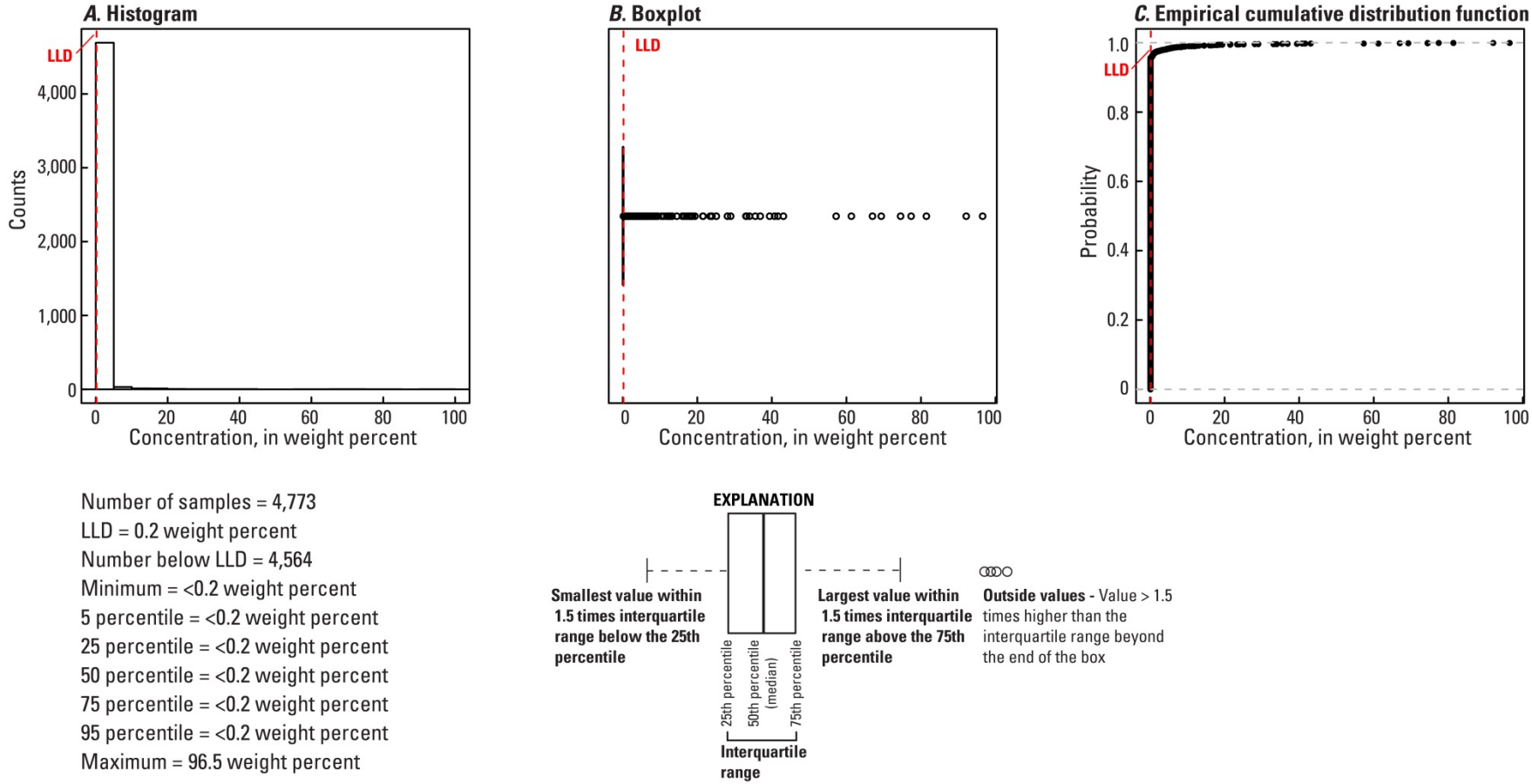


Figure 173. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gypsum in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

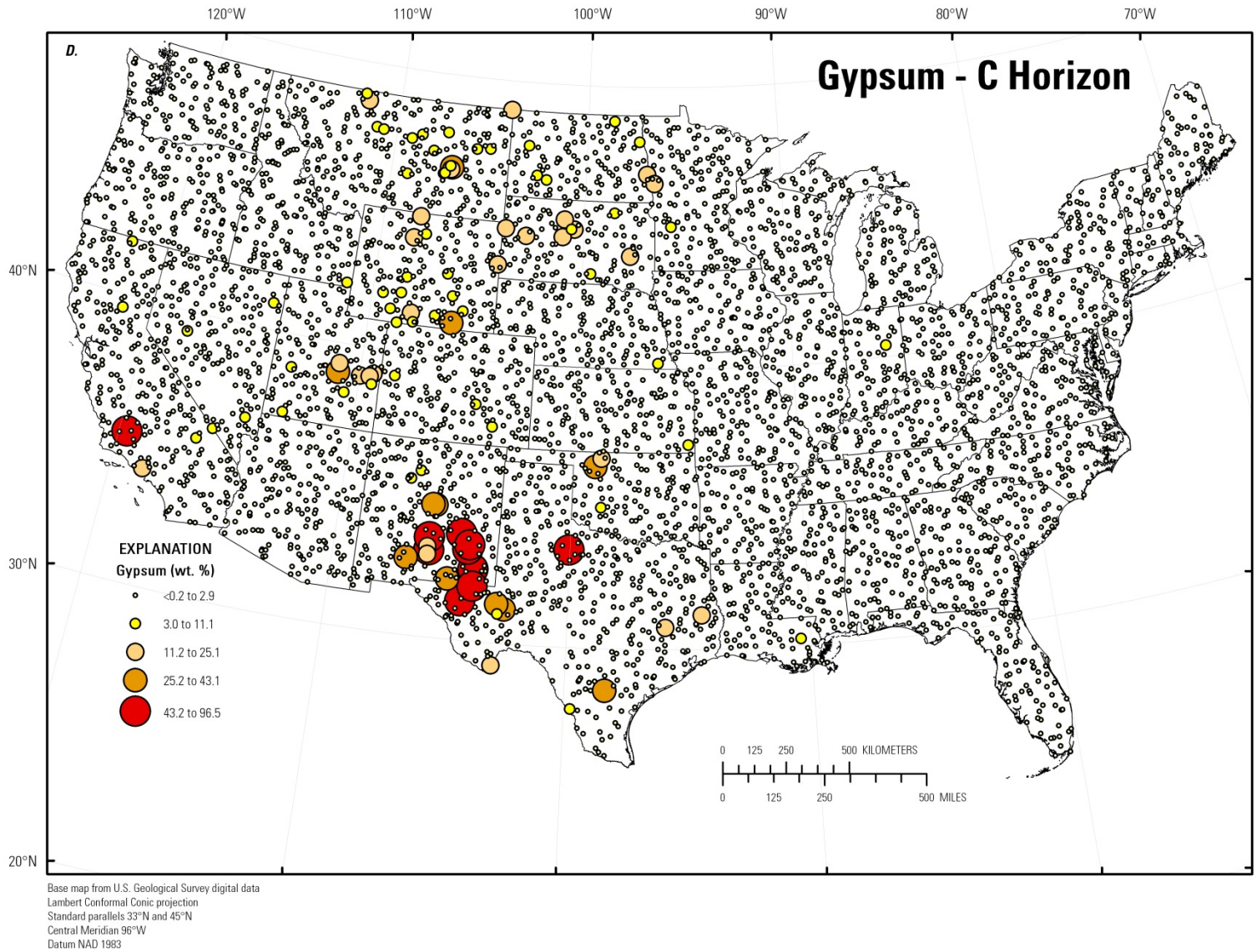


Figure 173. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of gypsum in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Talc in soil A horizon

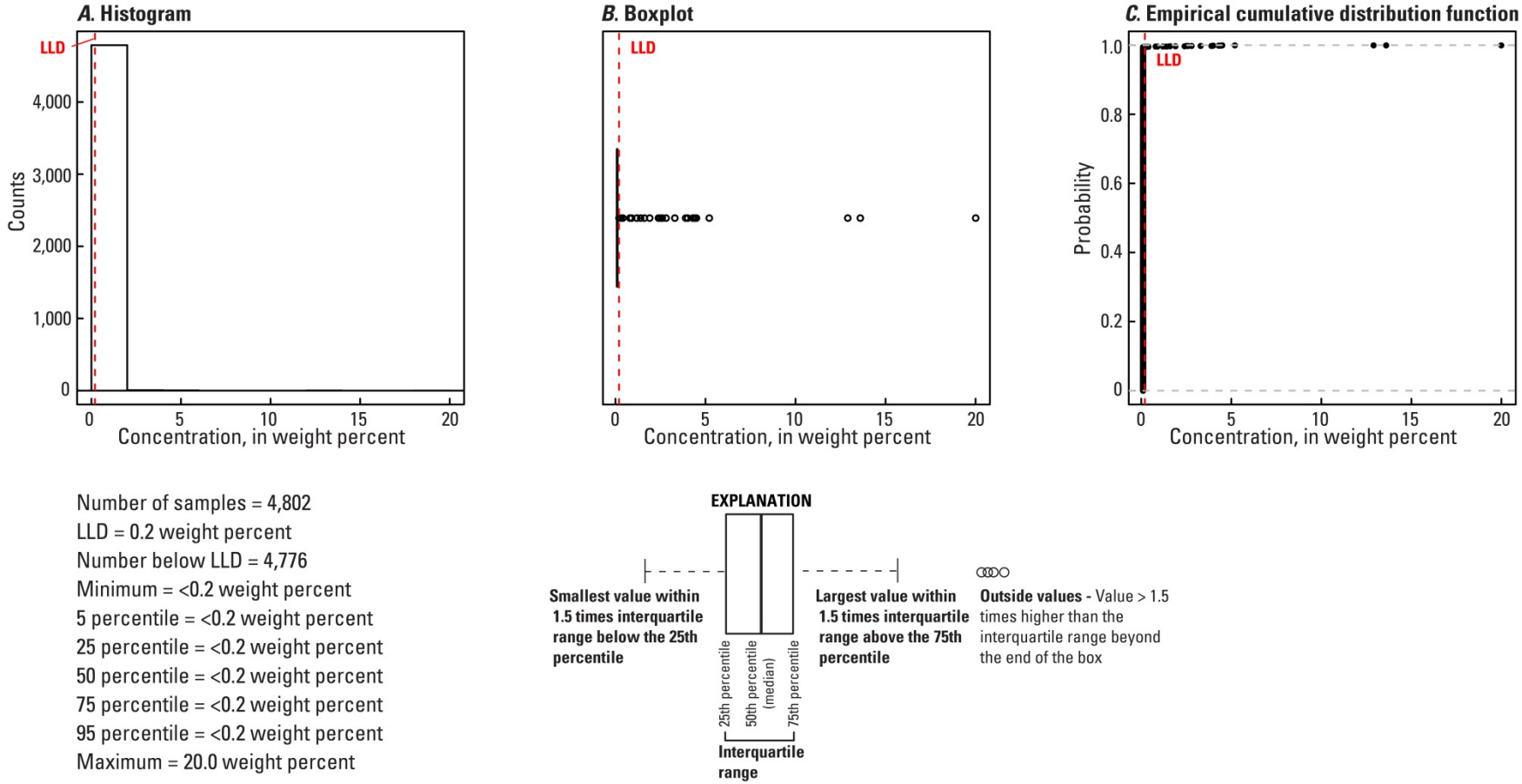


Figure 174. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of talc in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

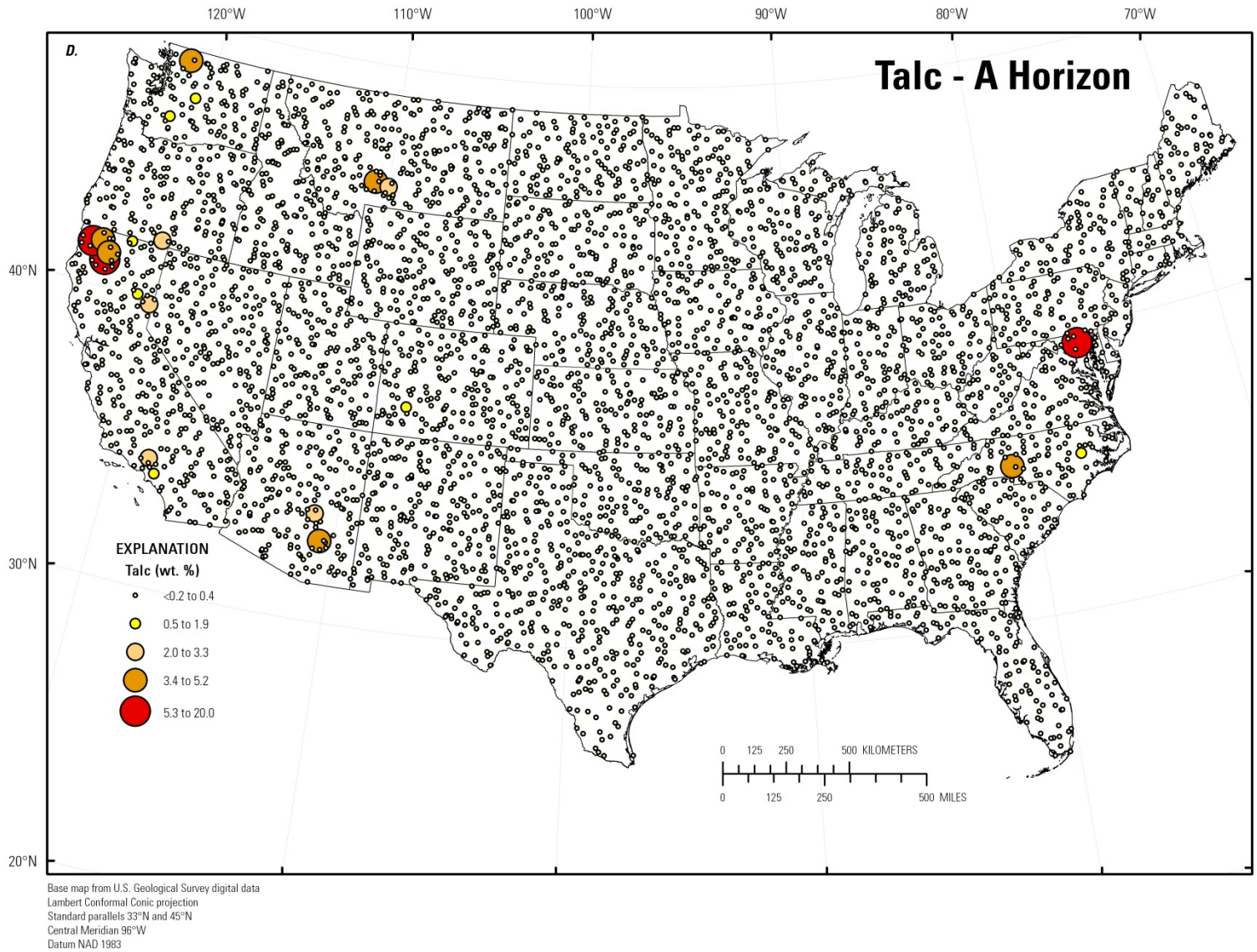
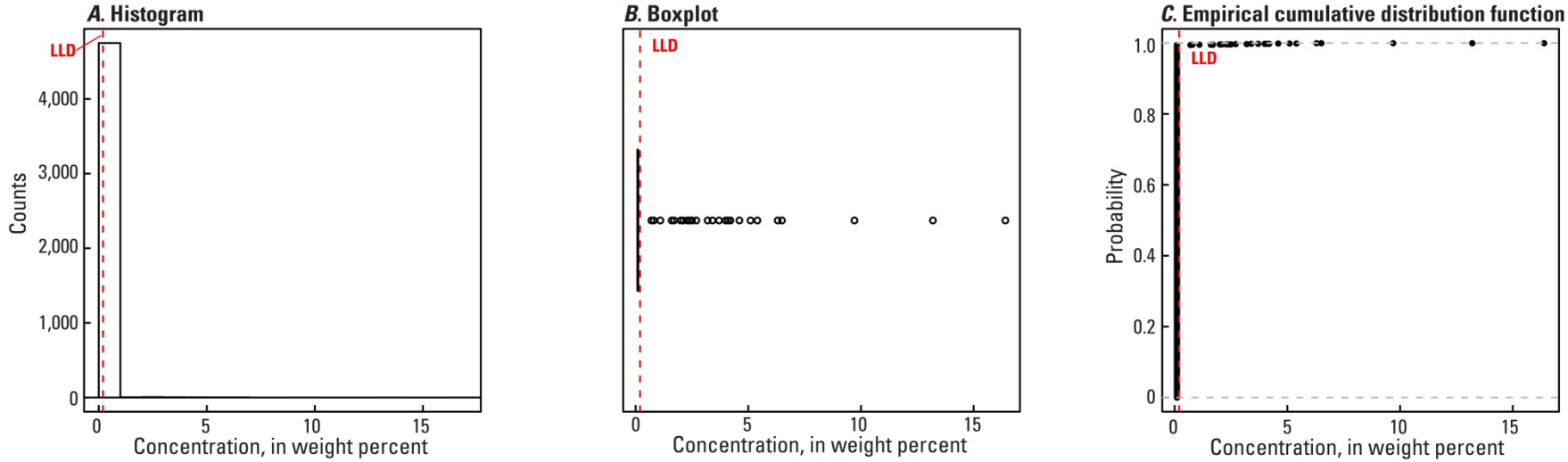


Figure 174. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of talc in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Talc in soil C horizon



Number of samples = 4,773
LLD = 0.2 weight percent
Number below LLD = 4,747
Minimum = <0.2 weight percent
5 percentile = <0.2 weight percent
25 percentile = <0.2 weight percent
50 percentile = <0.2 weight percent
75 percentile = <0.2 weight percent
95 percentile = <0.2 weight percent
Maximum = 16.4 weight percent

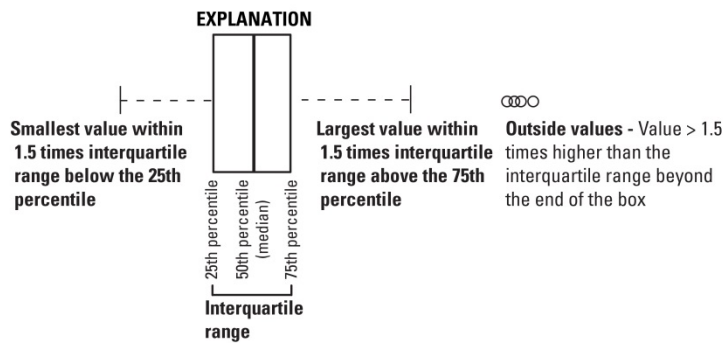


Figure 175. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of talc in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

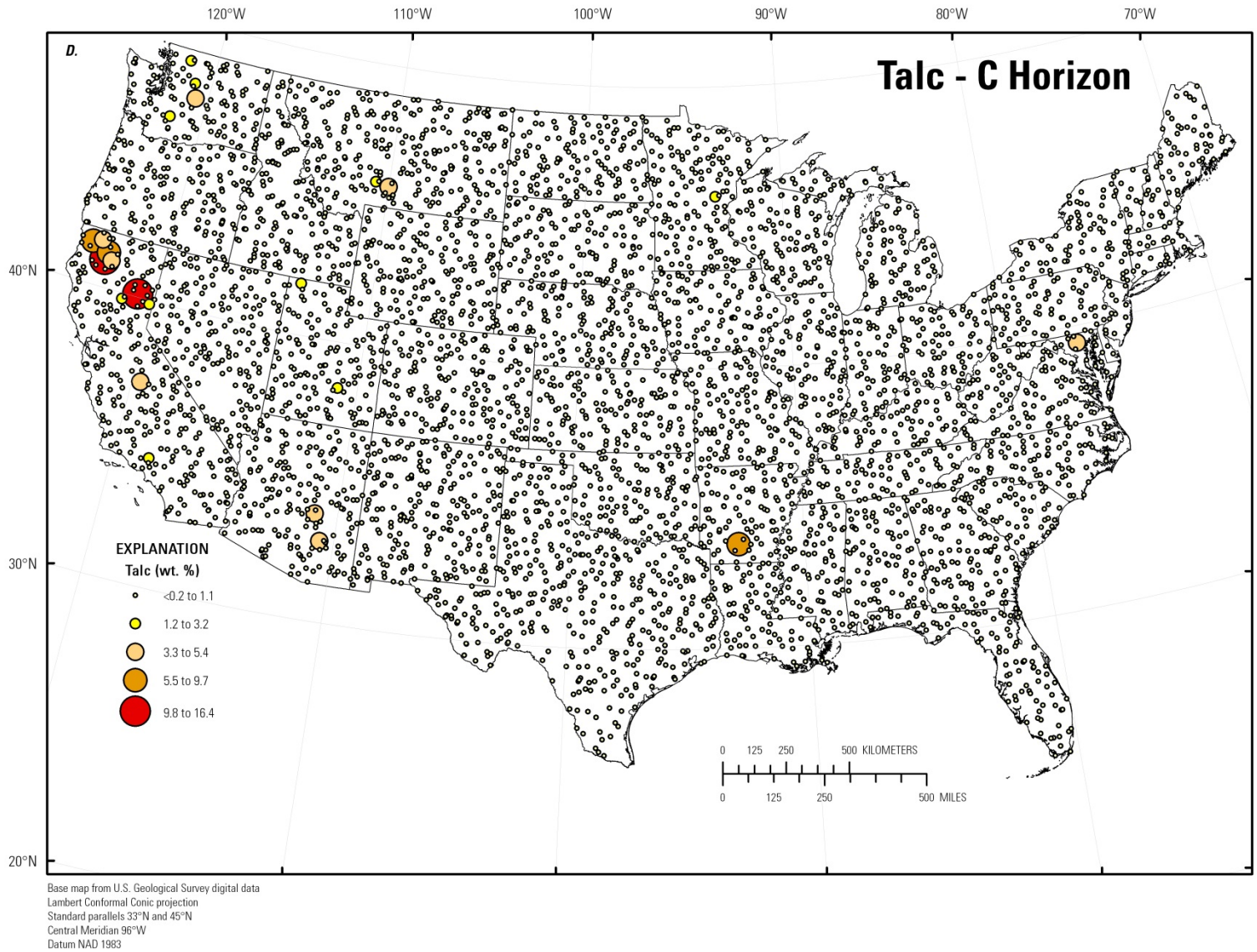


Figure 175. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of talc in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Hornblende in soil A horizon

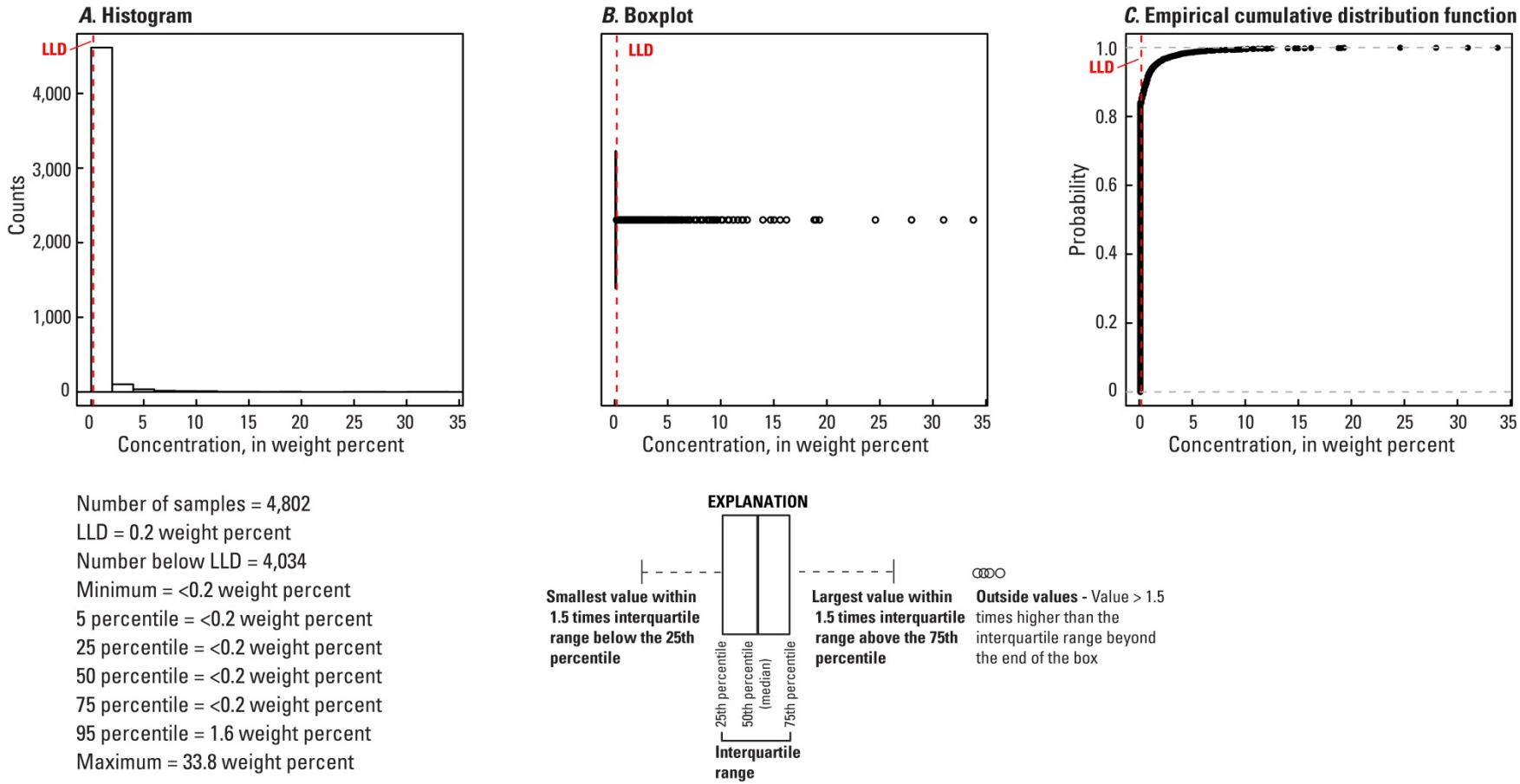


Figure 176. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hornblende in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

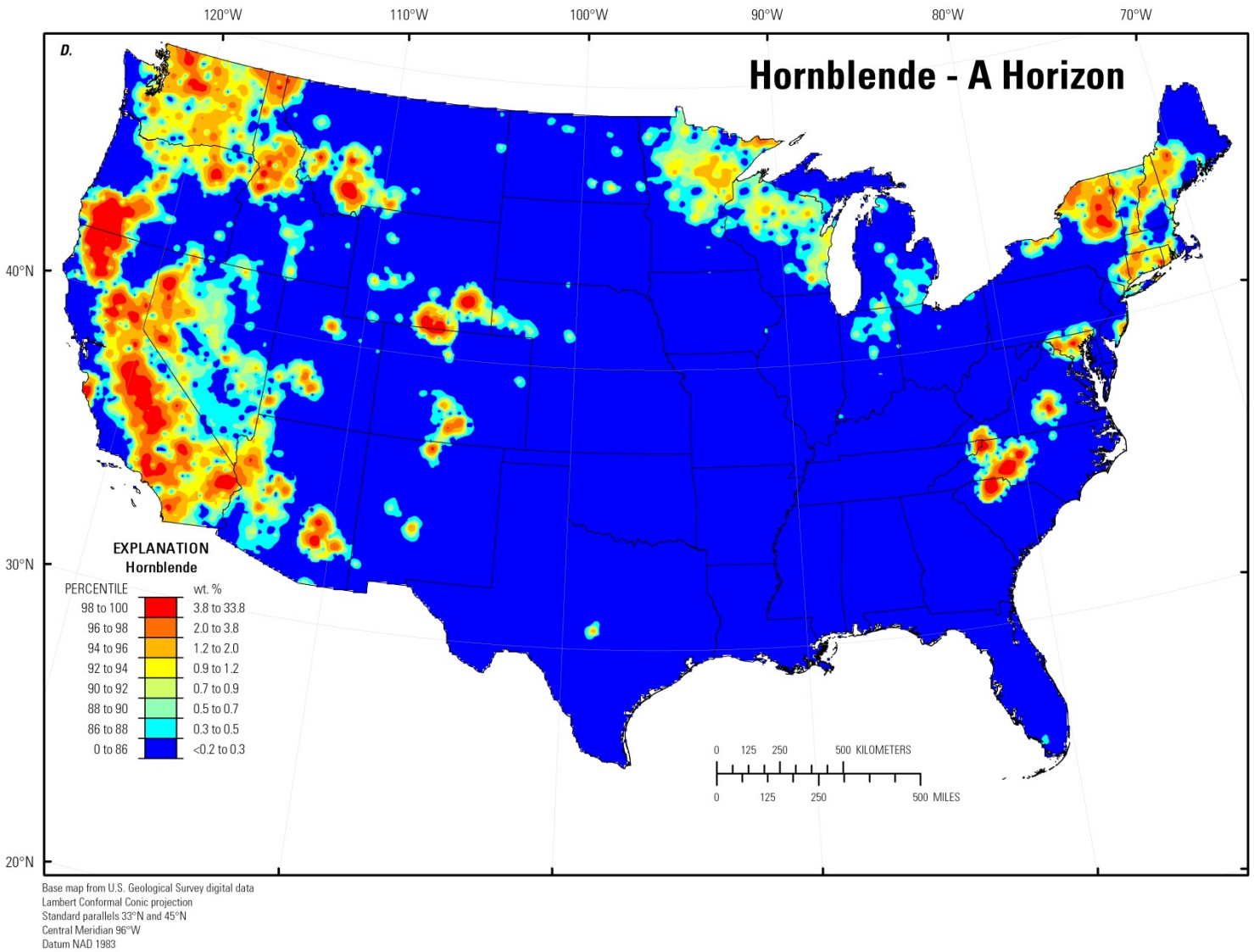


Figure 176. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hornblende in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Hornblende in soil C horizon

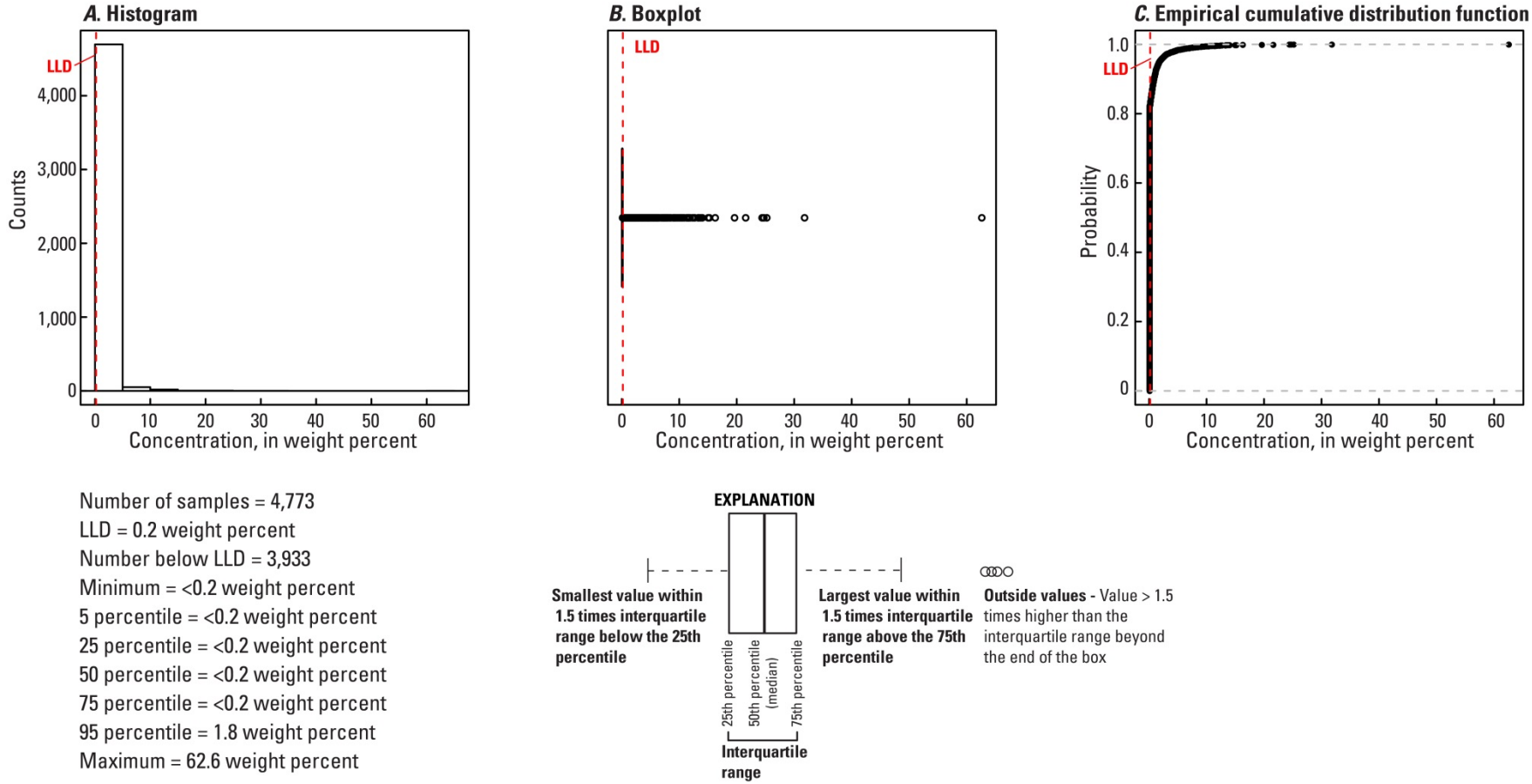


Figure 177. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hornblende in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

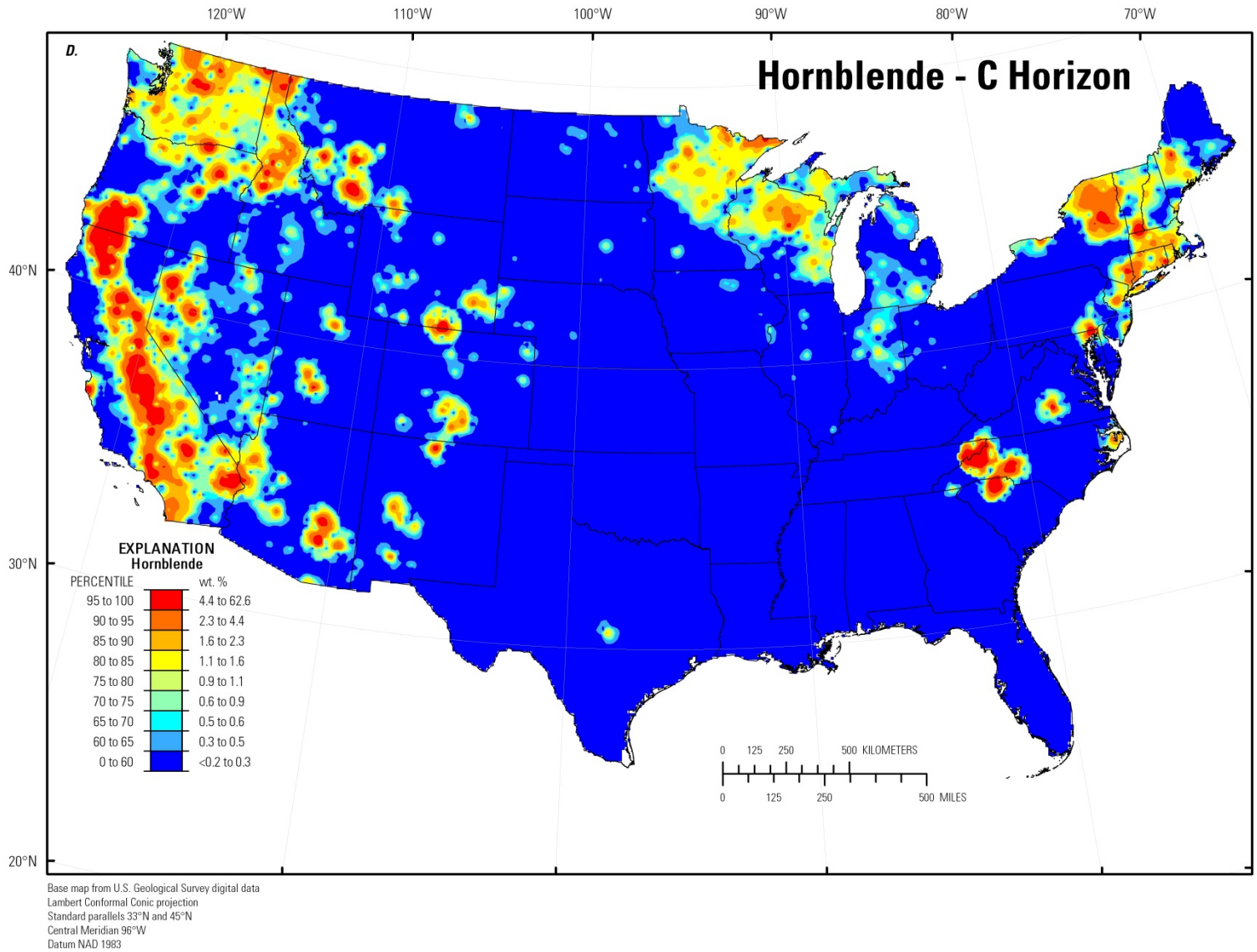


Figure 177. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hornblende in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Serpentine in soil A horizon

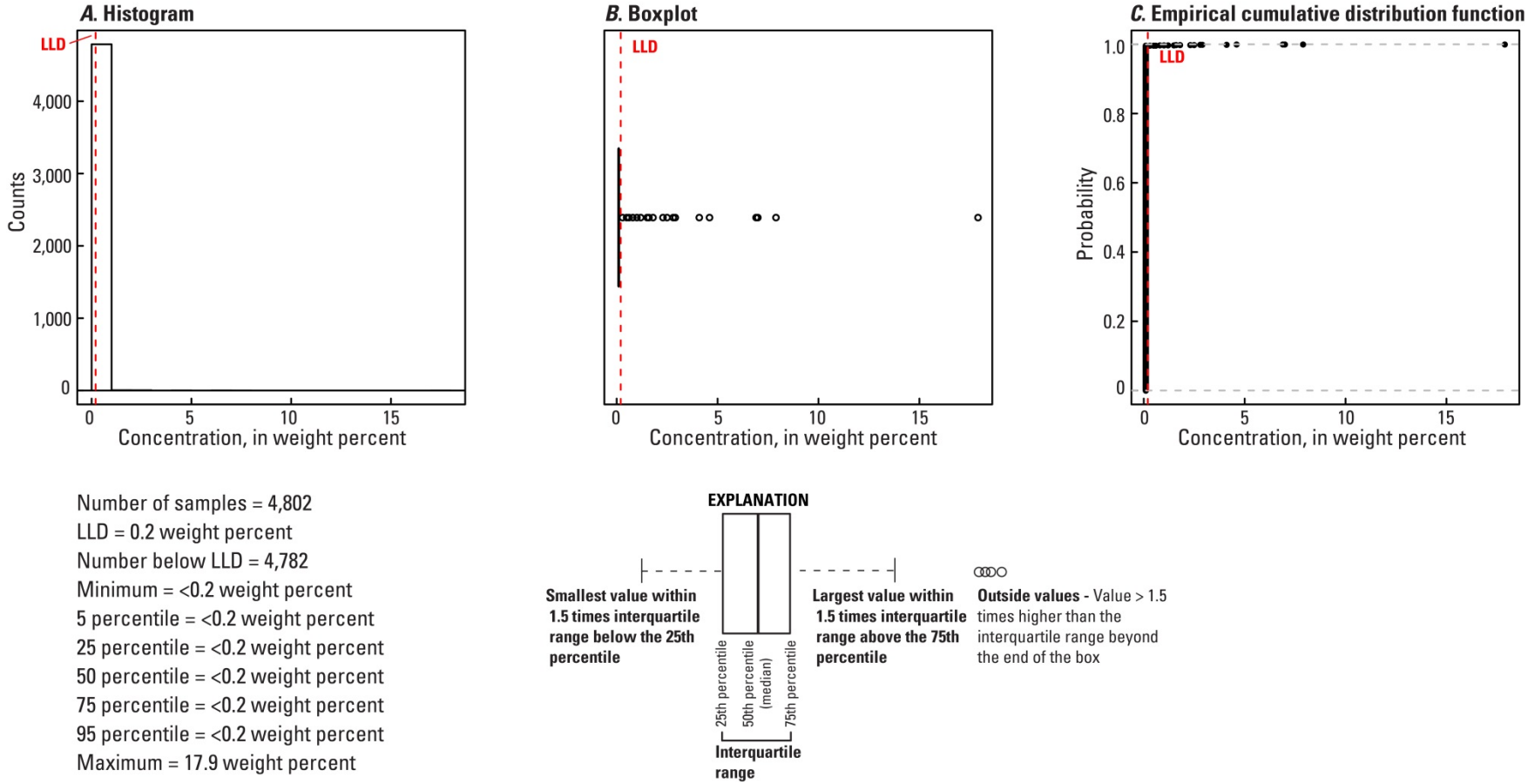


Figure 178. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of serpentine in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

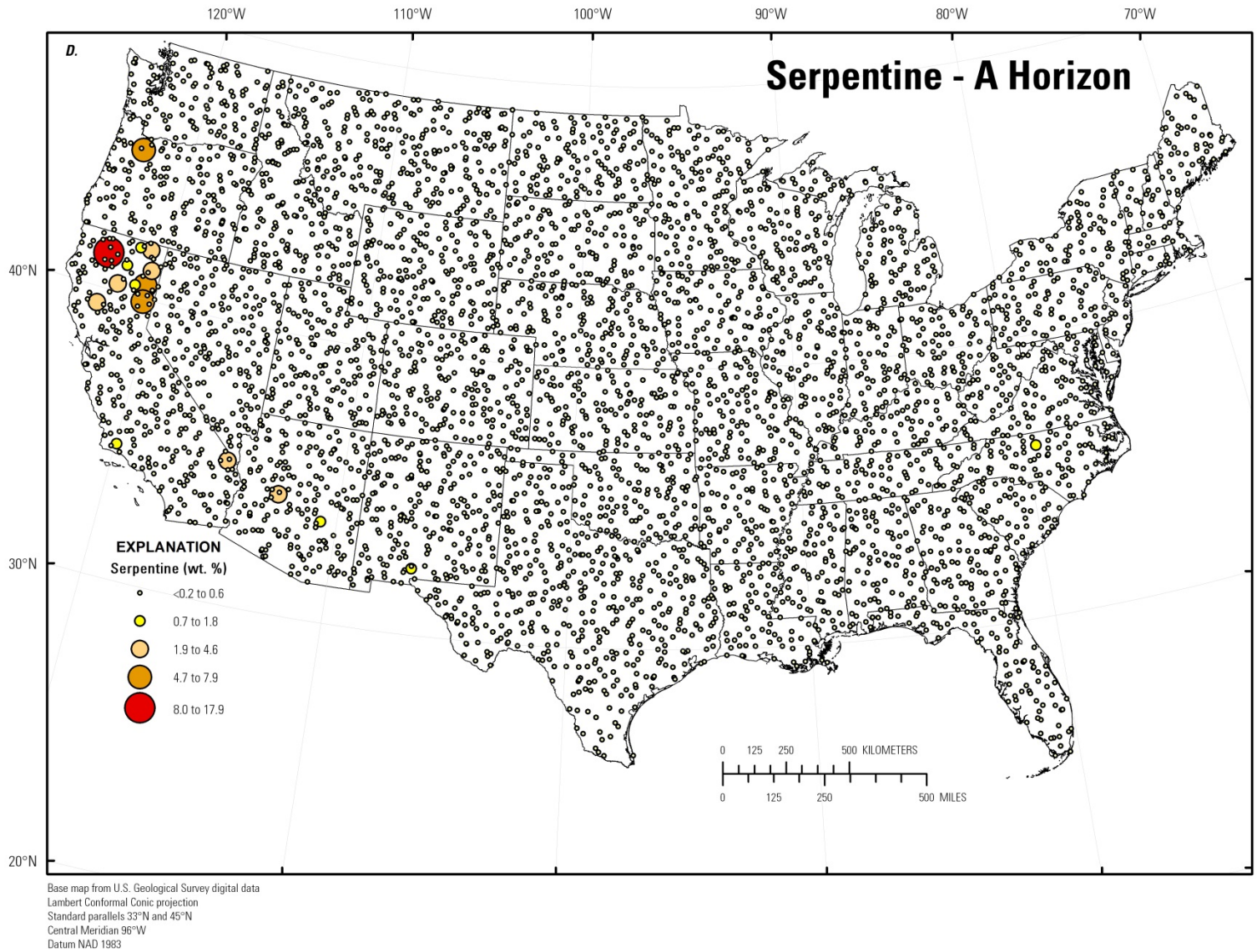


Figure 178. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of serpentine in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Serpentine in soil C horizon

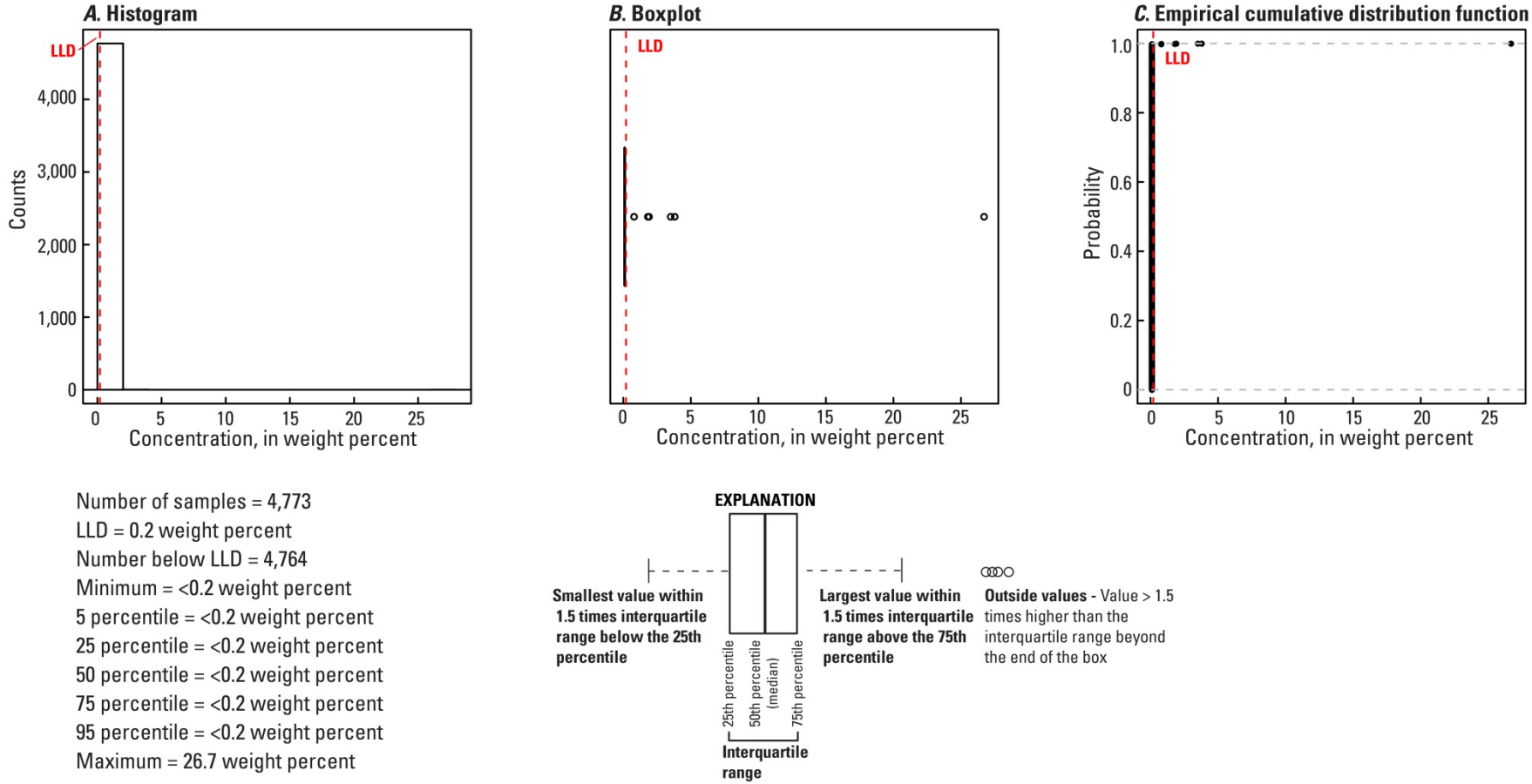


Figure 179. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of serpentine in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

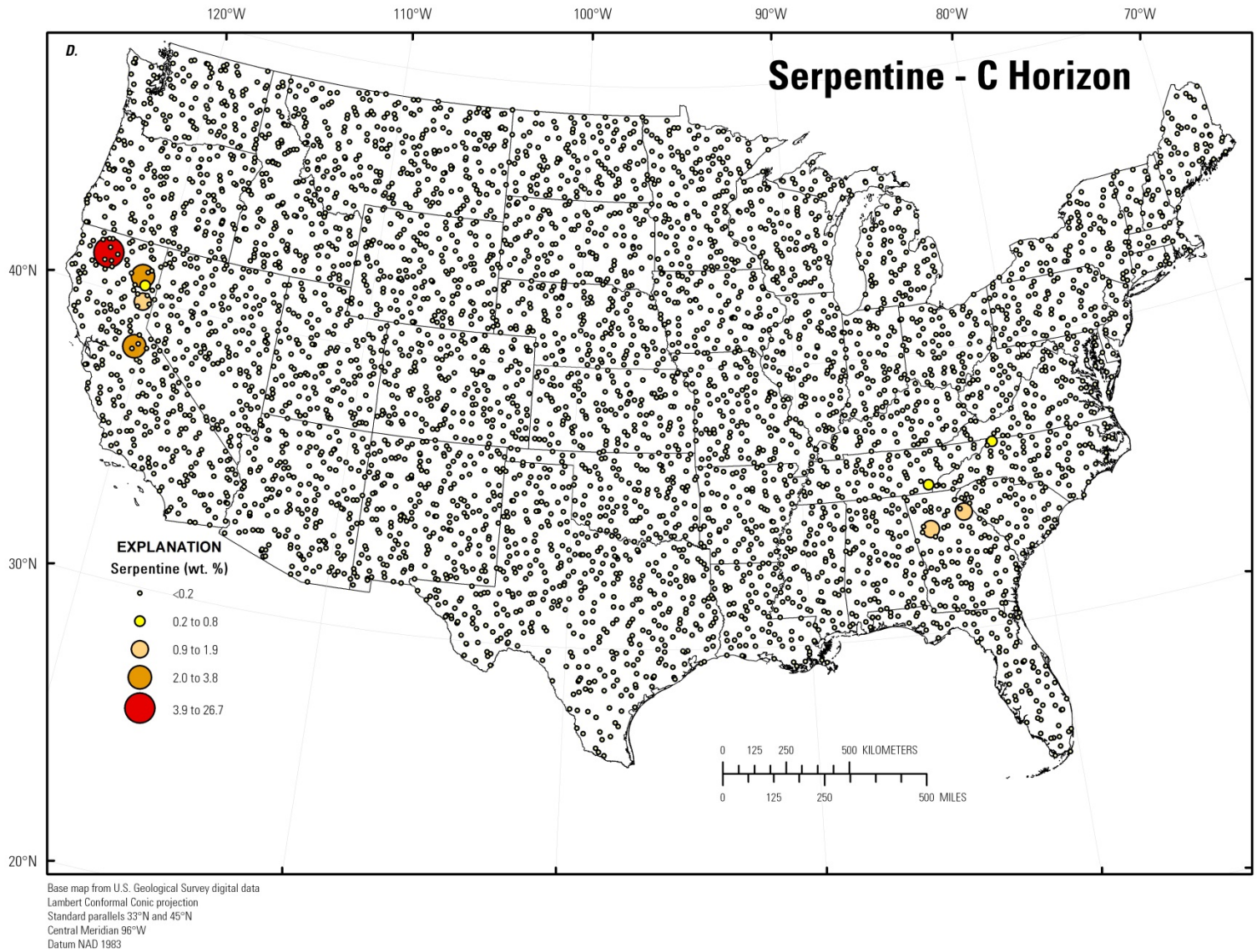


Figure 179. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of serpentine in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Hematite in soil A horizon

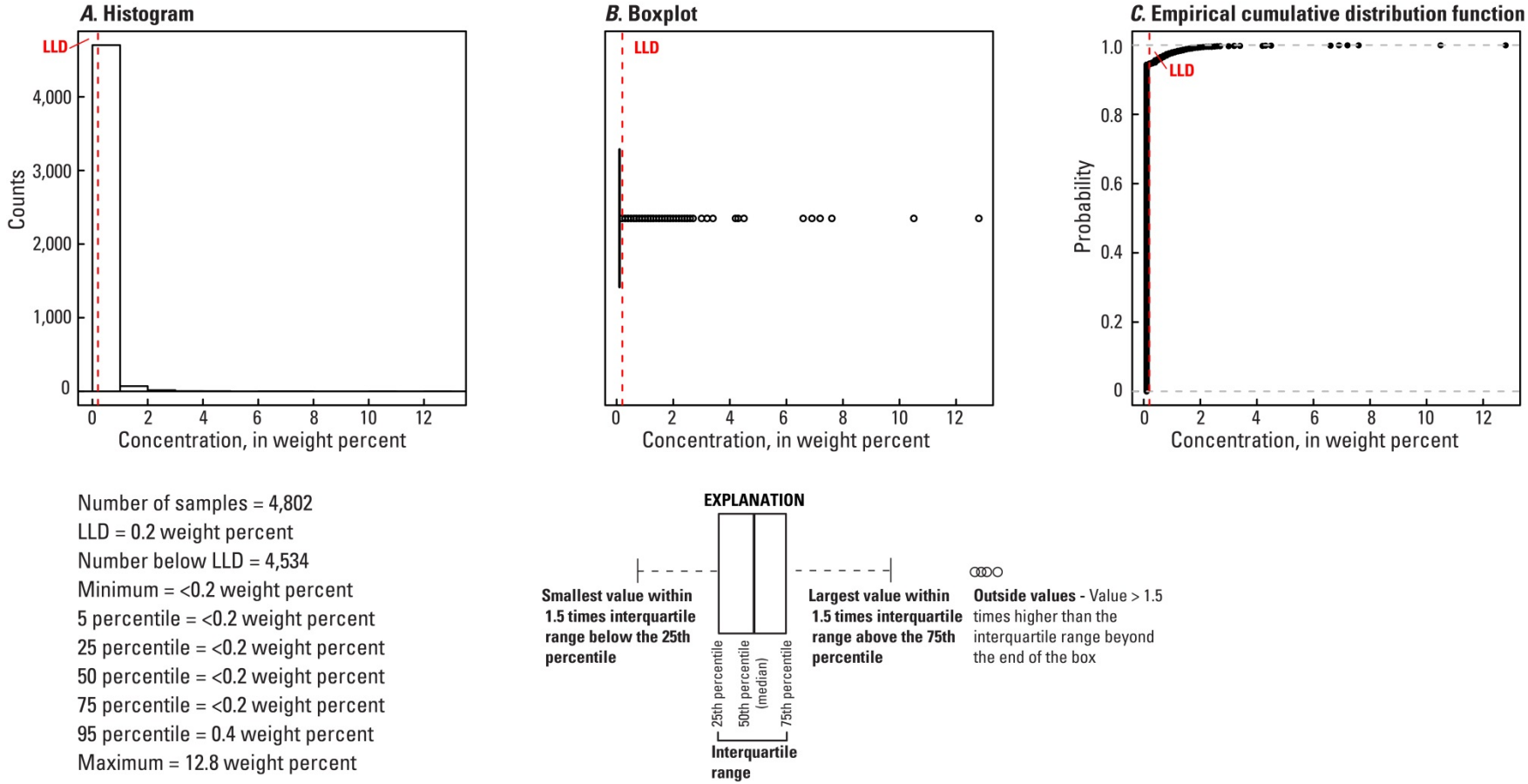


Figure 180. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hematite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

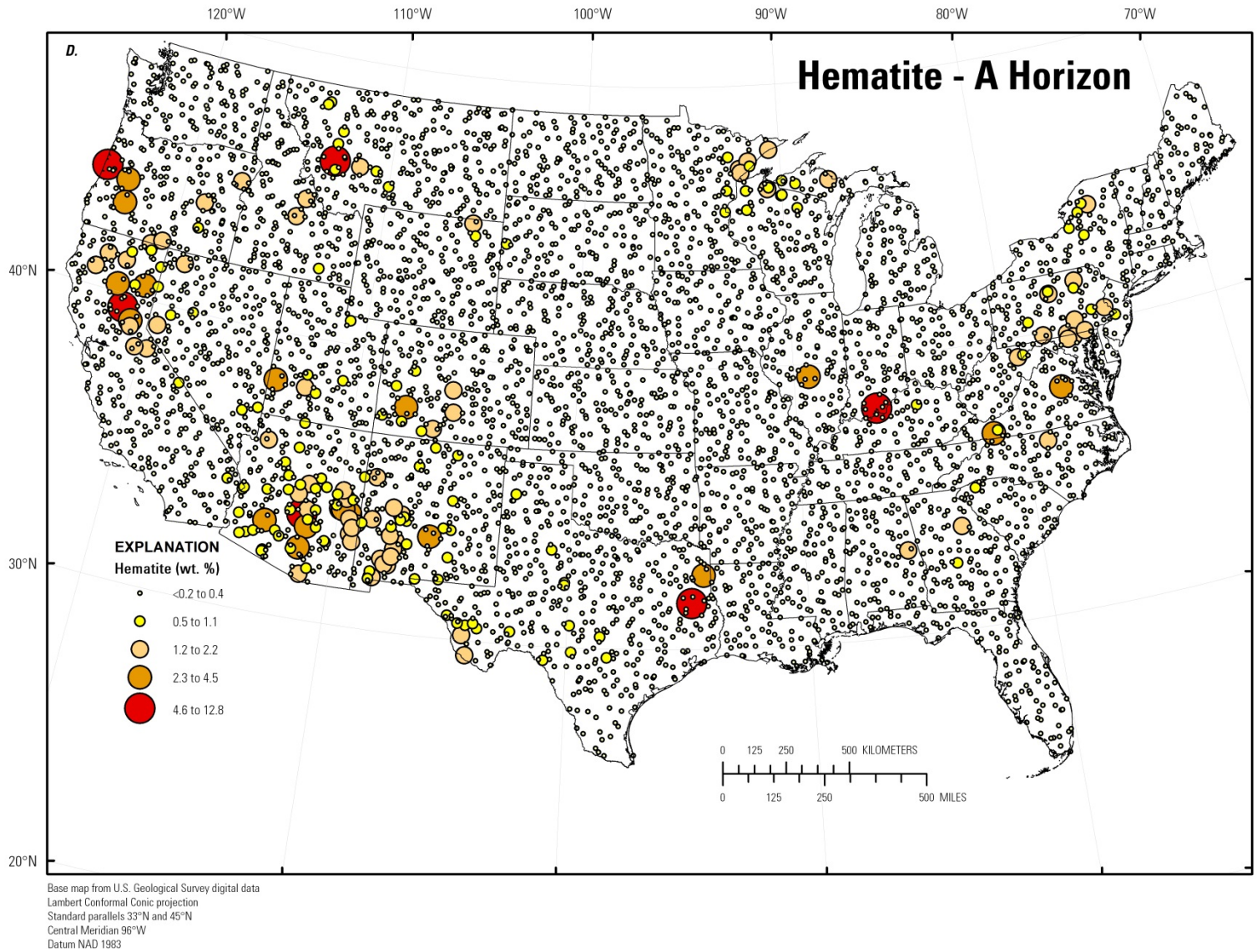


Figure 180. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hematite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Hematite in soil C horizon

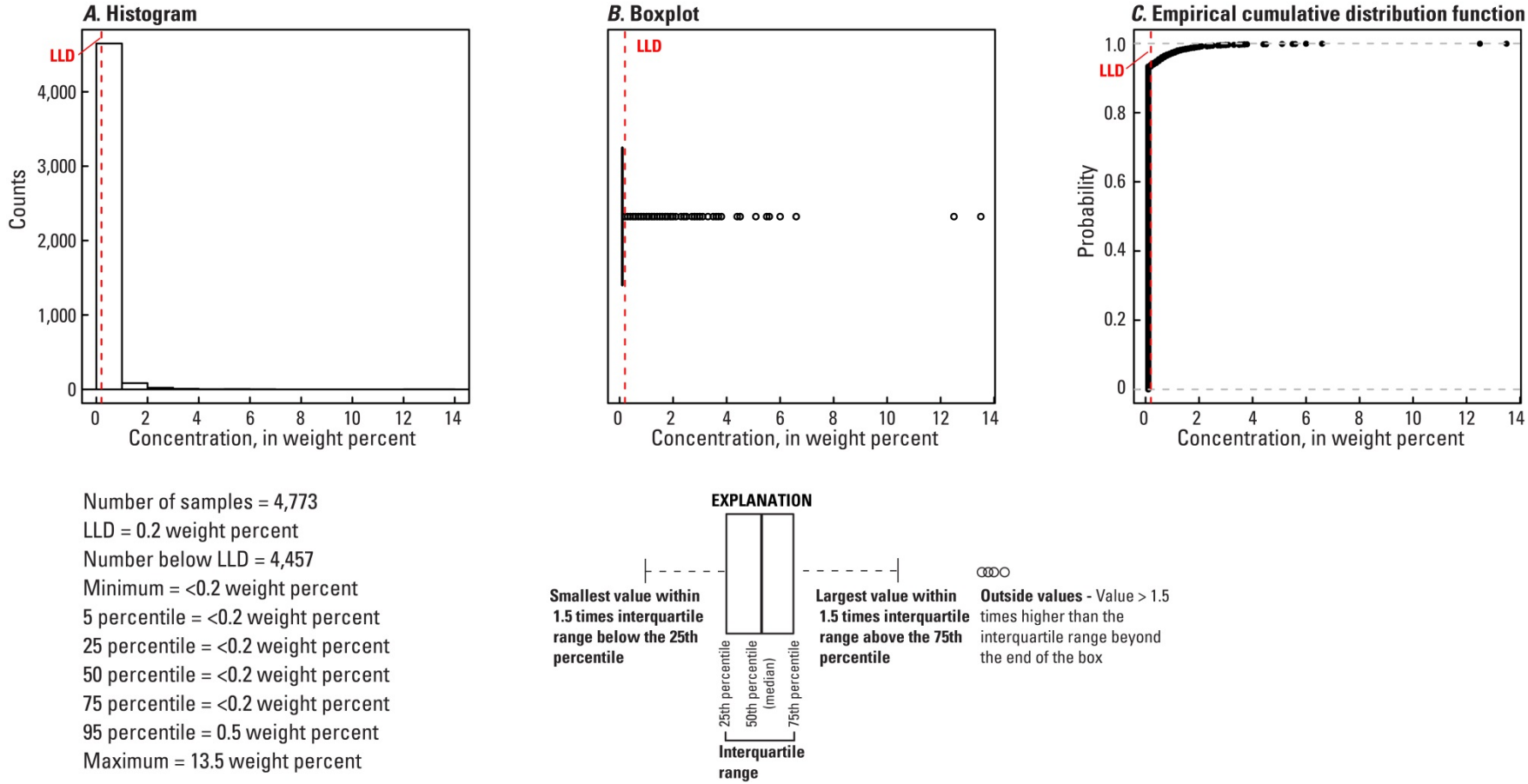


Figure 181. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hematite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

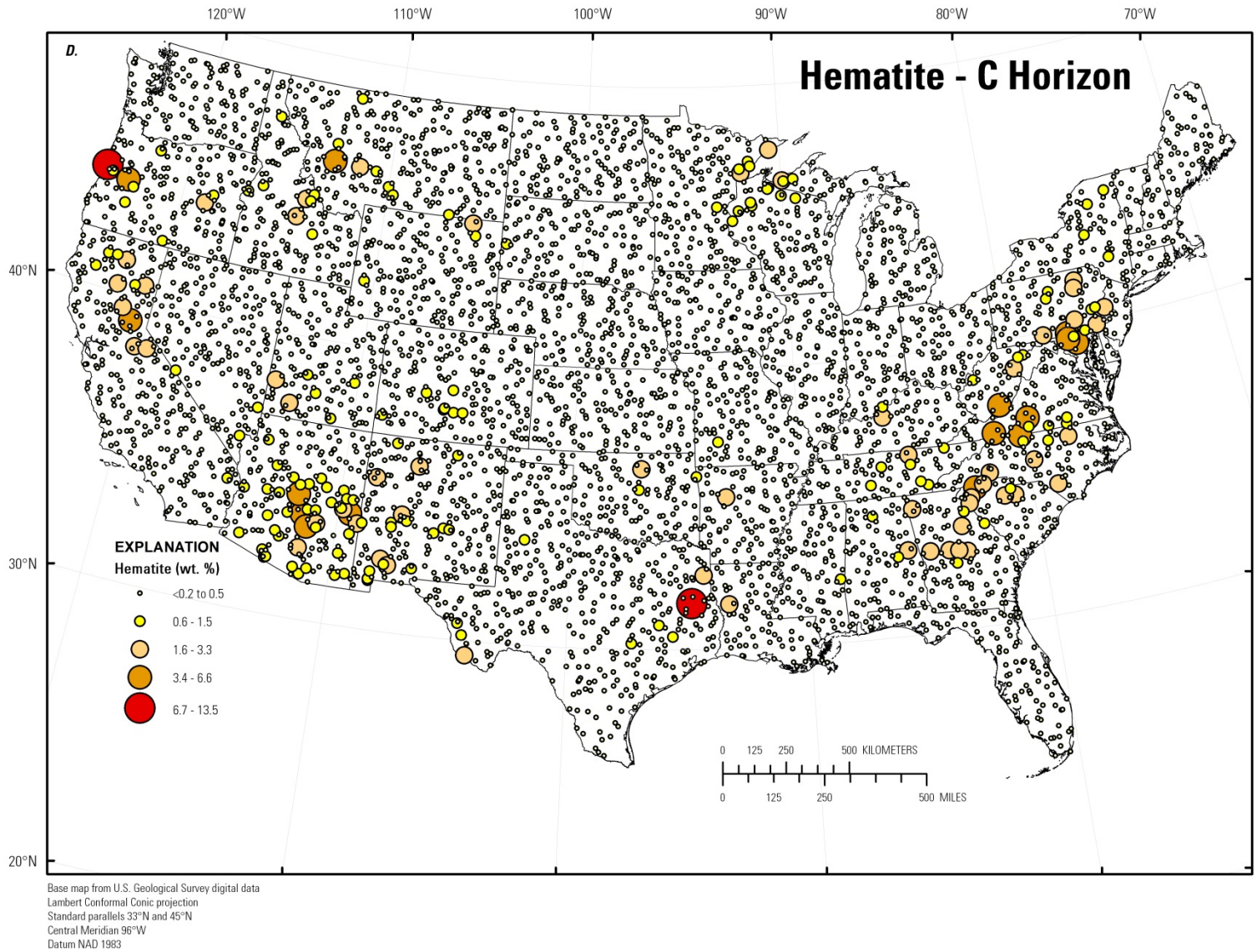


Figure 181. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of hematite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Goethite in soil A horizon

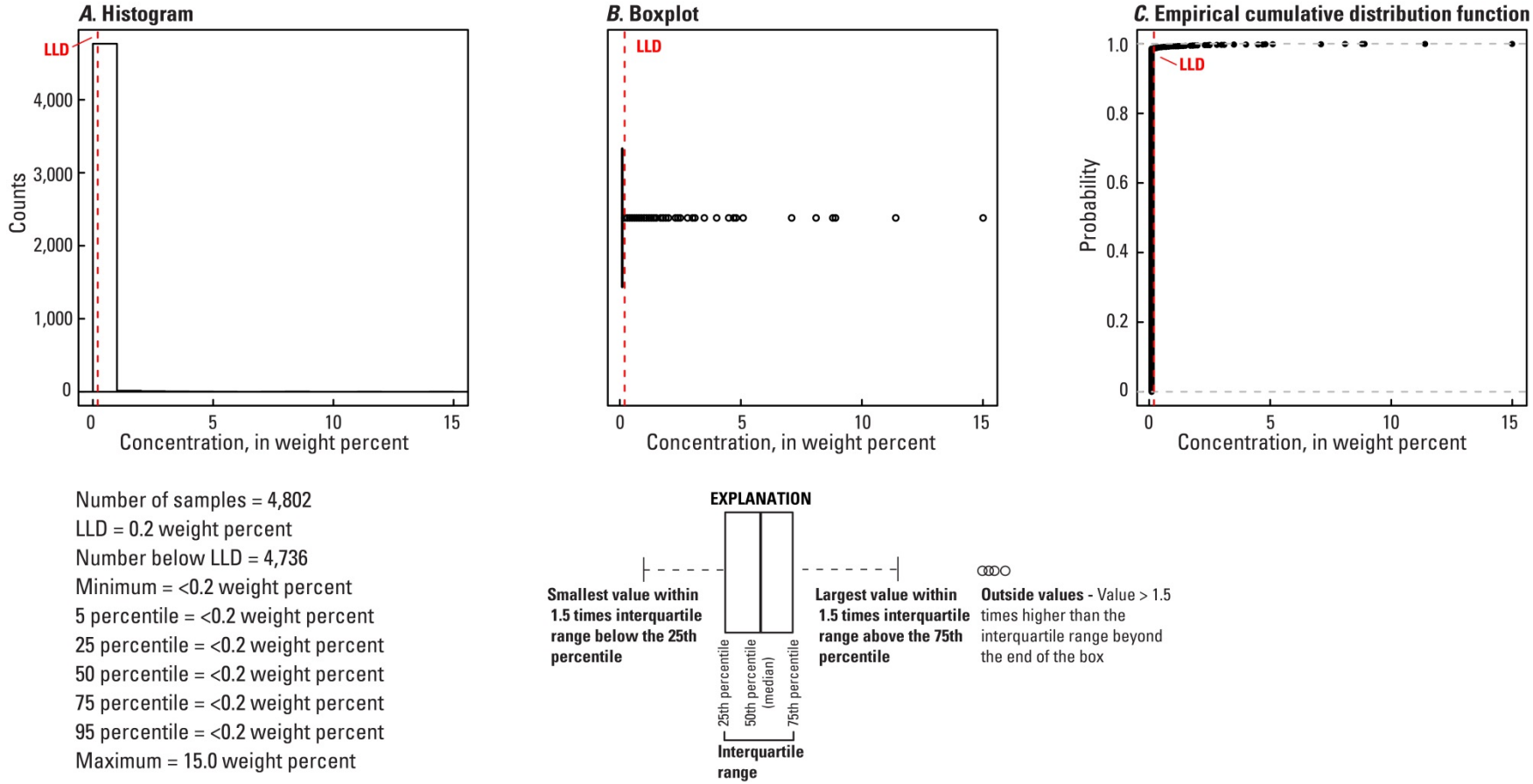


Figure 182. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of goethite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

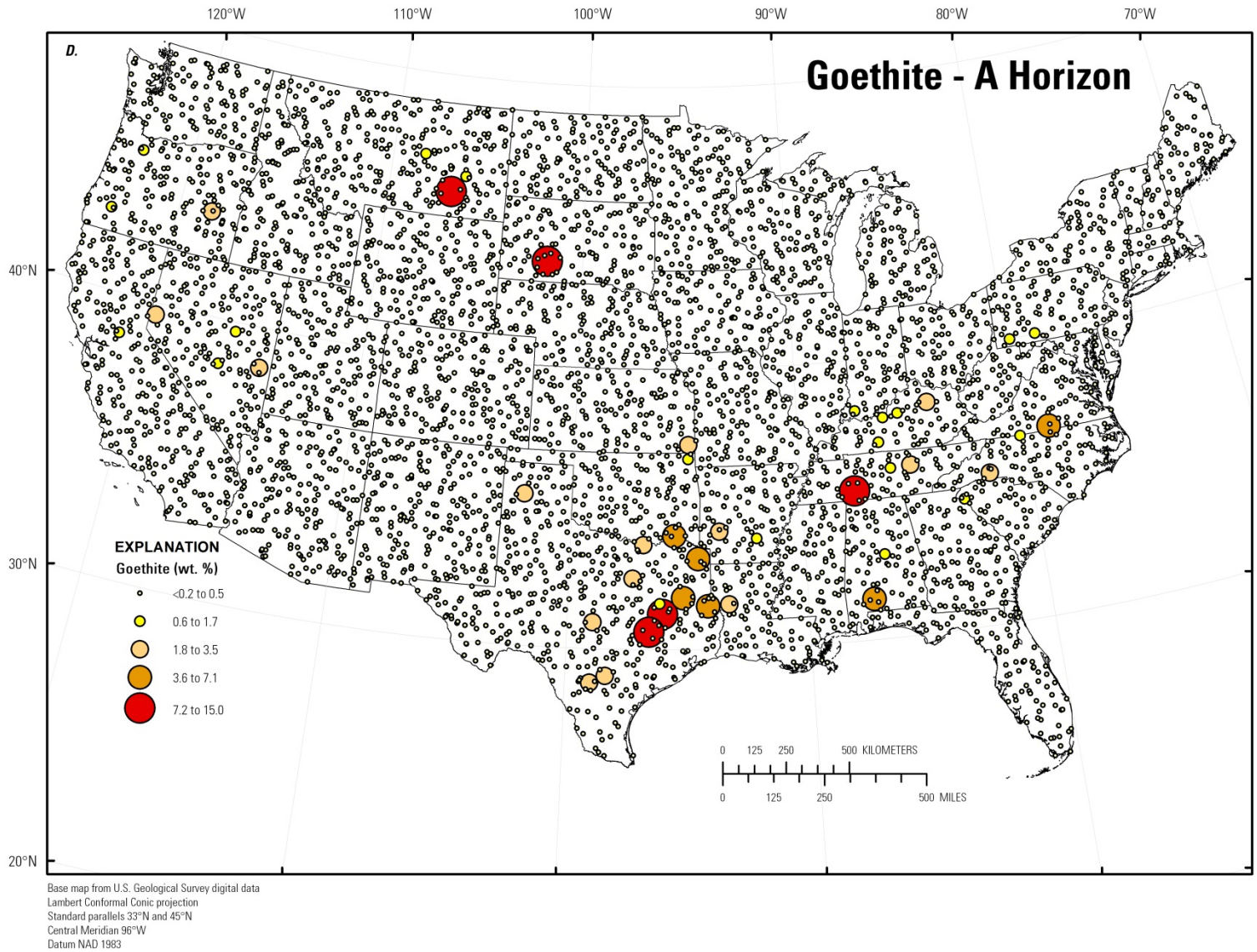


Figure 182. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of goethite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

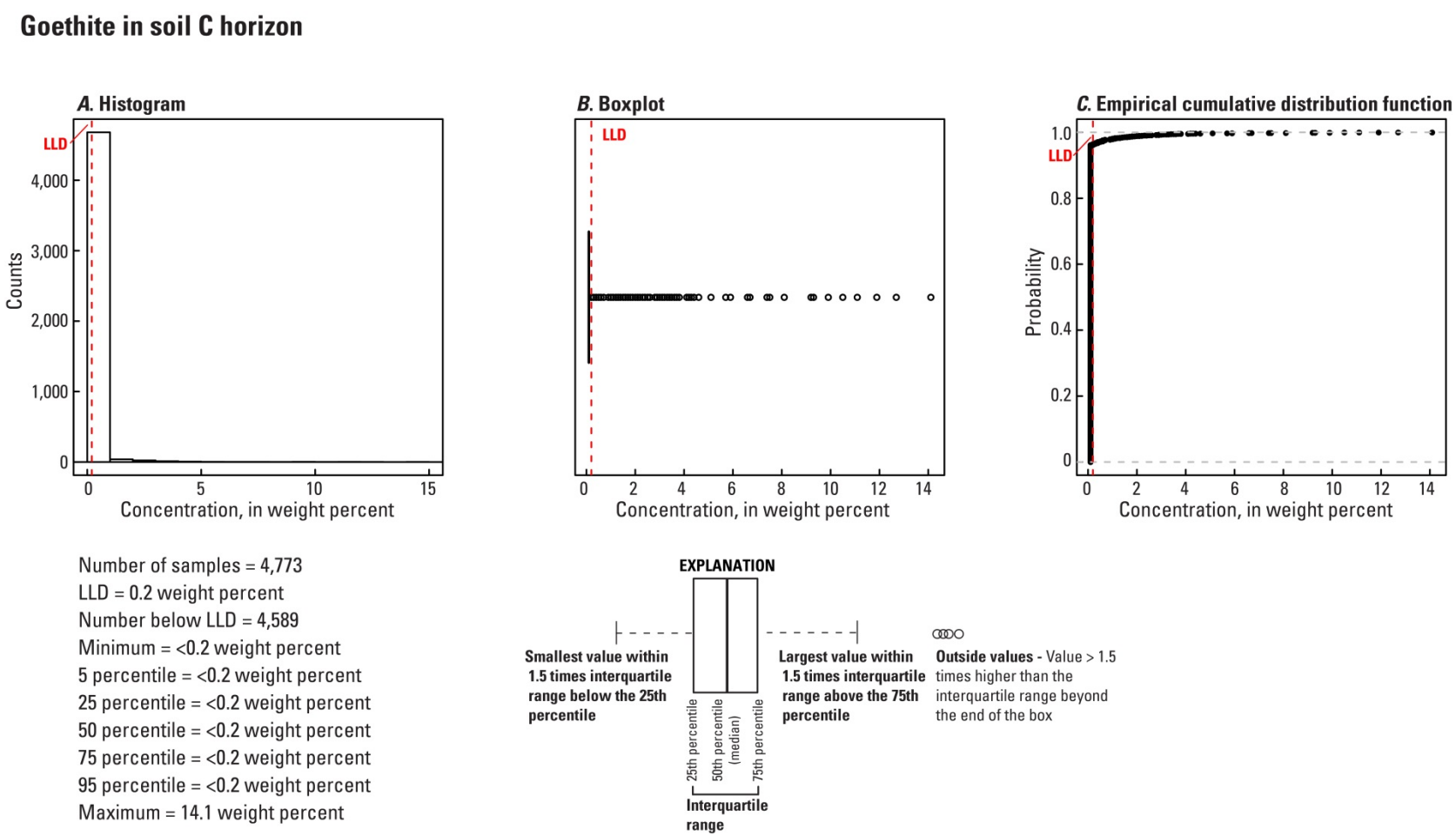


Figure 183. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of goethite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

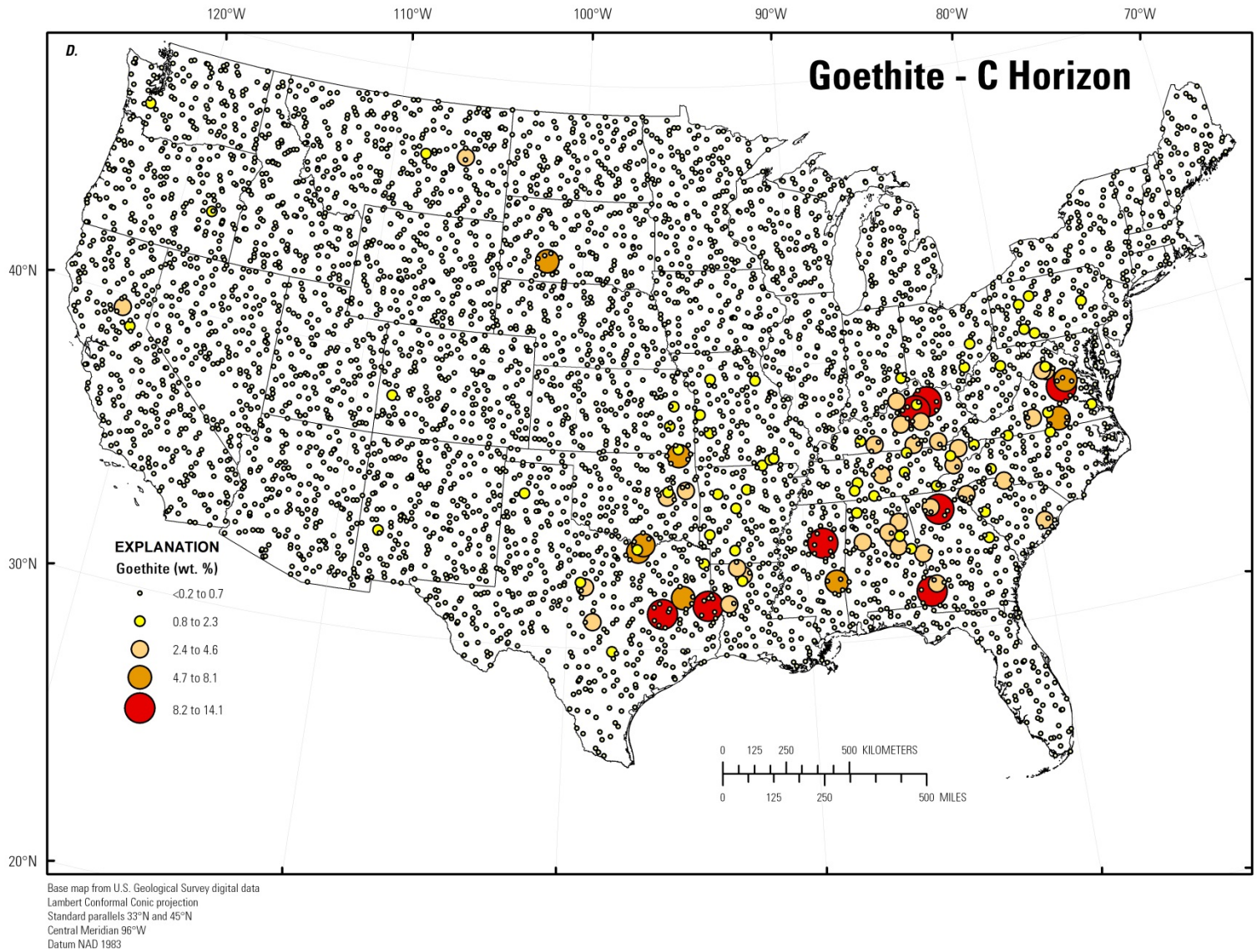
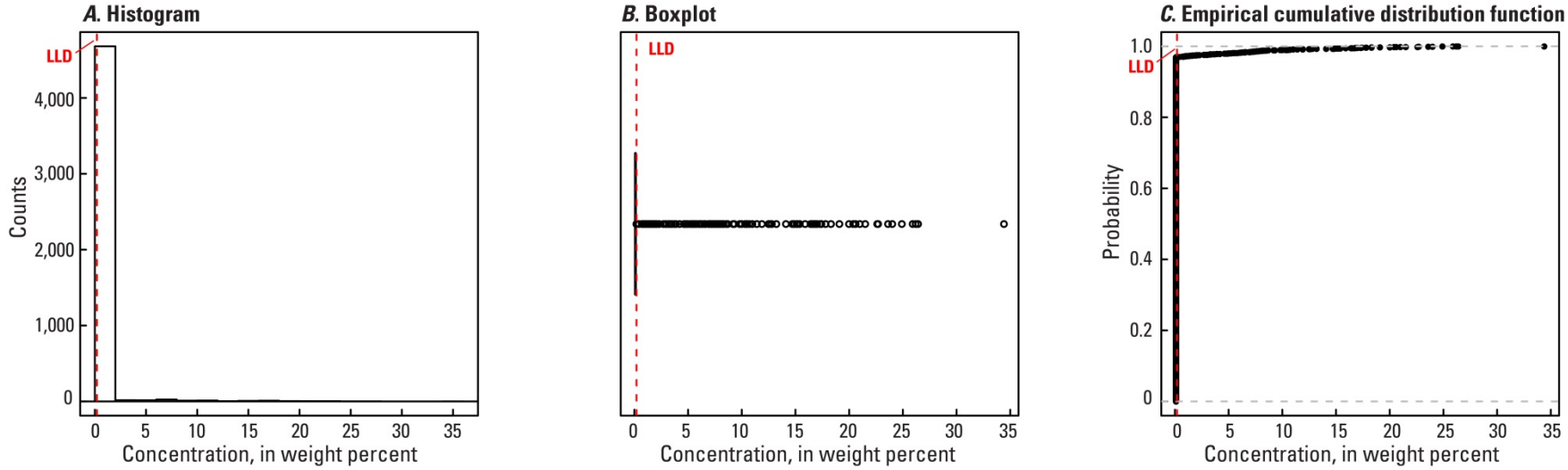


Figure 183. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of goethite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Pyroxene in soil A horizon



Number of samples = 4,802
LLD = 0.2 weight percent
Number below LLD = 4,655
Minimum = <0.2 weight percent
5 percentile = <0.2 weight percent
25 percentile = <0.2 weight percent
50 percentile = <0.2 weight percent
75 percentile = <0.2 weight percent
95 percentile = <0.2 weight percent
Maximum = 34.4 weight percent

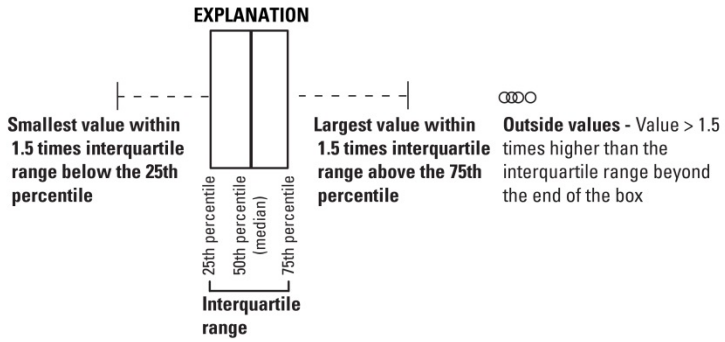


Figure 184. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyroxene in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

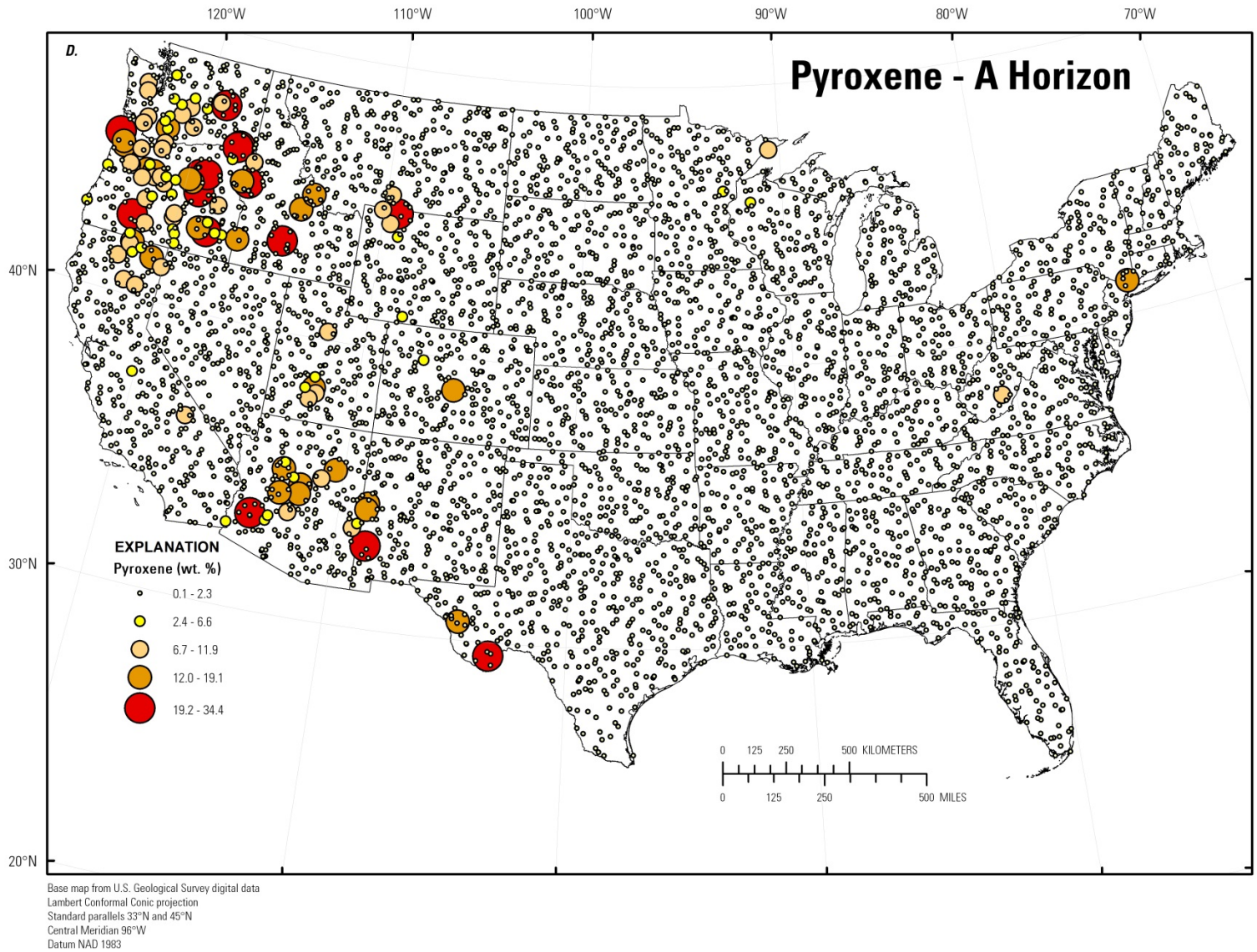


Figure 184. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyroxene in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Pyroxene in soil C horizon

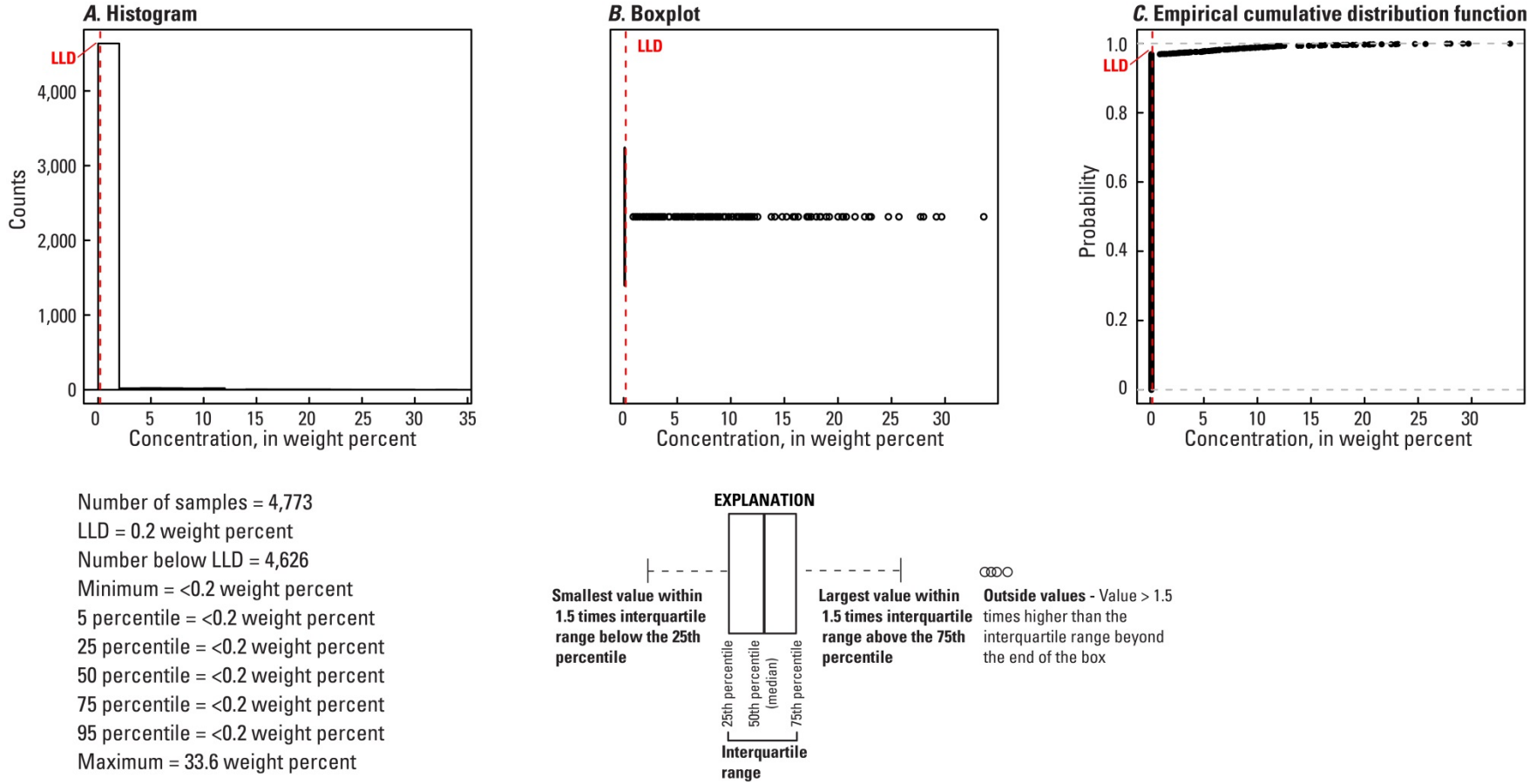


Figure 185. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyroxene in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

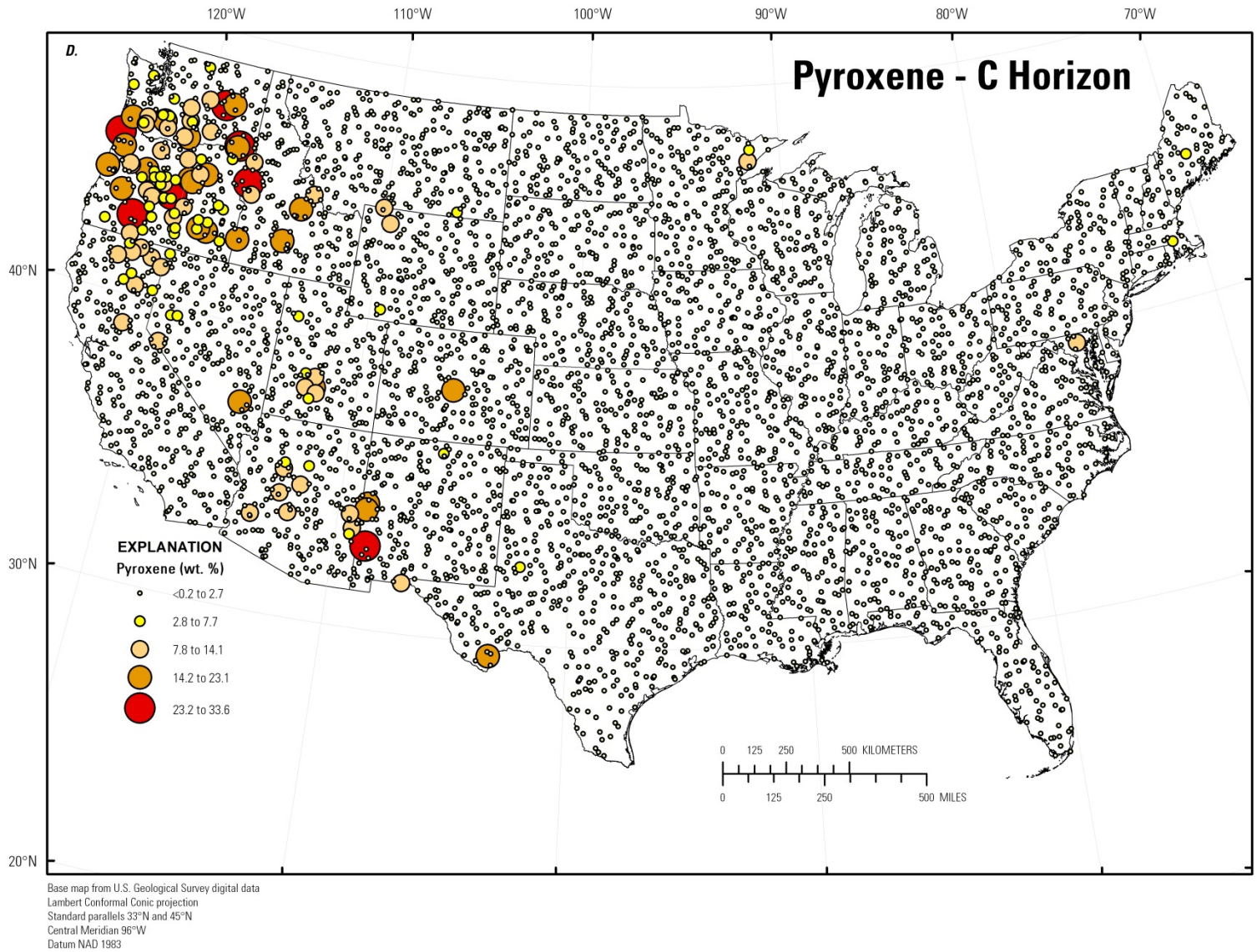
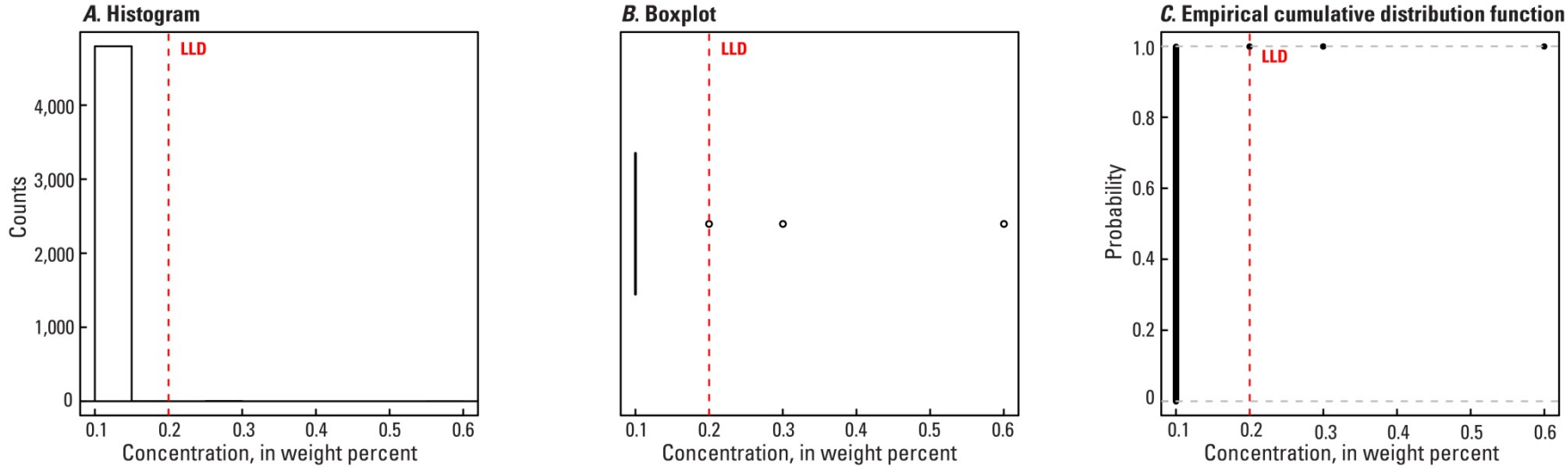


Figure 185. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyroxene in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Pyrite in soil A horizon



Number of samples = 4,802
LLD = 0.2 weight percent
Number below LLD = 4,796
Minimum = <0.2 weight percent
5 percentile = <0.2 weight percent
25 percentile = <0.2 weight percent
50 percentile = <0.2 weight percent
75 percentile = <0.2 weight percent
95 percentile = <0.2 weight percent
Maximum = 0.6 weight percent

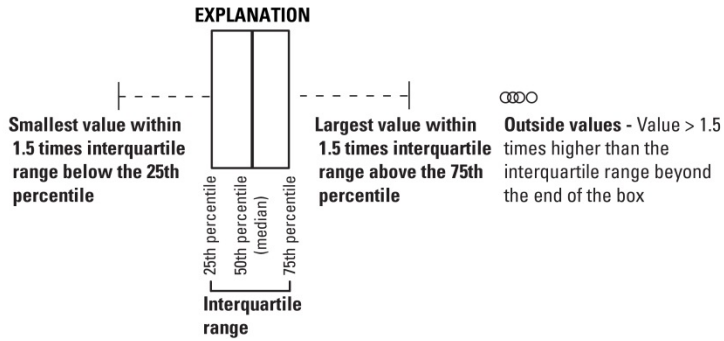


Figure 186. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyrite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

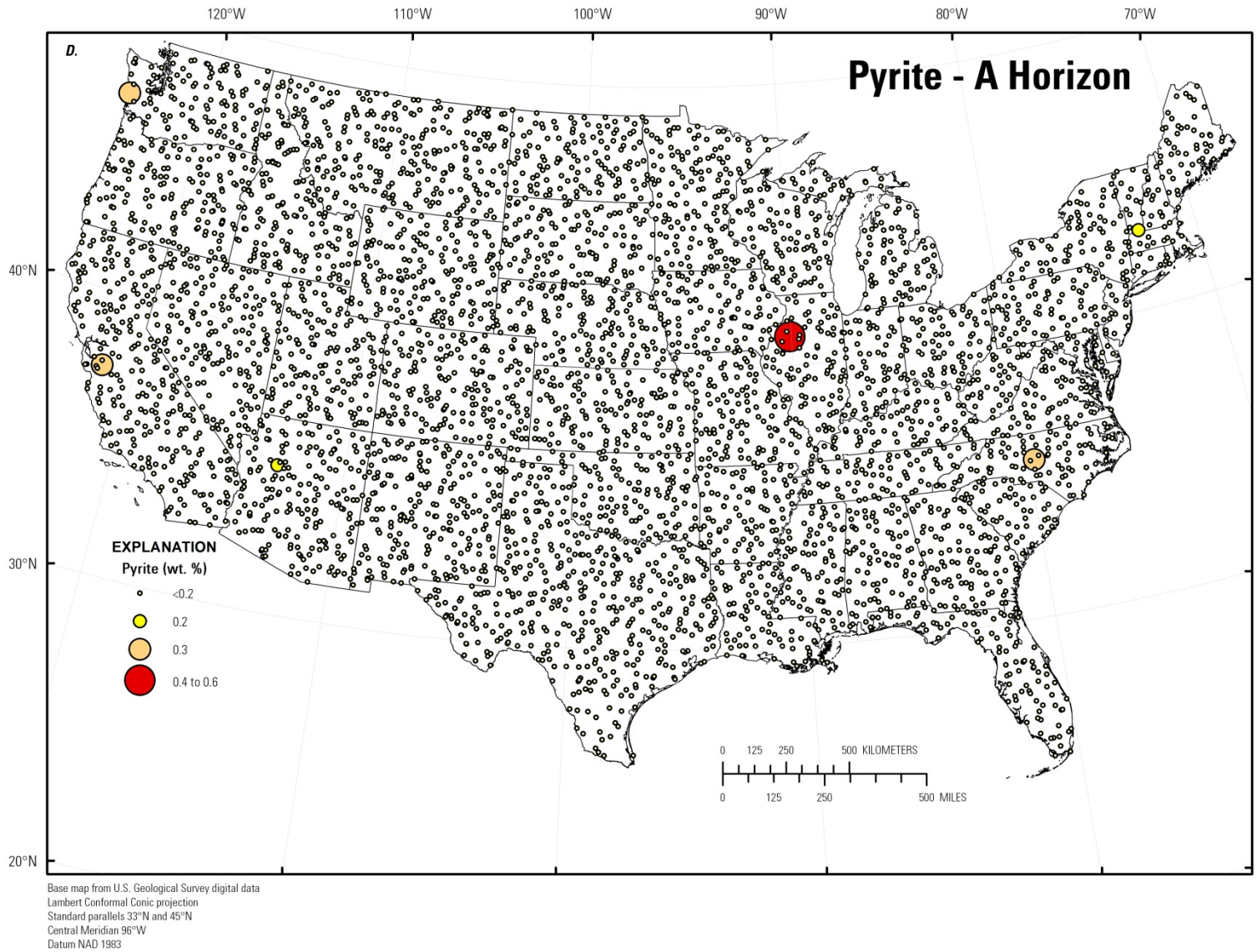


Figure 186. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyrite in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

Pyrite in soil C horizon

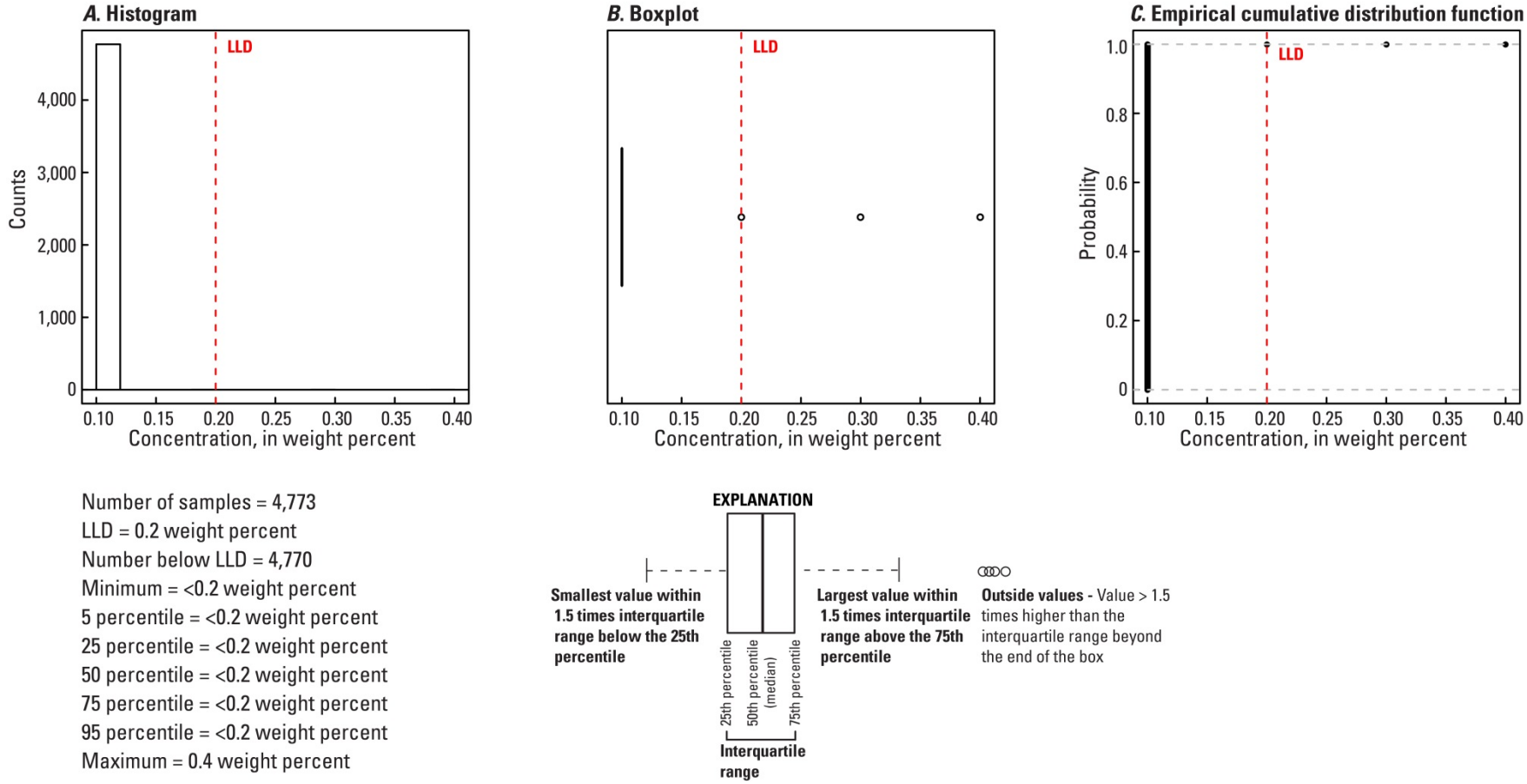


Figure 187. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyrite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

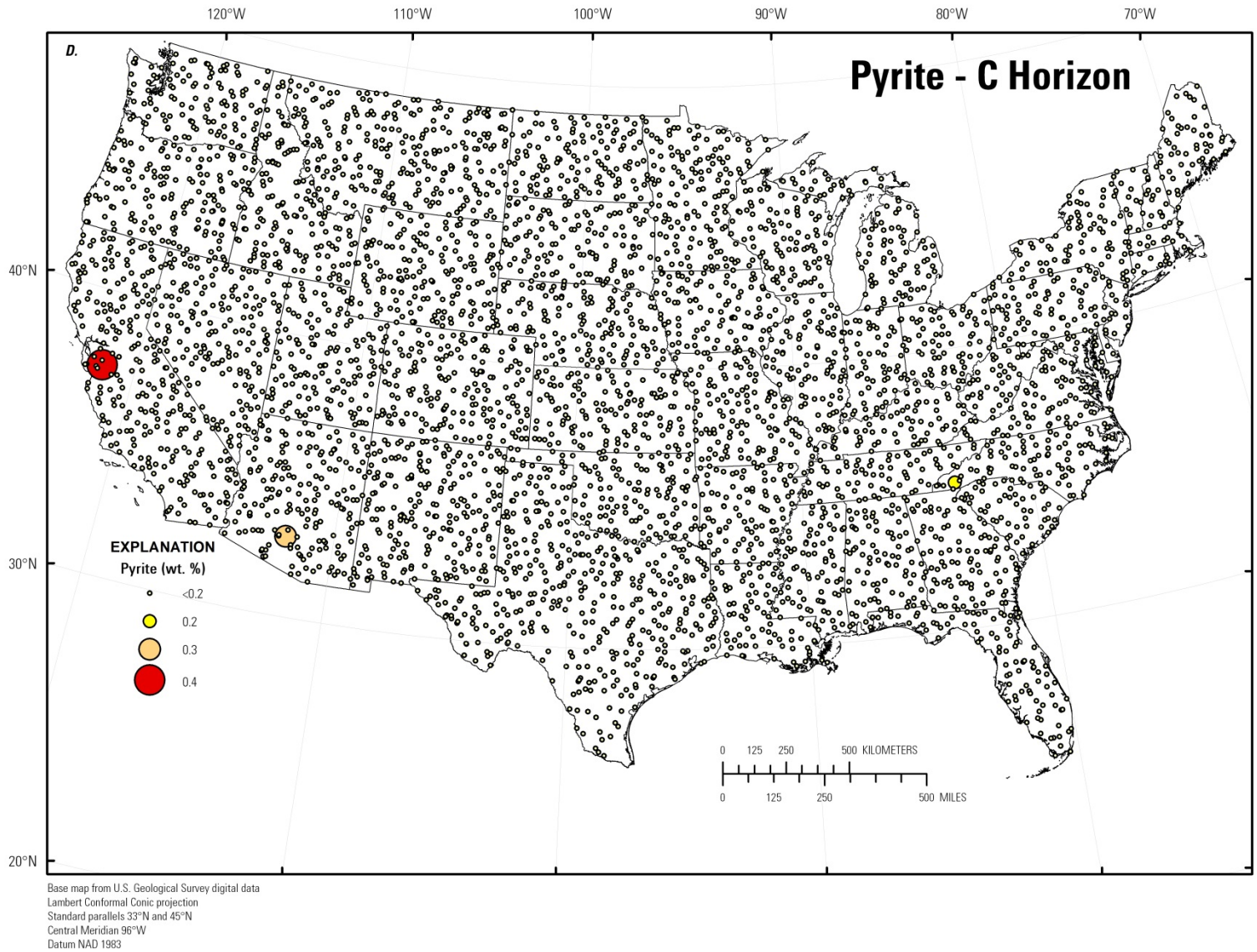


Figure 187. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of pyrite in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

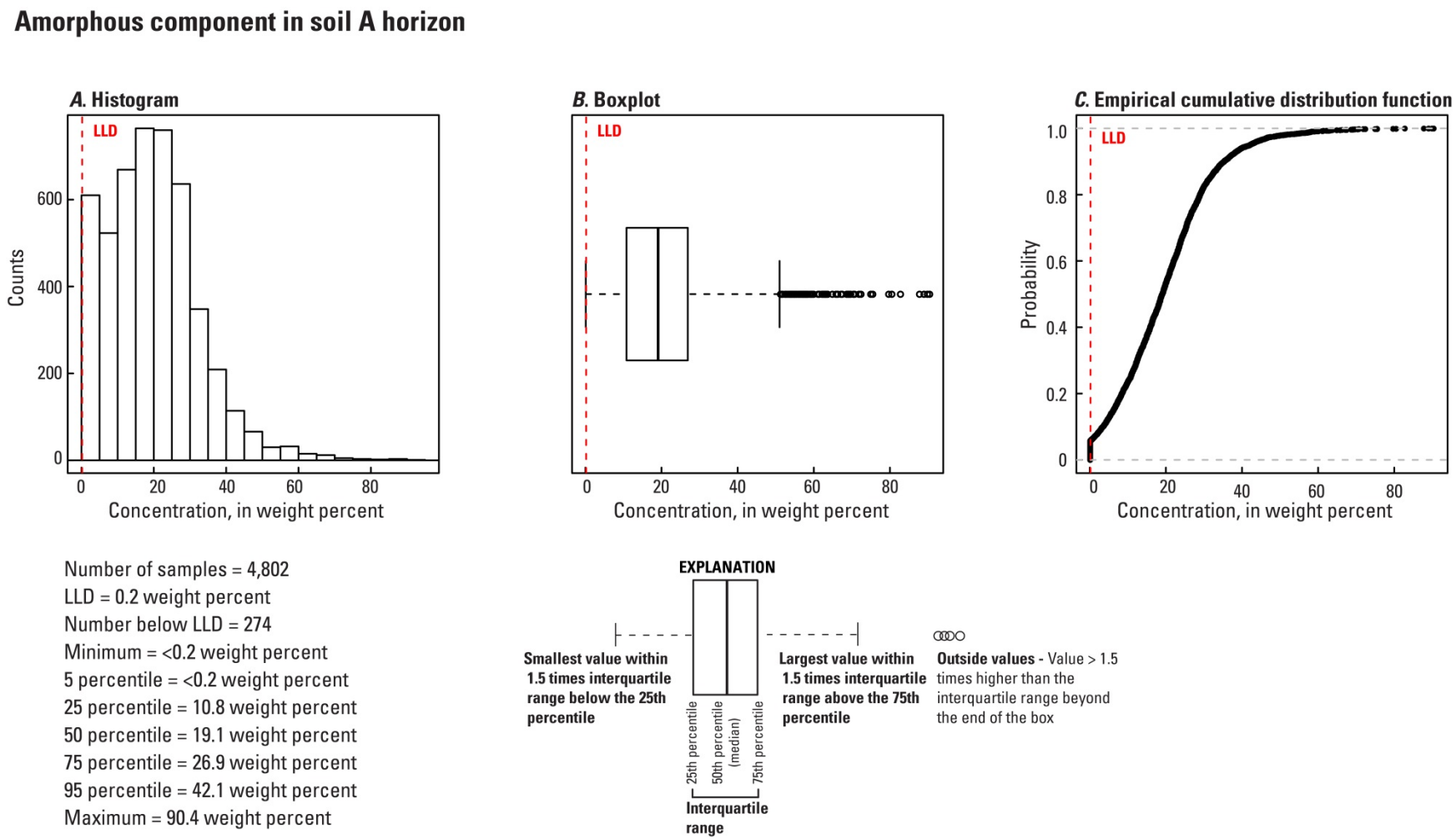


Figure 188. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of amorphous component in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

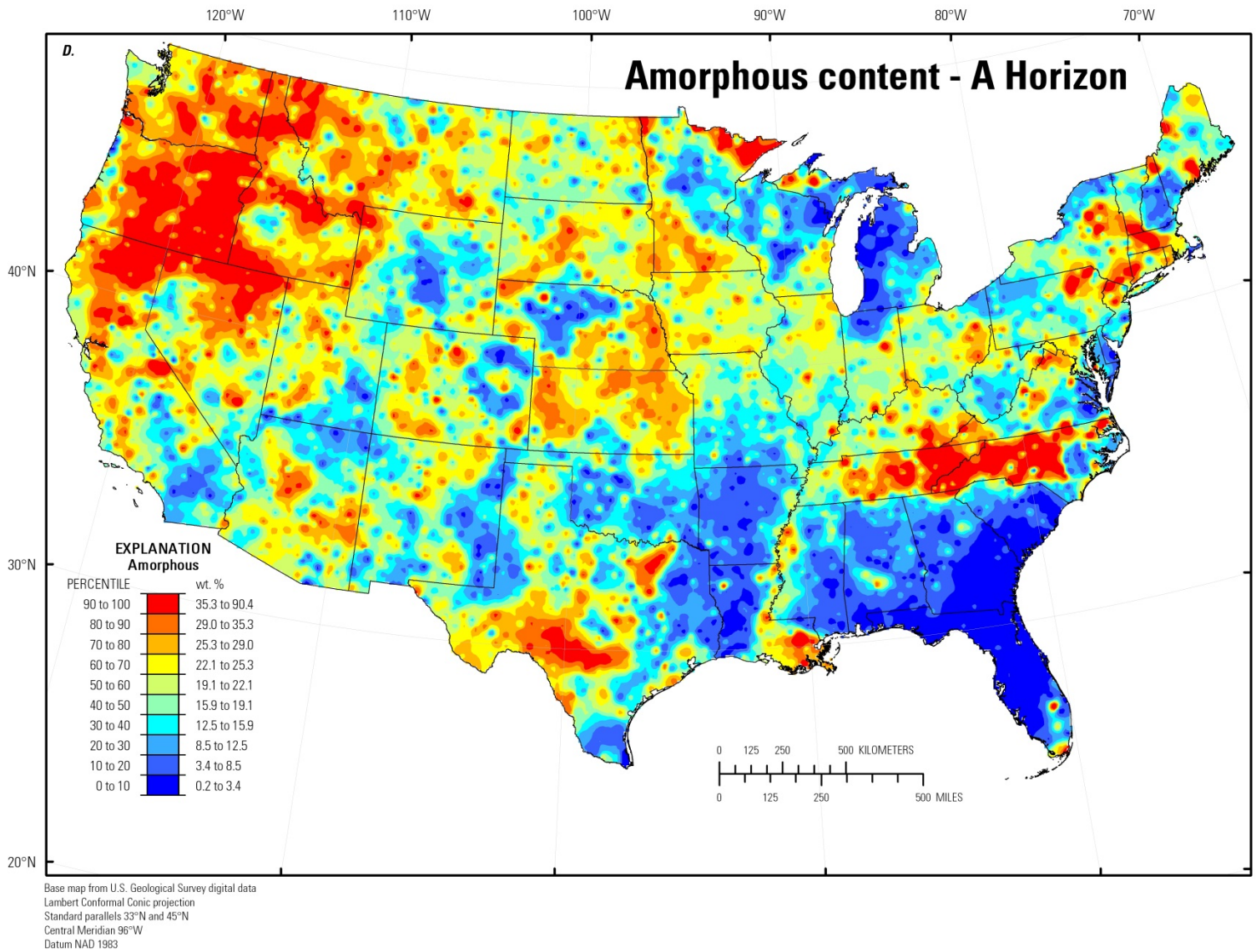


Figure 188. *A,* Histogram and summary statistics; *B,* Boxplot; *C,* Empirical cumulative distribution function; and *D,* Distribution of amorphous component in the soil A horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

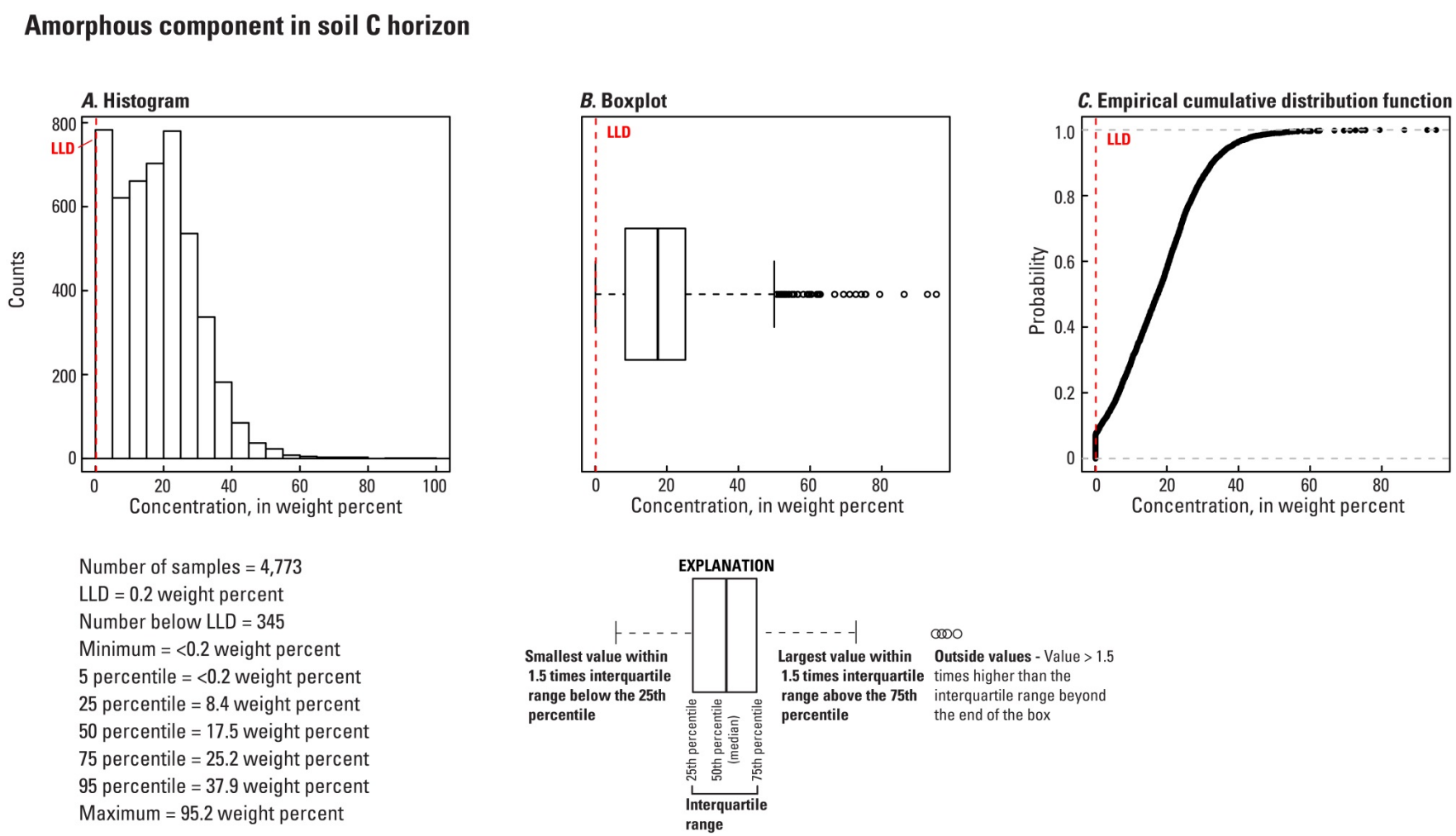


Figure 189. *A,* Histogram and summary statistics; *B,* Boxplot; C, Empirical cumulative distribution function; and *D,* Distribution of amorphous component in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).

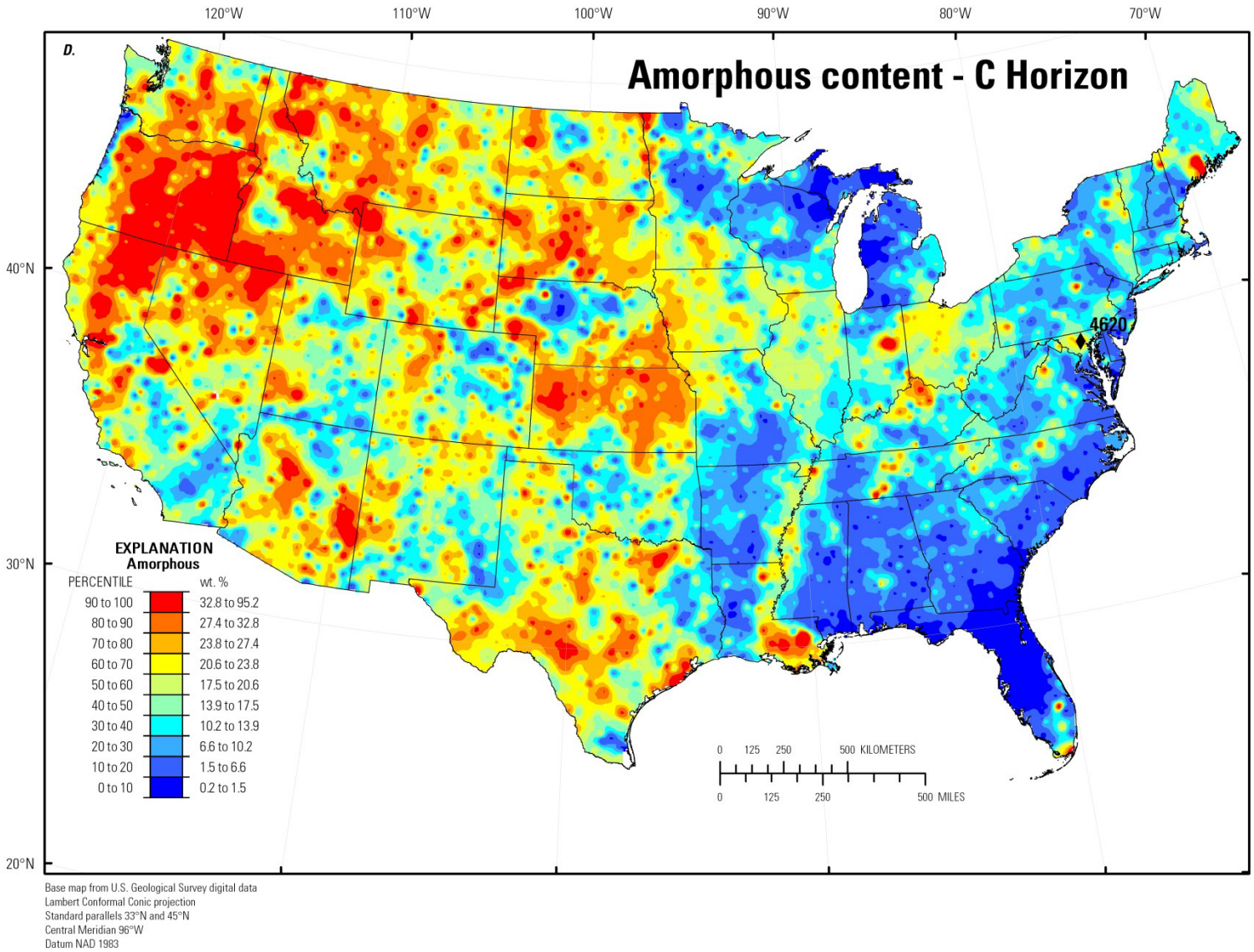


Figure 189. *A,* Histogram and summary statistics; *B,* Boxplot; C, Empirical cumulative distribution function; and *D,* Distribution of amorphous component in the soil C horizon, conterminous United States (LLD, lower limit of determination; wt. %, weight percent).—Continued

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