Geochronology Database for Central Colorado
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By T.L. Klein, K.V. Evans, and E.H. DeWitt

Data Series 489

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Abstract

This database is a compilation of published and some unpublished isotopic and fission track age determinations in central Colorado. The compiled area extends from the southern Wyoming border to the northern New Mexico border and from approximately the longitude of Denver on the east to Gunnison on the west. Data for the tephrochronology of Pleistocene volcanic ash, carbon-14, Pb-alpha, common-lead, and U-Pb determinations on uranium ore minerals have been excluded.

Introduction

This database is a compilation of published and some unpublished isotopic and fission track age determinations in central Colorado. The compiled area extends from the southern Wyoming border to the northern New Mexico border and from approximately the longitude of Denver on the east to Gunnison on the west (fig. 1). This compilation was concentrated in the area of the Central Colorado Assessment Project and will be used to develop a geologic framework for the area as part of the compilation of a 1:100,000-scale geologic map for the study area. Data from outside the study area also were included to provide information on regional age relationships, and their compilation is, therefore, not as exhaustive. Data for the tephrochronology of Pleistocene volcanic ash, carbon-14, Pb-alpha, common-lead, and U-Pb determinations on uranium ore minerals have been excluded.

More than 2,000 age determinations are contained in the database. The distribution of data points is shown in figure 1. The data are presented as a Microsoft Excel spreadsheet and an ESRI shapefile. The data are the same in each of the formats. The geographic coordinates are unprojected and use the North American Datum of 1927 (NAD 27).

References Cited


Geochronology database field names for spreadsheet

*FID* – Program generated unique ID.
*Unit_name* – Lithology of sample.
*Rock_Unit* – Formal or informal rock unit name or geographic area.
*Sample_No* – Published field or laboratory number where available.
*Quad_1_degree* – USGS 1/2°x1° topographic quadrangle name.
*Quad_24k* – USGS 7.5-minute topographic quadrangle name.
*Mineral* – Type of material analyzed.
*Age_Ma* – Geochronologic age, in millions of years (Ma).
*Age_Uncert* – Analytical precision.
*Age_Report* – Age as reported before recalculation using modern constants, in millions of years with analytical precision when given in reference.
*Reference* – Short form of determination reference, complete reference in “Geochronology References” section.
*Comments* – Comments on the age determination.
*X* – Longitude in decimal degrees (NAD27).
*Y* – Latitude in decimal degrees (NAD27).

**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>fission track</td>
</tr>
<tr>
<td>K/Ar</td>
<td>potassium/argon</td>
</tr>
<tr>
<td>Nd-Sm</td>
<td>neodymium-samarium</td>
</tr>
<tr>
<td>Rb-Sr</td>
<td>rubidium-strontium</td>
</tr>
<tr>
<td>U-Pb</td>
<td>uranium-lead</td>
</tr>
<tr>
<td>$^{40}$Ar/$^{39}$Ar</td>
<td>$^{40}$argon/$^{39}$argon</td>
</tr>
</tbody>
</table>
Figure 1. Sampling sites for published geochronology are represented by red filled circles. The location of Central Colorado Assessment Project area is represented by the red outline, 1/2°x1° topographic quadrangles are outlined in fine gray lines, and State boundaries are shown as coarse solid black lines. Names of the topographic quadrangles within and adjacent to the project area are shown.
Table 1 - Geochronology Database for Central Colorado

See accompanying Microsoft Excel spreadsheet or ESRI shapefile.

Link to spreadsheet
Geochronology References


Bole, C.E., 1971, Potassium-argon ages, argon diffusion studies and petrography in the northern Front Range, Manhattan (Rustic quadrangle), Colorado: Columbus, Ohio State University, Master’s thesis.


