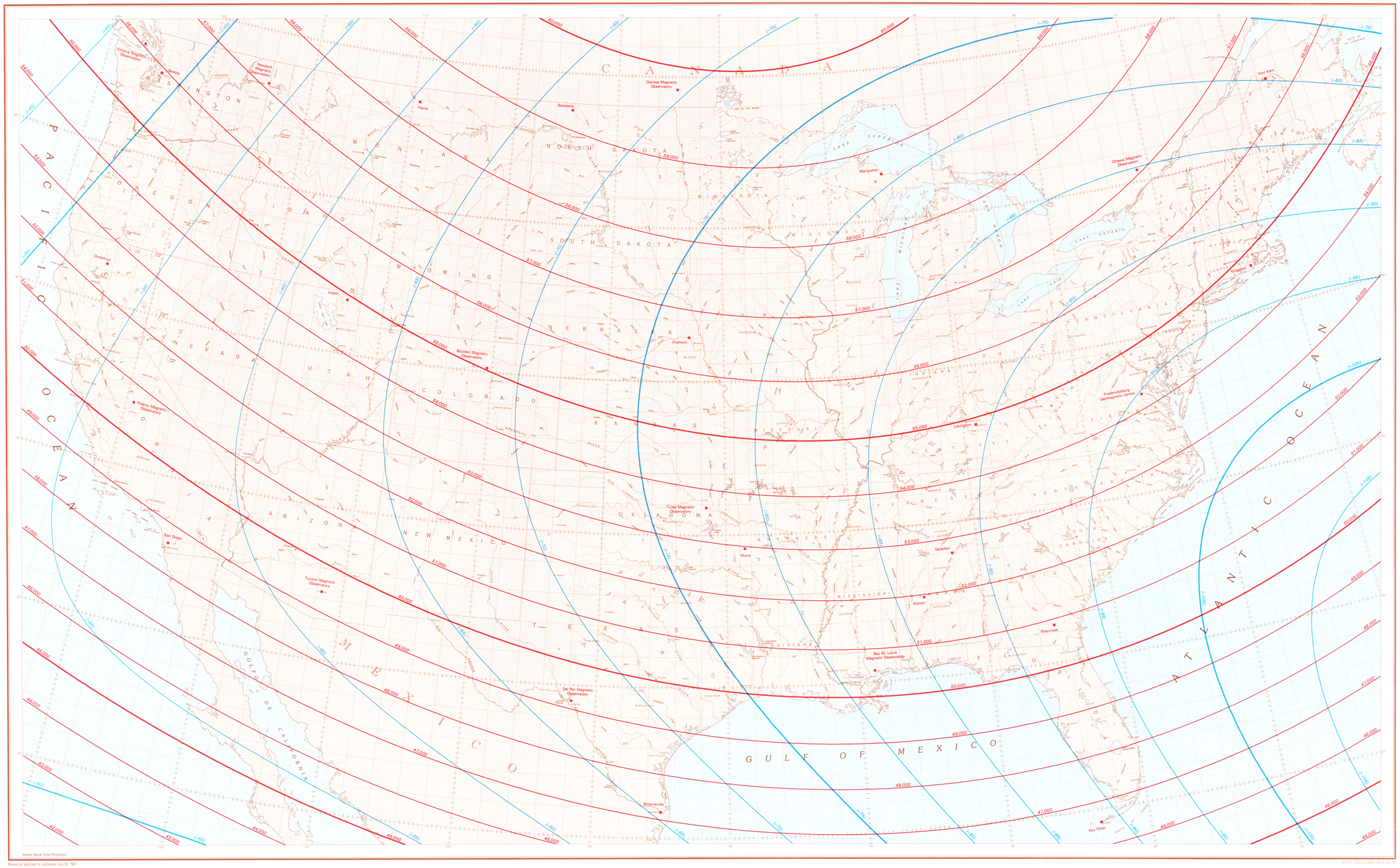

Albers Equal Area Projection

Manuscript approved for publication July 24, 1991

Unpublished base by U.S. Geological Survey, 1985.

NOTE

This chart is based on mathematical models of the magnetic field in the United States. The models were created by updating similar models for 1985 with new models of the secular variation, or change, during 1985–1990, which were derived mainly from data from magnetic observatories (●) and repeat stations (■). The models are spherical harmonic series of degree and order 4 for the conterminous states and Alaska, and degree and order 2 for Hawaii. For more information on the 1985 models, see Peddie and Zunde (1990).

Actual total intensity may differ from that shown here by several hundred nanoteslas under certain conditions. These include the occurrence of a magnetic storm and the presence of a strong magnetic anomaly due to a local source of magnetic field, such as an electric railway or magnetic mineral deposit. Also, actual annual change during the post-1990 period may differ considerably from that shown here because of unforeseen changes in secular variation.

TOTAL INTENSITY

Red lines indicate the total intensity of the magnetic field, in nanoteslas, at sea level at the beginning of 1990 (1 nanotesla equals 10^{-5} tesla). The total intensity can be adjusted for altitude above sea level by decreasing it by the fraction $h/2123$ of itself, where h is the altitude in kilometers (Chapman, 1951, p. 27).

SCALE 1:5 000 000

100 0 100 200 300 400 500 MILES

100 0 100 200 300 400 500 KILOMETERS

THE MAGNETIC FIELD IN THE UNITED STATES, 1990
TOTAL INTENSITY CHART

By
Norman W. Peddie

1992

ANNUAL CHANGE

Blue lines indicate approximate rate of change of total intensity, in nanoteslas per year. To apply change, add algebraically. For example, to obtain the total intensity for Denver, Colorado (39°44′N, 104°59′W), for July 1, 1993 (1993.5),

estimate the total intensity at 1990.0 (red lines):	54,850 nT	(1)
find the annual change (blue lines):	−69 nT/yr	(2)
determine the time in years since 1990.0:	3.5 yr	(3)
find the total change by multiplying (2) and (3):	−242 nT	(4)
finally, add (1) and (4):	54,608 nT	(5)
To adjust for Denver's altitude of about 1.6 km, multiply (5) by 1.6 divided by 2123:	41 nT	(6)
and subtract the result (6) from (5):	54,567 nT	(7)

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This map supersedes Peddie and Zunde, 1988.

ACKNOWLEDGMENT

Steve McWilliams skillfully assisted in the preparation of this chart.

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