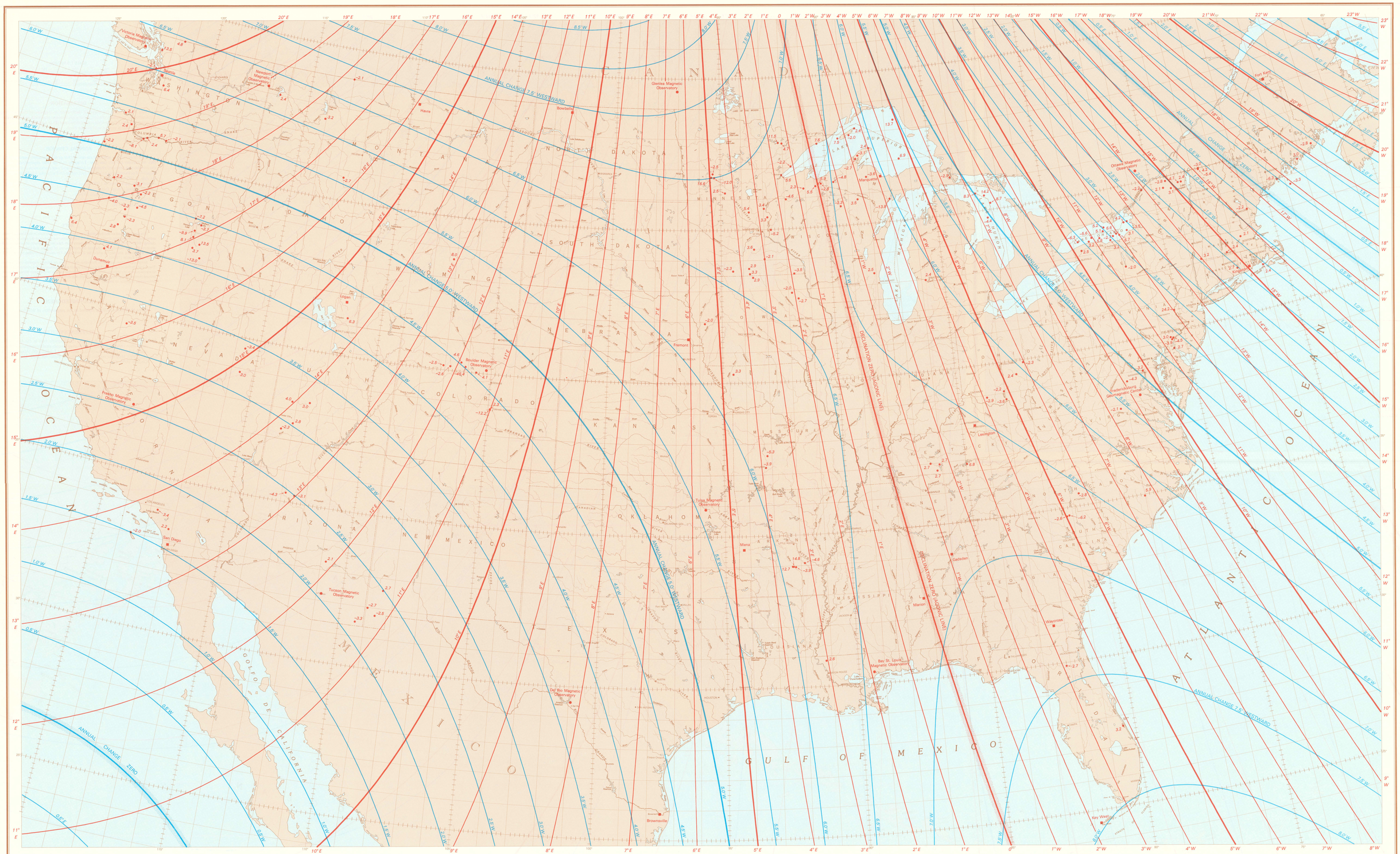

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Unpublished base by U.S. Geological Survey, 1985.

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 declination may differ from that shown here by several degrees 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.

DECLINATION

Red lines indicate the magnetic declination, in degrees, at the beginning of 1990. Declination, or compass variation, is the angle between true north and the direction in which the compass points. Declination is considered east (**E**) or west (**W**) depending upon whether the compass points east or west of true north.

Small red circles (•) and associated italic numbers indicate locations and magnitudes of known declination anomalies. At these locations, actual declination differs considerably from that shown on the chart. To obtain an estimate of the actual declination for such a location, add the anomaly and chart values algebraically, considering east declination positive and west declination negative.

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
DECLINATION CHART

By
Norman W. Peddie

1992

ANNUAL CHANGE

Blue lines indicate approximate rate of change of declination, eastward (**E**) or westward (**W**), in minutes (of arc) per year. To apply change, add algebraically, considering east declination and eastward change as positive, and west declination and westward change as negative. For example, to obtain the declination for Denver, Colorado (39°44′N, 104°59′W), for July 1, 1993 (1993.5), estimate the declination at 1990.0 (red lines): 11°10′E (1)
find the annual change (blue lines): −4.6′ (2)
determine the time in years since 1990.0: 3.5 (3)
find the total change by multiplying (2) and (3): −16′ (4)
finally, add (1) and (4): 10°54′E (5)

This map supersedes Peddie and Zunde, 1988

ACKNOWLEDGMENT

Steve McWilliams skillfully assisted in the preparation of this chart.

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