Magnetic Declination

A compass pointer is attracted to the magnetic North Pole rather than to the geographic North Pole. The angular difference between these two lines of direction is called magnetic declination.

Magnetic declination varies across the earth and also over time.

The line of 0 degrees declination today passes through Wisconsin. If you are west of the 0 degrees line, as we are in Oregon, the declination is said to be east (or positive).

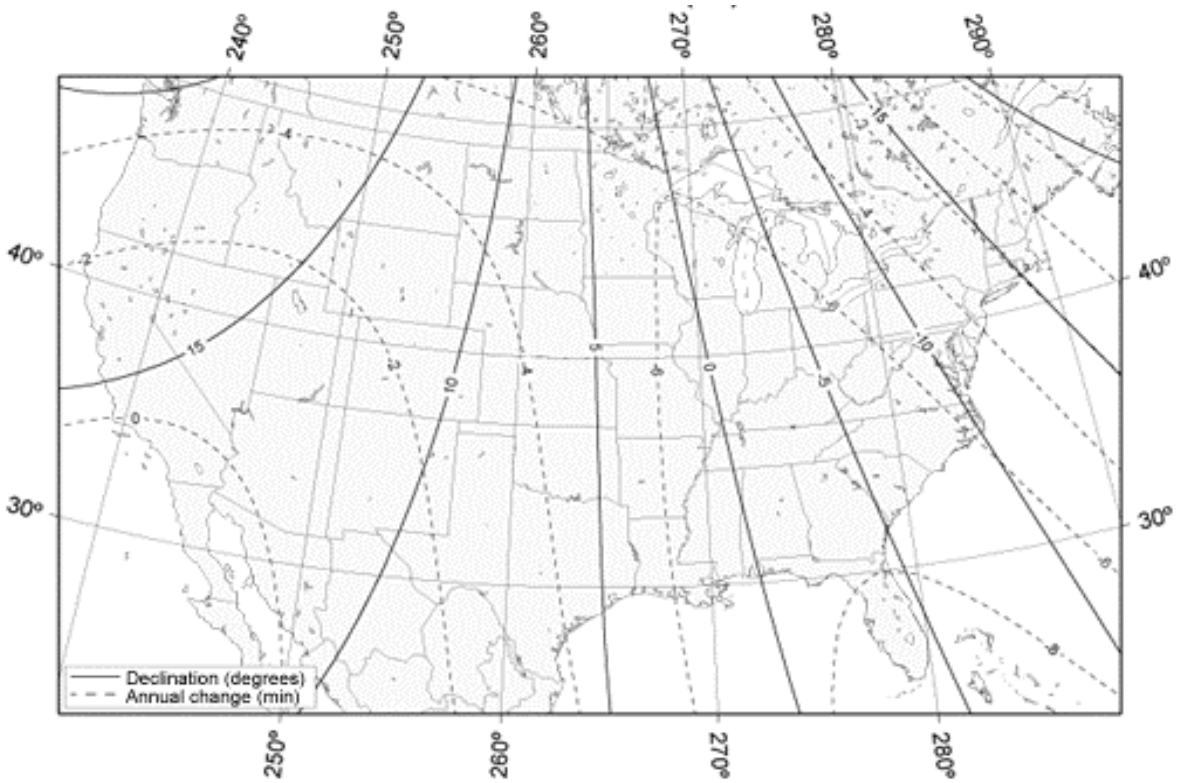
To translate the difference between the geographic and magnetic meridian, the angle must be subtracted from the magnetic north reading. Salem is located west of the 0 degree line and has a declination of approximately 18 degrees. To correct a magnetic compass reading to true north when west of the 0 degree line, the declination should be subtracted from the magnetic north reading.

How do I know what the magnetic declination is at my location?

Maps can be obtained showing isogonic lines showing magnetic location. Often you will need to interpolate between these lines to determine the magnetic declination of your area. The following page shows a magnetic declination chart of the United States of America. A picture of this chart is shown on page 2.

The second and more accurate method is to use a declination calculator. To do this you enter a web page at the National Geophysical Data Center. By entering a zip code to determine your location, a range of dates, number of years, latitude and longitude into the calculator, it will compute your magnetic declination for you. A picture of the web page showing this calculator is shown on page 3.

The calculator can be found at the following web address.
http://www.ngdc.noaa.gov/cgi-bin/seg/gmag/fldsnth1.pl



Magnetic Declination Chart

In the calculator below, enter the zip code of your location. Click on “Get Location”. This will fill in the Latitude and Longitude fields. Enter the date (1900-2005). Enter the start date and step size for number of years. Enter an elevation. Compute.

The top date (end of time range) needs to be at least one year more than the start date (beginning of time range) if using a step size of one.

Search for a place in the USA

Zip code: [ ] Get Location

Enter Date (1900 to 2005): Year (1900-2005): [2002] Month (1-12): [01] Day (1-31): [16]

For Range of Dates Please also Enter:

Start Date:

Year (1900-2005): [ ] Month (1-12): [ ] Day (1-31): [ ]

Step Size: Compute for every n years [1]

Enter Location: (latitude 90S to 90N, longitude 180W to 180E). For decimal degrees, enter the number as is (i.e. 45.508). For degrees, minutes, seconds enter space separated fields (i.e. 45 30 30).

Latitude: [ ] (•) N ( ) S

Longitude: [ ] ( ) E (•) W

Enter elevation: [0.0] (•) km (-1 to 600) ( ) mi (-0.6 to 372) ( ) ft (-3281 to 1,968,503)

Compute! Reset

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Model: IGRF2000
Latitude: 44.93 deg
Longitude: -122.98 deg
Elevation: 0.06 km
Range of Interest: 1/16/2002 - 1/17/2003, step 1.00

-------------------------------------------------------------------------
 Date          D              I              H       X       Y       Z       F
 (yr)       (deg)          (deg)          (nt)    (nt)    (nt)    (nt)    (nt)
2002.04   17d   40m   67d   12m   20773   19794    6303   49403   53593
2003.04   17d   34m   67d   10m   20769   19801    6267   49331   53525
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
2003.05   17d   34m   67d   10m   20769   19801    6267   49331   53524
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            dD          dI          dH          dX          dY          dZ          dF
         (min/yr)    (min/yr)    (nT/yr)     (nT/yr)     (nT/yr)     (nT/yr)     (nT/yr)
2003.05       -6          -2          -4           7         -35         -73         -68
-------------------------------------------------------------------------
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