

Magnetic Declination

Magnetic declination, sometimes called magnetic variation, is the angle between magnetic north and true north. Declination is considered positive east of true north and negative when west.

The Earth acts like a great spherical magnet, in that it is surrounded by a magnetic field. This magnetic field changes both with time and with location on the Earth and resembles, in general, the field generated by a dipole magnet (i.e., a straight magnet with a North and South Pole) located at the center of the Earth. The axis of the dipole is offset from the axis of the Earth's rotation by approximately 11 degrees. This means that the north and south geographic poles and the north and south magnetic poles are not located in the same place. At any point and time, the Earth's magnetic field is characterized by a direction and intensity which can be measured. Often the parameters measured are the magnetic declination, D , the horizontal intensity, H , and the vertical intensity, Z . From these elements, all other parameters of the magnetic field can be calculated.

This information and more can be found at:

<http://www.ngdc.noaa.gov/geomag/declination.shtml>

I used their website to calculate the current magnetic declination at three locations in the US.

Columbia, Missouri

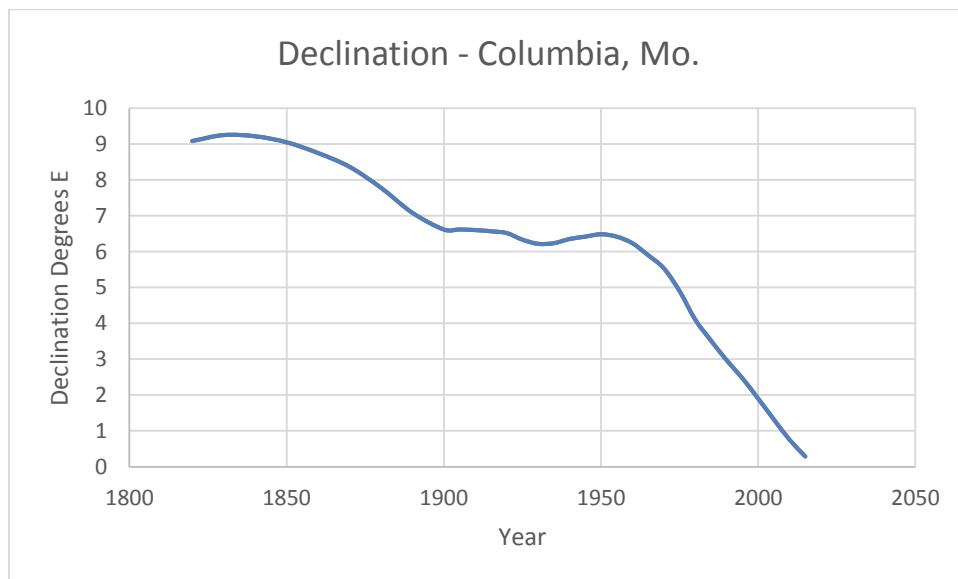
2015-06-09 $0^{\circ} 14' E \pm 0^{\circ} 21'$ changing by $0^{\circ} 5' W$ per year

Boston

2015-06-09 $14^{\circ} 48' W \pm 0^{\circ} 22'$ changing by $0^{\circ} 4' E$ per year

Seattle Washington

2015-06-09 $16^{\circ} 5' E \pm 0^{\circ} 22'$ changing by $0^{\circ} 8' W$ per year



NOAA's Geophysical Data Center - Geomagnetic Data - Mozilla Firefox

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Estimated Value of Magnetic Declination

To compute the magnetic declination, you must enter the location and date of interest.

If you are unsure about your city's latitude and longitude, look it up online! In the USA try entering your zip code in the box below or visit the U.S. Gazetteer. Outside the USA try the Getty Thesaurus.

Search for a place in the USA by Zip Code: [Get Location](#)

Enter Location: (latitude 90S to 90N, longitude 180W to 180E). See [Instructions](#) for details.

Latitude: N S Longitude: E W

Enter Date (1900-2010): Year: Month (1-12): Day (1-31):

[Compute Declination](#)

Declination = 0° 20' W changing by 0° 6' W/year

For more information, visit:
[Answers to some frequently asked questions](#) | [Instructions for use](#) | [Today's Space Weather](#)

http://www.ngdc.noaa.gov/ngdc.html

The screenshot shows a Mozilla Firefox browser window titled "NOAA's Geophysical Data Center - Geomagnetic Data". The address bar contains the URL "http://www.ngdc.noaa.gov/geomagmodels/struts/calcDeclinatio". The browser's address bar also shows "University Forest Miss". The page content includes a navigation menu with links for "Answers to some frequently asked questions", "Instructions for use", and "Today's Space Weather". A map of Minnesota is displayed, featuring a large red and blue compass rose with "MN" written in red above it. The map includes labels for "Lake Wappapello State Park" and "Wappapello". The map is powered by Google, with a copyright notice for "Map data ©2008 Tele Atlas - Terms of Use". Below the map, a text box states: "Compass shows the approximate bearing of the magnetic north (MN)". At the bottom of the page, there is a breadcrumb trail: "NOAA > NESDIS > NGDC > Geomagnetism" and contact information: "questions: Susan.McLean@noaa.gov". The browser's status bar at the bottom shows "Done".