The World Magnetic Model and Associated Software

This site provides access to the DoD software and current WMM model and WMM online calculator. The software computes the main components of the geomagnetic field and their annual changes. The programs are designed to be used in demand mode. The software is available as both C and Fortran source code. The model file, WMM.COF, is expected to reside in the same directory as the software. Note: The altitude is referenced to the World Geodetic System 1984 (WGS 84) ellipsoid. The WMM software library provides functions to convert height above mean sea level (AMSL) to height above WGS 84. This option is enabled by default.

Input And Output

The input parameters and valid entries are:

Latitude -90.00 to +90.00 degrees
Longitude -180.00 to +180.00 degrees
Altitude referenced to the WGS 84 ellipsoid OR the Mean Sea Level (MSL) (downloadable software)
Date 2015.0 to 2020.0

The seven magnetic componentscomputed are:

F - Total Intensity of the geomagnetic field
H - Horizontal Intensity of the geomagnetic field
X - North Component of the geomagnetic field
Y - East Component of the geomagnetic field
Z - Vertical Component of the geomagnetic field
I (DIP) - Geomagnetic Inclination
D (DEC) - Geomagnetic Declination (Magnetic Variation)

Annual change in each of these magnetic components is also displayed. The annual change is computed by subtracting the main field values for the desired input date from main field values one year later. The output units are displayed using the abbreviations nT (nanoTesla), deg (degrees) and min (minutes) per year. The new WMM2015 software also outputs uncertainty for each component. The error is one standard deviation difference between a hypothetical measurement and model output. The uncertainty values have the same units as their corresponding components.

Cite / Reference Data

For the **dataset, model, software and charts**, cite as:
Chulliat, A., S. Macmillan, P. Alken, C. Beggan, M. Nair, B. Hamilton, A. Woods, V. Ridley, S. Maus and A. Thomson, 2014. The US/UK World Magnetic Model for 2015-2020, NOAA National Geophysical Data Center, Boulder, CO, doi:10.7289/V5TH8JNW[access date].

For the **technical report**, cite as:
Chulliat, A., S. Macmillan, P. Alken, C. Beggan, M. Nair, B. Hamilton, A. Woods, V. Ridley, S. Maus and A. Thomson, 2015. The US/UK World Magnetic Model for 2015-2020: Technical Report, NOAA National Geophysical Data Center, Boulder, CO, doi:10.7289/V5TB14V7.

Third party software for World Magnetic Model

Third party software is available here. Note: Neither the authors nor NGDC can provide any warranty or technical support for these programs.

Changes made to the WMM Code

As changes are made to the WMM code, the revised code will be posted. Check this site for change notices. The downloadable code is always the latest version.

Download the World Magnetic Model - WMM2015 - software and documentation.

WMM2015 coefficient file	Release Date	Description
WMM2015COF.zip	Dec 15, 2014	WMM2015 Coefficient file (WMM.COF) valid for 2015.0 - 2020.0
WMM2015 + 2015 Software		
WMM2015_Windows.zip	Dec 15, 2014	World Magnetic Model (WMM2015) with the C software and executables for Windows environment.
WMM2015_Linux.tar.gz	Dec 15, 2014	World Magnetic Model (WMM2015) with C softwareand executables for Linux environment.
WMM2015 + Windows		

GUI		
WMM2015GUI.zip	Dec 15, 2014	World Magnetic Model (WMM2015) with Stand-alone Graphical User Interface (GUI) for Windows.
WMM2015 Documentation		
WMM2015_Report.pdf	Dec 15, 2014	World Magnetic Model (WMM2015) - Technical Report. Note: Older versions of the WMM reports are available here
WMM2015testvalues.pdf	Dec 15, 2014	World Magnetic Model (WMM2015) - Test values.
WMM2015 + Old Software		
WMM2015LegacyFortran.zip	Dec 15, 2014	World Magnetic Model (WMM2015) with Fortran source code and executables for Windows and Linux environments.
WMM2015LegacyC.zip	Dec 15, 2014	World Magnetic Model (WMM2015) with C source code and executables for Windows and Linux environments.
WMM2015 Mobile Apps		
Android	Dec 15, 2014	World Magnetic Model Android software as part of "CrowdMag" app.
iOS	Dec 15, 2014	World Magnetic Model iOS software as part of "CrowdMag" app.