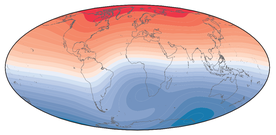
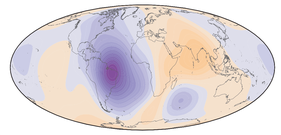
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

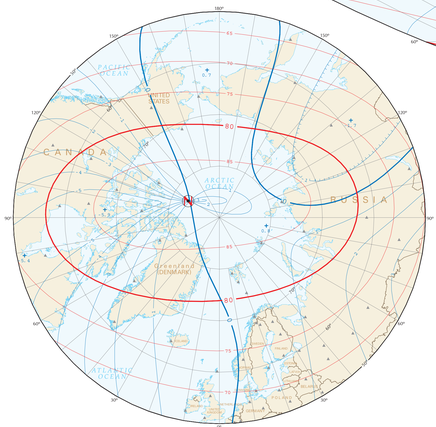
SCIENTIFIC INVESTIGATIONS MAP 2964
SHEET 2 OF 5
Version 1.0



INCLINATION



SECULAR VARIATION OF INCLINATION

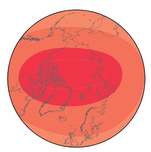


Azimuthal Equidistant Projection

Scale 1:40,000,000

0 1000 2000 3000 KILOMETERS

0 1000 2000 3000 MILES



INCLINATION

SECULAR VARIATION OF INCLINATION

Mollweide Projection
(Scale true along latitudes 40°44' N. and S.)

Scale 1:30,000,000

2000 MILES 1000 0 1000 2000 3000 KILOMETERS

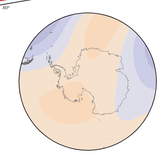
80° 70° 60° 50° 40° 30° 20° 10° 0°

Inclination (degrees)

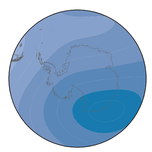
-90 -85 -70 -65 -50 -45 -30 -25 -15 -5 5 15 25 30 45 50 65 70 85 90

Secular Variation of Inclination (minutes of arc per year)

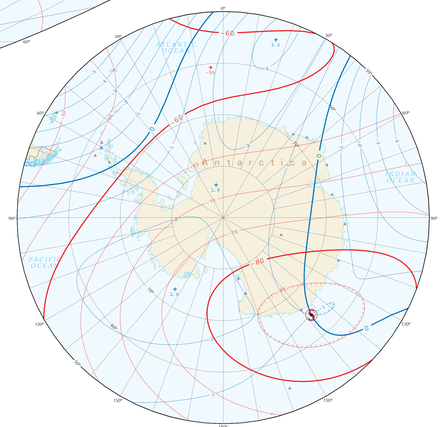
-22 -20 -18 -16 -14 -12 -10 -8 -6 -4 -2 0 2 4 6 8



SECULAR VARIATION OF INCLINATION



INCLINATION



Azimuthal Equidistant Projection

Scale 1:40,000,000

0 1000 2000 3000 KILOMETERS

0 1000 2000 3000 MILES

EXPLANATION

Inclination

Contours of inclination expressed in degrees. Inclination is the angle between the tangent plane attached to a point on the Earth's surface and the direction of the magnetic field. It is considered positive or negative depending upon whether the north-seeking end of a balanced compass needle dips below or above the tangent plane, respectively. Hachures point in direction of decreasing values

Point value of inclination expressed in degrees. Point values enclosed by a single contour are local maxima or minima

Secular Variation of Inclination

Contours of the estimated rate of change of inclination (secular variation) expressed in minutes of arc per year. To apply change, add algebraically. Hachures point in direction of decreasing values

Point value of the estimated rate of change of inclination (secular variation) expressed in minutes of arc per year. To apply change, add algebraically. Point values enclosed by a single contour are local maxima or minima

North and south magnetic poles. Magnetic poles are defined as the locations at which the horizontal magnetic intensity, computed from the degree and order ten spherical harmonic International Geomagnetic Reference Field 2005 model, is effectively zero at 2005.0

Geomagnetic observatory recording data since 1990

INCLINATION CHART
THE INTERNATIONAL GEOMAGNETIC REFERENCE FIELD, 2005

By

Kenneth S. Rukstales and Jeffrey J. Love

2007

DISCUSSION

This is one of five world charts showing the declination, inclination, horizontal intensity, vertical component, and total intensity of the Earth's magnetic field at mean sea level at the beginning of 2005. The charts are based on the International Geomagnetic Reference Field (IGRF) main model for 2005 and secular change model for 2005-2010. The IGRF is referenced to the World Geodetic System 1984 ellipsoid.

Additional information about the USGS geomagnetism program is available at: http://geomag.usgs.gov/.

ACKNOWLEDGMENTS

The IGRF is produced by the International Association of Geomagnetism and Aeronomy (IAGA) Division V, Working Group V-8: Analysis of the Global and Regional Geomagnetic Field and its Secular Variation. Production of the IGRF depends on the world-wide efforts of the magnetic-field modelers and the staff of magnetic observatory programs and satellite programs which produce the data from which the models are derived.

SELECTED REFERENCES

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Base map data from ESRI Inc. ArcWorld 1:3M.

Manuscript approved for publication March 8, 2007

Digital data prepared with ArcGIS 9.1 running under Windows 2000

This map was produced on request, directly from digital files, on an electronic plotter.

For sale by U.S. Geological Survey Information Services,
Box 25286, Federal Center, Denver, CO 80225; 1-888-ASK-USGS
http://ask.usgs.gov/

GIS files and PDF files are available online at http://pubs.usgs.gov/sim/2007/2964