Italian Magnetic Network and magnetic reference fields at 2010.0

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Abstract

The Istituto Nazionale di Geofisica e Vulcanologia (INGV) has systematically undertaken the task of making measurements of the Earth's magnetic field in Italy. By tradition and because of the elongated geometric shape of our peninsula and islands, in Italy, a grid of more than 110 points, called the first order repeat stations, with an average spacing around 55-60 km, is in operation. Over this grid the measurements are repeated regularly, every 5 years. A survey of 131 repeat stations of the Italian Magnetic Network (including 2 observatories, 11 stations in Albania, 3 stations in Corsica and 1 in Malta) was carried out between 2009 and 2010 with the main purpose of updating our magnetic cartography. We describe the characteristics of magnetic first and second order networks, the magnetic measurements and the data reduction procedure. In agreement with the recommendations of MagNetE Committee, we report new repeat station data measured and reduced at 2010.0. An analytical expression, a second order polynomial, in latitude and longitude for the field elements, was determined, and coefficients for 2010.0 and average secular variation over the period 2005-2010, were obtained. The new maps for Italy, for D, F, H and Z at the epoch 2010.0, are shown. A selection of stations from the Italian Magnetic Network, based on their low values of anomaly with respect to a 'normal' field, is also proposed for future surveys.

Keywords

Earth's magnetic field; Geomagnetic map; Magnetic surveys; Magnetic repeat stations; Secular variation

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References

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KEYWORDS

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