

THE MAGNETIC OBSERVATORY OF COIMBRA (COI): INSTRUMENTATION, OBSERVATORY PRACTICE AND DATA QUALITY EVALUATION

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The Magnetic Observatory of Coimbra (COI) is one of the oldest observatories in operation in the world. With a centenary tradition, the geomagnetic measurements started in 1866 in the earliest observatory located at the head office of Instituto Geofísico of University of Coimbra (IGUC). By the year of 1932, the magnetic observatory was transferred, due to the city's growth, to the present site (about 2.5 km from the city centre). However, during the first twenty years several logistic and operational problems have affected the good functioning of the observatory, and it was only near the end of 1951 that geomagnetic observations in the new site started on a regular and standard basis. This period lasted only about 30 years and around 1985 the COI data began showing some non-negligible perturbations mainly related with the aging of instruments, the urban magnetic noise and the unreliable measurement procedures. Finally, in 2007 the IGUC was able to substitute completely the old set of instruments (classic photographic recording variometers, Askania declinometer, QHM and BMZ) with the modern ones (FGE variometers, DIM and GSM90F). Therefore, and besides giving an account of the observatory's infrastructure, instruments and routines, this study aims at making a qualitative analysis of the geomagnetic series observed at COI and assessing the amplitude of the spurious effects (through the characterization of environmental magnetic field) observed at present. The emphasis will be put on the discussion of absolute measurements practice and baseline calculation and adoption processes. For a healthier scientific evaluation of COI series, we critically compare these with the series observed at the nearest Spanish observatories (Toledo and Ebro) and with the synthetic ones obtained from global geomagnetic models (e.g. IGRF).

Coimbra, Geomagnetic observatory

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