

## **CONNECTING SPACE AND GROUND-BASE MAGNETIC DATA FOR SCIENTIFIC BENEFIT**

MANUEL CATALÁN

Geophysic Dpt., Royal Observatory of the Spanish Navy, San Fernando, Cádiz. Spain

e-mail: [mcatalan@roa.es](mailto:mcatalan@roa.es)

Scientific use of magnetic data has provided a wealth of information concerning the evolution and geological history of our planet Earth. Since 19th Century, geomagnetic observatories have been studying the variation of the Earth's magnetic field by performing absolute observations, or by recording, using photographic paper then, or nowadays 1 Hz digital recording systems, the fluctuations in time of its different components. Additional knowledge has come from magnetometer surveys carried out on land, at sea or from the air, providing high frequency/short wavelength information of a phenomena which not only vary in time, but in space too. Additionally the incoming of magnetic satellite provided a more homogeneous perspective of the problem. Since February 23, 1999, Denmark's first satellite, Oersted, has been providing high-precision vector and scalar geomagnetic field measurements over nearly polar orbits at altitudes between roughly 650-865 km. Oersted measurements increase previous data obtained by POGO (Polar Orbiting Geophysical Observatory) and Magsat, in the early 70's and 80's respectively. This satellite was subsequently followed by other missions: SAC-C and CHAMP. Their data have revealed small-amplitude anomalies and later studies confirmed their lithospheric origin. The use of magnetic satellite data has provided a deeper and wider knowledge of the magnetic field of the Earth. In this sense satellite data has become an important source of information in several branches: Core field, lithospheric magnetic anomalies, induction, ionospheric and magnetospheric current systems. All previous cited sources of magnetic data: satellite, ground base, seaborne and aeromagnetic compilations, have their own advantages and limitations. Bibliography shows that they are complementary, and that they may be combined by applying different strategies and techniques, having access to a more complete perspective of the geomagnetic field spectrum. In this invited talk, a review of these methods and achievements, will be presented. Additionally, a summary of those contributions presented at Session V01 will be provided.

Magnetic satellites, magnetic observatories,

Geophysic Dpt., Royal Observatory of the Spanish Navy, San Fernando, Cádiz. Spain.

[mcatalan@roa.es](mailto:mcatalan@roa.es)