

ANNALS OF GEOPHYSICS

SPECIAL ISSUE: FROM THE SUN TO THE EARTH'S INTERIOR

PREFACE

The International Association of Geomagnetism and Aeronomy (IAGA) is one of the eight Associations of the International Union of Geodesy and Geophysics (IUGG). Research activities in the related fields are developed in Italy at several universities and major national research organizations, such as Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Astrofisica (INAF), Consiglio Nazionale delle Ricerche (CNR). The IAGA Italian Committee (<http://www.iagaitalia.it/it/organi.asp>), in cooperation with INGV, CNR and Area di Ricerca in Astrogeofisica, organized the National Conference "From the Sun to the Earth's Interior" (21–22 February, 2018) with the specific intent to stimulate the participation of young researchers, their mutual knowledge, the possibility to meet and discuss with more experienced researchers. To this end, the Committee has also provided a prize for the best scientific contributions presented by young researchers. The Conference was attended by about eighty researchers.

Some of the papers presented during the Conference are collected in this special issue. They deal with a variety of subjects. Some studies have analysed magnetic field measurements with different time resolutions, from milliseconds to hours, to locate the position of polar cusp [Marzocchetti et al., 2019], to reconstruct the plasmaspheric cold plasma density distribution [Del Corpo et al., 2019], to analyze the effects on the ground generated by the geomagnetically induced currents during the occurrence of geomagnetic storms [Tozzi et al., 2019], to study the scaling properties of the geomagnetic field's spatial fluctuations at both high latitudes (in the Northern and Southern Hemisphere) and low and mid latitudes [De Michelis et al., 2019], but also to investigate, along with electric field measurements, the anomalous electromagnetic signals generated in response to the propagation of a mechanical perturbation within the subsoil [Romano et al., 2019]. Magnetic measurements are also used by Ghezzi et al. [2019] to perform an analysis of the errors that affect magnetic anomaly data as regards the archaeological geophysics. Other studies are instead based on ionospheric measurements to investigate how the F2-layer critical frequency varied over Rome during the last three solar minima [Ippolito, 2019], to study both the dynamical properties of the electron density and the scaling properties of the electron density fluctuations at high latitudes in response to changes in the geomagnetic activity [Giannattasio et al., 2019], and to carry out an interhemispheric comparison between high-latitude ionospheric observations in response to peculiar solar wind conditions [D'Angelo et al., 2019]. Floating potential time series measured by the DEMETER satellite are instead used by Materassi et al. [2019] to characterise plasma irregularities in the equatorward boundary of the auroral oval, relying on the recently proposed ALIF method. Last but not least, a statistical approach for the computation of kinematic propagation of interplanetary coronal mass ejections has been developed and presented in order to forecast in real-time their propagation and arrival at Earth [Del Moro et al., 2019].

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