Geophysical Research Abstracts
Vol. 20, EGU2018-6110, 2018
EGU General Assembly 2018

Geomagnetically induced currents during the September 6, 2017 Storm Sudden Commencements.

Umberto Villante (3,2), Mirko Piersanti (1,2), Simone Di Matteo (3), Carter Brett (4), D'Angelo Giulia (5), Julie Currie (4), and Endawoke Yizengaw (6)

(1) Istituto di Astrofisica e Planetologia Spaziali, Department of Physical and Chemical Sciences, L'Aquila, Italy (mirko.piersanti@aquila.infn.it), (2) Consorzio Area di Ricerca in Astrogeofisca, L'Aquila, Italy., (3) Department of Physical and Chemical Sciences, University of L'Aquila, Italy., (4) SPACE Research Centre - RMIT University , Melbourne, Australia, (5) Department of Mathematics and Physics, University of "Roma Tre", Italy, (6) Institute for Scientific Research, Boston College, Boston, Massachusetts, USA

The space environment near Earth, is constantly subjected to changes in the solar wind flow generated at the Sun. Examples of effects resulting from this variability are the occurrence of powerful solar disturbances, such as coronal mass ejections (CMEs). The impact of CMEs on the Earth's magnetosphere perturbs the geomagnetic field causing the occurrence of geomagnetic storms. Such extremely variable geomagnetic fields trigger geomagnetic effects measurable not only in the geospace but also in the ionosphere, upper atmosphere, and on the ground. For example, during extreme cases, rapidly changing geomagnetic fields generate intense geomagnetically induced currents (GICs). In recent years, GIC impact on the power networks at middle and low latitudes has attracted attention due to the expansion of large-scale power networks into these regions.
In this work we analyzed the magnetospheric and ionospheric response to the September 6, 2017 SSC by reconstructing the global ionospheric current flow pattern through the use of the Piersanti et al. [2016] model and by evaluating the correspondent GIC. The study also indicated that the eastward component of the geoelectric field is dominant for low-latitude locations during the SSC events.