Investigation of the possibility of GIC development in Greece during the strongest magnetic storms of solar cycle 24

Adamantia Zoe Boutsī\textsuperscript{1,2}, Georgios Balasis\textsuperscript{2}, Ioannis A. Daglis\textsuperscript{1,2,3}, Kanaris Tsinganos\textsuperscript{1}, and Omiros Giannakis\textsuperscript{2}

\textsuperscript{1}Department of Physics, National and Kapodistrian University of Athens, Greece
\textsuperscript{2}Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing (IAASARS), Penteli, Greece
\textsuperscript{3}Hellenic Space Center, Athens, Greece

Geomagnetically Induced Currents (GIC) constitute an integral part of the space weather research and a subject of ever-growing attention for countries located in the low and middle latitudes. A series of recent studies highlights the importance of considering GIC risks for the Mediterranean region. Here, we exploit data from the HELLenic GeoMagnetic Array (ENIGMA), which is located in Greece, complemented by magnetic observatories in Italy, to calculate corresponding values of the GIC index, i.e., a proxy of the geoelectric field calculated entirely from geomagnetic field variations. We perform our analysis for the most intense magnetic storms (Dst<-150 nT) of solar cycle 24. Our results show a good correlation between the storm sudden commencement (SSC) and an increase of the GIC index value. These investigations indicate that despite the elevated amplitude of the GIC index the associated risk remains at low level for the power networks in Greece and Italy during the considered storm events.