Geophysical Research Abstracts
Vol. 18, EGU2016-1061-6, 2016
EGU General Assembly 2016

Characterization of different magnetospheric and ionospheric contributions at mid-latitude magnetic observatories

Yvelice Castillo (1,2,4), Maria Alexandra Pais (1,2), João Fernandes (1,3), Paulo Ribeiro (1), Anna Morozova (1), and Fernando J. G. Pinheiro (1)

(1) CITEUC, Geophysical and Astronomical Observatory, University of Coimbra, 3040-004 Coimbra, Portugal, (2) Department of Physics, University of Coimbra, 3004-516 Coimbra, Portugal, (3) Department of Mathematics, University of Coimbra, 3004-516 Coimbra, Portugal, (4) Department of Astronomy and Astrophysics, National Autonomous University of Honduras, Boulevard Suyapa, Tegucigalpa, Honduras

The main goal of space weather (SW) research is to produce reliable forecasts and nowcasts of the space environment and to evaluate the risks for technological infrastructures and human safety. Most of SW studies concern high and equatorial latitudes, because of well-known and significant effects of field-aligned currents and the equatorial electrojet at those latitudes. Less studies are made at mid-latitudes, resulting in an incomplete understanding of the local effect of magnetospheric and ionospheric currents. We compare the performance of global indices of geomagnetic activity such as Kp and Dst with simulations of the Tsyganenko semi-empirical model of storm-time geomagnetic field, in predicting the irregular geomagnetic activity observed at the Coimbra magnetic observatory (40.22 N, 351.58 E). At first we use principal component analysis to efficiently separate the geomagnetic daily variation. Then we identify the effect of different magnetospheric current systems and estimate their contributions. Finally, we discuss how ground observatory observations can benefit from semi-empirical models, but also contribute to improve their parameterization.