

Solar active regions complexity effects on Geo-Space environment

Shabnam Nikbakhsh (1,2), Eija Tanskanen (2), David Perez-Suarez (3), and Thomas Hackman (1)

(1) University of Helsinki, Department of Physics, Helsinki, Finland (shabnam.nikbakhsh@helsinki.fi), (2) Finnish Meteorological Institute, (3) University College London

We employ the Mount Wilson Classification to study the effect of solar Active Regions (ARs) magnetic complexity on Geo-Space environments. Magnetic field of the sun is disturbed in ARs and these areas frequently host solar explosive activities, such as solar flares and coronal mass ejections (CMEs). Mount Wilson scheme classifies ARs based on their magnetic topology from the more simple one (α) to the most complex one ($\beta\gamma\delta$). Several studies have been shown that the stronger flares and CMEs which play a crucial role in the space weather prediction, are mostly associated with more complex regions. In this study, we compared our substorms list with magnetic complexity data to analyze the ARs magnetic complexity effect on the near-Earth magnetic activity.