



Responses of power systems in Canada to the space weather disturbances of the solar cycle 24

Larisa Trichtchenko (1), Sebastien Guillon (2), David Boteler (1), and Risto Pirjola (3)

(1) Natural Resources Canada, Geomagnetic Laboratory, Ottawa, Canada (ltrichtc@nrcan.gc.ca), (2) Hydro-Québec – TransÉnergie, Canada, (3) Finnish Meteorological Institute, Finland

Significant geomagnetically induced currents (GIC) in power systems during the geomagnetic storms are the hazardous impacts of the solar activity. While during solar cycle 23 the most of the geomagnetic storms and subsequent effects on the power systems were resulting from the coronal mass ejections often associated with the significant flaring activity, the solar cycle 24 is quite different. During this current solar cycle there were not so many obvious sources of geomagnetic storms so far and the associated GIC activity perhaps was not that significant, especially at low latitude. The lack of significant space weather events gives the opportunity to identify the ground signatures of sources less pronounced during strong cycles, such as disappearing filaments and high speed streams. In the presentations we will discuss several cases when the recordings of the GIC and other power system parameters in Canada (high latitudes) show the presence of significant GIC in power systems during solar cycle 24. Their possible solar sources will be analyzed and compared with the GIC recordings and corresponding solar sources during “strong” solar cycle 23.