Geophysical Research Abstracts
Vol. 20, EGU2018-8082, 2018
EGU General Assembly 2018

Generation and application of real-time Polar Cap (PC) indices

Peter Stauning
Danish Meteorological Institute, Copenhagen, Denmark (pst@dmi.dk)

The standard Polar Cap (PC) indices, PCN (North) and PCS (South), are based on geomagnetic observations from Qaanaaq (Thule) and Vostok, respectively (e.g., Troshichev et al., 2006). The indices reflect the transpolar plasma convection driven by the interaction of the solar wind with the magnetosphere. The PC indices have been used in a variety of solar-terrestrial investigations relating to magnetic storms and substorms. In real-time versions the indices could be useful for power grid protection by enabling warning an hour or more (Stauning, 2013) ahead of violent events of geomagnetically induced currents (GIC) that may threaten high-voltage power lines in the vicinity of the auroral zones. With appropriate time shifts or integration of samples, PC indices could be used to predict auroral (AL), mid-latitude (Kp) and ring current (SYM, ASYM, Dst) geomagnetic disturbance indices. The PC indices, furthermore, might help the forecast of auroral substorms with their colourful and impressive display of vivid auroras to the benefit of, among other, tourist organisations. The presentation shall discuss these applications and shall also consider available methods to derive real-time PC index values as well as assessing the quality of presently provided indices. Furthermore, the potential use of alternative locations in the northern and southern polar caps to provide data for PC indices shall be considered.