

## Present status and future perspective of AE/Dst index derivation

# Masahito Nose[1]; Toshihiko Iyemori[2]; Masahiko Takeda[3]; Hiroaki TOH[4]; Manabu Kunitake[5]; Shinichi Watari[5];  
AE/Dst magnetic observatories AE/Dst magnetic observatory network[6]

[1] DACGSM, Kyoto Univ.; [2] WDC for Geomag., Kyoto Univ.; [3] Data Analysis Center for Geomag.and Space Mag., Kyoto Univ.; [4] Data Analysis Center for Geomagnetism and Space Magnetism, Kyoto University  
; [5] NICT; [6] -

The AE index has been used to identify substorms or to estimate magnitude of ionospheric convection for more than three decades. This index is derived from the horizontal component of the magnetic field variations from 10 stations in auroral latitude (64-70 degrees geomagnetic latitude (GMLAT)) and 2 stations in sub-auroral latitude (61-64 degrees GMLAT). These stations are Abisko [operated by SGU, Sweden], Dixon Island, Cape Chelyuskin, Tixie, Pebek [AARI, Russia], Barrow, College [USGS, USA], Yellowknife, Fort Churchill, Sanikiluaq (Poste-de-la-Baleine) [CGS, Canada], Narsarsuaq [DMI, Denmark], and Leirvogur [U. Iceland, Iceland]. Most of the stations are operated rather well and keep sending data to Kyoto University in quasi-real-time, which make it possible to provide the real-time AE index with science community. However, Russian stations had problems in operation since 1995 because of lack of finance and severe weather conditions. To solve the problems, we have been working in international partnership project, RapidMAG (Russian auroral and polar ionospheric disturbance magnetometers), which follows the PURAES (Project for Upgrading Russian AE Stations) project. These projects succeeded in resuming observations in most of Russian stations. At present, the provisional AE index is calculated by a few month delay, because it takes time to receive definitive data or visually check artificial noises with baseline correction. The provisional AE index is available by digital data from our WWW page.

The Dst index has been widely used to see degrees of geomagnetic disturbances in mid-latitude, in particular, development of geomagnetic storms. This index is derived from the horizontal component of the magnetic field variations from 4-5 stations in low- to mid-latitude ( $|GMLAT|=10-34$  degrees), which include Kakioka [KMO, Japan], Honolulu, San Juan [USGS, USA], Hermanus [HMO, South Africa], and Alibag [IIG, India]. Quasi-real-time data have been transferred from these observatories to Kyoto University with little problems, resulting in continuous derivation of the real-time Dst index and supply from our WWW page. The provisional Dst index is calculated after the definitive data are released from all of stations, thus it delays about 1-1.5 years.

In the talk, we will review the present status and future perspective of AE/Dst index derivation.