

TOWARD BETTER AND QUICKER DERIVATION OF THE GEOMAGNETIC AE INDEX BY UPDATING OBSERVATORIES IN SIBERIA

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Demands for global geomagnetic data in timely ways are growing in order to have good coverage for applications of the geomagnetic data besides researches of main field modeling, Solid Earth and Space Physics.

A timely AE index derived by stations along the Auroral zone is requested for Space Weather applications such as now-cast and forecast of storm and substorm. In order to derive good AE index, stability of the baseline and high time resolution data logging are necessary for data processing free from troubles.

Unfortunately serious difficulties in maintaining many geomagnetic observatories arose, especially in Siberian AE stations since 1990 such as long missing period and closure of an AE station Cape Wellen. Because of the problems, even the final and the provisional AE indices were not of as high quality as might be hoped. Responding to the growing demands for quick availability of the AE index, WDC Kyoto started a service of providing a Quick-Look (QL) AE index, its plot was made available by WWW of the WDC for Geomagnetism, Kyoto

(<http://swdcwww.kugi.kyoto-u.ac.jp>). However we were forced to derive it without a good coverage of Siberia.

Many efforts were tried to keep the observatories. In 2000, we started a 'Project for Upgrading Russian AE Stations' (PURAES) with cooperation with 'Space Weather Magnetometer Experiments' (SWME), an international cooperative project among Japan (Kyoto Univ. and CRL), Russia (IDG and AARI), and USA (APL and UAF).

A new geomagnetic observatory Pebek was founded as a replacement of Cape Wellen. A new fluxgate magnetometer, a new absolute

measurement system and a transmitter (DCP) for a near real-time data transmission through weather satellite GMS were installed

in four Siberian AE stations (Pebek in 2001, Tixie, Norilsk and Cape Chelyuskin in 2002).

All these observatories are manned, and the absolute measurements by GEO-10 equivalent theodolite are made once every week, and 0.1 second values are recorded locally using a stable fluxgate magnetometer. The near real time one minute data are transmitted through GMS to Japan, and relayed to CRL Hiraiso and

then to WDC Kyoto, which distributes the data at once to AARI, APL and UAF.

Through these efforts, it became possible to make a more reliable QL-AE index available more quickly. The quickest version became available within a few hours.

The data recorded at these Siberian observatories are in good quality and the coverage of real-time data is good enough to answer the INTERMAGNET requirements.

We plan to extend this PURAES/SWME effort to other Russian observatories such as Dixon and Amderma. We hope that many observatories in other countries will make cooperation with Space Weather efforts for a stable and better network of geomagnetic observations.