Geophysical Research Abstracts, Vol. 8, 00022, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00022

GPS Precipitable Water Vapour Measurements at Scott Base and McMurdo Station Antarctica during the Major Storm of 2003

0.1 Z. A. Abdul Rashid (1), W. Suparta (1), M. Othman (2), M. A. Mohd. Ali (1), and B. Yatim (3)

(1) Department of Electrical, Electronic and System Engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor Darul Ehsan, Malaysia, (2) National Space Agency of Malaysia, Putrajaya, Malaysia, (3) Institute of Space Science, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor Darul Ehsan, Malaysia (zaar@vlsi.eng.ukm.my; wyn_suparta@yahoo.com / Phone: +60389296327)

This paper looks into the influence of solar activity and surface meteorological conditions on the production of precipitable water vapour (PWV) at Scott Base (SBA) and McMurdo (MCM) stations during the major storms of 2003. In this works, the PWV measurement obtained using ground-based GPS receiver located at both stations are compared with the station surface meteorological measurements and with the global geomagnetic and solar indices, solar X-ray, and optical flare data from WDC and NOAA SEC. The major storm of 2003, "Superstorm 2003" cover the period from 29^{th} to 31^{st} October with Dst, Kp, and Ap indices equal to –401 nT, 9, and 162 respectively. During this period, SSN $>$ 200 and $F_{10.7}$ $>$ 250, several large active regions are visible on the surface of the sun which produced substantial solar flare activity a week before, with a combination of large M-Class followed by six X-Class flares. Analyses of the result show it possible to incorporate the solar variables output into the climate model through PWV measurement during geomagnetic storm.

Keywords - Geomagnetic storm, solar flares, Antarctica, GPS meteorology, precipitable water vapour.