



## **Effects of the solar storms on overhead equivalent currents and geomagnetically induced currents**

**D.W. Danskin**, D.H. Boteler, L. Trichtchenko, G. Jansen van Beek

Geomagnetic Laboratory, Natural Resources Canada

Major solar storms such as those in late October 2003 or November 2004 caused many effects on the earth and technology systems. In particular, the former storm can be categorized into periods based on the systems' responses. The sudden commencement is clearly observed with both magnetometers and geomagnetically induced current (gic) monitoring devices. After three hours, pc4 wave activity had an impulsive onset and endured for ten hours after which the frequency abruptly dropped into the pc5 band. Using an international array of magnetometers, equivalent overhead currents are determined at locations in the northern hemisphere. The combined maps of these currents give an enhanced understanding of their spatial extent and temporal variability during geomagnetic storms.