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# Considering the polarization of the oxygen thermospheric red line for Space Weather studies: theory and first measurements

**Mathieu Barthélémy (1)**, Joran Moen (2), Jean Lilensten (1), Cyril Simon (2), Roland Thissen (1), D. A. Lorentzen (3), O. Dutuit (1)

(1) Laboratoire de Planétologie de Grenoble, Bâtiment D de physique, BP 53, 38041 Grenoble cedex, (2) Department of Physics, University of Oslo, P.O.Box 1048, Blindern, N-0316 Oslo, Norway, (3) Arctic Geophysics, The University Centre in Svalbard, N-9170 Longyearbyen, Svalbard, Norway

Space weather thermospheric monitoring requires real-time and large-scale measurements. In order to monitor the thermospheric variations due to the geomagnetic activity, one relies mostly on the measurements of the intensity of the atomic oxygen green line and on the indirect measurement of the Total Electron Content. These two parameters do not allow retrieving the full characteristics of the thermosphere. We recently proposed to use the polarization of the atomic oxygen red line to fulfil this requirement (Lilensten et al., 2006). This paper will show the mechanisms underlying the polarization process. We will then present the preliminary results obtained during the first experimental campaign during the winter 2006 - 2007.