



Spatially extended observations of the coupled thermospheric and ionospheric temperature and velocity field over Svalbard

E. M. Griffin (1), A. L. Aruliah (1), H.-C. I. Yiu (1), I. McWhirter (1), A. Charalambous (1), I. W. McCrea (2)

(1) Atmospheric Physics Laboratory, University College London, UK (2) EISCAT group, Space Science Division, Rutherford Appleton Laboratory, UK

Measurements of all-sky thermospheric neutral winds and temperatures using the 630 nm oxygen red line have been obtained using a new instrument called SCANDI (for Scanning Doppler Imager) operating at the new Kjell Henriksen Observatory (KHO) at Longyearbyen, Svalbard (78.1 N, 16.0 E) since November 2007. The location allows extensive comparison to both existing optical instrumentation, including a standard Fabry Perot Interferometer, and to the ionospheric temperatures and velocities measured by the colocated Eiscat Svalbard Radar (ESR). With this unique arrangement of complementary instrumentation the structure observed in the extended field of neutral thermospheric measurements is examined. Temperature results reveal a rapid response to local Joule heating and also periods of large spatial gradient within the extended SCANDI field of view (around 1200 km diameter). Wind results are also combined with the observations of ionospheric velocities provided within the CUTLASS radar fields of view. The implications for further studies of the coupled ionosphere-thermosphere system are discussed.