

Study of the lower thermospheric wind dynamics

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The lower thermospheric wind dynamics has been paid attention for several decades to understand the Magnetosphere-Ionosphere-Thermosphere coupling. In particular, it has been an issue how the lower thermosphere will response to the solar wind energy input. IS radar measurements of the polar lower thermosphere begun about 40 years ago by a pioneer work of Brekke et al. [JGR, 78, 8235, 1973], and significant number of studies have been published since then. However, our understanding of the lower thermosphere is still limited. One of reasons is that the lower thermosphere is significantly influenced by atmospheric waves propagating from below. Thus, the day-to-day variability is very prominent. Owing to high running cost, long run of IS radar had not been conducted a decade ago. In 2007-2008, EISCAT Svalbard radar was operated almost continuously for 1 year. However, only about 20 % of the data sets can be used for deriving the ion velocity vector. If we have wind velocity datasets on daily basis like meteor and MF radars usually made for the mesospheric wind measurements, our understanding of the lower thermosphere wind dynamics will be much more progressed. EISCAT 3D can make it possible. I will overview works of the lower thermospheric wind and propose what kind of run we desire.

Keywords: EISCAT 3D, Lower thermosphere, polar region