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Comparison of HIWIND and EISCAT derived Daytime Thermospheric Winds

Q. Wu (1) and I. Haggstrom (2)
(1) NCAR, HAO, Boulder, United States (qwu@ucar.edu), (2) EISCAT, Kiruna, Sweden (ingemar@eiscat.se)

HIWIND is the first balloon borne Fabry-Perot interferometer for day and night thermospheric wind measurements. During its maiden flight in June 2011 from Kiruna, Sweden, HIWIND obtained high quality daytime thermospheric winds. The HIWIND observed winds were compared with the simultaneous EISCAT observation derived winds. Based on the comparison, the ion-neutral collision frequency was estimated by calculating the Burnside factor. Because of the availability of the HIWIND neutral wind data, we were able to assess the vertical wind effect on the EISCAT derived horizontal winds and estimate the vertical winds near the auroral oval due to local Joule heating and upwelling. It was found that the EISCAT derived winds tend to be more southward on the nightside compared to the HIWIND observation. We believe that the EISCAT wind might be affected by the upward vertical winds.