

Characteristics and Trade-Offs of Doppler Lidar Global Wind Profiling

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Abstract

Accurate, global profiling of wind velocity is highly desired by NASA, NOAA, the DOD/DOC/NASA Integrated Program Office (IPO)/NPOESS, DOD, and others for many applications such as validation and improvement of climate models, and improved weather prediction. The most promising technology to deliver this measurement from space is Doppler Wind Lidar (DWL). The NASA/NOAA Global Tropospheric Wind Sounder (GTWS) program is currently in the process of generating the science requirements for a space-based sensor. In order to optimize the process of defining science requirements, it is important for the scientific and user community to understand the nature of the wind measurements that DWL can make. These measurements are very different from those made by passive imaging sensors or by active radar sensors. The purpose of this paper is to convey the sampling characteristics and data product trade-offs of an orbiting DWL.