

Feasibility study for future space-based Doppler Wind Lidar

*Shoken Ishii¹, Kozo OKAMOTO², Takuji Kubota³, Philippe Baron¹, Maokoto Aoki¹, Atsushi Sato⁴, Toshiyuki ISHIBASHI², Taichu Y Tanaka², Riko Oki³, Masaki Satoh⁵, Toshiki Iwasaki⁶

1. National Institute of Information and Communications Technology, 2. Meteorological Research Institute, 3. Japan Aerospace Exploration Agency, 4. Tohoku Institute of Technology, 5. The University of Tokyo, 6. Tohoku University

Wind is a fundamental meteorological variable describing the atmospheric state as well as pressure, temperature, and humidity. Global wind profile observation is important to significantly improve the initial conditions essential for numerical weather prediction and other meteorological studies. Current space-based wind observing systems have a large coverage area and high temporal and horizontal resolutions but have a low vertical resolution. The World Meteorological Organization wants to develop a global wind profiling system. 'Light Detection And Ranging (Lidar)' is an optical active remote sensing technique which can make a range-resolved measurement. A space-based Doppler Wind Lidar (DWL) is one of promising sensors to fill the current gap. We are making feasibility study for the space-based DWL for future global wind profiling. Recent results and progress of the feasibility studies for the future space-based DWL will be presented.

Keywords: Lidar, range-resolved measurement, space-based observation, global wind profiling