

南極観測用の波長可変共鳴散乱ライダーシステム: 現況について Tunable resonance scattering lidar system for Antarctic observation: Current status

津田 卓雄^{1*}; 江尻 省¹; 西山 尚典¹; 阿保 真²; 松田 貴嗣¹; 川原 琢也³; 中村 卓司¹
TSUDA, Takuo^{1*}; EJIRI, Mitsumu¹; NISHIYAMA, Takanori¹; ABO, Makoto²; MATSUDA, Takashi¹; KAWAHARA,
Takuya³; NAKAMURA, Takuji¹

¹ 国立極地研究所, ² 首都大学東京大学院システムデザイン研究科, ³ 信州大学工学部

¹National Institute of Polar Research, ²Graduate School of System Design, Tokyo Metropolitan University, ³Faculty of Engineering, Shinshu University

We are developing a new resonance scattering lidar system to be installed at Syowa Station (69S, 39E) in Antarctica. For the new lidar system, we have employed a tunable alexandrite laser covering the resonance scattering wavelengths of two neutral species, which are atomic potassium (K, 770.11 nm) and atomic iron (Fe, 386.10 nm), and two ion species, which are calcium ion (Ca^+ , 393.48 nm) and aurorally excited nitrogen ion (N_2^+ , 390.30 nm, 391.08 nm). Thus the tunable resonance scattering lidar system will provide information on the mesosphere and lower thermosphere as well as the ionosphere. Using the tunable lidar and co-located other instruments, we will conduct a comprehensive ground-based observation of the low, middle, and upper atmosphere above Syowa Station. This unique observation is expected to make important contribution to studies on the atmospheric vertical coupling process and the neutral and charged particle interaction. In this presentation, we report current status of the tunable lidar system in development and test observations at National Institute of Polar Research in Tachikawa, Japan.

キーワード: 共鳴散乱ライダー, 南極, 昭和基地, K層, Fe層

Keywords: Resonance scattering lidar, Antarctica, Syowa Station, K layer, Fe layer