

## Tunable resonance scattering lidar system for Antarctic observation: Current status

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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 ( $\text{Ca}^+$ , 393.48 nm) and aurorally excited nitrogen ion ( $\text{N}_2^+$ , 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.

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