

## Visualization of Streaks, Thermals and Waves in the Atmospheric Boundary Layer

Fujiyoshi, Y.\*<sup>1</sup>, Yamashita, K.\*<sup>2</sup> and Fujiwara, C.\*<sup>2</sup>

\*1 Institute of Low Temperature Science, Hokkaido University, N19W8, Sapporo  
060-0819, Japan. E-mail: fujiyo@lowtem.hokudai.ac.jp

\*2 Graduate School of Environmental Science, Hokkaido University, N10W5, Sapporo  
060-0810, Japan.

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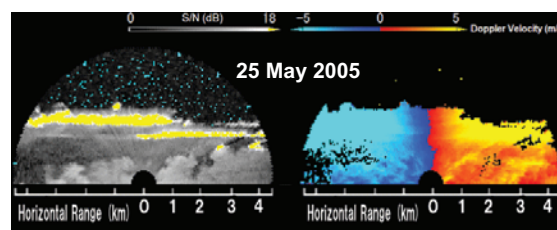
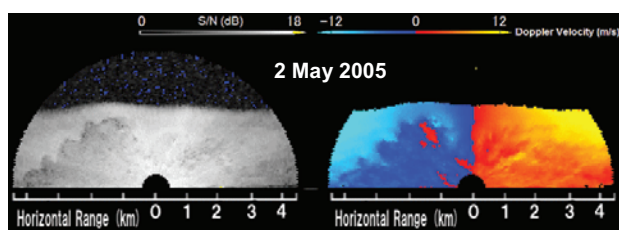


Fig. 1. Vertical cross-sections of back scattering intensity (S/N ratio) and Doppler velocity fields of blue-thermals. Red (blue) colored areas are radial velocities away from (toward) the lidar.

Fig. 2. As Fig. 1, but for moist-thermals developed below the stratus clouds.

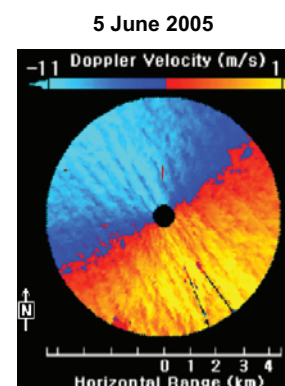
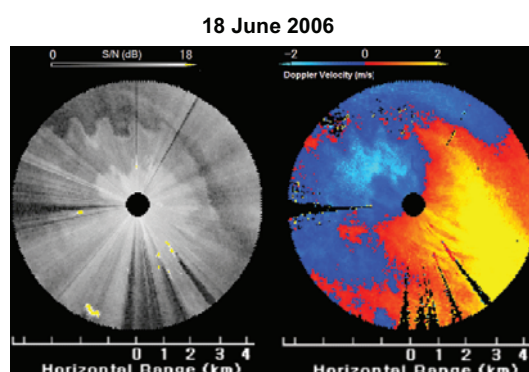
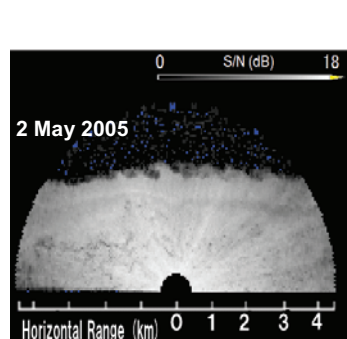


Fig. 3. Vertical cross-section of Kelvin-Helmholtz instability waves developed near the upper boundary of ABL.

Fig. 4. As Fig.1, but for horizontal cross-sections of waves formed along the horizontal wind shear line.

Fig. 5. Doppler velocity fields of streaks formed near the ground surface.

We can visualize the various kinds of atmospheric phenomena that have been hardly seen except for a 3D-Coherent Doppler Lidar with 1.54  $\mu\text{m}$  in wavelength (Mitsubishi Electric Corporation). These figures show several examples of typical organized airflows in the atmospheric boundary layer, that is, thermals (Figs. 1 and 2), Kelvin-Helmholtz instability waves (Fig. 3), waves developed along the horizontal wind shear zone (Fig. 4) and streaks (Fig. 5).