

# Measuring Turbulence and Eddy Flux with a Na Lidar

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Na resonance-fluorescence Doppler lidars have been used to measure vertical profiles of temperature and wind in the mesopause region (80-105 km) to study atmospheric perturbations at the gravity wave scales with measurement resolutions at ~1 min and ~500 m. Recent improvement of the Na lidar at the Andes Lidar Observatory greatly increased its signal and reliability, and enables detection of turbulence scale perturbations (~10s s and ~10s m). I will present the method to derive turbulence perturbations of wind and temperature perturbations from Na lidar photon counts. Correlations between turbulence perturbations in vertical wind and temperature are used to calculate the vertical eddy heat flux and derive eddy thermal diffusion coefficient.

Key words: Na Lidar, Turbulence, Eddy Flux, Eddy Diffusion (maximum 5)