

272nd Regular Open Seminar (2021 /09 /29)

Title : Characterization of atmospheric turbulence from remote sensing and in situ observations: achievements and prospective

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Related RISH mission : mission1

Abstract : As a new RISH member at the Laboratory of Atmospheric Observation Data Analysis, the first part of my presentation will show some of my research achievements mainly obtained with the MU radar, in an ongoing collaboration with RISH since 1997. The second part of my talk will describe several projects in progress or incoming for the next few years through national and international collaborations. Using recent observation techniques, these projects will allow us to study in more detail the characteristics of atmospheric turbulence (occurrence, intensities, scales,...) from the planetary boundary layer up to the lower stratosphere and at various latitudes. These studies aim to provide information to better understand the consequences of turbulence on many aspects of the humanosphere (e. g. , pollutant dispersion, aviation safety, weather forecast). For these projects, the instrumental resources of the Shigaraki MU observatory and of the Syowa station (Antarctica) gathered around the MU and PANSY radars will be used. Depending on implementation constraints, they will be complemented by additional newly developed in-situ devices (such as unmanned aerial vehicles, tethered balloons, stratospheric balloons, all equipped with turbulence sensors) and ground-based remote sensing instruments (Doppler lidars and weather radars).

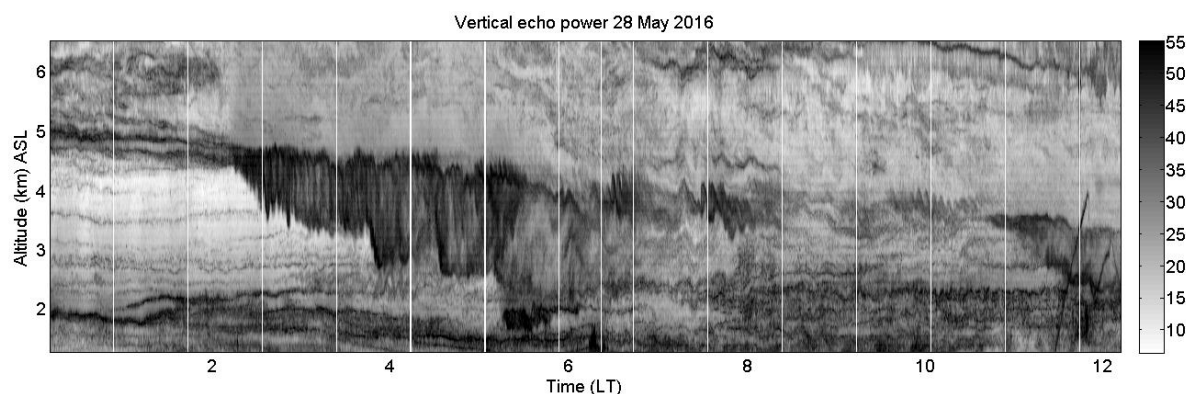


Figure: Time-height cross-section of MU radar echo power at vertical incidence in range image mode, showing the development of a Mid-level Cloud base Instability at a cloud base accompanied by Kelvin-Helmholtz billows in the frontal zone (around the altitude of 4.0 km).