

Estimation of the turbulence energy dissipation rate. Viktor Banakh, Igor Smalikho, Institute of Atmospheric Optics (Russia); Yelena Pichugina and Alan Brewer, NOAA (USA).

ABSTRACT

In this paper we present the basic relations for the estimation of the turbulence energy dissipation rate from the transverse and longitudinal structure function of the radial wind velocity measured by pulsed coherent Doppler lidar (CDL) at the conical scanning (both one full scan and multiple sectorial scanning). We compare the results of the pulsed CDL profiling the dissipation rate in the the ABL by these methods with the estimation of the dissipation rate obtained from the sonic anemometer data. We present the results of estimating the dissipation rate at the given height from the transverse and from the longitudinal structure function calculated based on the same data of the radial wind velocity measured by CDL during long temporal period and compare these results with each other.