

Turbulence structure in the daytime boundary layer around an isolated mountain from in-situ
airborne measurements

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Abstract

Results are presented of in-situ airborne measurements performed during the first field experiment of The Mountain Terrain Atmospheric Modeling and Observations (MATERHORN) Program (at Dugway Proving Ground (Utah, USA) in Fall 2012. A Navy Twin Otter aircraft flew 6 missions of about 5 hours each during the daytime, collecting in-situ measurements of meteorological variables at 10 Hz over a steep isolated mountain of a horizontal and vertical scale of about 10 km and 1 km, respectively. The data allow a thorough investigation of the turbulence characteristics and structures in the daytime boundary layer and during the morning and evening transition periods. Dynamically and thermally induced modifications of the turbulence structure around Granite Mountain are documented including the presence of organized convective structures.