

Abstract Submitted
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Stratified Turbulence Measurements in Complex Terrain Using Hot-film Probes and a Collocated Sonic Anemometer¹ C. HOCUT, U.S. Army Research Laboratory, E. KIT, Tel Aviv University, D. LIBERZON, Technion - Israel Institute of Technology, H.J.S. FERNANDO, University of Notre Dame, MATERHORN TEAM — In the fall of 2012 and spring 2013, the Mountain Terrain Atmospheric Modeling and Observations Program (MATERHORN) conducted extensive field experiments at the Granite Mountain Atmospheric Science Testbed (GMAST), US Army Dugway Proving Grounds (DPG), Utah. This provided a unique opportunity to deploy tower mounted three-dimensional hot-film combo probes, consisting of sonic anemometers collocated with hot-film anemometers able to respond to the wind direction. The combo probes follow mean winds using a feedback control loop and use a Neural Network to calibrate the hot-films in-situ. Once calibrated, these probes can handle a vast range of background flow conditions and scales from mesoscale flow down to the Kolmogorov scale. Of particular interest are the observed variation in velocity spectra during the evenings. Sometimes the velocity spectra shows the turbulence is Kolmogorov and is isotropic at small scales while in other spectra there is evidence of turbulence production at finer scales. An explanation on different spectral shapes will be presented as well as the relevant length/time scales of the production events.

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