

Precision Airdrop Modeling Studies Using TODWL Wind Data Collected over Complex Terrain during MATERHORN-X

Thursday, 14 January 2016: 2:30 PM

Room 243 (New Orleans Ernest N. Morial Convention Center)

G. D. Emmitt, Simpson Weather Associates, Charlottesville, VA; and **S. Greco** and K. S. Godwin

Recorded Presentation

During the ONR funded MATERHORN-X project that was held near Dugway, UT in Sept-Oct 2012, an airborne Doppler wind lidar was flown on board a Twin Otter aircraft to measure the boundary layer and near surface winds and aerosols over complex terrain. This Twin Otter Doppler Wind Lidar (TODWL) was mainly flown at around 3000 m and provided high resolution (1.5km horizontal and 50m vertical) 3-dimensional wind profiles between the aircraft and the near surface. During the MATERHORN experiment, the WRF model was run by project scientists and also run independently by Simpson Weather Associate (SWA).

While this >3000 wind profile data set was obtained primarily for academic purposes (e.g. parameterization schemes for numerical models), the utility of such a data base for air pollution dispersion modeling or research on activities such as air drops is clearly recognized. The authors will be reporting on work funded by the USAF that utilizes TODWL wind profiles and the WRF model output to investigate the impact of high resolution wind measurements on Precision Air Drops (PAD) over complex terrain. This work builds upon earlier USAF funded studies by the investigators which focused on the impact of Doppler wind lidar measurements over the complex terrain near the Salinas Valley and Monterey, CA. A main goal will be to report on a qualitative and quantitative assessment of the capability of airborne lidar systems for PAD application and comparisons with current methods. This will include the impact on CARP and the determination of drop locations.