

ADVANCED AIRBORNE DOPPLER WIND LIDAR SIGNAL PROCESSING FOR OBSERVATIONS IN COMPLEX TERRAIN

G. D. Emmitt

K. Godwin

S. Greco

O'Handley

Simpson Weather Associates, Charlottesville, VA

Abstract

An airborne Doppler Wind Lidar has been used in several atmospheric boundary layer field experiments over the past decade. These experiments have taken place in California (Salinas Valley and the Monterey Peninsula), Arizona (Yuma Proving Grounds), and Utah (Dugway Proving Grounds). A primary objective of these field experiments was to compare model predicted winds in mountainous areas with wind observations obtained from the lidar measurements. To accomplish this, there is a basic challenge to determine when a comparison is valid in space and time. Here we have introduced the case for combining 12 pint step stare scans (conical) with near nadir stares to better represent the vertical air motions in complex terrain. We have also described a new scanning pattern that allows for LOS intersections for desired altitudes such as a ridge line or a valley floor.

SPIE Remote Sensing at Amsterdam, NL. Conference 9246: Lidar Technologies, Techniques, and Measurements for Atmospheric Remote Sensing [9246-8], Sep 22-15.