

**Comparison of Single- and Dual-Doppler Lidar Wind Vector Retrievals with In-Situ and Vertical Lidar Measurements as They Apply to Wind Resource Assessment.** Keith S. Barr, Lockheed Martin Commercial Ventures (USA); Justin Sharp, Sharply Focused (USA); and Dan E. Wolfe, NOAA (USA).

## **ABSTRACT**

Lockheed Martin Commercial Ventures (LMCV) conducted a self-funded study to assess the quality of single- and dual-Doppler wind vector retrieval methods for use in wind energy Wind Resource Assessments (WRA). The experiment was conducted near the Boulder Atmospheric Observatory (BAO), a 300m tower owned by NOAA. LMCV installed wind energy industry standard Class I anemometers and vanes at three levels and on both sides of the tower as “truth” sensors. Additionally LMCV leased three vertical lidars (VL) which were placed at the tower and at two other remote locations under a notional proposed wind farm grid. Two WindTracer® Doppler Lidar units were installed at roughly 2km southwest and 2km east of the BAO tower and were configured in both scanning and staring beam configurations to take data for comparison with the tower measurements, VL datasets, and to provide long-term average flow measurements at high resolution and at multiple elevations above the proposed wind farm grid. Three months of data was taken between January and March, 2013. Results of the campaign, showing the comparison of the different wind vector retrieval methods with the different truth sensors along with three dimensional average velocity maps above the wind farm grid will be presented.