

P47 Numerical simulations of the 17-18 March 2014 Colorado Springs downslope windstorm

Vollmer, David R., *US Air Force Academy (USAFA)*, Sandra L. Jones, *US Army Cold Regions Research & Engineering Lab*, David R. Fisher, and Peter T. Vonich, *USAFA*

High winds are a major operational concern for the US Air Force Academy's (USAFA) flying training operations and present a critical forecast challenge. From 1200 UTC on 17 March 2014 until 0000 UTC on 19 March 2014, back-to-back significant wind events impacted USAFA and the greater Colorado Springs area. On 17 March, a classic Front Range downslope windstorm characterized by strong mountain lee waves developed as upper-level winds became westerly in a statically stable environment. Wind speeds remained high and gusty through 18 March as a very strong surface cold front pushed through the area from the north, leading to reports of significant tumbleweed accumulations across southern Colorado Springs that trapped some residents in their homes. This study uses the Weather Research and Forecast (WRF) model to simulate the event in order to examine the structure and evolution. Model-derived winds were compared to local observations and the USAFA High Wind Alert System (HWAS) network of weather sensors. Several horizontal and vertical resolutions were used, and the effect of a topographic drag parameterization on model low-level winds was evaluated for this case study. The WRF experiments highlight the sensitivity of the model's depiction of the flow structure and resultant winds to resolution and terrain representativeness in this case.