# Assimilation of wind speed and direction observations: a new formulation and results from idealized experiments

Xiang-Yu Huang[a], Feng Gao[a,b], Neil Jocobs[c] and Hongli Wang[a]

[a] *National Center for Atmospheric Research, Boulder, CO, USA,* [b] *Nanjing University of Information Science & Technology, Nanjing, China,* [c] *AirDat LLC, Morrisville, NC, USA.*

We present a new methodology for assimilating wind observations in their observed form of speed and direction, while taking into account both speed and direction error. It ensures the analyzed speed and direction will be consistent with their background and observed values. The new formulation is implemented in the Weather Research and Forecasting Data Assimilation system, and idealized experiments are used to demonstrate the potential benefit. The results suggest that analyses from the new formulation are more reasonable when compared to the conventional methodology. The forecasts generated in these idealized experiments also demonstrate the value of this new formulation.

**References**

**Huang, X.-Y., Gao, F., Jacobs, N. and Wang, H. 2013. "Assimilation of wind speed and direction observations: a new formulation and results from idealized experiments".** ***Tellus A*****, 65, 19936, http://dx.doi.org/10.3402/tellusa.v65i0.19936.**