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Interactive comment on "Assimilation of DAWN Doppler Wind Lidar Data During the 2017 Convective Processes Experiment (CPEX): Impact on the Precipitation and Flow Structure" *by* Svetla Hristova-Veleva et al.

Anonymous Referee #2

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General comments:

This manuscript investigates the impact of the assimilation of DAWN derived winds in the NASA NU-WRF EDAS data assimilation system on the precipitation forecast structure. Benefits are analyzed by investigating direct forecasts of the precipitation field as well as by performing a detailed study of the analysis increments in terms of moisture, temperature and wind fields. Results are verified against APR-2 and GPM satellite observations available during the time of the experiment.

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Discussion paper

Although results are limited to the analysis of a single flight event (one day of data assimilation experiments), this manuscript is well organized, and results are discussed with a great level of detail. I recommend the publication of this study after a couple of clarifying questions listed below are addressed.

Specific comments:

Coming from a data assimilation background, I was sometimes confused by the use of "simulation" and "assimilation". Is the word "simulation" used for verification purposes only rather than for the use of a forward model to perform data assimilation?

Also, it is not clear whether the assimilation is conducted in the regional system, in the global model that provides initial and boundary conditions, or in both. Was the assimilation just conducted in the NCEP's data assimilation and forecast system? If the answer is "yes", did you attempt to conduct direct data assimilation into the NU-WRF system? If the answer is "no", in which of the two domains was the assimilation conducted? Was it a 2-way nested configuration? If would be interesting to investigate the impact of the assimilation of the observations in the WRF system as well as to analyze the benefits that come directly from the assimilation in the global system through improved initial and boundary conditions.