Dropsonde Group Summary (11/20)

Research Questions:

- How much value do the dropsondes have on forecasts 12 h later?
- Does the assimilation of dropsondes lead to forecast improvements beyond convective initiation time, including overnight convection,12 June derecho, San Antonio flood, European forecasts?
- Can we identify particular targeted dropsondes that produce a similar impact as assimilating all dropsondes using ensemble sensitivity?
- Did the dropsondes capture any features missing from the analysis?
- What is the source of the difference between dropsondes and MTP temperature observations?
- What are the interesting mesoscale variations in the upper-level fronts? How do these compare to radiosondes?
- How do analysis errors/differences impact subsequent

Modeling Approaches:

- Glen – Continue to use WRF/DART ensemble, perhaps with model error. Dropsonde impact experiments
- Ryan – Sensitivity calculations from WRF/DART ensemble forecasts
- John and David – dropsonde impact experiments with HRRR
- Mike Baldwin – assimilation of upsonde and radar data to create storm-scale analyses
- Tom Galarneau – evaluation of GFS against dropsondes and rawinsondes within the SGP region
- Use of MPAS to diagnose sensitivity and dropsonde impact on far downstream forecasts

Technical Issues:

- MTP vs. dropsondes, which instrument is the source of the bias?
- Format of upsonde data…will TEMPDROP messages be available?
- Simple time/space conversion method incorporated into catalog (i.e., user specifies the wind speed)

Cases of Most Opportunity:

- 15 May cutoff low and precipitation over Oklahoma (Glen, Ryan, John/David)
- 23 May convection over west Texas, role of dropsondes and surface data in improving forecast and subsequent forecast of MCV over Texas (Glen, Ryan, Russ)
- 28 May – convection over Texas, large errors in GFS analysis (Glen, Ryan, Tom G.)
- 30 May – precipitation over Kansas
- 8 June – displacement and timing errors in convection (Ryan)

- 11 June – trough coming out of Utah, large timing errors on trough and convective initiation (Glen, Ryan)

Forecast Metrics:

- 1800 UTC rawinsondes at regular stations
- precipitation verification (As has been done by Craig and Kevin)
- Storm reports, though difficulty is that model does not produce this. Glen plans to verify rotation tracks within WRF/DART ensemble
- Timing of convective initiation
- Water vapor satellite vs. model simulated image. Tracking of individual features in the flow (Glen)

Operational Strategy Improvements:

- Additional drop points to the west of locations used here
- Drop points within the Navajo nation
- Stationing the plane at a lower elevation to allow for longer flights
- Run convective initiation flights at 29K feet below commercial air traffic