

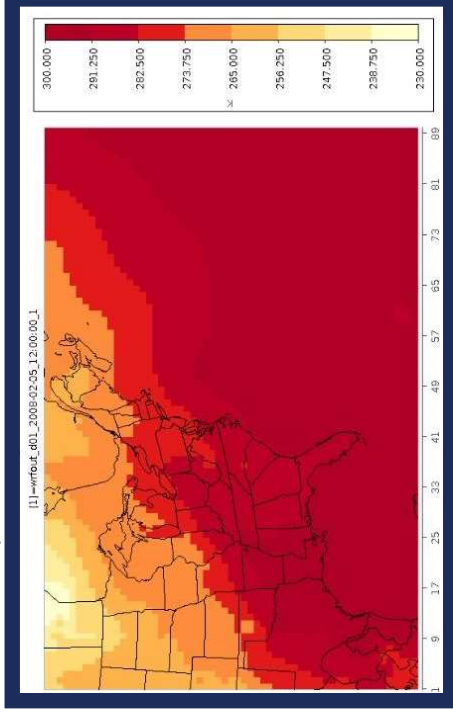


Impact of Using OBSGRID for WRF Weather Predictions



Objective: Compare predicted temperatures and horizontal wind velocities with and without observational nudging for a 2008 weather event to determine the effect of nudging on the accuracy of WRF predictions

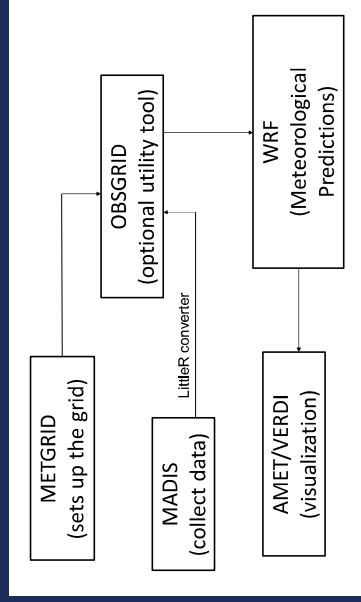
Baseline Temperature Results



Approach: Steps to perform observational nudging:

- Run data through preprocessing steps of geogrid and metgrid
 - Run MADIS data and metgrid outputs through OBSGRID
 - Run OBSGRID outputs through WRF
- Nudging should improve outputs and reduce possible error by weighting data values more specific to each WRF run

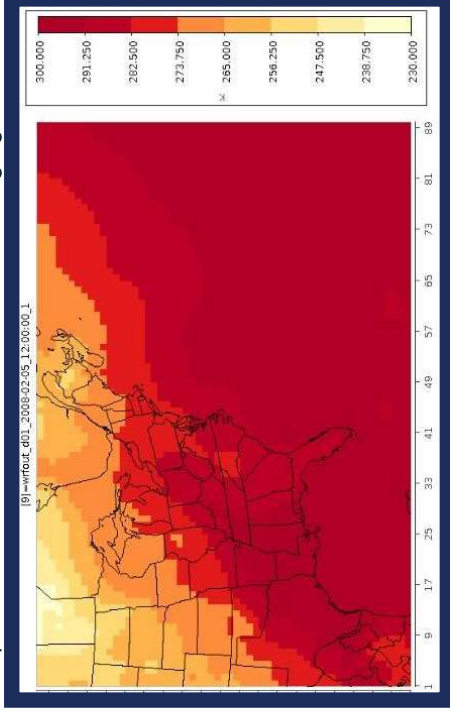
Observational Nudging Framework



Performing nudging is based on the following key programs:

- MADIS data collection
- OBSGRID utility tool
- Weather Research and Forecasting (WRF)
- AMET/VERDI for visualization

Temperature Results with Observational Nudging



Results:

- Observational nudging produces different values, but the differences are slight and trends inconsistent
- Cannot conclusively say that OBSGRID is beneficial to weather predictions
- Complex to set up correct files, program interfaces, and formats
- Considering both the lengthy setup time and minimal effects, nudging is not advantageous for this case

Sample Results

City	Observed Temp. (K)	% Diff.		Wind Speed (m/s)	% Diff. Nudged
		Baseline	Nudged		
Wilmington OH	289.15	0.306	0.360	5.66	17.63
Greensboro NC	281.95	0.531	0.229	4.63	5.66
					20.11
					10.43

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