Expansion and Enhancement of the Mesoscale Model Evaluation Testbed (MMET)

Jamie K. Wolff*, Michelle Harrold, and Cody Phillips

National Center for Atmospheric Research/Research Applications Laboratory and Developmental Testbed Center

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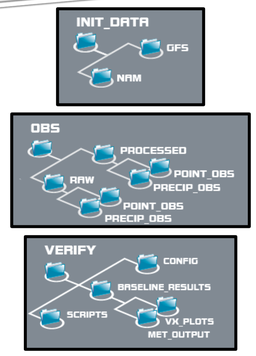
Motivation

The *Mesoscale Model Evaluation Testbed (MMET)* was established by the Developmental Testbed Center (DTC) to *assist the research community* in efficiently demonstrating the merits of a new technique by *providing datasets to utilize for testing* in a common framework in order to effectively *transition promising new advances into operations*.

MMET



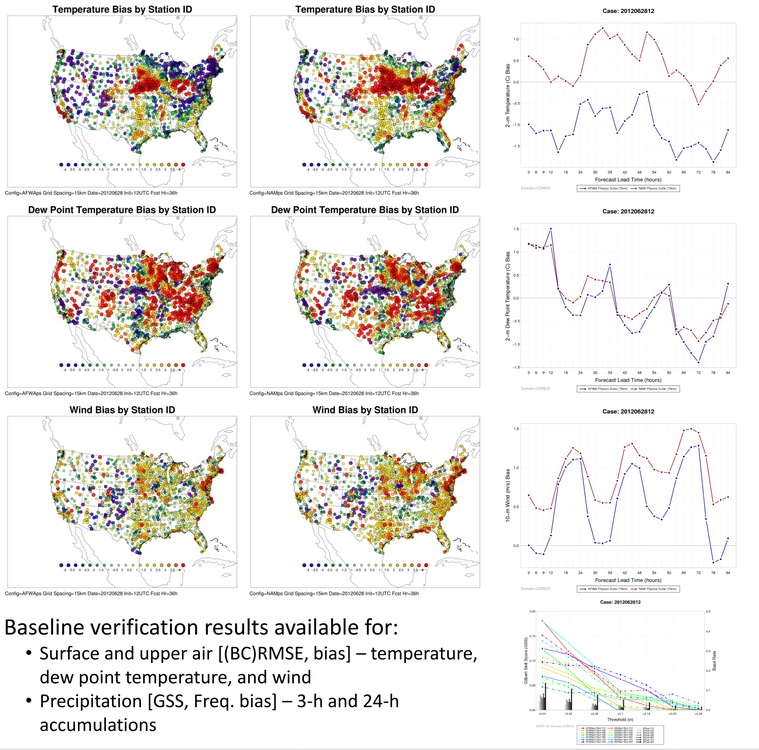
The DTC provides the user community with:

- *Model input* and *observational datasets* for testing and evaluation
- *Baseline results* for select Operational Configurations (OCs), including WRF-ARW and NEMS-NMMB
- *Scripts* to assist with post-processing, graphics generation, and model evaluation

Case List

Date(s)	Meteorological Scenario
28 Feb 2009	Mid-Atlantic *snow storm* where NAM model produced high QPF shifted too far north
11 Mar 2009	*High dew point* predictions by NAM over the upper Midwest and in areas of snow
7 Oct 2009	*HIRESW* runs *underperformed* compared to coarser NAM model
17 Dec 2009	"*Snowpocalypse '09*": NAM produced high QPF over Mid-Atlantic, lack of cessation of precipitation associated with decreasing cloud top over eastern North Carolina
28 Apr – 4 May 2010	Historic Tennessee *flooding* associated w/ an atmospheric river
4 Apr 2011	Record breaking *severe* report day
18 – 26 May 2011	Extended period of *severe weather* outbreak covering much of the Midwest and into the eastern states later in the period
28 Nov 2011	*Cutoff low* over SW US; NAM had difficulties throughout the winter of breaking down cutoff lows and progressing them eastward
3 – 5 Feb 2012	*Snow storm* over Colorado, Nebraska, etc.; NAM predicted too little precipitation in the warm sector and too much snow north of front (persistent bias)
28 Jun 2012	*Derecho* event that began in Iowa and traveled eastward through the Mid-Atlantic states
29 Jul 2013	*Mesoscale convective system* (MCS) over SE Kansas; NAM position too far north, SREF: NAM members too far north, ARW members further south
8 – 14 Sep 2013	Historic Colorado *flooding* associated w/ long duration and warm rain processes
5 Jan 2014	*Arctic air outbreak* impacting much of the United States east of the Rockies

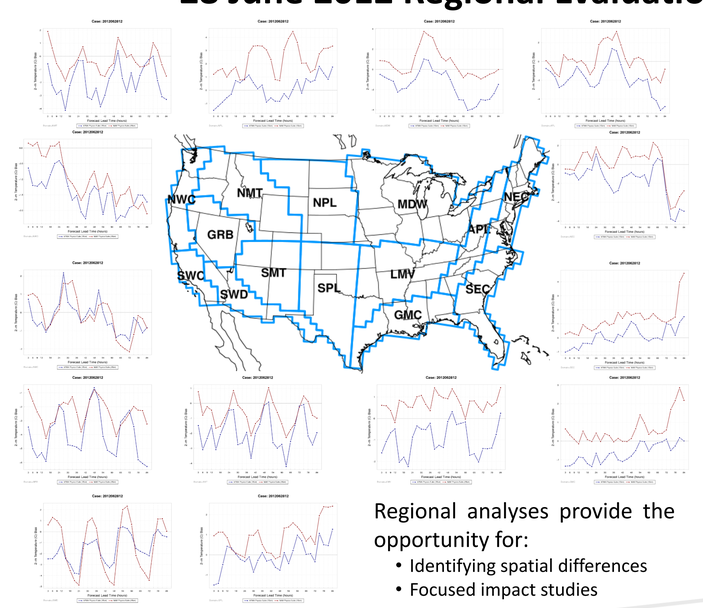
28 June 2012 CONUS Evaluation



Baseline verification results available for:

- Surface and upper air [(BC)RMSE, bias] – temperature, dew point temperature, and wind
- Precipitation [GSS, Freq. bias] – 3-h and 24-h accumulations

28 June 2012 Regional Evaluation



Regional analyses provide the opportunity for:

- Identifying spatial differences
- Focused impact studies

Summary

Four new cases have been established in MMET for a total of 13 cases. The NWP *community is encouraged to engage in the use of MMET cases* while developing and testing new model techniques with potential operational applications.

For *more information* on case descriptions, access to the data, or to nominate additional cases of interest to be included, please visit: http://www.dtcenter.org/eval/meso_mod/mmet

*jwolff@ucar.edu

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