WPC Snow MODE Verification Web Page *(Updated 9/28/21)*

On this page, the Method for Object-Based Diagnostic Evaluation (MODE) from the Developmental Testbed Center (DTC) is used to provide an objective analysis of the Weather Prediction Center's Day 1, Day 2, and Day 3 deterministic snowfall forecast. MODE analyzes the forecast and matches it with the National Snowfall Analysis provided by the National Operational Hydrologic Remote Sensing Center (NOHRSC) at thresholds of 1, 2, 4, 6, 8, and 12 inches. The times and cycles for each forecast/model are listed in the two tables below. The latest image that loads initially will be valid 24 hours prior to the current date and rerun after 72 hours in an effort to have as many snowfall observations included in the NOHRSC analysis as possible. Data archive goes back to November 2, 2018. Previous seasons can be viewed on the old website link (https://origin.wpc.ncep.noaa.gov/snowmode/modeview.php).

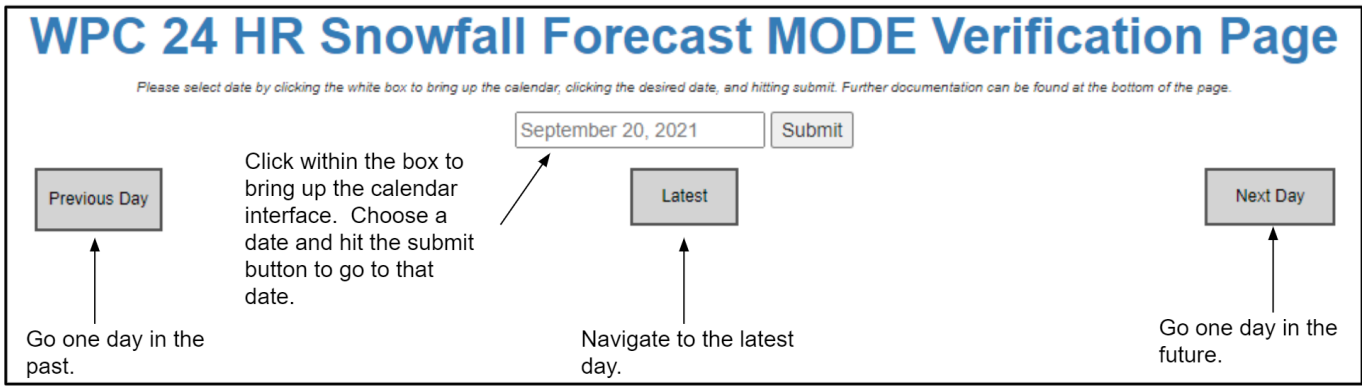
The following models and forecasts are able to be viewed:
For valid times 12Z to 12Z:

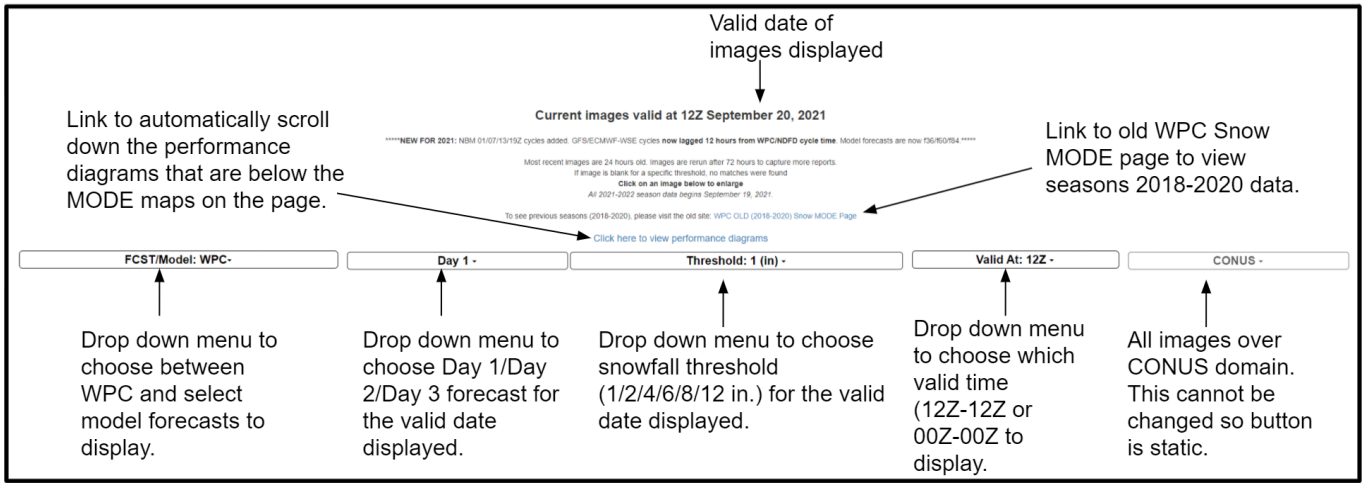
Model/Forecast:	**Cycle:**	**Forecast Hours:**	**Valid Time Period:**
WPC	12Z	f24/f48/f72	Day 1/Day 2/Day 3
NDFD	12Z	f24/f48/f72	Day 1/Day 2/Day 3
NBM	01Z	f35/f59/f83	Day 1/Day 2/Day 3
NBM	07Z	f29/f53/f76	Day 1/Day 2/Day 3
WSE-GFS	00Z	f36/f60/f84	Day 1/Day 2/Day 3
WSE-ECMWF	00Z	f36/f60/f84	Day 1/Day 2/Day 3

For valid times 00Z to 00Z:

Model/Forecast:	**Cycle:**	**Forecast Hours:**	**Valid Time Period:**
WPC	00Z	f24/f48/f72	Day 1/Day 2/Day 3
NDFD	00Z	f24/f48/f72	Day 1/Day 2/Day 3
NBM	13Z	f35/f59/f83	Day 1/Day 2/Day 3
NBM	19Z	f29/f53/f76	Day 1/Day 2/Day 3
WSE-GFS	12Z	f36/f60/f84	Day 1/Day 2/Day 3
WSE-ECMWF	12Z	f36/f60/f84	Day 1/Day 2/Day 3

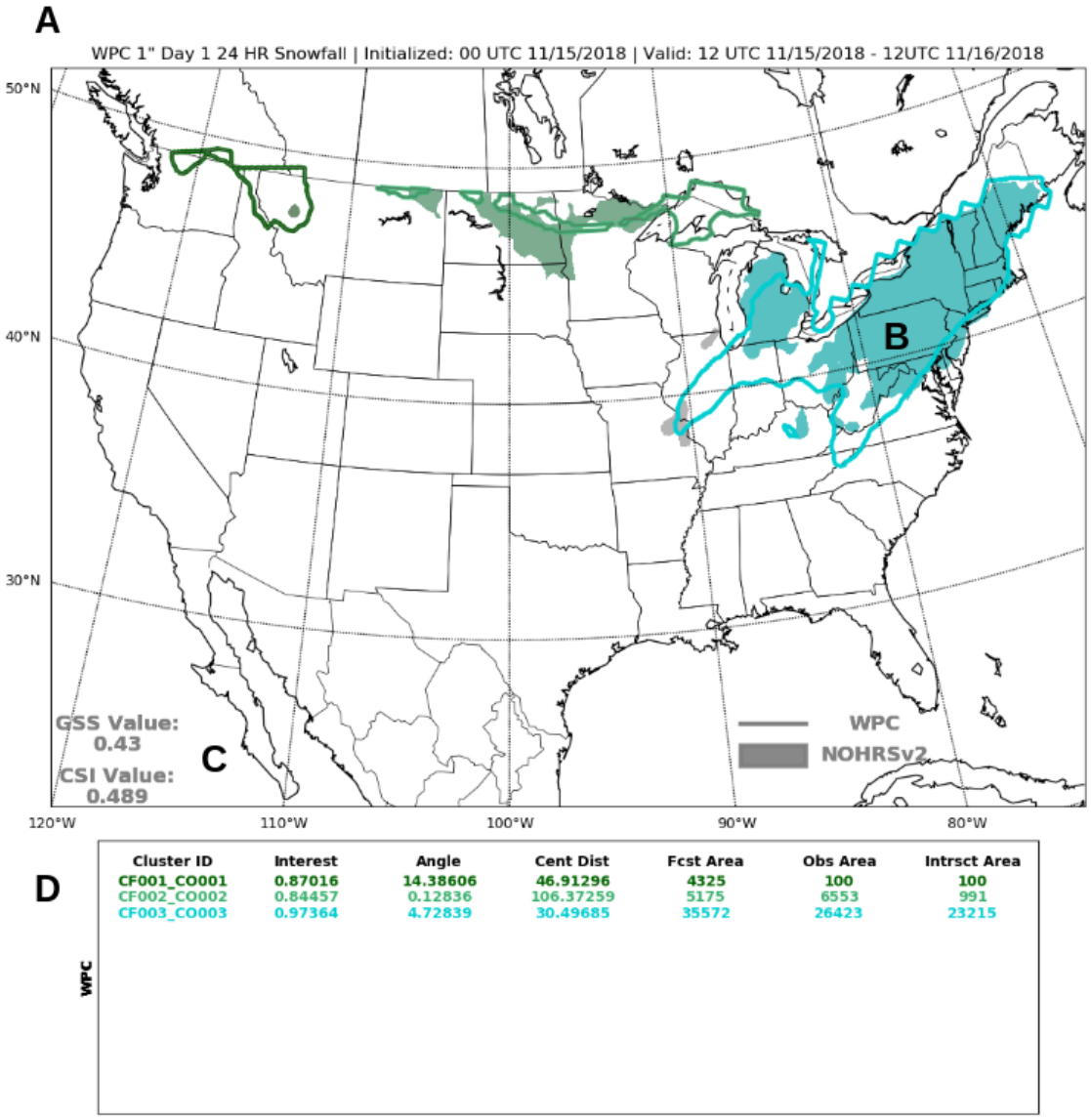
How to Navigate the Page:





An example of a MODE analysis for 1 inch of snow for the Day 1 WPC forecast is shown below.

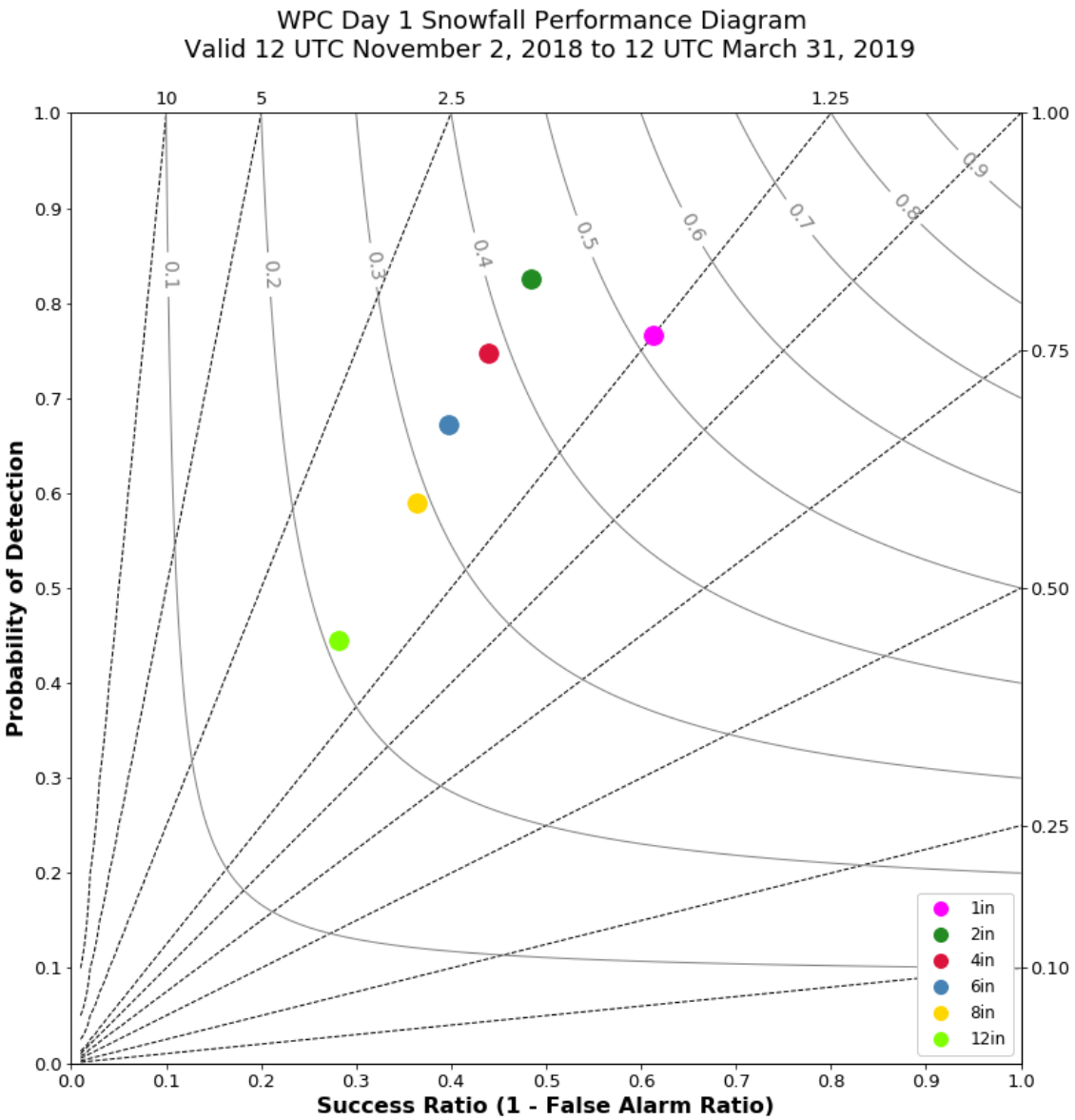
Note: Click on an image to enlarge it.



A. Title line -- States the threshold, the forecast day, and valid time period the image is for.
B. The objects -- Different identified objects are represented by different colors. The WPC forecast is always the contoured line and the NOHRSC snowfall analysis is always shaded. An unmatched forecast object will be represented by a gray line and an unmatched analysis object will be represented by gray shading.
C. Objective grid stats -- The Gilbert Skill Score (GSS) and critical success index (CSI), commonly referred to as Equitable Threat Score and Threat score are computed for each forecast over the whole domain and displayed in the bottom left of each image.
D. Object statistics -- For each colored, matched, object pair, several statistics on how well they are matched are listed in the table below.
    - Cluster ID -- Identifies and numbers each object.

- Interest -- Summary statistic derived from fuzzy logic engine with user-defined Interest Maps for all the attributes in the table plus some others. Close to 1 is good but does not mean “perfect” forecast.
- Angle -- For non-circular objects, gives a measure of orientation errors. Smaller is good.
- Centroid Distance -- Provides a quantitative sense of spatial displacement of forecast. Measured by grid points. Smaller is good.
- Forecast Area -- The number of grid points enclosed in the forecast object.
- Observation Area -- The number of grid points enclosed in the analysis object.
- Intersect Area -- The number of grid points in **both** the forecast and the observation objects.

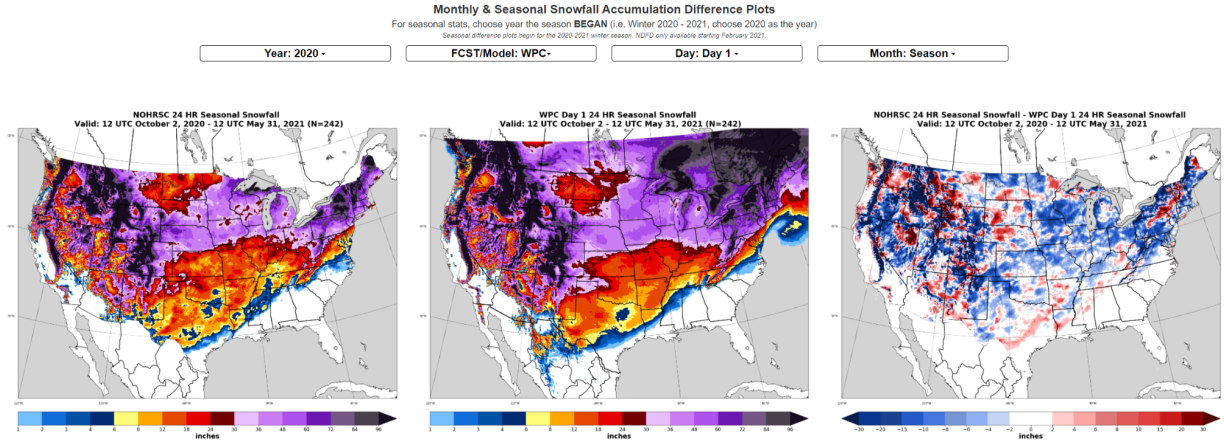
Performance Diagrams:



Use the buttons to choose the performance diagram for either Day 1, 2, or 3 and whether you'd like to view an individual month or the whole season.

In addition to object identification, MODE also outputs gridpoint to gridpoint statistics such as the number of hits, misses, and false alarms over the entire domain that can be used to calculate additional objective scores. These data are computed each day and then tallied over the whole month or season to produce the performance diagrams shown above. Again, please note that these scores are valid over the whole CONUS and not just in the areas of the MODE objects.

Monthly and seasonal accumulation plots for NOHRSC and the forecasts/models are available below the performance diagrams. The difference plot on the right is the total NOHRSC accumulation subtracted by the total model/forecast accumulation for the selected month or season.



Link at the bottom of the page to an archive of all the images by valid date.

FTP Archive

WPC Snow MODE Verification FTP Archive

Any questions or problems please contact: benjamin.albright@noaa.gov

Last Updated: **September 28, 2021**