

NEW NBM v4.1 Weather Elements

(1) Added NBM 24h PQPF percentiles (5th, 10th, 25th, 50th, 75th, 90th, and 95th) for the Hawaii domain. Added CONUS, Alaska, Hawaii, and Puerto Rico NBM QMD PQPF percentile guidance (10th, 50th, and 90th) for 48h and 72h periods with moving 12 hour windows through projection 108, then 24 hour windows through projection 276.

(2) Improved calibration of probabilistic and deterministic NBM winter weather guidance for snow, ice, freezing rain, and unconditional precipitation type through the increase in membership (18 to 100 members) and leveraging direct model precipitation type guidance;

(3) Added CONUS and Alaska 1h snow percentiles (5th, 10th, 25th, 50th, 75th, 90th, and 95th) and exceedance values (0.1, 0.3, 0.5, 0.7, 1.0, 1.5, 2.0, 2.5, 3.0, and 4.0 inches) for projections 1-36.

(4) Added Percentile Snow level for CONUS, Alaska, and Hawaii and Snow liquid ratios for CONUS and Alaska (5th, 10th, 25th, 50th, 75th, 90th, and 95th).

(5) 24h quantile mapped peak wind speed and wind gust guidance in the form of percentiles (5th, 10th, 25th, 50th, 75th, 90th, and 95th) and exceedance values (Wind speed: 11 kts, 17 kts, 22 kts, 34 kts, 48 kts, and 64 kts; Wind gust: 22 kts, 34 kts, 41 kts, 48 kts, 56 kts, and 64 kts) for the CONUS domain; Also included are the the 24h peak wind speed and wind gust mean and standard deviation.

(6) Added quantile mapped Alaska daytime maximum (MaxT) and nighttime minimum (MinT) temperatures in the form of percentiles and exceedance values for these thresholds: MaxT: < -40F, < -20F, < 0F, < 32F, > 70F, > 80F, > 90F; MinT: < -60F, < -50F, < -40F, < -30F, < -20F, < 0F, < 32F, > 60F). Standard deviations for both MaxT and MinT have also been added. For the CONUS an additional two thresholds were added for MinT < -10F and MinT < 10F.

(7) Improved Alaska deterministic aviation guidance routinely used in daily airport operational planning through 84 hours for Terminal Aerodrome forecasts (TAFs);

(8) Added 10th, 50th, and 90th percentile guidance for significant wave heights for the CONUS, Alaska, Hawaii, Puerto Rico, Guam, and Oceanic NBM domains;

(9) Added an innovative tropical cyclone feature matching technique to preserve the National Hurricane Center's Gridded Tropical Cyclone forecast advisory Message (WTCM) wind field while also ensuring a meteorological consistent wind field along the periphery and outside edges of the WTCM;

- (10) Added Wet Bulb Globe Temperature (WBGT) for the CONUS, Hawaii, Puerto Rico, and Guam NBM domains;
- (11) Added NCEP's Aviation Weather Center's 3-layer cloud product (cloud base, cloud top, and cloud coverage), High Cirrus Cloud Layer Base and Coverage and Icing product.
- (12) Added NCEP's Storm Prediction Center's calibrated Day-1 (4h and 24h) severe weather probabilistic products of hail, wind, and tornadoes to the CONUS domain;
- (13) Added Thunderstorm coverage for the CONUS, Alaska, Hawaii, Puerto Rico, and Oceanic NBM domains.
- (14) Added Sea ice concentration and thickness guidance to the Alaska domain for the NBM 0000- and 1200-UTC cycle times.
- (15) Introduced a 0000- and 1200-UTC 50km upper air quasi-Global blend product (85N to -85S) containing 100 members from the Global Ensemble Forecasting System (GEFS), European Centre for Medium-Range Weather Forecasts, Ensemble (ECMWF), and the Canadian Meteorological Center Ensemble (CMCE) global models. Variables include Geopotential heights, Temperature, Wind Speed, Wind direction, and Relative humidity at 250 mb, 500 mb, 700 mb, 850 mb, and 925 mb. Standard deviations for 500 mb and 700 mb geopotential heights are also included.
- (16) Added new weather elements noted above into the NBM deterministic and probabilistic text products.