Release Notes

Model	North American Mesoscale (NAM) modeling system
Version	V4.0.0
Implementation date/time	March 15, 2017; 1200UTC
Purpose	The NAM provides high-resolution guidance for days 1-3 for North America via the 12 km continental domain; provides day 1-2.5 “situational awareness” guidance for high-impact weather systems via the high-resolution 3-6 km nests over the contiguous US, Alaska, Hawaii, and Puerto Rico; provides fire weather support and/or on-call short term (0-36 hours) very high-resolution guidance via the 1.333 km fire weather nest.
Changes being made for this release	The version 4.0.0 of the NAM system has the following changes ● Horizontal Resolution: ○ CONUS nest from 4 km to 3 km ○ Alaska nest from 6 km to 3 km ● Forecast Model Changes: ○ Updated microphysics ␣ improved stratiform precipitation, more realistic radar reflectivity, reduce CONUS nest high precipitation bias in warm season ○ Model stability improvements ␣ More frequent calls to the moist physics and radiation, mix out superadibatic layers ○ Changes to land-surface physics and radiation to improve cool season surface temperature/dew point bias and warm season surface temperature bias, and improve forecast visibility ○ Convective parameterization changes in the 12 km parent NAM domain to improve cool season dry bias ● Data Assimilation (DA) Changes : ○ Replace 12-h DA cycle for the NAM parent (NDAS) with a 6-h DA cycle with hourly updates for the 12 km parent and 3 km CONUS/Alaska nests ○ Use of lightning data and radar-derived temperature tendencies in the model initialization ○ Use of new satellite radiances : METOP-B, HIRS4 AMSU, NOAA NPP ATMS/CRIS, METEOSAT-10 SEVIRI, DMSP-F17 SSMIS ○ Use of new satellite winds : Himawari-8, NOAA-15,18,19 AVHRR, METOP-A/B ○ Additional aircraft data : Aeromexico, ADS-C, Air Wisconsin ● Additional System Changes ○ Reinstate use of 557th Weather Wing (formerly

	AFWA) 23 km snow depth analysis ○ Tropical cyclone relocation (12 km parent domain only) ○ Use of a new climatology of fresh water lake temperatures for inland water bodies in the CONUS, Alaska, and fire weather nests ○ Reduced terrain smoothing in all NAM nests ○ For the fire weather nest, use NESDIS burned area data to adjust greenness fraction, albedo, and top layer soil moisture ● Output changes ○ CONUS nest output grid changing from the 5km grid #227 to the 3 km HRRR grid ○ Alaska nest output grid changing from the 6 km NDFD grid to the 3 km NDFD grid ○ All NAM nests (except fire weather) will make hourly output to 60-h ○ The GRIB2 compression will change to complex packing with 2nd order finite differencing for the 12 km NAM parent grids and grids from the CONUS and Alaska nests
Developed by	NOAA /NWS / Environmental Modeling Center
Runs on	The National Weather Service (NWS) Weather and Climate Operational Supercomputing System (WCOSS Phase 2)
Community software	NOAA Modeling System Framework (NEMS), Community Radiative Transfer Model (CRTM), Grid-point Statistical Interpolation (GSI) analysis
Input	● Global Data Assimilation System (GDAS) and Global Forecast System (GFS) ● NWS Real-time Global Sea Surface Temperature Analysis (RTG_SST) ● NESDIS IMS snow cover analysis ● 557th Weather Wing snow depth analysis ● NWS Stage 2/4 radar/gage-based precipitation analyses ● NWS Climatology-Calibrated Precipitation Analysis ● Surface observations ● Upper-air observations (raobs, aircraft, satellite cloud drift winds, etc) ● NEXRAD radar winds and radar-reflectivity-derived temperature tendencies ● Lightning ● Satellite radiance data ● GPS occultation data

Output and where to find it	ftp://tgftp.nws.noaa.gov/SL.us008001/ST.opnl/MT.nam_CYHH/RD.YYYYMMDD/PT.grid_DF.gr2 NCEP NOMADS : ftp://ftpprd.ncep.noaa.gov/pub/data/nccf/com/nam/prod/nam.YYYYMMDD, YYYY=Year, MM=Month, DD=Day
Primary users	• Regional Centers • NWS WFOs • Private sector
In the future	This is the final science upgrade planned for the NAM Forecast System

For more information on this model, please contact ncep.pmb.dataflow@noaa.gov .