

NOUS41 KWBC 241300
PNSWSH

TECHNICAL IMPLEMENTATION NOTICE 09-32
NATIONAL WEATHER SERVICE HEADQUARTERS WASHINGTON DC
900 AM EST THU SEP 23 2009

TO: SUBSCRIBERS:
-FAMILY OF SERVICES
-NOAA WEATHER WIRE SERVICE
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK
-NOAAPORT
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: JASON TUELL
SCIENCE PLANS BRANCH CHIEF
OFFICE OF SCIENCE AND TECHNOLOGY

SUBJECT: GLOBAL FORECAST SYSTEM CHANGES:
EFFECTIVE DECEMBER 15 2009

EFFECTIVE DECEMBER 15 2009...BEGINNING WITH THE 1200
COORDINATED UNIVERSAL TIME /UTC/ RUN...THE NATIONAL CENTERS
FOR ENVIRONMENTAL PREDICTION /NCEP/ WILL UPGRADE SEVERAL
COMPONENTS OF THE GLOBAL FORECAST SYSTEM /GFS/.

NEW DATA SOURCES AND IMPROVED NUMERICAL TECHNIQUES WILL BE
INCLUDED IN THE GRIDPOINT STATISTICAL INTERPOLATION /GSI/
ANALYSIS.

THE POST PROCESSORS USED FOR THE GLOBAL FORECAST SYSTEM
/GFS/ AND THE GLOBAL DATA ASSIMILATION SYSTEM /GDAS/ WILL BE
UNIFIED AND TWO MINOR CHANGES WILL BE INTRODUCED INTO THE
GLOBAL FORECAST MODEL. UNIFICATION OF THE POST PROCESSING
CODES WILL RESULT IN SLIGHTLY LESS SMOOTH FIELDS IN THE GDAS.

IN ADDITION THE ACCURACY IN THE FORMULATION OF A NUMBER OF
DIAGNOSTIC VARIABLES WILL BE IMPROVED AND ADDITIONAL
PARAMETERS WILL BE ADDED TO THE MODEL OUTPUT FILES.

THE ANALYSIS CHANGES INCLUDE:

- ASSIMILATING TROPICAL STORM PSEUDO SEA-LEVEL PRESSURE
OBSERVATIONS
- ASSIMILATING NOAA-19 HIRS/4 AND AMSU-A BRIGHTNESS
TEMPERATURE OBSERVATIONS
- ASSIMILATING RARS 1B DATA
- ASSIMILATING NOAA-18 SBUV/2 OZONE OBSERVATIONS. MONITOR
NOAA-19, GOME AND OMI OZONE OBSERVATIONS
- ASSIMILATING EUMETSAT-9 ATMOSPHERIC MOTION VECTORS
- USING UNIFORM THINNING MESH FOR BRIGHTNESS TEMPERATURE DATA
- IMPROVING ASSIMILATION OF GPS RADIAL OCCULTATION /RO/ DATA
/QC... RE-TUNED OBSERVATION ERRORS/

- ADDING DRY MASS PRESSURE CONSTRAINT
- USING GODDARD MODELING AND ASSIMILATION OFFICE/EMC MERGED CODE INCLUDING HOOKS FOR 4DVAR AND OBSERVATION SENSITIVITY
- UPDATING BACKGROUND ERROR COVARIANCE FILE

CHANGES TO THE GLOBAL FORECAST MODEL INCLUDE:

- UPGRADING EARTH SYSTEM MODELING FRAMEWORK /ESMF/ TO VERSION 3.1.0RP2
- CHANGING OUTPUT CLOUD DEFINITION INCLUDING BOUNDARY LAYER CLOUD AND LOW CLOUD

THE PARAMETERS WITH IMPROVED FORMULATIONS IN THE POST PROCESSOR INCLUDE:

- VORTICITY
- ISENTROPIC POTENTIAL VORTICITY /IPV/
- DYNAMIC TROPOPAUSE FIELDS
- PLANETARY BOUNDARY LAYER /PBL/ MEAN RH
- BEST CAPE/CIN
- BEST LIFTED INDEX
- LFM 0.33-1.00 RH

THE NEW PARAMETERS FOR THE GDAS INCLUDE:

- UNFILTERED SEA LEVEL PRESSURE

THE NEW PARAMETERS FOR THE GFS PRESSURE GRIB FILES INCLUDE:

- RELATIVE HUMIDITY AT 10...30...50 AND 70 MB
- HELICITY
- ICAO HEIGHT AT THE TROPOPAUSE AND MAXIMUM WIND LEVEL
- SUNSHINE DURATION

THE NEW PARAMETERS IN THE GLOBAL FORECAST MODEL SURFACE FILES /SFLUXGRBFXX.GRIB2/ INCLUDE:

- MAXIMUM SPECIFIC HUMIDITY
- MINIMUM SPECIFIC HUMIDITY
- DOWNWARD SOLAR RADIATION FLUX AT TOP OF ATMOSPHERE
- CLEAR SKY /CS/ UPWARD LONG WAVE RADIATION FLUX AT TOP OF ATMOSPHERE
- CS UPWARD SOLAR RADIATION FLUX AT TOP OF ATMOSPHERE
- CS DOWNWARD LONGWAVE RADIATION FLUX AT SURFACE
- CS UPWARD SOLAR RADIATION FLUX AT SURFACE
- CS DOWNWARD SOLAR RADIATION FLUX AT SURFACE
- CS UPWARD LONG WAVE RADIATION FLUX AT SURFACE
- SNOW PHASE-CHANGE HEAT FLUX AT LAND SURFACE
- WILTING POINT AT LAND SURFACE
- FIELD CAPACITY AT LAND SURFACE
- SUNSHINE DURATION

THESE CONTENT CHANGES WILL IMPACT THE NWS PUBLIC FTP SERVER AND THE NCEP PUBLIC FTP SERVER. DATA DELIVERY TIMING WILL NOT BE IMPACTED BY THIS IMPLEMENTATION. A SMALL INCREASE IN DATA VOLUMES IS EXPECTED.

TEST DATA IS ONLINE AT /USE LOWERCASE/ EXCEPT FOR WRF:

[HTTP://WWWT.EMC.NCEP.NOAA.GOV/MB/WRFRETRO/GFS_PARA/](http://wwwt.emc.ncep.noaa.gov/mb/wrfretro/gfs_para/)

A CONSISTENT PARALLEL FEED OF DATA WILL BECOME AVAILABLE ON THE NCEP FTP SERVER ONCE THE MODEL IS RUNNING IN PARALLEL ON THE NCEP CENTRAL COMPUTING SYSTEM ON OCTOBER 27 2009. THE PARALLEL DATA THEN WILL BECOME AVAILABLE VIA THE FOLLOWING URL /USE LOWERCASE/:

[FTP://FTP.NCEP.NOAA.GOV/PUB/DATA/NCCF/COM/GFS/PARA](ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/gfs/para)

NCEP ENCOURAGES ALL USERS TO ENSURE THEIR DECODERS ARE FLEXIBLE AND ARE ABLE TO ADEQUATELY HANDLE CHANGES IN CONTENT...PARAMETER FIELDS CHANGING ORDER...CHANGES IN THE SCALING FACTOR COMPONENT WITHIN THE PDS OF THE GRIB FILES AND ANY VOLUME CHANGES WHICH MAY OCCUR. THESE ELEMENTS MAY CHANGE WITH FUTURE NCEP MODEL IMPLEMENTATIONS. NCEP WILL MAKE EVERY ATTEMPT TO ALERT USERS TO THESE CHANGES PRIOR TO ANY IMPLEMENTATION.

FOR QUESTIONS REGARDING THESE MODEL CHANGES...PLEASE CONTACT:

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FOR QUESTIONS REGARDING THE DATAFLOW ASPECTS OF THESE DATA SETS... PLEASE CONTACT

REBECCA COSGROVE
NCEP/NCO DATAFLOW TEAM
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NCEP.LIST.PMB-DATAFLOW@NOAA.GOV

NWS NATIONAL TECHNICAL IMPLEMENTATION NOTICES ARE ONLINE AT
/USE LOWERCASE/:

[HTTP://WWW.NWS.NOAA.GOV/OS/NOTIF.HTM](http://www.nws.noaa.gov/os/notif.htm)

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