

NOUS41 KWBC 021253
PNSWSH

TECHNICAL IMPLEMENTATION NOTICE 10-15
NATIONAL WEATHER SERVICE HEADQUARTERS WASHINGTON DC
853 AM EDT FRI APR 2 2010

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

FROM: TIMOTHY MCCLUNG
SCIENCE PLANS BRANCH CHIEF
OFFICE OF SCIENCE AND TECHNOLOGY

SUBJECT: GLOBAL FORECAST SYSTEM CHANGES:
EFFECTIVE JUNE 22 2010.

EFFECTIVE JUNE 22 2010...BEGINNING WITH THE 1200 COORDINATED
UNIVERSAL TIME /UTC/ RUN...THE NATIONAL CENTERS FOR
ENVIRONMENTAL PREDICTION /NCEP/ WILL UPGRADE THE GLOBAL
FORECAST SYSTEM /GFS/. THE RESOLUTION OF THE GLOBAL FORECAST
MODEL WILL BE INCREASED FROM T382 /35 KM/ TO T574 /27 KM/.
THE HIGH RESOLUTION PORTION OF THE FORECAST WILL BE EXTENDED
FROM 180 HRS TO 192 HRS. WITH THIS EXTENSION 3 HOURLY OUTPUT
WILL BE MADE AVAILABLE OUT TO 192 HOURS.

THIS WILL RESULT IN SIGNIFICANT CHANGES IN THE DEFINITION OF
PARAMETERS IN THE 192 HOUR PRESSURE GRIB /PGRB/ AND FLUX
FILES. THERE WILL ALSO BE SIGNIFICANT CHANGES IN MODEL
PHYSICS ASSOCIATED WITH THIS CHANGE. IN ADDITION
MODIFICATIONS WILL BE MADE TO THE CONTENTS OF THE GLOBAL DATA
ASSIMILATION SYSTEM /GDAS/ AND GFS PGRB FILES.

CHANGES IN MODEL PHYSICS INCLUDE:

RADIATION AND CLOUD OVERLAP
GRAVITY WAVE DRAG
HURRICANE RELOCATION
NEW PLANETARY BOUNDARY LAYER SCHEME
NEW MASS FLUX SHALLOW CONVECTION
UPDATED DEEP CONVECTION SCHEME
POSITIVE DEFINITE TRACER TRANSPORT SCHEME

THE NEW PARAMETER FOR THE GFS FORECAST PRESSURE GRIB
FILES IS:

MAX WIND GUST

SEVERAL PARAMETERS ARE BEING DELETED FROM THE GDAS ANALYSIS

PRESSURE GRIB FILES BECAUSE THEY ARE NOT VALID FOR THE ANALYSIS DATASET AND HAVE NEVER PROVIDED PERTINENT INFORMATION. THESE INCLUDE:

4 PRECIPITATION TYPES
CONVECTIVE PRECIPITATION RATE
LAND SEA MASK
LATENT HEAT FLUX
SENSIBLE HEAT FLUX
PRECIPITATION RATE
2M RH
2M SPECIFIC HUMIDITY
2M TEMPERATURE
BOUNDARY LAYER CLOUD COVER
LOW CLOUD COVER
CONVECTIVE CLOUD COVER
SKIN TEMPERATURE
SURFACE UPWARD LONG WAVE FLUX
SURFACE UPWARD SHORT WAVE FLUX HELICITY

THESE PARAMETERS ARE BEING DELETED FROM THE GLOBAL FORECAST MODEL SIMULATED GOES GRIB FILE BECAUSE THEY WERE INCLUDED IN ERROR. THESE FIELDS ARE AVAILABLE IN THE PGRB FILES:

MEAN SEA LEVEL PRESSURE
WAVE-5 GEOPOTENTIAL HEIGHT

ALL ACCUMULATED OR AVERAGED VALUES IN THE 192 HOUR PGRB AND FLUX FILES WILL NOW BE OVER A 6 HOUR PERIOD INSTEAD OF 12 HOURS. THE FORMAT AND CONTENT OF THE 3 HOURLY FILES FROM 180 TO 192 HOURS WILL BE THE SAME AS THE FILES FROM 0 TO 180. FOR THE FLUX FILE...THIS INCLUDES THE MAJORITY OF THE PARAMETERS IN THE FILE. PARAMETERS CHANGING IN THE PGRB FILE ARE:

2 M ABOVE GROUND MAX. TEMPERATURE
2 M ABOVE GROUND MIN. TEMPERATURE
SURFACE ALBEDO
SURFACE CLEAR SKY UV-B DOWNWARD SOLAR FLUX
SURFACE CATEGORICAL FREEZING RAIN
SURFACE CATEGORICAL ICE PELLETS
SURFACE CONVECTIVE PRECIPITATION RATE
SURFACE CATEGORICAL RAIN
SURFACE CATEGORICAL SNOW
ATMOSPHERIC COLUMN CLOUD WORK FUNCTION
SURFACE DOWNWARD LONG WAVE FLUX
SURFACE DOWNWARD SHORT WAVE FLUX
SURFACE UV-B DOWNWARD SOLAR FLUX
SURFACE GROUND HEAT FLUX
SURFACE LATENT HEAT FLUX
SURFACE PRECIPITATION RATE
LOW CLOUD BASE PRESSURE
LOW CLOUD TOP PRESSURE
MID-CLOUD BASE PRESSURE

MID-CLOUD TOP PRESSURE
HIGH CLOUD BASE PRESSURE
HIGH CLOUD TOP PRESSURE
SURFACE SENSIBLE HEAT FLUX
ATMOSPHERIC COLUMN TOTAL CLOUD COVER
BOUNDARY CLOUD LAYER TOTAL CLOUD COVER
LOW CLOUD COVER
MID-CLOUD COVER
HIGH CLOUD COVER
LOW CLOUD TOP TEMPERATURE
MID-CLOUD TOP TEMPERATURE
HIGH CLOUD TOP TEMPERATURE
SURFACE ZONAL GRAVITY WAVE STRESS
SURFACE ZONAL MOMENTUM FLUX
SURFACE UPWARD LONG WAVE FLUX
TOP OF ATMOSPHERE UPWARD LONG WAVE FLUX
SURFACE UPWARD SHORT WAVE FLUX
TOP OF ATMOSPHERE UPWARD SHORT WAVE FLUX
SURFACE MERIDIONAL GRAVITY WAVE STRESS
SURFACE MERIDIONAL MOMENTUM FLUX
SURFACE CONVECTIVE PRECIPITATION
SURFACE TOTAL PRECIPITATION
SURFACE LARGE SCALE PRECIPITATION

NOTE THAT FOR THE 192 HR PGRB PRODUCTS AVAILABLE ON NOAAPORT AND IN AWIPS THE ACCUMULATIONS AND AVERAGES WILL REMAIN OVER THE PREVIOUS 12 HOUR PERIOD UNTIL AWIPS IS MODIFIED TO ACCOMMODATE THIS CHANGE.

THE FORMAT OF THE HALF AND ONE DEGREE PRESSURE GRIB FILES WILL REMAIN THE SAME EXCEPT FOR THE CHANGES IN VARIABLES LISTED ABOVE. THE SIZE OF THESE FILES WILL NOT CHANGE SIGNIFICANTLY. WITH THE INCREASE IN MODEL RESOLUTION... THE SIZE OF THE SIGMA COEFFICIENT FILES AND THE SURFACE FLUX FILES WILL INCREASE SIGNIFICANTLY.

THESE CONTENT CHANGES WILL IMPACT ALL DISSEMINATION ROUTES: NWS PUBLIC FTP SERVER...THE NCEP PUBLIC FTP SERVER...AND NOAAPORT.

A SET OF TEST DATA IS AVAILABLE AT /USE LOWERCASE/ EXCEPT FOR GFS AND T574L64:

[FTP.EMC.NCEP.NOAA.GOV/GC_WMB/WX24FY/GFS_T574L64/GFS.20091217](ftp://ftp.emc.ncep.noaa.gov/gc_wmb/wx24fy/gfs_t574l64/gfs.20091217)

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 IN MID APRIL. AT THAT TIME THE PARALLEL DATA 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)

DATA DELIVERY TIMING OF THE GFS WILL NOT BE IMPACTED BY THIS

IMPLEMENTATION.

NCEP ENCOURAGES ALL USERS TO ENSURE THEIR DECODERS ARE FLEXIBLE AND ARE ABLE OF ADEQUATELY HANDLING CHANGES IN CONTENT...PARAMETER FIELDS CHANGING ORDER...CHANGES IN THE SCALING FACTOR COMPONENT WITHIN THE PRODUCT DEFINITION SECTION /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 IMPLEMENTATIONS.

IF YOU HAVE ANY QUESTIONS CONCERNING THESE CHANGES...PLEASE CONTACT:

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

[HTTP://WWW.WEATHER.GOV/OS/NOTIF.HTM](http://www.weather.gov/os/notif.htm)

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