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TECHNICAL IMPLEMENTATION NOTICE 07-21
NATIONAL WEATHER SERVICE HEADQUARTERS WASHINGTON DC
1120 PM EDT THU APR 12 2007

TO: FAMILY OF SERVICES /FOS/ SUBSCRIBERS...NOAA WEATHER
WIRE SERVICE /NWS/ SUBSCRIBERS...EMERGENCY MANAGERS
WEATHER INFORMATION NETWORK /EMWIN/ SUBSCRIBERS...OTHER
NATIONAL WEATHER SERVICE /NWS/ CUSTOMERS AND PARTNERS
...NWS EMPLOYEES

FROM: PAUL HIRSCHBERG
CHIEF...SCIENCE PLANS BRANCH
OFFICE OF SCIENCE AND TECHNOLOGY /OST/

SUBJECT: NCEP GLOBAL FORECAST SYSTEM MODEL UPGRADE: EFFECTIVE
MAY 1 2007

EFFECTIVE TUESDAY MAY 1 2007...BEGINNING WITH THE 1200
COORDINATED UNIVERSAL TIME /UTC/ RUN...THE NATIONAL CENTERS FOR
ENVIRONMENTAL PREDICTION /NCEP/ WILL UPGRADE THE GLOBAL FORECAST
SYSTEM /GFS/ TO IMPROVE ITS ACCURACY AND PRODUCTS.

THIS UPGRADE WILL INVOLVE IMPROVEMENTS TO BOTH THE ANALYSIS AND
FORECAST OF THE GFS. DETAILS OF THESE CHANGES ARE AS FOLLOWS:

ANALYSIS CHANGES:

1. REPLACE SPECTRAL STATISTICAL INTERPOLATION /SSI/ ANALYSIS
SYSTEM WITH GRIDPOINT STATISTICAL INTERPOLATION /GSI/
ANALYSIS SYSTEM.
2. USE OF INCREASED OBSERVATIONS INCLUDING FULL RESOLUTION
ATMOSPHERIC INFRARED SOUNDER /AIRS/ DATA...CONSTELLATION
OBSERVING SYSTEM FOR METEOROLOGY...IONOSPHERE AND CLIMATE
/COSMIC/ GLOBAL POSITIONING SYSTEM RADIO OCCULTATION /GPSRO/
DATA.

MODEL CHANGES:

3. MODIFY SIGMA COORDINATE SYSTEM TO A HYBRID SIGMA-PRESSURE
COORDINATE SYSTEM.
4. UPDATED GFS RADIATION MODULE

PRODUCT CHANGES:

5. SURFACE FLUX FILES HAVE 30 NEW RECORDS MAINLY FOR
HYDROLOGICAL USE
6. CHANGE OUTPUT OF GLOBAL DIAGNOSTIC ASSIMILATION SYSTEM

/GDAS/ FROM 3-HOURLY TO HOURLY

7. MODEL TO NATIVE OUTPUT FILE WILL CHANGE FROM A SIGMA
SPECTRAL BINARY FILE TO A HYBRID SPECTRAL BINARY FILE

PLEASE NOTE THAT THERE WILL BE NO CHANGES TO THE GFS PRODUCTS
BEING SENT OVER NOAAPORT WITH THIS UPGRADE.

EXPECTED IMPROVEMENTS/CHANGES:

THE GFS FORECAST SHOULD HOLD THE ASIAN JET EAST OF THE HIMALAYAS
BETTER. THE GFS FORECAST SHOULD BE SLIGHTLY IMPROVED OVERALL IN
THE STRATOSPHERE. THE OVERALL TROPICAL SKILL OF THE GFS
FORECASTS SHOULD IMPROVE. THE EXTRATROPICAL SKILL SHOULD IMPROVE
IN THE SHORT LEAD TIMES BUT BE ABOUT THE SAME IN THE MEDIUM
RANGE. THE UNIFIED GSI ANALYSIS SYSTEM ENABLES NEW OBSERVATION
SYSTEMS AND IS MORE ADAPTABLE FOR FUTURE UPGRADES.

RETROSPECTIVE EVALUATION:

THE GFS SYSTEM HAS BEEN RETROSPECTIVELY EVALUATED FOR THE
FOLLOWING PERIODS:

JULY 1 2005 – OCTOBER 31 2005
SEPTEMBER 1 2006 – OCTOBER 31 2006
NOVEMBER 1 2006 – JANUARY 31 2007

RESULTS FROM THESE RETROSPECTIVE RUNS CAN BE VIEWED AT /USE LOWER
CASE LETTERS/:

[HTTP://WWW.EMC.NCEP.NOAA.GOV/GMB/PARA/PARALOG.GSIHYBRID.HTML](http://wwwt.emc.ncep.noaa.gov/gmb/para/paralog.gsihybrid.html)

NCEP CENTRAL OPERATIONS IS CURRENTLY RUNNING A REAL-TIME PARALLEL
RUN VERSION OF THE GFS WITH THESE UPGRADES. RESULTS FROM THESE
PARALLEL RUNS CAN BE VIEWED AT /USE LOWER CASE LETTERS/:

[HTTP://WWW.NCO.NCEP.NOAA.GOV/PMB/NWPARA/ANALYSIS](http://www.nco.ncep.noaa.gov/pmb/nwpara/analysis)

THE EFFECTIVE DATE OF THIS CHANGE IS SOONER THAN SPECIFIED BY NWS
POLICY. THE SHORTER ADVANCE LEAD TIME WAS CAUSED BY THE
NECESSITY TO CONDUCT AN EVALUATION OF THE GFS MODEL OUTPUT
STATISTICS /MOS/ GUIDANCE PRODUCTS. RESULTS OF THE EVALUATION
CONCLUDED THAT THERE WILL BE LITTLE IF ANY IMPACT ON GFS MOS
GUIDANCE PRODUCTS. THE SHORTER LEAD TIME WAS APPROVED BECAUSE IT
IS EXPECTED THAT USERS WILL NOT HAVE TO MAKE MAJOR ADJUSTMENTS TO
ACCOMMODATE THESE CHANGES.

IF YOU HAVE ANY QUESTIONS ABOUT THESE CHANGES...PLEASE CONTACT

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THIS AND OTHER NWS TECHNICAL IMPLEMENTATION NOTICES ARE AVAILABLE
ONLINE AT /USE LOWER CASE LETTERS/:

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

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