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PUBLIC INFORMATION STATEMENT...TECHNICAL IMPLEMENTATION NOTICE 99-09  
NATIONAL WEATHER SERVICE HEADQUARTERS WASHINGTON DC  
1220 PM EDT FRI MAY 14 1999

TO: FAMILY OF SERVICES /FOS/ SUBSCRIBERS  
NOAA WEATHER WIRE SERVICE /NWS/ SUBSCRIBERS  
OTHER NWS CUSTOMERS...PARTNERS AND EMPLOYEES

FROM: LEROY SPAYD  
CHIEF...SCIENCE AND TRAINING CORE

SUBJECT: CHANGES TO THE NATIONAL CENTERS FOR ENVIRONMENTAL PREDICTION  
/NCEP/ RAPID UPDATE CYCLE ANALYSIS/FORECAST SYSTEM

A RELATIVELY SMALL SET OF CHANGES FOR THE RAPID UPDATE CYCLE /RUC/ WAS  
IMPLEMENTED ON THURSDAY MAY 6 FOR THE 1200 COORDINATED UNIVERSAL TIME  
/UTC/ RUN. THESE CHANGES ARE FOR POST-PROCESSING AND TO SWITCH TO  
DIFFERENT FORMAT FIXED FIELDS /VEGETATION FRACTION AND SNOW/ICE COVER/. A  
CHANGE TO THE SPEED OF RUC PROCESSING HAS ALREADY BEEN MADE AND IS  
DISCUSSED BELOW.

THE CODE CHANGES INCLUDE:

- A BUG FIX AND CONSISTENCY CHANGES TO THE SURFACE TEMPERATURE AND  
DEWPOINT DIAGNOSIS FROM RUC NATIVE LEVELS.
- A CONVECTIVE AVAILABLE POTENTIAL ENERGY /CAPE//CONVECTION INHIBITION  
/CIN/ CHANGE.
- MORE SMOOTHING OF ISOBARIC LEVEL WINDS.
- USE OF DIFFERENT ICE AND VEGETATION FRACTION FIELDS.
- GRIDDED BINARY /GRIB/ IDENTIFIER CHANGES

EFFECTS:

- IMPROVED DIAGNOSIS OF SURFACE TEMPERATURE AND DEWPOINT TEMPERATURE.  
BACKGROUND: THE RUC SURFACE TEMPERATURE AND SURFACE DEWPOINT FIELD ARE  
DIAGNOSED FROM THE RUC NATIVE LEVELS USING ITS LOW-LEVEL LAPSE RATES TO A  
TOPOGRAPHY GRID THAT IS CLOSER TO ACTUAL METEOROLOGICAL TERMINAL AIR  
REPORT /METAR/ ELEVATIONS. THIS HAS BEEN DONE WITH BOTH THE RUC1 AND RUC2  
SYSTEMS. WITH THE FIXES...BIASES OF RUC2 ANALYZED SURFACE TEMPERATURE AND  
DEWPOINT COMPARED TO ACTUAL METAR OBSERVATIONS ARE REDUCED FROM 2 DEGREES  
CELSIUS TO 0 IN THE WESTERN U.S...AND STANDARD DEVIATION DIFFERENCES ARE  
REDUCED FROM ABOUT 2 DEGREES CELSIUS TO ABOUT 1.4 DEGREES CELSIUS. BIASES  
AND STANDARD DEVIATION ERRORS IN RUC2 SURFACE FORECASTS ARE ALSO REDUCED.  
THESE IMPROVEMENTS ALSO BENEFIT THE LIFTED INDEX CALCULATIONS.

-- THE DIAGNOSIS OF CAPE HAS BEEN MODIFIED TO BETTER DETECT POTENTIAL FOR  
ELEVATED CONVECTION BY CONSIDERING CLOUD PARCELS IN THE LOWEST 300  
MILLIBARS /MB/ NEAR THE SURFACE...RATHER THAN THE PREVIOUS 180 MB THICK  
LAYER. THIS CHANGE WAS REQUESTED BY THE STORM PREDICTION CENTER.

-- ADDITIONAL SMOOTHING OF RUC ISOBARIC WIND FIELDS IN THE LOWER TROPOSPHERE AND AT THE TROPOPAUSE IMPROVES THEIR ACCURACY. THIS MODIFICATION IS ONLY IN THE POST-PROCESSING...NOT IN THE MODEL OR ANALYSIS.

-- THE ICE COVER FIELD FROM THE NATIONAL ENVIRONMENTAL SATELLITE...DATA AND INFORMATION SERVICE /NESDIS/ SNOW/ICE ANALYSIS IS MORE PRECISE THAN THE PREVIOUS ICE FIELD USED IN THE RUC. THIS NESDIS ICE FIELD WAS ALREADY USED THIS PAST WINTER WITH THE ETA.

-- THE USE OF A GRIB-BASED VEGETATION FRACTION FIELD HAS NO EFFECT ON THE RUC OUTPUT. IT NOW READS FROM A COMPRESSED FORMAT...AND IS STILL THE NESDIS ADVANCED VERY HIGH RESOLUTION RADIOMETER /AVHRR/-BASED 0.14 DEGREE MONTHLY GREENNESS FRACTION ALSO USED BY THE ETA.

-- GRIB IDENTIFIER CORRECTIONS:

NUMBER CONCENTRATION FOR ICE PARTICLES	FROM 180 TO 198
SURFACE RUNOFF	FROM 234 TO 235
SUB-SURFACE RUNOFF	FROM 198 TO 234

-- SPEED OF RUC AND ETA PROCESSING IMPROVED:

AS OF APRIL 28 1999...NCEP ALLOCATED 10 PROCESSORS ON THE CRAY FOR ALL RUNS OF THE RUC2 AS PART OF IMPROVING THE USE OF THE CRAY FOR THE OVERALL NCEP MODEL SUITE.

THE EFFECTS OF THIS CHANGE ARE THAT RUC FORECAST GRIDS OUT TO 12-HOURS AT 0300...0600...0900...1500...1800 AND 2100 UTC ARE AVAILABLE ABOUT 25-30 MINUTES EARLIER THAN PREVIOUSLY. ANALYSES AT ALL TIMES ARE AVAILABLE ABOUT FIVE TO EIGHT MINUTES EARLIER NOW...AND FORECASTS OUT TO THREE HOURS AT NON-THREE-HOURLY TIMES ARE AVAILABLE ABOUT 15 MINUTES SOONER.

THIS CHANGE REDUCES THE CONFLICT BETWEEN RUC2 AND ETA RUNS SUCH THAT THE ETA RUNS ARE ALSO AVAILABLE 10 TO 15 MINUTES EARLIER.

IF YOU HAVE FURTHER QUESTIONS...CONTACT THE RUC WEB FORUM AT /USE LOWER CASE/:

[HTTP://MAPS.FSL.NOAA.GOV/FORUM/EVAL](http://maps.fsl.noaa.gov/forum/eval)

OR CONTACT:

STAN BENJAMIN  
NOAA/FORECAST SYSTEMS LABORATORY  
BOULDER COLORADO  
EMAIL: [BENJAMIN@FSL.NOAA.GOV](mailto:BENJAMIN@FSL.NOAA.GOV)  
PHONE: 303-497-6387

OR

GEOFF MANIKIN  
NATIONAL CENTERS FOR ENVIRONMENTAL PREDICTION  
ENVIRONMENTAL MODELING CENTER  
CAMP SPRINGS MARYLAND  
PHONE: 301-763-8000 EXT. 7263

NATIONAL TECHNICAL IMPLEMENTATION NOTICES ARE ONLINE AT /USE LOWER CASE/:

[HTTPS://WWW.WEATHER.GOV/NOTIFICATION/ARCHIVE](https://www.weather.gov/notification/archive)

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