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TECHNICAL IMPLEMENTATION NOTICE 06-92
NATIONAL WEATHER SERVICE HEADQUARTERS WASHINGTON DC
315 PM EST WED DEC 13 2006

TO: FAMILY OF SERVICES /FOS/ SUBSCRIBERS
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FROM: PAUL HIRSCHBERG
CHIEF...SCIENCE PLANS BRANCH
OFFICE OF SCIENCE AND TECHNOLOGY

SUBJECT: WEATHER RESEARCH FORECAST MODEL CRISIS CHANGES: EFFECTIVE
DECEMBER 19 2006

EFFECTIVE DECEMBER 19 2006...BEGINNING WITH THE 1200 COORDINATED UNIVERSAL
TIME /UTC/ RUN...SEVERAL CRISIS CHANGES WILL BE MADE TO THE WEATHER
RESEARCH FORECAST NON-HYDROSTATIC MESOSCALE MODEL /WRF-NMM/ RUNNING IN THE
NORTH AMERICAN MESOSCALE MODEL /NAM/...THE NAM DATA ASSIMILATION SYSTEM
/NDAS/...AND THE DGEX. THESE CHANGES ARE BEING MADE TO IMPROVE MODEL
PERFORMANCE.

THE CRISIS CHANGES INCLUDE:

1. THE DIVERGENCE DAMPING ROUTINE...WHICH DAMPS ALL GRAVITY-INERTIA AND
EXTERNAL MODES...IS CHANGED TO INCREASE DAMPING OF THE EXTERNAL MODE.
2. DURING THE NDAS...DIVERGENCE DAMPING IS INCREASED TO FIVE TIMES THAT
USED DURING THE 84-HOUR NAM FREE FORECAST.
3. NUMEROUS CHANGES ARE MADE TO CONVECTIVE PARAMETERIZATION.
4. THREE CHANGES ARE MADE TO THE CLOUD MICROPHYSICS.
5. HORIZONTAL DIFFUSION BETWEEN NEIGHBORING GRID POINTS WITH A SLOPE OF
LESS THAN OR EQUAL TO 54 M / 12 KM /NINE TIMES THAT IN OPERATIONAL NAM/ IS
ALLOWED.

THE COMBINED IMPACT OF THESE CHANGES HAS LED TO:

1. SLIGHT IMPROVEMENT IN NAM QUANTITATIVE PRECIPITATION FORECAST /QPF/
SCORES.
2. A FIVE TO TEN PERCENT REDUCTION IN NAM HEIGHT...TEMPERATURE AND VECTOR
WIND ROOT-MEAN-SQUARE ERRORS COMPARED TO RADIOSONDES /POSITIVE IMPACTS
INCREASE WITH FORECAST RANGE/.
3. A SIGNIFICANT REDUCTION IN THE FALSE ALARM RATE FOR TROPICAL STORMS.

4. THE NUMERICAL INSTABILITY OBSERVED OFF NEWFOUNDLAND IN OPS NAM RUNS FROM DECEMBER 1-4 WAS ELIMINATED BY THESE CHANGES.

MORE DETAILS ABOUT THE CRISIS CHANGES CAN BE SEEN AT /USE LOWER CASE/:

[HTTP://WWW.EMC.NCEP.NOAA.GOV/MB/MBPLL/PARALOG/PARALOG.NAM.WRFNMM NEW.HTML](http://www.emc.ncep.noaa.gov/mb/mbpll/paralog/paralog.nam.wrfnmm.new.html)

A COPY OF THE BRIEFING PACKAGE FOR THE NCEP DIRECTOR CAN BE FOUND AT /USE LOWER CASE/:

[HTTP://WWW.EMC.NCEP.NOAA.GOV/MB/NAMCHANGES DEC2006/NAM_UPGRADES.NOV2006.HTML](http://www.emc.ncep.noaa.gov/mb/namchanges_dec2006/nam_upgrades_nov2006.html)

THE EFFECTIVE DATE OF THIS CHANGE IS SOONER THAN SPECIFIED BY NWS POLICY /NWS INSTRUCTION 10-1805/. THE SHORTER ADVANCE LEAD TIME WAS APPROVED TO MEET OPERATIONAL REQUIREMENTS BY REMOVING NUMEROUS DEFICIENCIES IN THE NAM NOTED BY NWS FORECASTERS SINCE THE JUNE 2006 IMPLEMENTATION. TO ADDRESS THESE ISSUES...THE SET OF NAM CHANGES HAVE BEEN UNDER DEVELOPMENT SINCE EARLY FALL 2006 AND RUN IN PARALLEL BY NCEP.

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

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OR

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

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

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