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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...NOAA
WEATHER WIRE SERVICE /NWS/SUBSCRIBERS...EMERGENCY
MANAGERS WEATHER INFORMATION NETWORK /EMWIN/
SUBSCRIBERS... NOAAPORT SUBSCRIBERS...OTHER
NATIONAL WEATHER SERVICE /NWS/ CUSTOMERS AND
PARTNERS...NWS EMPLOYEES

FROM: PAUL HIRSCHBERG
SCIENCE PLANS BRANCH CHIEF
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 5 TIMES
THAT USED DURING THE 84 HR 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 /9 TIMES THAT IN
OPERATIONAL NAM/ IS ALLOWED.

THE COMBINED IMPACT OF THESE CHANGES HAS LED TO:

1. SLIGHT IMPROVEMENT IN NAM QPF SCORES.
2. A 5-10 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 1-4 DECEMBER WAS ELIMINATED BY THESE CHANGES.

MORE DETAILS ABOUT THE CRISIS CHANGES CAN BE SEEN AT /USE LOWERCASE LETTERS/:

[HTTP://WWW.EMC.NCEP.NOAA.GOV/MB/MBPLL/PARALOG/PARALOG.NAM.Y.WRF.NMM_NEW.HTML](http://www.emc.ncep.noaa.gov/mb/mbpll/paralog/paralog.nam.y.wrf.nmm_new.html)

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

[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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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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