



WESTERN REGION TECHNICAL ATTACHMENT
NO. 86-25
August 5, 1986

NMC EVENT SCHEDULE

A little over a year ago, a table was compiled summarizing and comparing various aspects of NMC operational models. The table was published as a part of Western Region Technical Attachment No. 85-22. Since that time, many changes have been made to NMC models and schedules. Therefore, the table has been updated and is presented below.

The main changes that have occurred are summarized below.

Barotropic

This model, which had been in operation for several decades, is no longer run in the early time slot.

LFM

No significant changes have been made to this regional model except the data cutoff time for the LFM analysis has been moved up by about 15 minutes. It now plays a secondary role to the NGM. Several LFM products have been dropped from both AFOS and FAX. The LFM still provides model data for MOS. It now serves as the early look model (ERL) in place of the barotropic.

NGM

The Nested Grid model has become the primary regional model (RGL) for 0-48 hour forecasting. This model, along with its associated analysis, is often referred to as the Regional Analysis and Forecast Systems (RAFS). It has undergone evolutionary changes since its operational implementation in March 1985. The main changes and dates of the changes are listed here. For details, the reader should consult appropriate Technical Procedures Bulletins.

- March 5, 1986 - Evaporation of falling precipitation added.
- April 23, 1986 - Incorporation of a modified ocean drag coefficient and addition of low level mechanical mixing.
- July 23, 1986 - Addition of long and short wave radiation, diurnal cycle, surface fluxes of moisture and heat over land, revised convective precipitation algorithm.

Spectral

The old familiar Spectral model runs in the Aviation (AVN) time slot. It is now run to 72 hours at both 00 and 12Z.

MFM

The Movable Fine Mesh model is run as needed for hurricane forecasting. It is no longer run for forecasting heavy precipitation events due to the improved

precipitation forecasting skill of the NGM. A new vectorized version has been implemented on the CYBER computer. It can run on any regional subset of the globe using the analysis from the spectral model. The model initially performs a "spin-up" to generate the mass/motion field of the hurricane.

MRF

The Medium Range Forecast model is an improved version of the old Spectral model. It runs once a day from 00Z for providing medium range (3-10 day) forecast guidance. It was implemented in April 1985. On May 28, 1986, several significant changes were made both to the analysis and forecast model. The analysis changes include increased horizontal resolution and an increase in the number of observations used at each grid point. The principal changes to the forecast model were a redistribution of model layers in the vertical, incorporation of improved turbulent eddy and cumulus mixing processes, changes in the treatment of surface fluxes and lateral diffusion near steeply sloped terrain, and the use of better fixed fields of surface roughness, albedo, etc. Forecasters should read Technical Procedures Bulletin No. 361 for more information on these changes.

FNL

The Final analysis/forecast system or Global Data Assimilation system (GDAS) provides the first guess fields for analyses for all the other operational models. On May 28, 1986, this system was upgraded to make the analysis and forecast models identical to those used for the MRF. No output from the Final is sent to the field.

Backup Systems

Implementation of operational models on the CYBER computer has complicated NMC backup operations since NMC currently has only one CYBER. When it fails, equivalent or reduced capability versions of some models are run on the NAS 9000 computer while other models are simply scrubbed. A basically equivalent version of the LFM is run on the NAS. The NGM is not run at all when the CYBER is inoperative, but LFM products are sent on AFOS and FAX in place of NGM products. The Aviation run employs a spectral Hough Analysis and 30 mode version of the Spectral model as a backup on the NAS 9000. For medium range forecasting, the MRF is scrubbed, and the backup Aviation run is extended from 72 to 144 hours. The Final run is also dropped in a backup mode. First guess fields for subsequent operational model runs are obtained by using an old MRF forecast valid at the appropriate time.

NMC EVENT SCHEDULE

RUN	PREDICTION MODEL	DOMAIN	ANALYSIS	DATA CUT-OFF	RESOLUTION HORIZ VERT	FORECAST PROJECTION	BACKUP	500MB PRODUCTS AVAILABLE ON AFOS
EARLY LOOK (ERL)	LIMITED AREA FINE MESH (LFM)	REGIONAL (N.A.)	GRIDPOINT CRESSMAN SUCCESSIVE CORRECTION 2-DIMENSIONAL	1+15	GRIDPOINT 190KM @60°N 7 LAYERS	48 HRS	BACKUP VERSION RUNS ON NAS	50(6,7) 52(6,7) 54(6,7) 56(6,7) 58(6,7)
REGIONAL (RGL)	NESTED GRID MODEL (NGM)	HEMISPHERIC	GRIDPOINT 3 DIMENSIONAL OPTIMUM INTERPOLATION (OI)	2+00	GRIDPOINT GRID A 360KM 16 LAYERS GRID B 180KM GRID C 90KM @60°N	48 HRS	LFM PRODUCTS SENT UNDER RGL HEADERS	50(H,V) 52(H,V) 54(H,V) 56(H,V) 58(H,V)
AVIATION (AVN)	GLOBAL SPECTRAL MODEL	GLOBAL	GRIDPOINT 3 DIMENSIONAL OI	3+30	SPECTRAL 40 WAVES 12 LAYERS	72 HRS	COARSER RESOLUTION VERSION RUNS ON NAS	5A(H,V) 5C(H,V) 5E(H,V) 5G(H,V) 5I(H,V) 5J(H,V) 5JØ
HURRICANE (HCN)	MOVABLE FINE MESH (MFM)	REGIONAL (51X51 GRID)	GRIDPOINT (51X51 GRID) OI	3+30	GRIDPOINT 60KM 10 LAYERS	72 HRS	SIMILAR VERSION RUN ON NAS	NONE
MEDIUM RANGE (MRF)	MEDIUM RANGE FORECAST MODEL (MRF)	GLOBAL	GRIDPOINT OI	6+00	SPECTRAL 40 WAVES 18 LAYERS	240 HRS	AVN RUN EXTENDED AT COARSER RESOLUTION TO 144 HRS ON NAS	5NH 5PH 5RH 5TH 5VH 5XH ØØZ ONLY
FINAL (FNL)	GLOBAL DATA ASSIMILATION SYSTEM (GDAS)	GLOBAL	GRIDPOINT OI	ØØZ 6+00 12Z 8+30	SPECTRAL 40 WAVES 18 LAYERS	TWO 6 HR SEGMENTS	NONE. FIRST GUESS OBTAINED FROM OLD MRF FORECAST	NONE