WESTERN REGION TECHNICAL ATTACHMENT
NO. 86-11
March 11, 1986

REORGANIZATION OF AFOS GRAPHIC TITLES

The attached memos from Dr. Lavoie and Mr. Howcroft discuss the rationale behind wholesale changes that are planned to the NMC model graphics titles as they appear in AFOS. The name assigned will be based on the relative position of the model run within the overall NMC network and upon the purpose of the model, rather than on the name of the model. For Example, the models primarily used by field forecasters are the LFM, NGM, SPM, and MRF. Under the new AFOS titles, they will be called the ERL (early run), RGL (regional run), AVN (aviation run), and MRF (medium-range forecast run), respectively. The new convention allows implementation of a new model without changing the AFOS title key files. The name of the model used (e.g., LFM, NGM) will still be transmitted with the chart and appear when the chart is displayed.

This new convention will also facilitate backup operations. For example, if the NGM cannot be run due to computer problems with the CYBER 205, LFM charts will be sent in place of the NGM on AFOS. The title of the products will be RGL. However, the chart will also carry an LFM name so forecasters will know which model was used as the regional (RGL) model on that day.

The new naming convention is also significant to non-AFOS users since NMC people, in their discussions with the field, will normally use the new names. Also the LFM may sometimes be transmitted in the RGL time slots on NAFAX as a backup when the NGM is not available. Forecasters can tell when this occurs because the LFM name will appear on the charts.

The attachment referred to in Mr. Howcroft's memo is not attached to this weeek's Technical Attachment. It was already published a few weeks ago as WRTA NO. 86-05.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

MAR 05 1986

W/OM2:RLL

MEMORANDUM FOR: Addressees Listed Below

FROM: Ronald L. Lavoie
Chief, Program Requirements and Planning Division

SUBJECT: Background Information on Reorganization of AFOS Graphic Titles

We are proceeding with plans to revise AFOS Graphic Titles to make them consistent with NMC usage and less confusing when changes are made in model runs at NMC. New title files should be sent to field offices within the next 2 to 3 weeks.

Some of you suggested that material be made available to our forecasters explaining the reason for this change and the terminology used by NMC. The attached memo from Jim Howcroft does that very well. Please make use of it as you see fit to inform our field offices of the rationale for this forthcoming AFOS change.

Attachments

ADDRESSEES:
W/ER3 - Fred L. Zuckerberg
W/SR3 - Daniel L. Smith
W/CR3 - Joseph T. Schaefer
W/WR3 - Glenn E. Rasch

cc:
W/NMC4 - J. Howcroft (w/o att.)
W/OSD24 - W. Sequin
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MAR - 3 1986

W/NMC42:jds

MEMORANDUM FOR: Ronald L. Lavoie
Chief, Program Requirements & Planning Division
OM

FROM: James G. Howcroft Howcroft
Chief, Automation Division

SUBJECT: NMC Product Identification

REFERENCE: Your memo W/OM24x1:RJM to me, subject: Field Documentation for Graphics Title Changes, dated 2/7/86.

The recently accepted proposal to introduce a consistent set of names for the Title Keys and Chart Labels of NMC produced AFOS products has raised some questions. The specific plan is to use the NMC RUN (or NET) name in the Title Keys and to specify the name of the model (whether analysis model or forecast model) in the Chart Label. The attached document, of some length, describes the various runs and models that make up the NMC Production Suite and introduces the naming convention that will be used in the AFOS labels. (Not all of the runs described produce AFOS output - the document describes the entire suite.)

Answers to other specific questions follow.

Why has NMC decided to make changes to its long-standing but varied names of models, runs, jobs, what have you? In a word: consistency. Over the years a number of differing names for NMC's operational forecasts have come into use; that presented no real problem when there were only a small number of such models, but now when there are six distinct forecast models and four or five differing analysis codes all running operationally, casual naming is simply out of the question. It also appears that NMC's production has once again grown to fill all the computer time available within the constraints of operational deadlines. We expect the current models (with developmental changes) to be with us for some time now so stability contributes to our establishing a naming convention.

The main advantage of a consistent set of names is in communication: when something goes wrong and calls come into NMC, a number of people spread across a number of Divisions may get involved is solving the problem - at least this way they will all be working on the same problem.

As described in more detail in the attached document "The NMC Production Suite", we refer to the distinct "runs" in the production suite by names that are more or less descriptive of their purpose. A "run" can be defined as a complete package: the receipt of data up to a specific time, an analysis, a forecast to some future time, and the dissemination of the analysis and forecast information. There are differences in detail in the runs, of course: they are described in the document.

One thing to try to keep straight is the difference between a "run" and the analysis or forecast models that are executed in the run. The "run" includes everything; a model is a specific thing: the LFM forecast for example, or the GOI analysis.

What do we do when something goes wrong with hardware, software, whatever, i.e. what is "backup" in the NMC context? The current backup procedures for the six runs are sketched in the "Suite" document. The field can learn of the invocation of backups in at least two ways: 1) there will (or should) be some sort of notification from the Meteorological Operations Division's Senior Duty Meteorologist in the usual manner: 2) the labels on the maps which show which model (not run) produced the analysis or forecast will change to indicate what happened.

What in the world is the difference between an analysis and a "00 hr forecast"?

It used to be, in simpler times, that you just made an analysis of, say, the 500 hPa height field, fed it to a simple model like the old Barotropic, and sat back to wait for forecasts to roll off the machine. No more. We still make analyses, now at all the mandatory levels, but "feeding" them to a model has gotten more complex. By "analysis", by the way, I mean the computation of grid point values of the field in question, given a collection of observations scattered about. As far as the computer is concerned, a line drawn graphic is just a frill.

The "feeding" operation now involves interpolation from pressure to special "sigma" coordinates and, importantly, something called a "normal mode initialization" (NMI). The NMI is akin to what used to be called the "geostrophic adjustment process", but since the models now use the primitive equations, "geostrophic" is no longer quite correct. What does happen is that the mass (height, temperature) and motion (wind) fields are brought into a sort of mutual quasi-geostrophic balance by actually changing their values before the forecast even begins. The NMI is necessary to eliminate noise from the forecast. If we then interpolate the altered values of height and wind back to the usual pressure surfaces we can look at the results of the NMI. These maps are the ones labeled "00 hr forecasts". The meteorological information has moved into and out of the forecast model without actually being forecast into the future: it's not the analysis anymore because of the NMI: it has become a "forecast" of 00 hours length.

The reason that NMC sends out graphics of the 00 hr forecast is because those are the true initial conditions for the forecast - if you want to look at changes forecast by the model over a given time range, you will need the model's initial conditions to start from. The analysis won't do because the startup NMI step has changed the fields independently of any forecast into the future.

Attachments

cc:
(w/o attachment)
W/NMC - W. D. Bonner

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