

June 27, 2012

MEMORANDUM FOR: NCEP Model Implementation Scientific Review Team

FROM: Chris Caruso Magee, Team Lead, Production Control
Production Management Branch, NCEP Central Operations

SUBJECT: Proposed Implementation of Global Aerosol System – NEMS GFS
Aerosol Component v1.0.0

The Environmental Modeling Center (EMC) has proposed implementation of the Global Aerosol System – NEMS GFS Aerosol Component (NGAC) v1.0.0. This system produces global aerosol forecasts and runs once daily within the NCEP Production Job Suite for the 0000Z cycle. The forecast model component of the NGAC is the Global Forecast System (GFS) based on the NOAA Environmental Modeling System (NEMS) which, in turn, is based on the common modeling framework using Earth System Modeling Framework (ESMF). The aerosol component of the NGAC is Goddard Chemistry Aerosol Radiation and Transport Model (GOCART). Funded mainly by NASA Earth Science programs, the GOCART model was developed to simulate atmospheric aerosols (including sulfate, black carbon (BC), organic carbon (OC), dust, and sea-salt), CO, and sulfur gases.

The objective of this implementation is to provide global short-range aerosol forecasts for various applications. The implementation plan employed in this project consists of three phases. The first phase is to produce dust forecasts. Phase 1 is the only part of NGAC to be implemented at this time. Phase 2 (production of the full suite of aerosol forecasts (sea salt, sulfate, dust, and carbonaceous aerosols) and phase 3 (production of aerosol analysis using NGAC and Grid-point Statistical Interpolation (GSI)) will be implemented at a later date.

The NGAC implementation includes:

- introduction of NGAC (NEMS-GFS coupled with NASA GOCART)
- generation of a new global dust product
- the first global NEMS implementation
- output files in grib2 format

Real time parallel data:

Beginning Monday, July 2, 2012 and starting with the 1200Z cycle, a consistent parallel feed of data will be available at:

HTTP:

<http://www.ftp.ncep.noaa.gov/data/nccf/com/ngac/para/ngac.YYYYMMDD>

FTP:

<ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/ngac/para/ngac.YYYYMMDD>

where YYYYMMDD is the year, month, day.

A Technical Implementation Notice for the Hybrid is expected to be released soon and will be available at:

<http://www.nws.noaa.gov/os/notif.htm>

Request for Evaluation

Please complete the attached “Intent to Participate” form and return it to Chris.Caruso.Magee@noaa.gov no later than July 6, 2012. NCO requires an intent form be filed by all NCEP Service Centers. NWS WFO San Juan and NESDIS are listed as being primarily responsible for this evaluation. All NWS Service Centers are optional, as are the NWS Regions, WFOs other than San Juan, government agencies, or private companies not listed above. For the NCEP Service Centers, if, in your estimation, the nature of the proposed change would have little or no impact on the forecast process at your Service Center, simply indicate that you do not intend to participate in the subjective evaluation and return the form.

The 30-day evaluation period will start at 12Z on Monday, July 2, 2012 and run through August 1, 2012. Participants need to complete the attached “Model Implementation Subjective Evaluation Report” form and return to Chris.Caruso.Magee@noaa.gov no later than August 6, 2012. Please indicate the overall performance of the product, with any additional comments on specific cases with noteworthy positive or negative performance. Please note that NCO requires evaluators to specifically address the benefits stated in the attached form as to whether those benefits were observed or not. Any feedback you wish to provide during the evaluation period should be emailed to Chris.Caruso.Magee@noaa.gov.

A final coordination teleconference will be scheduled to review the evaluation and address any outstanding issues. Based on the outcome of that teleconference, EMC and NCO will prepare a recommendation for Dr. Uccellini (NCEP Director). This teleconference has not yet been scheduled.

Points of Contact

Chris.Caruso.Magee@noaa.gov (NCO)

Sarah.Lu@noaa.gov (EMC)

**Intent To Participate
Model Implementation Subjective Evaluation**

Scientific Review Team Member: _____

Team Member E-mail: _____

Region/Service Center/Company Representing: _____

**(Govt Only) Authorizing Official or
Service Center Director:** _____

Intent to Participate:

____ Will Participate in the Evaluation

____ Will Not Participate in the Evaluation

Model Implementation Subjective Evaluation Report

Scientific Review Team Member: _____

Region/Service Center/Company Representing: _____

Proposed Change: NGAC v1.0.0

Model Developer: Sarah Lu (EMC)

Real-Time Parallel Runs:

General comments: _____

Evaluation of expected benefits:

Do you observe the following and are they beneficial to you?

1. Does NGAC provide boundary conditions to regional dust models?

2. Does NGAC provide guidance on long-range dust transport from Africa and Asia on Particulate Matter pollution impacting the Caribbean and continental US?

3. Does NGAC provide aerosol information that improves satellite data assimilation capability?

Recommendation:

Implement as proposed ____

Reevaluate after changes ____

Do not implement ____