Dynamic Core Test Group (DTG) Charter

29 May 2015

Prepared by:

NGGPS Project Management Team

1. BACKGROUND

As part of its Research to Operations (R2O) Initiative, the National Weather Service (NWS) plans to develop and implement a state-of-the art Next Generation Global Prediction system (NGGPS) which will be readily adaptable to and scalable on evolving High-Performance Computing (HPC) architectures. The NGGPS will be designed to produce useful forecast guidance to 30 days, as well as become the foundation for the operating forecast guidance system (Global Forecast System) for the next several decades. Current research and development efforts both inside and outside NWS, including the Navy, NOAA laboratories, National Center for Atmospheric Research (NCAR), the university research community, and other partnership efforts, will contribute to the development of this prediction system.

The current operational Global Forecast System is based on the Global Spectral Model. The Global Forecast System is an operational, very mature hydrostatic dynamic model with known limitations regarding scalability and adaptability to future computing architectures. The future NGGPS will require an atmospheric dynamic core (dycore) that is non-hydrostatic, highly scalable and architecturally compatible with projected high performance computing archictecture. Six dycores currently being developed and modified from a variety of institutions are viewed as potential candidates to be evaluated for the new system. The NGGPS Dycore Testing Plan will guide the testing of these dycores and leverage ongoing High-Impact Weather Prediction Project (HIWPP) activities in the evaluation of the dycores.

Objective and unbiased assessment of the test and evaluation results is essential to the selection of the future atmospheric model dynamic core for the NGGPS. A Dynamic core Test Group (DTG) is hereby established to conduct this assessment. The DTG will evaluate the test plan, conduct of the test, and results of the NGGPS evaluation and provide an assessment, either individually or collectively of their evaluation to NWS management. This assessment, along with business considerations will be used in the development of the business case supporting the selection of the next dycore by NWS management.

2. ROLES

The role of the DTG is to review the technical aspects of all dycore testing and provide an assessment of test results in written reports to NWS management for each of the candidate dynamic core codes. The DTG will provide guidance on outstanding issues relayed from the Advanced Computing Evaluation Committee (AVEC) or the NGGPS Project Management Team regarding the preparation for and conduct of dycore performance testing, and will advise on resolution of conflicts on testing procedures, scoring or ranking

Initial Level 1 and Level 2 testing is described in the NGGPS Testing Plan, however, the DTG will assess the evaluation criteria and provide feedback to the NGGPS Program Manager as applicable. Overall Level 1 testing results will be compiled by the NGGPS Project Management Team for presentation to the DTG for review. The DTG will complete a review of the Level 1 testing data and provide an assessment to the NGGPS Program Manager prior to Level 2 testing. Upon completion of Level 2 testing, evaluation of all test result data will be performed by the DTG. Results of this evaluation will be included in a final report prepared for the NGGPS Program Manager.

The DTG will meet as needed to review test and evaluation procedures and to conduct assessments of dycore test data.

DTG deliberations and products are confidential until released publicly by the NWS.

3. PARTICIPANTS

Each candidate dycore shall have one representative on the DTG. Technical consultants will also be included in the group. Other technical representatives, including the NGGPS Test Manager and the Advanced Computing Evaluation Committee Chair, will participate as needed.

Chair: Dr. Ming Ji, Director, NWS Office of Science and Technology Integration

Consultant: Dr. Robert Gall, University of Miami

Consultant: Dr. Richard Rood, University of Michigan

Consultant: Dr. John Thuburn, Exeter

Superintendent, Naval Research Laboratory Monterey: Dr. Melinda Peng (Acting)

Director, Geophysical Fluid Dynamics Laboratory: Dr. Venkatachala Ramaswamy

Director, Global Systems Division, ESRL: Dr. Kevin Kelleher

Director, Environmental Modeling Center, NCEP: Dr. Hendrik Tolman

Director, Mesoscale and Micrometeorology Division, NCAR: Dr. Chris Davis

NGGPS Program Manager: Fred Toepfer /Dr. Ivanka Stajner (Alternate)

Ex Officio - Test Manager: Dr. Jeff Whitaker

Ex Officio - AVEC Test Manager: John Michalakes

Staff: Steve Warren/Sherrie Morris

4. FUNDING

There is no dedicated funding associated with the committee for Federal Employees.   Consultants will be compensated in accordance with their contract.

5. PERIOD OF AGREEMENT AND MODIFICATION/TERMINATION

This Agreement shall become effective on the date of approval by the NGGPS Program Manager. The remaining signatures constitute the agreement by the participating organizations and or consultants to participate. It is anticipated that the charter will be terminated once the tasks of the DTG are completed. Completion of DTG tasking is expected to coincide with the delivery and acceptance of a written dycore test assessment (individually and/or collectively) to/by NWS management. Any extension of the agreement will be proposed, as necessary, by NWS management.

Reviews of this charter may be conducted as deemed necessary by the DTG or NGGPS Project Team at any time. The latest date of amendment constitutes the new effective date unless some later date is specified.

6. SIGNATURE

_____ Date _____   _____ Date _____
Chair   NGGPS Program Manager

7. ACKNOWLEDGMENT

_____ Date _____
Consultant

_____ Date _____
GFDL – FV3

_____ Date _____
Consultant

_____ Date _____
EMC – NMMB and GSM-NH

_____ Date _____
Consultant

_____ Date _____
NCAR/MMM – MPAS

_____ Date _____
Navy/NRL - NEPTUNE

_____ Date _____
ESRL/GSD - NIM