

**Monthly Report
of the WRF Program Coordinator
to
Executive Oversight Board**

March 2005

1. **WRF Development and Implementation:**

- **Next WRF operational implementations:**
 - (a) NCEP's implementation of its **six-member WRF ensemble** system in the High-Resolution Window domains remains on track for late summer 2005.
 - (b) **AFWA's first operational implementation of WRF-ARW** in its classified domains remains on track for summer 2005.
- NCEP remains on track for operational implementation of **North American Mesoscale (NAM) WRF-NMM** in March 2006. Assembly of the first **WRF-NMM forecast system with fully cycled GSI data assimilation** has been delayed by other commitments, but should take place in March 2005. This brief delay in beginning the testing is not expected to adversely impact implementation of the model in '06.
- **Infrastructure Development:** NCAR has continued introducing **upgrades** to top-levels (driver and mediation layers) of the **WRF software infrastructure to conform to ESMF** "init/run/finalize" calling interface protocols for coupled applications. NCAR/MMM has also written a **white paper** describing its proposed approach to make the current advanced engineering framework conformable to ESMF, for the goal of engaging WRF Infrastructure Working Group 2 to their review and advise on WRF-ESMF integration plans.
- **ESMF testing and evaluation:** NCEP has continued its work to link its GFS (Global Forecast System) with ESMF interfaces so it can be integrated by an ESMF-conformed driver. This is one of the simpler forms of ESMF linkage that can be performed for a model, since it does not involve coupling to another modeling system. The goal is to learn about labor and time required to engage and run a model in ESMF and to evaluate impact on model performance. NCEP plans to use ESMF to couple the WRF-NMM atmospheric system to the HYCOM ocean model and WaveWatch-III to assemble a Hurricane WRF system by the end of FY07. The current work being done by NCAR to ensure WRF conforms to ESMF interface and "set services" standards is an enabling part of this plan.
- **Nesting for WRF-NMM:** NCEP has begun work to extend the **nested-grid version of WRF-NMM** to support moveable nested grids. Meanwhile, the one-way nested version is being installed into the latest NMMv2. This keeps

Hurricane WRF development on track for preliminary testing of the moveable-nest modeling system during the 2005 hurricane season.

- **FSL** plans to modify its experimental real-time **WRF-Chem** on-line air-quality forecast system to efficiently perform off-line chemistry (i.e., chemistry run separately from the meteorological simulation). This step will allow determination of determine value added by on-line chemistry and also will allow direct inter-comparison of different chemistry solvers in the operational WRF-CMAQ and experimental WRF-Chem systems.
- **Planning for WRF-NMM-version 2 code release:** NCAR has successfully installed the WRF-NMMv2 code in the WRF code repository. NCAR and NCEP will work to port the new NMMv2 to most commonly used computer platforms before its release to the public, planned for about **June 2005**.

2. WRF Management

- Preparations are at an advanced stage for the next meeting of the WRF Executive Oversight Board to be held 13 April 2005 at NRL/DC.
- Army Research Lab will have a senior executive in attendance at the April meeting of the ExOB. ARL has requested to become a signatory to the WRF Agreement in Principle and will brief the ExOB on ARL's interest in WRF and how it can contribute to the WRF program.

3. WRF and DTC – OTC

- The DTC **WRF Winter Forecast Experiment** has continued through February and will end on 31 March 2005. Preliminary statistical analysis for the ARW and NMM versions of WRF indicate that they produces detailed precipitation fields either very similar or moderately better in skill than those of the operational Eta model. NWS forecasters have expressed great interest in the high-resolution derived reflectivity fields produced from the model output. Daily 5-km forecasts can be viewed at the DTC's website, at <http://www.dtcenter.org/>.
- The DTC and NCEP are collaborating to establish the **first WRF-NMM tutorial** for new users. NCAR/MMM's WRF-ARW tutorial has been delayed to August 2005 and that is now the earliest-possible date for a WRF-NMM tutorial. The date will be subject to the pace at which progress is made toward releasing WRF-NMM to the public and toward development of suitable training modules. NCEP/EMC will make its NMM experts available to DTC to help develop and teach the initial tutorial.

- **FY05 funding** for the NCAR node of WRF DTC has been secured. There is still a **shortfall** of ~\$152K in FY05 to fund the FSL node of DTC. **DTC Funding sources have been broadened** to include NCAR, NCEP, NWS-USWRP, AFWA, and NSF. Computer resources are provided by NCAR, FSL and DoD (at NAVO, under AFWA sponsorship). Funding for FY06 remains uncertain and long-term funding stability of the DTC remains a concern.
- The completed **DTC Terms of Reference** has been forwarded to WRF ExOB for approval, after which it will be sent to agency administrators for final signatures.
- A full draft of the **NCEP OTC Plan** has been written and is being circulated at NCEP/EMC for comment.

4. **WRF and COPC**

- The COPC Directors met on 28 March 2005 and requested that the draft of the **WRF Joint Implementation Plan** be expanded to include a plan for developing, testing and implementing a joint ensemble system within 5 years.
- The COPC Directors are preparing memos that will be provided to the WRF ExOB, stating their commitment to a unified operational short-range WRF ensemble system, their interest in developing a unified modeling approach from the global scale to mesoscale, and stating that “our” interest would best be served by one modeling infrastructure that cuts across all models (atmosphere, ocean, land, cryosphere). The formal memos will