Developmental Testbed Center
Updates

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Overview of the DTC

**DTC purpose:** Facilitate the interaction and transition of NWP technology between research & operations

The DTC is a collaborative facility between NCAR & NOAA/ESRL/GSD

Strong partnerships with operational partners & model developers is critical

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**O2R:** Support operational NWP systems to the community

**R2O:**

- **Partner with developers** to get innovations into **centralized code**
- Perform diagnostics and **T&E on promising NWP innovations** for possible operational implementation

**Interaction between R&O:** Workshops, **visitor program**, newsletter

DTC activities funded by NOAA (including HFIP), Air Force, NSF, and NCAR
HWRF code management

- **Centralized HWRF repository**
  - SVN & Git repositories house all HWRF components
  - Automated build for entire system, end-to-end python scripts, tools for automation, source for components
  - Sync main HWRF development branches with community trunks
  - Conduct regression, consistency checks to ensure code integrity
  - Support unified scripts that run all HWRF components
  - Streamline access/checkout for components that move from VLab to GitHub

![Diagram of HWRF code management](image)
Community Support

- Helpdesk: hwrf-help@ucar.edu
- User support continues to be active – working with HWRF v4.0a public release
  - Planned transition to forums
    - www.dtcenter.org/HurrWRF/users

- Streamlining the transition of new developments (developer support)
  - Access to the unified HWRF code repository w/ experimental codes
  - Support for inter-developers collaboration
  - Training, assistance with developments, specialized helpdesk
  - Oversight of code integration to avoid divergence
  - Communication: developer committee meetings, webpage, mailing lists

- Scripting development deemed high priority in collaboration with partners
  - Intercycle data assimilation

http://www.dtcenter.org/HurrWRF/developers
Testing and Evaluation

Development supported by DTC Visitor Program (Fovell, U. Albany)

- Development to enhance HWRF to run using MYNN PBL with operational GFDL surface layer
  - Testing conducted (Idealized by R. Fovell, real cases by DTC) to assess impact on HWRF forecasts
- Facilitated connection between research and operational partners
  - Development updated to incorporate latest MYNN development (J. Olson, ESRL)

Capability integrated into HWRF trunk, available within HWRF v4.0a public release

Courtesy R. Fovell
Testing and Evaluation

Testing results from DTC (Michael, Isaac, Florence (2018))

- Track error differences unremarkable
- Intensity errors suggest better performance at longer lead times
- Storm to storm performance variability

No pre-implementation testing due to moratorium – potential candidate for 2020?

*Note: testing performed using MYNN version without updates, no mass flux scheme activated

✔ HWRF-MYNN better matches observed wind profile in Hurricane Michael
Verification and diagnostic tool development

- Designed to enable storm-relative model evaluations within Model Evaluation Tools (MET)
  - Converts model output to storm-relative coordinates
  - Computes an azimuthal average over multiple heights and radii
- Ability to:
  - Normalize by radius of maximum winds
  - Derive tangential wind and radial wind
- Output to a NetCDF file
- Additional tool to filter, stratify and aggregate across cases

Included in next MET release