

Developmental Testbed Center: Status Update and Outlook

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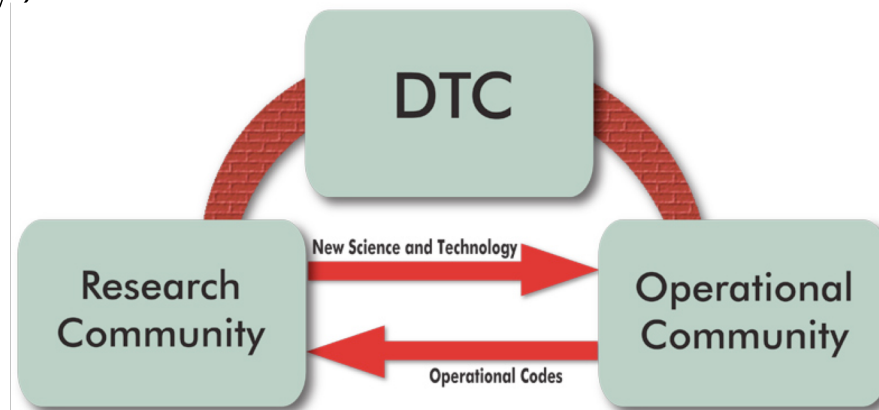
³CSU/CIRA

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What is the DTC?

- **Purpose:** Facilitate the interaction & transition of NWP technology between research & operations
 - **O2R:** Support operational NWP systems to the community
 - **R2O:** Perform T&E on promising NWP innovations for possible operational implementation
 - **Community:** Visitor Program, Workshops, Newsletter
- Jointly sponsored by NOAA, Air Force, NCAR & NSF (Visitor Program only)



Current Focus Areas



Data
Assimilation
Ming Hu



Regional
Ensembles
Jamie Wolff



Hurricanes
Kathryn
Newman



Global
Model Test
Bed
Ligia
Bernardet



Verification
Tara Jensen

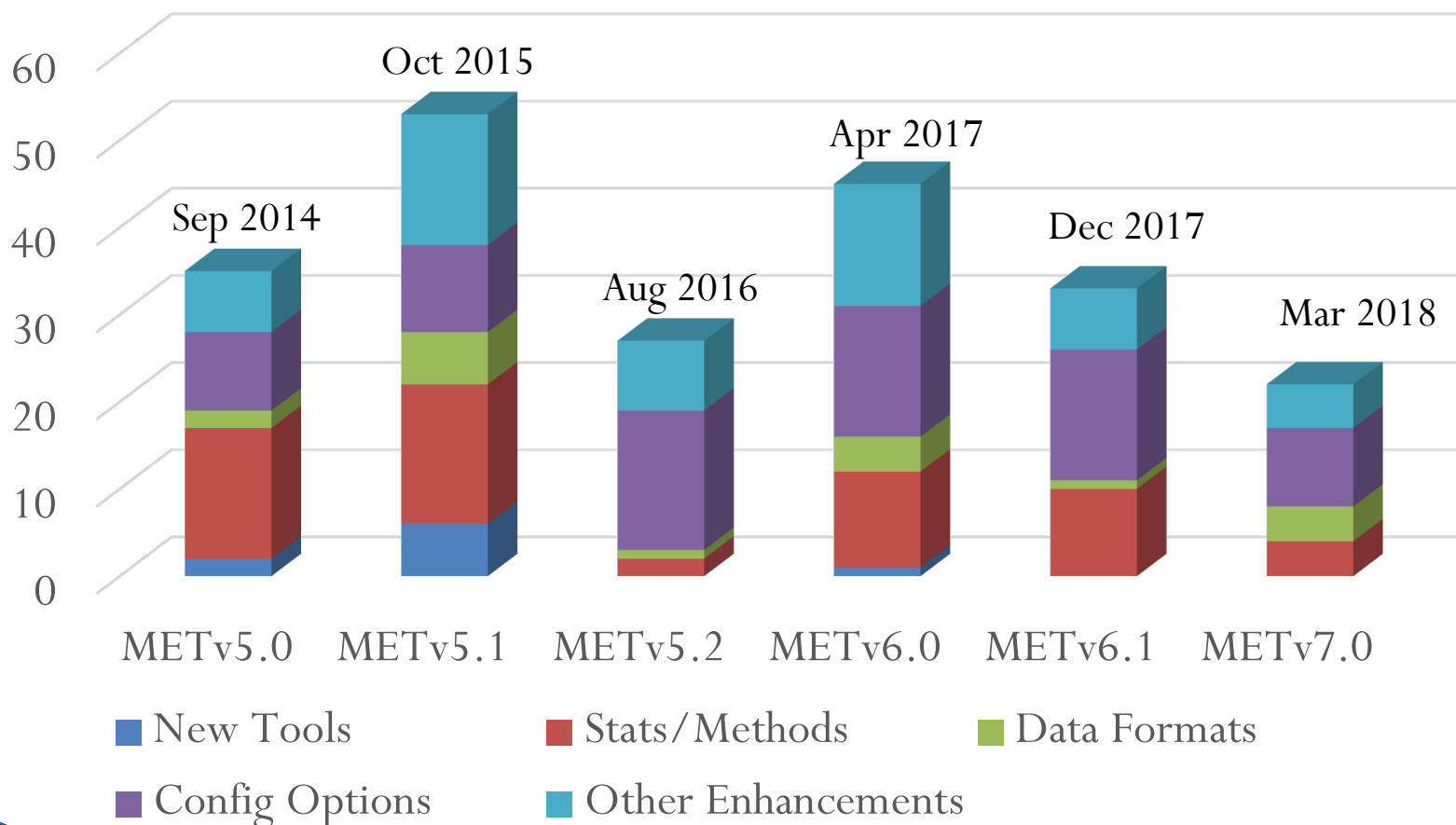
Software management/user support + community outreach + T&E

Capability Advances over the Past Year

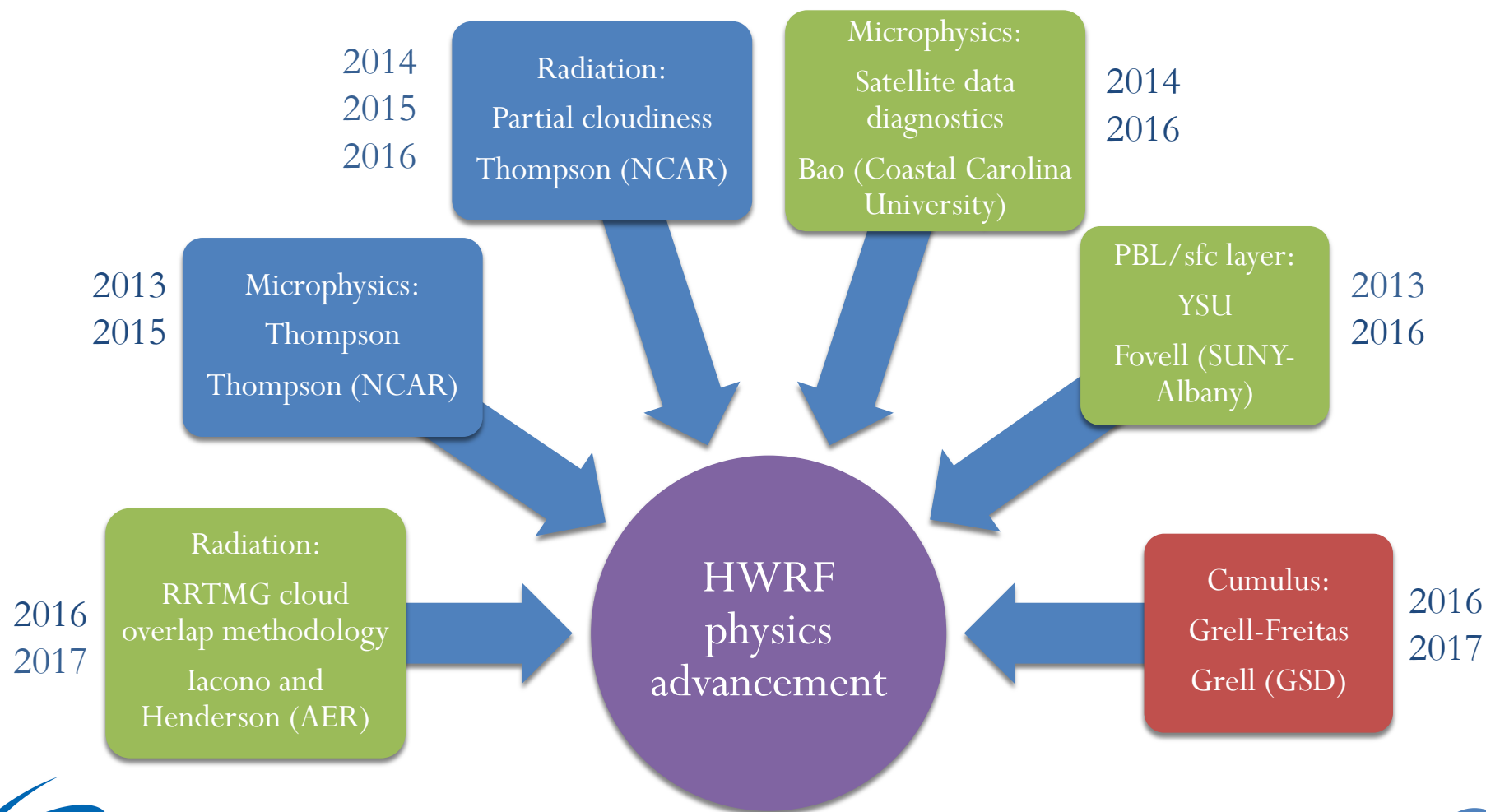
- WRF
 - SPP option for PBL MYNN, RUC LSM & Thompson MP
 - Hybrid vertical coordinate
- UPP
 - GRIB2 support
- HWRF
 - Physics
 - Alternate cloud overlap methodology for RRTMG radiation
 - Grell-Freitas cumulus parameterization
 - Ocean model
 - Addition of SST uncertainty to the GEFS-based HWRF ensemble
 - Host hwrf-contrib repository for inter-developer exchange of codes
 - Scripts for GOES satellite verification
- GSI/EnKF
 - Added functions to enhance 4DVar for ARW w/ RAP/HRRR sfc DA configurations
 - Capability to
 - use sub-hourly obs, ensemble & background
 - use ARW hybrid vertical coordinate
 - assimilate satellite hydrometeor retrievals
 - Unified multiple-platform build system
 - Improved diagnostic & display utilities, such as new utility function to generate ensemble initial files for regional ARW.
 - Improved forward observation operator for coastline observations
- CCpp
 - GFS physics suite w/ SCM capability
- MET+ (verification software package)
 - Numerous enhancements to meet needs of research and EMC
 - Python wrappers to make set-up and running easier

MET Release History

MET release enhancement categories



HWRF Physics Advancement

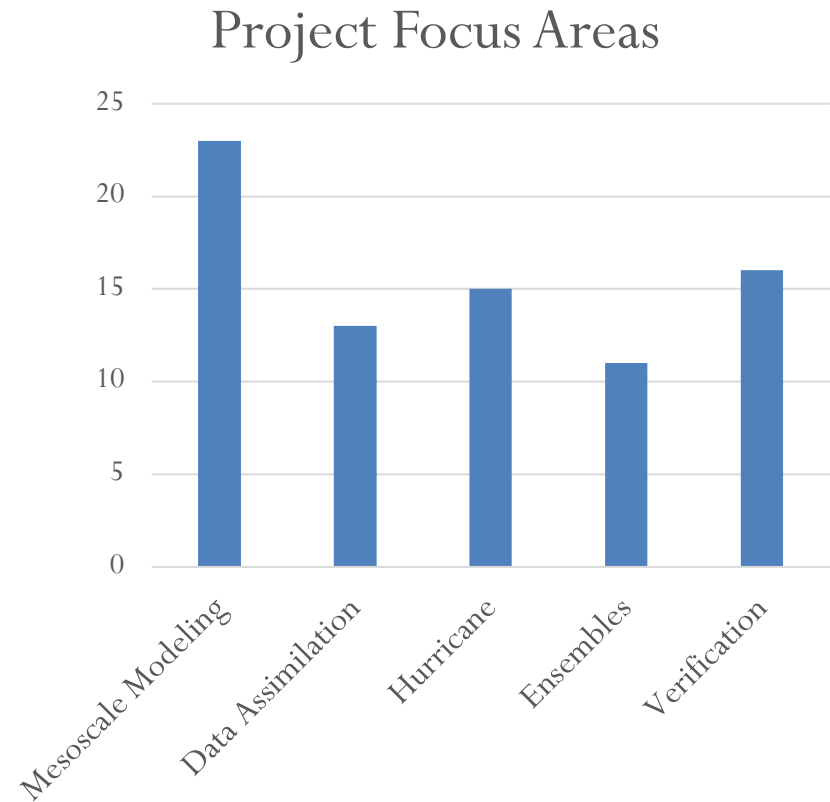
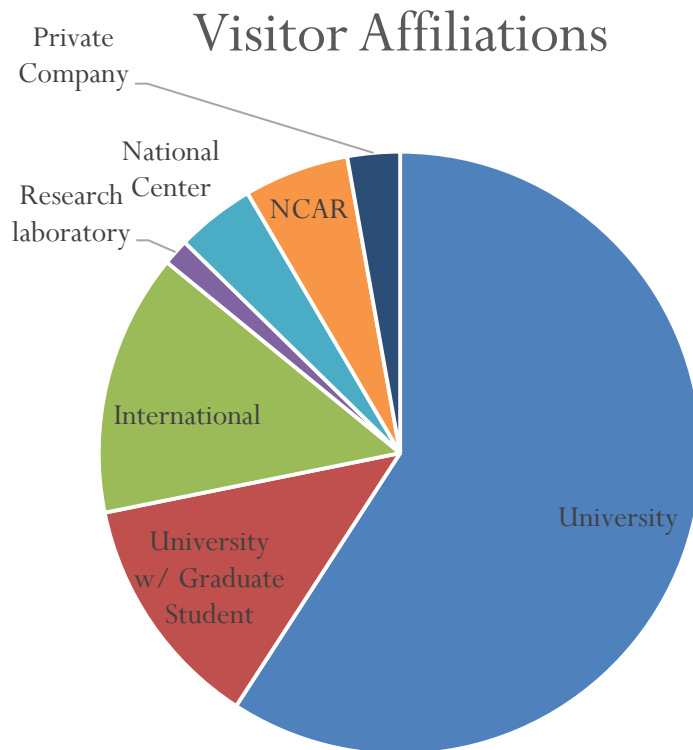


DTC Visitor Program

- Supports visitors to work w/ the DTC to
 - Add new capabilities to community software systems
 - Test new forecasting & verification techniques, models & model components for NWP
- Project types
 - PI project – up to 2 months salary, travel & per diem
 - Graduate student project - up to 1 year housing/living allowance & travel expenses for student to work w/ DTC &/or one of its partners + travel & per diem for up to 2 2-week visits to the location of the student by project PI
- Looking for **subject-matter-experts** to collaborate with DTC on T&E activities – physics a key focus area for engaging!
- **Currently accepting proposals – funding is available!**

<http://www.dtcenter.org/visitors/>

Historical Information on Visitors



Current Activities

Software

- Unified Forecast System (UFS)-Convective Allowing Model (CAM) user support
- WRF & UPP support & community engagement
- GSI/EnKF code management & user support
- HWRF user & developer support
- MET+ development & community support
- Enhancing community collaborations through DTC-supported software containers

2.5 Kavulich et al (Tues)

Friday instructional session

- Common Community Physics Package (CCPP) – including Physics Testbed

5.6 Heinzeller et al (Wed)

P2 Bernardet et al

Community Outreach

- WRF Users Workshop
- Workshop on test plans and metrics for assessing model improvements

P47 Jensen et al

Testing and Evaluation

- Model Evaluation for Research Innovation Transition (MERIT)

P42 Hertneky et al

- Testbed collaborations with HWT

8.7 Blank et al (Thurs)

- DA advancement for convective forecast (HRRR)

P12 Zhou et al

- HWRF physics advancement & diagnostic tool development for hurricanes

P51 Grell et al

P52 Biswas et al

9.5 Kalina et al (Thurs)

- Validation/verification for AF applications ranging from global to regional & deterministic to ensemble

- Physics testing for global applications

P41 Harrold et al

DTC Community Unified Forecast System Test Plan and Metrics Workshop

Goal: Bring the community together to develop a test plan & suite of metrics to provide transparent & actionable decisions for the UFS under development

Who can attend? Anyone from the community that would like to actively participate in formulating UFS Test Plan (limited to 80 participants)

NCWCP
College Park, MD

July 30-31

Morning – Presentations to inform process

Afternoon – Breakouts to populate draft test plan

August 1

Morning – report out from breakouts

Afternoon – UFS SIP meeting begins

Stop by Poster 47
OR
Open Session to gather
WRF/MPAS community
input

Thursday 12:20-1:20
(bring your lunch)
CG1 - 3131

Outlook

- NOAA transitioning to Unified Forecast System (UFS) based on GFDL's FV3 dynamic core across temporal and spatial scales.
 - Fewer modeling systems to support, but potentially more components and/or applications
- First venture into setting up UFS user support will be focused on the limited area domain or CAM application – [using CCPP!](#)
 - Survey existing community support efforts to determine most effective model – avoid stove-piped support for each application!
 - Support for shared infrastructure (NCAR-NOAA MOA) will also need to figure into the structure of the UFS user support
- Shared infrastructure will provide opportunities to share information/technology/experiences across modeling systems

For more info:
Visit dtcenter.org
or
Contact Louisa Nance
(nance@ucar.edu)

The screenshot shows the DTC website homepage. At the top is a navigation bar with the DTC logo, links for ABOUT, TESTING + EVALUATION, COMMUNITY CODE, VISITOR PROGRAM, NEWS, and EVENTS, a search bar, and links for CONTACT US and LOGIN. The main banner features a dramatic image of a lightning storm with the text: "SOFTWARE RELEASE: RELEASE OF THE COMMON COMMUNITY PHYSICS PACKAGE (CCPP)". Below the banner is a blue box with the text: "DTC is a distributed facility where the NWP community can test and evaluate new models and techniques for use in research and operations." The lower section is divided into two columns. The left column is titled "Research To Operations" and "Testing + Evaluation", and contains six tiles: "DATA ASSIMILATION" (with a satellite image), "GLOBAL MODEL TEST BED" (with a globe), "HURRICANES" (with a hurricane image), "REGIONAL ENSEMBLE" (with a landscape image), and "VERIFICATION" (with a map). The right column is titled "SOFTWARE + TOOLS" and lists the following tools: Advanced Research WRF (ARW), Hurricane WRF, GFDL Vortex Tracker For TCs, Unified Post Processor (UPP), Model Evaluation Tools (MET), Grid Point Statistical Interpolation (GSI), Ensemble Kalman Filter System (EnKF), Interoperable Physics Driver/Common Community Physics Package (IPD/CCPP), and Physics Test Harness.