

2015 Community GSI Tutorial

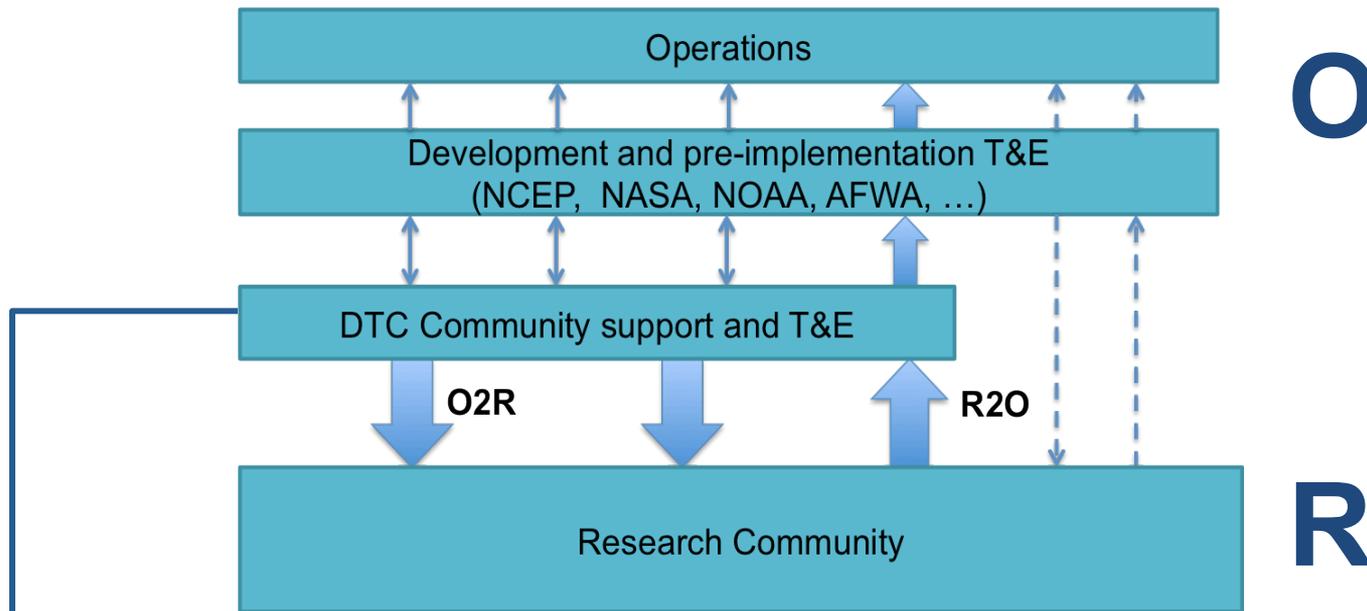
Hui Shao

Developmental Testbed Center (DTC)

August 11-14, 2015, Boulder, CO

Acknowledgement: NOAA/OAR and NCAR. NCAR is supported by NSF.

Developmental Testbed Center (DTC) and Community NWP Systems



→ **DTC** (<http://www.dtcenter.org/>):

- A bridge between the research and operational communities
- Supports NWP systems
 - WRF, HWRF, GSI, EnKF, MET, UPP, ...

Community code and support

- Gridpoint Statistical Interpolation (GSI):
 - V3.4 release: July 31, 2015
 - GSI webpage
 - Gsi_help@ucar.edu
 - GSI User's Guide v3.4 & Advanced GSI User's Guide
- Ensemble Kalman Filter (EnKF):

New!

- First beta release in January 2015
 - Formal release v1.0: July 31, 2015 (with GSI)
 - EnKF webpage
 - Enkf_help@ucar.edu
 - EnKF User's Guide v1.0
- ✓ EnKF community support follows GSI protocol
 - ✓ EnKF & GSI community code repository (mirror EMC repo + libs + com. utilities)
 - ✓ Shared helpdesk internally

Close collaboration between DTC & developers is
critical to the success of this work!



From 2010 to 2015

- GSI: v1.0 (first community release)
- GSI User's Guide v1.0
- 1st community GSI tutorial
- Supporting: ARW, NMM
- GSI community repository
- GSI Review Committee

- GSI: 8 formal releases, 7 versions of user's guide, 8 tutorials/instructional sessions (plus upcoming one tomorrow), 2 workshops
- EnKF: one beta release, one formal release, one tutorial/one instructional session
- BUFR/PrepBUFR format support:
 - Sample code
 - One instructional session
 - Documentation
- Supporting: GFS, NMM, NMMB, ARW
- HWRF repository linked to the community GSI repository
- GSI/EnKF community repository
- Data Assimilation Review Committee



~1.5 FTE

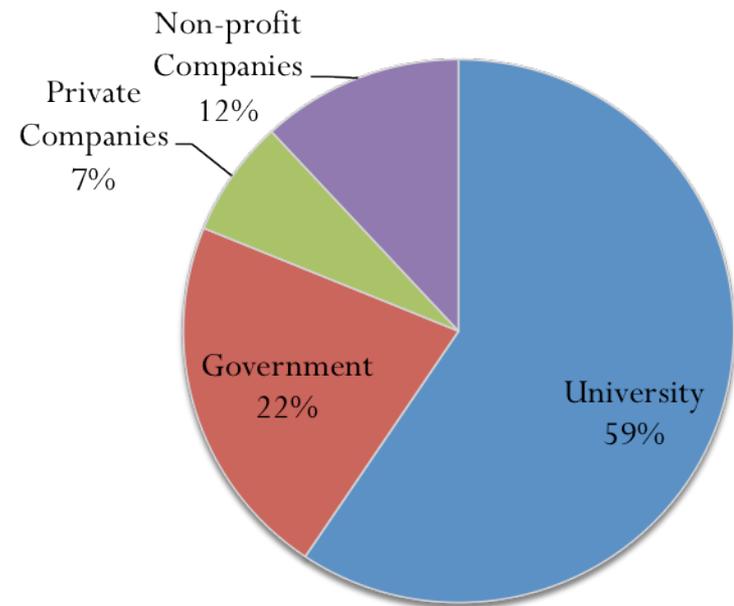


~1.5 FTE

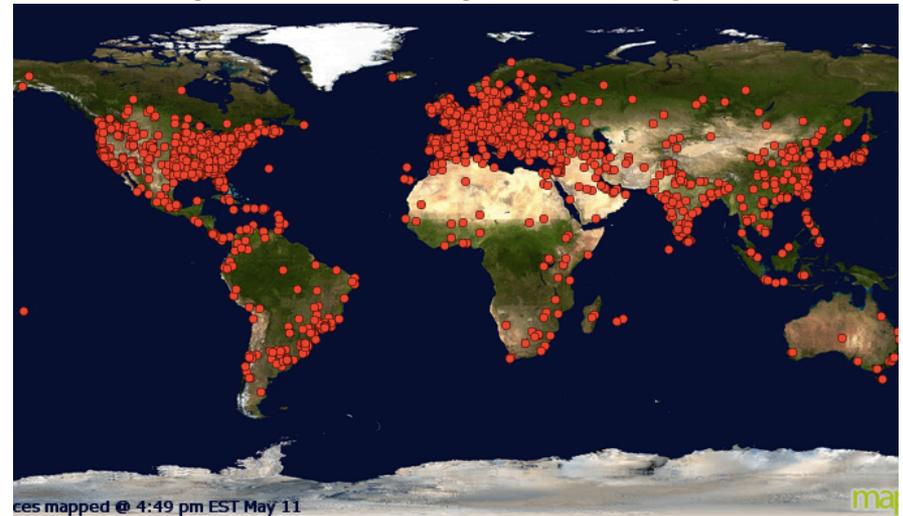
Community Users

- On-site training:
 - ~400 participants from U. S. and international communities
- Registered users:
 - ~1300 (up to April, 2015)
 - Additional registered through the HWRF community release
- 2013 NCWCP GSI Tutorial:
 - 23 out of 53 “students” came from NOAA or NASA

“Internal” developers are part of the community



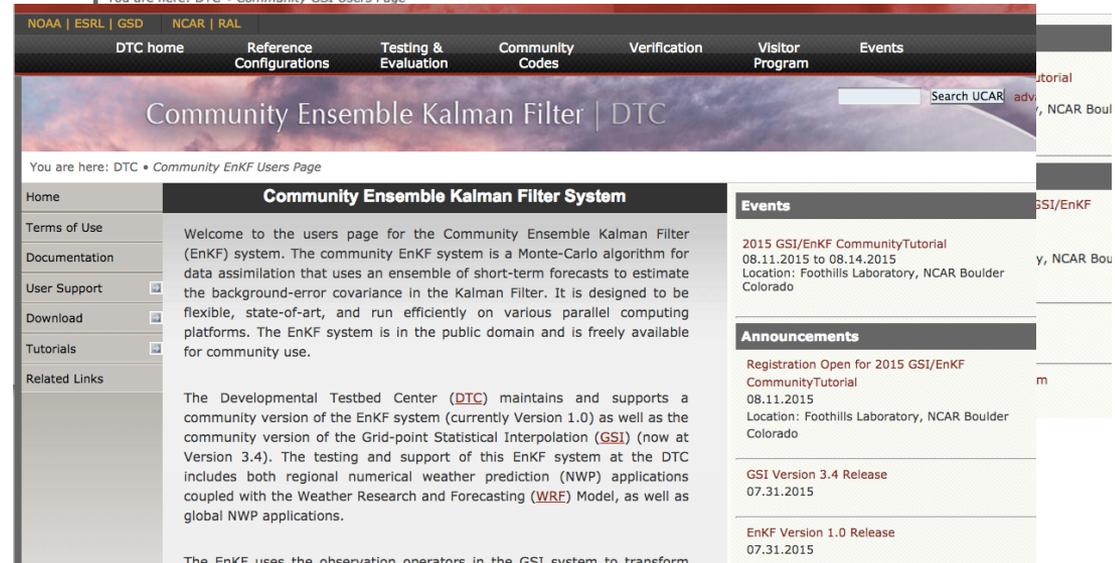
Affiliation of registered users (who are obtaining code through webpage?)



Who is accessing the GSI User's Webpage?

Annual Release Package

- GSI source code
- EnKF source code
- Auxiliary files and reference configurations
- NCEP library source code
- Multiple-platform compilation tool for EnKF, GSI, and libraries
- Simplified run scripts
- Diagnostic and display utilities
- User's Guide
- Testing cases
- Online practice
- User support



- GSI user's webpage: <http://www.dtcenter.org/com-GSI/users/index.php>
- EnKF user's webpage: <http://www.dtcenter.org/EnKF/users/>
- Both share the same download page



DA Code Test & Utility Development

- Code review tests
- Facilitate community development tests
 - DTC Visitor Program
- Pre-release tests: testing GSI/EnKF, as well as libraries and scripts
- Independent code tests in support of operational applications, providing recommendation for pre-implementation tests and identifying research areas (under DA T&E task)
 - Existing capabilities
 - Developmental community research
- Multiple platforms/compiler (DTC): autotools
- Diagnostic tools: read diagnostic files, display scripts, etc.
- Verification tools: MET can read GSI/EnKF diagnostic files directly now

Advantage of Using an Operational Model

- Sustained development and support

- NCEP/EMC
- NASA/GMAO
- NOAA/ESRL
- AFWA
- NCAR/MMM
- NESDIS
- DTC (supporting community & sponsors)
- JCSDA



**GSI/EnkF
Data
Assimilation
Review
Committee**

- Direct transitions from research to operations
- Robust system performance, cross-checked by multiple daily operations
- High priority for assimilating new data types/instruments
- Running efficiency

About this tutorial...

- Fundamental talk series: provide basics for configuring and running GSI/EnKF
 - Shao, Hu, Newman, Stark, Zhou (DTC)
- Guest speaker: Zupanski (CSU)
 - Overview of data assimilation
- Featured talks: Specific features of GSI and EnKF
 - Mahajan (NCEP)
 - Cucurull (NOAA)
 - Whitaker (NOAA)
 - Todling (NASA)

Misc.

- Group photo: Tuesday morning break (~10:30am), in front of main entrance
- Complimentary refreshment and lunch: Cafeteria atrium
- Practical session: computer room behind the front desk (main entrance)



- Please introduce yourself:
 - Name
 - Affiliation
 - Plans for using GSI/
EnKF...

