2017 Community GSI Tutorial

July 11-14, 2017, College Park, MD

Hui Shao Developmental Testbed Center (DTC)

This event is sponsored by NOAA/OAR and NCAR. NCAR is supported by NSF







Who Made This Happen?

• **Developmental Testbed Center** (DTC, <u>http://www.dtcenter.org/</u>)

Jeff Beck (NOAA), Guoqing Ge (NOAA), Ming Hu (NOAA), Jessica Johnson* (NCAR), Hui Shao* (NCAR, stationed at NCEP), Donnald Stark (NCAR), Chunhua Zhou* (NCAR)

• NCEP/Environmental Modeling Center (EMC,

http://www.emc.ncep.noaa.gov/)

Kristen Bathmann*, Jacob Carley, Andrew Collard, John Derber*, Mary Hart*, Daryl Kleist*, Rahul Mahajan, Mark Potts

 Joint Center for Satellite Data Assimilation (JCSDA, <u>https://www.jcsda.noaa.gov/index.php</u>)

Thomas Auligné*, Ana Carrion*, Yannic Tremolet, James G. Yoe*

- NASA/Global Modeling and Assimilation Office (GMAO) Ricardo Todling
- University of Maryland Kayo Ide

*Tutorial planning committee members and coordinators



Public Releases and Community Outreach

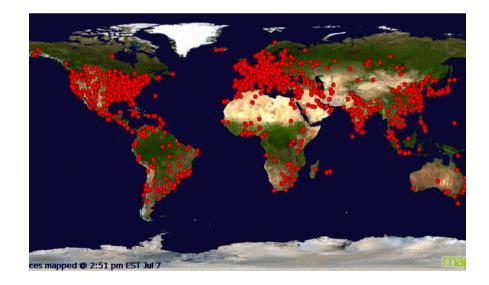
	2009	2010	2011	2012	2013	2014	2015	2016	2017
GSI	v1.0	v2.0 v2.5	v3.0	v3.1	v3.2	v3.3	v3.4	v3.5	v3.6*
EnKF	-	-	-	-	-	-	v1.0	v1.1	v1.2*
GSI_chem	-	-	-	-	-	-	v3.4	included	Included*
BUFR/ PrepBUFR tools	-	-	-	V1.0	-	-	-	_	-
Tutorials	-	GSI	GSI BUFR	GSI	GSI	GSI	GSI EnKF	-	GSI EnKF
Workshops	-	-	GSI	-	GSI	-	-	-	-

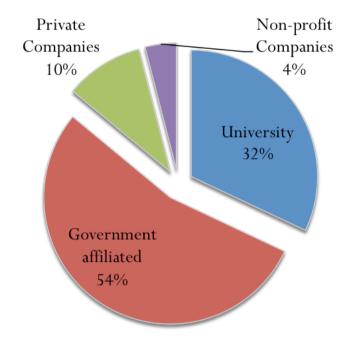
All the public released code is obtained from the GSI/EnKF code repository, which shares code with active developers and operational applications (e.g., GFS, RAP, HRRR, etc)

* 2017 code will be released by end of September, 2017

Community Users

- Registered users:
 - ~1900 (up to June 2017)
 - Additional registered through the HWRF community release





- For this tutorial:
 - 53 participants (40+ for both lectures/practical sessions)

DTC

User's Websites and Helpdesk

- GSI user's webpage: <u>http://www.dtcenter.org/com-GSI/</u> <u>users/index.php</u>
- EnKF user's webpage: <u>http://www.dtcenter.org/EnKF/users/</u>
 - Shares the same download page with GSI
- BUFR tools:
 - http://www.dtcenter.org/com-GSI/ BUFR/index.php
- Helpdesk:
 - gsi-help@ucar.edu
 - enkf-help@ucar.edu
 - Shared ticketing system. Separate email addresses help to categorize tickets

IOAA ESRL	GSD NCAR R	AL	19. 10. 10.			
	DTC home	Reference Configurations	Testing & Evaluation	Community Codes	Verification	\ P
e l	Comm	unity Gridpo	oint Statist	ical Interp	olation D	TC

are here: DTC • Community GSI Users Page

Home	Community Gridpoint Statistical Interpolation System
Terms of Use	Welcome to the users page for the Community Gridpoint Statistical
User Support	Interpolation (GSI) system. The community GSI system is a variational data assimilation system, designed to be flexible, state-of-art, and run efficiently
Download	on various parallel computing platforms. The GSI system is in the public
Tutorials	domain and is freely available for community use.
Code Contributions	The Developmental Testbed Center (DTC) currently maintains and supports a
Documentation	community version of the GSI system (now at Version 3.5). The testing and support of this GSI system at the DTC currently focus on regional numerical
Publication	weather prediction (NWP) applications coupled with the Weather Research
Contact	and Forecasting (WRF) Model , but GSI can be applied to Global Forecast 11. System(GFS) as well as other modelling systems.
Related Links	GSI
	GSI is an operational data assimilation system available for community use. Some of these GSI advanced features is listed as follows:
	Some of these GSI advanced reatures is listed as follows: 11. Ple
	Combined with an ensemble system, this version of GSI can be used
	as an 3D/4D ensemble-variational hybrid data assimilation system.
	GSI features capabilities for observation sensitivity calculation. Coupled with its global model, this feature has been used by NASA for its operational data impact study. GSI
	The observation operators in GSI can be used in an EnKF system or
	other data analysis systems, transforming model variables to observed variables at the observational space.
	Nat
	For a complete list of the new functions and changes included in the latest
	release version, as well as the observation data can be used in GSI, please check these links: Version 3.5.

About this tutorial...

- Concept and theories and system overviews:
- Fundamentals of data assimilation: Kayo Ide (University of Maryland), Tuesday
- Overview of GSI: John Derber (EMC), Tuesday
- EnKF Overview and theory: Rahul Mahajan (EMC), Thursday
- **Fundamental talk series**: provide basics for configuring and running GSI (6 talks, Tuesday and Wednesday) and EnKF (2 talks, Thursday)
- Ming Hu, Chunhua Zhou, Jeff Beck, Guoqing Guo (DTC), & Mark Potts (EMC)
- **Featured talk**: Specific features of GSI and EnKF
 - Radiance: Andrew Collard (EMC), Wednesday
 - Radar/Lightining: Jacob Carley (EMC), Wednesday
 - Hybrid/4D EnVar: Daryl Kleist (EMC), Thursday
 - GSI Infrastructure: Ricardo Todling (GMAO), Thursday
- Community contributions and future directions
 - Community code transition: Hui Shao (DTC), Thursday
 - Joint Effort for Data Assimilation Integration (JEDI): Yanick Tremolet (JCSDA), Thursday

Misc.

- Group photo: Tuesday morning break (~10:15am), in front of main entrance
- Complimentary refreshments for paid participants and speakers for the day
- Lunch order: link provided
- Practical sessions:
 - Tuesday-Thursday: NCWCP
 - Friday (optional): University of Maryland



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



