Community support for the WRF Data Assimilation system

Michael J. Kavulich, Jr., Xin Zhang, Xiang-Yu Huang

National Center for Atmospheric Research, P.O. Box 3000, Boulder, Colorado 80307-3000, United States

Introduction

WRF Data Assimilation (WRFDA) is the data assimilation system for the Weather Research and Forecasting (WRF) Model. WRFDA follows the spirit of the WRF Model, in that it is designed “to be a flexible, state-of-the-art, portable code that is efficient in a massively parallel computing environment”, and to be easily configured for both research and operational applications. The WRFDA source code is public domain and freely available, and is developed and maintained by the Mesoscale and Microscale Meteorology (MMM) division of the NCAR Earth System Laboratory.

As part of its mission, and the intention for WRFDA to be an easy-to-use data assimilation system for use with WRF, MMM is committed to providing interactive help to community users, aiding them in the setup and running of the system for a wide variety of platforms.

wrfhelp@ucar.edu

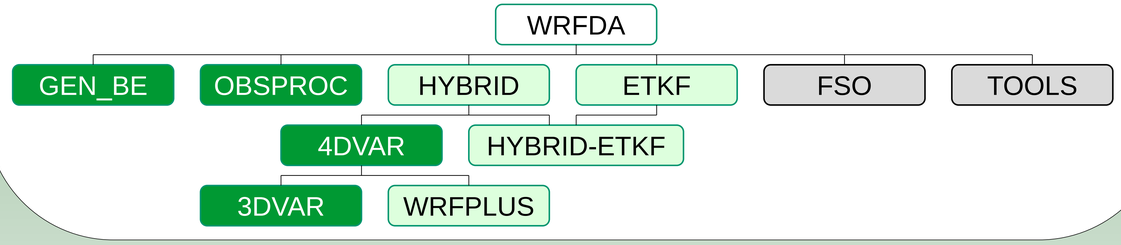
WRFHELP is an email support service offering help and guidance to users of most components of the WRF System, including WRFDA. For any questions regarding WRFDA, send an email to wrfhelp@ucar.edu and we will be happy to provide as much help as possible. No question is too large or small; we are happy to assist!

Support for various WRFDA components

WRFDA has been in development for over 10 years, and has grown into a comprehensive data assimilation system, offering several modes of assimilation, including variational (3DVAR and 4DVAR), ensemble (ETKF), and hybrid methods. Due to limited funding, we are not able to promise support for all components, though we will assist users as much as time and funding will allow.

The following tree shows the components of WRFDA and their relationships to each other. Colors indicate the different levels of support available for each component. As we continue to improve documentation we hope to expand the number of fully supported features.

GREEN	Fully supported. Documentation will be developed and maintained. Assistance will be available through WRFHELP
LIGHT GREEN	Partially supported; some portions of this system are experimental, and may not function properly on all platforms. May not have complete documentation. Assistance will be available through WRFHELP, though support may not be possible for some components
GRAY	Not supported; this resource is offered as-is for our users convenience. Support and assistance through WRFHELP may not be possible for this resource.



Documentation

Documentation for WRFDA is continuously improving:

- Chapter 6 of the WRF User’s Guide gives instructions for downloading and installing WRFDA, as well as instructions on how to run most components of the system.
- Several peer-reviewed papers have been published on various components of the WRFDA system. These can be found on our website, as well as in the handout found at right

Tutorials

On-site:
MMM hosts a 3-day tutorial for WRFDA each summer in Boulder, Colorado. Registration is not yet open for this year’s session, but will be announced via the wrf-news mailing list and our website when the dates are set.

Online:
The WRFDA website features an online tutorial. It includes step-by-step guides for installing and running 3DVAR, troubleshooting guides, and solutions to some common WRFDA problems. Improvements are being made continuously, and new tutorials will be periodically announced via wrf-news and on the website.

Website

http://www.mmm.ucar.edu/wrf/users/wrfda

Our website is an excellent resource for users; scan the QR code at right to see it! In addition to providing additional information about all the other resources mentioned here, you will find:

- WRFDA download information
- Peer-reviewed publications making use of the WRFDA system
- News about new version releases and documentation updates
- Bug fixes
- Links to useful data sets and software

Please take a handout below for future reference!

[website handout here]

Future improvements

An NCAR Technical Note on WRFDA-3DVAR is currently being written. This technical note will include:

- A WRFDA-3DVAR quick-start guide
- Instructions on installing and running WRFDA-3DVAR for conventional and radiance observations, the observation preprocessor (OBSPROC), background error generation (GEN_BE), and cycling WRFDA with WRF forecasts
- Detailed descriptions of namelist variables

There are plans for further technical notes on other parts of the WRFDA system, including 4DVAR.

The Online Tutorial will undergo continuous development, with more helpful tips and instructions added on a regular basis.

As WRFDA continues to expand its capabilities, we will continue to support additional features as they are added.

Acknowledgements:
The National Center for Atmospheric Research (NCAR) is sponsored by the National Science Foundation (NSF) and is operated by the University Corporation for Atmospheric Research (UCAR).