



CADRE-EPIC data assimilation training and science workshop

CADRE (Consortium for Advanced Data assimilation Research and Education; ucadre.org) is a multi-university consortium which aims to advance a broad range of data assimilation research thrusts while also serving as a source of data assimilation education and training in the broader geoscience community.

Following a successful 3-day DA training event in 2025, CADRE in partnership with NOAA EPIC will be hosting a 5-day data assimilation training event and CADRE science workshop on 1-5 June 2026. The event will include training on both fundamental and advanced data assimilation methods and theory, as well as science lectures and hands on activities. New this year, the training will be integrated with a science workshop that includes CADRE-led and invited talks from leading experts in data assimilation from various entities involved in research and applications, and poster sessions focused on CADRE-related research topics.

If you would like to attend, please fill out the application using the QR code below or this [link](#).



Location: National Weather Center, University of Oklahoma, Norman, OK

Dates: June 1-5, 2026

Content: Fundamentals of data assimilation methods and theory as well as more advanced topics in lectures provided by data assimilation experts; hands-on exercises with simple models culminating in a larger exercise with the UFS-JEDI (Unified Forecast System- Joint Effort for Data assimilation Integration); science workshop with invited talks from subject matter experts and poster sessions and talks about participants' research.

Who should consider applying: Students or professionals with an interest in learning the basic and/or advanced concepts and mathematics associated with data assimilation, and who are interested in applying it to prediction problems in Earth system science. Audience members may include undergraduates or grad students completely new to data assimilation; grad students who plan to work in data assimilation but are just getting started; grad students with experience in data assimilation, but who want to learn JEDI; and NOAA employees and other professionals who want to learn data assimilation and JEDI.

What is unique about this training: The culminating experience focused on UFS-JEDI, the data assimilation code to be used at NOAA and other operational centers. In addition, the instructors are leaders in both data assimilation research and education. Speakers will also include guest lecturers, such as data assimilation practitioners from government agencies and the private sector.

Prerequisite knowledge: No prior experience in data assimilation is needed. Knowledge of computer programming, basic statistics and some linear algebra are essential. A brief review of the underlying mathematics and statistics will be provided as a pre-read. Some experience with atmospheric or Earth system phenomena and predictability is helpful but not required.

What to bring: Participants are expected to bring a laptop which will be used to conduct JEDI-based hands-on exercises with both simple model and UFS models. Information about any necessary software installations will be provided before the event.

Format: In order to facilitate a hands-on experience both through presentations and running code, this workshop will be offered in-person only.

Number of Participants: We anticipate approximately 100 total participants. Participants will be from the CADRE consortium, from NOAA, and about 75 external participants. Note that CADRE plans to offer another DA training event in 2027 as well, so there will be additional options to participate for those unable to attend this event.

Travel Support: CADRE can provide travel support for up to 50 grad student participants. Use the registration application to indicate if you do need such support.

Planned Topics

Day 1

- Introduction to Bayes Theorem and derivation of different DA methods
- Fundamentals of Kalman and Ensemble Kalman Filter (EnKF) theory and applications
- Fundamentals of Variational methods (3- and 4DVar) theory and applications
- JEDI-EDU tutorials

Day 2

- Fundamentals of hybrid (EnKF and Var) methods
- Fundamentals of background, observation, and model error covariance estimation
- Nonlinear DA methods (Particle Filters, Particle Flow filters)
- JEDI-EDU tutorials
- Capstone exercise in JEDI-EDU

Day 3

- Advanced training on machine learning in DA
- Hands-on training with full JEDI system begins
- Science workshop sessions
- Machine learning and DA
- Observation errors

Day 4

- Science workshop sessions
- Satellite and radar DA
- Coupled DA
- Global DA demonstration with JEDI

Day 5

- Advanced training on observation preprocessing and impact assessment
- Science workshop sessions
- Satellite and radar DA
- Aerosol DA
- Ocean DA
- Hands-on global DA exercise with JEDI
- Panel discussion

