June 1 2026. Room NWC1313. Chair: Steve Greybush. *All time is local time in CT.*	
Fundamental training	
7:30-8:00 am	Registration Desk
8:00–8:30 am	Welcome, opening remarks, and introductions Xuguang Wang, CADRE Matt Hulver, OU Vice President for Research and Partnership Jan Ising, EPIC
Introductory topics	
8:30–9:30 am	Steve Greybush, CADRE: Basic Concepts of Data Assimilation (abstract)
9:30 –10:30 am	Jonathan Poterjoy, CADRE: A Bayesian introduction to DA (abstract)
10:30–10:40 am	Break
Kalman filtering	
10:40–11:20 am	Xingchao Chen, CADRE: The Kalman filter and extended Kalman filter (abstract)
11:20–12:00 pm	Xingchao Chen, CADRE: Ensemble Kalman filters and strategies for treating sampling errors (abstract)
12:00–1:15 pm	Lunch break CADRE PIs and co-PIs lunch meeting with NOAA leadership
Data assimilation research and career opportunities	
1:15–1:45 pm	Neil Jacobs, NOAA: Keynote talk
1:45–2:30 pm	Panel discussion Moderator: Peter Jan van Leeuwen (CADRE). Panelists: Neil Jacobs (NOAA), Xuguang Wang (CADRE), Arun Chawla (tomorrow.io), Derek Posselt (NASA)
2:30–2:50 pm	Break
Ensemble Kalman filter with CADRE-JEDI-edu	
2:50–3:20 pm	Aaron Johnson, CADRE: Introduction to CADRE-JEDI-Edu tutorial (abstract)
3:20–4:20 pm	Xingchao Chen, CADRE: Ensemble Kalman filter tutorial in CADRE-JEDI-edu (abstract)
4:20-4:30 pm	Break

Variational approaches to DA	
4:30–5:15 pm	Kayo Ide, CADRE: Variational data assimilation
5:15–6:00 pm	Zhaoxia Pu, CADRE: Variational data assimilation in practice — 3DVar and 4DVar (abstract)

June 1 2026 parallel (CADRE cohort only). Room NWC1350 & 1313. Chair: Yunji Zhang	
Career Development: Observation theme	
7:30-8:00 am	Registration Desk
8:00–8:30 am	Welcome, opening remarks, and introductions (NWC 1313) Xuguang Wang, CADRE Matt Hulver, OU Vice President for Research and Partnership Jan Ising, EPIC
8:30–8:40 am	Transition to auditorium NWC1350
8:40–9:30 am	Sarah Dance, University of Reading: Assimilating novel observations (abstract)
9:30–10:00 am	Randy Chase, tomorrow.io: The Tomorrow.io Microwave Sounder Constellation: Achieving Full On-Orbit capacity and its impact on ML DA (abstract)
10:00–11:30 am	Tour of NWC and ARRC
11:30–12:00 pm	Chris Riedel, Windborne: WindBorne Global Sounding Balloons: How They Work, What They Measure, and Considerations When Assimilating Them into NWP (abstract)
12:00–1:15 pm	Lunch break CADRE PIs and co-PIs lunch meeting with NOAA leadership
1:15–1:45 pm	Neil Jacobs, NOAA: Keynote talk (NWC 1313)
1:45–2:30 pm	Panel discussion (NWC 1313) Moderator: Peter Jan van Leeuwen (CADRE). Panelists: Neil Jacobs (NOAA), Xuguang Wang (CADRE), Arun Chawla (tomorrow.io), Derek Posselt (NASA)
2:30–2:50 pm	Break
2:50–3:20 pm	Aaron Johnson, CADRE: Introduction to CADRE-JEDI-Edu tutorial (abstract) (NWC 1313)

3:20–4:20 pm	Xingchao Chen, CADRE: Ensemble Kalman filter tutorial in CADRE-JEDI-Edu (abstract) (NWC 1313)
4:20–4:30 pm	break and transition to the auditorium NWC 1350
4:30–5:00 pm	David Schvartzman, OU/SoM/ARRC/EE: Phased Array Radar: Observations and Opportunities for Data Assimilation (abstract)
5:00–5:30 pm	Tony Segales, CIWRO/NSSL: CopterSonde: Developing a Weather-Sensing UAS for Boundary Layer Profiling and Data Assimilation (abstract)
5:30–6:00 pm	(remote) Jason Sippel, NOAA AOML: NOAA's Hurricane Field Program: Improving observations, understanding, and forecasts of tropical cyclones (abstract)

June 2 2026. Room NWC1313. Chair: Jonathan Poterjoy	
Fundamental training	
Hybrid DA	
8–8:45 am	Xuguang Wang, CADRE: Hybrid ensemble-variational (EnVar) data assimilation (abstract)
8:45–9:40 am	Nick Gasperoni, CADRE: Variational DA tutorial in CADRE-JEDI-Edu (abstract)
9:40–9:50 am	Break
9:50–10:30 am	Xuguang Wang & Yongming Wang, CADRE: Hybrid DA tutorial in CADRE-JEDI-Edu (abstract)
Error covariance estimation from training data	
10:35–11:20 am	Peter Jan Van Leeuwen, CADRE: Static background error covariance and model error covariance estimation (abstract)
11:20–11:30 am	Break
11:30–12:00 pm	Henry Santer, CADRE: Observation Error Covariance Estimation for Ensemble Data Assimilation (abstract)
12:00–12:40 pm	Christian Sampson, JCSDA: Background error covariance modeling in JEDI, SABER and BUMP (abstract)
12:40–1:40 pm	Lunch break

Nonlinear data assimilation methods	
1:40–2:10 pm	Jonathan Poterjoy, CADRE: Particle filters (abstract)
2:10–2:40 pm	Peter Jan Van Leeuwen, CADRE: Particle flow filters (abstract)
2:40–3:10 pm	(remote) Jeff Anderson, NCAR: Quantile Conserving Ensemble Filters for Non-Gaussian and Nonlinear Data Assimilation (abstract)
3:10–3:20 pm	Break
3:20–4:10 pm	Jonathan Poterjoy, CADRE: CADRE-JEDI-Edu tutorial for nonlinear DA (abstract)
4:10–4:55 pm	Yunj Zhang, CADRE: Verifications of Data Assimilation and Forecast (abstract)
CADRE-JEDI-edu capstone exercise: Who can construct the most accurate reanalysis?	
4:55–6:00 pm	Xingchao Chen & Jon Poterjoy, CADRE: CADRE-JEDI-Edu capstone exercise (abstract)

June 3 2026. Room NWC1313. Chair: Peter Jan van Leeuwen	
Advanced training session 1	
Integrating machine learning and data assimilation	
8:00–9:00 am	Peter Jan Van Leeuwen, CADRE: What do DA and ML have in common, how are they different, and how can they be combined? (abstract)
Science workshop	
Invited talk	
9:00–9:40 am	Hang Fan, Columbia University: Efficient and Physically Consistent Atmospheric Data Assimilation in Latent Space (abstract)
9:40–10:00 am	Break
Machine learning and data assimilation	
10:00–10:20 am	Peng-Xiang Lai, CADRE: Missing Physics Estimation Using Data Assimilation and Machine Learning (abstract)

10:20–10:40 am	Yongming Wang, CADRE: Introducing and Evaluating Baseline Version of MAPCast: A Convection Allowing Emulator for Ensemble Background Error Covariance Estimation Toward Multi-Scale Data Assimilation (abstract)
10:40–11:00 am	Dan Kubalek, CADRE: Combining Data-driven and Physics-based Background Ensemble in Data Assimilation (abstract)
11:00–11:20 am	(remote) Sergey Frolov, NOAA ESRL PSL: Towards end-to-end machine learning models that combine forecast with data assimilation (abstract)
11:20–11:40 am	Chris Riedel, Windborne: Quantifying the Impact of WindBorne GSB Observations on AI Forecast Skill Using WeatherMesh (abstract)
11:40–1:00 pm	Lunch break
Quantifying uncertainty in observations	
1:00–1:20 pm	Henry Santer, CADRE: Fully non-Parametric Ensemble Data Assimilation: Idealized and Sea Ice Model Experiments Using Data-driven Estimates of Likelihood Functions (abstract)
1:20–1:40 pm	Joshua Chen, CADRE: Copula Active Subspaces for Dependence Dimension Reduced Multivariate Noise Estimation in Data Assimilation (abstract)
1:40–2:00 pm	Christian Sampson, JCSDA: Continuous DA modes in JEDI (abstract)
2:00–2:20 pm	Derek Posselt, JPL: Using Data Assimilation to Explore Precipitation Processes in Weather Systems (abstract)
2:20–2:40 pm	Break
Advanced training: session 2	
EPIC training: Getting started with JEDI	
2:40–4:10 pm	Jong Kim, EPIC: Running UFS FV3-JEDI 3D-Var Hyb DA: System Access and Control Experiment (abstract)
Science workshop: poster session 1 and reception (Atrium)	
4:10–5:30 pm	Poster session (abstracts)

June 4 2026. Room NWC1313. Chair: Xingchao Chen	
Science workshop	
Invited talk	
8:00–8:40 am	Sarah Dance, University of Reading: Estimating and accounting for observation uncertainty in data assimilation (abstract)
Radar and satellite data assimilation: session 1	
8:40–9:00 am	Braedon Stouffer, CADRE: Assimilating Boundary Layer Depths Observed by WSR-88Ds to Improve the Prediction of a Derecho (abstract)
9:00–9:20 am	Ethan Shaefer, CADRE: Assessing the Value of Assimilating MRMS Reflectivity in JEDI for MPAS Winter Storm Simulations (abstract)
9:20–9:40 am	Break
9:40–10:00 am	Ayoola Abe, CADRE: Assimilating radar-derived products for modeling convective initiation using MPAS (abstract)
10:00–10:20 am	Jonathan DeGraw, CADRE: Implementation and Testing of the Multigrid Beta Filter for Radar DA within the MPAS-JEDI 3DEnVar Framework: 2021 Hurricane Ida Test Case (abstract)
10:20–10:40 am	Nusrat Yussouf, CIWRO: Data Assimilation for Warn-on-Forecast System (WoFS): Current Capabilities in WoFSv1, Emerging Directions, and the Path Toward WoFSv2 (abstract)
10:40–11:00 am	JJ Guerrette, tomorrow.io: Assimilating the Tomorrow.io Microwave Sounder Constellation into medium-range Weather Forecasts (abstract)
11:00–11:20 pm	Break
Coupled data assimilation	
11:20–11:40 am	Aaron Johnson, CADRE: Convection-allowing ensemble-based land-atmosphere coupled background error covariance and its sampling error: A dryline case study (abstract)

11:40–12:00 pm	Brett Castro, CADRE: Impact of Greenness Vegetation Fraction Perturbations on Convection-Allowing Ensemble-Based Land-Atmosphere Coupled Background Error Covariance (abstract)
12:00–1:20 pm	Max Johncox, CADRE: Evaluating Impacts of Assimilating Snow Depth and Snow Cover on UFS forecasts (abstract)
12:20–1:30 pm	Lunch break
1:30–1:50 pm	Haotong Jing, CADRE: Development of Coupled Land-Atmosphere Soil Moisture Data Assimilation Using UFS and JEDI for Improved Weather-to-S2S Predictions (abstract)
1:50–2:10 pm	(remote) Dan Holdaway, NOAA/NCEP/EMC: Coupled Data Assimilation Progress and Plans at EMC (abstract)
2:10–2:30 pm	Jeff Anderson, NCAR: Strongly Coupled Ensemble Data Assimilation in Earth System Models: Novel Algorithms and Software Frameworks (abstract)
2:30–2:50 pm	Break
Advanced training session 3	
Global DA demonstration with EPIC	
2:50–4:10 pm	Jong Kim, EPIC: Running UFS FV3-JEDI 3D-Var Hyb DA: Background Error Modeling — NICAS Length Scales & Hybrid Weights (abstract)
Science workshop: poster session 2	
4:10-5:30 pm	Poster session (abstracts)

June 5 2026. Room NWC1313. Chair: Jan Ising	
Advanced training session 4	
Observation bias correction and quality control	
8:00–8:30 am	Kayo Ide, CADRE: Bias correction and quality control theory
8:30–9:00 am	Christian Sampson, JCSDA: Observation bias correction and QC in JEDI (abstract)
9:00–9:30 am	Zhaoxia Pu, CADRE: Quantifying the impact of observing systems (abstract)

9:30–9:40	Break
Science workshop	
Invited talk	
9:40–10:20 pm	Elizabeth Satterfield, NRL: The Navy's JEDI-enabled FALCON Data Assimilation System (abstract)
Radar and satellite data assimilation: session 2	
10:20–10:40 am	Chandler Pruett, CADRE: Improving Forecasts of Hurricane Beryl (2024) Genesis through Assimilation of All-Sky Infrared Radiances (abstract)
10:40–11:00 am	Feng Hsiao, CADRE: Physics Sensitivity of All-Sky Infrared Radiance Assimilation in HAFS-JEDI and Its Impact on Tropical Cyclogenesis Forecasts (abstract)
11:00–11:20 am	Break
11:20–11:40 am	David Dowell, NOAA/ESRL/GSL: Radar Data Assimilation Development for NOAA Convection-Allowing Forecast Systems: Experiences and Opportunities (abstract)
11:40–12:00 pm	Joseph Chan, OSU: Atmospheric Data Assimilation near the Equator: Characteristics, Challenges and Advances (abstract)
12:00–12:20 pm	Chris Kerr, CIWRO/NSSL: ZDR column-based additive noise for short-term convection-allowing model forecasts of developing thunderstorms (abstract)
12:20–1:40 pm	Lunch break, **submit capstone results, and conduct workshop survey**
Aerosol data assimilation	
1:40–2:00 pm	Michael Benneh, CADRE: UFS/JEDI LIDAR Data Assimilation: LiDAR Forward Operator Development (abstract)
2:00–2:20 pm	(remote) Cory Martin, NOAA/NCEP/EMC: Progress on JEDI-based Atmospheric Composition DA at NOAA NWS (abstract)
2:20–2:40 pm	Break
Ocean data assimilation	
2:40–3:00 pm	Kayo Ide, CADRE: Progress on assimilation of global drifter project (GDP) data using MOM6-JEDI/SOCA (abstract)
3:00–3:20 pm	(remote) Guillaume Vernieres, NOAA/NCEP/EMC: Marine and coupled data assimilation development for the GFS (abstract)
3:20–3:40 pm	Break

Advanced training session 5	
3:40–5:10 pm	Jong Kim, EPIC: Running UFS FV3-JEDI 3D-Var Hyb DA: Observation Error Modeling — ATMS Error Specification & Tuning (abstract)
Closing remarks, Capstone prize winner announcement	
5:10-5:30 pm	Xuguang Wang, CADRE