
JCSDA's vision of a community data assimilation for research and operations

Tom Auligne*^{1,2}

¹Joint Center for Satellite Data Assimilation – FL4, Mitchell Lane Boulder, CO 80301, United States

²University Corporation for Atmospheric Research – FL4, Mitchell Lane, Boulder, CO 80301, United States

Abstract

The Joint Center for Satellite Data Assimilation (JCSDA) is spearheading a revolutionary approach to developing next-generation data assimilation capabilities in support of scientific research and operations. Our major objectives are to reduce duplication of effort without imposing a single approach, to improve our agility to use observations, and to enable innovative solutions for coupled analysis of the Earth system.

This presentation provides JCSDA's overarching vision, which is supported by the following three pillars:

1. Collaborative Infrastructure: we are committed to developing, maintaining, and distributing open-source software via modern working practices such as agile/SCRUM methodology, automated and multi-tier testing, continuous integration and continuous delivery. Additional focus is devoted to training and facilitating rapid community contributions.
2. Generic software components: leveraging the separation of concerns and generic programming, the data assimilation combines generic components (e.g., forward operators, error covariance modeling, data assimilation algorithms), which get instantiated for each specific model, set of observations and configuration. This approach allows the use of a common data assimilation framework for a variety of applications.
3. Joint testbed applications: we are now deploying end-to-end systems to continuously test all components in several pseudo-operational environments and inform on future design updates. A shared ecosystem to manage research experiments will ensure that results are transparent and easily reproduceable throughout the community, thus maximizing the benefits of "jointness".

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*Speaker