Integrated Modeling Framework Workshop

Information Sheet

Delta Science Program

DELTA STEWARDSHIP COUNCIL

Statement of Need

Models are used by agencies to anticipate the impact of management actions, generate predictions for possible future conditions, evaluate alternative hypotheses about drivers of phenomena, and fill spatial or temporal gaps in data. However, models and modeling products are often contested—even litigated—because their assumptions are questioned or because they are perceived as poorly representative of present or future conditions, or as black boxes because of a historical lack of transparency about their assumptions, inputs, and structures. Further, many of the communities and interests that are impacted by the decisions made based on model outputs have historically been excluded from the modeling process. Meanwhile, agency modeling teams routinely experience limitations in their ability to use models to evaluate a comprehensive suite of management-action tradeoffs, due to limited staff time and computational resources (e.g., supercomputing time).

Statement of Purpose

This workshop will lay the foundation for realizing the vision of "One Delta, one science" in the context of modeling. Achieving the vision of "One Delta, one science, one modeling framework" means creating an open-science modeling community that is broadly inclusive and works to promote the transparency, sharing, and integration of models and seeks to expand the community of model users by providing training, mentorship, and collaboration opportunities. Together, this community seeks consensus on features of a common modeling framework that includes shared infrastructure and human resources, standard practices for documenting, disseminating, reviewing, and updating models and features that

should be consistent across models, such as digital elevation models, downscaled climate inputs and boundary conditions. Henceforth, we refer to this open-science modeling community and the associated collection of cyberinfrastructure and staff-support resources as the "collaboratory."

Workshop Objectives

- Work toward consensus on components of a common modeling framework.
- Achieve a common understanding of recent cyberinfrastructure developments that support open-science modeling communities elsewhere and decide whether to adopt these advancements.
- Concretely identify the potential benefits of an investment in a collaborative modeling framework by 1) exploring case studies of projects that could have had a more timely and important impact if the resources of a collaboratory had been available and use-cases of management needs on which rapid progress could be made with these resources and 2) understanding the perspectives and constraints faced by agency leadership and science managers.
- Identify resources and strategies that could be leveraged to develop the collaboratory, and develop a phased plan for rollout.

Audiences

- Agency leadership (objective 1; morning of day 1)
- Science managers
- Academic, agency, and private-sector modelers

Outcomes

- Presentation and memo to DPIIC, and potentially a working group to implement elements of a common modeling framework.
- Potential proposal to form a new Bay-Delta working group within the Community Surface Dynamics Modeling System (csdms.colorado.edu).
- Competitive research proposal(s) to fund and advance the next steps.