

Science Needs Assessment - Integrating Science for a Rapidly-Changing Delta
Principal Recommendation: Interagency Forecasting

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In 2019, the Delta Independent Science Board (Delta ISB) urged the Delta Plan Interagency Implementation Committee (DPIIC) to improve integration of Delta interagency science and technology to better address rapidly changing and interlinked challenges facing the Delta. The Delta's future will likely be very different. Climate change, sea level rise, population growth, earthquakes, potential flooding, new invasive species, increasing water diversion demands, land use shifts, changes in infrastructure and environmental regulations, and declines in native species will further challenge ecosystem health in the Delta, water supply reliability, and local communities. Perhaps more than ever, it is critical to recognize fundamental linkages among these processes and the need to organize scientific activities that span agency missions.

In November 2019, DPIIC endorsed the development of a Science Needs Assessment as part of the Delta Science Funding and Governance Initiative. During 2020, the Delta ISB and DPIIC hosted four virtual discussions, followed by a science needs assessment workshop focused on future science needs and integration for changes expected in the Delta. The discussions and workshops were well attended and panels and participants discussed future changes in the Delta and management and science needs for future decisions. The sessions also discussed how best to address those science needs.

Based on these extensive discussions, the Delta ISB and an interagency planning team have agreed that focusing on ***inter-agency forecasting capabilities*** could be a unifying principle for integrating science and its applications for Delta policy and management with rapidly changing conditions.

Forecasting as a Focus for Integrating Multi-agency Science

Science focused on organized prediction will support more meaningful and coherent input and discussions for decision-making and adaptive management. In an era of rapid changes, forecasting and prediction provides time to develop responses and to identify responses likely to bring more desirable outcomes. Forecasting employs both modeling and data, and supports coordinated data collection, synthesis, and management. Increasing demand for forecasting (for harmful algal blooms, fish recruitment and habitat quality, water quality and supply, invasive species, etc.) will require more collaborative institutional strategies to build and maintain expertise, platforms, and modeling capabilities for effective forecasting for problems that span agency missions. Such an approach would:

- Require interagency science collaboration and integration.
- Identify critical gaps/needs in our understanding of critical Delta processes and responses to changes in driving forces for each of the Delta's coequal goals (ecosystem health, water supply reliability, and Delta as an evolving place).
- Require conceptual and numerical modeling frameworks that integrate data and depict how influences are likely to play out within the Delta.

Draft Proposal to DPIIC for the Delta ISB's Discussion on February 11, 2021

- Prioritize appropriate monitoring of key inputs to models and indicators.
- Develop integrated scientific insights and assessments on problems that span the missions of several agencies and improve interagency discussions.

Develop cross-agency mechanisms to support forecasting and manage the Delta more explicitly across agencies as a complex, integrated system responding to natural and human drivers. This would require:

- Delta science managers to organize the Delta Science Strategy (Delta Science Plan, Science Action Agenda, State of Bay-Delta Science) and the Science Needs Assessment to better formulate science priorities with identified agency responsibilities and collaborations.
- Build connections between forecasting scientific efforts and existing agency and interagency technical, data, and modeling activities at planning and operating levels.
- Development of effective stakeholder engagement to assess needs.

Develop a formal collaborative Delta scientific capability (e.g., forecasting/prediction capabilities) to address major problems that span agency missions. This would include:

- An implementation and science governance plan that supports, funds, and employs interagency science.
- Administrative capability (leadership, authorities, financial and employment flexibility, etc.) to accomplish integrated scientific activities and deep interagency collaborations.
- Involving a range of scientific expertise, synthesis, and collaborative funding, including academic researchers and funding sources (including the National Science Foundation) and advances in data science.
- Deeply engage project and regulatory agencies and stakeholders in setting research agendas, with overall synthesis, coherence, transparency, and communication.

Ensure Compatibility with Ongoing Policy Initiatives

This effort will expand on existing efforts to address changing conditions and problems spanning agency missions (e.g., climate change, ecosystem restoration, water supply and quality, flooding, harmful algal blooms). Forecasting will support the effectiveness of key Newsom Administration initiatives, such as the [Water Resilience Portfolio](#) and [Executive Order N-82-20 \(October 2020\)](#), on innovative strategies on natural and working lands. It also will support The Delta Plan, the Delta Science Strategy, and other agency and policy efforts.

Request and Next Steps – Interagency Forecasting Technical Task Force

Remaining science needs assessment discussions and recommendations should reflect technical activities and capabilities at the major agencies, and their relation to needed interagency forecasting capabilities for Delta management objectives.

We request that DPIIC and its member agencies contribute members to an ***Interagency Forecasting Technical Task Force*** to work with the interagency planning team and Delta ISB to complete the Science Needs Assessment and recommendations for discussion and endorsement at the July 12, 2021 DPIIC meeting.