

2014-2015 Pacific Anomalies Science and Technology Workshop Prospectus

Statement: Unusual ocean weather and climate patterns have been observed throughout 2014 and early 2015 across the North Pacific basin. Areas of the North Pacific have been as much as 5°C warmer than average, earning the nickname ‘the blob’, and affecting weather and climate patterns. Extreme conditions in physical and biogeochemical parameters are occurring in many locations, and appear to be impacting pelagic ecosystems, including fisheries. This workshop is designed to understand the timing and scale of these anomalous oceanographic conditions in the North Pacific, with the intent of maximizing our global and coastal ocean observing systems to deliver information to meet societal needs. During the first part of a two-part workshop, we intend to generate a series of research and development questions and issues related to these anomalies. The second, follow-up workshop, 6-9 months from now, will aim to improve our understanding of how these significant oceanographic variations arose, their impact on our water, weather, and economic well-being, and ways in which we can potentially improve predictive capabilities.

In light of recent interest from researchers and the general public in these ocean anomalies, the ocean observing community can use these workshops to bring together scientists who will synthesize key datasets, in order to ask “What are the temporal and spatial extents of these anomalous ocean conditions? How pervasive are the signals, and what are their impacts on the North Central and Eastern Pacific Ocean? How do these conditions relate to changes in North American weather and climate? What further data (ocean observing, ecosystem analysis, modeling, etc.) do we need to improve our ability to understand and predict future signals and impacts?”

Purpose: We intend to hold a two-part workshop series, with the initial workshop in May 2015 and the follow-up workshop in Fall 2015, to bring together climate, ocean and coastal researchers and operational communities to examine our collective ability to observe, understand, and predict physical and biogeochemical conditions in the North Central and Eastern Pacific Ocean. The workshops aim to improve our overall ability to integrate oceanographic information within the construct of an integrated ocean observing system. Bringing experts from multiple disciplines together to discuss this issue will enable:

- Increased understanding of 2014-2015 ocean temperature/biogeochemical anomalies and associated ocean ecosystem changes
- Documentation of existing data sources and ocean observing capabilities
- Determination of whether these patterns are predictable
- Determination of new research questions, data gaps, and partnership opportunities
- Collaborative, informed and improved observing plans moving forward

Proposed Dates:

Pacific Ocean Anomalies Workshop, Part I, May 5-6, 2015, La Jolla, CA – What do we currently know, what do we need to know, and where are the gaps in our understanding of these oceanographic conditions? What collaborations/working groups can be established to tackle developing priorities?

Pacific Ocean Anomalies Workshop, Part II, Fall 2015, University of Washington, Seattle, WA – What have we learned since May? What progress has been made in understanding the causes of the anomalies? What opportunities exist for contributing to increased understanding of these oceanographic conditions?

Participants will include federal, non-federal, state and local scientists and coastal managers. Participants from Canada and Baja California will also be invited.

A wealth of long-term satellite and *in situ* time-series data have been collected and assimilated in models, but we still need a comprehensive integration and analysis of these data at a Pacific-wide scale.

Discussion topics will include:

- Observing changes in physical and biogeochemical (e.g. hypoxia, ocean acidification) variables in the North Central and Eastern Pacific Ocean
 - Impacts on fisheries and other ecosystems (e.g. plankton, seabirds, HABs)
 - Variations in ocean and atmospheric conditions (coastal sea level, currents, temperature, salinity, winds, mixing, etc.)
- Large-scale climate, ocean, and atmospheric processes and their relation to physical and biogeochemical variations
 - Structure of the California Current System and its interaction with the larger North Pacific system
 - Atmospheric or ocean processes that may translate warming signals between the open ocean and coastal regions
 - Connection of the observed responses to climate processes, such as ENSO and PDO
- The abilities of global and regional models to detect ocean variations seen in observations

Workshop Goal: The first workshop will discuss what anomalies are occurring, and what systems they affect. This discussion will provide the basis and framework for a second workshop (pending funding) in Fall 2015, which will focus on the drivers, potential impacts, and possible longevity of these anomalies. Both workshops will allow us to investigate these anomalies at a comprehensive Pacific-wide scale, and to highlight potential gaps in data for improved monitoring efforts.

The outcome of the first workshop will be an abstract volume, a recommended framework to enable increased collaboration (science, observing, and project) opportunities, and high-level summaries of observed ocean and atmospheric anomalies and impacts that can be used to communicate to researchers, stakeholders, and the media. Both workshops will provide a communal forum in which various research and monitoring efforts focused on these anomalies can share observations and analysis, creating a community-wide effort to understand, address and predict these and future anomalies. This collective effort will likely also propose a special Pacific Ocean anomalies session at the 2016 Ocean Sciences Meeting, plus additional stakeholder discussions, publications and presentations.

Stakeholders: The current anomalous North Central and Eastern Pacific conditions have captured the attention of the public and the concern of resource managers, fisherman, and other ocean-related agencies. The Pacific Anomalies Workshops will help provide information to these stakeholders, who include: marine scientists, coastal and marine resource managers and decision-makers working in marine health and climate-related fields, and economic sectors affected by ocean climate (including agriculture, mariculture, recreation and tourism).

Meeting Preparation: Prior to the May workshop, participants will be encouraged to submit extended abstracts highlighting 2014-2015 anomaly observations and data. Extended abstracts will be compiled into a document for reference during and after the meeting. **Extended abstracts are due by Monday, April 20, 2015.**

Remote participation in most Workshop sessions will be possible.