

Ocean Protection Council Science Advisory Team Consensus Statement on Ocean Observing

Most of the important science relating to California's coastal ocean requires well-conceived, regular and sustained measurements of the marine environment and its many ecosystems. These measurements are critical for accomplishing the Ocean Protection Council's (OPC) mission *to ensure that California maintains healthy, resilient, and productive ocean and coastal ecosystems for the benefit of current and future generations*. Understanding the changing ocean environment and how coastal ecosystems respond to such changes is vital for swift, confident, and effective management. The OPC has demonstrated leadership in the establishment of ocean observing systems for California. These systems monitor critical oceanographic processes and parameters (e.g., coastal upwelling, ocean circulation, water temperature) and the health of coastal marine ecosystems (e.g., monitoring marine protected areas) that enable scientists, managers and policy makers to identify and respond to changes in California's marine environment and to ensure sustained use of resources and the many services generated by our coastal ecosystems. The Ocean Protection Council Science Advisory Team (OPC-SAT) encourages the OPC to continue to devote resources and cultivate partnerships that maintain and develop these activities, and to continue to leverage their actions to promote expanded observations at the regional, state and federal levels.

The list of scientific and management issues served by well conceived, regular and sustained measurements of the coastal ocean and its ecosystems, including the human component, is long and continually evolving. Important examples include:

- 1) Describing dynamic patterns of winds, waves and currents that impact real time issues including the fate and impact of hazardous material spills, success of search and rescue efforts, geographic opportunities for ocean-based energy production, and current and future threats of coastal storm damage;
- 2) Identifying shifts in ocean circulation, ocean temperature and ocean water volume associated with a changing ocean climate, which influence the distribution and productivity of species and fisheries, sea level rise and coastal erosion;
- 3) Characterizing the timing, magnitude and distribution of harmful algal blooms and pathogen pollution and their impacts on ecosystems and human and animal health;
- 4) Quantifying physical and biological processes that influence biodiversity, fisheries productivity and facilitate management for sustainable fisheries;

- 5) Revealing patterns of oceanographic conditions and associated ecosystems that determine the foundation upon which marine spatial management is planned and implemented;
- 6) Depicting spatial and temporal patterns of runoff and atmospheric deposition including coastal pollution and ocean acidification.
- 7) Characterizing the spatial patterns and dynamics of human activities that influence and respond to marine ecosystems and their management.

Understanding and tracking the physical, chemical and ecological processes that underpin these issues requires an observing system that includes targeted observations of ocean surface currents (e.g., exploiting the OPC's investment in the high-frequency radar network), ocean temperatures and salinities (e.g., establishing repeated glider surveys), dissolved chemical constituents, and the structure, function and resilience of coastal marine ecosystems, including the human component. We now have the tools, approaches and expertise that can help prioritize which sources or types of information are of most value in specific management of decision-making processes.

The OPC-SAT strongly encourages the continued development, implementation and maintenance of a responsive and integrated observing system, which are critical for the stewardship of California's coastal ocean.



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