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The ORION and MARS ocean observing systems: vision, details, progress and opportunities

Gene Massion

Monterey Bay Aquarium Research Institute

magene@mbari.org

Worldwide, the Ocean Sciences community has been developing increasingly more sophisticated ocean observing systems over the last several decades. In the US, the Ocean Research Interactive Observing Networks (ORION) office is tasked by the National Science Foundation to bring a new generation of long term, multi-scale, multi-disciplinary, 4D, high power and high bandwidth observing systems to the Ocean Sciences research community. The Ocean Observatories Initiative (OOI) is the first phase of ORION activities bringing these observatories to fruition. The goal of the OOI is "to deliver an interactive, globally distributed and integrated observatory network to enable next-generation studies of the complex, interlinked physical, chemical, biological, and geological processes operating throughout the global ocean". MARS is the first US observatory being developed to address these goals and will serve a test bed for future OOI and ORION activities. MARS will also be available to other efforts developing ocean observing systems as well as the scientists planning experiments for these systems. This presentation will discuss the vision driving ORION, OOI and MARS; some of the critical details that must be addressed to achieve this vision; progress to date; and the opportunities these systems present for the international Ocean Sciences community.