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The NOPP O-SCOPE and MOSEAN Projects: Advanced Sensing for Ocean Observing Systems

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Abstract

The National Oceanographic Partnership Program (NOPP) consecutively sponsored the Ocean-Systems for Chemical, Optical, and Physical Experiments (O-SCOPE) and Multi-disciplinary Ocean Sensors for Environmental Analyses and Networks (MOSEAN) projects from 1998 through 2008. The O-SCOPE and MOSEAN projects focused on developing and testing new sensors and systems for autonomous, concurrent measurements of biological, chemical, optical, and physical variables from a diverse suite of stationary and mobile ocean platforms. Design considerations encompassed extended open-ocean and coastal deployments, instrument durability, biofouling mitigation, data accuracy and precision, near-real-time data telemetry, and economy—the latter being critical for widespread sensor and system utilization. The complementary O-SCOPE and MOSEAN projects increased ocean sensing and data telemetry capabilities for addressing many societally relevant problems such as global climate change, ocean carbon cycling and sequestration, acidification, eutrophication, anoxia, and ecosystem dynamics, including harmful algal blooms. NOPP support enabled O-SCOPE and MOSEAN to accelerate progress in achieving multiscale, multidisciplinary, sustained observations of the ocean environment. Importantly, both programs produced value-added scientific results, which demonstrated the utility of these new technologies. The NOPP framework fostered strong collaborations among academic, commercial, and government entities, and facilitated technology transfers to the general research community and to long-term observational and observatory programs.

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