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practices and technologies for maintenance of modular deep-sea observing systems

The advent of deep-sea cabled observing systems and related installation and maintenance requirements has driven the development of new practices and new capabilities in subsea intervention. Since 2006 Ocean Networks Canada and its partners have led innovations that range from modular sensor platform designs to major rebuilds of scientific ROVs and the development of sophisticated instrument lifecycle workflows. A key component of ONC's deep-water networks are ROV-deployable instrument platforms or 'pods' that support onboard and satellite sensors through connections to a central junction box. A wet-mate optical-electrical link to the observatory backbone network simplifies the recovery and redeployment of individual instrument platforms and their sensor suites. Adding heavy-lift capability to scientific ROVs whose highly maneuverability and dexterity are essential for observatory servicing, has been a transformative development. Through-frame lifting, first developed for the ROV ROPOS, permits the controlled placement of instrument platforms on the seafloor and their rapid recovery for maintenance and upgrades. Observatory support requirements extend beyond field logistics. ONC's Oceans 2.0 software environment includes an integrated instrument workflow, from procurement through calibration, testing, deployment, commissioning and decommissioning, plus tools for monitoring instrument health and data QA/QC, all aimed at maximizing the scientific value of the data archive.

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Track Classification: Sustainability of modular ocean observation systems and maintainability challenges with focus on the use of Remotely Operated underwater Vehicles (ROV) and environmentally challenging locations