

A two-ship expedition at Barkley Canyon

Submitted by Virginia Keast Sun, 2015-06-21 13:55

Updated July 2, 2015

On 11 January 2015, the link with Ocean Networks Canada's Barkley Canyon node was lost, halting all data delivery from this site in the Northeast Pacific. Further investigation revealed that a fishing trawling gear had damaged the node and cut off communications to all sensors connected to the Barkley Canyon node.

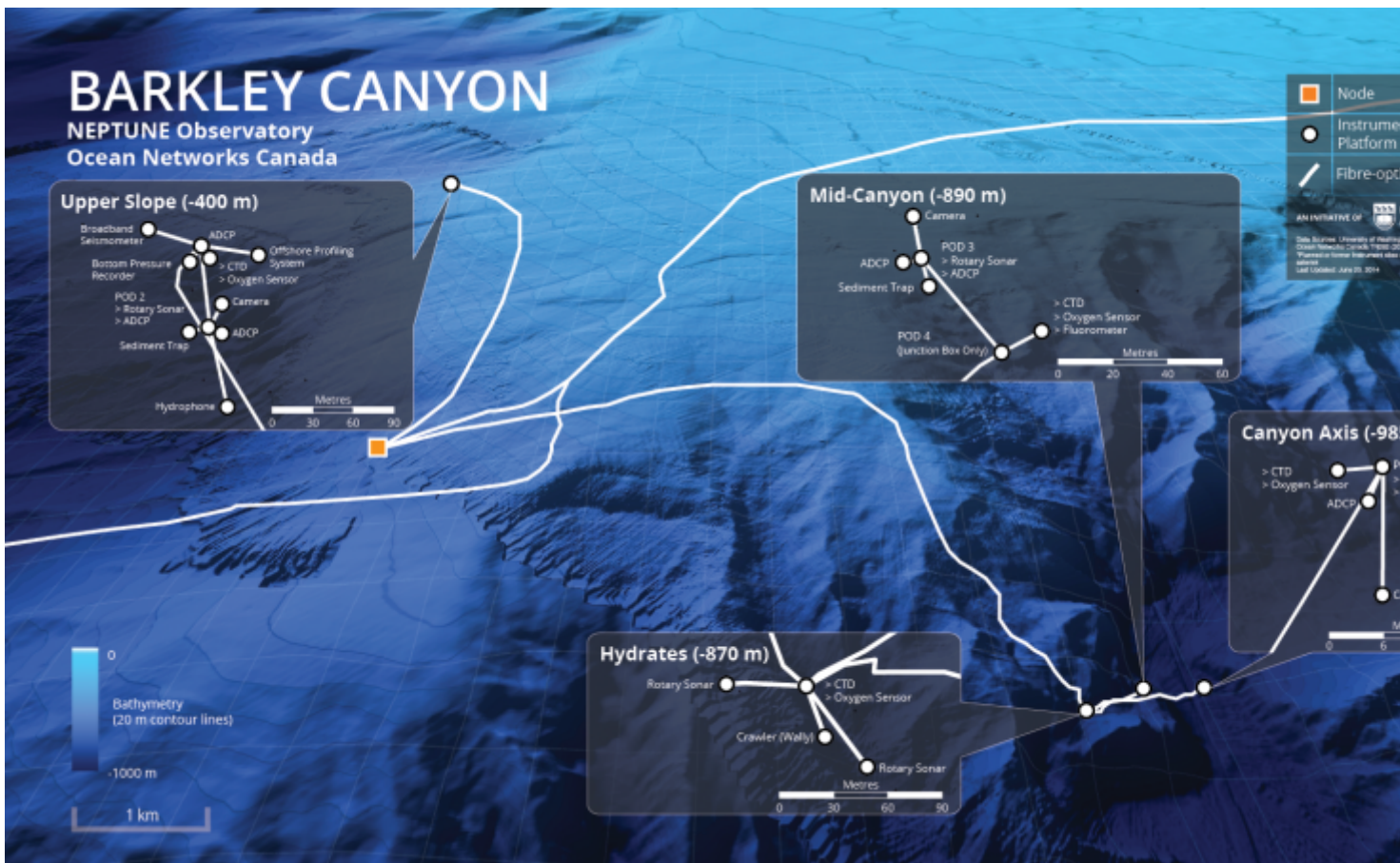


Fig.1 ?Barkley node (orange square) is the power and communications hub for ONC?s Barkley Canyon observatory site.

For locations like Barkley Canyon where active fishing occurs, ONC works to make fishers aware of observatories' installations?from posting notices to mariners and engaging in consultations with the fishing community, to installing trawl-resistant designs.

On 28 January 2015, the cable ship (C/S) *Wave Venture* set out from Victoria to conduct a survey of the damages at the Barkley Canyon site using a remotely operated vehicle (ROV). The ROV was used to confirm that the node was severely damaged and was rotated and shifted approximately two metres from its original location. It was clear that the node would require major repair.



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Fig2. ? Dive visuals from the research vessel (R/V) *Dorado Discovery* ROV investigating the damaged node and frame.

ONC?s Director of Operations, Adrian Round, immediately worked with his teams to prepare for a weeklong expedition to replace the node and repair any damaged cables connected to the 47 science instruments and supporting devices on the seafloor.

On 19 May 2015, the R/V *Dorado Discovery*, operated by Pelagic Research Services, set sail from Esquimalt with two ROVs on board, plus a four-person ONC operations team including expedition leader, Ian Kulin. Forty-eight hours later, the C/S *Wave Venture* departed to the site above the node, specifically to replace the damaged cables at the node.



Fig.3 ? C/S *Wave Venture* pulls alongside the R/V *Dorado Discovery* for the complex repair mission at ONC?s Barkley Canyon observatory site.

The expedition achieved a number of firsts in ONC?s cabled observatory maintenance operations, including the Pelagic Research Services recovery and redeployment of a node

pod, and the recovery and redeployment of cable termination assemblies by the C/SWave Venture.

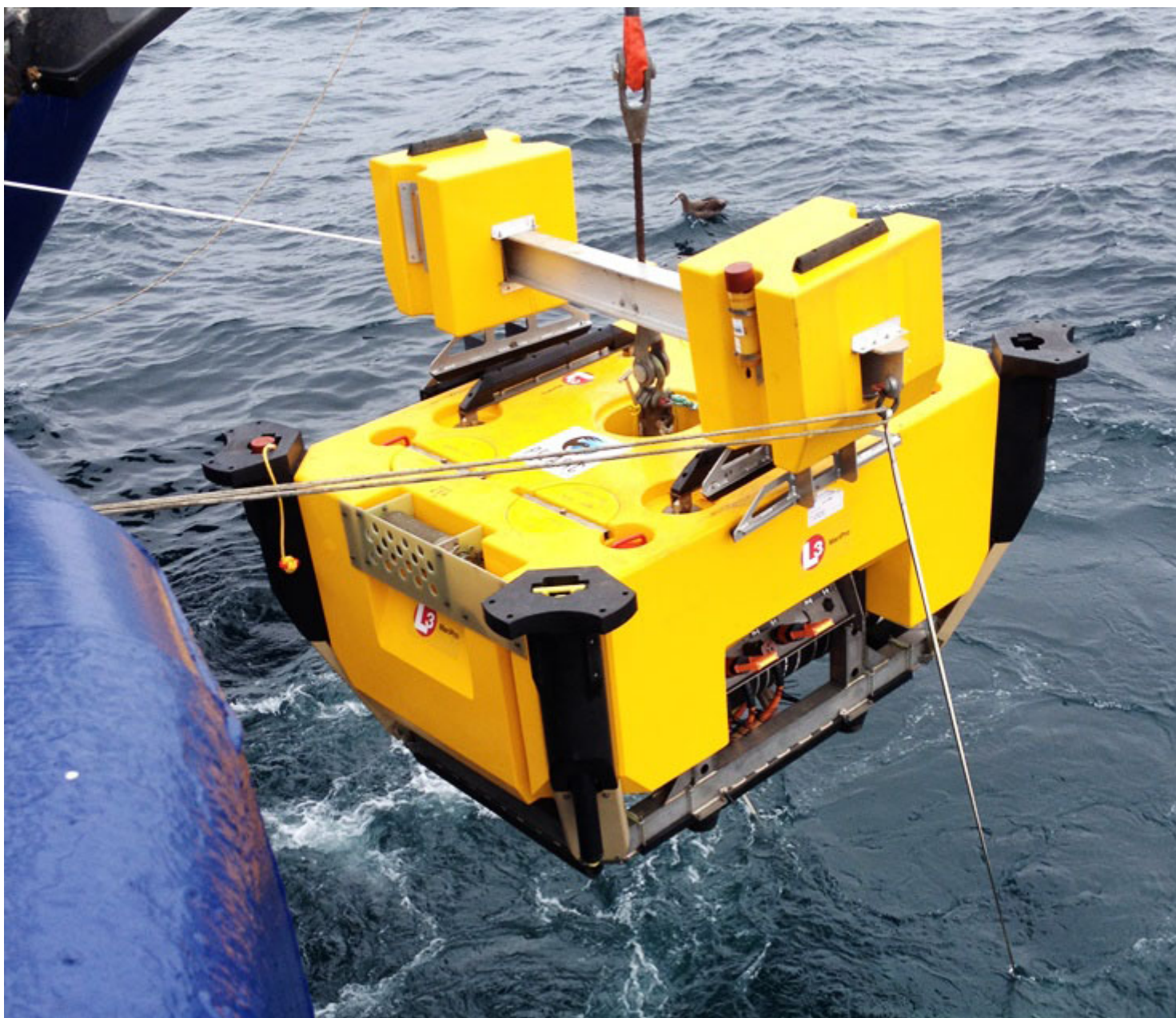


Fig.4 ? The new Barkley Canyon node and deployment harness is lowered off the stern of the R/V *Dorado Discovery*.

Unfortunately, the repair mission was not yet completed during this expedition due to the failure of the main high voltage wet mate connector on the replacement node. All of the equipment was recovered from the seafloor after the connector failed so that planning could take place for a return repair expedition.

ONC's Marine Technology Centre in Sidney is playing host to all of the Barkley node equipment, including the main trawl resistant frame (13,500 lbs.), two node pods (10,500 lbs. each) and two of the cable termination assemblies.

ONC will return to Barkley Canyon during the annual summer maintenance expedition from late August to mid-September, and because the node equipment will not be ready for redeployment, will install high priority autonomous sensors to ensure data continuity at Barkley. Repairs will resume as soon as plans are in place to complete the repair.

This is the third trawl hit for ONC at Barkley. The first was in February 2011, when Barkley's upper slope platform in 400m of water was flipped over. It took a year to re-establish live-streaming from this important deep sea research site. In 2013, also at the upper slope, the Offshore Profiling System was severed from its seafloor mooring. The profiler's float and partial cable were found adrift and recovered during the May 2013 summer maintenance expedition aboard the CCGS *Tully*.

Quotes:

"What we have learned from this expedition will serve to improve the operations of the observatories and also demonstrate the ongoing evolution of technology and expertise that keeps ONC at the forefront of global ocean observation."

~ Adrian Round, Director, Observatory Operations

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