

## Free Wally Keeps on Ticking

Submitted by Dwight Owens Wed, 2011-09-21 00:00

Wally the Crawler underwent the ultimate stress test on Sunday. After entering the water tethered beneath the Remotely Operated Vehicle ROPOS, strong waves apparently sprung Wally loose. He took an 870 m free dive from the sea surface to the seafloor at Barkley Hydrates.



Wally the Crawler dangles below ROPOS just prior to entering the ocean at Barkley Hydrates, 18 September 2011.

Shortly after entering the water, we checked for Wally in the downward-looking camera, and he was gone. As the dive logger described it, "The hook came off, Wally is by himself."

Onlookers both on ship and shore drew a collective gasp.

?Hoppla, that could imply that Wally took his own dive with 40 kg weight.?

Wally's creator, Laurenz Thomsen of Jacobs University was watching the events live from Bremen, Germany. He remarked, ?Hoppla, that could imply that Wally took his own dive with 40 kg weight.?

## Free Falling

Free-fall deployment is not new to ocean research, and has been used for many years. In fact, we used this method to successfully deploy the Seafloor Compliance apparatus at ODP 889 (Clayoquot Slope) in 2009. But, Wally was not designed and built to be dropped from the surface, although we wouldn't put it past our German partners to have designed some extra toughness into their little crawler.

As we watched ROPOS descend, the sense of dismay was palpable. Could Wally survive such a plunge? Could his extremely sensitive instruments and microprocessors?

## Cat-like Landing

When ROPOS arrived at the bottom, Wally was not there. To make matters worse, a sudden glitch in our positioning system complicated our efforts. ROPOS began running sweeps, using sonar to search for Wally. Gas hydrate mounds in the area presented a couple of false targets. But, after a relatively short search, the ROPOS pilots found Wally, resting on his treads on a steep submarine slope. Just like a cat, Wally had landed on his feet!





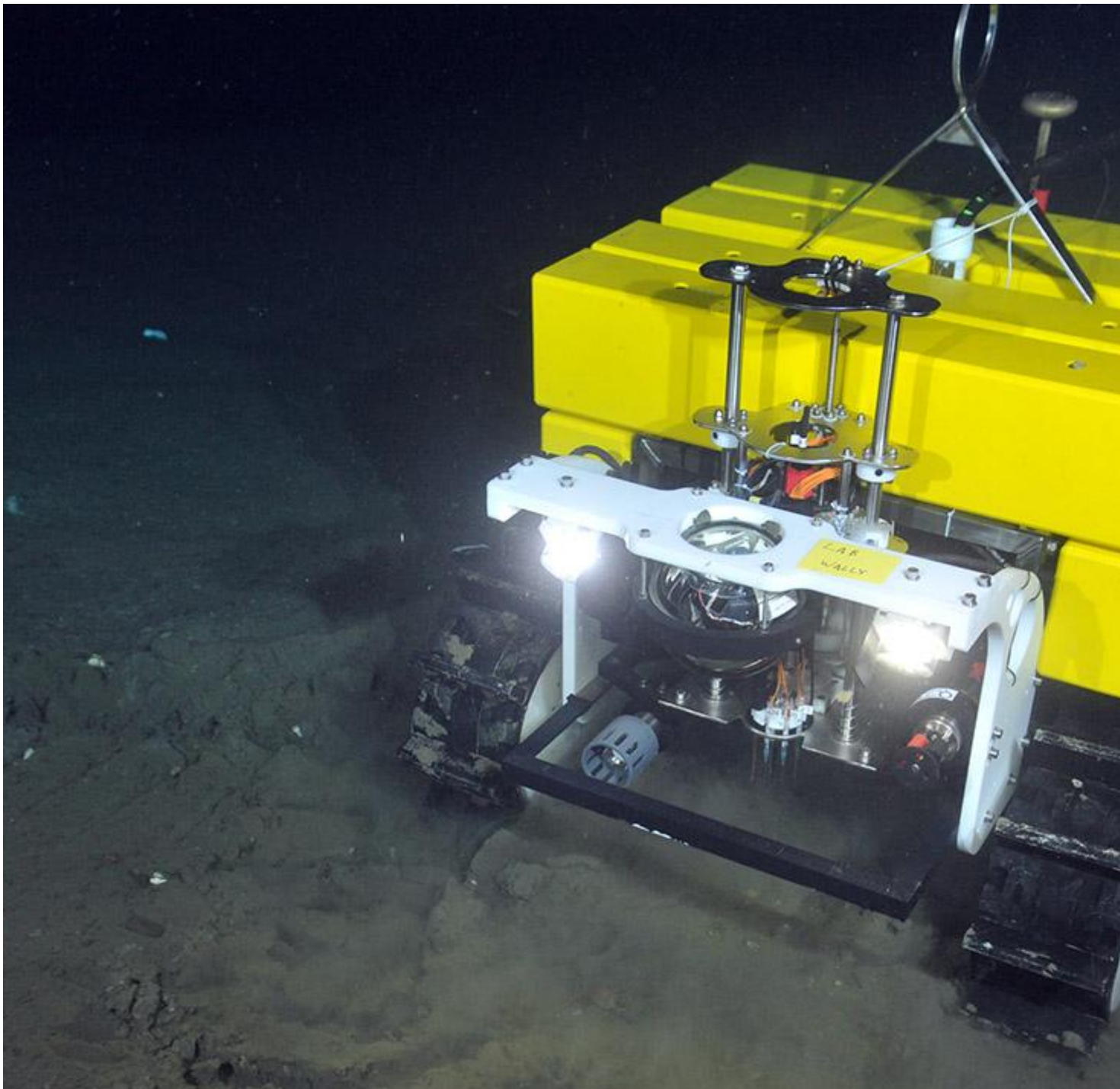
Wally's position on the steep submarine canyon slope where we found him after his "cat-like" landing. (Click to enlarge.)

We were relieved to find Wally, but the question on everyone's mind was whether he and his instruments were intact. ROPOS carried him back to his regular haunts in "Wallyland", unfurled his umbilical cable and plugged him in to the Barkley Hydrates instrument platform.

## Wally Phones Home

Fingers crossed, we turned on the power and asked Laurenz Thomsen to go ahead and activate Wally. ROPOS hovered nearby as everyone watched and waited. At first, nothing happened. The ROPOS crew Skyped Laurenz, "we are 2 m away, don't run us over."

There a sudden shout and rapid flurry of Skyped "Yee-Haws" erupted when Laurenz switched on the lights and began driving Wally. No problems with left turn, right turn, forward or backward movement.

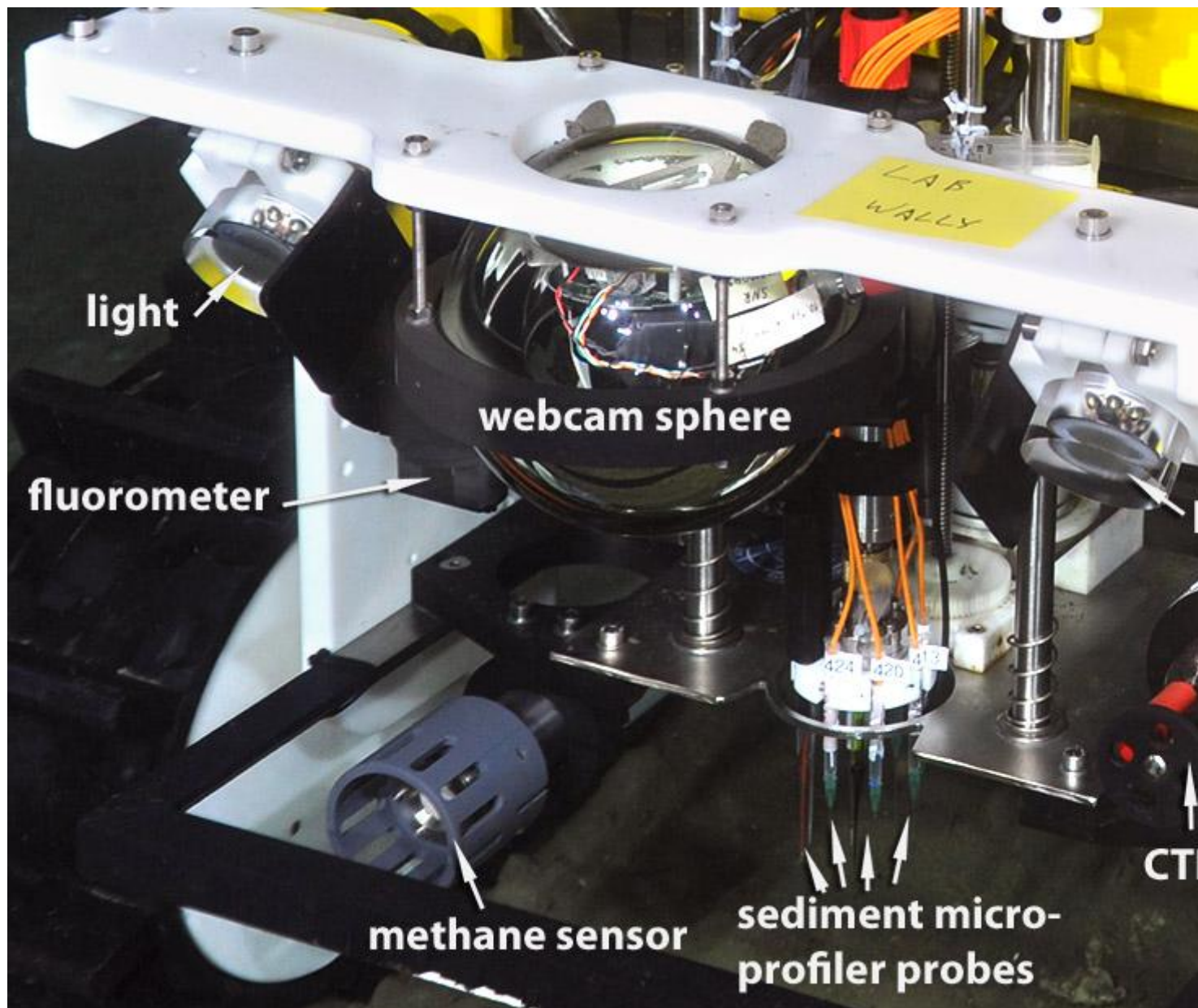


Wally does the Hokey-Pokey after surviving his great fall, 18 September 2011. (Click to enlarge.)

## Instruments Alive

We were happy to see Wally's lights, camera and wheels still functioning. The next concern was the state of his instruments:

- compass
- methane sensor
- conductivity-temperature-depth (CTD) instrument
- current meter
- fluorometer
- turbidity meter
- sediment micro-profiler

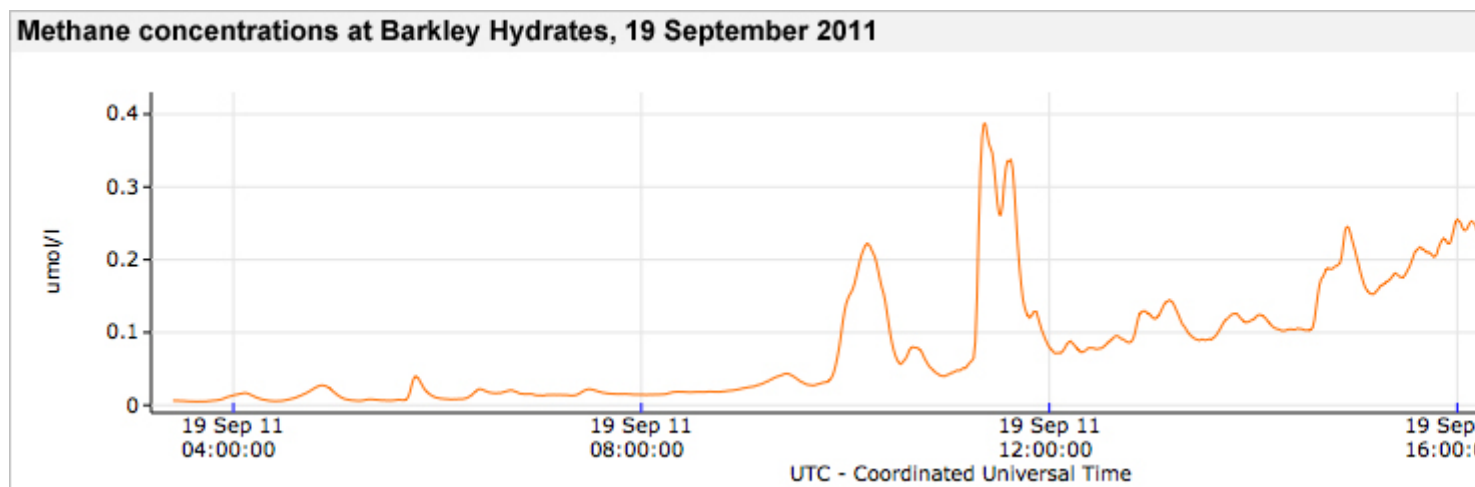


Some of the instruments installed on Wally II, 18 September 2011. (Click to enlarge.)

Upon visual inspection, all appeared intact, although Wally's lights were somewhat askew.

One-by-one we powered and quickly tested the instruments. After troubleshooting a couple of device driver problems, we were able to confirm all instruments to be working. However, there appear to be problems with two of the delicate probes on Wally's sediment micro-profiler. There are also some lingering data offset issues, which we're still trying to resolve, but Wally appears to be well enough to leave deployed at Barkley Hydrates for the winter.

Needless to say, everyone's happy Wally was able to 'take such a licking and keep on ticking'. But, we're not planning to use free-diving as our favoured method of deployment for Wally anytime soon!



Plot of methane concentrations from Wally II METS methane sensor, 19 September 2011. (Click to enlarge.)

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