

Axial 2017 Expedition RR1712 to Axial Seamount

R/V Revelle – July 13-23, 2017

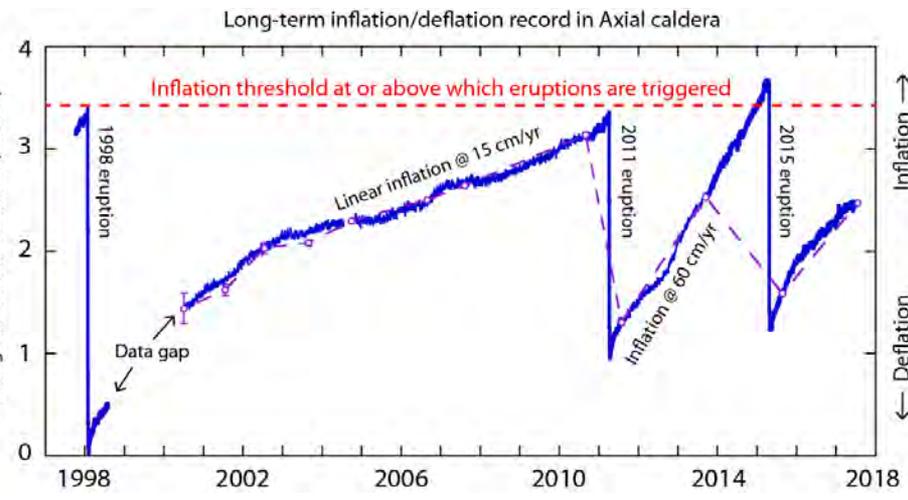
Newport, OR – Newport, OR

Main goals using Jason & Sentry:

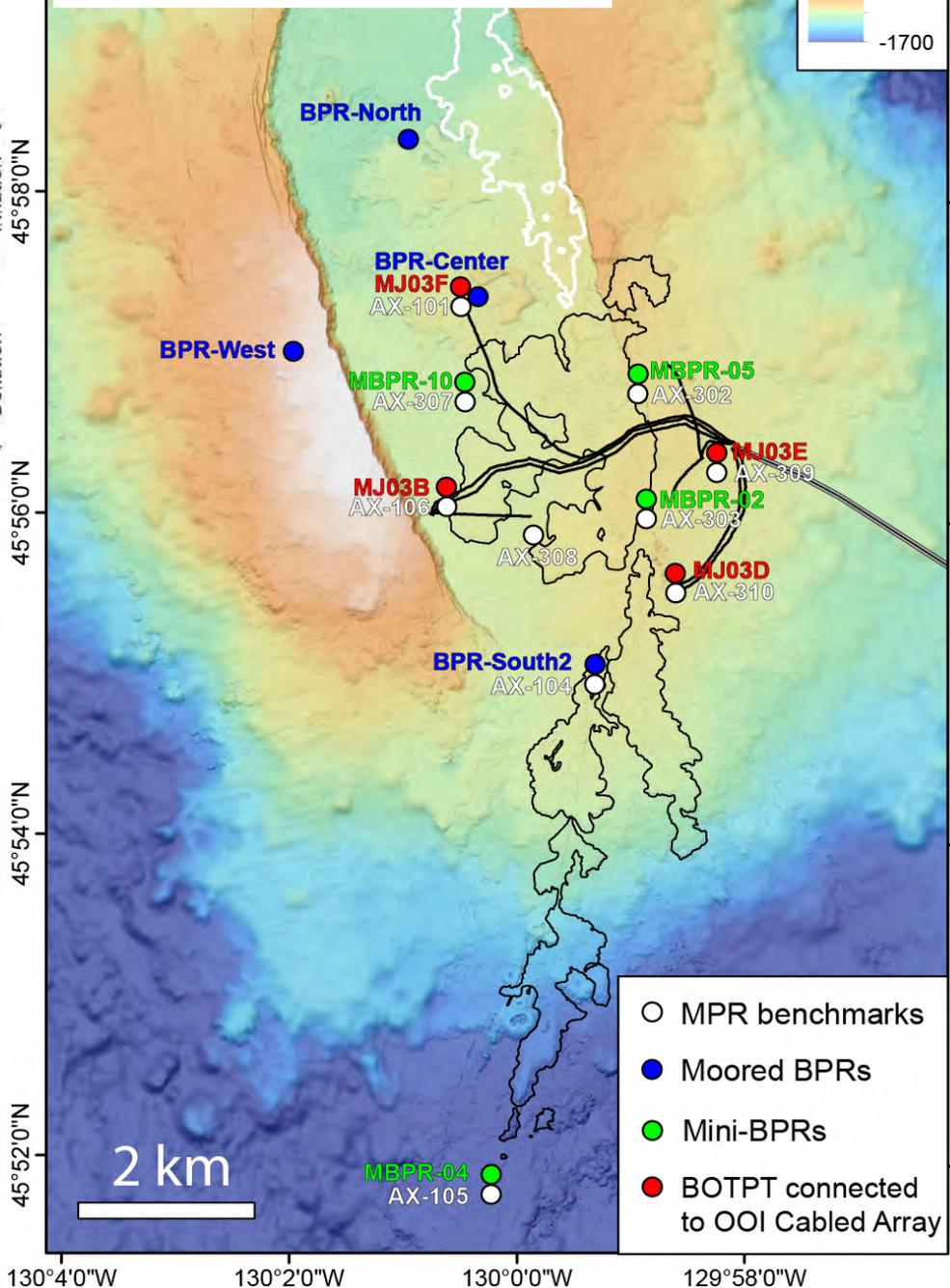
- Repeat pressure measurements for inflation/deflation time-series monitoring (Nooner/Chadwick; funding from NSF)
- Time-series fluid and microbial sampling (Butterfield/Holden/Huber: funding from NOAA & NSF)
- Repeat AUV bathymetric mapping to measure inflation/deflation outside caldera
- 5 ROV Jason dives, 5 AUV Sentry dives
- CTD casts/tows, mooring turn-arounds



Pressure measurements to monitor volcanic inflation and deflation

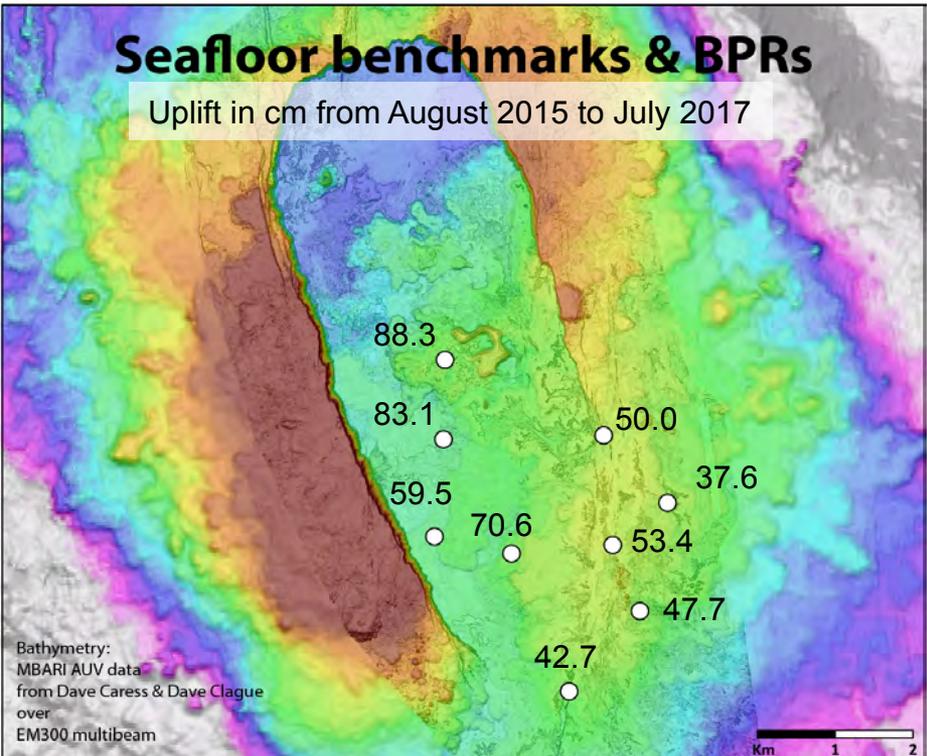


Current monitoring array



Seafloor benchmarks & BPRs

Uplift in cm from August 2015 to July 2017



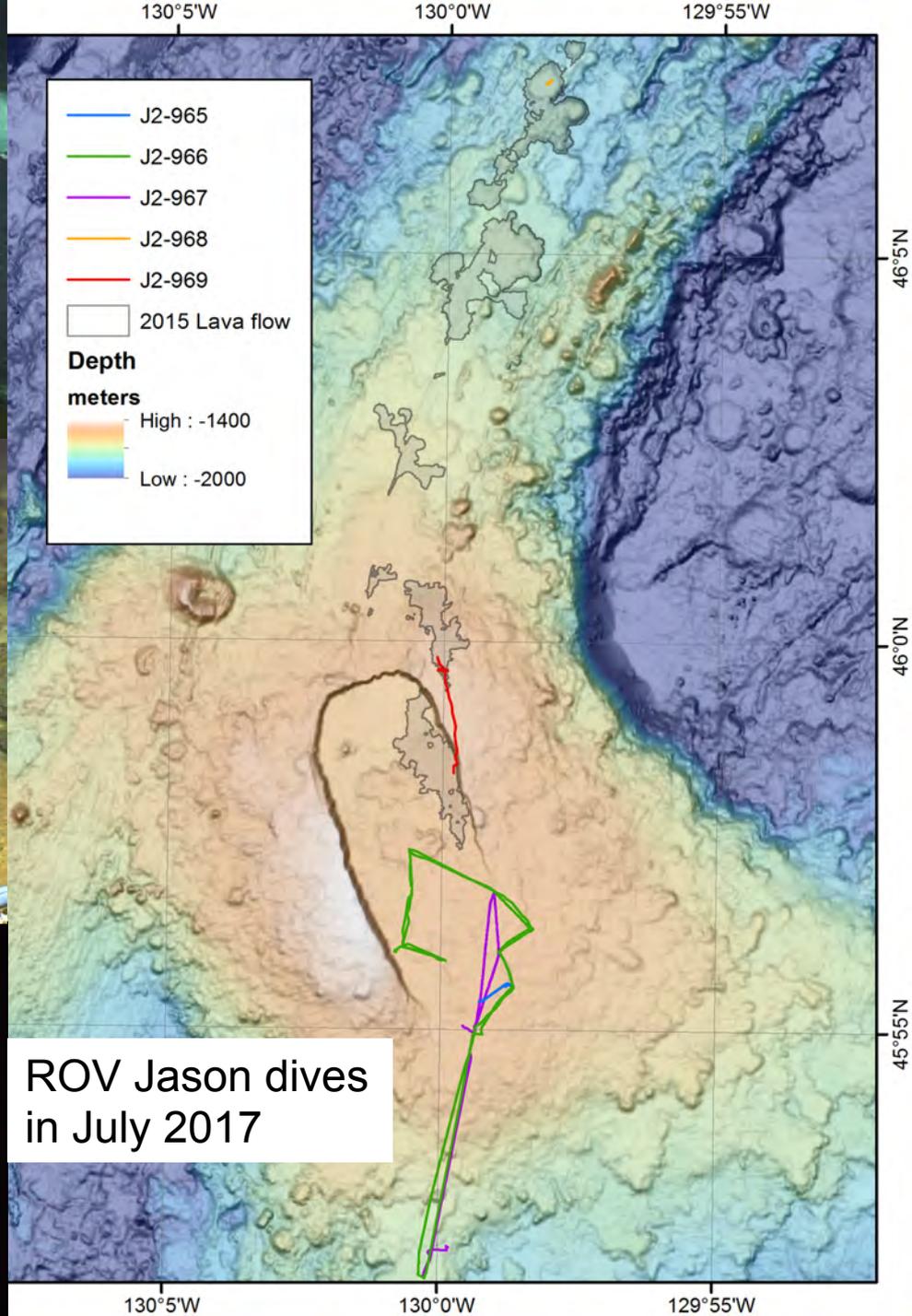
Blue ciliate mat returned to Marker N3 vent site after burial during 2011 eruption



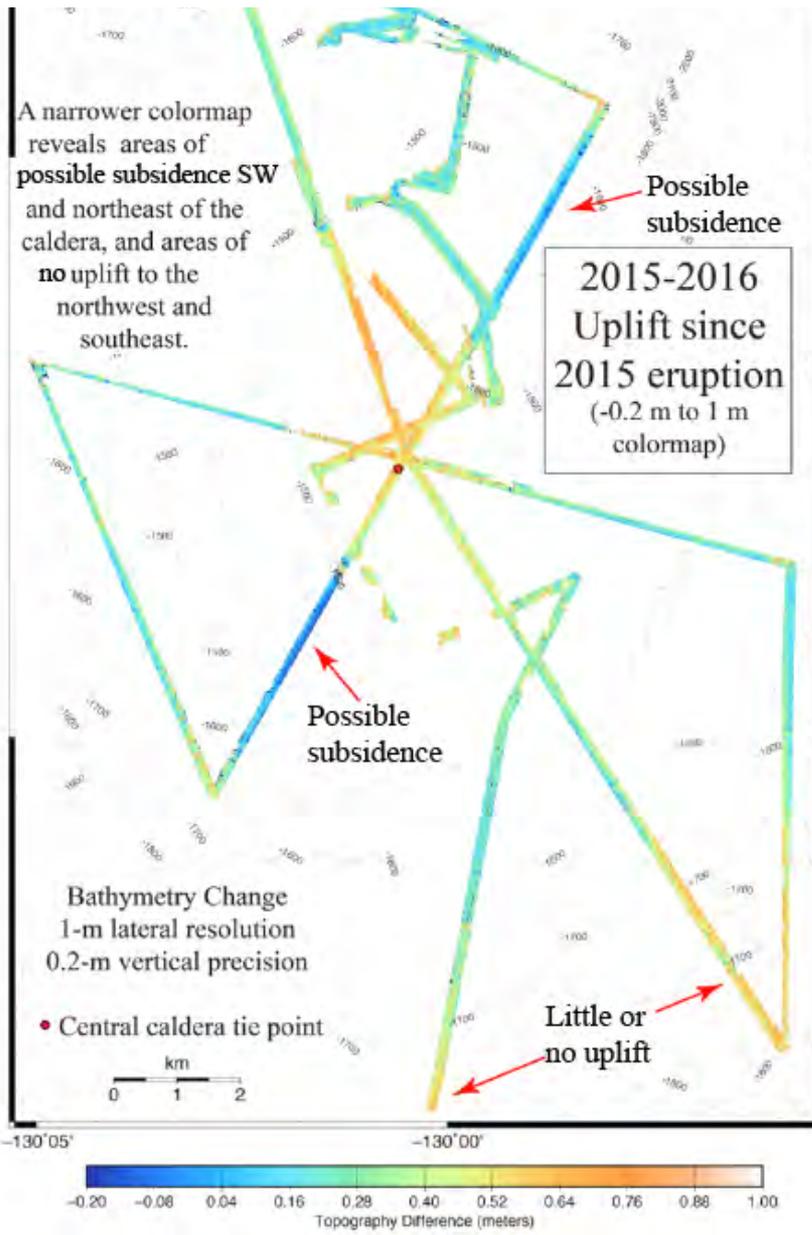
Mini-smokers sampled on thick 2015 lava flow on NRZ



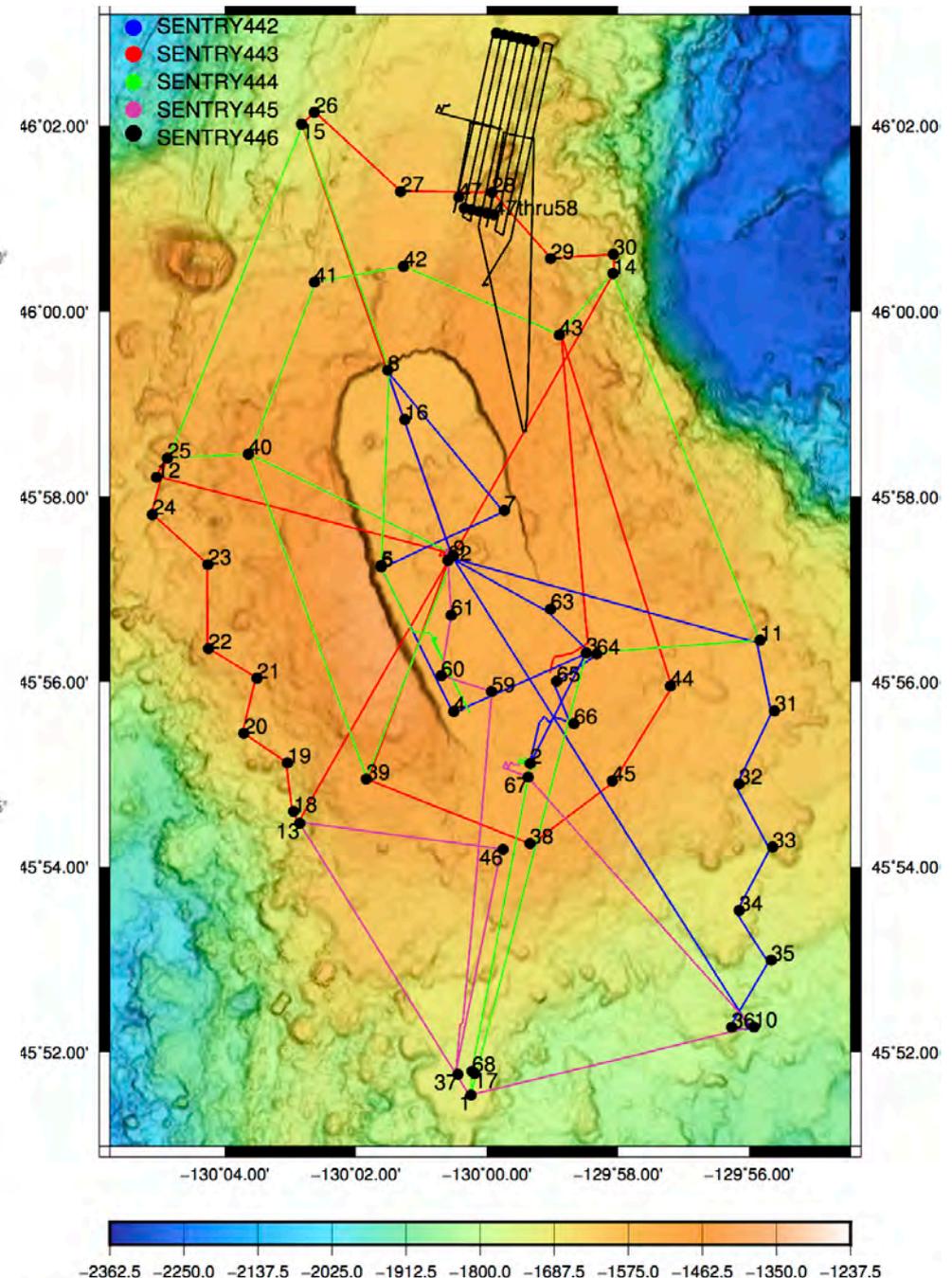
2015 lava flows sampled that erupted out of graben on NE rim of caldera



Repeated AUV dives reveal that deformation extends over a larger area than the caldera



AUV Sentry dives in July 2017



Axial Seamount Expedition 2017

R/V Revelle | ROV Jason and AUV Sentry | Newport-Newport, July 13-23, 2017

FRIDAY, JULY 28, 2017

Axial 2017 Wrap-up

By Bill Chadwick
Chief Scientist

Our research expedition to Axial Seamount was a great success, thanks to the combined efforts of the crew of the R/V Revelle, the Jason and Sentry teams, and the science party. We were able to complete 5 Jason ROV dives, 5 Sentry AUV dives, 3 CTD casts, and we deployed 4 instrument moorings and we recovered 5 of them that had been out collecting data for the last 2 years. It was a big relief to feel we accomplished all our goals as we returned to Newport, OR, but the work of analyzing data and samples will continue for many months from now.



Scientists on the expedition.



R/V Revelle returning to Newport, OR.

Two of the Jason ROV dives were mainly devoted to making pressure measurements at an array of seafloor benchmarks to measure how much the volcano has re-inflated since our last survey two years ago. We found the center of the caldera has risen 80 centimeters (nearly 3 feet) in the last two years, and 1.25 meters (over 4 feet) since the end of the 2015 eruption. That means the volcano has recovered half of the deflation that occurred during the last eruption in just two and a quarter years, but during that time the rate of re-inflation has also slowed substantially, from initial rates of 80 cm/yr to current rates of about 20 cm/yr. That means the second half of re-inflation will take longer than the first and the next eruption is probably not due before 2020 or 2021, depending on how the inflation rate varies between now and then. We'll be keeping an

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