Axial 2018 Expedition KM1813 to Axial Seamount

*R/V Kilo Moana* – August 18-27, 2018
Astoria, OR – Astoria, OR

**Main goals using Jason & MBARI-AUV:**

- Repeat pressure measurements for inflation/deflation time-series monitoring (Nooner/Chadwick; NSF-funded)

- Time-series vent fluid and gas sampling (Butterfield: NOAA-funded)

- Repeat AUV bathymetric mapping to measure inflation/deflation outside caldera (Dave Caress, MBARI, NSF-funded)

- 2 ROV Jason dives, 2 MBARI AUV dives

- 7 CTD casts, 5 mooring turn-arounds, multibeam bathymetric surveys
Pressure measurements to monitor volcanic inflation and deflation

Seafloor benchmarks & BPRs
Uplift in cm from July 2017 to August 2017

Current monitoring array
AUV Sentry dives in July 2017

MBARI – Mapping AUV Surveys at Axial Seamount - August 2018
Summary of the 2018 expedition

It's always a great feeling at the end of a research cruise when the ship is coming back into port and I know we have accomplished all your main science goals. In oceanography, there are many things that can go wrong at sea, from bad weather to equipment malfunctions that can prevent you from working, that success is never guaranteed. So I always have a sense of relief when we are able to get the work done that we set out to do. Thankfully, that is the case this time. The other feeling I have is gratitude for everyone on board the ship who contributed to our success – from the ship’s crew, the operators of the vehicles we use, and the science party.

Our main goal on this expedition was to continue our measurements of the volcanic inflation going on at Axial Seamount since its last eruption in April 2015. We accomplished that in several different ways during this cruise: 1) We repeated pressure measurements on an array of seafloor benchmarks inside the summit caldera with the Jason ROV. 2) We recovered and re-deployed bottom pressure recorder instruments that had been continuously recording on the seafloor at various locations for the past year. 3) Thirdly, the MBARI AUV made dives to collect high-resolution bathymetry that we will compare with previous surveys to measure depth changes over a much larger area than where the pressure measurements are made.
Related presentations at this year’s AGU:

Natalie et al. – Poster – Thurs-pm V43G-0211
The relationship between post-2015 eruption deformation and seismicity rates since the 2015 eruption at Axial Seamount using OOI data

Hefner et al. – Poster – Thurs-pm V43G-0212
Magmatic Source Estimates at Axial Seamount for the 2015 Eruption From Seafloor Deformation and Seismic Data

Cook et al. – Talk – Thurs-pm T44C-08
Calibrated pressure measurements for seafloor geodesy

OOI real-time BPR data: www.pmel.noaa.gov/eoi/rsn/