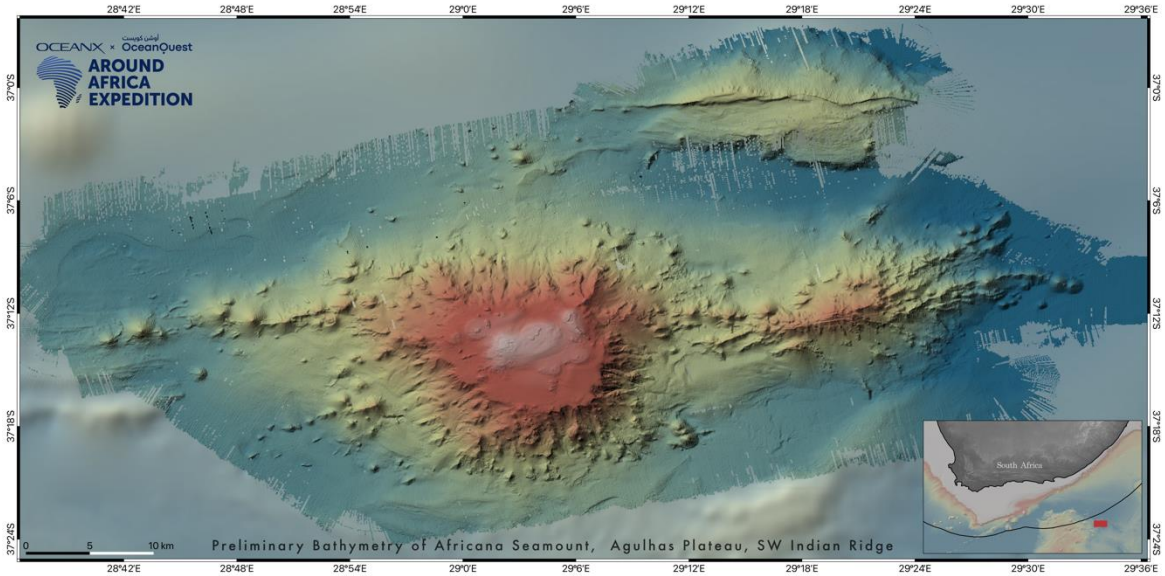
OceanX + OceanQuest - Around Africa Expedition 2025

Leg 1, Moroni, KM – Cape Town, ZA

Weekly Report 4 (and 5; 14 – 23 February 2025)

After completing the mapping of an unnamed seamount early Thursday morning, we set sail for Africana Seamount, a journey expected to take about three days. However, a strong weather front with high winds and waves reaching up to 6 meters from the west significantly slowed our progress, reducing our speed to just 5 knots or less. Despite maintaining a steady westward course, the challenging conditions extended our travel time.

By Sunday, the weather began to ease, allowing us to regain some lost time. The wind subsided, and the swell dropped to around 3.5 meters, improving conditions as we approached our destination. After a longer-than-anticipated transit, we arrived at Africana Seamount early Monday morning, where we had a 48-hour window to complete our planned survey work. We began with bathymetric mapping, and the first survey line immediately revealed surprises: a complex volcanic system featuring an elongated ridge to the east, numerous volcanic cones rising up to 1,000 meters, and a guyot-shaped main structure with a summit spanning approximately 13 km in diameter. Africana Seamount is part of a striking 75 km-long volcanic ridge with an array of intriguing geomorphological features.

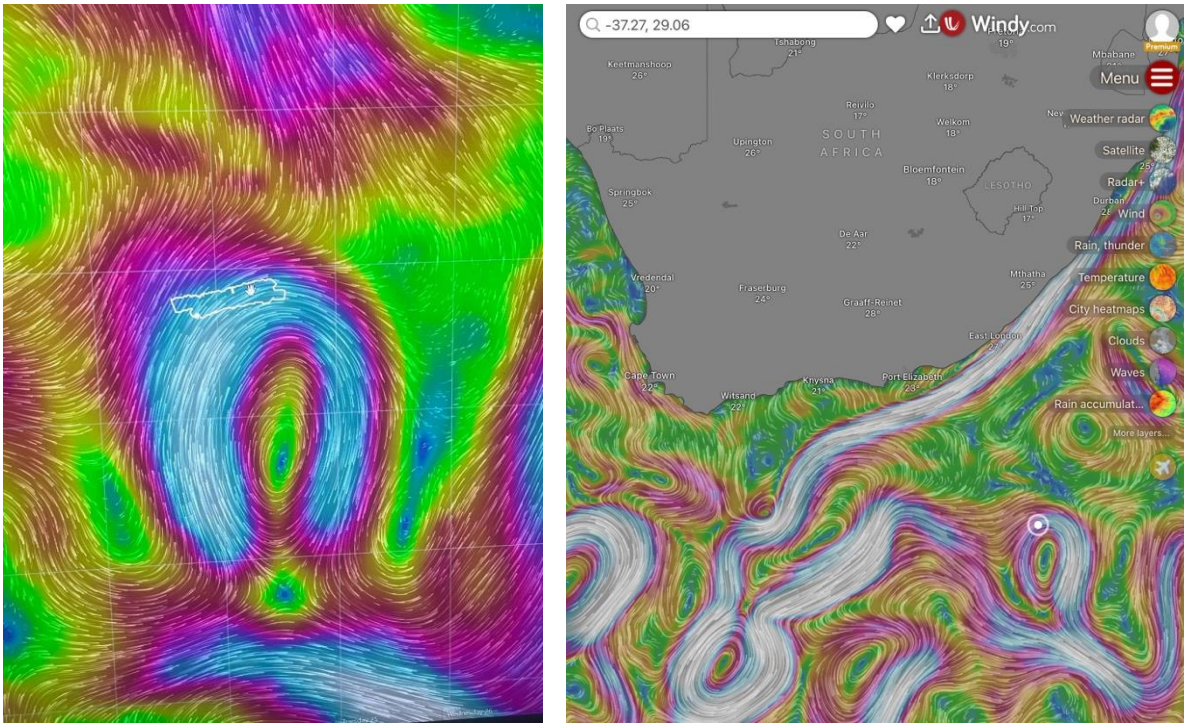


Bathymetric maps like this one of Africana Seamount spark curiosity about what lies beneath. This newly mapped section at the edge of the Agulhas Plateau offers plenty to analyze and interpret, revealing intriguing geomorphological features.

However, our initial excitement was met with a setback. A CTD cast at the summit confirmed that the Agulhas Current – specifically its retroflection at this location – was exceptionally strong, racing along at more than 3 knots causing the ship and CTD to drift almost 5 km during the cast. This was disappointing, as we had hoped to capture ROV footage of the seamount. Unfortunately, the current was too powerful to conduct safe ROV operations on Monday. Instead, we shifted focus to continuing bathymetric mapping

of Africana Seamount and its surroundings, with only a brief pause for a plankton net station before resuming overnight mapping.

The large eddy responsible for the strong currents over Africana Seamount did not shift eastward by Tuesday, as we had hoped, making ROV operations impossible on Tuesday as well. Instead, we conducted a second drift-CTD cast over the seamount's summit area and continued high-resolution bathymetric mapping. By early Wednesday morning, it was time to leave the area and begin our transit toward Cape Town, where we are expected to arrive by Sunday morning.



The mapped area around Africana Seamount (outlined in white on the left image) lies directly in the path of a massive eddy, with currents exceeding 3 knots (5.5 km/h). On the right image, the Agulhas Current - visible as the prominent white band along the South African coast - flows swiftly eastward further south. Known as one of the fastest ocean currents, it can reach speeds of up to 4.8 knots (9 km/h). While 3-5 knots may seem modest compared to wind speeds, the density of moving water makes these currents significantly more powerful, often posing challenges for work at sea. Images are from windy.com on 17th (left) and 18th February (right).

Although we were unable to conduct ROV dives, Africana Seamount became the third seamount mapped in detail during this expedition. It is now fully charted in high resolution for the first time, and we successfully explored its water column using CTD casts and plankton nets. Despite the strong currents preventing exploration this time, we must wait patiently for another opportunity to uncover its secrets.

After departing from Africana Seamount, we continued collecting bathymetric data during transit until reaching the South African EEZ on Thursday afternoon.

A side project not previously highlighted in past reports is the deployment of drifter buoys for the Global Drifter Program, part of NOAA's Global Ocean Observing System, which contributes to improving weather forecasts. Here, Mattie Rodrigue, Science Program Director at OceanX, prepares a drifter buoy for deployment with Doreen Walter Mushi (Tanzania) and Amina Makori (Kenya).

The entire scientific team is deeply grateful for our time aboard the RV OceanXplorer and the incredible support from the bridge, crew, pilots, surveyors, galley, engineers, and interior staff. It has been an enriching experience alongside an outstanding team. A special thanks goes to Mattie Rodrigue, OceanX Science Program Director, for her unwavering support throughout the expedition. Her expertise in marine research, deep knowledge of the RV OceanXplorer, and ever-positive attitude made our time onboard as productive and enjoyable as possible.

Everyone on board is in good health and high spirits as we approach Cape Town, marking the end of an unforgettable Leg 1 of the OceanX + OceanQuest Around Africa Expedition.

Greetings from RV OceanXplorer.

Nico & Lara

As the OceanXplorer makes its way to Cape Town, we are busy packing equipment, cleaning up the labs, and compiling the technical cruise report, which will serve as a key reference for future use. With considerable swell and waves, we are navigating around Cape Agulhas and the Cape of Good Hope, expecting to arrive in Cape Town on Sunday morning.