The Benthic Communities of Condor Seamount

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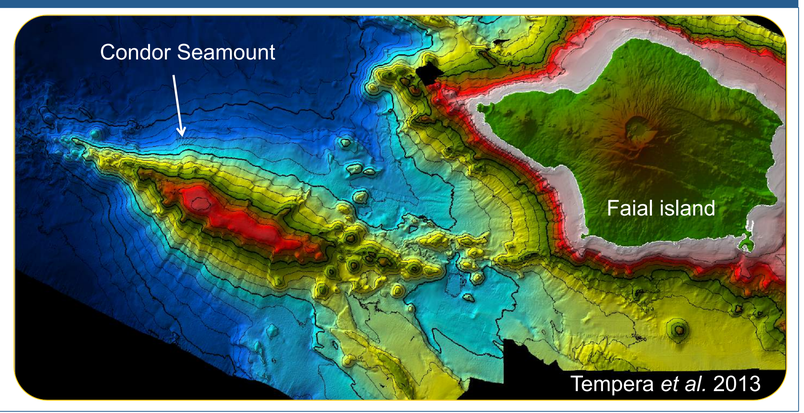
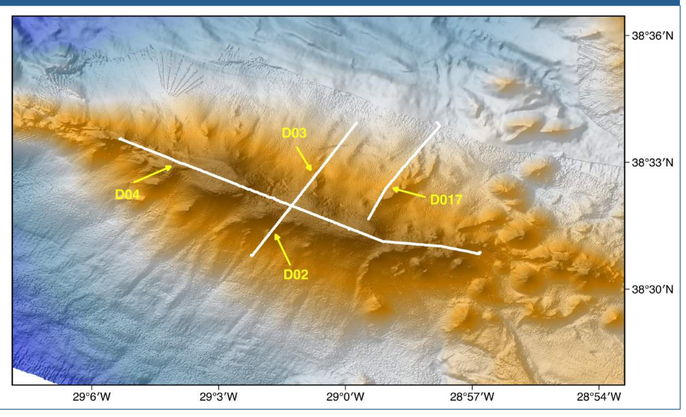
Background

Condor seamount is an elongated V-ridge volcano located only 17 km away from Faial Island (Azores). The seamount covers an area of 430 km^2, with depths that range between 182 m at the summit down to 1800 m in its deepest part. The seamount has a flat and broad summit area in the west and an elongated, relatively flat but narrower area of deeper elevation in the central and eastern sectors. It's high acoustic backscatter relates to the presence of large rocky seafloor outcrops, boulders an gravels, as revealed by seabed imagery. The flanks of the seamount are generally smooth, with dominance of both unconsolidated sediments and cemented sediments forming 10- to 15-cm thick plates.
Condor was recently declared a MPA as part of the Azores Marine Park, and fishing activities were prohibited in 2010. This situation provides a unique opportunity to understand the ecology and the capacity of recovery of benthic communities dwelling in a seamount that has historically been affected by commercial long-line fishing but it is currently protected from their negative impacts.



ROV survey

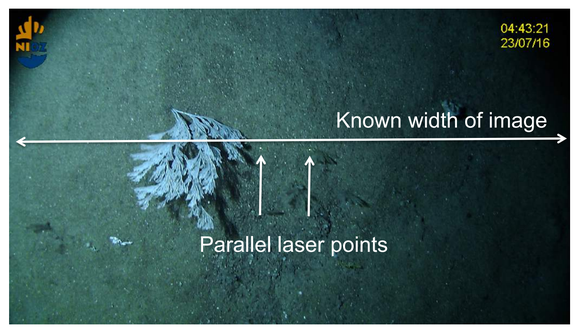
As part of the MIDAS cruise in 2016, four tow-cam video transects were performed on the summit and on both flanks of the seamount, at depths between 250 and 1100 meters. The total length of the videos exceeds 28 km of seabed, covering all habitats existing in Condor seamount, from soft flat shallow areas to deep rocky outcrops.



Video analysis

Video transects will allow for quantitative data to be obtained due to the presence of laser points and the vertical orientation of the camera towards the sea bed.

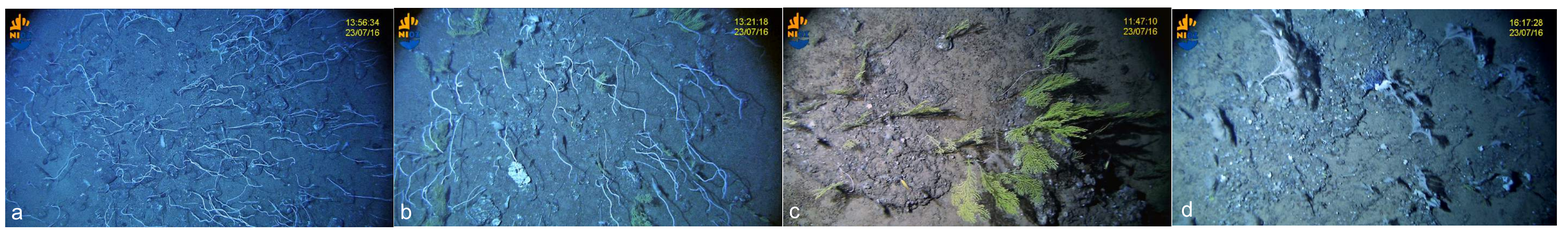
All organisms will be determined to the lowest possible taxon along the whole video transect. Densities will then be calculated in contiguous sampling units of a determined size in order to comprehensively characterize its key fauna associations by means of community analysis.



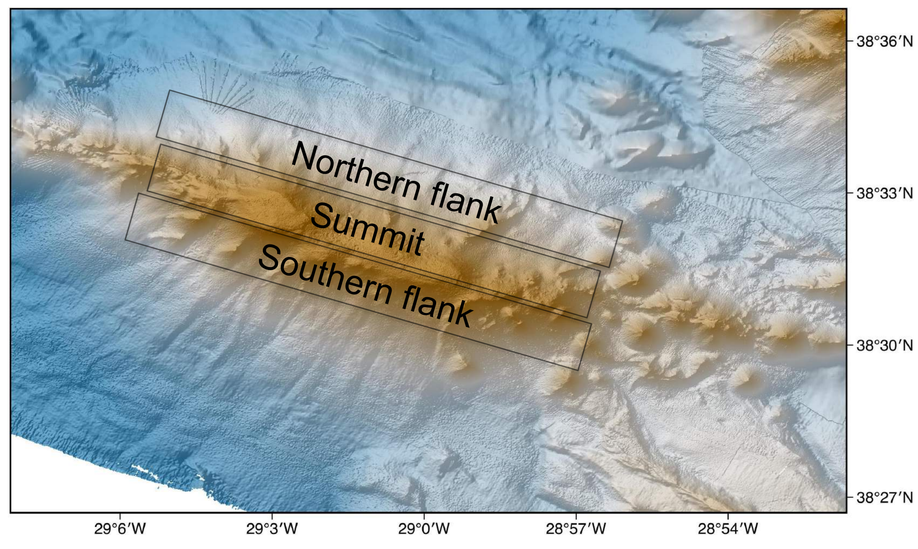
Preliminary results

Summit

The summit is mainly characterized by the presence of several coral gardens, which can be found as monospecific o multispecific patches of varying densities. Sponge aggregations have also been observed, although more sparsely and with lower densities.

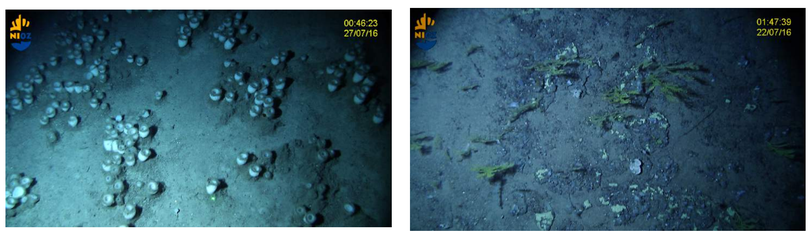


Some examples of the coral gardens observed on the summit. (a) Monospecific patch of *Viminella flagellum.* (b) Multispecific association with *Viminella flagellum* and *Dentomuricea aff. meteor. (c)* Monospecific patch of *Dentomuricea aff. meteor.* (d) Monospecifc patch of *Callogorgia verticillata*, mostly found on both ends of the summit.



Northern flank

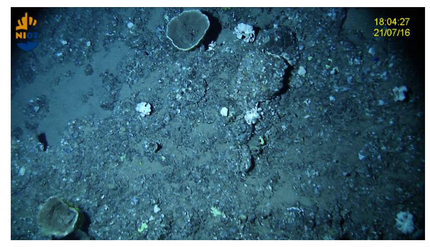
The northern flank is less species diverse than the summit, although certain areas show very high densities of the sponge *Pheronema carpenteri*.



Some examples of the aggregations found on the northern flank. (a) *Pheronema carpenteri* aggregations found on unconsolidated substrates. (b) The gorgonian *Dentomuricea aff. Meteor* is also common on the southern flank, but reaches lower densities than those recorded on the summit.

Southern flank

The southern flank holds a wide variety of sponge species of varying sizes, in some areas forming dense aggregations. It is particularly important the large number of encrusting sponges found On the rocky outcrops.



Future outcomes

The video images recorded not only will give us the possibility to comprehensively characterize the megafauna associations using fine-scale quantitative data but also provide valuable information on key structural species to determine what constitutes a VME in Condor seamound, information that will also be used to better understand coral and sponge aggregations in offshore seamounts.

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