



Early development of a deep sea volcano offshore Mayotte revealed by seafloor mapping : first results from the MAYOBS cruises

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The early development and growth of seamounts are poorly known as the birth of a volcano on the sea bottom has been rarely observed. The on-going Mayotte seismo-volcanic crisis is associated with the formation of a new seafloor volcano at a water depth of 3300 m and provides the opportunity to study its early development.

Four oceanographic cruises, MAYOBS 1 to 4, were carried out between May and July 2019 aboard the French R/V Marion Dufresne. High resolution bathymetry and backscatter data as well as sub-bottom profiler, gravity and magnetic profiles were collected during each cruise. A dense network of profiles has been achieved over the new volcano at different epochs, allowing to assess its detailed morphology and the evolution through time. During MAYOBS4, a deep-towed underwater camera provided sea bottom videos and photos on the volcano.

First results indicate that the new volcano is still growing at the end of July 2019. Repetitive surveys in May, June and July 2019 allow to document the morphological evolution of the volcano, to estimate the volume of material emplaced between each epoch and to discuss the emitted lava rate.

The new volcano has a starfish shape and is now 820 m high. Steep slopes are observed close to the summit and several radial ridges developed from its central part, displaying hummocky morphology similar to the ones observed along mid oceanic axial volcanic ridges. At the bottom, flat areas with high backscatter could indicate channelized lava flows emplaced at higher effusion rates. The morphological analysis combined with video imagery brings constraints to the eruptive processes yielding to the formation of a nascent volcano.