

Discovery of recent volcanic and tectonic provinces along the Comoros archipelago (North Mozambique Channel) – Preliminary results of the SISMAORE oceanographic cruise (ANR-COYOTES project)

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⁴ <https://anr.fr/Projet-ANR-19-CE31-0018> ; <http://www.geocean.net/coyotes/doku.php?id=start>

A new geophysical and geological dataset, acquired during the SISMAORE oceanographic campaign (2020-2021), reveals a recent tectonic and volcanic deformation distributed over 130km in the abyssal plain that permit to unravel the unconstrained lithospheric plate boundaries between Lwandle and Somalia blocks and the controversial origin of the Comoros Archipelago.

Two recent submarine volcanic and tectonic provinces of 5000km², with a large number of varied volcanic structures and faults, are unveiled: the N160° N'Droudé (north of Grande-Comore) and the N130° Mwezi provinces (north of Anjouan/Mayotte). Dredged Mwezi rocks suggest a recent gas-rich volcanic activity. It is also identified a recent N130° trending volcanic structures (cones, lava flows, eruptive fissures) between Anjouan and Mayotte in agreement with the presence of shallow earthquakes, and also recent lava flows on the southern flanks of the Grande Comore and Moheli. Southwards, recent sedimentation is important with no volcanism and deformation. A consistent sedimentary thickness covers the flanks of Mayotte and Anjouan and the presence of large areas of submarine instability at the foot and on the slope of the islands is confirmed.

These first observations suggest a transtensional deformation, accommodated by dextral strike-slip motion, strongly influenced by pre-existing structuration of the Mesozoic oceanic crust and by the East Africa Rift system. The 130km wide zone of intraplate deformation characterizes an immature lithospheric plate boundary of the north Lwandle block.

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