

# Radiogenic Sr-Nd-Hf-Pb isotopic compositions of submarine volcanic rocks of a Seamount from the Andaman Sea

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One of the most abundant features on the ocean floor is the occurrence of volcanic seamounts. In the Andaman Sea, the Western Andaman Fault (WAF) which lies above the fore arc is connected by a chain of submarine seamounts in the south to subaerial exposed volcanoes of Barren Island (BI) and Narcondom in the north. Isotopically, the rocks of BI and Narcondom were well characterized, but little is known on the submarine portion of the Andaman arc. Using swath bathymetry survey, Kamesh Raju *et al.*[1] have mapped closely spaced twin seamounts near the centre of Nicobar swarm. One of the seamounts (TVG-10, 07° 55'N & 94° 02'E) has a well developed crater (398m depth), with a summit of 1500m below the sea surface. Using a TV guided grab, sampling was carried out within the crater seamount. Here we report the radiogenic Sr, Nd, Hf and Pb isotopic compositions of rocks collected from this crater seamount and compare these isotopic signatures with those subaerial exposed Narcondom and BI volcanoes to constrain possible geodynamic settings.

We analyzed a suite of 8 rock samples for the radiogenic isotopes. As these samples are partly altered, some with a veneer of Fe-Mn oxide coatings, an intense multi-step 6N HCl leaching was performed until the acid was colorless or pale yellow. All isotope measurements were performed on a single aliquot digest using Nu Plasma MC-ICPMS.

Measured isotopic compositions display a range for  $^{87}\text{Sr}/^{86}\text{Sr}$  (0.7046 to 0.7055),  $^{143}\text{Nd}/^{144}\text{Nd}$  (0.51271 to 0.51284),  $^{176}\text{Hf}/^{177}\text{Hf}$  (0.28303 to 0.28216),  $^{206}\text{Pb}/^{204}\text{Pb}$  (18.592 to 18.649),  $^{207}\text{Pb}/^{204}\text{Pb}$  (15.618 to 15.656) and  $^{208}\text{Pb}/^{204}\text{Pb}$  (38.808 to 38.973). Pb isotope data indicate the involvement of Dupal like source with  $\Delta 7/4$  (11-14). When these compositions are compared with prominent BI and Narcondom volcanic compositions, we find a remarkable coherency between the crater seamount and Narcondam but not with the BI. We discuss, on a broad scale the implications of similar isotopic trends and values interms of geodynamic settings.

[1] Kamesh Raju *et al.* (2012) *J Asian Earth Sci.* **56**, 42-53.