

## Calcium isotopic compositions of Indian MORB samples between 18-20°S and its implications

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Comparing with Pacific MORB and Atlantic MORB, Indian MORB is unique because its different trace element and isotopic compositions, which is named as DUPAL anomaly. This anomaly suggests the source of Indian MORB is a contamination of enriched end members. Here we present calcium isotopic composition measurements of Indian MORB samples collected between 18-20°S to further investigate the anomaly and to test the previously postulated contamination of recycled marine sediments with oceanic crust.

$\delta^{44/40}\text{Ca}_{915a}$  of samples (2SD is around 0.10 or 2SE is better than 0.07 for each sample) from the study area range from 0.70 to 0.89, which are lower than the suggest value of the primary mantle ( $1.05\pm 0.04$ ). The variation of  $\delta^{44/40}\text{Ca}_{915a}$  is correlated with Ba/La and  $^{87}\text{Sr}/^{86}\text{Sr}$ , and this could be best explained by adding up 2-4% ancient marine carbonate into the source of Indian MORB.

In addition, based on sample locations, samples in the study area could be divided into two groups, On-Axis and Gasitao, respectively. Gasitao group basalts, which is believed to contain some Reunion-type plume material, have higher  $\delta^{44/40}\text{Ca}_{915a}$  than the On-Axis group. This indicates the source of Indian MORB probably have more contributions from recycled ancient marine carbonate than Reunion-type plume. This could be easier explained as: in subduction zone, more calcium stayed in the upper mantle and joined in the MORB source through mantle convection; less calcium was subducted into lower mantle and went to the OIB source.

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