Evolution of deep-water circulation in the Indian-Atlantic ocean gateway since late Miocene from authigenic neodymium isotope records

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The Agulhas Current is the largest western boundary current in the Southern Hemisphere [1] exporting warm and saline water from tropical Indian Ocean to the Atlantic, thereby playing a vital role in controlling the thermohaline circulation (THC) and global climate. To understand the influence of Aghulhas Current system on Atlantic Meridional Overturning Circulation (AMOC), it is important to understand the past deep-water circulation variability in this region.

Authigenic Neodymium isotope (ε_{Nd}) is a potential proxy to trace past deep water circulation as it is unaffected by any biological and physical processes [2]. In this study, we are reporting the initial data on Nd isotope in foraminiferal shells and fish teeth, hand-picked from the sediment recovered during the IODP Expedition 361 [3] from the Agulhas Plateau (Site U1475). This site is located on the Southwestern flank of Agulhas Plateau (41° 25.61′ S; 25° 15.64′ E) through which North Atlantic deep water (NADW) enters into the southern Indian Ocean and hence is suitable for understanding the variability of NADW export. The ε_{Nd} record will help to elucidate the major changes in the deep-water circulation in the Indian-Atlantic gateway during major climate transitions since late Miocene.

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