

Preliminary Reports of International Ocean Discovery Program Expedition 390 and 393: South Atlantic Transect

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The South Atlantic Transect (SAT) consists of four International Ocean Discovery Program (IODP) expeditions (Exp. 390C, 395E, 390, and 393). Engineering Exp. 390C (October to December 2020) and 395E (April to June 2021) were conducted without a scientific party during the COVID-19 pandemic. Subsequently, IODP Exp. 390 and 393 occurred in 2022 from April to June and June to August, respectively. The SAT expeditions primarily aim to investigate the evolutionary processes of aging oceanic crust, microbial community variation with substrate composition and age, and reconstruct past climate and oceanic changes throughout the Cenozoic. These expeditions almost completely recovered Paleocene to Recent sedimentary successions and the upper oceanic crust from seven sites (U1556–U1561 and U1583) along the western flank of the Mid-Atlantic Ridge at approximately 31°S. The crustal ages encountered at these sites are 7, 15, 31, 49, and 61 Ma. The sediments across all sites, a total of ~2000 m in length, were mainly composed of calcareous nannofossil ooze and clay. In all holes, age models were constructed based on magnetostratigraphy, planktic foraminiferal biostratigraphy, and calcareous nannofossil biostratigraphy. The sediment/basement interface and the uppermost oceanic crust were successfully recovered at most sites, and approximately 500 m basalt cores were collected during these expeditions. Additionally, geophysical wireline logs were obtained at four sites: U1556, U1557, U1560, and U1583. Since the completion of the expeditions, a wealth of multi-disciplinary and collaborative post-expedition studies are being developed to further investigate the scientific objectives of the South Atlantic Transect.

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