ACT is a US-led, NSF-funded project to build a multi-decadal time series of Agulhas Current volume transport. The strength of the Agulhas Current and its leakage into the Atlantic Ocean have been tied to a number of climatic processes, such as African rainfall, the Indian Ocean Dipole mode and heat budget, Southern Hemisphere winds, and the Atlantic overturning circulation. A three-year time series of Agulhas Current variability is being collected from a moored array of instruments across the Current and along a TOPEX/Jason altimeter ground track. These measurements will be correlated with patterns of along-track sea surface height variability to produce a proxy (or index) for Agulhas Current transport extending over two decades.

Preliminary results from hydrographic measurements obtained during the first ACT cruise in April 2010 show that the Agulhas Current was under the influence of a solitary meander. The core of the Current was pushed approximately 140 km offshore into waters of 3000 m depth. Northeastward flow within the system, normally restricted to below 800 m in the Agulhas Undercurrent, strengthened and outcropped at the surface inshore of the Current during the meander passage. Sea surface temperature images confirm that a meander of approximately 100 km diameter was being advected across the mooring line at 15 km/day. The change in southwestward transport of the Agulhas Current was negligible as the meander passed, but the fluctuating northeastward flow changed the Eulerian transport across the ACT line from 80 to 110 Sv.