



Oceanic gateways in between Weddell and Scotia seas: tectonic development and global influence

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The development of the Scotia Arc since the Oligocene between the major South America and Antarctic plates constitutes the main recent tectonic structural event in Southern Atlantic. The southern branch of the Scotia Arc corresponds to a complex plate boundary formed by an array of submerged continental banks and small basins that represents part of the former continental connection between South America and the Antarctic Peninsula. This continental barrier separates the oceanic domains of the Scotia and Antarctic plates and is the main obstacle for the Weddell Sea Bottom Water (WSBW) northwards migration to the Scotia Sea where interacts with Antarctic Circumpolar current (Maldonado et al., 2003, 2004). For this reason, the basins developed in between the banks constitute the most important gateways between Weddell and Scotia Seas. In order to constrain the nature, tectonic structure and age of the basins, we have analysed Seismic Multichannel profiles, gravity, magnetics and bathymetric data from several cruises. The basins constitute the link in between Weddell and Scotia Seas and they were developed by different tectonic mechanisms and in a temporal sequence from 28 Ma to recent. Ona, Protector, Dove and Scan oceanic basins are developed in southern Scotia Sea by the eastwards migration of continental blocks from 30 to 10 Ma. The northern Weddell Sea basins, Powell and Jane basins were developed in relation the South Orkney Microcontinent eastward migration and the Weddell Sea oceanic crust subduction (28 to 14 Ma). Moreover, several small basins have been developed in a stretched continental crust (inside Discovery Bank and Western South

Scotia Ridge) related to present day sinistral transcurrent plate boundary.

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