

**Study of the Separation between Antarctica and South America:  
its geological and biological implications (SEASOAM)**

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A detailed knowledge of Antarctica's past and present status is globally significant for predicting how its future may affect the Earth's System. Comparisons between Antarctica and other fragments of Gondwana, the study of climate change, and anthropogenic influences to the Antarctic environment are critical for understanding the evolution and present biological community structures in Antarctica, and their connexions with the biota outside the polar front. The ultimate separation of Antarctica from South America happened during the Oligocene, and was responsible for the Antarctic isolation, northward flow of the AABW, formation of the Southern Ocean, and existence of numerous unique geological processes observed along the northern end of the Antarctic Peninsula (e.g. an active spreading centre in the Bransfield Strait, ridge trench collision and gas hydrates on modern sediments). The combination of isolation and climate change has led to an Antarctic biota rich in endemic taxa, and a strong contrast between marine, terrestrial, and limnetic biotas. In cooperation with other countries, the Brazilian Antarctic Programme proposes to act in two phases: 1) allowing the continuity of relevant research that investigate signals of global and regional changes in Antarctica, also gathering all available metadata collected through the programme into a format that can be linked to major world databases; and 2) an exploring phase integrating geophysics, geosciences and life sciences. The latter shall contribute to the following: A. Study the timing of separation between South America and Antarctica and the creation of the AABW; opening of the Drake Passage, and implications for faunal distribution across continents (past and present). Sediment deposited along the South American margin will be used in this study, and the impact of the AABW will be investigated through microfossils present in the sediments. B. Study the timing of the opening of the Bransfield Basin using stratigraphy observed in some of the islands, seismic profiles, and other geophysical tools. The precise time of opening may bear direct correlation with the final separation of Antarctica. C. Study the consequences for marine, terrestrial and limnetic ecosystems function of the Antarctic separation and the impact of past, current and predicted environmental change on biodiversity. Study the nature and extent to which interactions between changing abiotic conditions change biotic responses. D. Sample across the Bransfield Strait spreading axis, which is tectonically active and has an expressive bathymetric range, and explore patterns of gene flow along its bathymetric range.