

Evolution of Accretionary Complexes in the Antarctic Peninsula Region

TROUW, R.A.J., RIBEIRO, A. and PACIULLO, F.V.P. Federal University of Rio de Janeiro, Brazil.

Metamorphic successions with a large proportion of ocean floor material, named the Scotia metamorphic complex, have been interpreted as representing accretionary complexes, related to the Mesozoic-Cenozoic Antarctic Peninsula magmatic arc. According to metamorphic age three units can be identified: the South Orkney Islands with ages of 180-200 Ma, the Elephant Island group with ages in the range 90-110 Ma, and Smith Island with ages around 50 Ma. These units show similar deformational structures although with different orientation. A first deformation phase, D1, associated with the growth of relatively high pressure metamorphic minerals, including blue amphibole, records southward subduction with respect to the present geographic position of these islands. A second phase appears to represent collision with an ocean plateau or sea-mount, resulting in intense refolding of D1 structures, with a sinistral strike-slip component at Elephant Island. These local collisions seem to have provided suitable conditions for preservation. Metamorphic conditions during D2 are at higher temperature but lower pressure as compared to D1. Later structures, labelled D3, are related to heterogeneous uplift and regional rotation, under declining metamorphic conditions.

The deformation and metamorphism of the Trinity Peninsula Group and correlatives, composed of ?Permo-Triassic turbidite successions, show several features similar to the Scotia metamorphic complex. Although these were deposited along an inactive continental margin they were later involved in accretionary wedge deformation as testified by their structural style.