



## **The Ross - Delamerian Orogeny: a Cambrian belt along the paleo-pacific convergent margin of Gondwana**

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In Cambrian time the paleo-Pacific margin of the Gondwana supercontinent included East Antarctica, Australia, Tasmania and New Zealand and was affected by a major mountain building process that produced the Ross - Delamerian orogen. Although there is general agreement about the former continuity of the different sectors of the chain, contrasting tectonic reconstructions have often been proposed to explain the tectonic evolution in each sector. The main differences are related to the subduction vergence and to the presence of separate terranes, or island arcs, colliding with the continental margin (e.g. Kleinschmidt and Tessensohn, 1987, Weaver et al., 1984; Ferraccioli et al., 2002; Münker & Crawford, 2000; Meffre et al., 2000).

Evidence exists that Ross orogeny in northern Victoria Land (Antarctica) resulted from the oblique subduction of the Pacific plate under the Gondwana margin, accompanied by the opening (and subsequent subduction) of a back-arc basin (Federico et al., accepted).

By means of comparisons between type and timing of sedimentological, magmatic and tectonic events in SE-Australia, New Zealand and Tasmania, we were able to recognize the strong similarities between Cambrian tectonics in northern Victoria Land and New Zealand. In both cases the Middle Cambrian volcanites of the Glasgow Formation (northern Victoria Land) and of the Devil River Group (New Zealand) can be interpreted as an arc/back-arc association produced by a westward subduction. Conversely, the SE-Australian and Tasman sector of the margin were affected by an eastward subduction event, which in the Middle Cambrian had already brought to the arc-continent collision. This reconstruction also takes into account substantial temporal differences in the major tectonic events in the two sectors of the margin: in Tasmania

and SE-Australia the principal orogenic pulse corresponds to arc-continent collision and obduction of a mafic/ultramafic nappe in the mid-Middle Cambrian (Meffre et al., 2000); in northern Victoria Land the main Ross tectonic event is constrained by eclogite metamorphism in the early Late Cambrian (Di Vincenzo et al., 1997);

in New Zealand the principal orogenic pulse is marked by the formation of the Balloon Mélange, which cuts Cambrian rocks but no Ordovician rocks and therefore can be placed in the Late Cambrian (Münker & Crawford, 2000).

It follows a re-interpretation of the tectonic setting of the Pacific margin of Gondwana during the Cambrian in the framework of two opposite-dipping subductions separated by a major transfer zone.

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