Geophysical Research Abstracts,
Vol. 10, EGU2008-A-03735, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-03735
EGU General Assembly 2008

The Cambrian to Present long lasting memory of mechanical weakness along continentally-sized shear zones in Victoria Land, Antarctica

F. Storti, F. Balsamo, F. Rossetti, F. Salvini
Universita' Roma Tre, Roma, Italy, (storti@uniroma3.it / Fax: +39 0657338201)

The northeastern edge of the Antarctic plate is characterized by an impressive array of intraplate strike-slip deformation belts that originate at the mid oceanic ridge in the Southern Ocean and terminate by transtensional horsetail splaying in the Ross Sea, within the Antarctic plate. At present, this is the best documented example of the intraplate termination of transform shear, a major update to "conventional plate tectonics". Development of this strike-slip deformation belt array in Cenozoic times was made possible by exploiting the complex tectonic architecture inherited from Early Paleozoic orogenic deformations, and from subsequent Mesozoic wide rifting in the Ross Sea. In particular, segments of some of the major strike-slip deformation belts initially originated as contractional shear zones during the Early Cambrian Ross Orogeny and the late orogenic magmatism of the Granite Harbour intrusive, with shearing outlasting pluton emplacement. The southeasternmost segments of the post-granitisation remnants of these shear zones were able to localize transfer faulting during the Mesozoic rifting event. The entire continental segments of the major Cambrian shear zones and related Mesozoic transfer fault zones were then re-activated as Cenozoic right-lateral strike-slip fault systems during the post-rift shearing of the Southern Ocean Antarctic passive margin. All this episodic re-activation history indicates that, once formed, crustal shear zones can maintain over a very long timescale their mechanical influence as weakness belts relative to their surrounding wall rocks.