



MAGM-1: Arcos magmáticos fanerozoicos

Devonian geotectonic environments along the Chilean portion of the Gondwana continental margin

Francisco Hervé^{2,1}, Mauricio Calderon^{5,6,7,3,4}, Paulo Quezada⁴, Carlos Rapela⁶, Robert Pankhurst⁵, Mark Fanning³.

(1) Universidad Andrés Bello

(2) Universidad de Chile

(3) Australian National University, Australia

(4) Seremi de Minería Region de Aysen, Chile

(5) British Geological Survey, UK

(6) Universidad Nacional de la Plata, Argentina

(7) Carrera de Geología, Ingeniería, Universidad Andrés Bello, Santiago, Chile

The Devonian continental margin of Gondwana as evidenced in Chile is highly variable. A northern portion is characterized by faint magmatic activity in what appears to have been a passive margin with the development of sedimentary basins with clastic infills mainly west of an eroding Ordovician magmatic arc built on the late – Proterozoic crust of the Arequipa – Antofalla (or MARA) terrane. Between 28° and 38°S (present coordinates), the Chilenia terrane was accreted to Gondwana during the Devonian, with the suture zone located east of the present Andes. The collision was accompanied by localized magmatic activity in Argentina. An accretionary prism started to evolve on Chilenia's trailing edge and continued through Carboniferous and Permian times. South of Chilenia, two subduction-related magmatic arcs developed, the eastern over the continental margin of Gondwana (Patagonia?) and the western one, Chaitenia, in oceanic crust, later accreted to Gondwana in pre-Triassic times. No outcrops of igneous Devonian rocks are known south of 45°S near the present day continental margin, but Devonian igneous zircons are well represented in some of the "basement" complexes in western Patagonia, and they may well derive from Devonian intrusives in the Deseado massif in eastern Patagonia. The observed large-scale variations in the tectonic environments along the continental margin of Gondwana are probably caused by varying subduction parameters of the Panthalassa lithosphere under the SW margin of Gondwana.