On the tectonic framework of Quaternary Rhyolitic Fields in the Central Chilean Andes (35.5-36.8 S)

GODOY, E. Servicio Nacional de Geología y Minería, Santiago, Chile.

The Calabozos Caldera, together with the Puelche, Laguna del Maule and Domuyo lava fields, all located in the western half of the Neuquén Miocene fold and thrust belt, represent the only known large clusters of Quaternary rhyolitic magmatism in the Andean Southern Volcanic Zone. These voluminous intra-arc ignimbrite and rhyolite flows, erupted between two Late Eocene to Early Miocene intra-arc extensional basins. The southern one (Cura Mallín Basin), is developed mainly east, close to the continental divide and shows only widespread minor folding. The northern basin (Coya-Machalí), whose bimodal to andesitic volcanoclastics bear a thinned-crust geochemical signature, crops out only west of the divide instead and was tightly folded along its partly lacustrine sedimentary rich margins during Late Miocene inversion. Inversion took place in two stages : uplift prevailed during construction of a superimposed Miocene arc (Farellones Formation), which was followed by mainly eastward tectonic transport linked to out-of-sequence thrusting. This greater shortening north of 35.5 S is also reflected in crustal thickening, as well as progressive eastward migration of both the trench and the volcanic arc. It is proposed that restriction of voluminous Quaternary rhyolitic extrusives to the latitudes here considered may be related to yet poorly understood favourable intra-arc extensional conditions for crustal melting and emplacement of the silicic magmas at a late stage accommodation to these along-strike changes in the orogen.