



Cities on Volcanoes 9  
November 20-25, 2016  
Puerto Varas, Chile

*'Understanding volcanoes and society: the key for risk mitigation'*



## **Cerro Barrancas: a highly productive and hazardous eruptive center in the Laguna del Maule volcanic field, Chile**

Patricia Sruoga<sup>1</sup>, Manuela Elissondo<sup>2</sup>, Judy Fierstein<sup>3</sup>, Nathan Andersen<sup>4</sup>, Alejandra Arboleya<sup>5</sup>

<sup>1</sup>CONICET-SEGEMAR, Buenos Aires, Argentina. patysruoga@gmail.com

<sup>2</sup>SEGEMAR, Buenos Aires, Argentina.

<sup>3</sup>USGS, Menlo Park, CA, USA

<sup>4</sup>Department of Geoscience, University of Wisconsin–Madison, USA <sup>5</sup>Universidad de Buenos Aires, Argentina

Keywords: Barrancas, Laguna del Maule, rhyolite domes, pyroclastic flows

The postglacial record of the Laguna del Maule Volcanic Field (LMVF) (36° 10'S, 70° 30' W) includes rhyolite and rhyodacite lava flows, domes, tephra falls and pyroclastic flows related to 24 vents. Ongoing uplift of >20 cm/year since 2007 makes unraveling its eruptive history imperative in a hazard assessment. The Barrancas center in the southeastern part of LMVF has been an especially productive and long-lived vent complex. Much of its ~5.5 km<sup>3</sup> postglacial eruptive volume is preserved in the headwaters of Río Barrancas, Argentina. Detailed mapping, combined with petrographic, grain-size, textural and geochemical analyses, reveal two overlapping edifices, each with multi-stage growth: Edifice 1 began 14.5 ka with an early episode of dome building. A subsequent explosive event and partial dome collapse produced block-rich pyroclastic flows that traveled ~13 km from source, filled the upper Barrancas valley with deposits ~60 m thick and created the plateau called Pampa del Rayo. Edifice 2 was built by sequences of explosive and effusive events, ultimately producing 8 obsidian flows and 3 pumice cones. One of the lava flows has been dated at 5.6 ka. Edifice 2 tephra falls and pyroclastic flows made a quickly thinning pyroclastic wedge on top of the older block-rich deposit from Edifice 1. Fall deposits from other LMVF vents underlie, overlie, and are intercalated within the Edifice 2 pyroclastic sequence. Ongoing tephrochronology studies and Ar/Ar dating will undoubtedly improve our understanding of this volcano which—if it were to erupt again—could have widespread effects in Chile and Argentina, particularly in southern Mendoza and northern Neuquen provinces.