



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

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



## **Post-glacial record of significant ashfall events in extra Andean Northern Patagonia, Argentina**

**Villarosa Gustavo<sup>1,2</sup>, Outes Valeria<sup>1</sup>, Brent Alloway<sup>3</sup>, Patricio Moreno<sup>4</sup>, Virginia Iglesias<sup>5</sup> and Cathy Whitlock<sup>6</sup>**

<sup>1</sup>IPATEC, UNCo-CONICET Bariloche, Argentina

<sup>2</sup>Univ. Nac. del Comahue, Argentina

<sup>3</sup>U. of Auckland, NZ

<sup>4</sup>U. de Chile, Chile

<sup>5</sup>U. Franche-Comté, France

<sup>6</sup>Montana State U., USA

Key words: Tephrochronology, Chaitén volcano, lacustrine records, ashfall events, postglacial eruptions

A necessary first step to evaluate volcanic hazards in Patagonia is to reconstruct the history of explosive volcanic events that have affected this region. Significant ashfall events are well preserved in lake sediments of the arid environments of the Patagonian steppe, east of the Andes. We studied four lake sediment cores and soil records in sites around 43° S. Bayesian chronological models were developed for calibrated tephra dating. A 10cm-thick tephra was deposited soon after 17,900 yr BP in Cóndor lake (Con) area. This tephra is present in Theobald lake (Th) and exposed near Laguna La Zeta (LZ). Petrographical and geochemical data suggests it may be derived from a significant eruption of Michinmahuida volcano. Six rhyolitic tephtras from Chaitén volcano are identified in Mosquito lake (Mos), LZ, Th and LC. Two tephtras were dated at 10,500 yr BP and 9700 yr BP. The second one, reaching up to 16 cm thick, represents the most important Chaitén event in the area. Two thick (>2cm) tephtras identified in Mos, Con and Th cores were dated at 7760 yr BP, and 5450 yr BP, representing another two major Chaitén explosive events. Two eruptions previous to the 2008 event were dated at 420 cal yr BP, 530 to 478 yr B.P. Tephra derived from the 2008 Chaitén eruption in all these lakes shows a maximum thickness of ~2cm. Both thickness and dispersion range of the identified major tephtras indicate that the 2008 eruption cannot be considered the largest Holocene eruptive event from Chaitén volcano.