



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

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



Short and long-term impact associated with volcanic ash: the case of Ingeniero Jacobacci, Patagonia, Argentina.

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Key Words: ash, volcanic impact, resuspension, vulnerability, Cordon Caulle

Tephra fallout is one of the most dispersed hazards of volcanic eruptions in terms of space and time. Although tephra fallout does not represent a direct threat for human life, it can generate important impacts on health, animal and plant life, as well as severe disruptions to critical infrastructure systems across large geographic areas. Besides, even small to moderate eruptions can produce sufficient material that, combined with particular climatic conditions, can generate secondary hazards such as resuspension of ash which persists over time. The holistic structure of the exposed societies in terms of their political, territorial, economic and social aspects, is fundamental to thoroughly understand the impact due to these hazards that occur over multiple temporal and spatial scales. This is the case of the impact associated with the 2011 long-lasting eruption of the Cordon Caulle volcano (CC). This eruption started on June 4th producing 11-14 km high plumes, dispersed mostly to the SE due to prevailing wind patterns and significantly affected the towns of Villa La Angostura, Bariloche and Ingeniero Jacobacci. While the climactic phase of the eruption lasted only a few days, the fine ash accumulated on the ground surface combined with strong winds, particularly in the area of Ingeniero Jacobacci (IJ), generated the remobilization of ash during the eruption and even up to now. The effects of the primary and secondary fine ash in both urban and rural areas of IJ produced significant physical impacts (e.g. death of animals) but also important cascade effects affecting the functionality of the various exposed systems (e.g. road closure due to poor visibility). The CC eruption impact analysis demonstrates the complex interaction between volcanic hazards and the vulnerability of the surrounding societies, providing an opportunity to gather fundamental insights into their respective contributions to short- and long-term volcanic risk assessment.