Pino Hachado is a well-known Pleistocene caldera structure located in the southern Andes of Chile and Argentina at ca. 700 km SE of Santiago, within the main active volcanic chain of the Andes. The geology of the area is mainly formed by basaltic to andesitic lavas that form the caldera walls and scarce pyroclastic deposits in the surroundings of the structure. The caldera is also located within the influence area of a major tectonic feature, the Liquiñe-Ofqui Fault System.

New studies carried out in recent years have revealed that the volcanic history in the area is much more complex, and includes within the caldera depression a series of subglacial eruptive products, as well as amphibole-rich dacitic domes, uncommon in the Southern Volcanic Zone. The subglacial products include hackle-jointed basaltic lavas, mixed pyroclastic and fluvio-glacial deposits, and a major volcanic center formed by hialoclastite pyroclastic deposits, which shows on its base a transitional contact from glacial deposits. The distribution and type of products indicates a complex history in the area, suggesting that the initial caldera depression was filled by ice/lake during the Middle Pleistocene while bimodal magmas (basaltic andesite and dacite) were erupting and interacting with the ice and lake within the caldera. Postglacial volcanism is represented by a series of subaerial dacitic domes. Then the caldera depression has suffered a series of partial collapses on its walls leading to its current morphology. This research has been partially funded by UBA (CT) and Fondecyt projects 1040535 and 1090387 (AR, JC).