



## Late Pleistocene and Holocene activity of the Atacazo–Ninahuilca Volcanic Complex (Ecuador)

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### Abstract

The Atacazo–Ninahuilca Volcanic Complex (ANVC) is located in the Western Cordillera of Ecuador, 10 km southwest of Quito. At least six periods of Pleistocene to Holocene activity (N1 to N6) have been preserved in the geologic record as tephra fallouts and pyroclastic flow deposits. New field data, including petrographic and whole-rock geochemical analyses of over forty soil and tephra sections, 100 pumice and lithic samples, and 10 new <sup>14</sup>C ages allow us to constrain: (1) the tephra fall isopachs and detailed characteristics of the last two events (N5–N6) including volume estimates of the tephra and pyroclastic flow deposits and the corresponding volcanic explosivity index (VEI); (2) the petrographical and geochemical correlations between domes, tephras, and pyroclastic flow deposits; and, (3) the timing of the last 4 eruptive events and a period of quiescence that endured a few thousand years (1000–4000).

The last two eruptive events (N5 and N6) took place at around  $4400 \pm 35$  yr BP and  $2270 \pm 15$  yr BP, producing huge plinian and pyroclastic flow deposits. Taking into account the widely spread deposits of these VEI 5 eruptions, the present population of about 70 000 people, and the current infrastructure; the development of mitigation plans and deployment of monitoring systems at ANVC is highly recommended.

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