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Late Holocene eruptive activity at Nevado Cayambe Volcano, Ecuador

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Abstract

Four Late Holocene pyroclastic units composed of block and ash flows, surges, ashfalls of silicic andesite and dacite composition, and associated lahar deposits represent the recent products emitted by domes on the upper part of Nevado Cayambe, a large ice-capped volcano 60 km northeast of Quito. These units are correlated stratigraphically with fallout deposits (ash and lapilli) exposed in a peat bog. Based on 14C dating of the peat and charcoal, the following ages were obtained: ~910 years BP for the oldest unit, 680–650 years BP for the second, and 400–360 years BP for the two youngest units. Moreover, the detailed tephrochronology observed in the peat bog and in other sections implies at least 21 volcanic events during the last 4000 years, comprising three principal eruptive phases of activity that are ~300, 800, and 900 years in duration and separated by repose intervals of 600–1000 years. The last phase, to which the four pyroclastic units belong, has probably not ended, as suggested by an eruption in 1785–1786. Thus, Cayambe, previously thought to have been dormant for a long time, should be considered active and potentially dangerous to the nearby population of the Interandean Valley.

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