

**Active tectonics around the Cusco City, Perú:
Record of earthquakes in the last 14,000 years, from
paleoseismological data**

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The city of Cusco in Peru was hit by several strong earthquakes in historical times (Silgado, 1978), but the seismogenic source of these earthquakes are yet unknown. Cusco is surrounded by geological faults with evidence of Quaternary tectonic activity (Sébrier et al., 1985; Cabrera, 1988; Mercier et al., 1992; Benavente et al., 2013), but there is not enough data to establish a history of fault reactivations and the seismogenic potential of each one these structures.

The Tambomachay Fault is the closest to the city of Cusco (~4 km). The NW sector has a well-preserved morphology. In this sector, we observe 14,000-year-old lateral moraines dated from cosmogenic nuclide ¹⁰Be, that show normal type fault displacements. This make this sector a prime target for paleoseismology studies.

Our paleoseismological results with the ages obtained from dating C14, suggest that the Tambomachay Fault generated at least four seismic events, with surface ruptures, in the last 14,000 years. Using empirical relationships, we conclude that the Tambomachay Fault is capable of generating earthquakes with magnitudes greater than 6.7Mw, putting at high risk the inhabitants of the city and the archaeological remains declared as world heritage by the UNESCO.

In addition, the last seismic event, dated between 856-988 cal AD, coincides with the abandonment of the citadel of Pikillacta by the Wari culture (McEwan, 2015), pre-Inca culture located to the south of the city of Cusco and adjacent to Tambomachay Fault.