

Lonnie G. Thompson

Thompson, Lonnie G. (1948-) is an important figure in the history of water because as a glaciologist he has targeted the long-neglected ice fields of the tropics. His work provides critical information which illuminates some of environmental causality behind the life cycles of prehistoric and historic civilizations. In 2001, because of his innovative work, Thompson was named by CNN and *Time* magazine as one of America's best scientists (see Photo 1).



Photo 1. Ohio State University researcher Lonnie Thompson (right) discussing his ice cap research with CNN reporter.

Born in 1948, Thompson grew up in rural Gassaway, West Virginia, and he views his family's struggle to eke out an existence on a small farm as a source of personal strength. Among other things, that strength has helped inure him to the physical hardships--frostbite, altitude sickness, barely palatable food--that he routinely endures during his field work.

Thompson won a scholarship to West Virginia's Marshall University, majored in geology, then enrolled at Ohio State with the intention of becoming a coal geologist. But while working on his master's degree, he took a research job that put him in contact with the first ice core ever retrieved from Antarctica. To his surprise, he developed an interest in reconstructing Earth's climatological history from the dust particles, pollen grains and subtle geoclimatical shifts trapped in the core's layers.

This interest has lead Thompson to collect and interpret a varied assortment glacial records. Recently he studied the snow-clad ice fields of Kilimanjaro and the ice pack of the Himalayas. In the 1980s he worked on the Quelccaya ice cap in southern Peru, reconstructing a 1,500-year sequence of swings from wet to dry that eerily track the rise and fall of ancient adjacent civilizations (ie. Tiwanaku).

The Quelccaya ice cap is located in the Cordillera Oriental mountain range approximately 200 km northwest of Lake Titicaca (see Fig. 1). During the 1980s, Thompson and his colleagues drilled and analyzed cores from the ice cap. Their work has provided a record of the climate dating from 500 AD to 1984 AD (see Fig. 2). Like layers in a cake, each slab of the ice reveals yearly accumulations of ice along with dust particles and oxygen isotopes. A layer's thickness represents yearly precipitation. The oxygen isotope is a guide to temperature. Dust from parched agricultural fields is blown by the wind, some of it settling on the glacier.

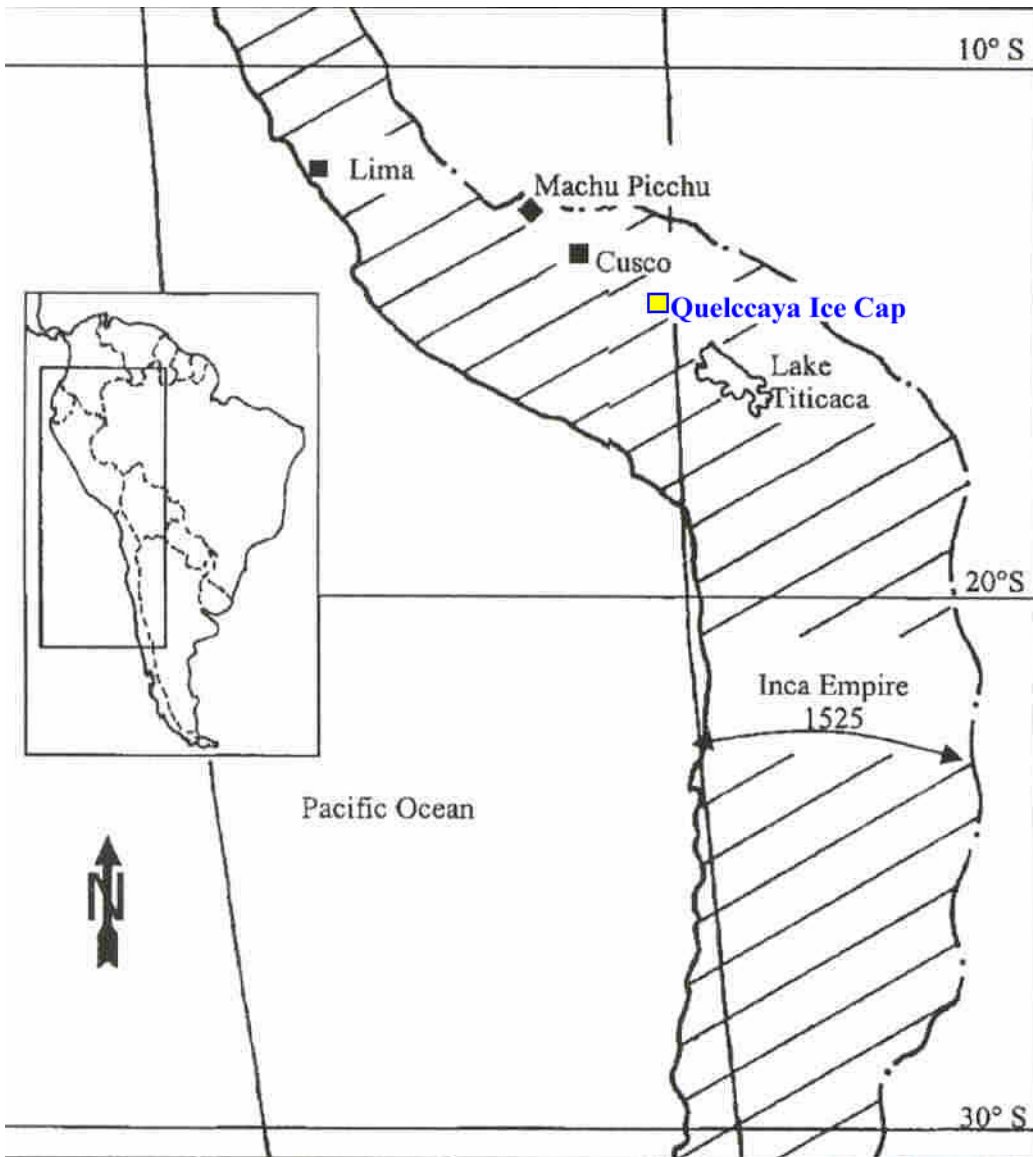


Fig. 1. Map showing the location of Quelccaya ice cap, located midway between Cusco and Lake Titicaca.

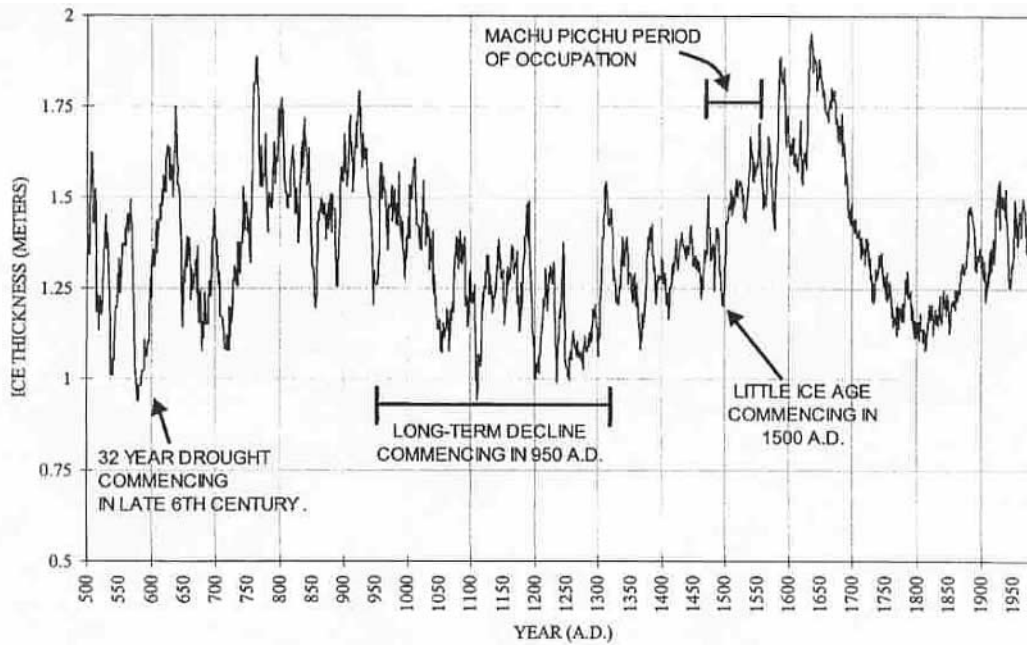


Fig. 2. Quelccaya Ice Cap record illustrated as 10-year moving average for 500-1984 A.D. period.

In recent years, Thompson has been consumed not only with the dramatic shift that has occurred in the distant past but also by those that are so clearly taking place now. In 2001, Thompson unveiled compelling evidence that ice across the tropics is disappearing at an unprecedented rate. Kilimanjaro, he reported, has 80% less ice cover today than it did in 1912; a third of that loss has happened within the last decade. The Quelccaya ice cap is also receding at an alarming clip and may disappear entirely by 2020.

Sources: Nash, J. Madeleine, 2001. "The Iceman", *Time*, August 20, pp. 42-43.

Thompson, L. G., et al., 1989. "A 1500-year record of tropical precipitation in ice cores from the Quelccaya ice cap, Peru," *Science*, 229 (4717), pp. 971-973.