

ORIGIN OF GLACIER CAVES IN THE QUELCCAYA ICE CAP, PERU*

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INTRODUCTION

IN JULY 1974, 1976 and 1977, and January 1977, the first author observed several types of glacier caves in the Quelccaya Ice Cap, south central Andes, Peru during glaciological field work conducted under a cooperative program between the Institute of Polar Studies and the Peruvian Institute of Geology and Mining. The main objective of this research project is the development of a paleoclimatic record for an equatorial glacier (Thompson and Dansgaard, 1975), in a fashion similar to that previously accomplished for Greenland and for Antarctica

ABSTRACT

The 5645 m-high Quelccaya Ice Cap of the Cordillera Oriental contains both obstruction- and crevasse-type glacier caves in several outlet glaciers. Reconnaissance observations on the obstruction caves, produced by deformation of ice around obstructions in the bed of the glacier, indicate that two distinct forms occur: (1) single passages parallel to the ice-flow direction with a bedrock protuberance or boulder at the head, and (2) single passages perpendicular to ice flow and formed in the lee of bedrock ledges. The crevasse-type caves form from crevasse-wall collapse and roofing by snow and firn; they may occur at all angles to glacier flow. Speleothems observed in the caves include stalactites, stalagmites, columns, and cave coral; cave ceilings are usually fluted or striated.

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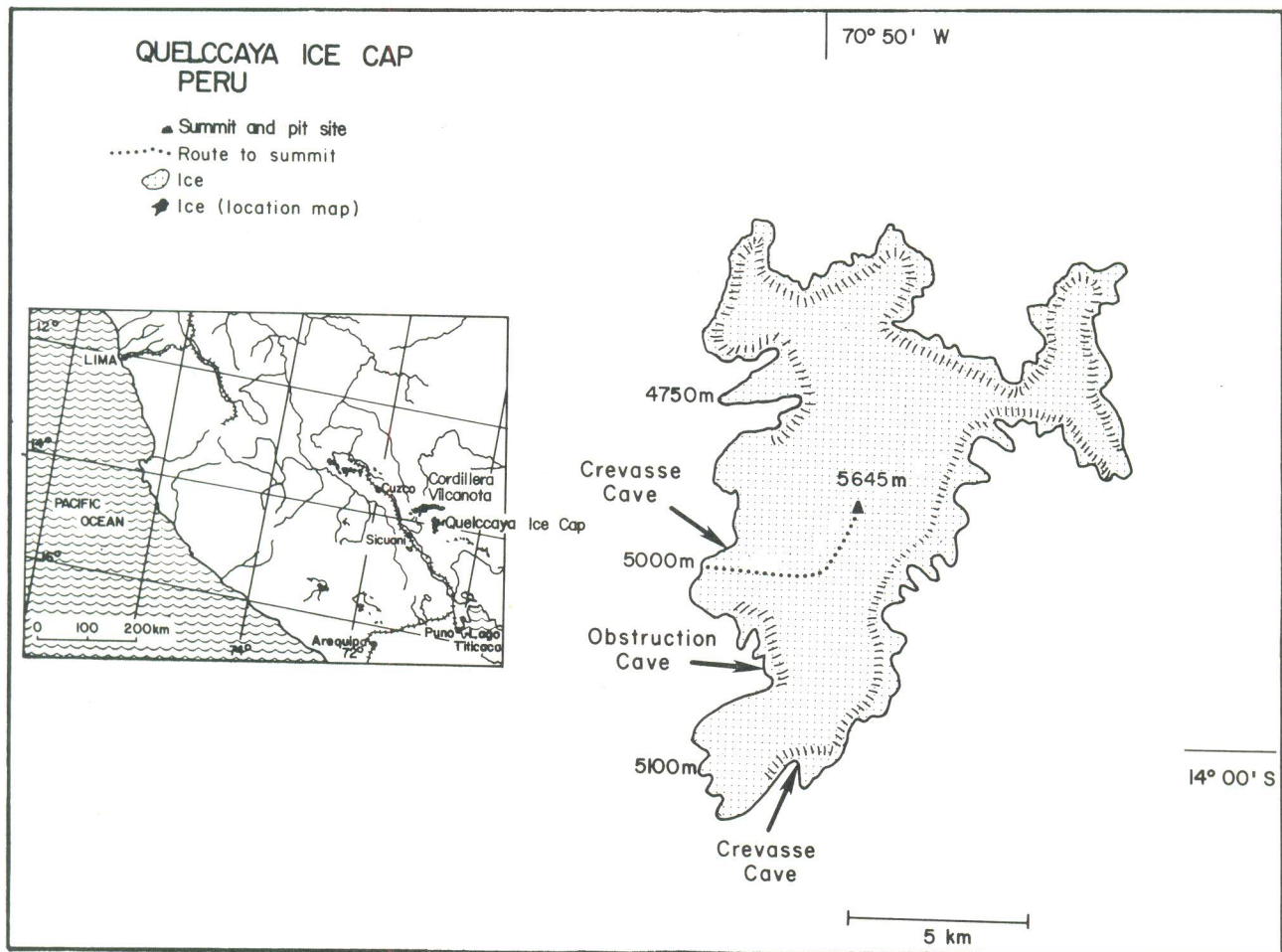


Figure 1. Map of Quelccaya Ice Cap, showing locations of some of the glacier caves.

