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## Glaciation Of Mount Kinabalu

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### ABSTRACT

Mount Kinabalu (13,455') in Sabah, the highest point in the Sunda area, is comparable in height to other tropical mountains which were glaciated in Pleistocene. Kinabalu has been referred to as glaciated by Bowman (1916) and Bowen and Wright (1957), but no description of its glacial features has appeared.

Examination of the bare granodiorite summit area of the mountain (above about 11,000') reveals convincing evidence of geologically recent glacial action. The general morphology of the summit area includes smooth, abraded, debris-free slopes and bowls; steep, craggy peaks and pinnacles; and some U-shaped passages leading off the summit between peaks. These features terminate, often abruptly, at elevations around 12,000'. Ice-produced surficial markings and small-scale features are preserved locally on the abraded summit surface. These include glacial polish, concentric cracks, concentric gouges, plucking cracks, and rectilinear glacial grooves.

The general summit morphology argues for considerable glacial erosion on Mount Kinabalu, while the poor preservation of glacial markings and the rarity of probable morainal material suggest only mild or fleeting glaciation. A solution to this apparent contradiction may be the possibility that Kinabalu has been glaciated more than once during the Pleistocene, and that most glacial erosion occurred before the most recent (Wisconsin?) period of ice cover.

**DISCUSSION:** The absence of moraines on Kinabalu was discussed. The speaker pointed out that although none had been observed in the field, B. N. Koopmans had since identified two probable moraines from air photographs. It seemed likely that other morainal accumulations had been removed by mass movements on the steep slopes. The boulder deposits of the Pinosuk Plateau were mentioned, but the speaker said they were at too low an elevation to be moraines.

W. Meijer asked about the snowline during the glaciation. The speaker said that it seems to have been at about 12,000' on Kinabalu. Meijer added that the vegetation zones of Southeast Asia indicated a temperature not lower than 45°F since the Tertiary.