Glacial geomorphology of the Haizishan area, SE Tibetan Plateau

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The Haizishan area of the SE Tibetan Plateau has an ice sheet style glacial landscape that contrasts with the mountain glacial landscape found across much of the Tibetan Plateau. It's a relatively low relief high plateau (c. 4600 ~5200 m a.s.l.) surrounded by steep fluvial valleys. Glacial deposits and erosive imprints are widely distributed indicating former glacier expansions across a presently ice-free area. Glacial landforms mapped using remote sensing and field investigations show well preserved moraine complexes and discontinuous glacial deposits outside the plateau that mark the extent of the paleo ice caps. U-shaped valleys without cirques at the head are cut deeply into the margin of the plateau and represent the locations of past outlet glaciers. Extensive areas of areal scouring occur on the plateau surface, but there is also a central area with preserved saprolites suggesting limited erosion associated with a cold based region of the paleo ice sheet. Overall the landscape pattern is consistent with models of glacial landform zonation under ice sheets; however multiple glaciations have produced a complex pattern of erosion and deposition across the area. Cosmogenic nuclide exposure duration data for boulder and bedrock samples suggest glacial stages around 21-23, 120-130, and 160-200 ka, while differences between exposure durations for adjacent bedrock and boulder samples provide insight in to patterns and magnitudes of glacial erosion produced by several stages of past glaciation.

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