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Explanation

Recent

Alaskan Glaciation

Qat — Tunnel advance
Well-defined moraines in cirques and near the ice margins of modern glaciers; not modified by erosion; no vegetation; locally end moraine of two advances present

Qatu — Tustumena advance
Well-defined moraines generally less than one mile from cirques or glacier margin; only slight modification by erosion; locally end moraine of three advances

Qao — Outwash and valley train graded to moraine of the Alaskan Glaciation

Qal | Qf — Flood plains and alluvial fans
Qal, flood plains and associated low terraces along streams; terraces generally unpaired; fine sand to boulders
Qf, alluvial fans and talus cones

Qbl | Qbm — Beach deposits
Qbl, lake beach deposits, primarily fine sand to gravel; mainly confined to Iliamna and other large lakes
Qbm, marine beach deposits, mainly rock with minor sand

Qls — Sand dunes
Fine, wind-blown sand in dunes 8 to 8 feet high of moppable size only at west end of Iliamna Lake, but present elsewhere around Iliamna and Kukaklek Lakes

Qts — Stream terrace deposits
High-level terrace gravels 10 to 40 feet above wide valley flood plains; both paired and unpaired terraces

Qtl | Qtm — Terrace and beach ridge deposits
Qtl, high-level lake terraces and beach ridges, mainly sand and gravel; well-developed on Iliamna, Kukaklek, and Nonvianuk Lakes; at least four levels on Iliamna Lake; highest about 100 feet above present lake level
Qtm, high marine terraces and beach ridges; mainly gravel; range from 50 to 100 feet above sea level

Qlb | Qmb — Lake bed and salt marsh deposits
Qlb, high lake bed deposits, mainly silt; formed below highest lake terrace and beach ridge
Qmb, elevated tidal flat and salt marsh deposits, mainly silt and clay, generally below 50 feet above sea level

Qc — Colluvial deposits
Landslide debris, talus, and locally glacial drift; mainly coarse rock fragments

Pleistocene

Brooks Lake Glaciation (Wisconsin)

Qmb⁴ — Brooks Lake Four
Iliuk advance - well defined end and lateral moraines, somewhat modified and tundra covered; confined mainly to mountain valleys; commonly divides mountain lakes into upper and lower basins; generally has two or more recessional moraines

Qmb³ — Brooks Lake Three
Well-defined end and lateral moraines; last major advance of the Wisconsin Glaciation; locally moraines considerably modified; has several recessional moraines and possibly a minor readvance

Qmb² — Brooks Lake Two
Well-defined end and lateral moraines that enclose the major lake basins in the Iliamna Quadrangle; moraines more modified than previous advances but still retain fresh knob and kettle topography; one minor readvance, and several recessional moraines.

Qmb¹ — Brooks Lake One
First major advance of the Wisconsin Glaciation; moraines considerably modified and locally covered by outwash of later advances; some streams cut moraines; locally several minor recessional moraines; end moraine lies approximately 20 miles southwest of Iliamna Lake

Qbg — Ground moraine of Brooks Lake Glaciation

Qbo — Outwash, valley train, and kame terrace deposits; graded to moraine of the Brooks Lake Glaciation

Qbtm — Modified moraine
Discontinuously mantled and terraced by glaciofluvial deposits of younger advances of the Brooks Lake Glaciation

Qof — Outwash fans and deltaic deposits; includes hanging deltas at mouths of streams draining into proglacial lakes and Cook Inlet

Qab — Abandoned channel deposits
Glacial stream channel deposits, and abandoned drainage lines of the Brooks Lake Glaciation, locally contain modern streams

Qgl — Proglacial lake bed deposits
Fine sand and silt deposited in water of proglacial lakes, mainly confined to area between Brooks Lake one and Brooks Lake two at west end of Iliamna Lake

Qgm — Proglacial lake modified moraine
Glacial moraine of the Brooks Lake One and Two advances deposited in or modified by proglacial lake Iliamna; moraine discontinuously mantled by lake bed deposits

Mak Hill Glaciation (Pre-Wisconsin)

Qmm — Mak Hill advance
Moraine highly modified with knob and kettle topography subdued; lateral or medial moraines still recognizable locally, cut by numerous streams

Qmg — Ground moraine of the Mak Hill Glaciation

Qmtm — Modified moraine
Discontinuously mantled and terraced by glaciofluvial deposits of the Mak Hill and younger glaciations

Qmo — Outwash plains graded to moraine of the Mak Hill Glaciation

Qam — Abandoned channel deposits
Glacial stream channel deposits and abandoned drainage lines of the Mak Hill Glaciation. The deposits locally contain glaciofluvial deposits of younger glaciations

Triassic to Recent

Modified bedrock surfaces
Most bedrock areas in the Iliamna Quadrangle have been modified by Pleistocene and Recent glaciation. Many of the areas shown as bedrock are overlain by a thin veneer of glacial drift, erratics, alluvium, talus, or soil; this covering may range from a few inches to several feet thick.

Beach ridges
Formed mainly of sand and fine gravel and 2 to 10 feet high. Found along the major lakes and along Cook Inlet. Several levels along Iliamna lake where they are commonly found between scarp segments

High water line
Line marking highest brief stand of water in Iliamna Lake, found at about 150 feet above present lake level around the western part of the lake. This stand of the lake was post Brooks Lake Two and was of short duration as there are few scarps or beach ridges formed; a slight modification of the glacial deposits by water marks the line

Contact
Geologic boundaries between various type of surficial deposits

Morainal boundary
Boundary of well-defined end, lateral, and recessional moraine. Hachures on outside of moraine with glaciated area inside of solid line.

Lake and stream scarps
Formed mainly by glacial and proglacial lakes; locally found along streams and abandoned drainage lines. Four levels of scarps present locally on Iliamna Lake. Scarps range from about 3 to 60 feet high

Surficial Deposits of the Iliamna Quadrangle, Alaska

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This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.