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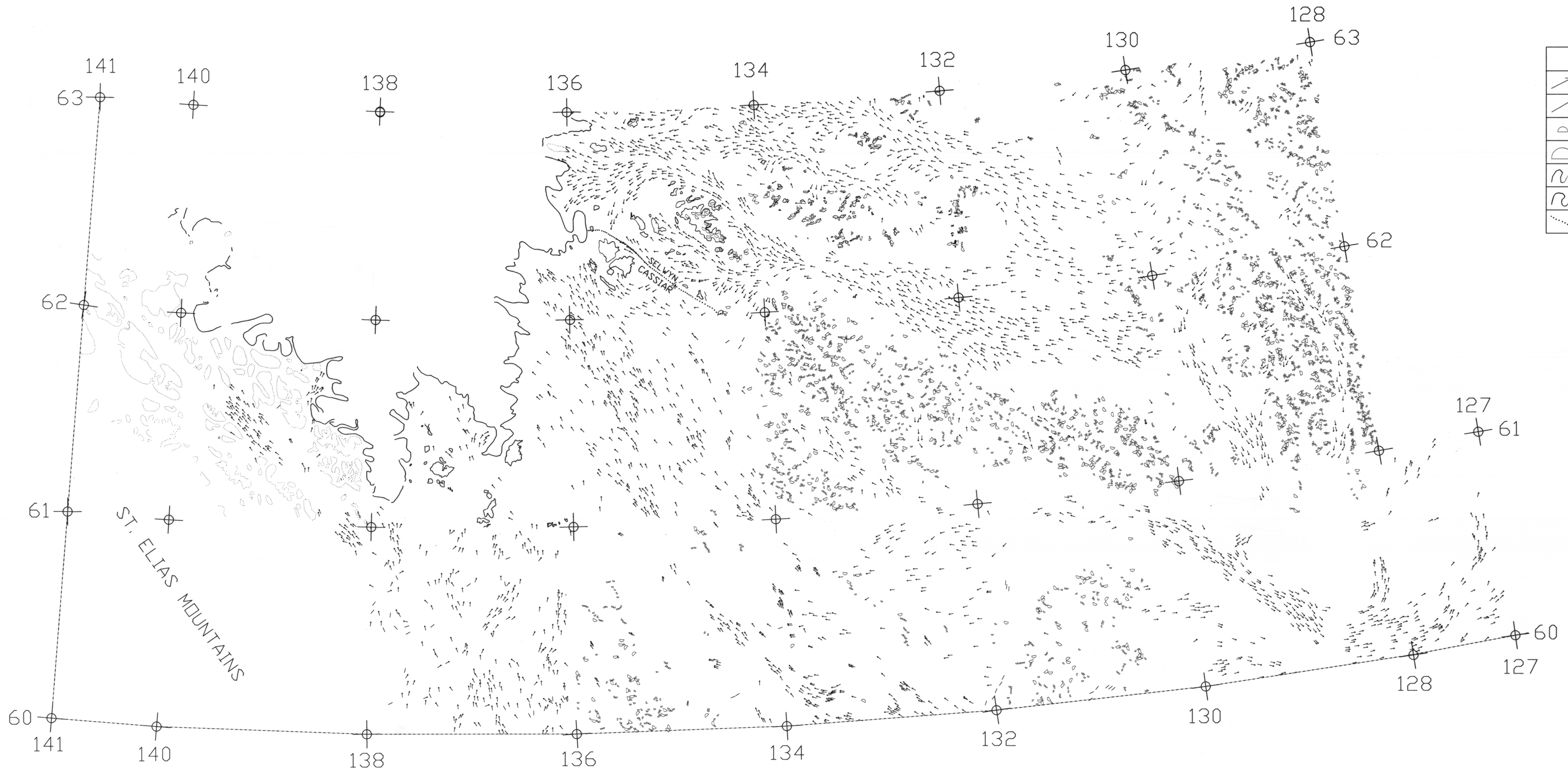
Canada

GLACIAL LIMITS AND ICE-FLOW DIRECTIONS OF THE LAST CORDILLERAN ICE SHEET IN YUKON TERRITORY BETWEEN 60 AND 63 DEGREES NORTH



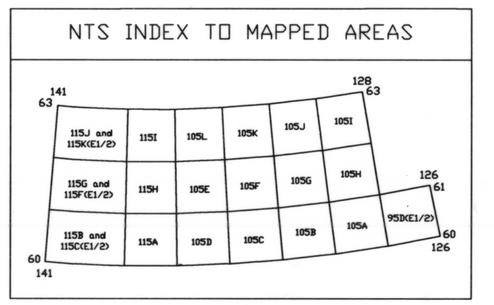
Kilometres 25 0 25 50 75 100 Kilometres

O.F. 2329

LEGEND

- Streamlined ridges and striations parallel to ice-flow: ice flow direction established
- Streamlined ridges and striations parallel to ice-flow: ice-flow direction not established
- Cirque: convexity plotted in actual orientation
- Group of cirques: convexity direction is an average for the complex
- Nunatak areas: boundaries defined, approximate
- Limit of glacial ice during McConnell glaciation; limit defined, approximate
- Approximate boundary between Selwyn and Cassiar lobes

NTS INDEX TO MAPPED AREAS



NTS NO.	MAP AREA	SOURCES
95D(W1/2)	Coal River	Klassen, R.W. 1981: Surficial geology, Coal River (west half), Yukon Territory; Geological Survey of Canada Map 13-1982, scale 1:250 000
105		Hughes, O.L. 1969: Glacial Map of Yukon Territory, South of 65 Degrees North Latitude; Geological Survey of Canada Map 6-1969 (accompanies GSC Paper 68-34), scale 1:1 000 000.
105A	Watson Lake	Klassen, R.W. and Morison, S.R. 1979: Surficial Geology, Watson Lake, Yukon Territory; Geological Survey of Canada Map 21-1981, scale 1:250 000.
105B	Wolf Lake	Klassen, R.W. 1987: Surficial Geology, Wolf Lake, Yukon Territory; Geological Survey of Canada Map 14-1982, scale 1:250 000.
105C	Teslin	unpublished
105D	Whitehorse	unpublished
105E	Laberge	Klassen, R.W. and Morison, S.R. 1987: Surficial Geology, Laberge, Yukon Territory; Geological Survey of Canada Map 9-1985, scale 1:250 000.
105F	Quiet Lake	Jackson, L.E., Jr. 1983: Terrain inventory, Quiet Lake, Yukon Territory; Geological Survey of Canada Open File Report 1536, scale 1:125 000.
105G	Finlayson Lake	Jackson, L.E., Jr. 1986: Terrain Inventory, Finlayson Lake; Geological Survey of Canada Open File 1379, scale 1:125 000.
105H	Frances Lake	Dyke, A.S. 1983: Terrain Inventory, Frances Lake; Geological Survey of Canada Open File 895, scale 1:125 000.
105I	Nahanni	Jackson, L.E. Jr. 1987: Terrain Inventory and Quaternary history of Nahanni map area; Yukon Territory and Northwest Territories, Geological Survey of Canada paper 86-18, 23p.
105J	Sheldon Lake	Jackson, L.E. Jr. 1984: Terrain Inventory, Sheldon Lake; Geological Survey of Canada Open File 1053, scale 1:125 000.
105K	Tay River	Jackson, L.E. Jr. 1986: Terrain Inventory Tay River; Geological Survey of Canada Open file 1380, scale 1:125 000.
105L	Glenlyon	Campbell, R.B. 1963: Surficial geology, Glenlyon, Yukon Territory, Geological Survey of Canada Map 1222A (accompanies GSC Memoir 352), scale 1:250 000.
115A	Dezadeash	Rampton, V.N. and Paradis, S. 1979: Surficial geology and geomorphology Teye Lake, Yukon Territory; Geological Survey of Canada Map 14-1981, scale 1:100 000. 1979: Surficial geology and geomorphology Frederick Lake, Yukon Territory; Geological Survey of Canada, Map 15-1981, scale 1:100 000. 1979: Surficial geology and geomorphology Pine Lake, Yukon Territory; Geological Survey of Canada Map 16-1981, scale 1:100 000.
115F (E1/2,G)	Kluane Lake	Rampton, V.N. 1978: Surficial geology and geomorphology Burwash Creek, Yukon Territory; Geological Survey of Canada Map 6-1978, scale 1:100 000. 1978: Surficial geology and geomorphology, Congdon Creek, Yukon Territory; Geological Survey of Canada Map 8-1978, scale 1:100 000.
115H	Alsishik	Hughes, O.L. 1969: Surficial geology, Long Lake, Yukon Territory; Geological Survey of Canada Map 29-1987, scale 1:100 000. 1969: Surficial geology, West Alsishik River, Yukon Territory; Geological Survey of Canada Map 21-1987, scale 1:100 000. 1969: Surficial geology, Stevens Lake, Yukon Territory; Geological Survey of Canada, Map, 22-1987, scale 1:100 000. 1969: Surficial geology, Little Buffalo Lake Yukon Territory; Geological Survey of Canada, Map 23-1987, scale 1:100 000.
115I	Carmacks	Morison, S.R. and Dok-Rodkin, A. 1987: Surficial geology, Carmacks, Yukon Territory; Geological Survey of Canada, Map 9-1985, scale 1:250 000.
115J and 115K (E1/2)	Snag	Rampton, V.N. 1977: Surficial geology and geomorphology, Kaldern Mountain, Yukon Territory; Geological Survey of Canada map 5-1977, scale 1:100 000.

MARGINAL NOTES

The last Cordilleran ice sheet came into existence sometime after ca. 24 ka B.P. (Hughes et al. 1989; Jackson 1989) and had disappeared by 10 ka B.P. The ice-flow directions indicated on this map are based upon the orientations of landforms streamlined by the passage of glacial ice and striations on outcrops. These ice-flow directions generally reflect the flow directions at the height of glaciation. Concentrations of cirques indicate ice-source and divide areas within the former ice sheet. Nunataks are mountains which protruded through the ice sheet. The ice sheet was considerably thinner than the present ice caps. This is particularly true of nunataks west of 139° longitude. The ice sheet west of 139° longitude was a plateau ice sheet with expanded versions of the ice caps which presently mantle the St. Elias Mountains. The balance of the ice sheet grew from ice centres in the Selwyn, Pelly, Cassiar Mountains and the Eastern Coast Mountains in Yukon and northern British Columbia.

The Cordilleran Ice Sheet in southern Yukon differed significantly from the contemporary ice sheets of Greenland and Antarctica. It can best be pictured as a complex of anastomosed valley glaciers. The relief of the terrain traversed by the Cordilleran ice sheet was close to that of or exceeded ice sheet thickness and directed ice-flow. The thicknesses of the Greenland and Antarctic ice sheets are usually many times greater than the relief of the underlying terrain. Flow directions in these ice sheets are almost entirely determined by their surface gradients. This is a significant point in the application of this map for drift prospecting. Even where ice-directional features are lacking, such as in mountainous areas where flow history was likely complicated, topography directed ice-flow. However it must be kept in mind that ice-flow could have been in directions opposite to flow directions of contemporary valley glaciers.

Drift prospecting in these areas will have to employ lithologically distinctive erratics, striations, and similar indicators in order to determine local ice flow history.

ACKNOWLEDGMENTS

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REFERENCES

Hughes, O.L., Rutter, N.W., and Clague, J.J. 1989: Yukon Territory (Quaternary stratigraphy and History, Cordilleran Ice Sheet); in Chapter 1 of Quaternary Geology of Canada and Greenland, R.J. Fulton (ed.); Geological Survey of Canada, Geology of Canada no. 1 (also Geological Society of America, The Geology of North America, v. K-1).

Jackson, L.E., Jr. 1989: Paleoglaciology of the Selwyn Lobe of the Cordilleran Ice Sheet and Quaternary stratigraphy of the east-central Yukon; in L.D. Carter, T.D. Hamilton, and J.P. Galloway (eds.) Late Cenozoic history of the interior basins of Alaska and the Yukon; United States Geological Survey Circular 1026, p. 66-71.

Compilation by L.E. Jackson, Jr. and T.D. MacKay, 1990.