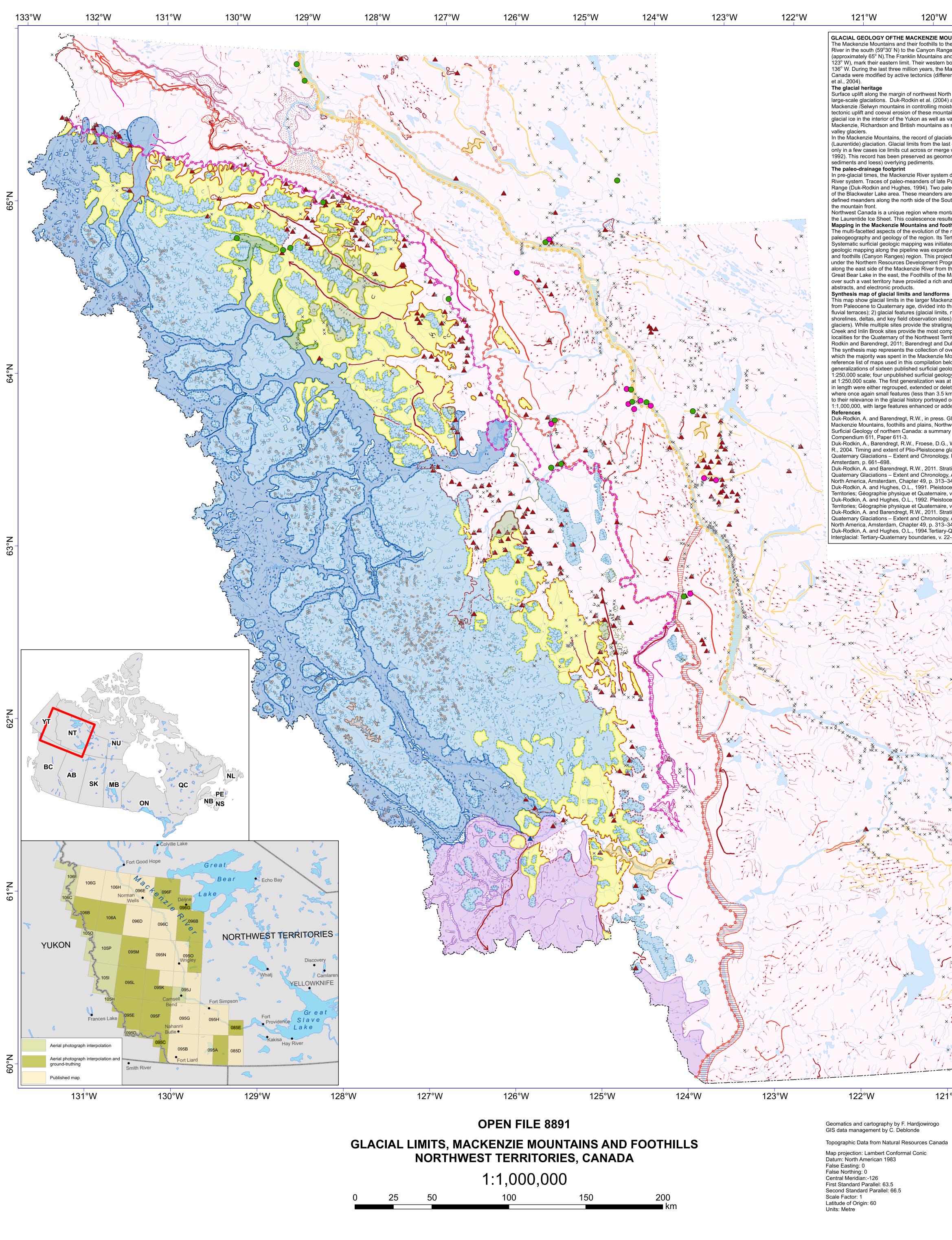
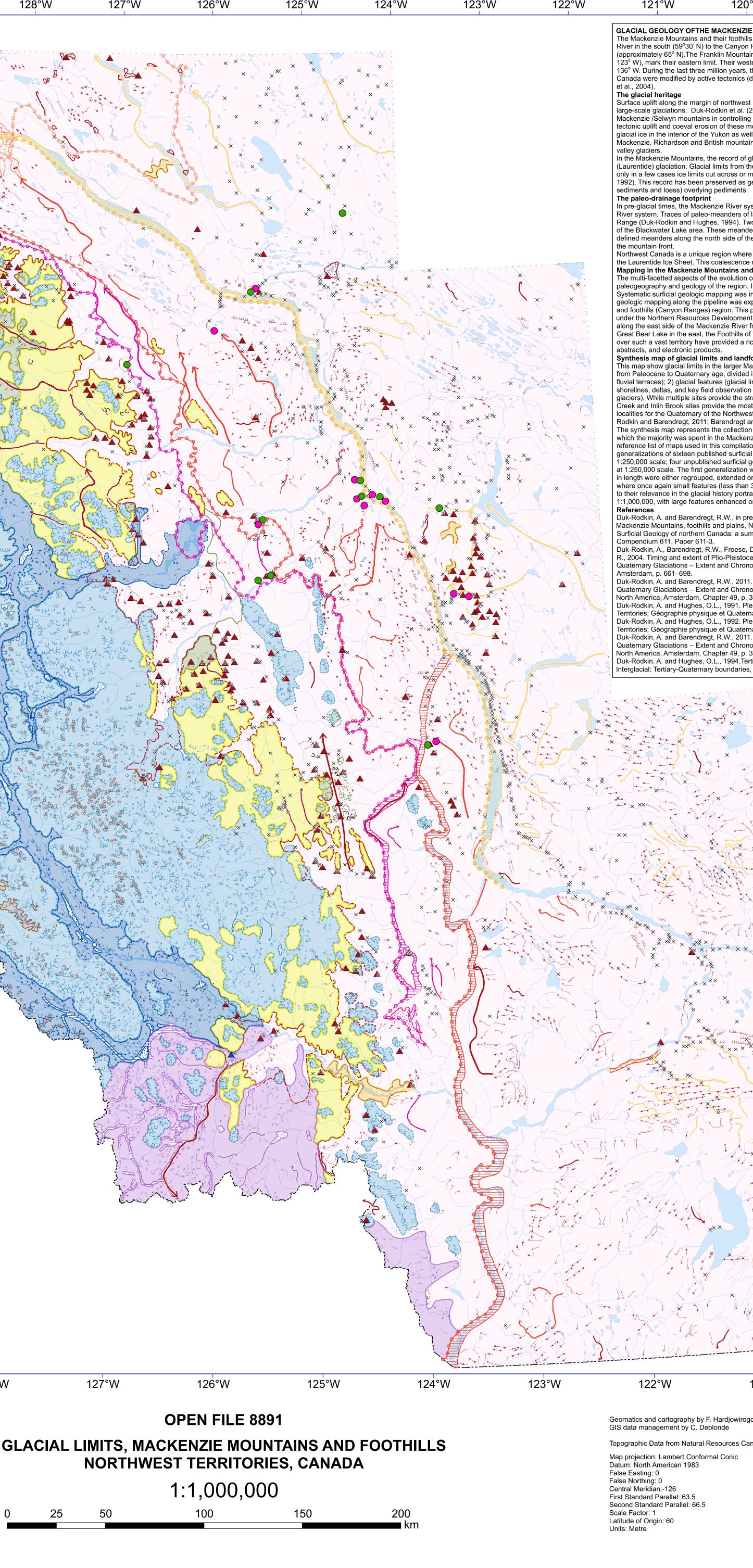
Geological Survey of Canada Open File 8891





GLACIAL LIMITS, MACKENZIE MOUNTAINS AND FOOTHILLS, NORTHWEST TERRITORIES, CANADA

A. Duk-Rodkin¹

For more information, please contact: A. Duk-Rodkin (alejandra.duk-rodkin@nrcan-rncan.gc.ca)

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IE MOUNTAINS A		eature extending from Liard
n Ranges in the n ains and Norman stern boundary is , the Mackenzie N	orth and Bonnet Plume Bas Range, near the western s located approximately betw lountains and all the moun	
(2004) articulated ng moisture distrib mountainous barr ell as valleys east	the importance of the Wra ution in northwest Canada. iers controlled the growth, of the continental divide. C	poch (ca. 4 Ma) set the stage for ngell/St. Elias Mountains and The timing and interplay of thickness and decay of the Blaciers formed in the edmont glaciers and montane
glaciations is rep the last glaciation merge with Laure	resented by six glaciations in the mountains postdates	and one continental s the Laurentide glaciation and Rodkin and Hughes, 1991,
of late Paleocene a wo paleo-meande ders are superimp	age are found superimpose rs obscured by Laurentide osed in the valleys within t	brador Sea via the paleo Bell ed in valleys within the Norman till can be traced in the vicinity he Franklin Mountains. Two well es above the river thalweg near
e resulted in the M nd foothills n of the northern la l. Its Tertiary-Quat s initiated prior to t expanded under the s project was then ent Program in the r from the Macken of the Mackenzie	Mackenzie drainage system indscapes provide a glimps ernary geologic record has he construction of the Mac he Frontier Geoscience Pro followed by the Northern E Mackenzie Corridor. This r zie Delta in the north, to O Mountains and the border w	enzie Mountains coalesced with a late in the Quaternary Period. Se of the complexity of the been studied since the 1960s. kenzie Valley pipeline. Surficial ject in the Mackenzie Mountains Energy and Development project new mapping area extended Id Crow (Yukon) in the west, with Alberta. Studies completed ed articles, GSC-reports, maps,
d into three group l limits, moraines, on sites); and, 3) r stratigraphic frame ost complete strati est Territories (Du and Duk-Rodkin 2 on of over 24 year enzie Mountains, f tion below). The g ial geology maps	s: 1) pre-glacial features (p drumlins, meltwater chann- eo-glacial and modern fea work of this vast territory, t graphic record and as such k-Rodkin and Hughes, 199 2011). s of fieldwork in the Northwo bothills and Interior Plains a lacial limits dataset is generat 1:100,000 scale; five pub	he Little Bear River, Katherine h, are considered the type 2; Duk-Rodkin et al., 2004; Duk- vest Territories and Yukon, of and plateaus (see the complete erated from three successive plished surficial geology maps at
or deleted. A second or deleted. A second n 3.5 km in length trayed on the map	of 1:250,000, where small and generalization was und	
Northwest Territo	ries, Canada: a brief overv	and Laurentide Ice Sheets in the iew; In I. McMartin (ed.), rvey of Canada, Special Bulletin
cene glaciations i	n north-west Canada and e	a, G.D., Waters, P., and Klassen, east-central Alaska; in rd, Elsevier North America,
nology, A closer lc . 313–345. Pleistocene Monta rnaire, v. 45, no. 1 Pleistocene Monta rnaire, v. 46, no. 1 11. Stratigraphical nology, A closer lc . 313–345.	ok, (ed.) J. Ehlers, P.L. Git ne glaciations in the Macke , p. 79–90. ne glaciations in the Macke , p. 69–83. record of glacial/interglacia ok, (ed.) J. Ehlers, P.L. Git drainage of the pre-glacial	als in northwest Canada. in obard and P.D. Hughes, Elsevier enzie Mountains, Northwest enzie Mountains, Northwest als in northwest Canada. in obard and P.D. Hughes, Elsevier Mackenzie Basin; Quaternary
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_	Present-day icenero extent		Glacial extent
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		e i da anti-	Meltwater channel, wi
	Rock glacier		
			Limit defined
			Limit inferred
	LOCAL GLACIERS: GAYNA RIVER GLACIATION (ca. 22 ka)		Limit concealed
	<u>Glacial extent</u>		
and the second	Limit inferred		Meltwater channel
	Limit concealed		Meltwater channel, na
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	Glaciated area	\sim	Major (up to 40 km
	Cirque	\sim	Major (greater than
\frown /	Moraine ridge		KELLY LAKE PHASE
	Meltwater channel, narrow		Glacial extent
		\sim	Limit defined
	Minor (up to 10 km in length)		Limit approximate
\sim	Major (up to 40 km in length)		
\sim	Shoreline of former lake: low, ridged beach deposits of sand and gravel		Limit inferred
	Glacio-fluvial delta deposited into a glacial lake. Gently sloping surface		Glacio-fluvial delta de
	ending in an escarpment		ending in an escarpm
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	MCCONNELL GLACIATION (YUKON PROVENANCE) AND GAYNA RIVER GLACIATION (MACKENZIE MOUNTAINS PROVENANCE) (<i>ca.</i> 22 <i>ka</i>)	\sim (
	Glacial extent		Limit defined
\sim	Limit defined		Meltwater channel, na
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and a second	Limit inferred	\sim	Major (up to 40 km
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			TUTSIETA LAKE PH
	Cirque		Glacial extent
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	Meltwater channel, wide (up to 1 km in width)	~	Limit approximate
	Limit defined	and the second	Limit inferred
			Meltwater channel, wi
	Limit approximate		
	Limit inferred		Limit defined
•••••	Limit concealed		Limit approximate
			Limit inferred
	Meltwater channel area		
	Meltwater channel, narrow		Limit concealed
\frown	Minor (up to 10 km in length)		Meltwater channel
\sim	Major (up to 40 km in length)		Meltwater channel, na
\sim	Major (greater than 40 km in length)	\frown	Minor (up to 10 km
\sim	Shoreline of former lake: low, ridged beach deposits of sand and gravel		Major (up to 40 km
	Glacio-fluvial delta deposited into a glacial lake. Gently sloping surface ending in an escarpment		Major (greater than
			Glacio-fluvial delta de
CORDILI	LERAN GLACIATION NORTHEAST BRITISH COLUMBIA PROVENANCE (<i>ca.</i> 22 <i>ka</i>)		ending in an escarpm
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,	Limit concealed		Limit approximate
		معيد المستعم	Limit inferred
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\sim	Moraine ridge		
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	Limit approximate		
			Meltwater channel
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011110	Malturator abornal are -	\sim	Major (up to 40 km
	Meltwater channel area	\sim	Major (greater than
	Meltwater channel, narrow		
\frown	Minor (up to 10 km in length)		Glacio-fluvial delta de ending in an escarpm
\sim	Major (up to 40 km in length)		LAURENTIDE ALL-T
\sim	Shoreline of former lake: low, ridged beach deposits of sand and gravel		Glacial extent
		\sim	Limit defined
	Glacio-fluvial delta deposited into a glacial lake. Gently sloping surface ending in an escarpment	n	Limit approximate
			Limit inferred
			Glaciated area

HOLOCENE AND YOUNGER

Present-day icefield extent

NEOGLACIAL

121°W

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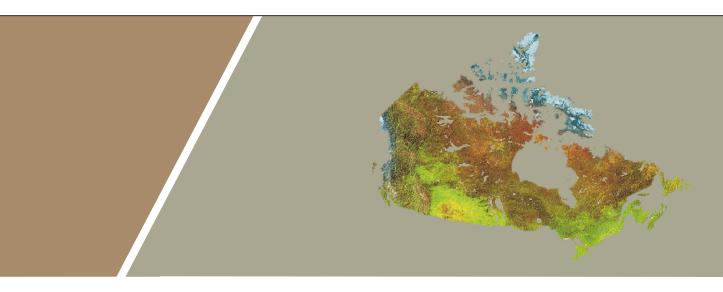
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Permanent link: https://doi.org/10.4095/10.4095/330011

120°W

119°W

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HACKENER FUNDER		CORDILLERAN GLACIATION
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<u>Glacial erratic</u>	Limit concealed	
	Meltwater channel area	<u>Glacial erratic</u>

Meltwater channe Meltwater channel, narrow

Minor (up to 10 km in length)

Major (up to 40 km in length) Major (greater than 40 km in length)

> Glacio-fluvial delta deposited into a glacial lake. Gently sloping surface ending in an escarpment

KATHERINE CREEK PHASE (ca. 22-28 ka)

Limit approximate

Meltwater channel, wide (up to 1 km in width)

Limit approximate

Meltwater channel area

Meltwater channel, narrow

Minor (up to 10 km in length) Major (up to 40 km in length)

Major (greater than 40 km in length)

Glacio-fluvial delta deposited into a glacial lake. Gently sloping surface ending in an escarpment LAURENTIDE ALL-TIME MAXIMUM (ca. 26-28 ka)

Limit approximate

Meltwater channel, narrow Major (up to 40 km in length)

Major (greater than 40 km in length)

Glacio-fluvial delta deposited into a glacial lake. Gently sloping surface ending in an escarpment

UNCORRELATED Moraine or drumlinoid ridge

Meltwater channel, narrow, minor (up to 10 km in length) Shoreline of former lake: low, ridged beach deposits of sand and grave

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Cordilleran provenance (white and light pink granite)

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E/SW, aerial photograph interpretation and ground-truthing.

106 A, aerial photograph interpretation and ground-truthing.

95 F, aerial photograph interpretation and ground-truthing.

95 M, aerial photograph interpretation and ground-truthing.

K/NW/NE/SE, aerial photograph interpretation and ground-truthing.

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