

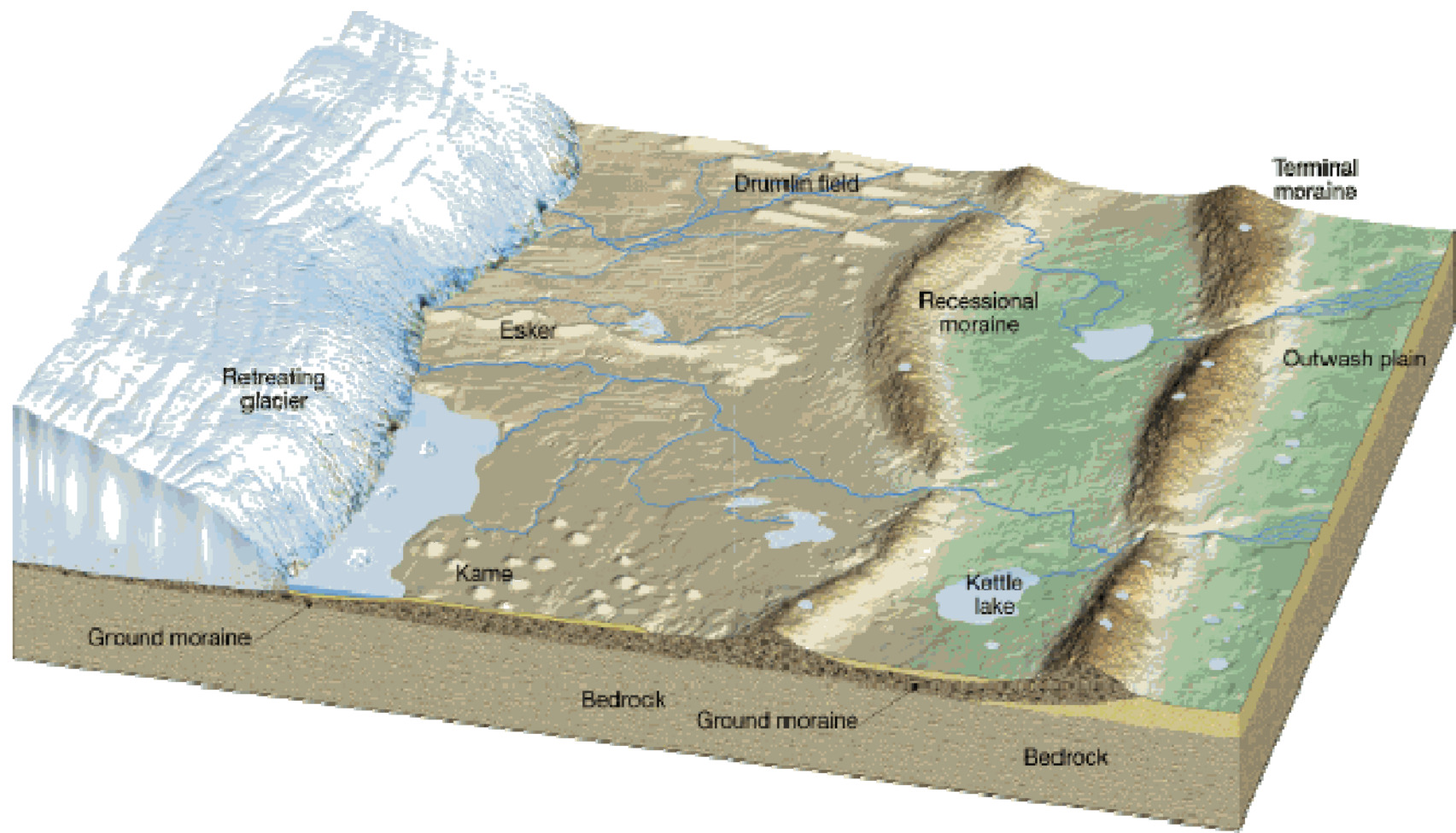
Glacier Depositional Features

Moraines

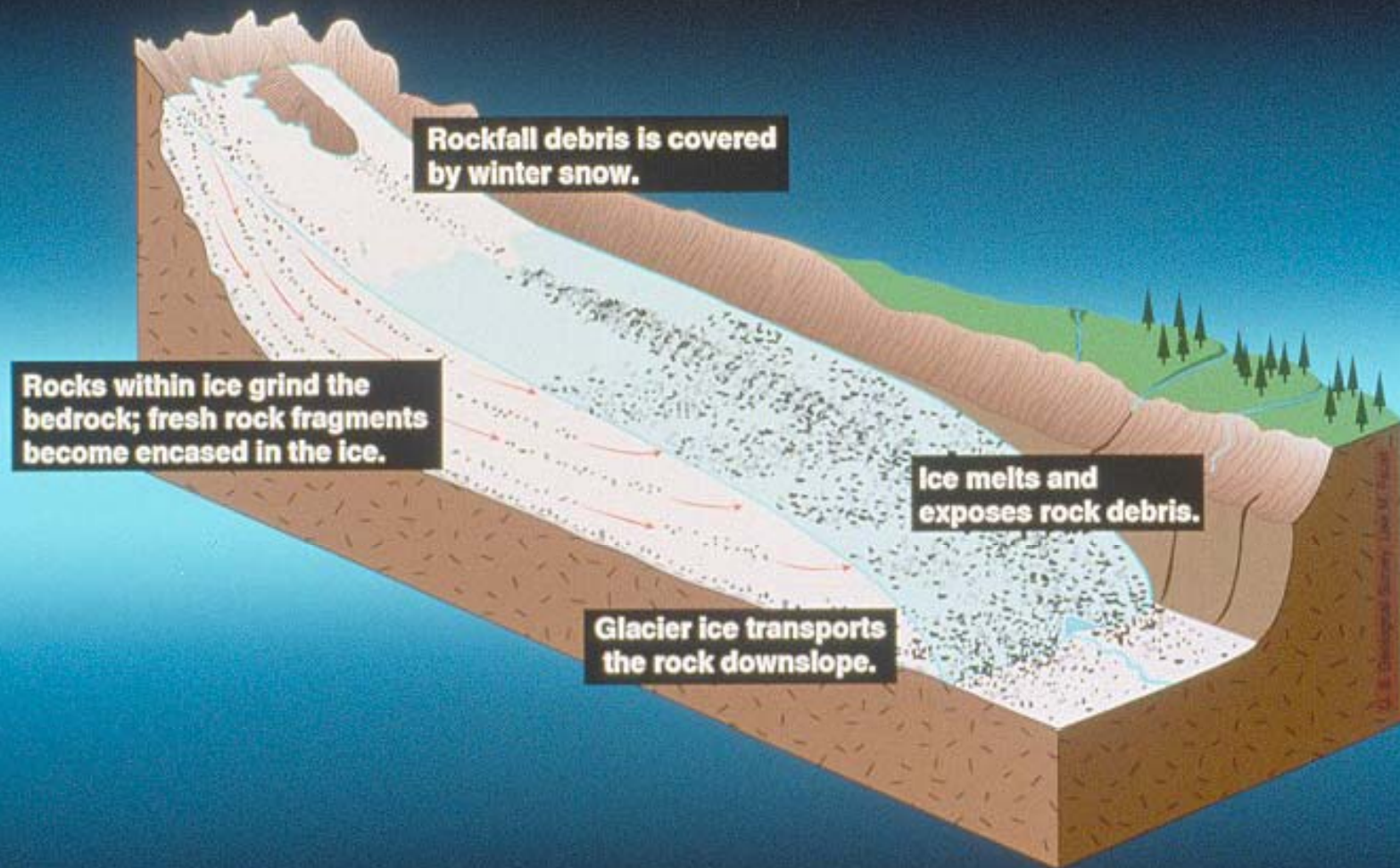
Eskers

Kames

Drumlins



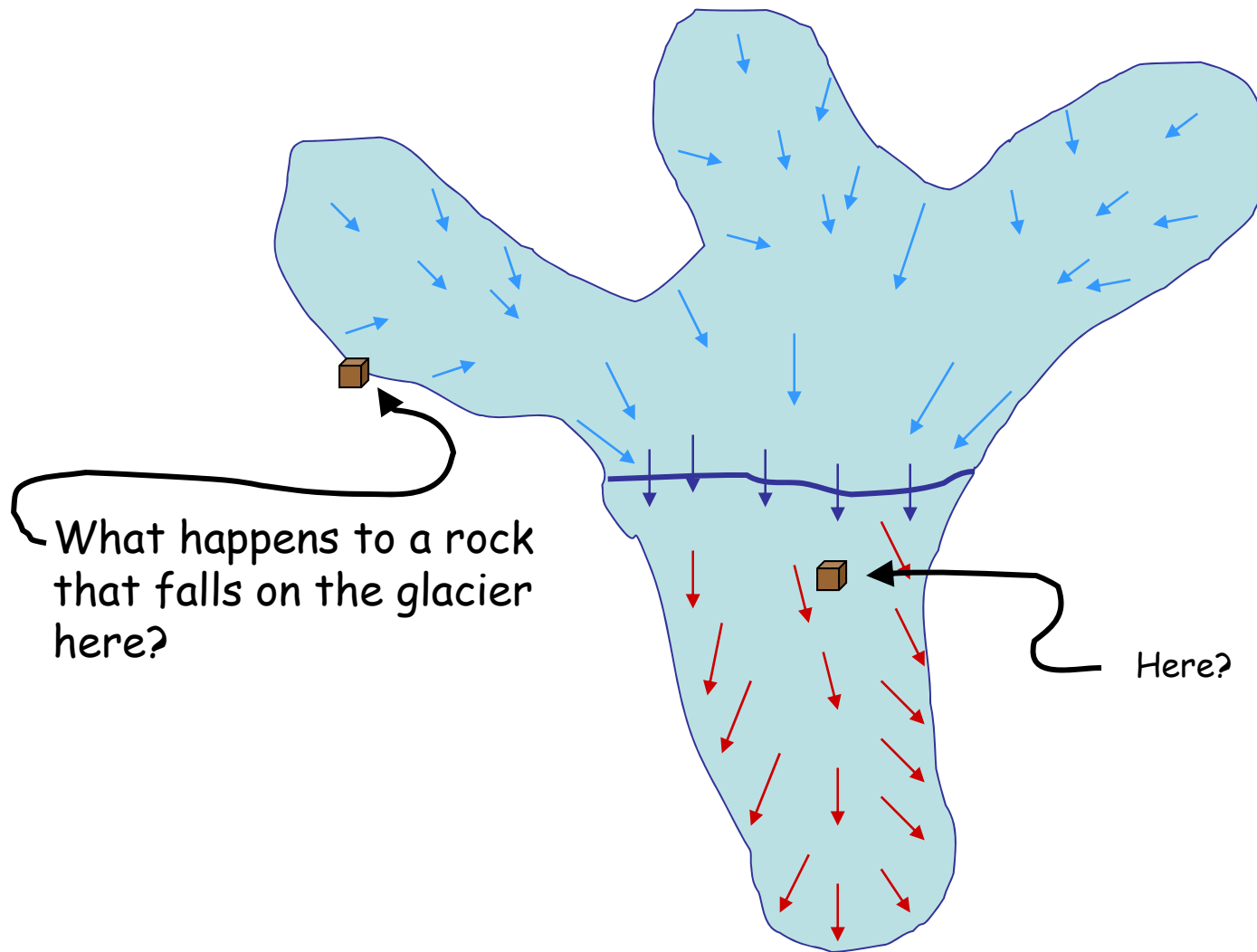
How Rock Debris Moves through a Glacier



Submergence velocity in the accumulation zone.

Emergence velocity in the ablation zone.

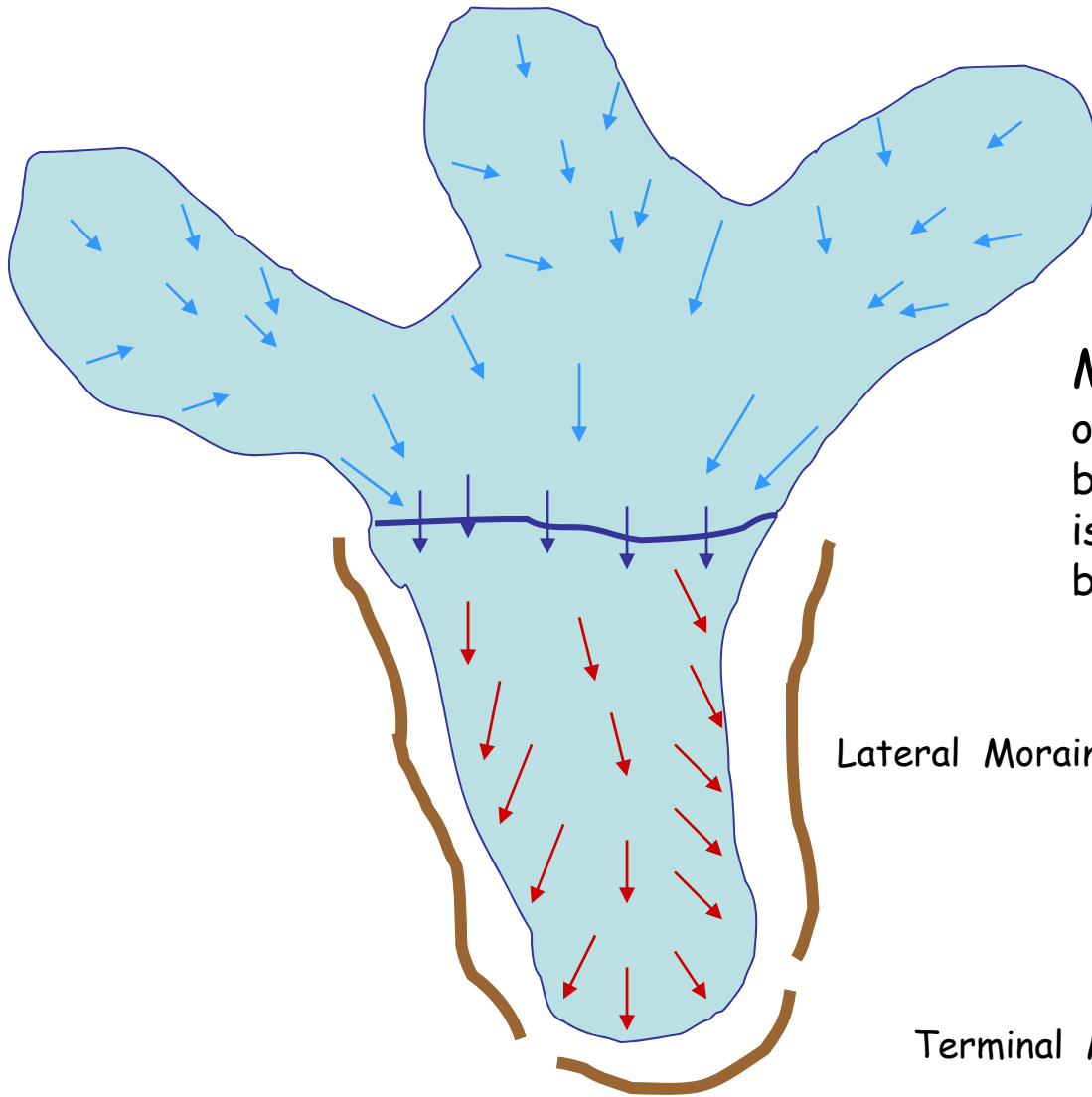
Transport of Rock Debris



What happens to a rock that falls on the glacier here?

Here?

Moraines

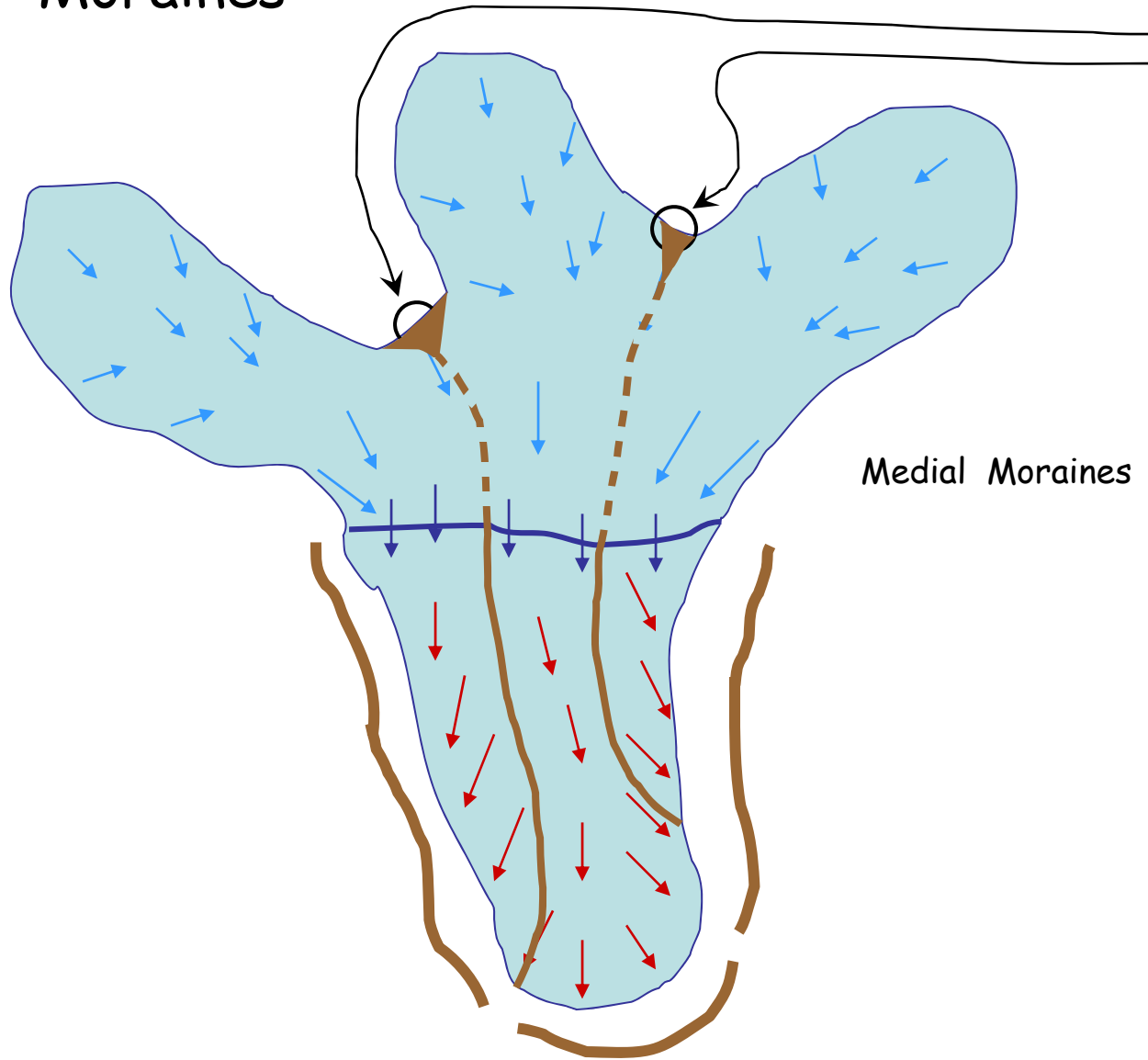


Moraine - accumulation of rock debris deposited by a glacier. The debris (till) is unsorted and ranges in size boulders to clay.

Lateral Moraine

Terminal Moraine

Moraines



What about here?

Medial Moraines

Bruce Molnia, USGS







Barnard Glacier

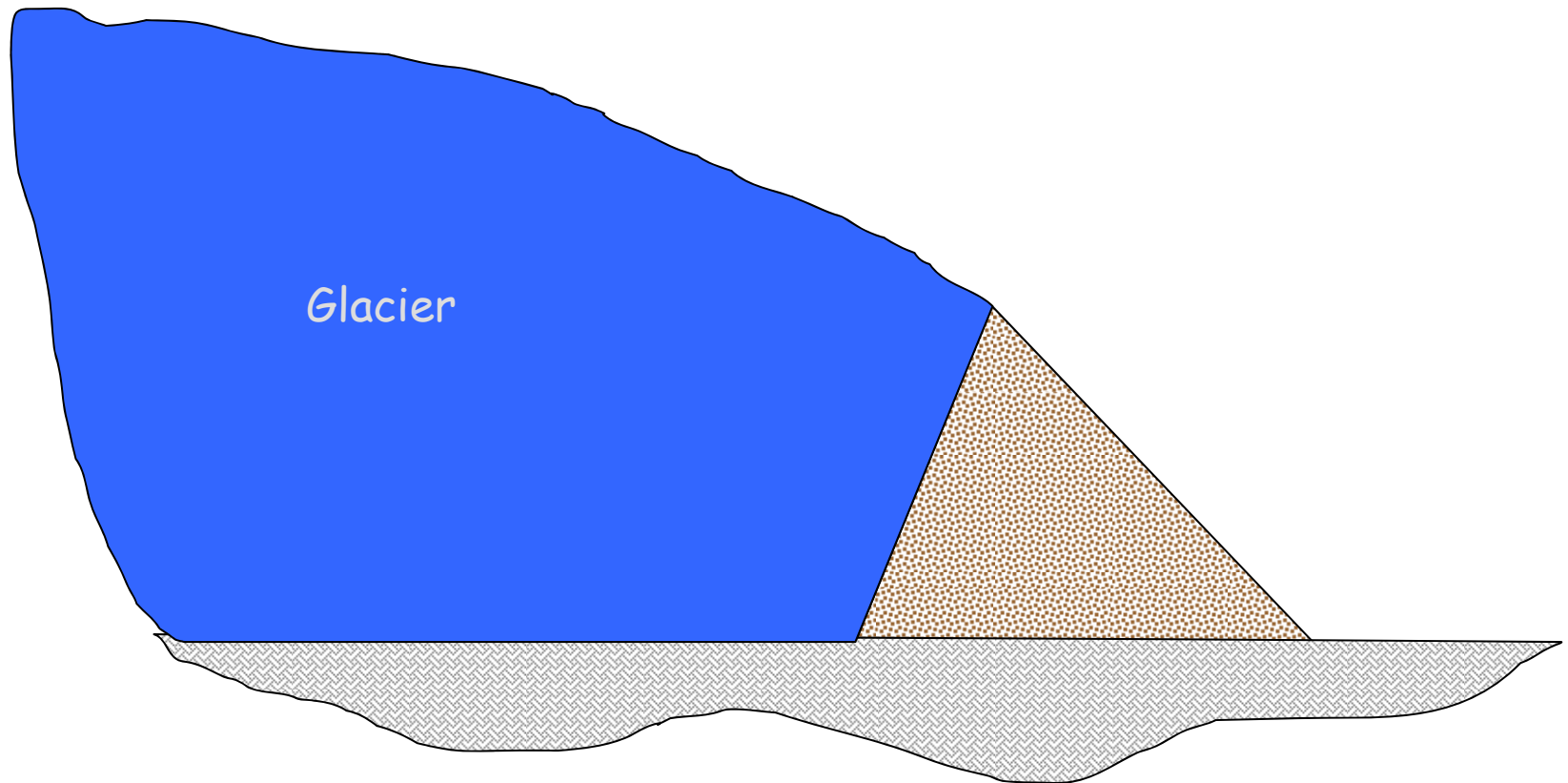


Kennicott Glacier



Black Rapids *Glacier*
Austin Post

Moraine Cross-sectional Shape







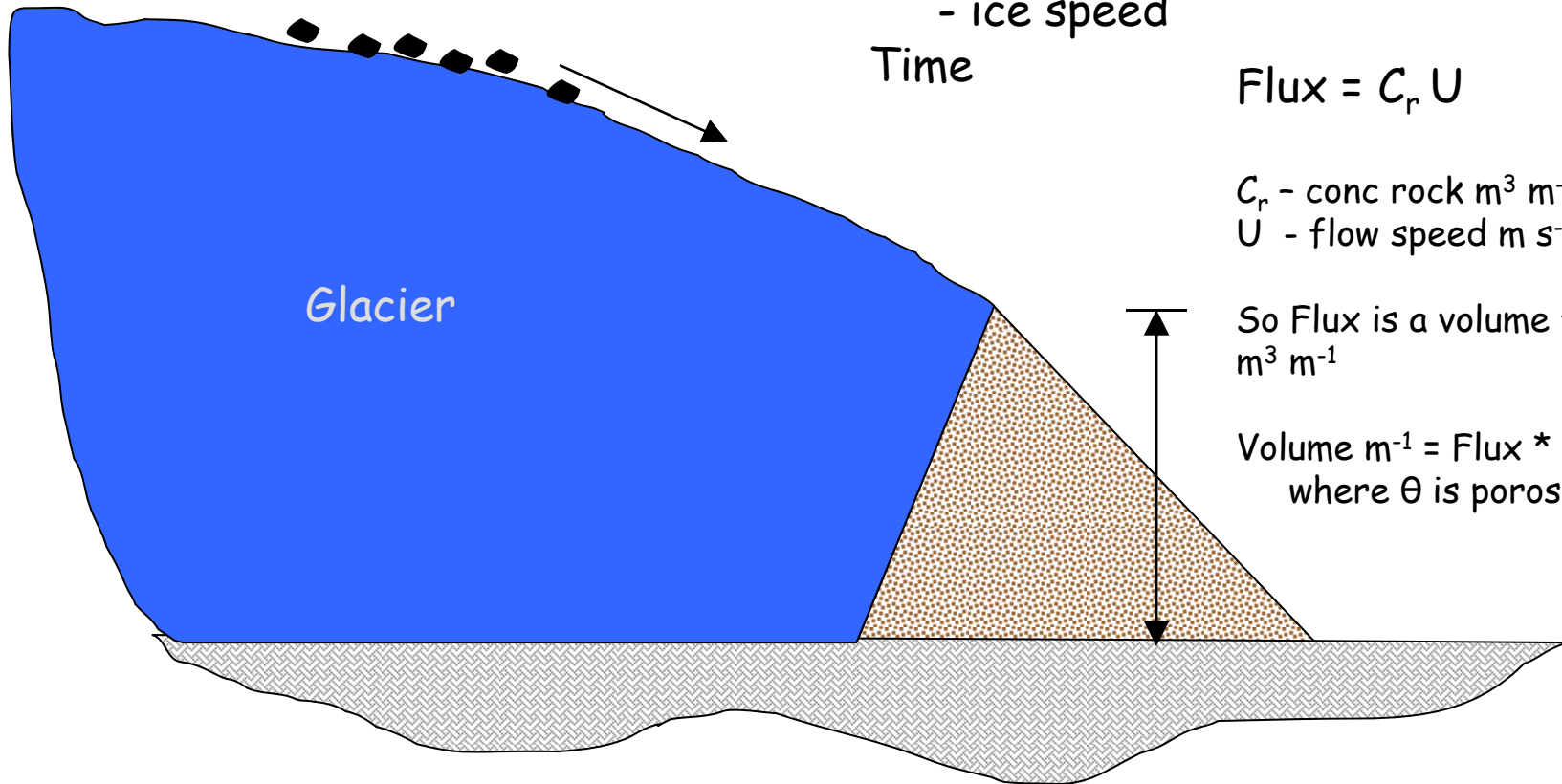


What controls moraine size?

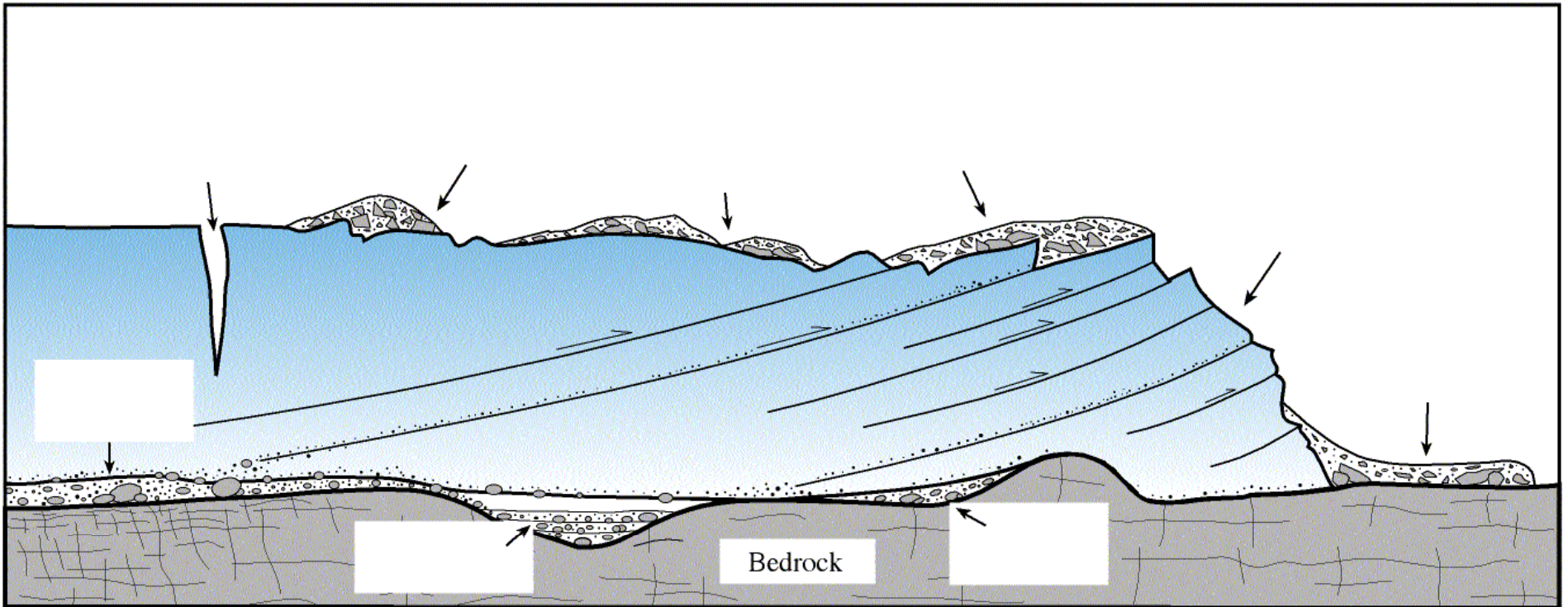
Glacier Thickness at terminus

Rock Flux to the moraine

- rock concentration on the glacier (~function of geology, weathering)
- ice speed



Shearing is another process to transfer subglacial sediment to the surface, and on to the moraine.



British Geomorphological Research Group



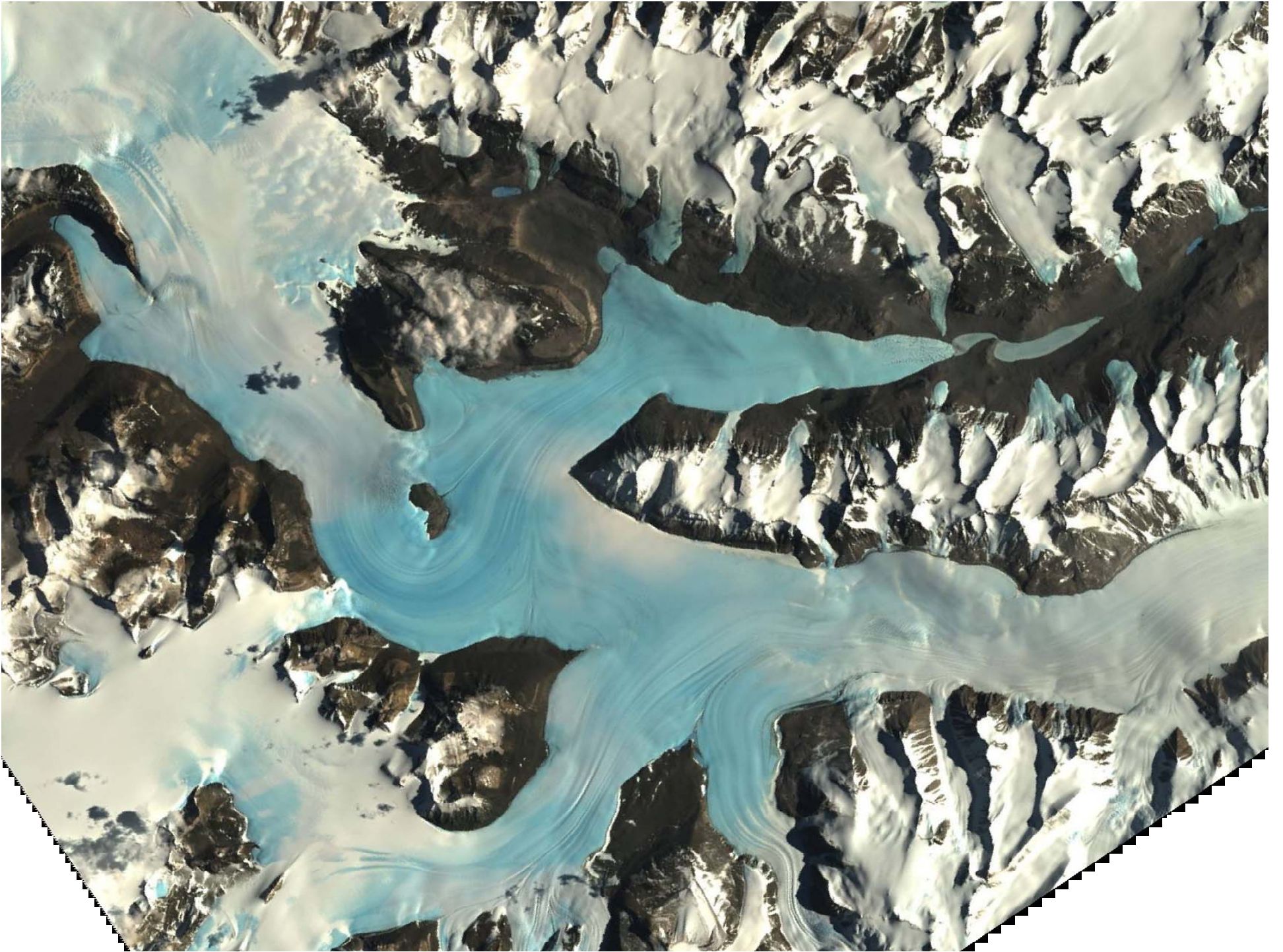
Isfallen Glacier



Below Isfallen Glacier



Storglaciaren





Taylor Glacier, Antarctica



Taylor Glacier, Antarctica

Canada Glacier
Antarctica





Canada Glacier, Antarctica



Canada Glacier, Antarctica



© Scott McGee

Taku Glacier, near Juneau, AK



Push Moraine





Thompson Glacier, Canadian Arctic
Canadian Landform Inventory Project

Recessional Moraines - Push Moraines ? Same, different?



Willow Lake and moraines on south flank of the Wind River Mtns, near Pinedale, WY

These moraines are known as recessional moraines, why?

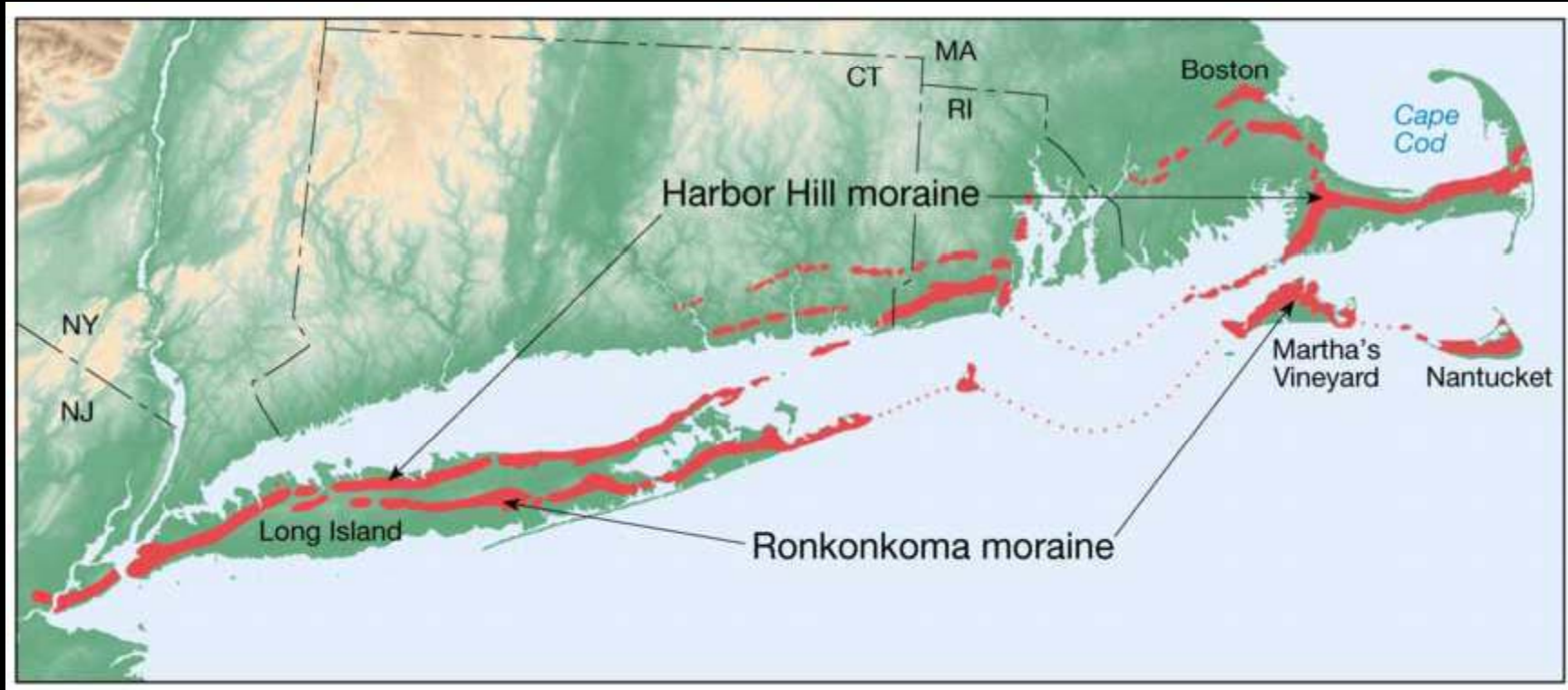


New Fork Lakes, near Pinedale, WY

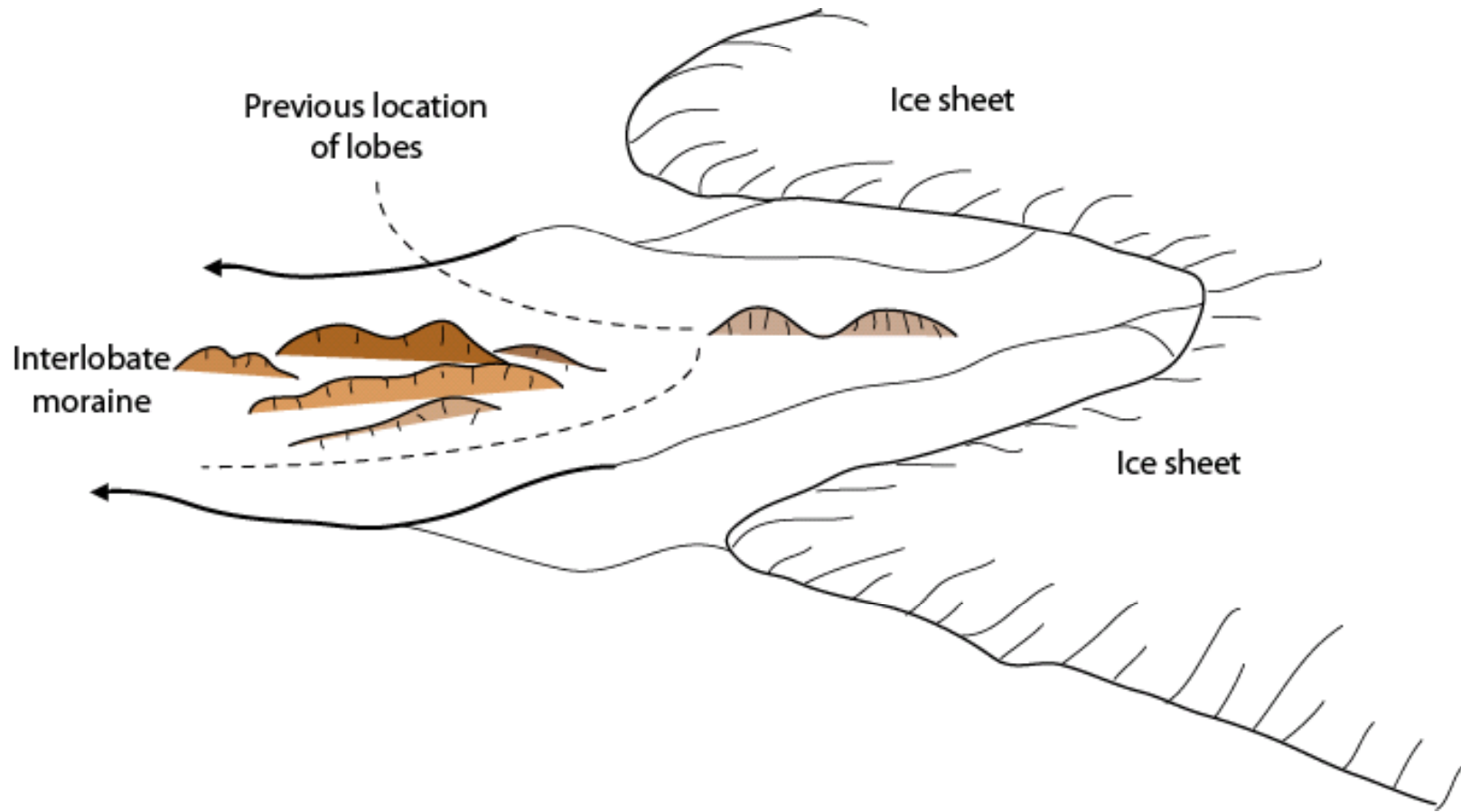


Willowa Lake, OR Dave Jensen

Where are some of the biggest moraines on the East Coast?



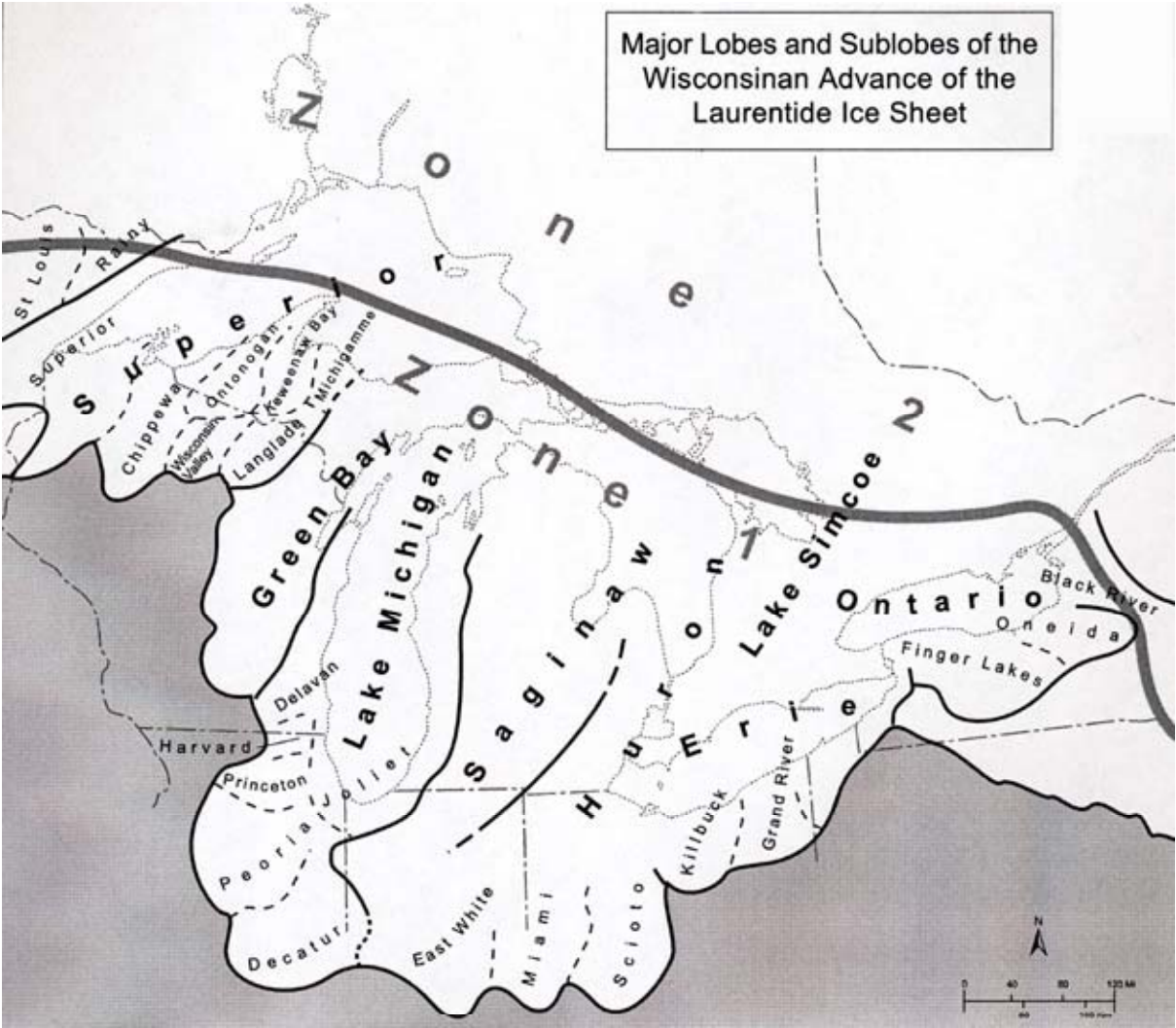
Interlobate moraines

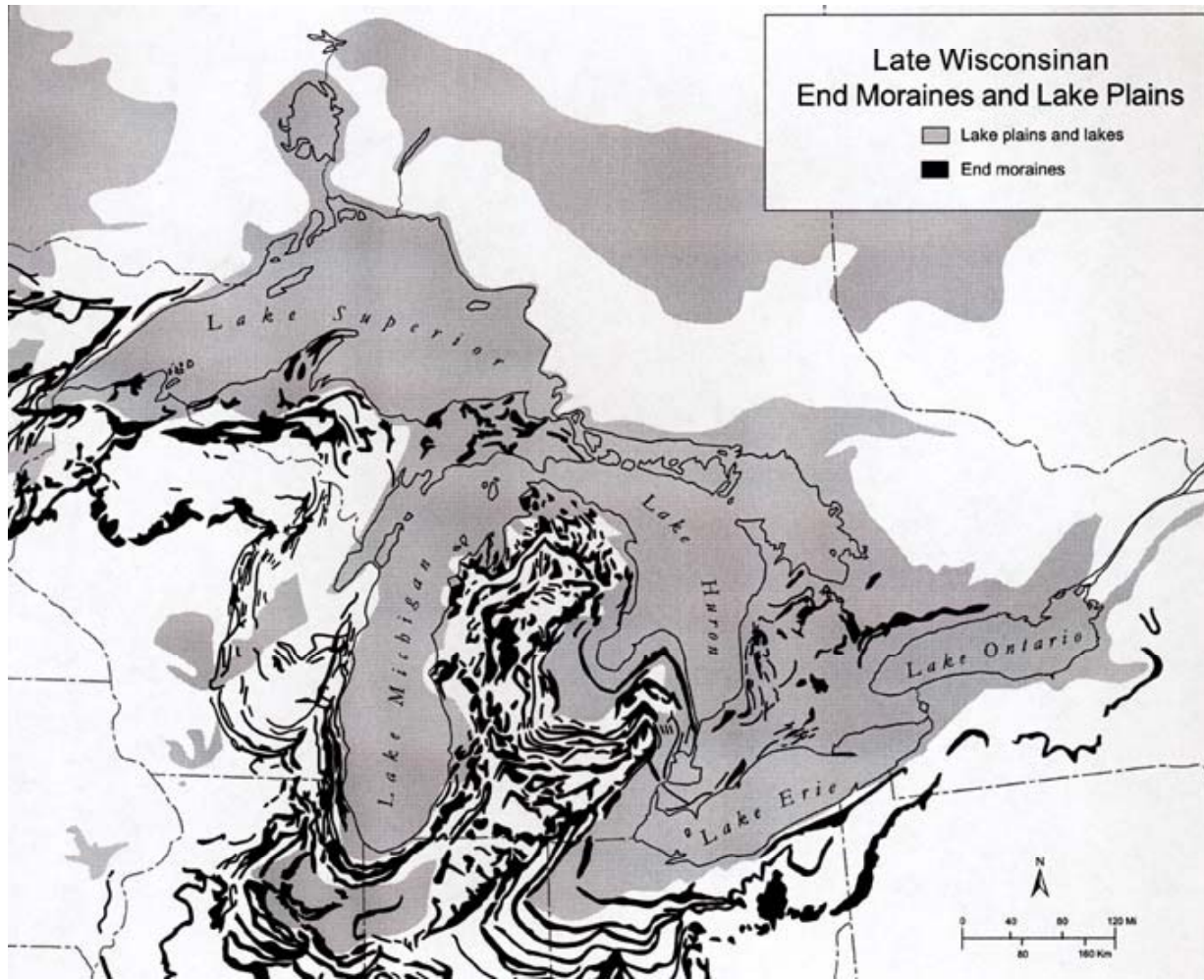


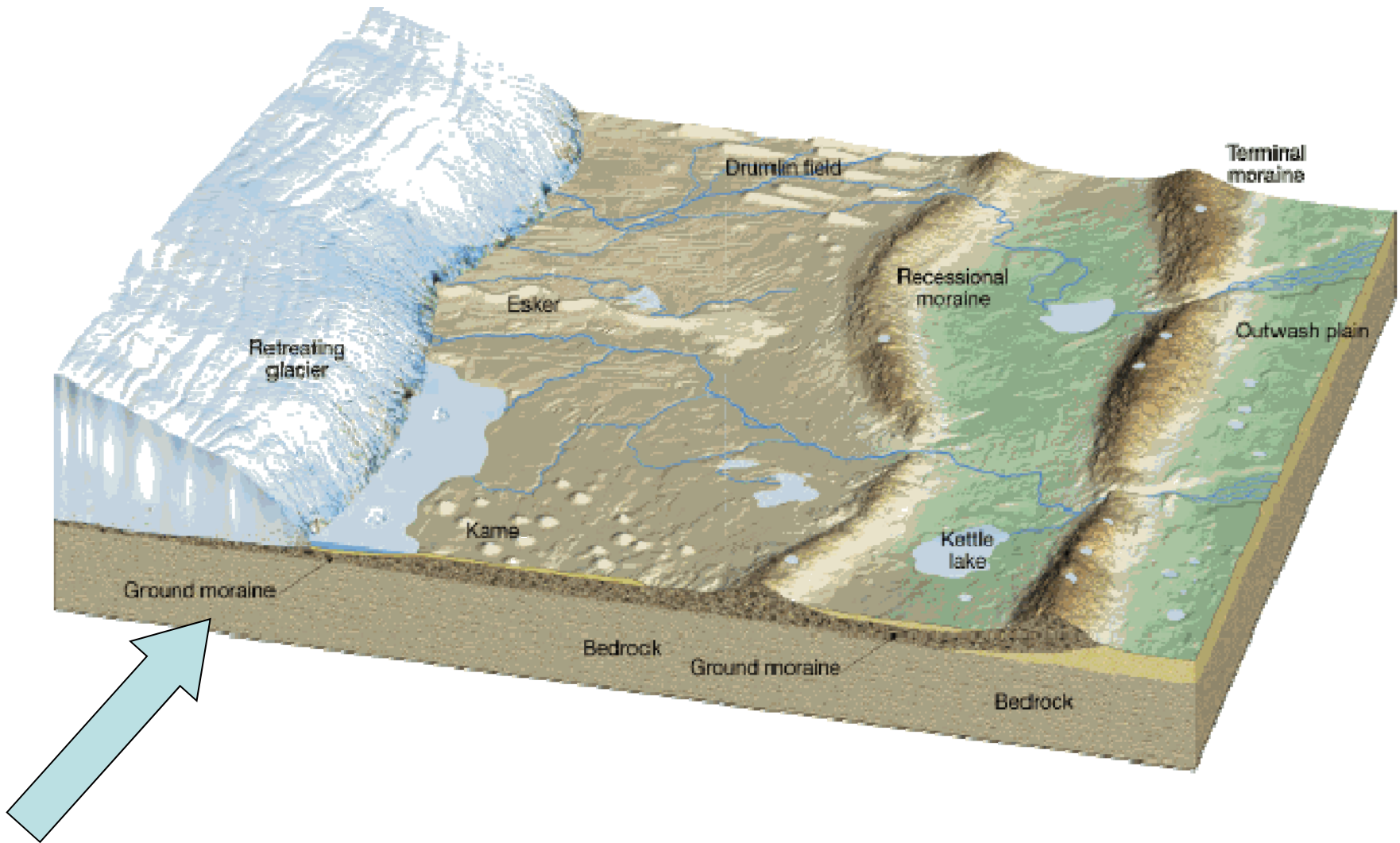


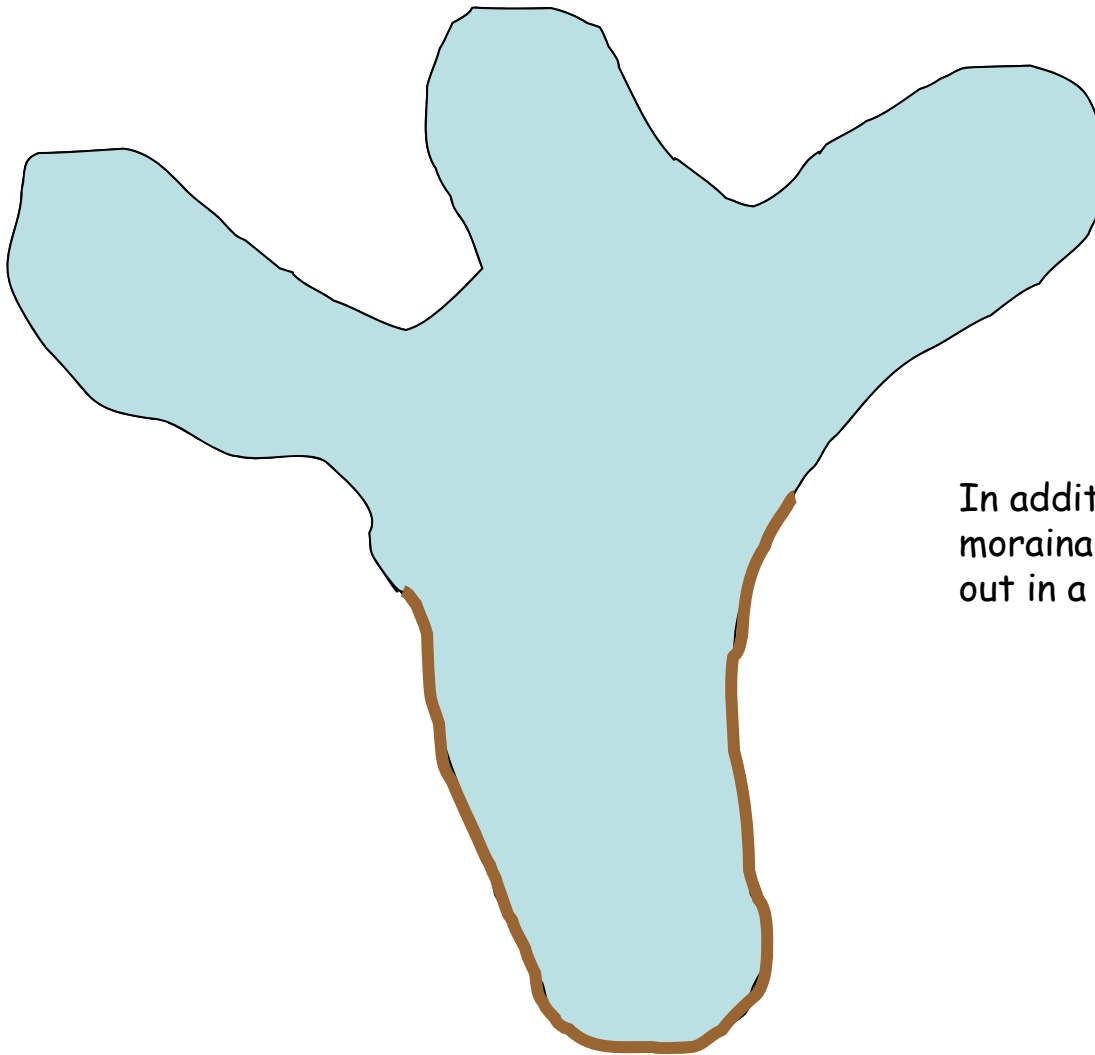
Interlobate moraines next to Fremont Lake, WY, near Pinedale.

Major Lobes and Sublobes of the
Wisconsinan Advance of the
Laurentide Ice Sheet









In addition to long ridges of till, morainal material can be spread out in a sheet.



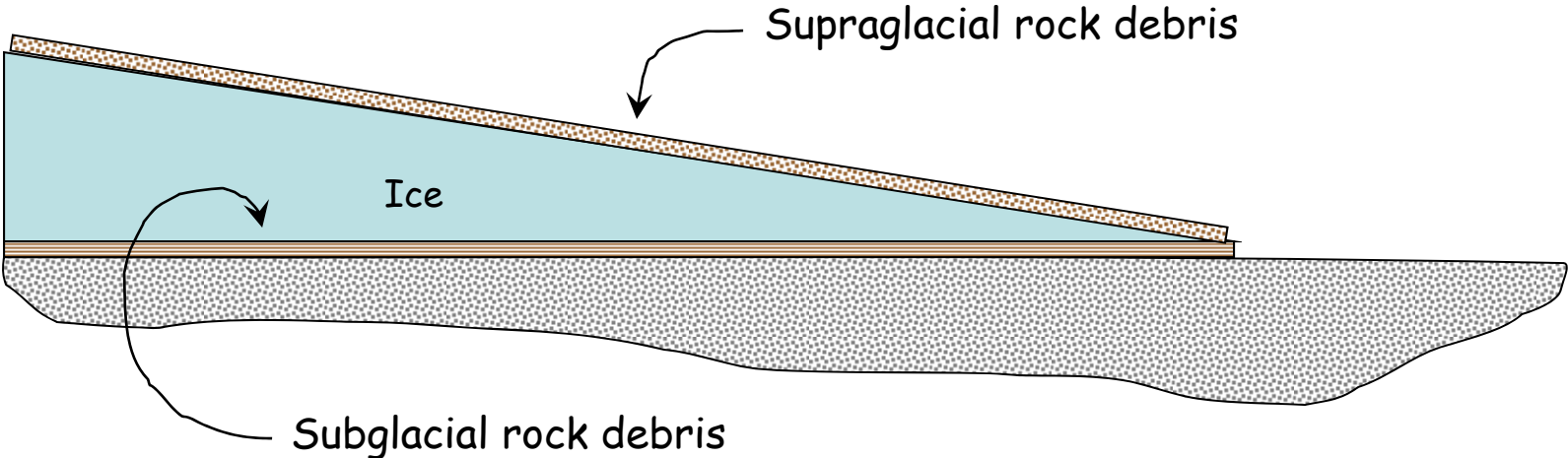
Formation of Ablation Till

Mount Billy Mitchell, northcentral Chugach Mountains

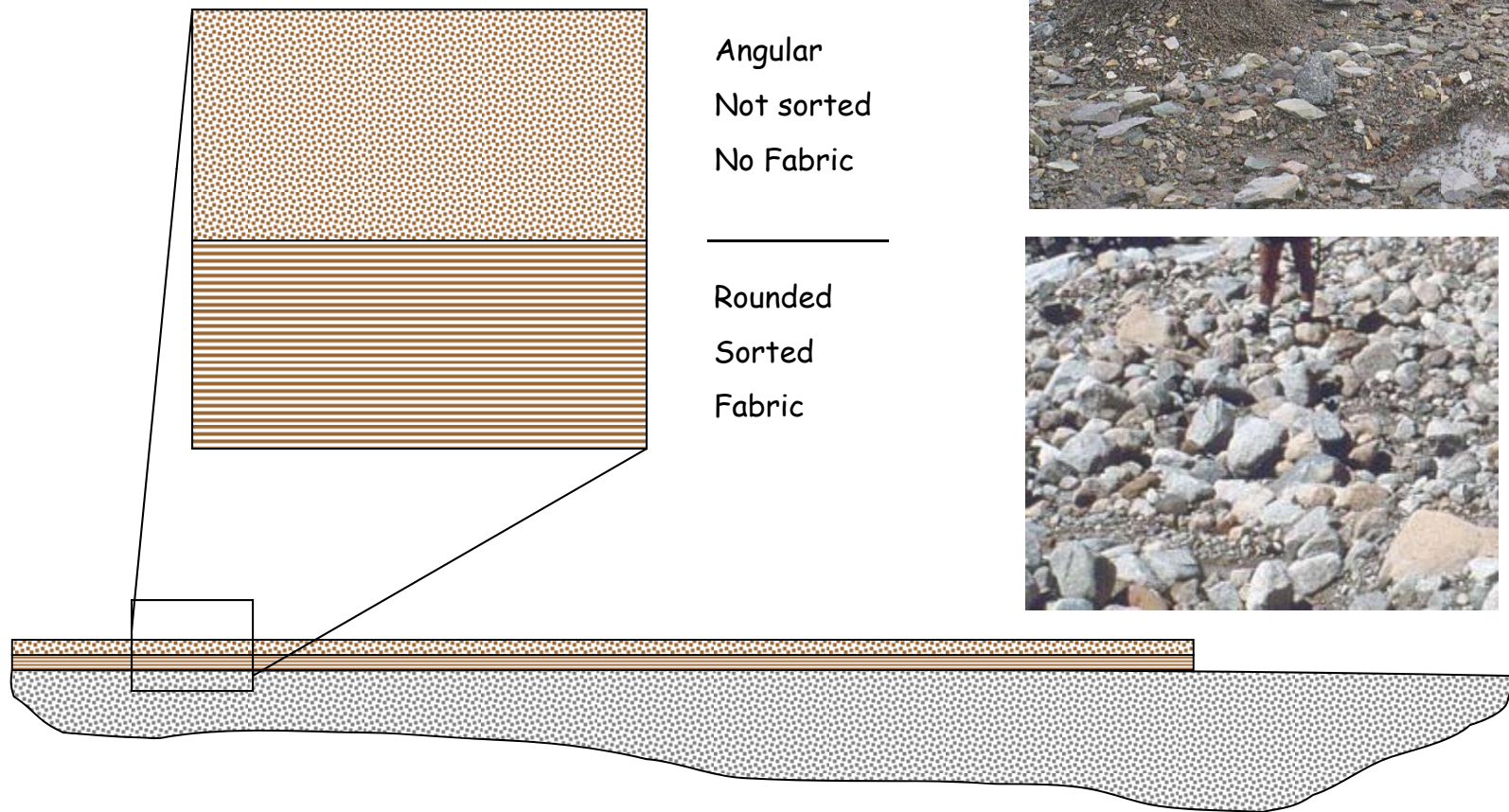




Ground Moraine



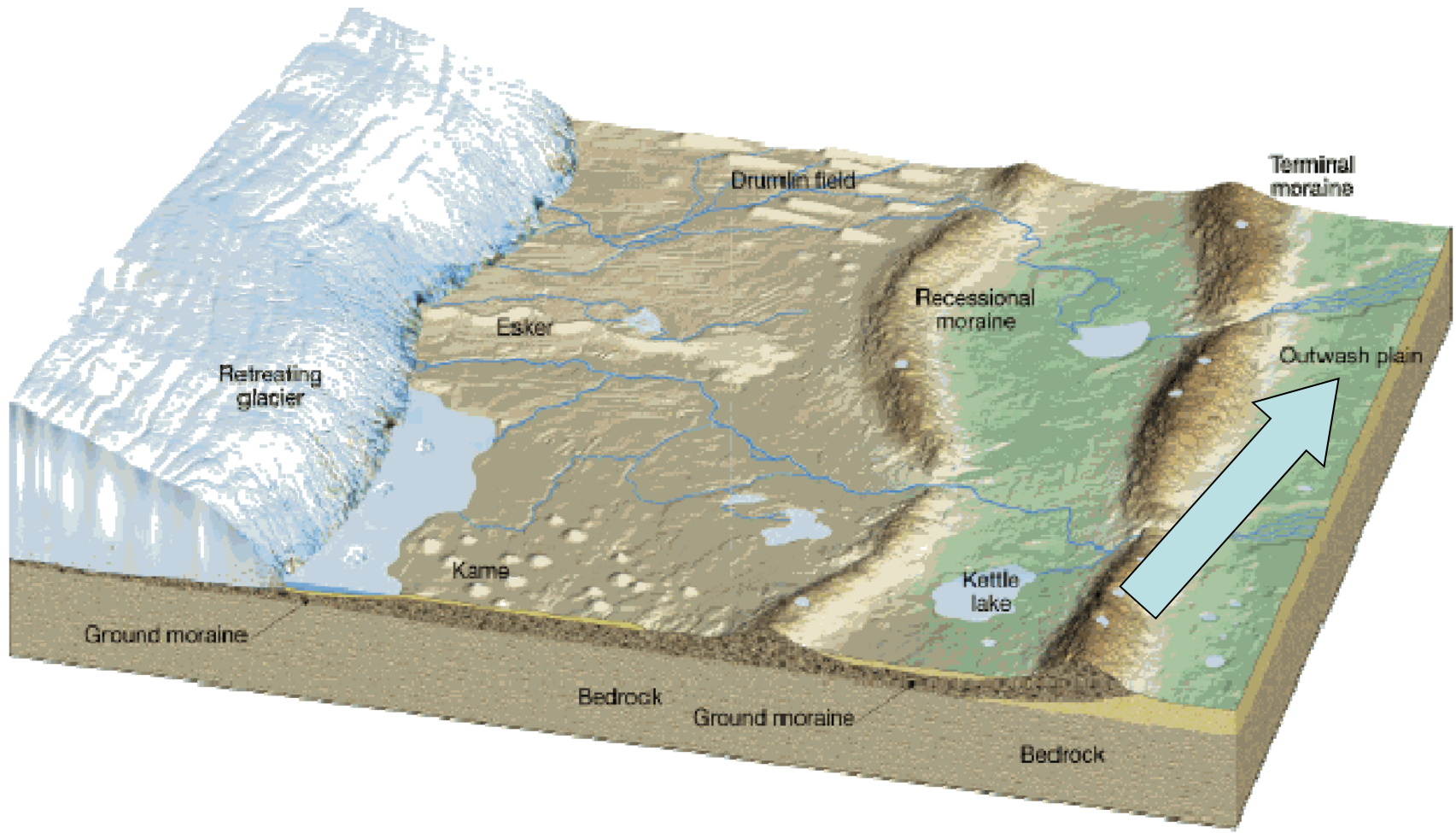
Glacial Drift (ground moraine)





Kennicott Glacier





Outwash Plain



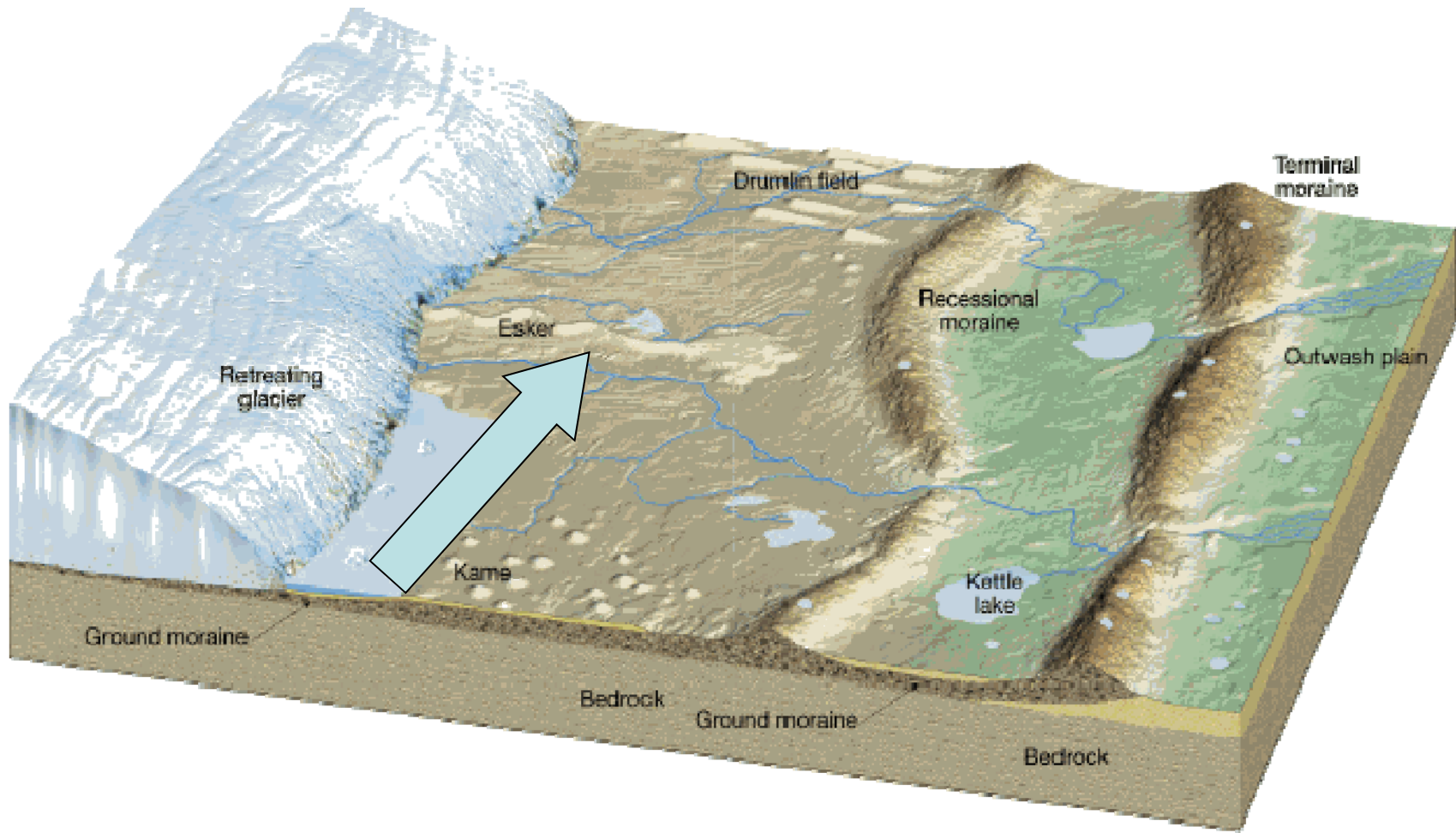
South Cascade Glacier



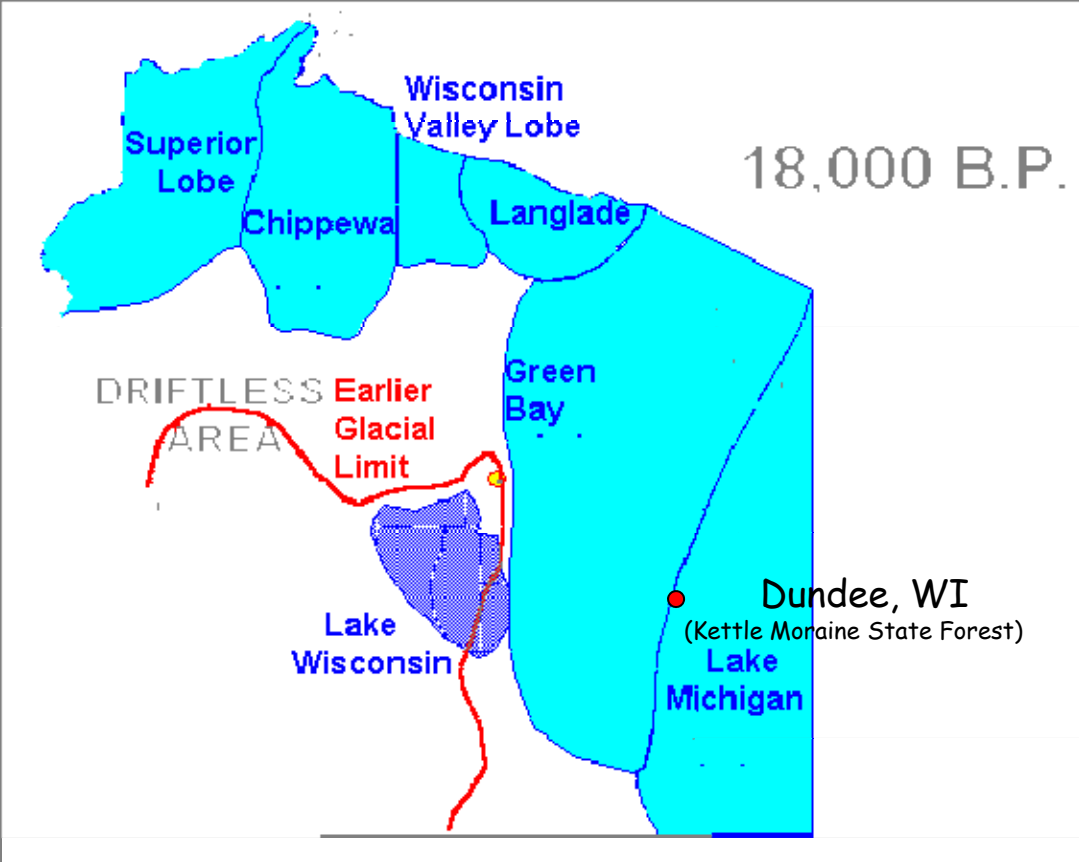
South Cascade Glacier



South Cascade
Glacier



Esker Locations





Parnell Esker and kettle lake, near Dundee, WI



Sand Quarry in the Parnell Esker, Dundee, WI



Parnell Esker near Dundee, WI

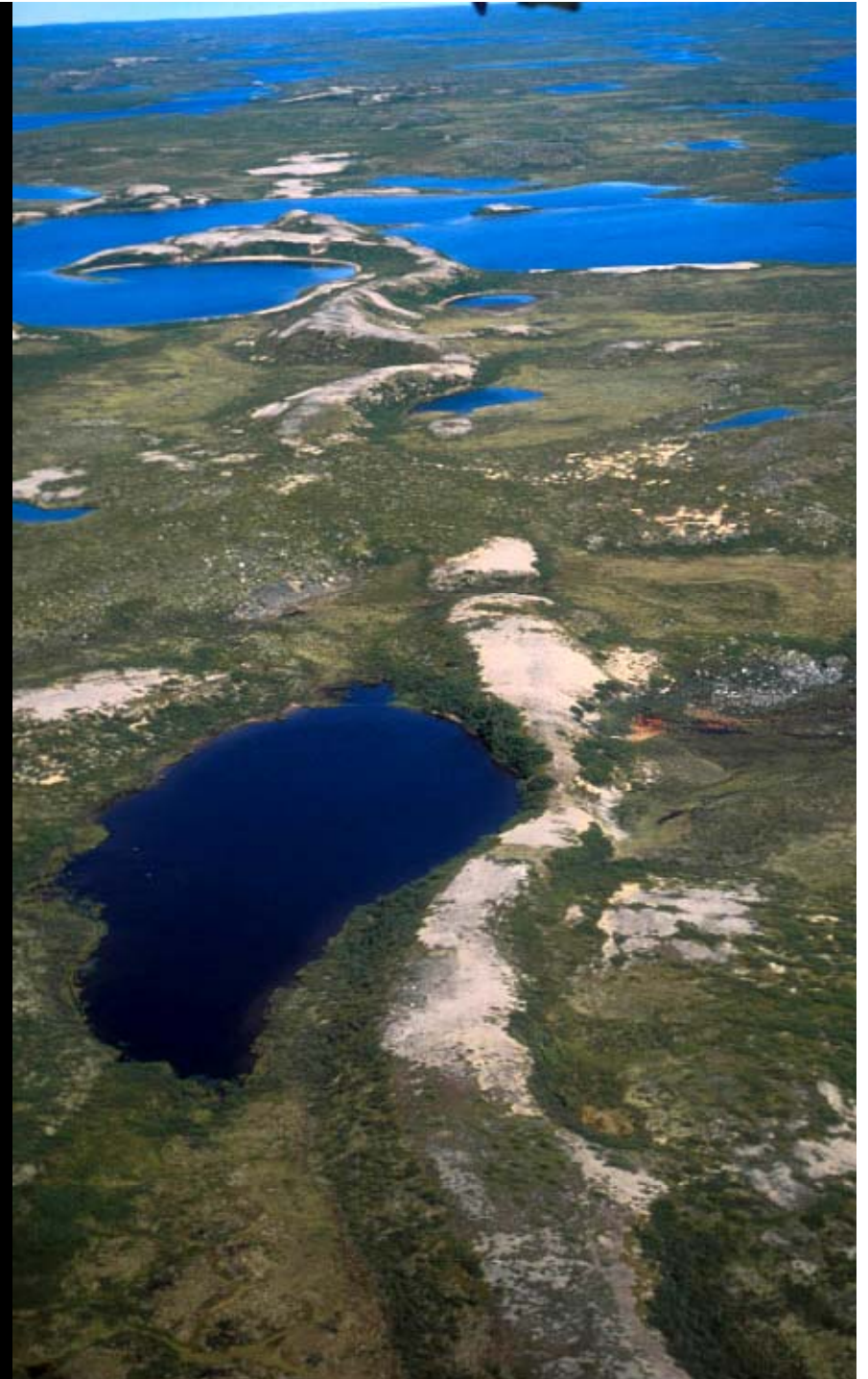


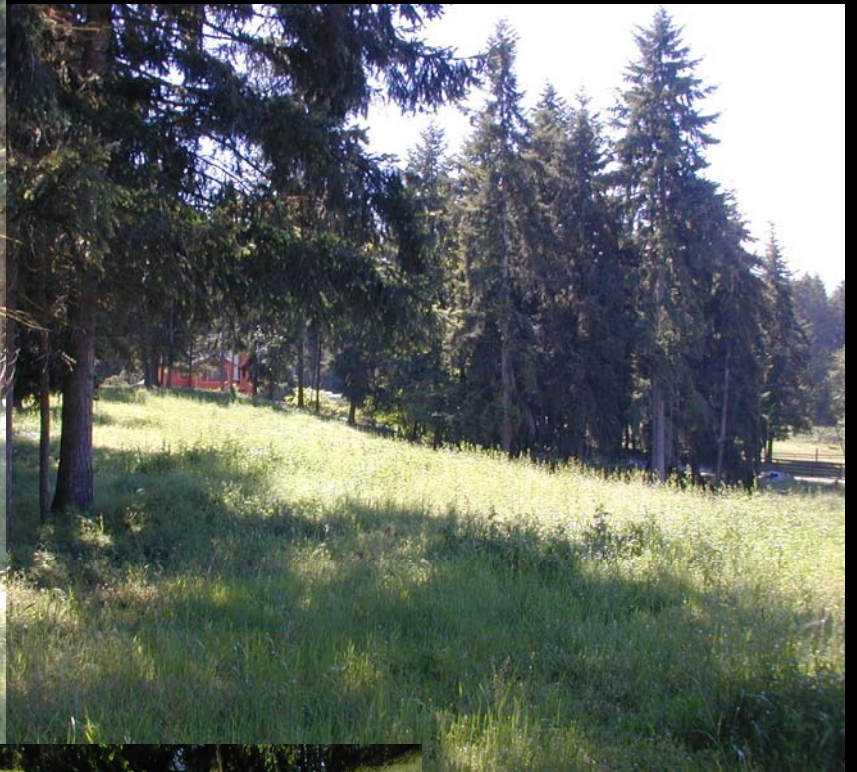
Manitoba

Eskers

NWT ...BoiseState

Near Elk River, MN



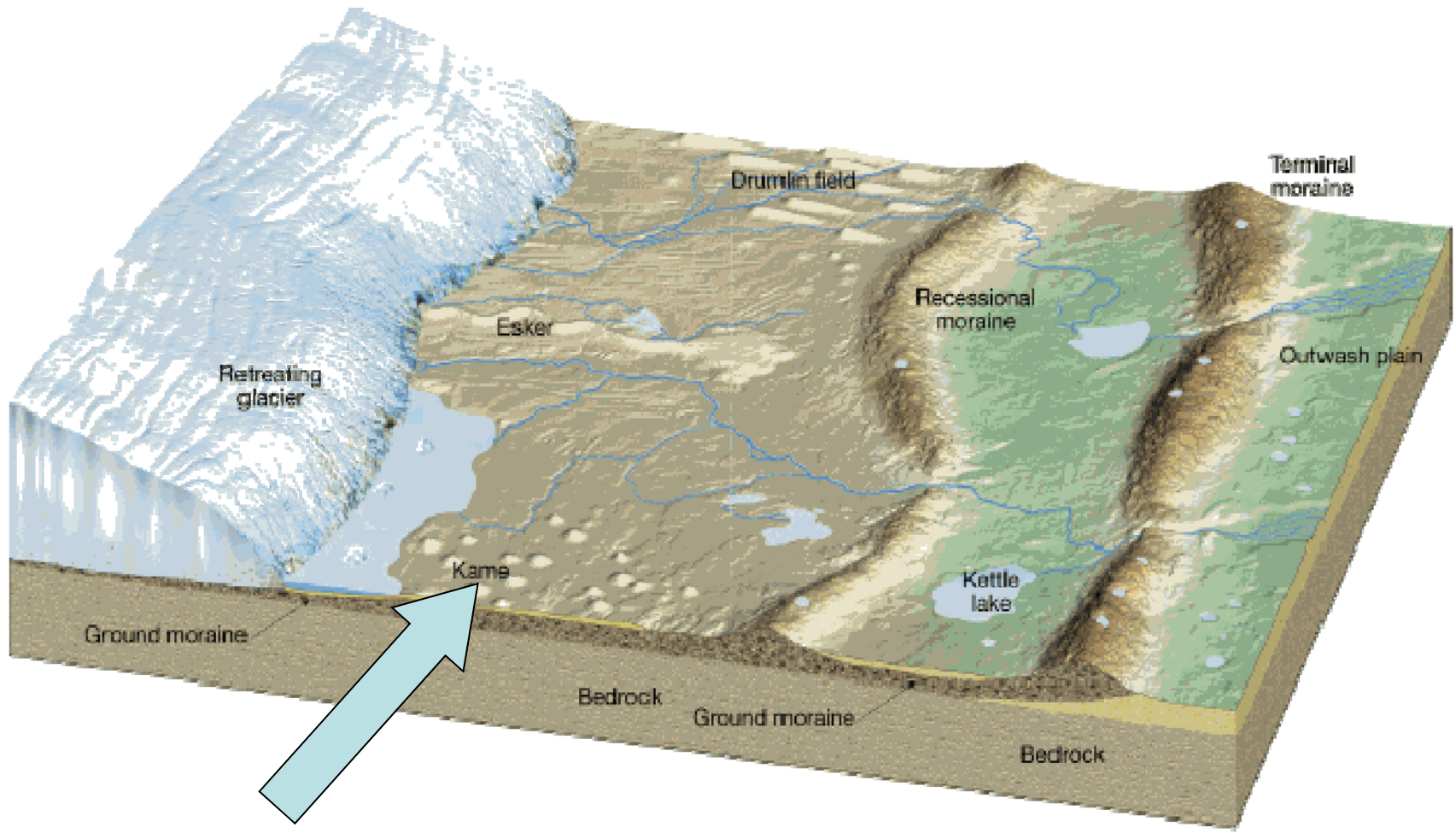


Orting? Esker

Near Tacoma, WA



Esker near Tacoma, WA
Otis Esker?





Moulin Kamewhat is a moulin kame?

Dundee, WI



Moulin Kame

Dundee, WI



Moulin Kame Dundee, WI

Drumlins

- smooth, oval, streamlined hills
(elongated, tear-dropped)
- composed mostly glacial till and some with stratified drift, and some have a rock core.
- formed by glacial “action”
- indicate direction of glacier flow



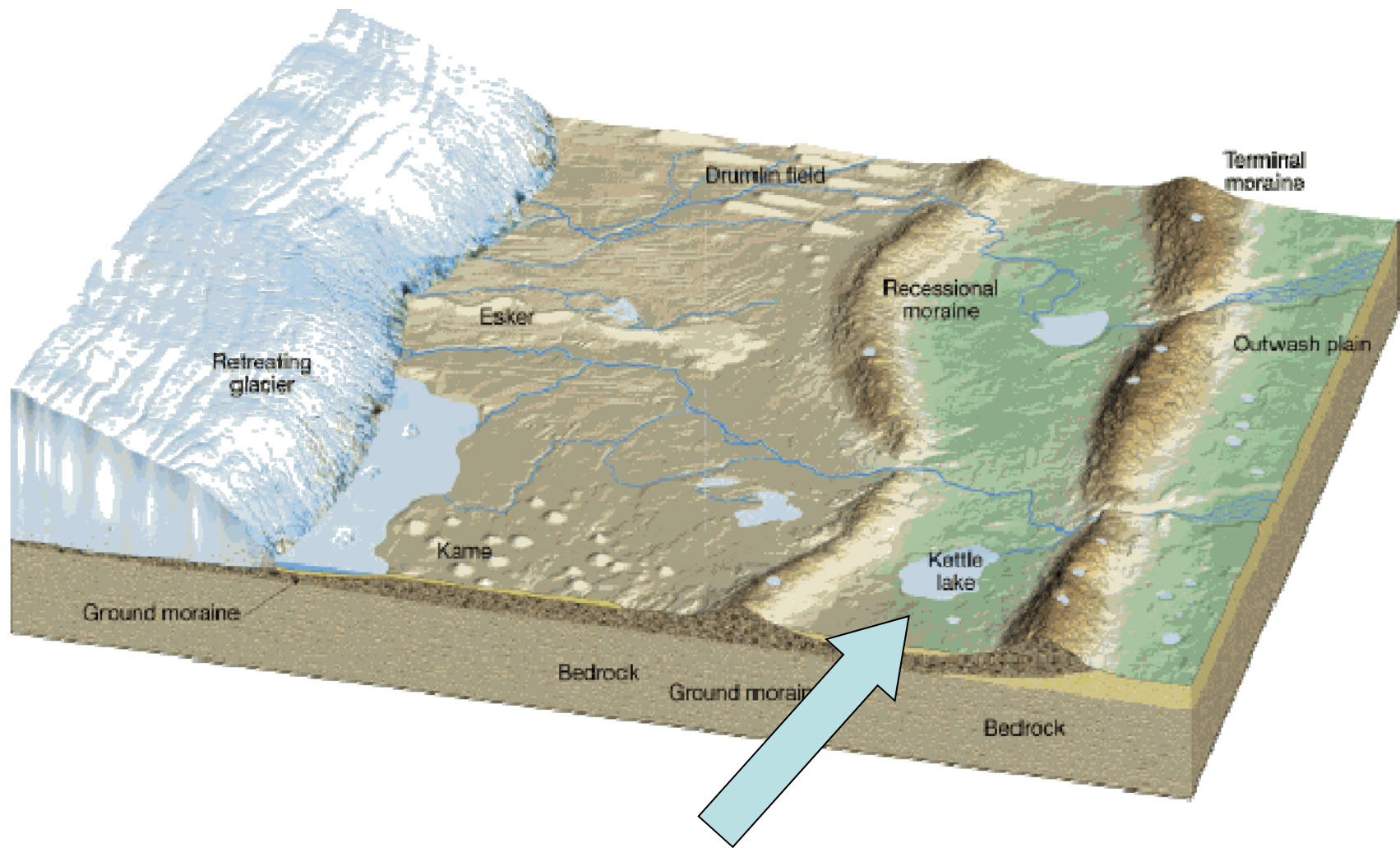




near Hustisford, WI Prentice-Hall, Inc



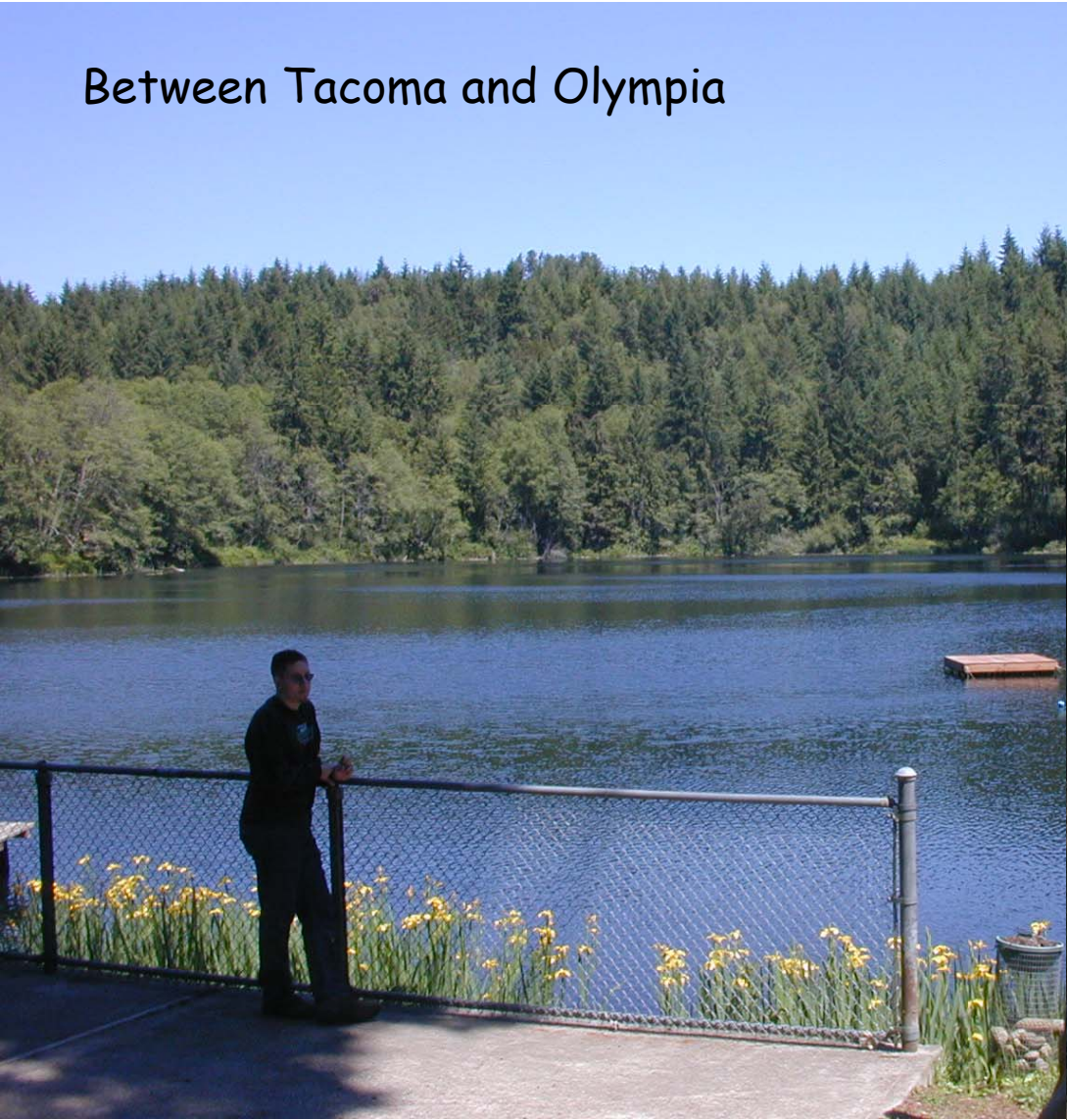
A series of drumlins of the Green Bay Lobe about two miles SE of Waterloo, WI



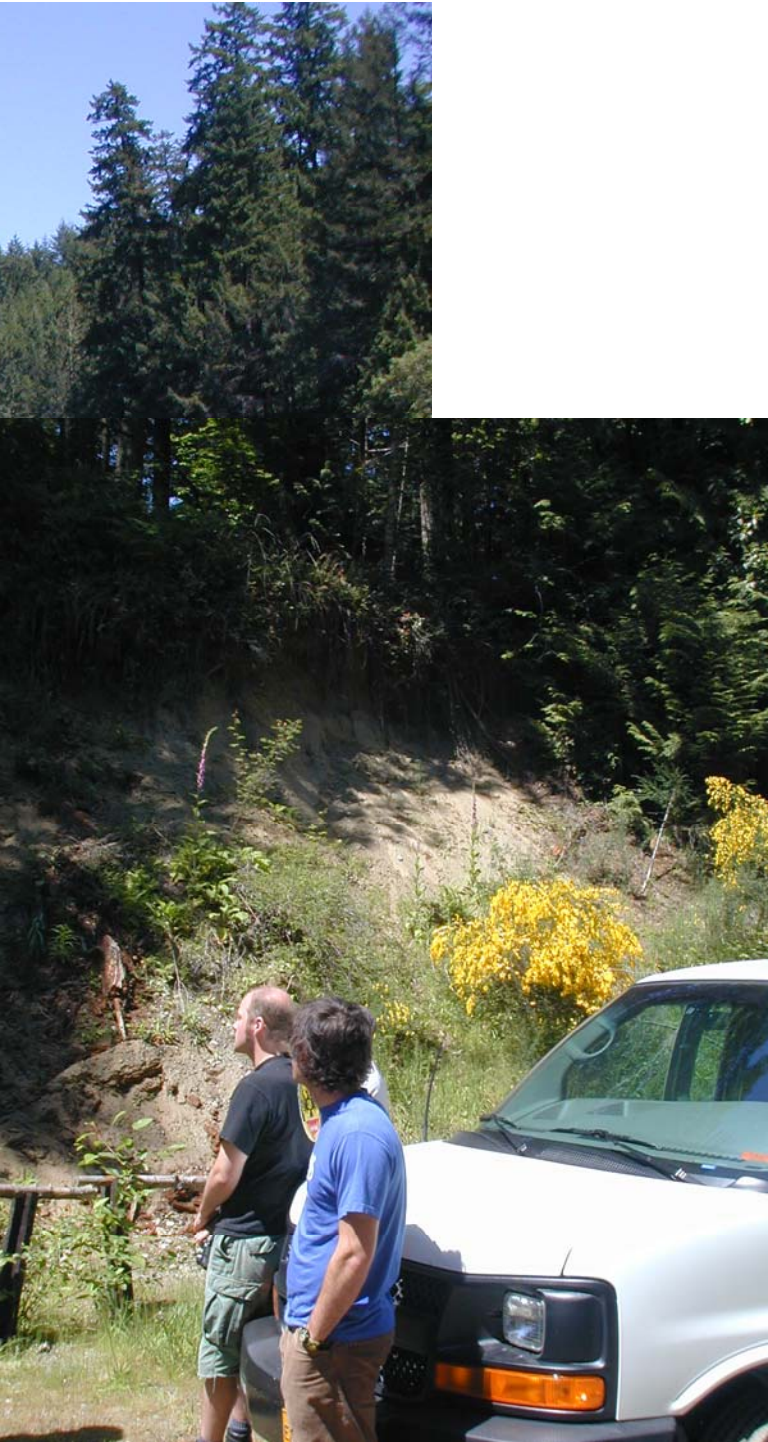


Prentice-Hall, Inc

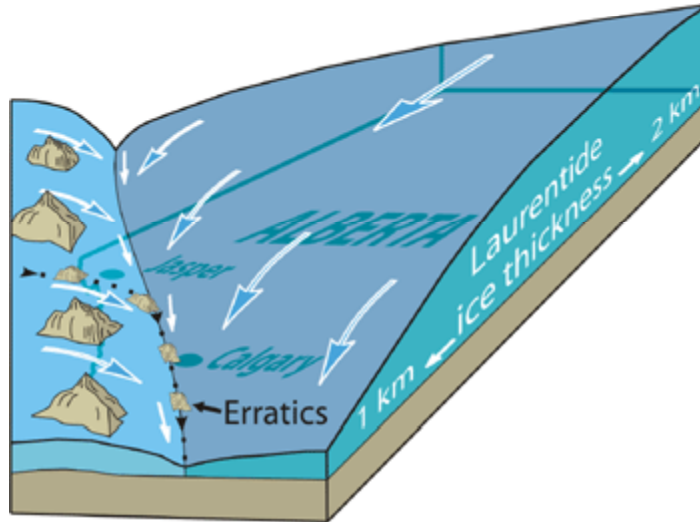
Between Tacoma and Olympia



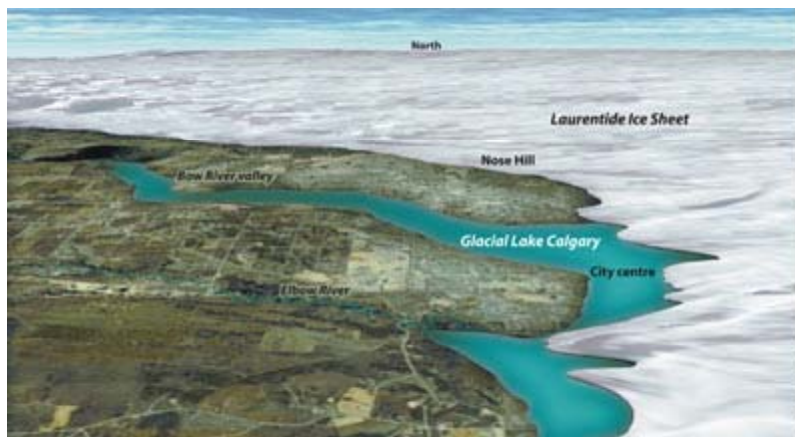
Near Tacoma, WA



Erratics



The 'Big Rock' is an erratic from the Jasper area that now rests near Okotoks. *(Photograph by B. Groulx)*



Digital rendering of the Laurentide Ice Sheet on today's landscape. *(Rectified Landsat on 60 m DEM: Ron DaRoza)*



Haystack Rocks, near Wenatchee, WA

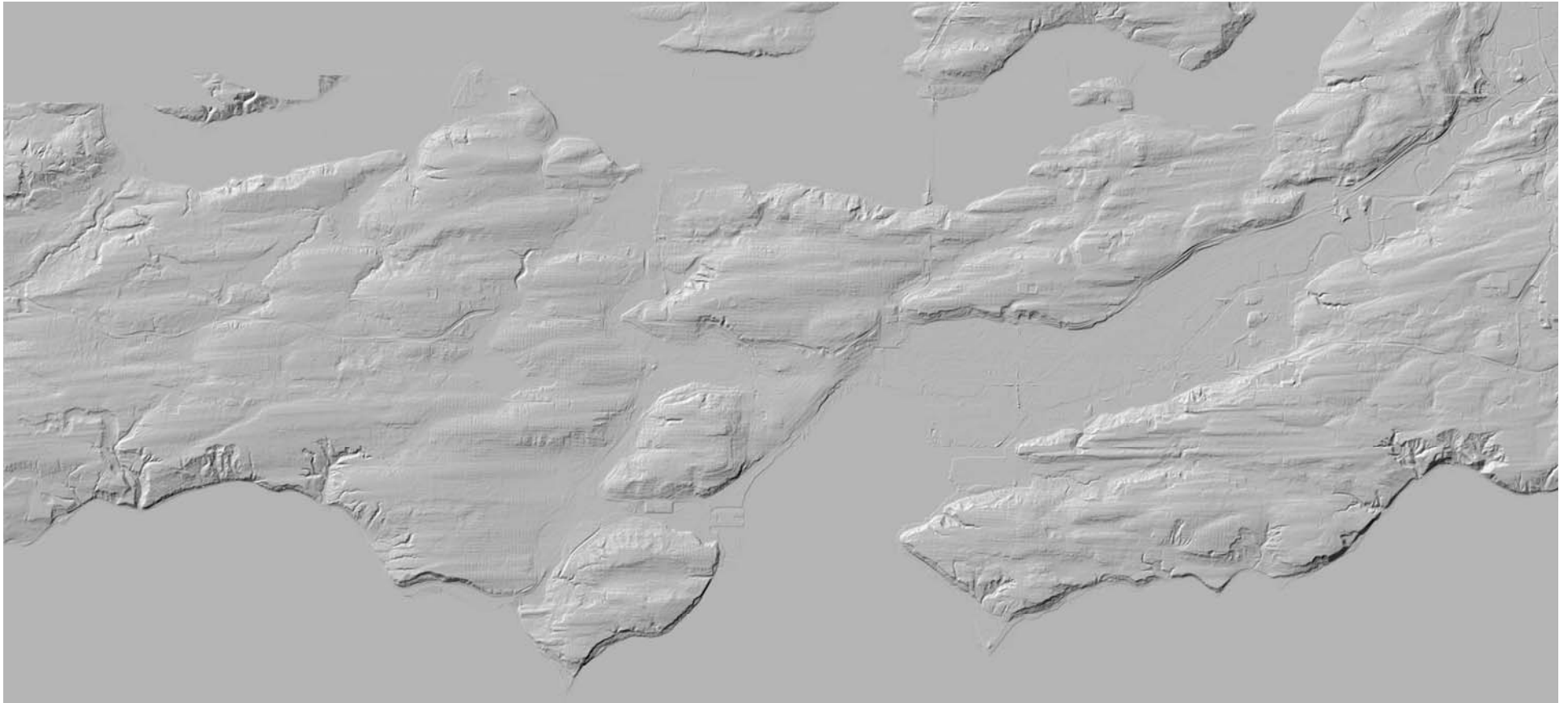
Flutes, Flute Moraines, 1899 Columbia
Glacier, Gilbert



Fluted surface, glacier advancing on forest

Columbia Glacier, 1899 GK Gilbert

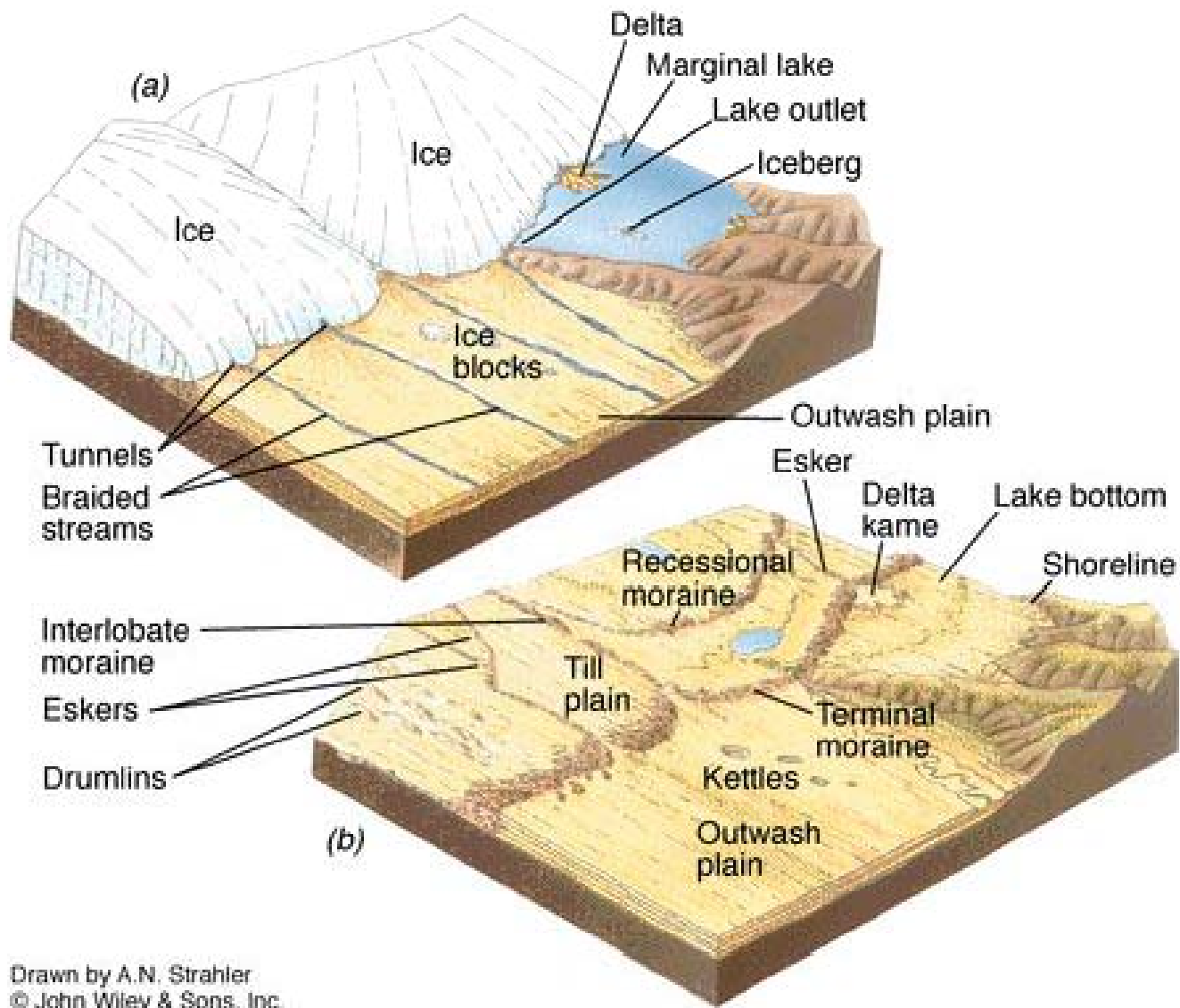




Where is this?

END





Drawn by A.N. Strahler
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Taylor Glacier, Antarctica







Lateral moraines along Fremont Lake, WY near Pinedale.

Push Moraine, Columbia Glacier 1899, GK Gilbert

