



Our Diverse Prairie Landscape



Ice Age: Architect of Our Landscape

The province of Saskatchewan was covered by at least five continental ice sheets over the past 2 million years. The action of these ice sheets carved the much of landscape as we know it today. The final ice sheet is known as the Laurentian Ice Sheet and retreated for the last time between 17,000 and 8,000 years ago.



Ice Age: Architect of Our Landscape

A few terms

Continental Ice Sheet - a large mass of ice that covers almost all land features. Today there are continental ice sheets in Antarctica and Greenland.

Ice Age - a time of extensive glacial activity. The last ice age took place during the Quaternary Period which began 2 million years ago.

Ice Age: Architect of Our Landscape

A few terms

Ablation - ice mass lost when the build up of ice is less than the melt.

Accumulation – the ice mass increase when the build up of ice is more than the loss.



Ice Age: Architect of Our Landscape

A few terms

Advance - as ice is added to the glacier it grows in mass, the increase causes the glacier to slide slowly. A moving glacier is like a bulldozer, pushing some obstacles out of it's way and moving over others.

Retreat - ice at the front of a glacier melts causing the glacier to decrease in size. This melt leaves behind a variety of sediments and landforms.

Ice Age: Architect of Our Landscape

How does a glacier form?

A snow field is critical in the formation of a glacier. When the snow that accumulates during the winter is unable to melt completely during the summer thick ice accumulates. If the ice thickens enough it will begin to slide away from the snow field. As more ice builds the glacier thickens and advances.

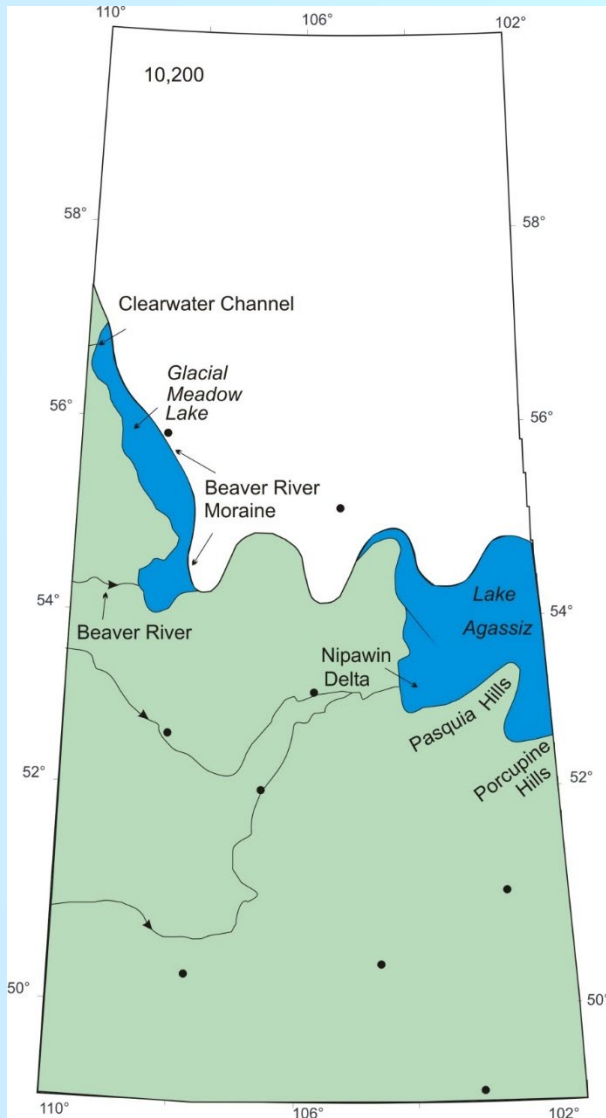


Ice Age: Architect of Our Landscape


How does a glacier form?

Firn or neve is a type of ice that is critical in the formation of glaciers. Snow crystals that have survived a summer become compacted and turn into small globules. They then form a mass of ice crystals with interconnected air spaces, this is firn. As the firn is compacted the air spaces become less and less until pure ice is formed.

Ice Age: Architect of Our Landscape



This diagram shows the province of Saskatchewan 10,200 years ago.



Ice Age: Architect of Our Landscape

How does a glacier move?

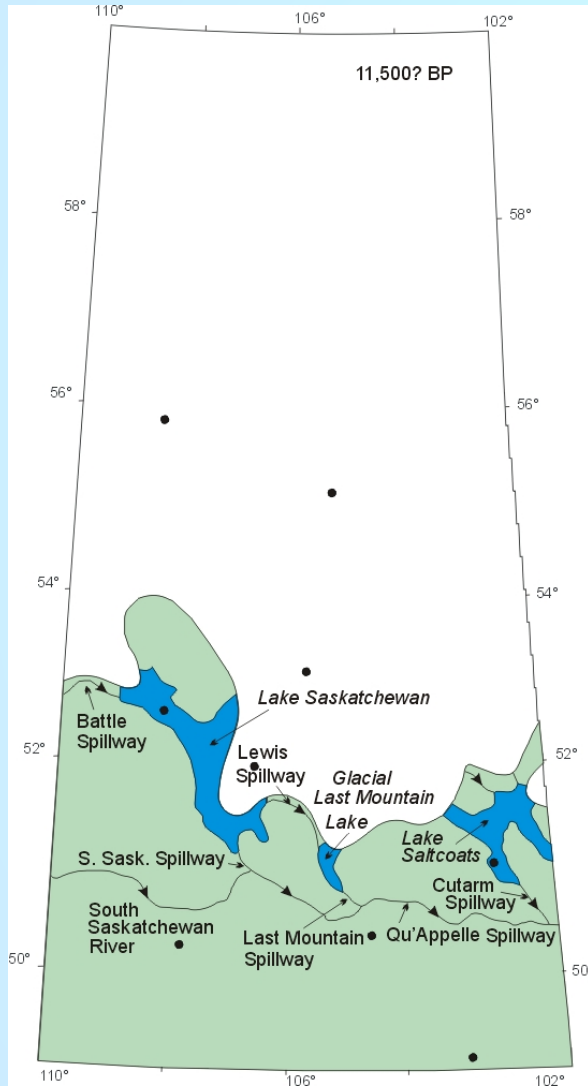
Glaciers and ice sheets can move slowly or quickly.

Creep happens when the mass of the ice combined with the force of gravity cause the glacier to slowly move . This generally happens in a down slope direction.

There may be water under the ice, this allows the glacier to flow.

The glacier may also crack or deform to allow for movement over or around it's surroundings.

Ice Age: Architect of Our Landscape



This diagram shows the province of Saskatchewan 11,500 years ago.



Ice Age: Architect of Our Landscape

Glacial Effects

As glaciers move they pick up sediments, rocks and other debris. As the glacier travels **till** (glacial debris) is left behind creating some beautiful and interesting landforms.

Ice Age: Architect of Our Landscape

Glacial Effects



This is a granitic erratic that was carried by glacial ice over 400 km from northern Saskatchewan to Rockhaven.

Ice Age: Architect of Our Landscape

Glacial Effects



Striae are scratch marks caused by the rocks and sediments frozen in the glacial ice as they travel over the landscape.

Ice Age: Architect of Our Landscape

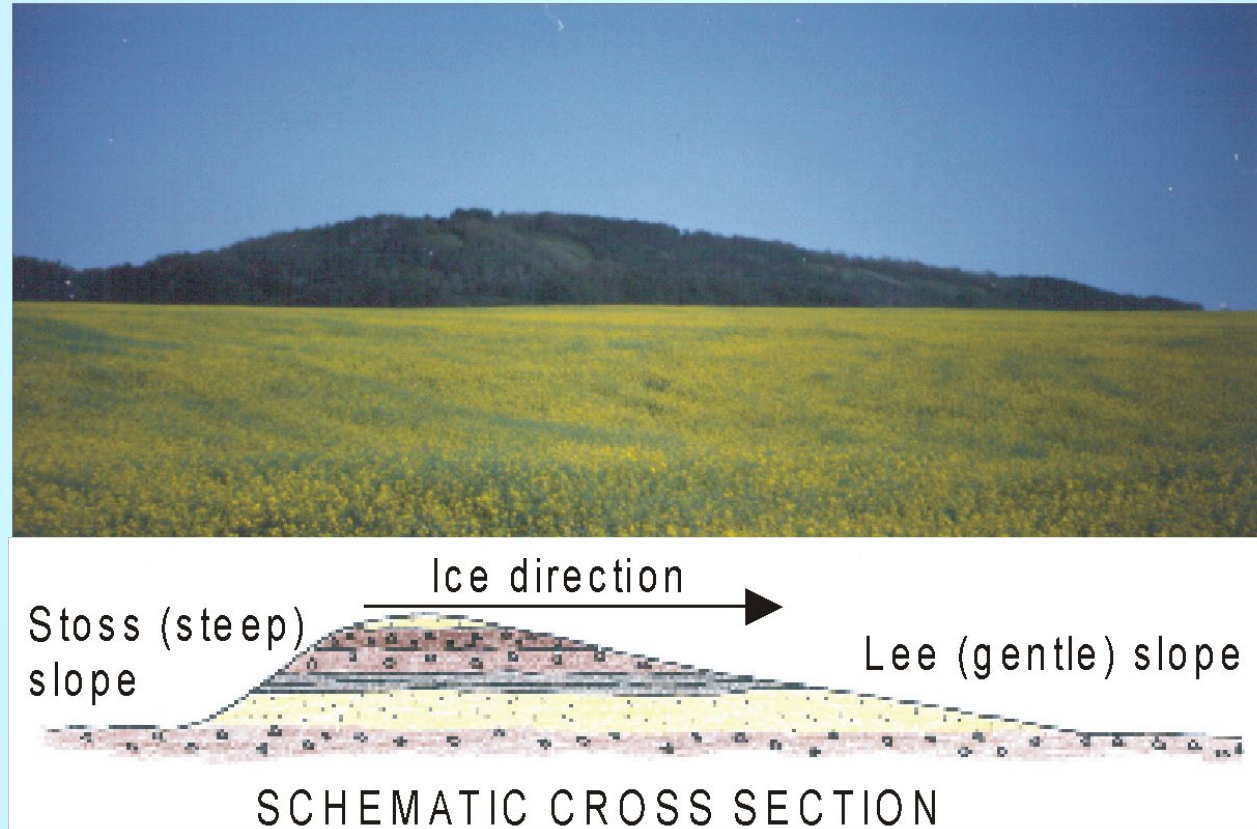
Glacial Effects



Rouche Moutonnees are rock outcrops that have been modified by glacial ice.

Ice Age: Architect of Our Landscape

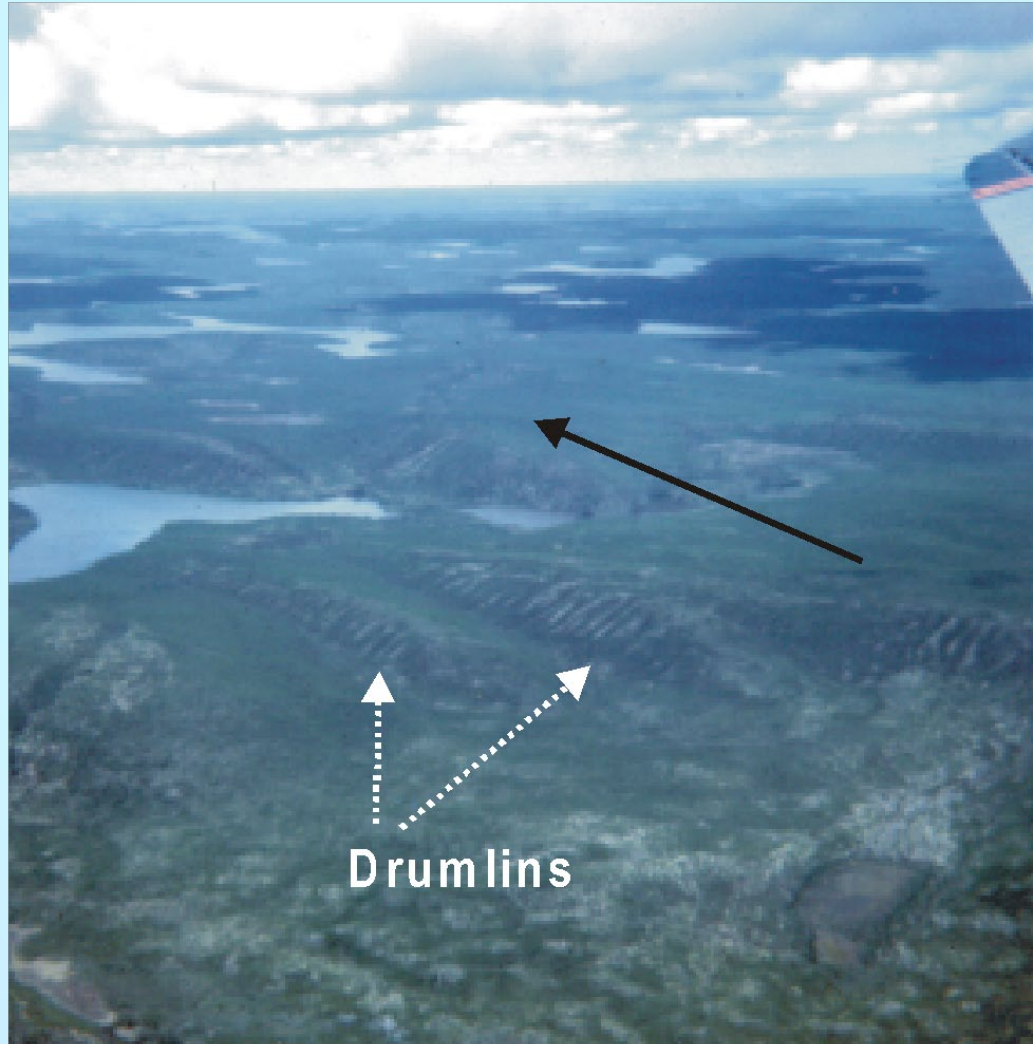
Glacial Effects



This is a drumlin near Kamsack, Saskatchewan.

Ice Age: Architect of Our Landscape

Glacial Effects



Ice Age: Architect of Our Landscape

Kettles are lakes and sloughs formed when a block of ice becomes isolated then melts.



ROB FENSOME



Four Billion Years and Counting
Quatre milliards d'années d'histoire

Supported by:
Avec le soutien de:



Ice Age: Architect of Our Landscape

Glacial Effects

Outwash plains are formed from the melt water that flowing from the glacial ice margin. This allows for many layers of sand, silt and clay to build up in a smooth, gently sloping manner.



Ice Age: Architect of Our Landscape

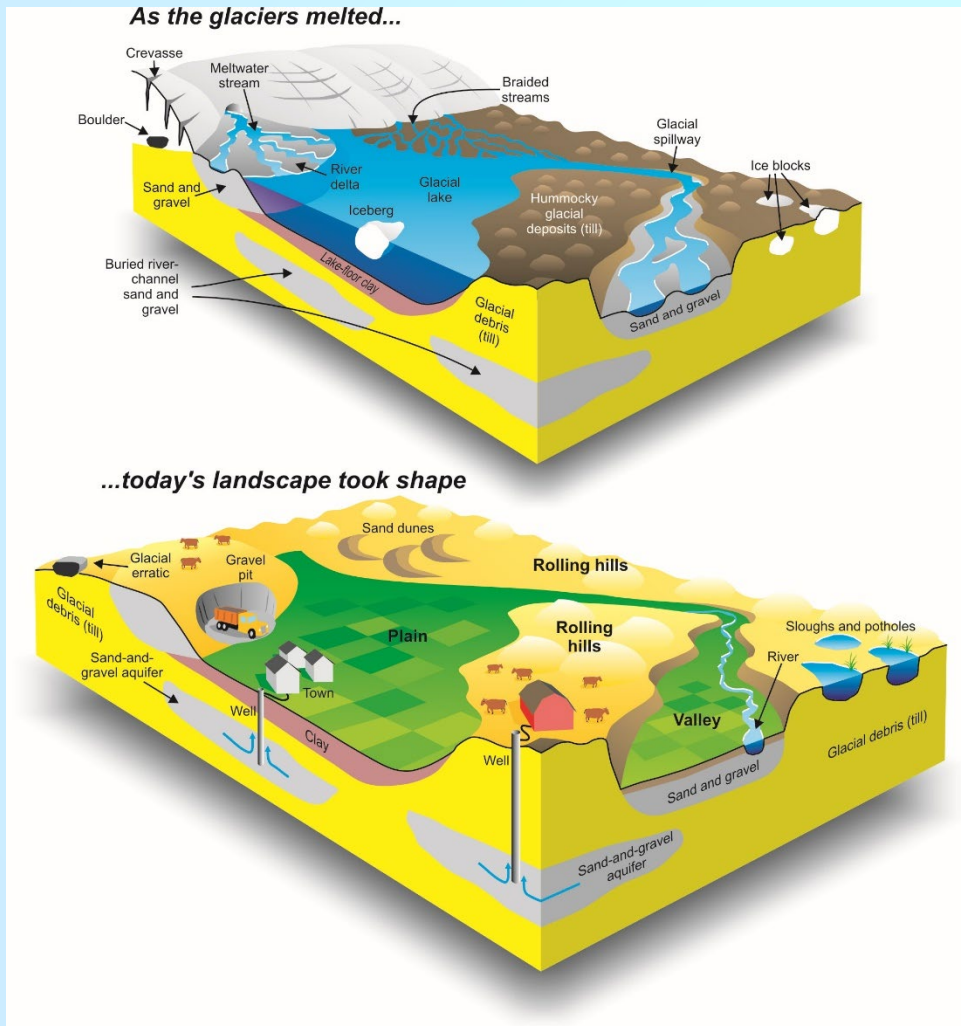
Glacial Effects



Melt water channels are created by the movement of glacial melt water and are generally steep sided with wide valley floors.

Ice Age: Architect of Our Landscape

Glacial Effects



Glacial lakes are formed when glacial meltwater was trapped in low-lying areas. The melt water contained fine sediments that settled on the bottom of the lake bed.

Ice Age: Architect of Our Landscape

Glacial Effects



Ice Age: Architect of Our Landscape

Glacial Effects



Eskers are ridges formed by streams flowing under the ice sheet. Eskers are parallel to the direction of ice flow.

IAN WARD / AIRSCAPES.CA



Four Billion Years and Counting
Quatre milliards d'années d'histoire

Supported by:
Avec le soutien de:





Ice Age: Architect of Our Landscape

Glacial Effects

Moraines are mounds, ridges or accumulations of till. Moraines are deposited by the glacier and can take a variety of forms. Moraines can be parallel to ice flow or perpendicular to ice flow depending on the type of moraine.

Ice Age: Architect of Our Landscape

Glacial Effects



An end moraine (yellow arrow) is the ridge formed at the outer end of a glacier. This type of moraine is perpendicular to ice flow (red arrow).

TED LITTLE

 Four Billion Years and Counting
Quatre milliards d'années d'histoire

Supported by:
Avec le soutien de:



Ice Age: Architect of Our Landscape

Glacial Effects



A lateral moraine (green arrows) is a ridge or mound accumulated on the outer edges of the glacier. They are roughly parallel to ice flow (red arrow)



Ice Age: Architect of Our Landscape

Glacial Effects

A medial moraine is formed when two glaciers come together as one. The medial moraine is formed when two lateral moraines combine, this creates a striped appearance within the glacier.

Ice Age: Architect of Our Landscape

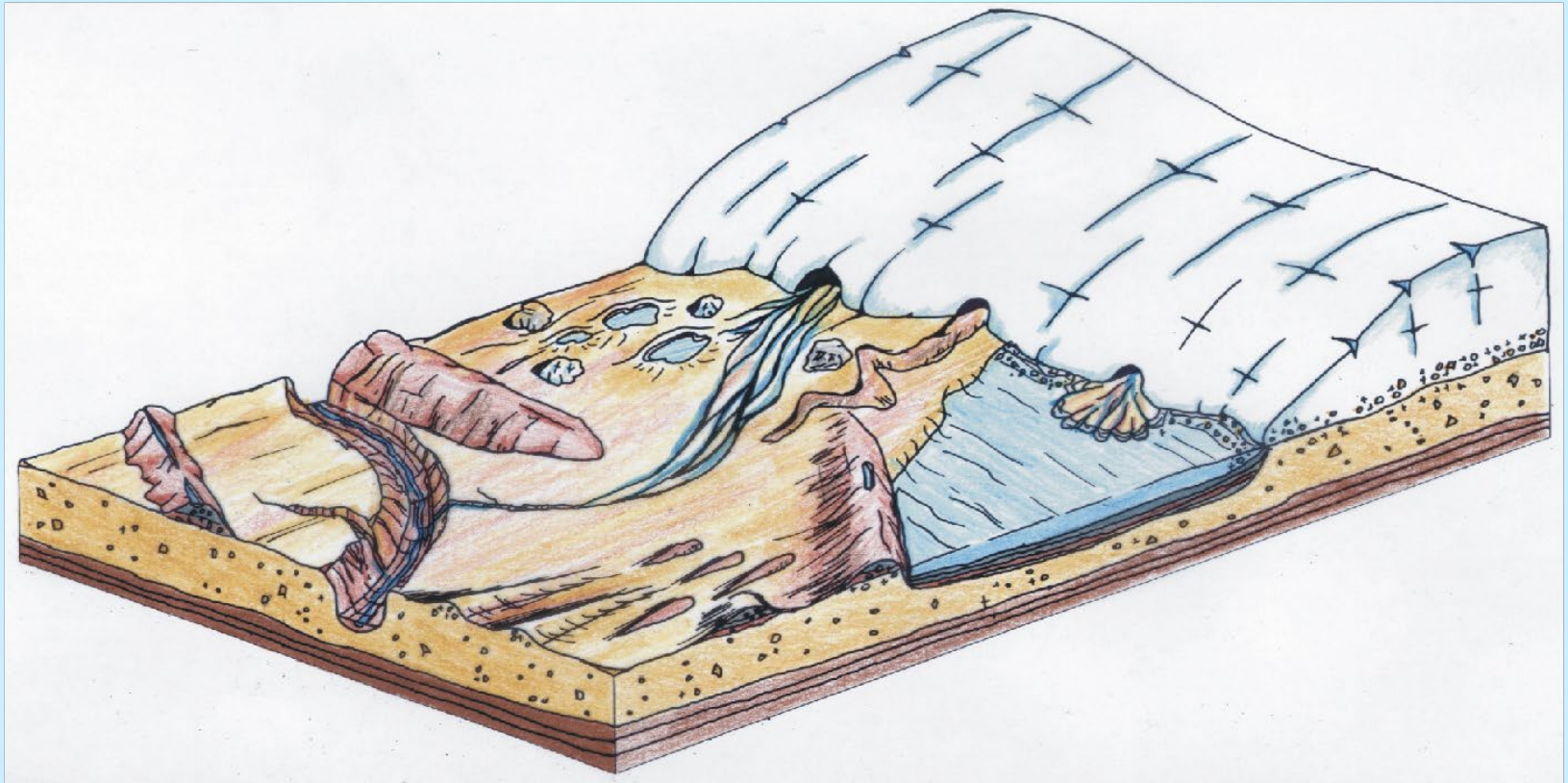
Glacial Effects



Hummocky moraines can also be referred to as hummocky terrain. This type of terrain is formed when an area is marked by many hills (hummocks) and kettles.

Ice Age: Architect of Our Landscape

Glacial Effects



Ice Age: Architect of Our Landscape

How would the province of Saskatchewan be changed without the effects of glaciation?