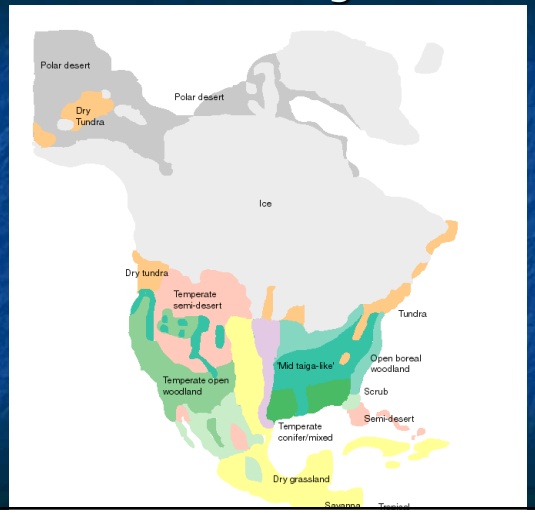
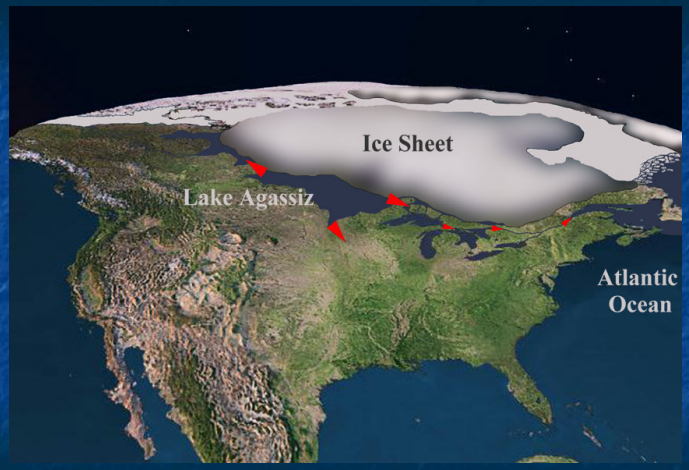
This Ice Age!!



Cause: Ice Ages

- "Ice Ages" are times when continental glaciers covered large parts of the Earth.
- About 20,000 years ago, half of North America was covered by a vast ice sheet called a glacier.



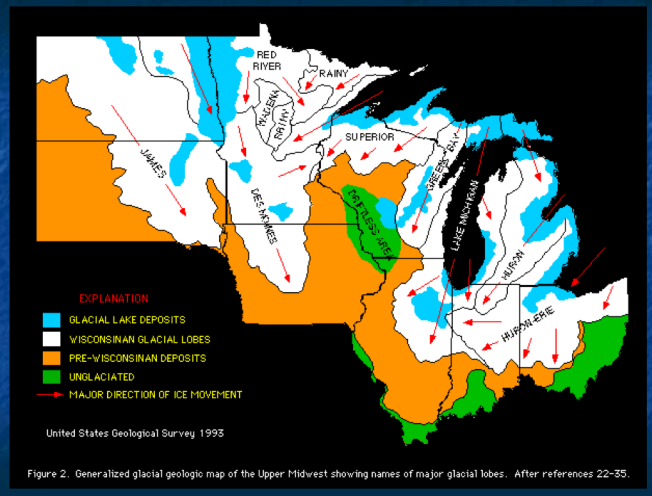


Figure 2. Generalized glacial geologic map of the Upper Midwest showing names of major glacial lobes. After references 22-35.

2 Types of Glaciers:
#1 Continental Glaciers

- Continental glaciers cover large areas of land. (most of a continent or island)
- Can flow in all directions when moving
- "Pancake batter".
- 2.5 MYA, a third of the Earth was covered by these glaciers.

#2 Alpine (Valley) Glaciers!

- Glaciers that are most common in our time period.
- Long, narrow found in high mountain valleys.
- Smaller than continental glaciers but can be 10,000+ kilometers long!
- Glaciers cover 10% of Earth's surface today

How Do Glaciers Form?

- Glaciers form from layers of compacted snow.
- Snow turns to ice.
- Glaciers form only in areas where more snow falls then melts!

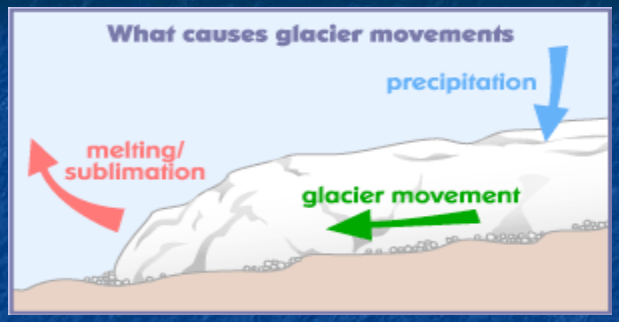
Glacier Formation Continued

- During the winter thicker layers of glacial ice are formed
- In the summer thinner layers are formed
- By counting these seasonal bands scientists are able to use glaciers as a timeline for the Earth

How do Glaciers Move?

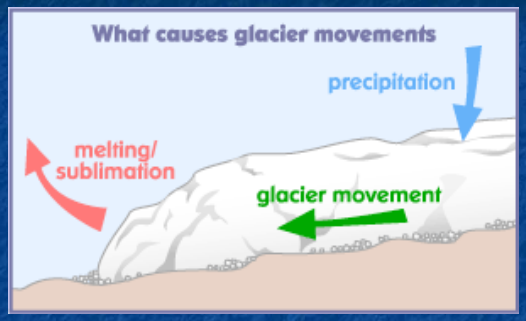
1. Glaciers form from the compaction of snow.
2. The bottom layer of snow becomes slippery & putty like
3. Gravity pulls the glacier downhill, the slippery layer reduces friction helping it slide.

Glacial Advance



- When a glacier is growing in size and moving into different areas.

Glacial Retreat



- When a glacier is shrinking in size and moving out of areas.

Glacial Erosion

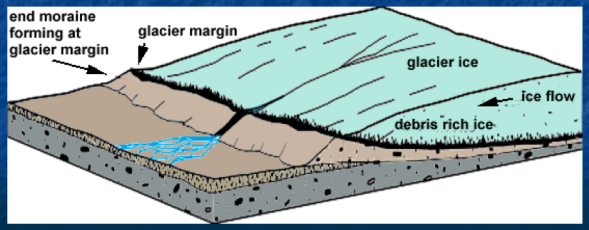
- A glacier erodes away the landscape causing massive weathering and erosion.
- Striations: Large cuts into the side of a rock, formed by glaciers.
- Plucking: Glaciers pick up rocks as it flows over the land.
  - Moves large boulders
  - Abrasion: "Sandpaper like"

Glacial Striations

- When a glacier melts, it deposits the sediment it eroded from the land creating various landforms.
  - Till
  - Moraine
  - Kettle
  - Drumlin
  - Esker

Moraines

- Piles and ridges of sediment deposited at the edges and front of glaciers
- Lateral & End Moraines



10,000+ Lakes in MN

Kettle Lakes/Great Lakes/Mississippi River

- Lakes that are formed from the break off of large ice chunks as a glacier retreats.
- Large chunks of ice compress into the ground forming layers water can't get through.

Glacial Till

- Small rock, sediment, and soil that is deposited by a melting glacier (clay in Forest Lake area)

Glacial Erratics

- Rock that is moved and carried to different locations by a glacier.