

## END MORAINES—the end of the glacial ride



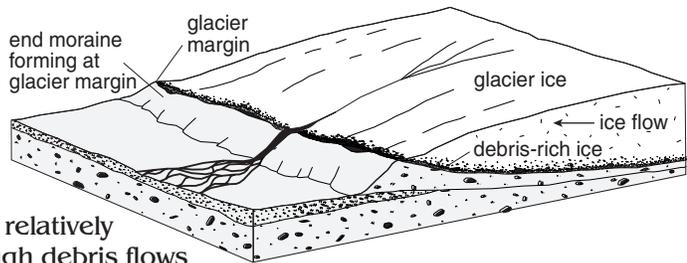
Satellite photo of central Illinois shows broad curved ridges.

We tend to think of Illinois as very flat, but bike riders and joggers know that our landscape has many subtle hills, ridges, and long uphill slopes. From a satellite or the space shuttle high above the earth, large broad ridges can be seen that arc across northeastern Illinois.

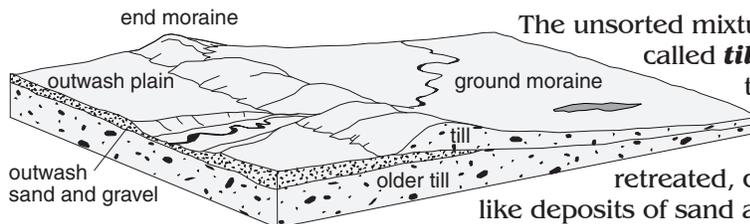
These ridges, left behind when the last Ice Age glaciers melted away, are called end moraines; they formed between about 25,000 and 14,000 years ago during the Wisconsin glacial episode. Although these ridges are easy to see from space, they are so broad and rounded you may sometimes overlook them when you drive across Illinois.

### How do end moraines form?

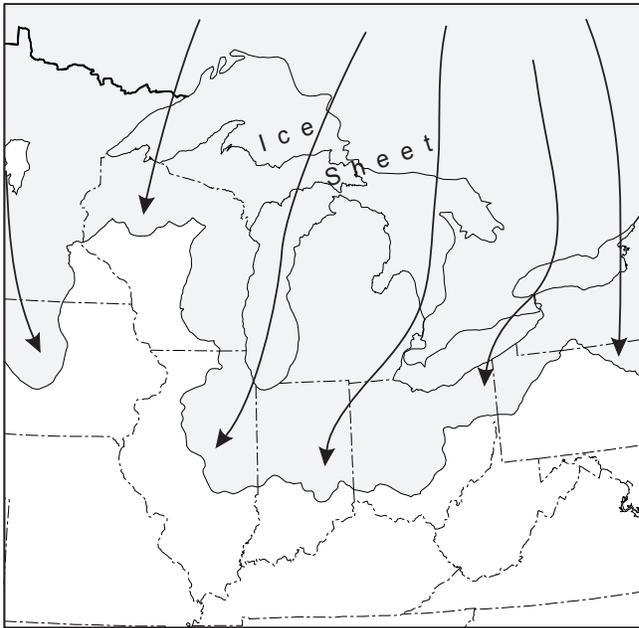
Melting at a glacier margin causes the ice to thin, and ground-up rock debris carried in the base of the ice or dragged along beneath the glacier is deposited. When the ice margin remains in the same place for a relatively long time (tens of hundreds of years), enough debris flows to the glacier's leading edge and piles up to form a large **end moraine** on the landscape.



### What are end moraines made of?



The unsorted mixture of debris deposited by a glacier is called **till**. Most **end moraines** in Illinois are thick ridges of till. A ground moraine, the relatively flat low-lying landscape across which the melting glacier retreated, consists of a thinner layer of till. Sheet-like deposits of sand and gravel, called **outwash plains**, were left behind by meltwater streams flowing away from the glacier.



During the Wisconsin glacial episode, a vast sheet of ice formed over most of Canada. Glaciers flowed away from the center of the ice sheet. The glacier that flowed through the Lake Michigan basin and into northeastern Illinois reached its southernmost extent at Shelbyville about 20,000 years ago.



## End moraines in northeastern Illinois

The glacier did not just flow into Illinois and then gradually melt away. Its overall retreat was interrupted by many pauses during which moraines formed. Most of the more than 30 end moraines in Illinois (shown as dark arcs on the map) formed as the glacial lobe was "retreating" from its southernmost position. At times during the overall retreat, the ice margin temporarily readvanced, sometimes as much as 50 miles.

Even as the lobe was retreating, however, the glacier continued to flow toward its outer margin, delivering ice and debris to its leading edge. Large moraines mark positions where the ice margin paused for hundreds of years.

**Try to spot end moraines the next time you take a drive. Their rounded crests form the highest parts of the landscape. Radio and TV towers are commonly located atop these moraine ridges.**

*Contributed by A.K. Hansel*

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