Glaciation of Wisconsin

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Fourth edition

For the past 2.5 million years, Earth's climate has fluctuated between conditions of warm and cold. These cycles are the result of changes in the shape of the Earth's orbit and the tilt of the Earth's axis. The colder periods allowed the growth of glaciers that covered large parts of the world's high altitude and high latitude areas.

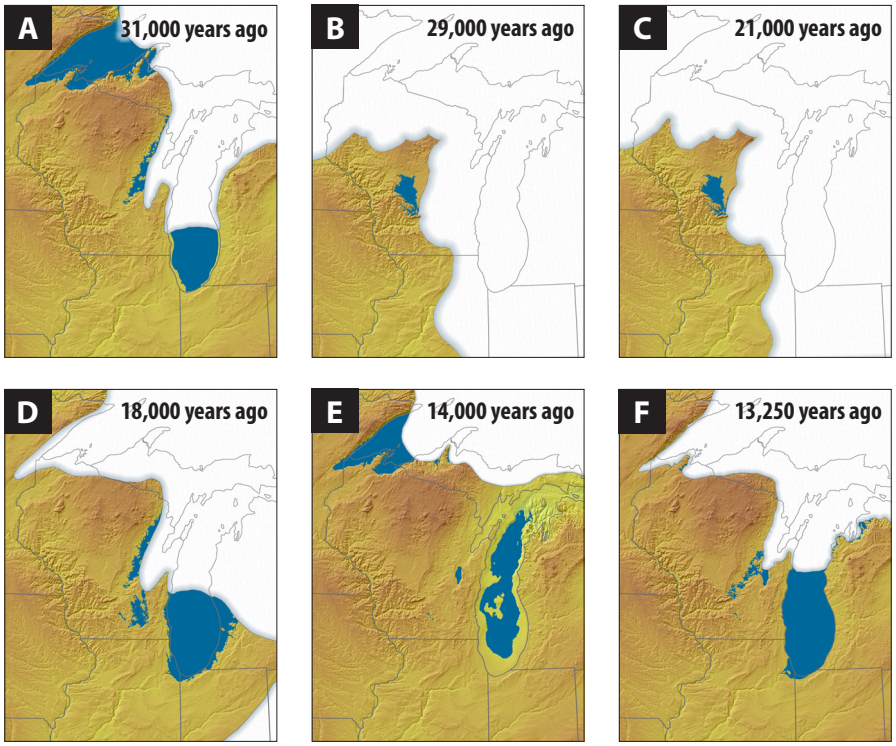
The last cycle of climate cooling and glacier expansion in North America is known as the Wisconsin Glaciation. About 100,000 years ago, the climate cooled and a glacier, the Laurentide Ice Sheet, began to cover northern North America. For the first 70,000 years the ice sheet expanded and contracted but did not enter what is now Wisconsin.

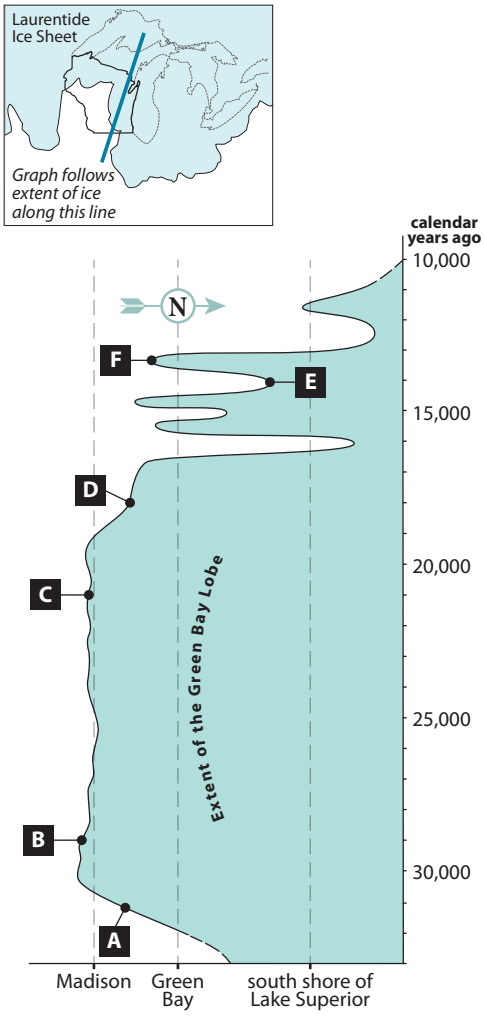
During the last part of the Wisconsin Glaciation, the Laurentide Ice Sheet expanded southward into the Midwest as far as Indiana, Illinois, and Iowa. The ice sheet advanced to its maximum extent by about 30,000 years ago and didn't melt back until thousands of years later. It readvanced a number of times before finally disappearing from Wisconsin about 11,000 years ago. Many of the state's most prominent landscape features were formed during the last part of the Wisconsin Glaciation.

The maps and diagrams in this publication show the timing and location of major ice-margin positions as well as the distribution of the glacial and related stratigraphic units that were deposited in Wisconsin.

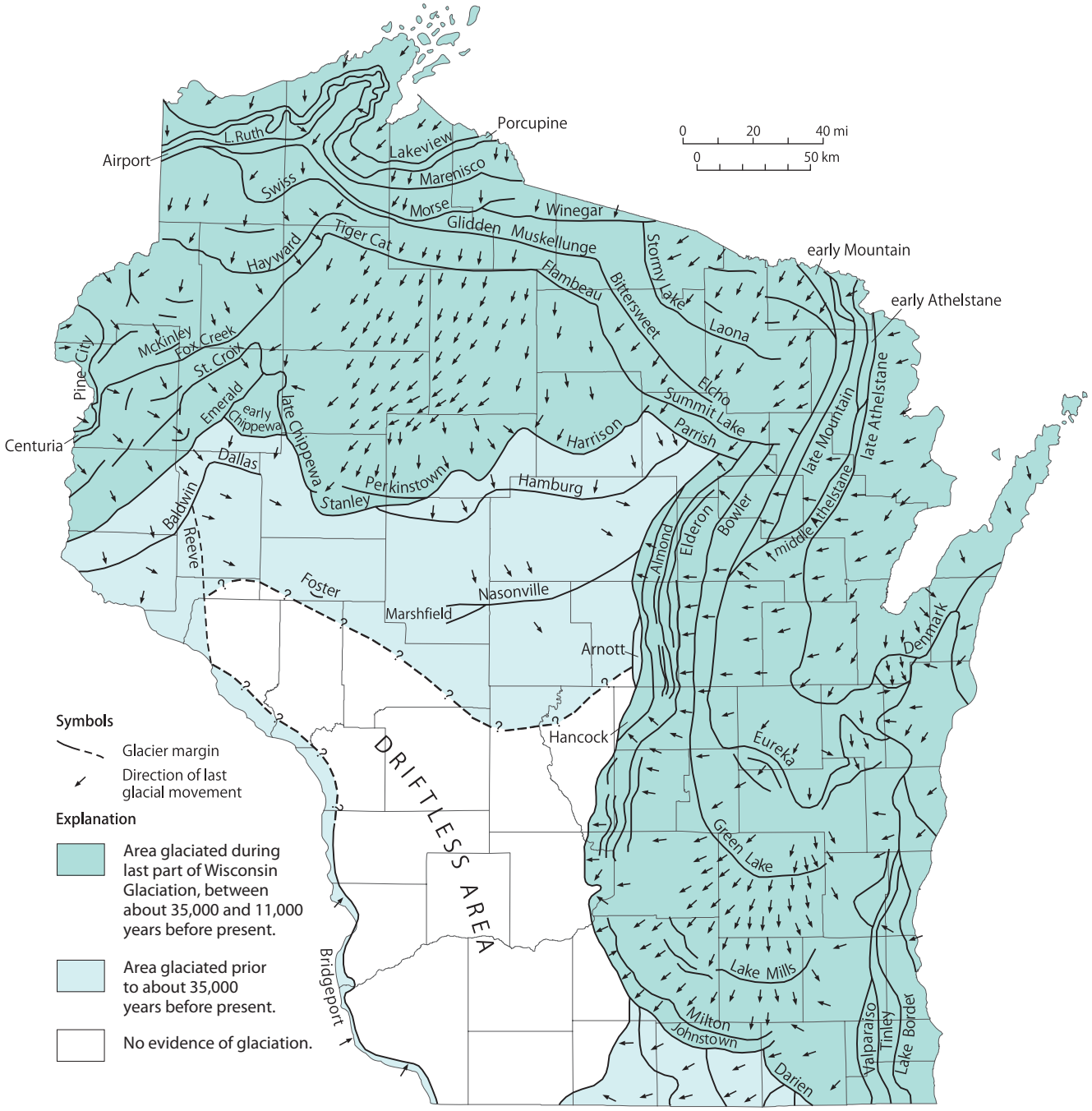
Tracking the glacier

Maps showing the extent of the Laurentide Ice Sheet and changes to glacial lakes at several times. This set of maps, keyed to the graph below, shows when ice first began its advance into Wisconsin (A), ice near its maximum extent (B and C), the initial retreat (D), when ice left Wisconsin (E), and the final major readvance (F).





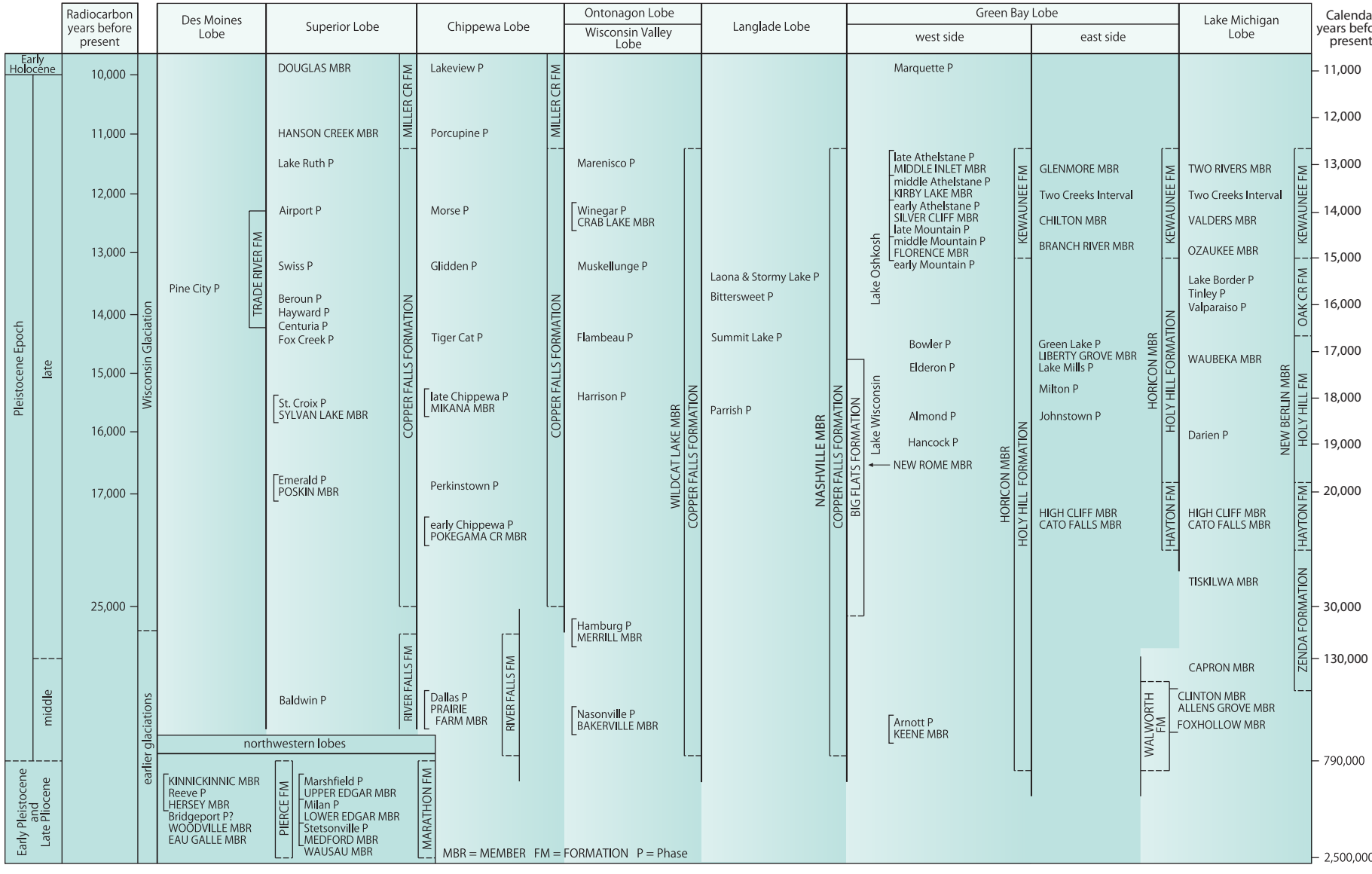
Phases of glaciation



Ages of glaciation. In this map and the one on the last page, areas are distinguished by age: older or younger than about 35,000 years. Ages are determined using geochronology (radiocarbon and other dating techniques) and by studying features in the landscape. Younger glacial features are relatively fresh and uneroded; older glacial features are mostly or completely worn away.

A **phase** is a geologic event rather than a period of time. Most phases represent at least a minor advance of the edge of the Laurentide Ice Sheet. Each line marks the edge of the ice sheet during a phase of glaciation. For example, during the Johnstown Phase of the Wisconsin Glaciation, the southern edge of the Green Bay Lobe (see back page for lobe locations) of the Laurentide Ice Sheet advanced to the line marked "Johnstown" in southcentral Wisconsin. Only the most recent phase is shown at any location.

Correlation of Ice Age events and lithostratigraphic units across Wisconsin

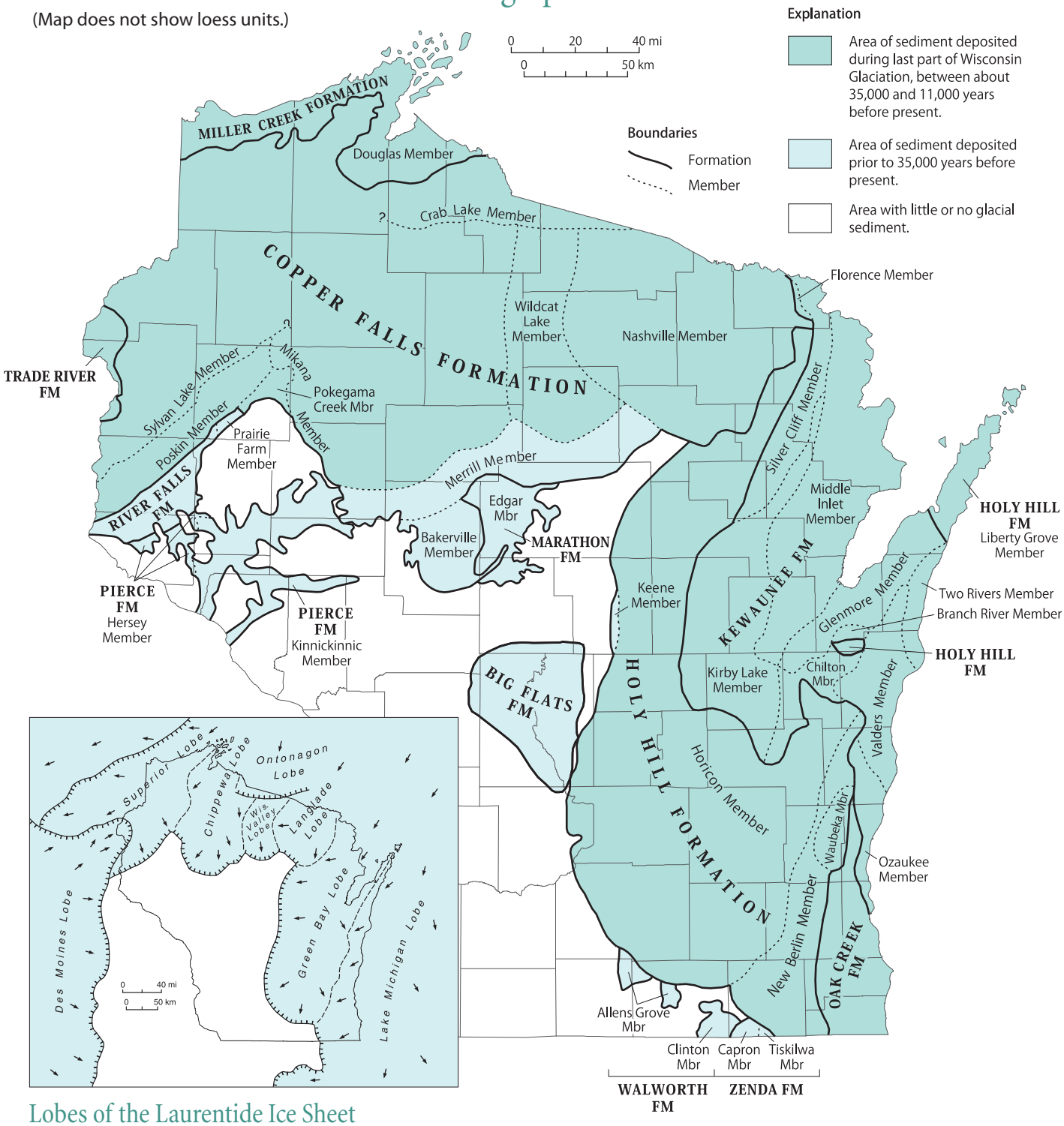


Events (phases) are shown in lowercase letters, and lithostratigraphic units (members and formations) are in uppercase. A lithostratigraphic unit is a layer of geologic material having a given set of physical characteristics and a specific position within a sequence of units. Most lithostratigraphic units in this figure contain till (glacial sediment) and meltwater-stream sediment, and some glacial-lake sediment. When a specific event was responsible for a specific lithostratigraphic unit, the event is bracketed with the lithostratigraphic unit. Lobes are shown on the last page.

(2017 revision: Langlade Lobe, Nashville Mbr.)

Distribution of Pleistocene lithostratigraphic units

(Map does not show loess units.)



Lobes of the Laurentide Ice Sheet

Arrows indicate the direction of ice movement.

For additional information, see the *Lexicon of Pleistocene Stratigraphic Units of Wisconsin*, Wisconsin Geological and Natural History Survey Technical Report 1.

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