

Illinois Glaciers and the Kankakee Torrent

Teaching Guide For Grades 3 - 5

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Thank you for the International Coalition of Sites of Conscience,
the Institute of Museum and Library Services,
and the Illinois State Museum Society for their contributions to this exhibit.

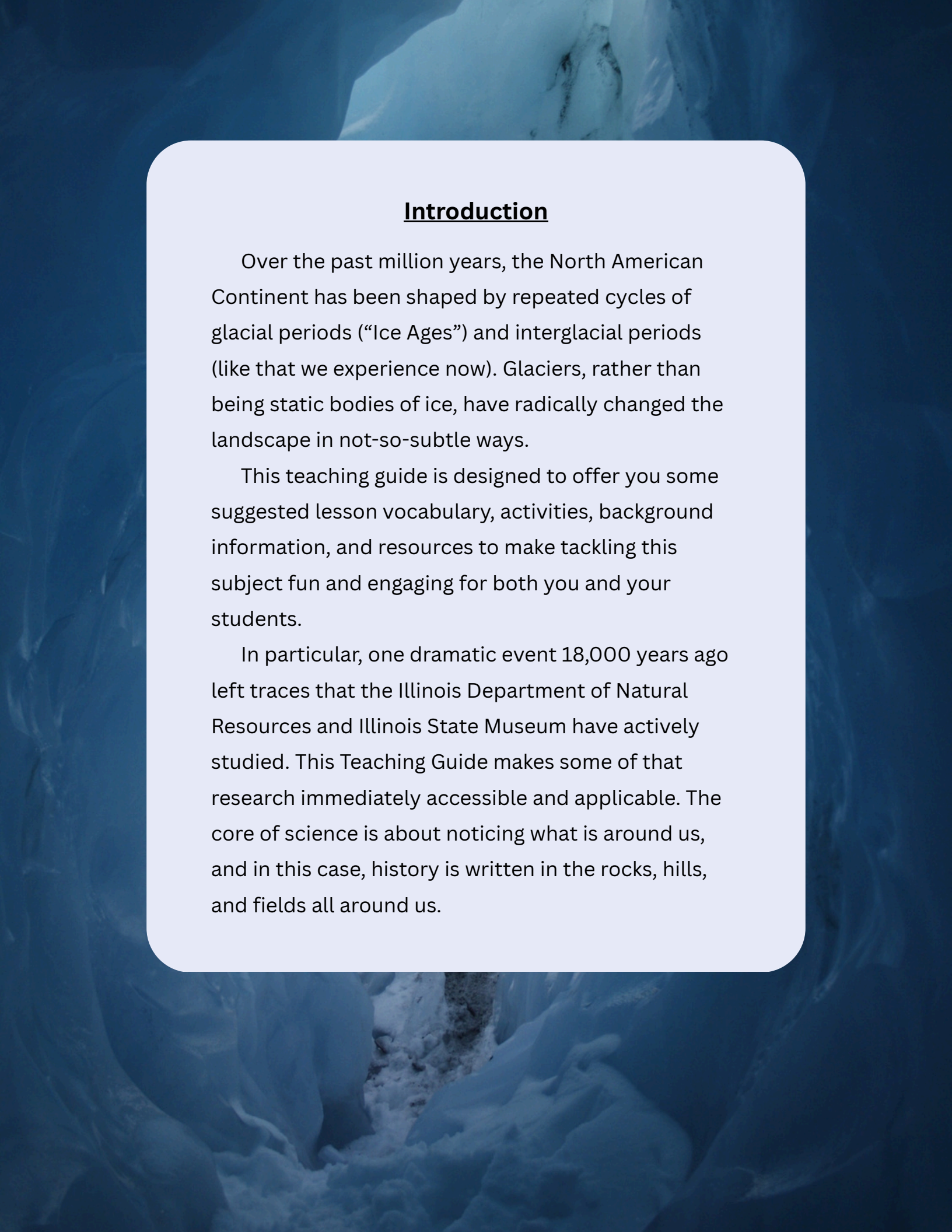


International Coalition of
SITES of CONSCIENCE



INSTITUTE of
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State
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The background of the entire page is a photograph of a glacier, showing deep blue and white ice formations with visible crevasses and textures. The image is slightly blurred and has a cool, blue color palette.

Introduction

Over the past million years, the North American Continent has been shaped by repeated cycles of glacial periods (“Ice Ages”) and interglacial periods (like that we experience now). Glaciers, rather than being static bodies of ice, have radically changed the landscape in not-so-subtle ways.

This teaching guide is designed to offer you some suggested lesson vocabulary, activities, background information, and resources to make tackling this subject fun and engaging for both you and your students.

In particular, one dramatic event 18,000 years ago left traces that the Illinois Department of Natural Resources and Illinois State Museum have actively studied. This Teaching Guide makes some of that research immediately accessible and applicable. The core of science is about noticing what is around us, and in this case, history is written in the rocks, hills, and fields all around us.

Key Themes

- Geology
- Environmental Change
- Climate Change
- Geography

Next Generation Science Standards:

3-ESS2-2.

Obtain and combine information to describe climates in different regions of the world.

4-ESS1-1.

Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

4-ESS2-1.

Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

4-ESS2-2.

Analyze and interpret data from maps to describe patterns of Earth's features.

5-ESS2-2.

Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

5-ESS2-1.

Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

Objectives

Upon completion of this unit, students will be able to:

- Articulate the way that scientists form hypotheses, analyze evidence, and test their ideas
- Interpret basic features on a map
- Plan their own investigations
- Select lines of evidence that support their thinking
- Draw diagrams representing their hypotheses
- Relate past events to current / future ones, predict what may happen as the climate changes

Suggested Vocabulary

Glacier: a large, perennial low moving mass of ice, snow, and sediment.

Ice Age: a period of intense glaciation

Moraine: hilly deposits left behind by a glacier

Topography: the study of the land's surface

Subsidence: the deformation and retrodeformation of the Earth's crust

Glacial Dam: water trapped by a glacial ice or terminal glacial moraines

Till: sediment left behind by a glacier

Hypothesis: an educated guess based on observations

Observation: noticing things about the natural world

Erratic: A rock moved from its original location by glaciers and then left behind

Latitude: imaginary lines that run East to West

Longitude: imaginary lines that run North to South

Introduction

19,000 years ago, Illinois was entering an interglacial period - the time between Ice Ages. Huge ice sheets, acting as conveyor belts, piled huge moraines across the midwest region. Moraines are large piles of glacial debris. These moraines had just-so happened to trap millions of tons of glacial-meltwater. This body of water is long gone, but geologists who study the traces it left behind call it Lake Chicago. This lake occupied what will one day become the city, as well as the southernmost portion of Lake Michigan.

The moraines that trap this water, however, do not hold forever. One day, approximately 19,000 years ago, these moraines burst. The Kankakee Torrent flowed over the course of days, redirecting the ancestral Illinois and Kankakee rivers. Further south, the larger Ohio and Mississippi rivers were reshaped as well.

This massive torrent also carved canyons in what would one day be Starved Rock State Park. Just west of Starved Rock, in Putnam County, is "The Great Bend" of the Illinois River, so-called because it is where the river makes a sharp turn toward the South.

Where the current stopped or changed direction, massive sand prairies were deposited. Today, these can be seen in Sand Ridge State Park and Kankakee River State Park. These sandy soils later proved to be fertile ground for Black Oak Savannahs, ecologically important biomes for plants, pollinators, and more.

Within a matter of days, Northern and Central Illinois were dramatically reshaped. These changes happened in a geological instant and helped form the world as we know it today.

ISM Video Resource:

Exploring the Ice Age

Click the image below to open the video!



Activity

Instructors will present evidence for the Kankakee Torrent, a large flood resulting from the breaking of a natural dam that contained the ancient Lake Chicago. They will introduce the concept with videos of large flooding events caused by the breaking of a dam and will then explore the evidence for this event in Illinois. Using Google maps, they will examine the ancient land features that this flooding event left behind and assess how scientists came to this conclusion. They will then look at other areas of the world and try to interpret the land's history.

Engage! Consider asking students:

- “Why do we have hills?”
- “Why do we have valleys?”
- “Why does the land look the way it does?”
- “What makes you think that?”
- “What evidence do you think the Kankakee Torrent left?”

Explore! Introduce some real-world events and places:

What a Glacial Outburst Flood Looks like

Click the image below to open the video!



ISM Video Resource

What is the Kankakee Torrent?

Click the image below to open the video!



Engage! Consider asking students:

- What would living around a glacier be like?
- Can you think of anything you see that a glacier may have carved? Why do you think that?
- Do you have any other guesses (or hypotheses) about how the land gets its shape?

Explore! Introduce Google Earth:

Google Earth is a way to visit different places and see the world from the comfort of your computer. It gives you a bird's eye view of the world, and it lets you see things that might otherwise go unnoticed. Show the students their hometowns and places they've been with Google Earth - have fun!

Evidence of Glaciers in Illinois

Starved Rock GPS Coordinates: 41.3128° N, 88.9701° W

<https://dnr.illinois.gov/content/dam/soi/en/web/dnr/parks/interpret/documents/park-history-geology-and-ecology-information-packet.pdf>

Sleeping Bear Dunes GPS Coordinates: 44.8734° N, 86.0467° W

<https://friendsofsleepingbear.org/wp-content/uploads/2011/09/Geology-020511.pdf>

Elaborate:

In Google Earth, take students to the two locations listed above. Show them the different landforms, and explain how the glaciers and the flooding they caused (including the Kankakee torrent!) carved out parts of Starved Rock State Park and made the hills and dunes of Sleeping Bear Dunes National Lakeshore.

Activity

Instructors will model the effect glaciers have on the landscape and show students how to do the same using blocks of ice, baking soda, and rocks. Use the video below as a model!



Materials:

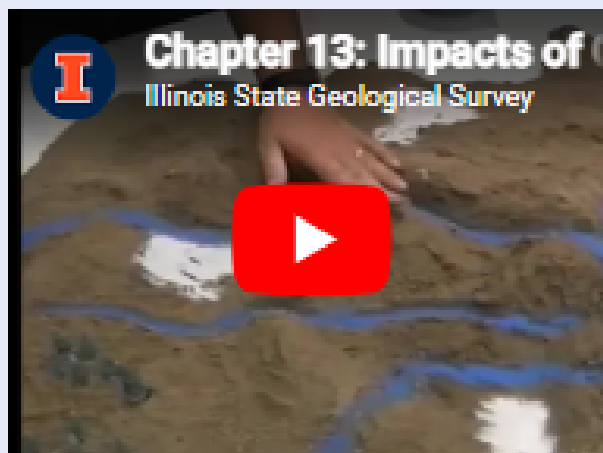
- Clear Flexible Containers
- One half quart of gravel and one half quart of dirt for each group of four students
- One half quart of gravel, one half quart of dirt, and one half quart of flour,
- (optional) A few drops of blue food coloring to add to the dirt, gravel, and water mixture
- Sufficient water to fill the plastic shoebox one inch from the top after gravel and dirt have been added (This allows for expansion after freezing)
- A foil tray
- Student science journals

Evaluate!

- Have each group of students shape their landscape, sculpting the land. They can be creative and introduce additional props (ideally, props that can get wet...). After about 5 - 10 minutes of sculpting their land, have them stop. Let the ice melt.
- Ask each group to make a map of their region, explaining the topography and Earth history. Their map doesn't have to look great, and it can even be artistic.
- Ask each group to explain what happened and give them an opportunity to ask questions of other groups.
- Ask hypotheticals and "what ifs" to encourage students to entertain multiple explanations and ideas.

Illinois State Geological Survey: Glacial Landforms

Click the image below to open the video!



More Resources:

- [Plate-Tectonics_Teacher-Background.pdf](#)
- [Topographic and Geologic Maps | CK-12 Foundation](#)
- [USGS Map Resources](#)
- [USGS Tracking Changes over Time](#)
- [National Geographic: Glaciers - Moving Rivers of Ice](#)
- [USGS Topographic Map Activities](#)
- [USGS Geology K-12 Resources](#)
- [Kankakee River State Park Geology Field Trip Guide](#)

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