

March 2013: America's Geologic Heritage

Education Outreach Panel

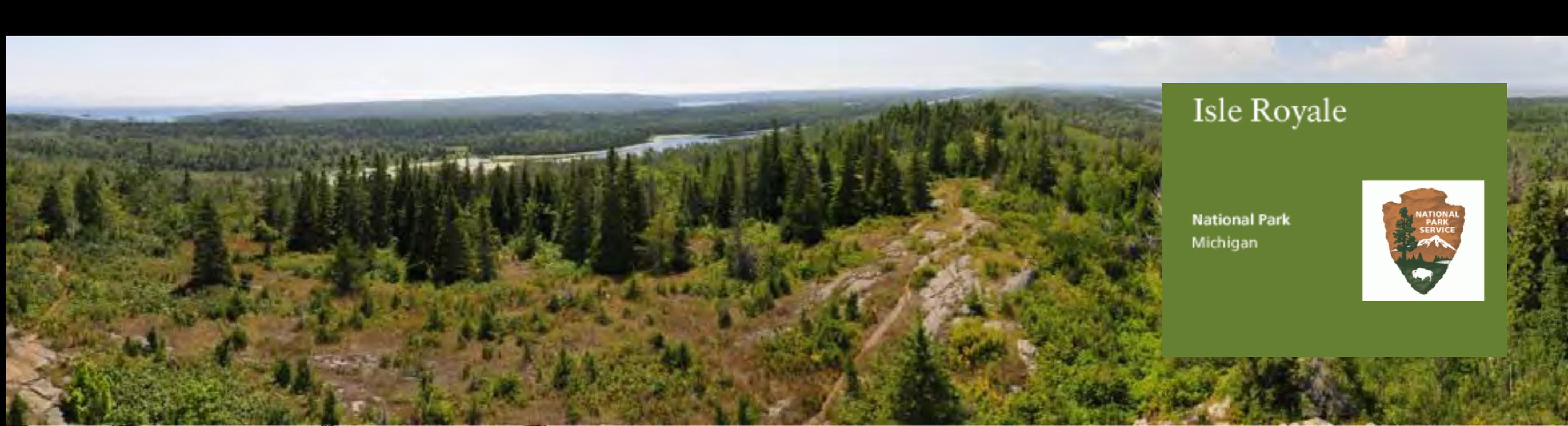
Building 41, Denver Federal Center, Lakewood, CO

1:30-3 pm, Tuesday, 19 March 2013



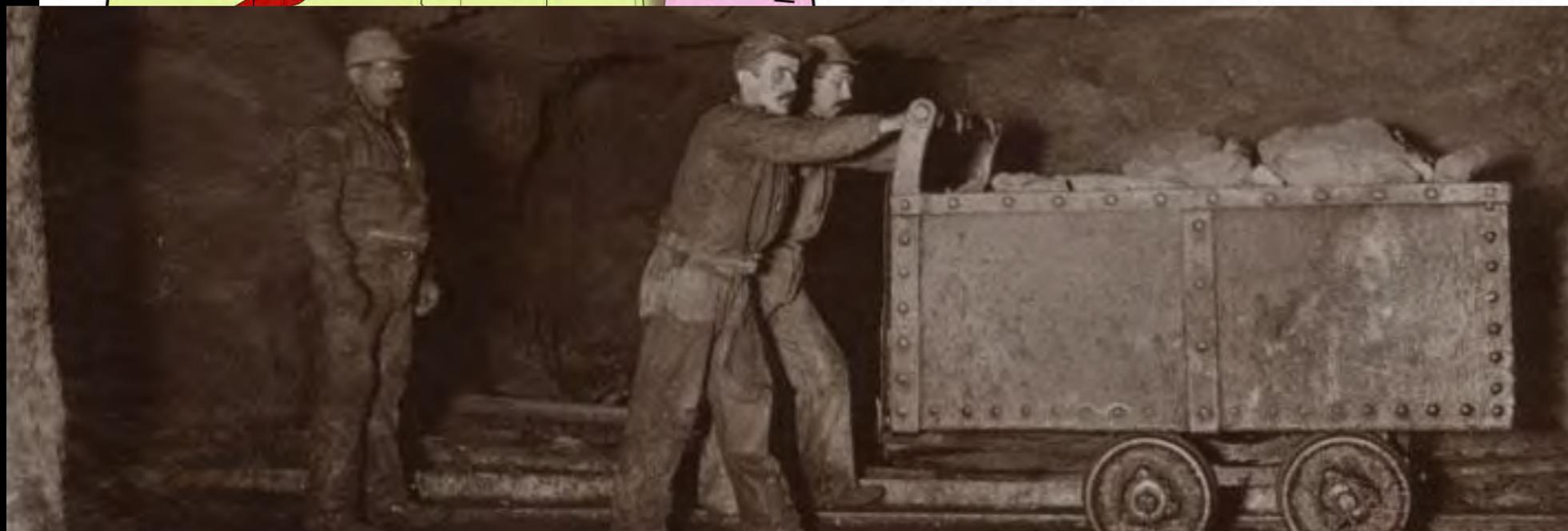
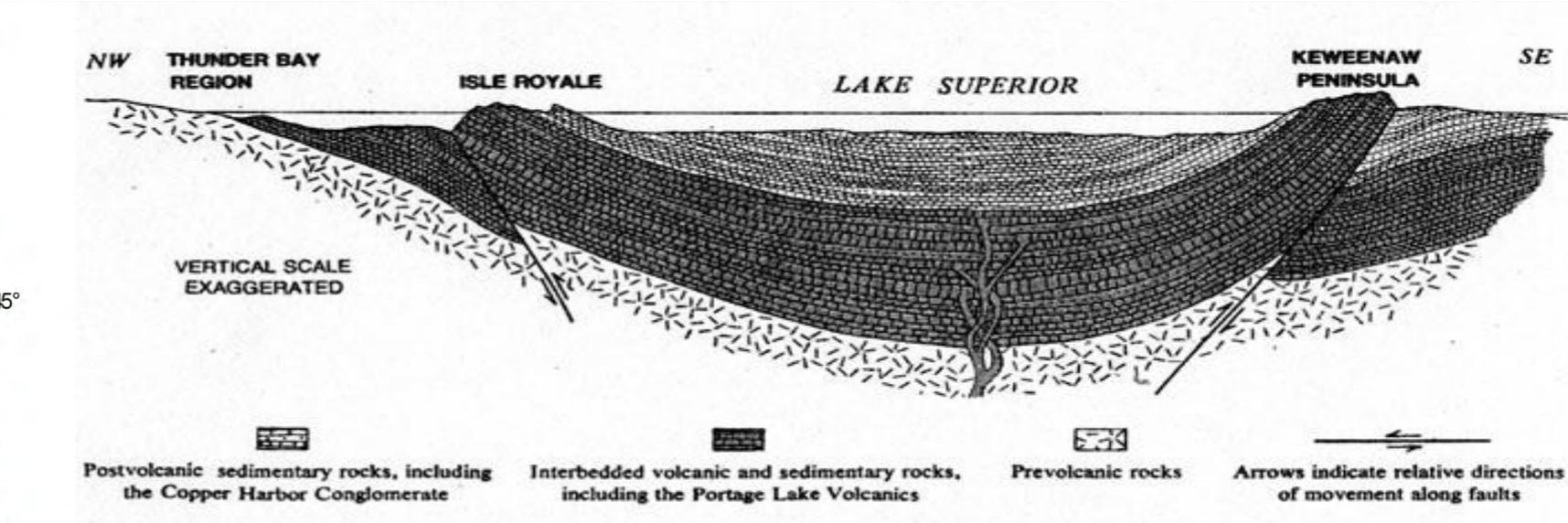
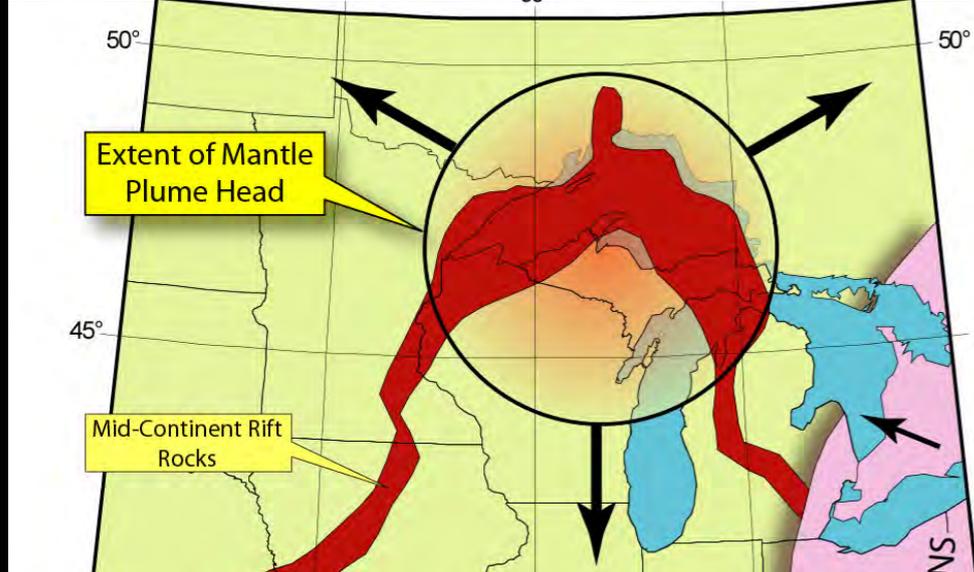
Building Grassroots for a Keweenaw Geopark

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Isle Royale

National Park
Michigan

Keweenaw

National Historical Park
Michigan



Keweenaw

National Historical Park
Michigan



Isle Royale

National Park
Michigan



Heritage Site Partners

- ☐ [Keweenaw Water Trail](#)
- ☐ [Keweenaw Trails](#)
- ☐ [Epic Bike Trails](#)
- ☐ [Cliff Mine](#)
- ☐ [Caledonia Mine](#)
- ☐ [Painesdale Mine and Shaft](#)
- ☐ [Delaware Mine](#)
- ☐ [Quincy Mine](#)
 - [Old Victoria](#)
 - [Adventure Mining Co](#)
 - [Chassell Heritage Center](#)
- ☐ [Fort Wilkins State Park](#)
- ☐ [Le Roche Verte](#)
- ☐ [Copper Harbor](#)
- ☐ [Calumet](#)
- ☐ [Houghton](#)
- ☐ [Hancock](#)
- ☐ [Copper Country Trail Scenic Byway](#)
- ☐ [Copper Range Historical Museum](#)
- ☐ [Coppertown Mining Museum](#)
 - [Finnish American Heritage Center](#)
 - [Hanka Homestead](#)
- ☐ [Houghton County Historical Museum](#)
- ☐ [A.E. Seaman Mineral Museum](#)
- ☐ [St Annes Church, Calumet](#)
- ☐ [Keweenaw County Historical Society](#)
- ☐ [Ontonagon Historical Society](#)
 - [Old Victoria](#)
 - [Baraga County Historical Museum](#)
 - [UP Fire Fighters Museum, Calumet](#)
- ☐ [Jacobsville Quarries](#)

Two NPS core partners

Michigan Tech

FINLANDIA

Two University Partners

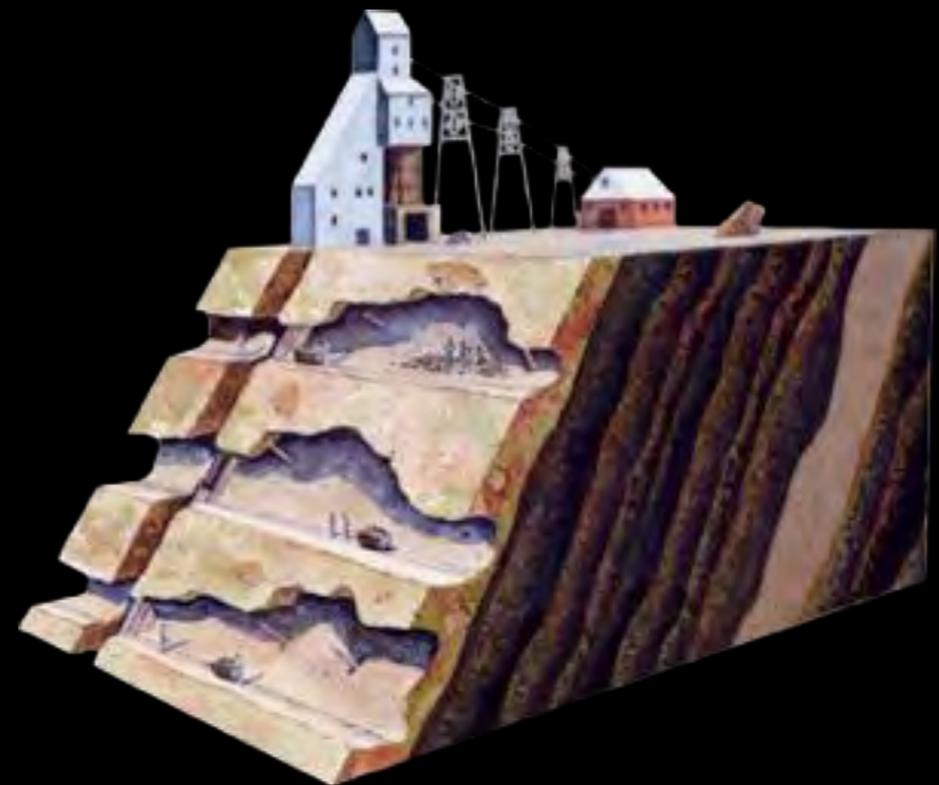


- Use the university to build constructive geo-interpretation for the public.

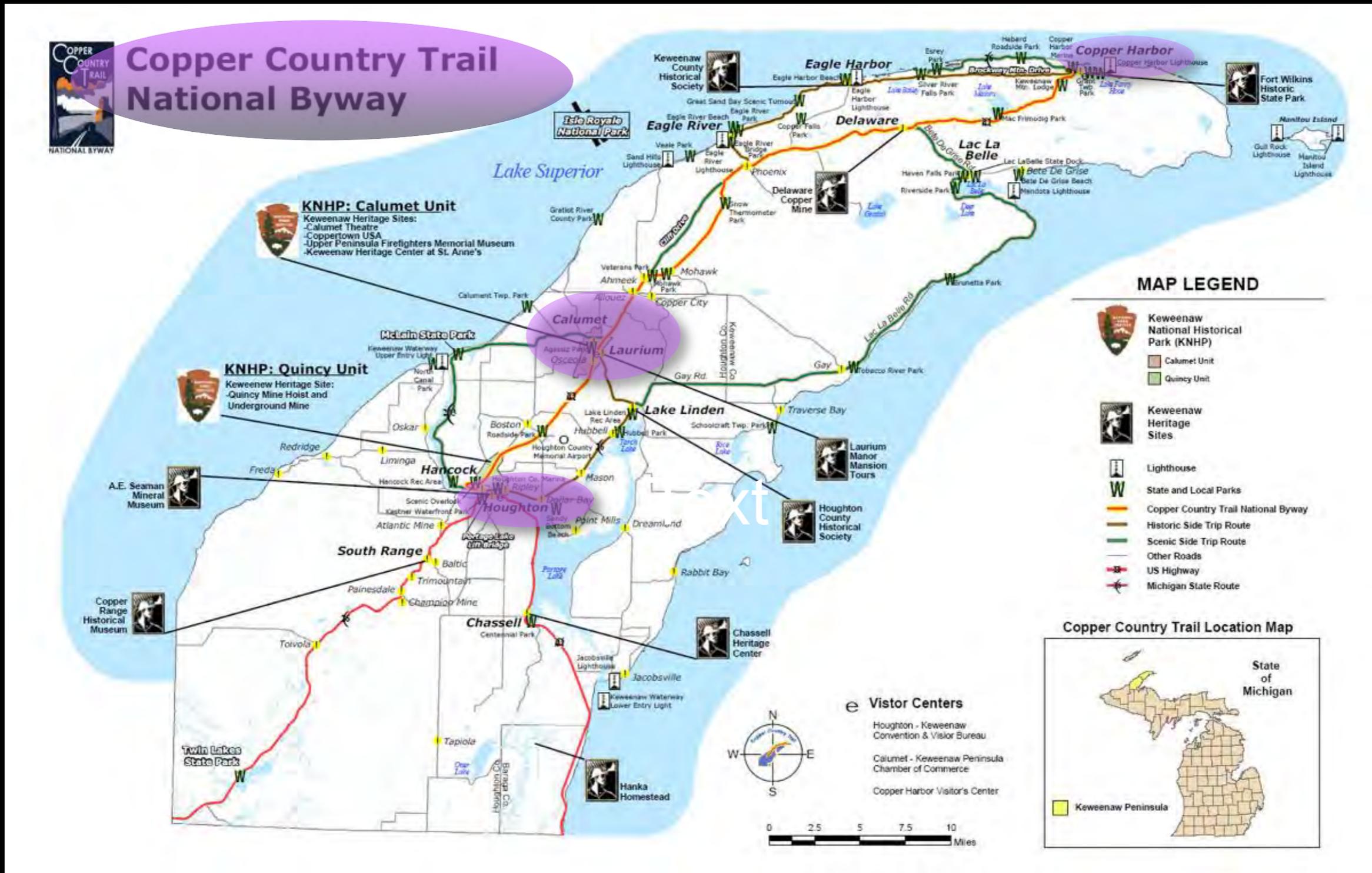
- Start with constructive partnership with Geoheritage partners.

- Use students, faculty, teachers as content generators.

- Use technological tools (smart phones, GPS, Google Earth) to attract young users and build reading landscape awareness.



Use local geoheritage partners as linkage to grassroots building



Work incrementally, which builds demand and credibility
Hundreds of diverse geosites are possible



Keweenaw Boulder Garden

http://www.geo.mtu.edu/~raman/SilverI/Boulder_Garden

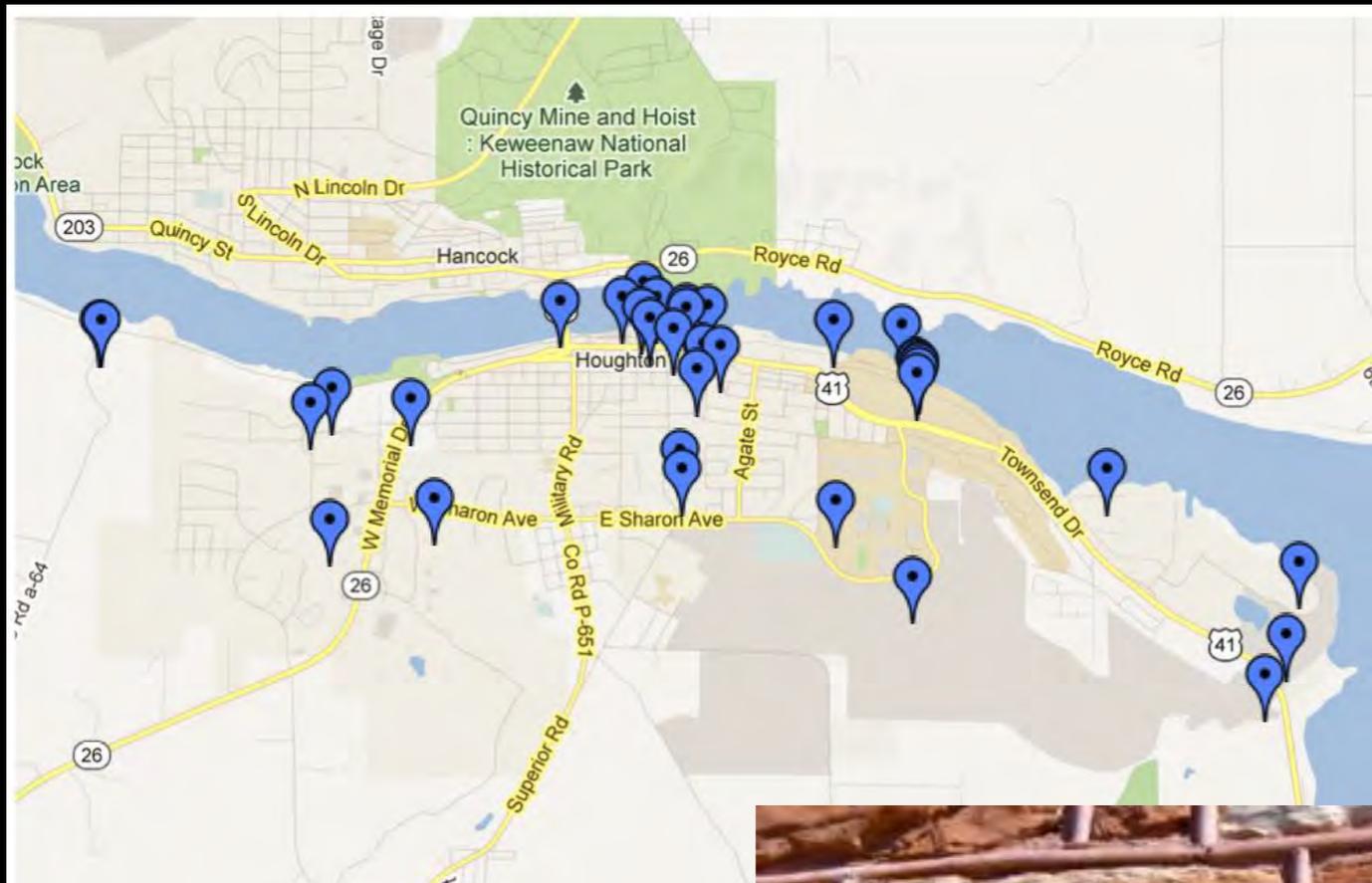
Human Computer Interaction

Graduate Class in smart phone app development

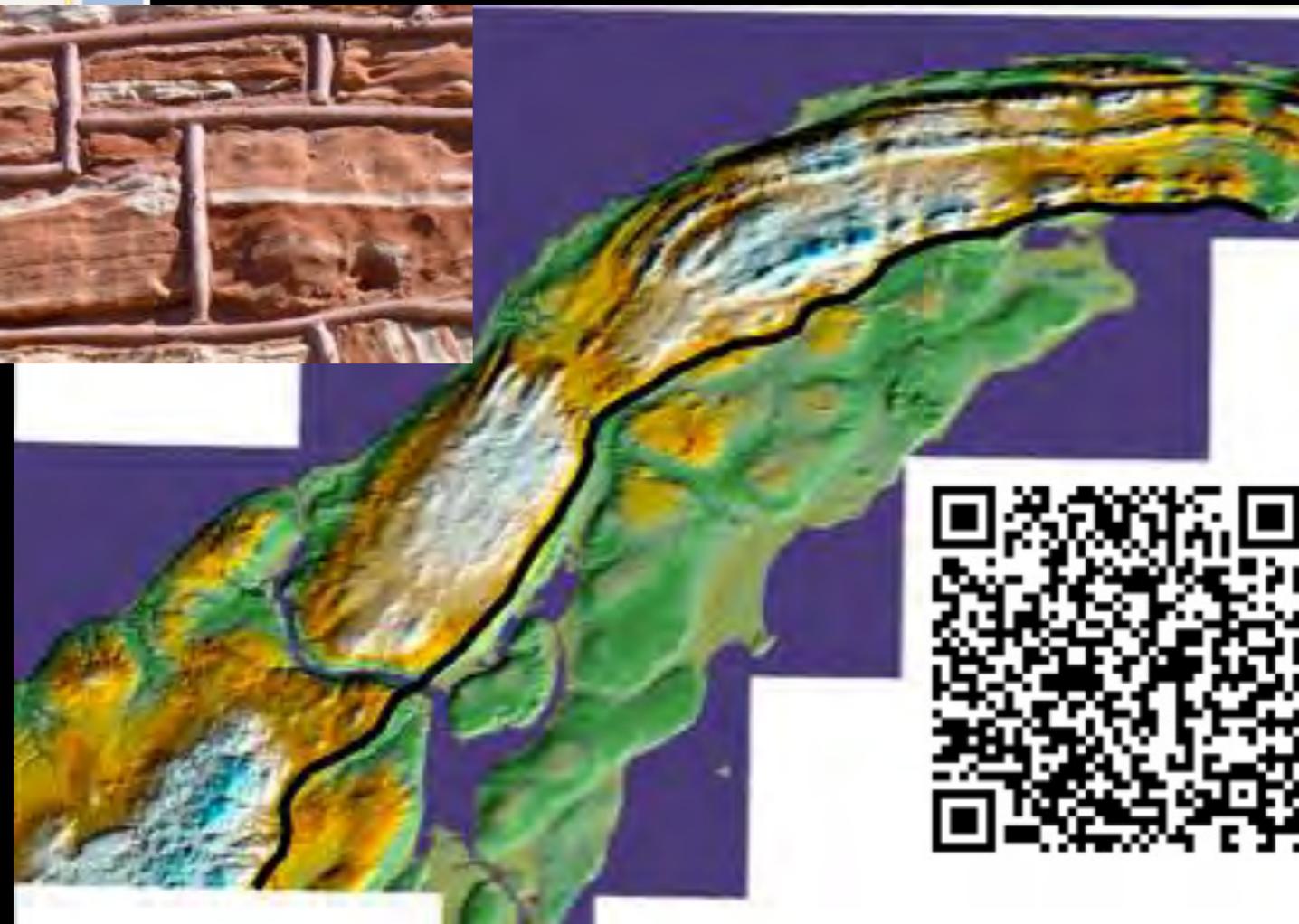
Geeks and Humanities students

all work with faculty to develop app

Geotracker app developed



This site is aimed to walk or bike you through the city of Houghton, a place defined by the local geology, with an eye toward geological features and how they impact the site. You should use your GPS as a guide and Google Earth as a map tool. Any community can be linked to its geologic roots, and this is something that earth science teachers will find helpful. Outcomes of doing this is that people learn how to find their way around, how to visualize landscapes, how to read rocks and then how to understand their natural world and how it works.



Houghton Geo Walk/Bike Sites

Bent trees, slope stability testers



Trees growing on an unstable slope will show indications of slope movements because of geotropism--the growth of plants in a direction opposed to gravity. The degree of bending is indicative of the rate or amount of movement. In the example we have found in Houghton, we note that not all trees are bent. Why would this be? Could these observations be made into a slope stability map?

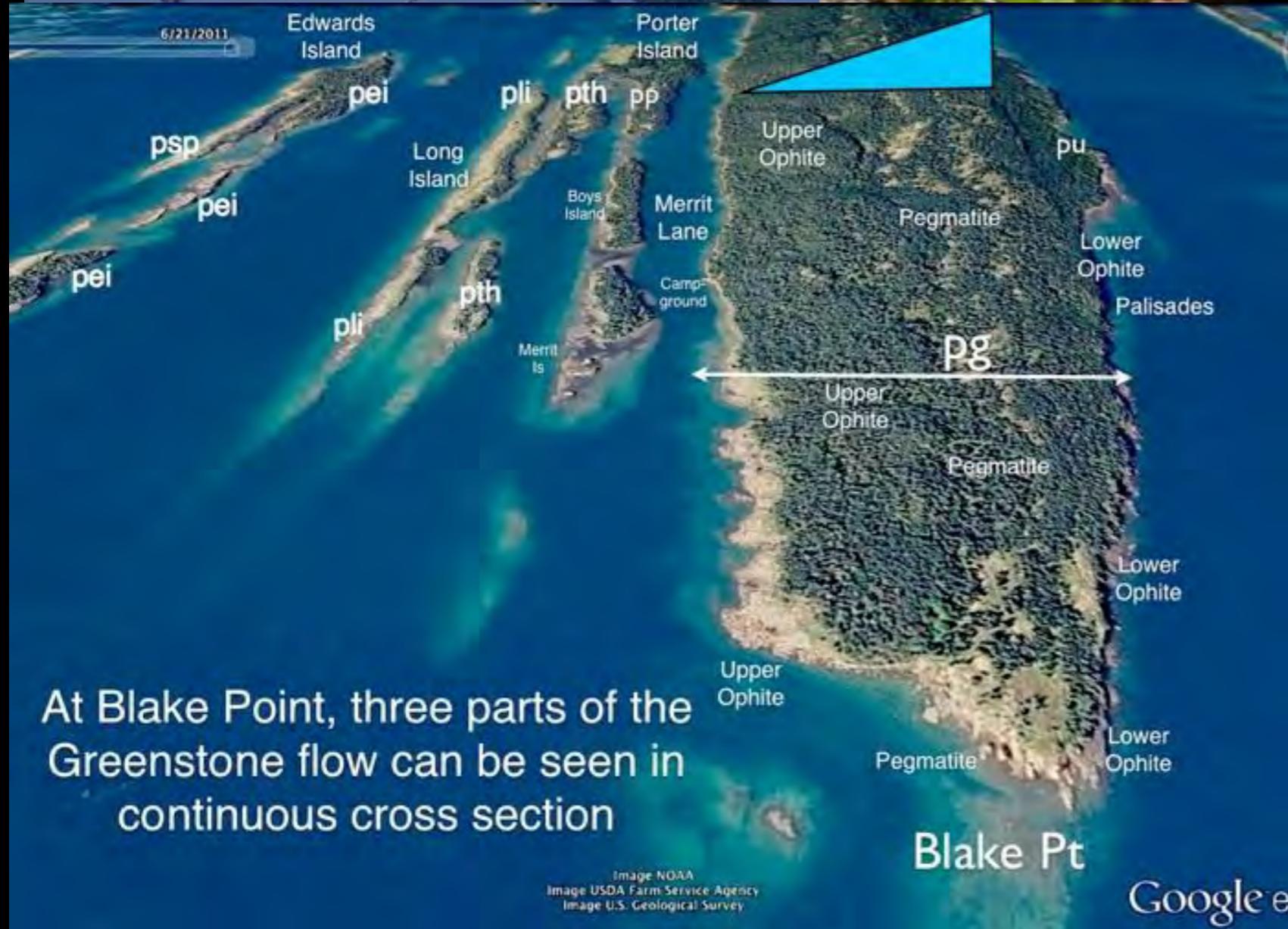
Questions:

Why are some trees bent a lot and others not at all?
Are they all bent in the same direction?

http://www.geo.mtu.edu/~raman/SilverI/HoughtonEC/Bent_trees.html

wRift

This web effort is to give field guidance for several days of geological exploration that can be done within the National Park. Most of the sites described are within a day of Rock Harbor, where many visitors enter the park. Many of the best sites are wave-washed shorelines where the rocks are kept clean by the waves and ice. Isle Royale has lots of shoreline, much more than the Keweenaw Peninsula, which has nearly identical geology. There is background information and day by day field guide information, which you can use in any order. If you spend a week on Isle Royale and hustle, you can visit all of these places. We hope you will try it.



At Blake Point, three parts of the Greenstone flow can be seen in continuous cross section





Geospatial skills and awareness are central to earth science.

They especially reinforce contextual knowledge (reading the landscape). Integration of Google Earth/GPS and Earth Cache into ESS-1 and 2 is done from day 1.

Each site is located with waypoints and translated to GE visualization.

Routine use of tracking applications and GoTo incorporated into the class. EarthCache write-ups of visited sites done .



MiTEP and the Geopark
Place-based educational use
EarthCache development tools
NPS internships



NPS internships



Isle Royale National Park



Keweenaw National Historic Park



Pictured Rocks National Lakeshore

Sleeping Bear Dunes National Lakeshore



Summer 2013

- Four teachers requesting placements at Keweenaw National Historic Park and Isle Royale



- Develop new geosites and assist in the Geopark proposal development

Community meetings



- March 18th , 2011
"Experiences with the Bohemia Geopark initiative in Europe and the European perspective of Geoparks," led Dr Benjamin Van Wyk deVries, Professor, Universite Blaise Pascal, Clermont Ferrand, France
- March 18th , 2012
Community meeting on Geopark proposal with guest speaker Bob Lillie
- March 26th , 2013
Geopark discussion with Dr Benjamin Van Wyk deVries

Challenges



March 26, 2012

The Daily Mining Gazette

To the editor:

Keweenaw geopark, eh? More like agenda 21 coming to a backyard near you. I'll bet there aren't too many native Yoopers who will enjoy asking the United Nations for permission to drill a water well on their own 40, let alone pay for it. And don't forget, there will be a meter on your new well that you pay for also, in order for the U.N. to bill you for your water.

Educate yourself, people. This "geopark" is a wolf in sheep's clothing. We do not need or want this in our backyards. Do you think it's a coincidence they're bringing this up only three weeks after we hear some companies are taking another look at our old northern ore bodies? I don't.

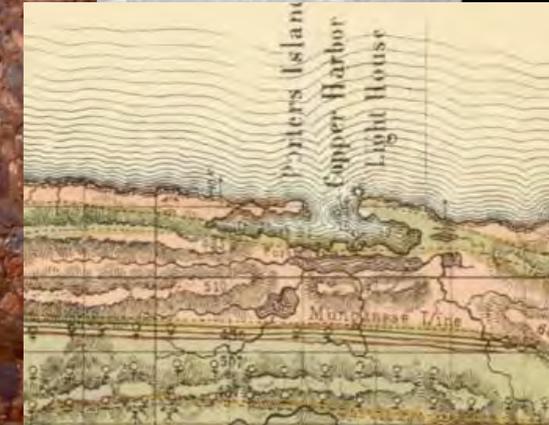
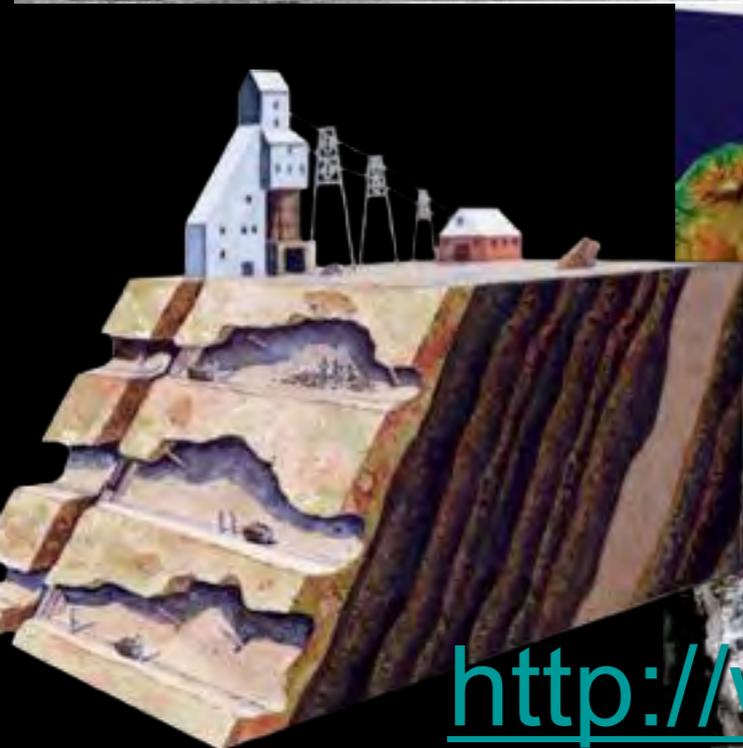
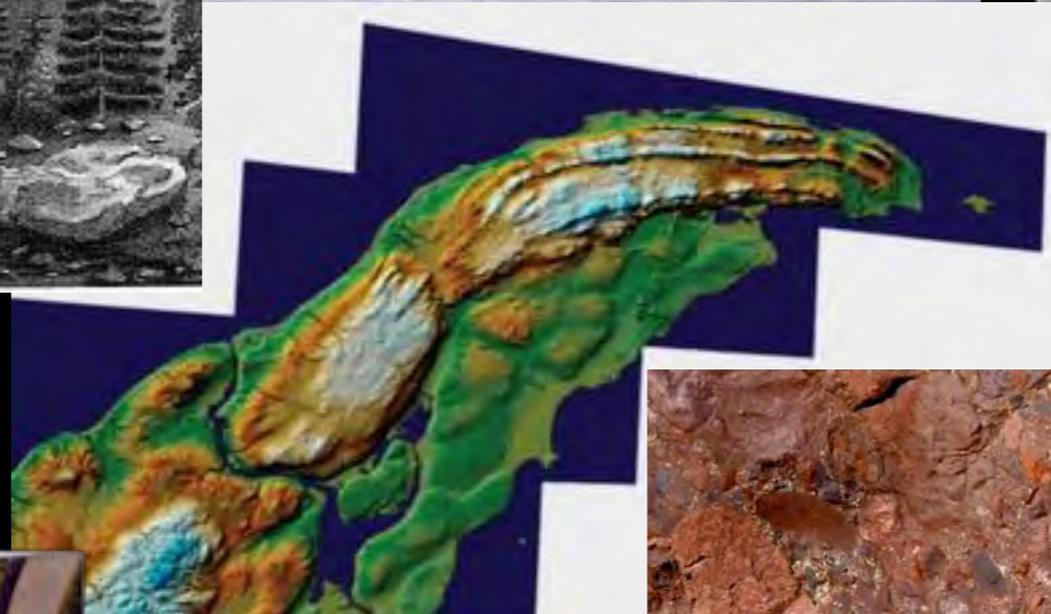
"You say it's going to bring people here, but they're only going to be able to look at it through glass or over a fence"

"Do you want to take a few advertising dollars for our water?"

Audience member reacting to UNESCO Director-General Irina Bokova's membership involvement with the U.N.'s World Water Forum, which he said was an indication the U.N. was planning to take over the Great Lakes as a freshwater resource



Photo Courtesy Michigan Tech Archives



<http://www.geo.mtu.edu/~raman/Geopark>

Michigan Tech