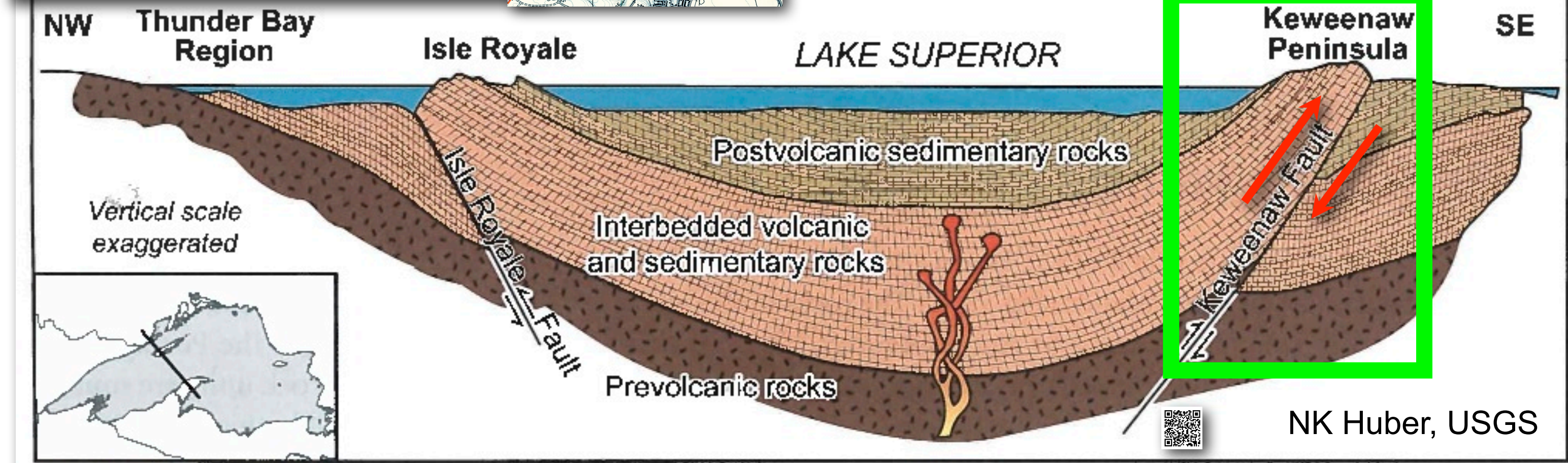
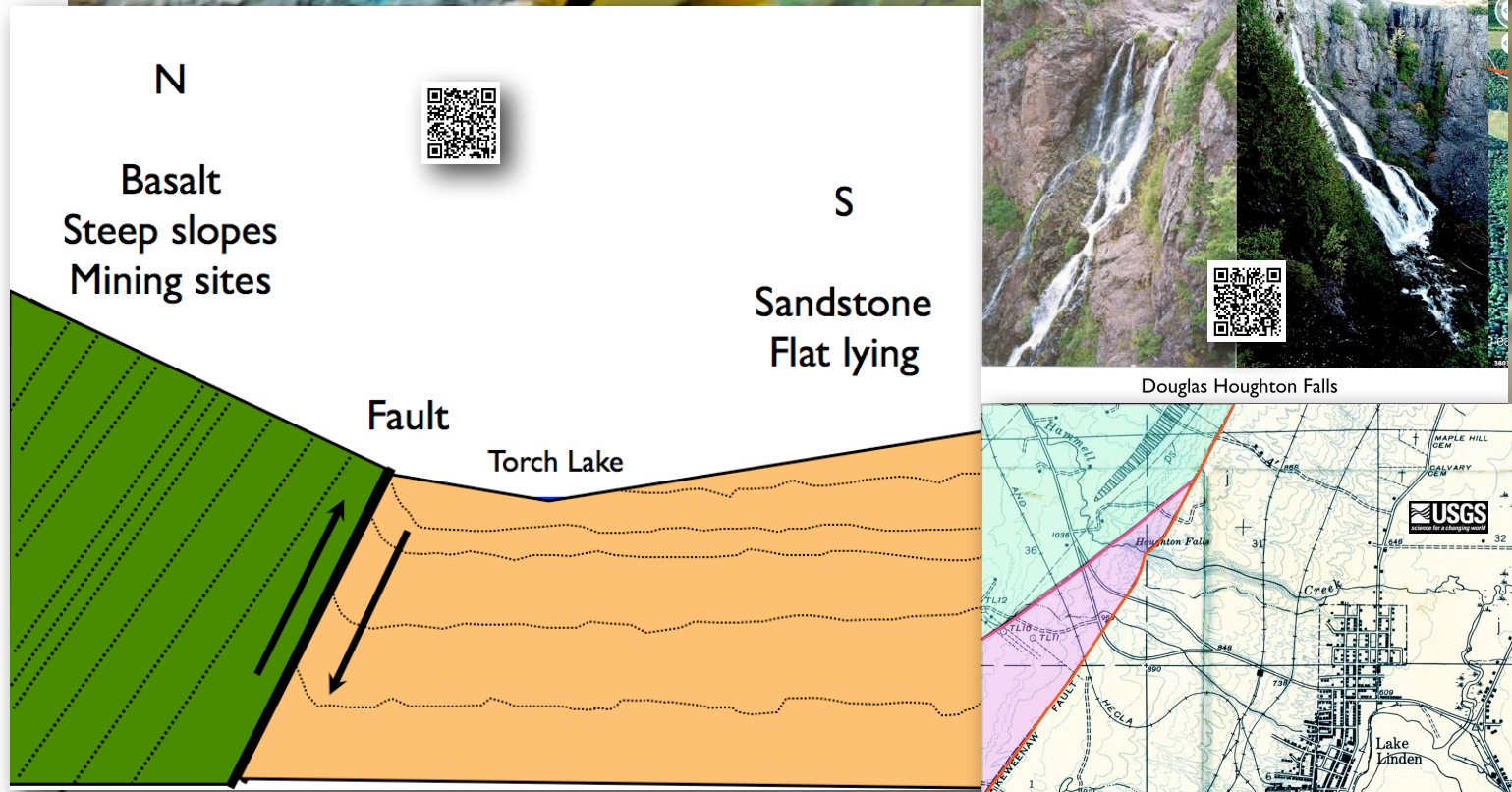
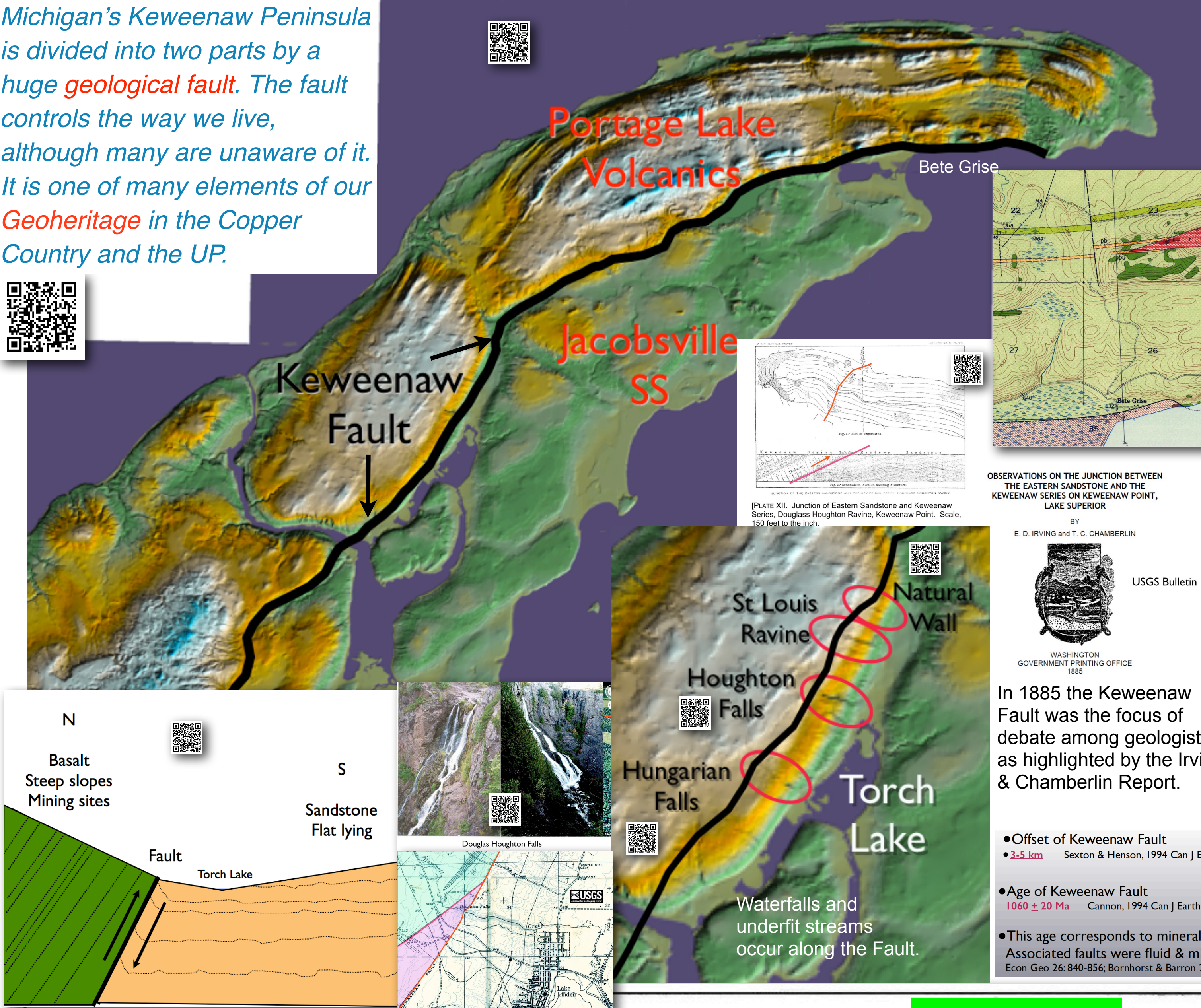


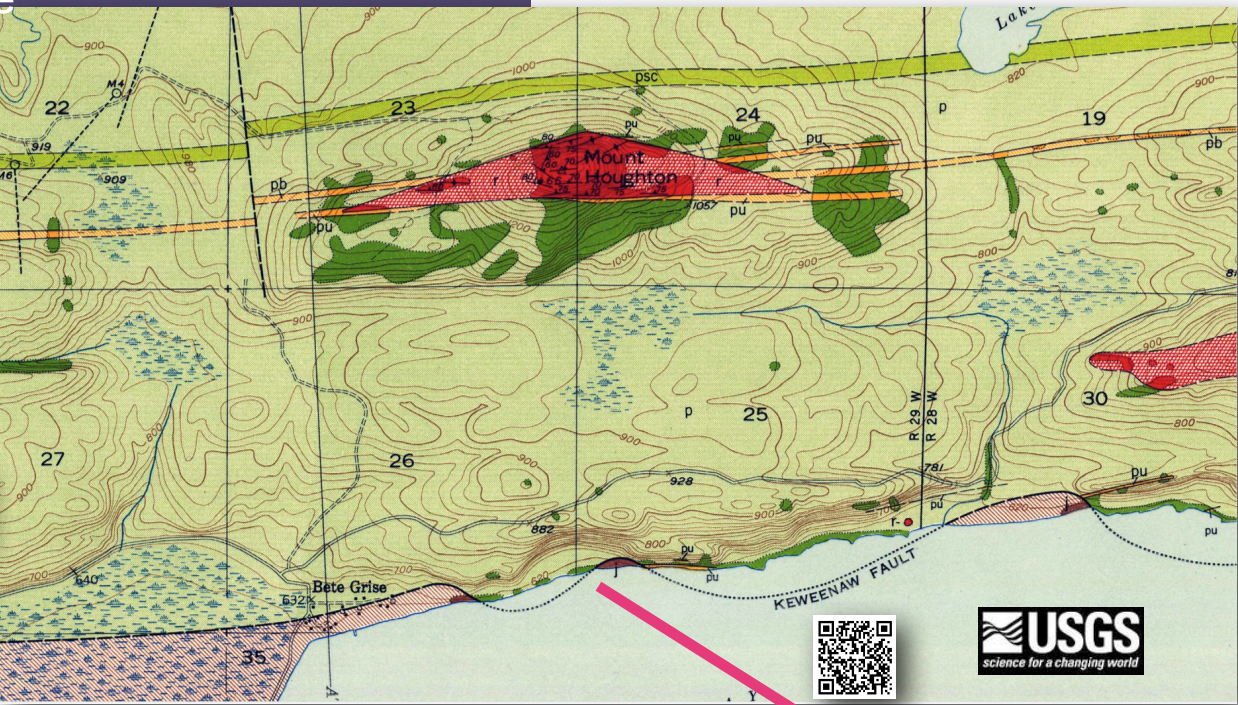
GEOHISTORY AND GEOHERITAGE OF THE KEWEENAW AND ISLE ROYALE FAULTS, MICHIGAN

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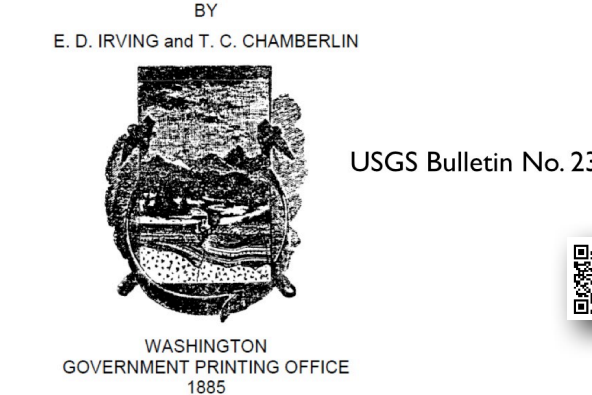
Michigan's Keweenaw Peninsula is divided into two parts by a huge geological fault. The fault controls the way we live, although many are unaware of it. It is one of many elements of our Geoheritage in the Copper Country and the UP.



At Bete Grise the Keweenaw Fault crosses the shoreline repeatedly making for spectacular exposures that can be viewed through the water as well as on wave-washed surfaces.

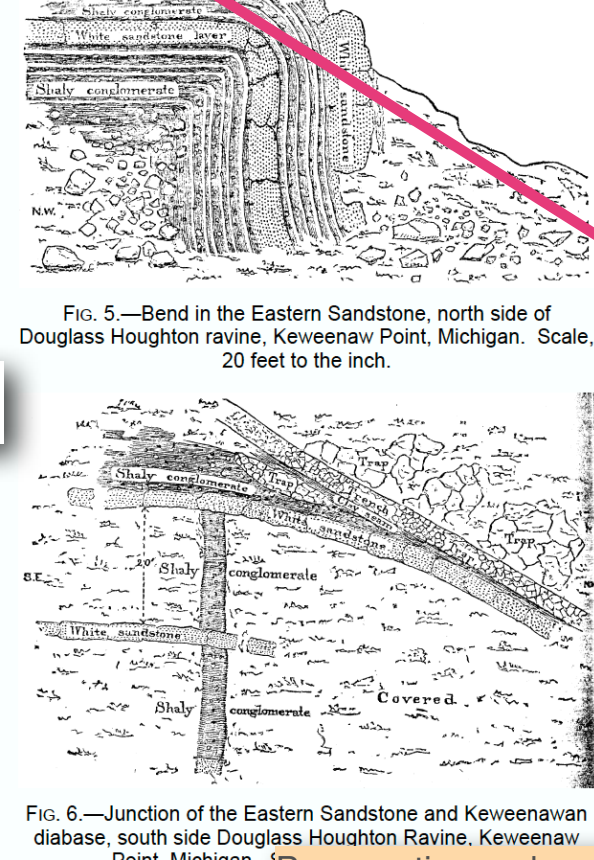


OBSERVATIONS ON THE JUNCTION BETWEEN THE EASTERN SANDSTONE AND THE KEWEENAW SERIES ON KEWEENAW POINT, LAKE SUPERIOR



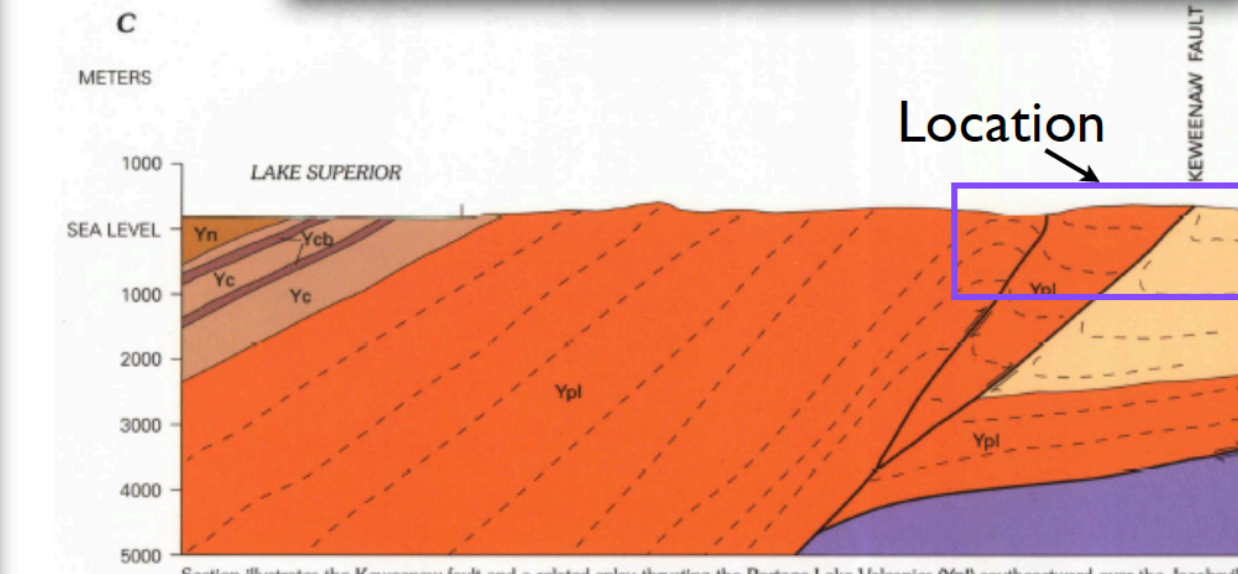
In 1885 the Keweenaw Fault was the focus of debate among geologists, as highlighted by the Irving & Chamberlin Report.

- Offset of Keweenaw Fault
• 3-5 km
Sexton & Henson, 1994 Can J Earth Sci 31: 652-660
- Age of Keweenaw Fault
• 1060 ± 20 Ma
Cannon, 1994 Can J Earth Sci 31: 652-660
- This age corresponds to mineralization of Native Cu.
Associated faults were fluid & mineral pathways. Broderick, Econ Geol 26: 840-856; Bornhorst & Barron 2013 ILSG 59 (ISSN 1042-9964)



Preservation and access to sites and features associated with the fault are critical for furthering public understanding of how the Keweenaw formed. The fault was the conduit for copper solutions to be transported and concentrated to levels where people could find and mine them. Without the vertical thrusting of several miles by the fault, the mines would never have been found!

The Keweenaw Fault has also greatly influenced the landscape people work, play and depend on. Many of the most beautiful sites in the area, such as rivers, lakes, waterfalls, are at or near the big fault; without the fault there would be no such places. Smaller faults associated with the big fault have also influenced other important landscape features, such as the Portage Channel. These are key geosites for a Keweenaw Geopark that can help visitors and locals understand Earth system processes in a broader sense while further connecting them to the local landscape.



ABSTRACT

An inventory of the rich geodiversity of the Keweenaw and Isle Royale region has helped to identify key geosites for the basis for a geopark proposal. In identifying these valuable sites we have discovered compelling material concerning thrust faults, a major point of discussion for geologists in the 1880s worldwide.

The Keweenaw Fault divides the Keweenaw Peninsula, having uplifted the synclinal sequence of continental flood basalts and rift-filling sediments by several kilometers. The interpretation of the field occurrences of this great fault were widely debated in geological literature (Irving, E.D. and Chamberlin, T.C., 1885, Bulletin of the United States Geological Survey No. 23, 58 pp.). Key exposures are still observable at several locations where the fault is well exposed. New models of the fault development are now being crafted by geophysicists.

Access to these sites is problematic and offers a challenge to local advocates of the geopark. However, the educational value of the historic debate surrounding thrusts suggests the need for preservation of these excellent exposures of Earth's thrusting. Access to these important geosites affords educational and geotouristic opportunities for a diverse set of stakeholders ranging from national and state parks, local towns and museums, businesses, and Earth Science educators.

<http://www.geo.mtu.edu/KeweenawGeoheritage/>

