Seafloor Spreading

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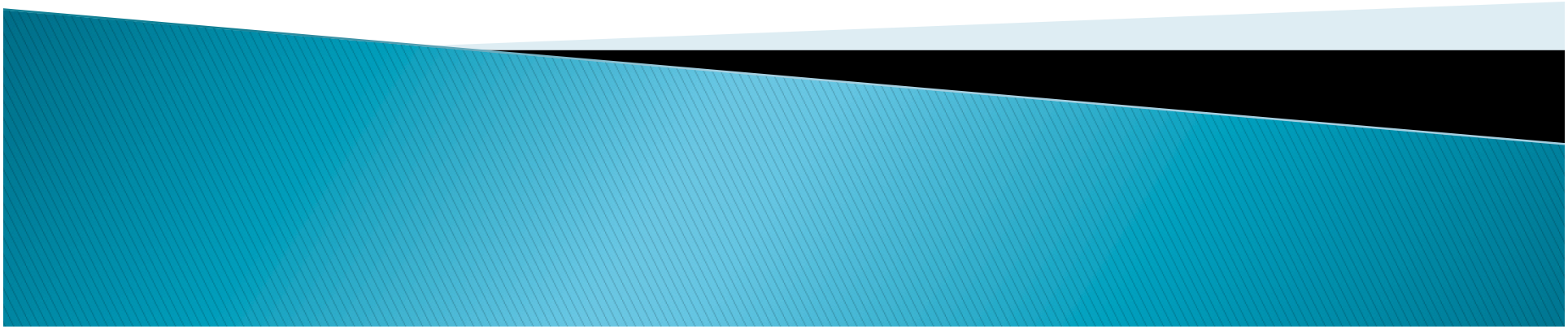


Learning Target/Objective

- Students will be able to relate different plate boundaries to the mid-continental rift and its importance to the area.
  - Understand different plate boundaries
  - Understand and describe different land formations connected with rifting and how they were developed over time.
- Question of the day:
  - What is the relationship between the mid-Atlantic ridge and the mid-continental rift in Minnesota?

Download

- *KMZ file needed to run program:*
  - *oceanleadership.org/files/seafloor_spreading.kmz*

- An Expedition to the Seafloor-Student guide:
  - http://joidesresolution.org/sites/default/files/12-SeafloorSpreading_student_hires.pdf
  - Student worksheet may need adjustments per file used
    - Background information
    - Start at Step 6-7, and 9-10
    - Adjust Answer page to make questions related to Mid-Continental ridge

Native Science Relationships

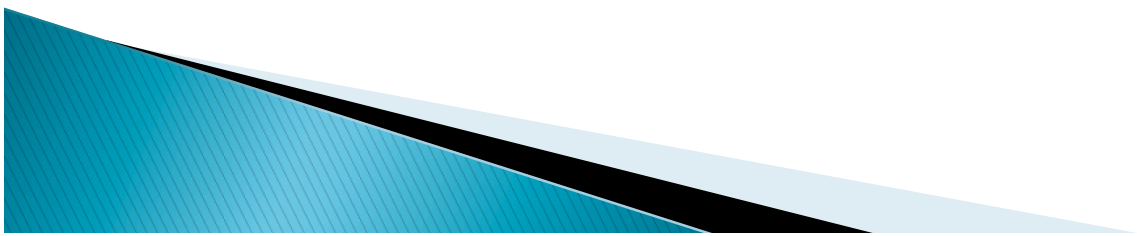
- Compare and contrast the Seafloor Spreading exercise to the fault area in Duluth, Minnesota
- Jay Cook State Park is a great place to visit with students.
  - This is in our area and we can see basalt flows, gabbro and granite from the mid continental rift
    - Uses of these types of rocks
    - Important resources
  - Vocabulary of different plate boundaries:
    - divergent = pull apart or separate=naazhaga
    - convergent =coming together or meeting=wiidookodaadiwin
    - transform = to mold=asiniiwikaa

Basalt and Gabbro on the North Shore of Lake Superior

- Looking at the fault area in Duluth
  - This is in our area and we can see basalt, gabbro and granite uplifts from the mid continental rift

Earthscope Relationships

- EarthScope explores the entire North American continent, as well as Earth, to better understand earthquakes, tectonic plates, and active volcanoes.
- Youtube video link:
  - https://www.youtube.com/watch?v=Wu9AM_T9wyw
- For our exercise today, please open:
  - http://www.earthscope.org/information/publications/newsletters/the-spree-project



Class Relationships

- Covers a number of Minnesota State standards:
- Mn Benchmarks 8.1.3.4.1 satellite and data sets to describe/predict global systems
- 8.2.3.1.1 expalin seismic waves and energy transfers through geologic layers
- 8.3.1.1.2 correlate ocean trenches/ridges to volcanic /seismic activity
- 8.3.1.1.3 Major geologic events result from moving tectonic plates
- Can easily be done within one class period
- Interactive, critical thinking, math, graphing, etc.
- Helps students visually see how plates have been moving apart for millions of years.