



INVESTIGATING HAZARDS ACTIVITY

1 Ask a Question

What is a hazard? What makes a community vulnerable to hazards? Which natural hazards impact your community and where are they located? How have hazards changed the physical landscape? How have hazards changed human systems? How are these hazards connected to sustainable development?

Guide a classroom discussion to help students think about the above questions to set the context for the activity. Natural forces are constantly changing Earth's surface. These changes may be considered hazards where they threaten human populations. People in some communities are more vulnerable to hazards depending on where they live or what access they have to information or resources to respond, adapt, or move away from different types of hazards. These decisions also depend on perceived risk factors, frequency, and outcomes. Hazards can affect the level of sustainability at a location. Analyzing hazards, vulnerability, and resilience can help students understand the complex connections between physical and human systems. For more, see www.aag.org/gcefoodsecurity.

2 Get data to Observe

Distribute the MyCOE Investigating Hazards Guide (pg 2) to students. Ask them to identify a natural hazard that has an impact in or near the community as a focus for their study and analysis. This may include volcanoes, tornadoes, hurricanes, blizzards, flooding, drought, fire, earthquakes, landslides, tsunamis, etc. (You may

have students choose different hazards or work as a class on the same one.) Using the chart provided, students should describe the changes caused by the hazard event in the physical landscape, human systems, and sustainability based on data from multiple sources including satellite images, interviews with community members, media accounts, or field observation (if appropriate and safe).

3 Use these GIS tools to Analyze

Students can access free satellite imagery from the Change Matters Landsat viewer (<http://changematters.esri.com/compare>). Enter the location into the "Search" box, select the type of imagery to view and the dates to compare from the drop down menus. Alternatively, satellite images are available from the USGS, NASA Earth Observatory, Google Maps, and Google Earth. Students may wish to take a "screen shot" of the view to include in their analysis. Pictures from widely known hazard events or disasters may also be available using the Image search feature on Google. Students should record changes based on their observations and data from the imagery, interviews, photos, or media accounts as a part of their descriptions.

4 Develop ideas for a Solution

Based on your analysis of the changes, rate the degree of change for each change area with 1 as a low degree of change and 10 as a high degree of change and include the reasons for their ratings. Finally, calculate a *Final Degree of Change Rating* by averaging the ratings assigned to the three categories and record their final rating. Discuss their ratings and reasons why they assigned the ratings as a class. Remind the students that these are subjective ratings but they should be based on the data they observed and collected. Return the discussion to the three research questions guiding the investigation to summarize their analysis of the connections between natural hazards and human populations.

5 Take action and Share it!

Share your Final Degree of Change Rating results with other MyCOE participants. Use the instructions on pg 3. If you made a hand drawn or digital map, follow STEP ONE and submit it to www.mycoe.org to be considered for recognition or prizes related to UN Rio+20. To be able to share your results with other MyCOE GCE classrooms, add a project point to the online MyCOE Project Exchange map following the instructions under STEP TWO. View other projects at MyCOE GCE sites and exchange comments on the projects in STEP THREE.

MyCOE INVESTIGATING HAZARDS GUIDE

What is a hazard? What makes a community vulnerable to hazards? Which natural hazards impact your community and where are they located? How have hazards changed the physical landscape? How have hazards changed human systems? How are these hazards connected to sustainable development?

Select a hazard event that has happened in or near your community to investigate (including volcanoes, tornadoes, hurricanes, blizzards, flooding, drought, fire, earthquakes, landslides, tsunamis, etc.). Fill in the table below including a description, date, location, and frequency of the hazard you are investigating. Describe the changes in the physical landscape and human systems based on data from multiple sources including satellite images, interviews with community members, photos, and media accounts. Consider how the human-environment changes affect sustainability in your community to determine the degree of impact. Based on your analysis, rate the degree of change/impact for each category with 1 as a low degree of change and 10 as a high degree of change. Include the reason for your rating. Calculate a Final Degree of Change rating by averaging the ratings assigned to the three categories and record the rating. Share your results with your class and other MyCOE project teams!

NAME _____ My Community Location: _____

HAZARD DESCRIPTION	DATE OF EVENT:	HAZARD LOCATION
The hazard in my community is...		Include a sketch map or attach a screen shot of a map or satellite image from a web mapping site. Be sure to note the locations of other places that might be impacted by this hazard.
The frequency of this hazard is...		
RESULTING CHANGES IN THE PHYSICAL LANDSCAPE		DEGREE OF CHANGE
The changes in the physical landscape including landforms, water flows, soils, or vegetation are...		1 2 3 4 5 6 7 8 9 10
		REASON FOR RATING:
RESULTING CHANGES IN HUMAN SYSTEMS		DEGREE OF CHANGE
The changes in human systems including housing, land use, transportation, or economics are...		1 2 3 4 5 6 7 8 9 10
		REASON FOR RATING:
RESULTING IMPACT ON SUSTAINABILITY		DEGREE OF IMPACT
This change impacts sustainability in my community by...		1 2 3 4 5 6 7 8 9 10
		REASON FOR RATING:
FINAL		DEGREE OF CHANGE
(Determined by average of ratings above)		1 2 3 4 5 6 7 8 9 10



my community, our earth

GEOGRAPHIC LEARNING

for Sustainable Development

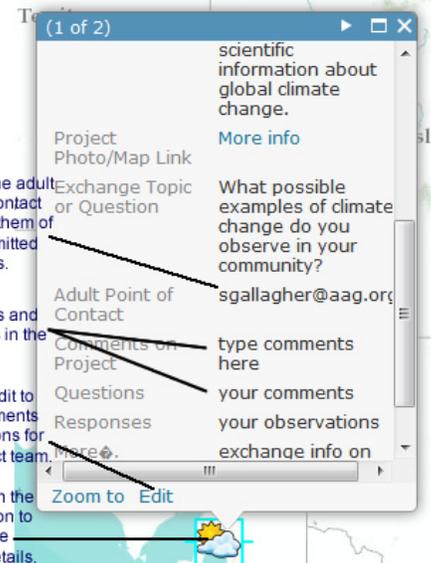
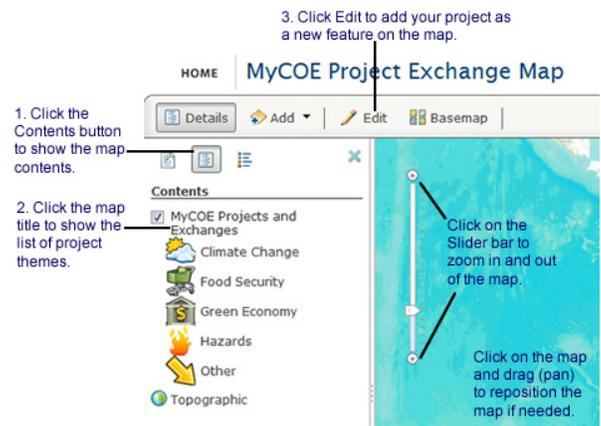
Share your project and exchange comments with other MyCOE participants!

STEP ONE (Optional): If you made a map during the themed activity, please report your project to MyCOE to be considered for recognition or prizes related to the UN Rio+20 conference.

1. Go to mycoe.org, click on “5. Take action and Share it!” button at the top of the page to submit your project details using the MyCOE online submission form.

STEP TWO: How to share your project on our MyCOE Project Exchange map

1. Go to mycoe.org, click on the “3. Use these GIS tools to Analyze” button at the top of the page.
2. Enter “MyCOE Project Exchange Map” into the search box (where it says, “Find maps, applications, and more...”). Click on the search icon or hit the Enter key.
3. Select the link “MyCOE Project Exchange Map” from the results list.
4. Simply click *Open* or select “Open in ArcGIS.com map viewer” in the drop down menu below the map icon.
5. To add your project to the map, zoom in or out using the slider bar on the map and click on the map and drag (pan) to reposition the map in order to find and view your location.
6. Click on the *Contents* button to display the map contents. Click on the map title under contents to display the list of project themes.
7. Click on the *Edit* button to add a point for your project to the map.
8. Click on the project theme icon for the project you would like to add to the map then move your mouse to the location on the map where you wish to add the point and click on the map.
9. Enter the details about your project in the fields in the pop up box. Be sure to type in one of the five project themes since the theme field will determine your project icon! There are hints to help you input the correct information and any entry can be edited and updated if needed. If you have a link to a project photo or map, include it with your details. Click Close.
10. Your project and details are now displayed on the map! All changes are automatically saved when you close the browser window.
11. Return to the map occasionally to check your project point on the map to see if you have any comments or questions.



STEP THREE: How to view and comment on other projects displayed on the MyCOE Project Exchange map

1. Click on a project icon on the map to view the project details for that project.
2. To add your comments and questions, click *Edit* at the bottom of the pop up box.
3. Enter your comments or questions into the appropriate fields.
4. Email the adult point of contact to inform them of your submitted comments and your exchange information.
5. Click close and all changes are saved automatically.