Is Climate Change Good for Us?

An activity for exploring how changes in climate could affect daily life and influence the economy of a region

by Jackie Oblak

To many people, the thought of temperatures rising two or three degrees Celsius does not seem to be a big deal, and to those who live in areas with cold winters it may even sound appealing. Yet global climate change brings with it a number of uncertainties about how regions will be affected. This activity is designed to encourage students to consider how changes in climate could affect them personally. They are then asked to broaden their focus by looking at the big picture to see how changes could affect their regions, whether they live in a rural or urban community, in the interior or along a coastline.

Although this activity is designed as an introductory exercise for primary and junior students, it can be easily modified for other levels by increasing the depth of the classroom discussion and research requirements. The exercise should serve as a reminder that even with our advanced technologies, we are dependent on the Earth's natural systems.

Tom Goldsmith

Background

We live in a world in which we expect a certain amount of climatic predictability. In temperate interior regions, we expect very warm summers and cold winters. In more southerly regions and along coastlines, we expect more rainfall in certain seasons than in others. For some, snow in May is typical; for others, annual droughts are the norm. Regardless of where we live, we have adapted our activities, economies and communities to seasonal cycles and climatic conditions which we have come to depend on.

One of the most important examples of our dependence on predictable weather patterns is found in agriculture. Plants have specific tolerances to rainfall, drought, and high and low temperatures, as well as to a number of other variables. As a result, farmers rely on having predictable seasonal weather patterns when they determine what type of crops they will grow and when they will plant them. Many other businesses rely on the weather as well. Tourist attractions, ski operations, theme parks and camping facilities all depend on a number of optimal days, whether they be snow days or sun days, to stay in business. Think of how empty the beaches would be without the hot sunny days of summer, or how empty the ski hills would be if it rained most of the winter! Restaurants, hotels, transportation companies and other enterprises depend on these weather-reliant businesses to bring in customers.

The design of buildings within a region is also based on an expected range of weather conditions. In areas with high winds, for example, new buildings are constructed in such a way that they can be expected to withstand these winds. Flood-control dams are designed to handle a maximum amount of runoff within a certain period. Areas around rivers and lakes are often designated as being within in the "100-year plan," meaning that according to past trends, the area has only a one percent chance of flooding each year. Land use decisions depend on these designations and, like agriculture and tourism, are based on a certain amount of predictability in the weather. Major changes in weather patterns, such as large increases in rainfall, especially over a very short period of time, may increase the potential of flooding in these areas.

We tend to take it for granted that climate will stay the same within certain limits of variability; but if our climate does change, many other aspects of our lives could also change. Consider the occurrence of a hot, dry summer with many sunny days in a region that usually experiences rain about once a week. It may be great for us to have more sunny days than normal during summer vacation, but if there is more sun, there is potential for increased evaporation of moisture from the soil. Would farmers likely benefit from these wonderful sunny days? How might the resulting decline in crop yields affect the price and availability of food? What could happen if these weather conditions continued for a number of years? These are the types of details that this activity encourages students to consider when looking at climate change.

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Activity

This activity can be done individually, but students will benefit from discussing their ideas in groups.

1. Using the chart (see next page) as a starting point, have students discuss and record what they think would be the consequences of various climate changes. Note that the chart is very general, and does not expect the students to quantify the changes, but only to consider general trends. You may want to add other weather conditions or events that are common in your region. The following are examples of ideas that you might expect from primary or junior students:

Season: Summer

Type of Change: More rainstorms

How would this affect me?

h My baseball and soccer games are likely to be cancelled more often.

h Water may leak into our basement.

h The storm spillways will fill with water and it may be dangerous to go near them.

h The wind that comes with rainstorms may break branches on the large old trees near my house.

How would this affect things around me?

h Local tomato farmers may have their crops ruined by hail or flooding of the fields. Tomato plants need regular rainfall with periods of sunshine. More storms may make the tomatoes crack and rot.

h The local summer festival may not make as much money because more events will be rained out and fewer people will attend.

2. Once the groups have completed the chart, discuss the responses as a class. Ask if there are any categories in which there seem to be no negative effects. Remind students to consider the effects of storms and other events on infrastructures such as drainage, roads, electricity and so on.

3. What adaptations would humans have to make if certain weather events became more common? This can be approached as a "What if?" brainstorming exercise, or students may contact local climatologists to ask about actual trends and long-term predictions for your area. Adaptations considered might include modifications to infrastructure and buildings; and changes in diet, dress, activities and transportation.

Extensions

1. Have students research the climatic tolerances and potential effects of climate change on a local crop or natural resource. Information to be gathered might include the maximum and minimum amounts of rainfall and the range of temperatures that the crop tolerates, the number of frost-free days it requires for maturation, and its susceptibility to weather-influenced pests such as insects and fungus. Compare these tolerances to the local norms for your area (obtain charts showing annual precipitation, temperature, and sun days from local weather offices). In areas where a specific crop or resource is the cornerstone of the local economy, consider the economic, social and environmental consequences of lower harvests due to climate change (e.g., many people might lose their jobs; if people have less money to spend, local businesses will suffer; if local crops suffer, more food may have to be imported to the region, resulting in higher prices and greater consumption of fossil fuel).

2. How could changes in climate affect wildlife? Choose two or three species of insects, plants or animals and consider whether and how they would be affected. Since all organisms depend on other things in their habitat, encourage students to look at requirements for food, shelter and water, as well as interdependence with other organisms. How might changes in climate influence these factors?

3. The media frequently report extreme weather events that cause difficulties for individuals and local economies. Choose a current weather-related event and have the students identify the cause (e.g., rain for three weeks in a region that usually has rain once a month) and the result (e.g., mudslides, flooding of rivers, loss of life, houses, crops, safe drinking water).

4. Have students select several different regions of the world, including their own, and identify features of architecture, dress, diet and culture that may have developed as adaptations to the climate.

Evaluation

At the end of the exercise, the students should show an understanding that climate changes which many individuals may consider desirable (more sun, more time on the beach) may not be good for farmers, other sectors of the economy or other organisms. Students should also understand that we depend on natural systems to be relatively predictable and to function within certain limits. Students should be able to identify, in general terms, what could occur to local structures such as dams and storm sewers if climate were to be more severe than expected within a certain time period. g

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Season: _____

Type of Climate Change	How would it affect me?	How would it affect things around me?
More rainstorms or snowstorms 		
Less rainfall or snowfall 		
More sunshine 		
Less sunshine 		
Higher daytime temperatures 		
Lower daytime temperatures 		
Higher wind speeds 		
Other changes