

**Current Events Paper: Connecting Course Content with Global Events**

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## **Current Events Paper: Connecting Course Content with Global Events**

This paper will discuss three different current event articles and the connections between the different Earth's spheres. Each of these articles addresses the impact that climate change is having on the environment. Articles one and two both address how climate change, which involves the atmosphere, biosphere, and hydrosphere, can directly and indirectly effect the population of birds. Article three discuss the effect climate change is having on glaciers and how this increases the chances of landslides and tsunamis in Alaska. These articles also highlight the different ways that scientist and researchers use satellite images and data from NASA to help better understand these events.

### **Summary of Current Events**

#### ***Article 1: Noise and Light Pollution from Humans Alter Bird Reproduction***

This article discusses how a research team at California Polytechnic State University used high resolution light pollution data from NASA's Visible Infrared Imaging Radiometer Suite (VIIRS) to understand the effects of light pollution on bird populations. Birds time their reproduction so that their eggs hatch when food is the most abundant to feed their young. Birds rely on the cues from the amount of daylight to know when to begin their reproduction cycle. However, climate change has caused the food supply for birds to become available early than normal, if birds do not breed at the correct time, they will lose out on peak food supply and risk not having enough food to feed their young (Henry, 2020).

What researchers found was, birds that were exposed to higher amounts of light pollution were able to change their internal clocks and reproduce earlier than they normally would. The birds that were able to do this had better reproduction success because their timing was in synch with the earlier availability of food due to climate change. The researchers also found that

human activity can adversely affect bird populations. Birds that have a lower frequency call can have their nesting delayed because female birds cannot hear the song of the male birds over the noise pollution causing them to not be physically ready to breed.

### ***The connection to spheres***

Climate change connects the biosphere both the human impact through industrialization and burning of fossil fuel and how climate change effects all life on Earth, the atmosphere with the increase of greenhouse gases, and the hydrosphere as it can cause an increase in cloud cover and precipitation as well glacial melting (“Causes of Climate Change, 2020). Henry (2020) discusses how climate change can impact the birds and the vegetation in the biosphere. The increase in greenhouse gases in the atmosphere can cause food sources for birds to appear earlier than normal which then impacts the bird’s ability to feed their young resulting in less fledging each year. Henry (2020) also shows how the actions of one part of sphere, humans, and their light pollution, can alter the course of another part, in this case the reproduction of birds.

### ***Article 2: New Mexico Mystery: Why are so Many Birds Dropping Dead?***

In August of 2020 residents around New Mexico began to report large numbers of dead migratory birds on mountain trails, golf courses, driveways, and other areas (Romero, 2020). Scientist and researchers in the area have estimated that the number of dead birds could be in the hundreds of thousands. Ornithologist from Cornell Lab of Ornithology have surveyed the areas and collected hundreds of the dead specimens. After examining the birds, they have noted that they have little to no fat, show signs of damage from for smoke inhalation, and are underweight (Romero, 2020).

These signs have led the scientist to believe the wildfires in the west could be to blame for the death of so many migratory birds as they attempt to fly through the smoke and lingering

pollution. The other leading cause could be due to the severe drought parts of New Mexico experienced over the summer months. One ornithologist, Dr. Farnsworth, believes it could be the combination of the drought and fires that caused such devastation.

### ***The connection to spheres***

In this article, the biosphere here is represented by the migratory bird population and vegetation. This highlights the close interaction they have with the atmosphere and hydrosphere. When temperatures in the atmosphere began to rise, they caused a heatwave for parts of New Mexico. This coupled with the drought, or lack of rain from the hydrosphere, had a negative impact on the vegetation in the area for the migratory birds. Without ample water or food supply, and with increased smoke in the atmosphere from the neighboring wildfires (also possibly exacerbated by the drought) the effects on the avian life in the biosphere was devastating.

### ***Article 3: Landslide Occurs Along Barry Arm of Prince William Sound***

As Barry Glacier has been retreating in Prince William Sound it has left a mass of land along the arm unsupported. In October of 2020, the U.S. Geological Survey (USGS) measured 8 inches of downward movement of the 600 million cubic yard mass using satellite images from NASA that had been collected for several years (Barto & Clark, 2020). Scientist and researchers from the USGS, Alaska's Division of Geological and Geophysical Survey, the Department of Natural Resources, and the National Tsunami Warning Center are all weighing in on the recent discovery. The concern is that if the landslide fails the results could be disastrous for the people in Prince William Sound. A large landslide event could trigger a 30-foot tsunami causing widespread damage.

### *The connection to spheres*

There is a connection here between the hydro/cryosphere (Barry Glacier) and the lithosphere (landslide). As the changes occur in the cryosphere and the glacier begins to melt, it leaves behind a large part of the lithosphere that is exposed and unsupported which can cause it to move down slope. This not only will change the surface of the lithosphere but will then impact a third sphere, the biosphere. The landslide could trigger a tsunami which could endanger the people that live and work in the community as well as the large tourist population that visits Prince William Sound each year.

### **Connections between classroom lessons and current events**

The three articles show the important role that real time data collected by NASA over the decades plays in helping understand different phenomena that occur on Earth and within the different spheres. The data may not have been intended for the purpose that scientist and researcher inevitably use it for but still a provides information to assist in understanding different problems and possibly finding solutions. When a casual observer noticed that the landmass on Barry Arm looked different, they called in a team of experts. With the use of years of data imagery from NASA they were able to measure the small yet substantial movements of this landmass over the years. Knowing this information helps people better prepare for what could be a catastrophic event. An article such as the Barto and Clark (2020) article could be used in connection with teaching about the hydrosphere, cryosphere, lithosphere, and the biosphere. This article also meets several Next Generation Science Standards in terms of human impact, the importance of learning about weather hazards, and quick changes to Earth's surface.

The lessons in the class focused on the importance of using authentic data in the science classroom and how to provide ways for students to understand the connection between all aspects of what makes Earth the Earth. Using articles such as these shows students how data collected by NASA is not just about space but important to various issues that affect them and other living things within their biosphere.

## References

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