

American Conservation Film Festival

In the Classroom



Chasing Ice

2015 Festival Official Selection

Filmmaker: Jeffrey Orlowski

Length: 75 Minutes

Summary: This film chronicles the Extreme Ice Survey, a multiyear project by photographer James Balog to deploy time-lapse cameras in unforgiving locations to capture a visual record of arctic glaciers before they disappear due to climate change.

Course Mapping: Earth Science, Physics, Environmental Science

Curricular Keywords: Climate Change, Glaciers, Scientific Measurement, Measurement of Change

Suggested Discussion Topics

In *Chasing Ice*, photographer James Balog painstakingly captures videos of environmental changes that are happening literally at a glacial pace. These videos can then be played at a much higher frame rate than at which they were captured bringing the slow changes they show into the much faster timescale of human perception. Thus, the film demonstrates a hallmark of the scientific method, using instruments to measure distances, masses, and times in order to avoid relying on our undeniably biased and inaccurate senses to make observations about the natural world.

- Discuss the scientific evidence available in support of climate change.
- Debate reasons why the relatively slow time scale of climate change compared to the passage of events in our everyday lives may make it hard for individuals to take climate change seriously. How does the work of the Extreme Ice Survey change human perceptions about the time scales of glacial change?
- Discuss other natural processes that occur on length or time scales that are beyond the range of human perception. What techniques or instruments facilitate study of these processes?
- The use of photography and videography to convey a scientific message is a significant dimension of the Extreme Ice Survey. Discuss how the challenges faced in order to make this visual art mirror the challenges a scientist may face conducting field surveys or laboratory experiments. Compare and contrast scientific methods and the scientific mindset with the methods and mindset used to create visual arts.

Suggested Activity

Download a time-lapse video of a retreating glacier like those posted on extremeicesurvey.org and estimate the glacier's flow rate in meters per second using the definition of speed, distance divided by time. Doing so requires estimating both distance and time scales for the video being analyzed.

While the Extreme Ice Survey utilizes time-lapse video to study the relatively slow process of glacial flow and retreat, other processes happen too fast for human's to perceive in real time. For example, [this video](#) of a glass Prince Rupert's Drop shattering was taken with a high speed camera and played back in slow motion so our human senses can discover the details of the chain reaction unfolding. Make your own time-lapse or slow motion videos to investigate slow and fast processes in the world around you. What previously unperceived details do your video's reveal about the processes recorded?

Water is one of few common substances that can exist as a solid, liquid, or gas within the range of temperatures that naturally occur on the surface of the Earth. Liquid water has a relatively high specific heat capacity and, unlike most substances, water in its solid phase is actually less dense than water in its liquid phase. Investigate how these and other properties of water contribute to its important biological and climate regulatory role on our planet.

Additional Resources: Another recent selection to the American Conservation Film Festival, *Snows of the Nile* (2014), explores climate change by showcasing the receding glaciers of Uganda's Rwenzori Mountains using images captured during the 1906 expedition of the Duke of Abruzzi and retracing the steps taken during this expedition today.

A selection of time-lapse videos produced by the Extreme Ice Survey is viewable online (extremeicesurvey.org).

The National Geographic publication *Extreme Ice Now* showcases the ice and glacier photography of James Balog.