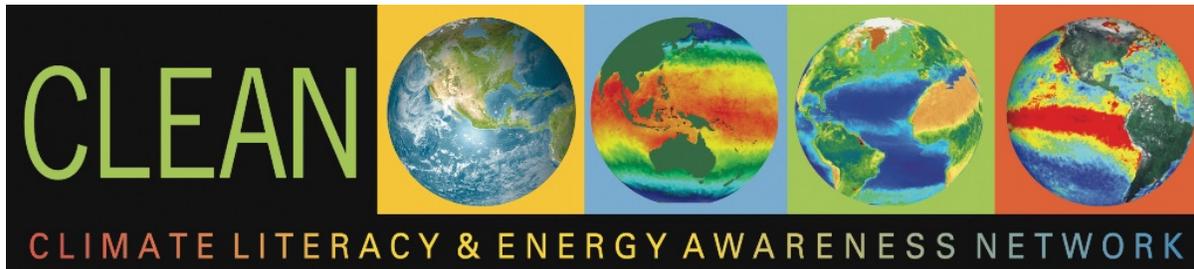
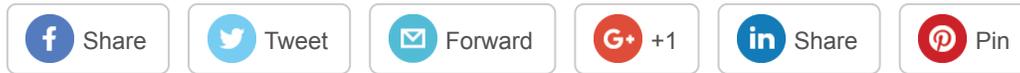


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[How Permanent is Permafrost?](#) | [Changing Planet: Thawing Permafrost and Methane](#) | [Alaska's Permafrost](#) [Washington Post](#)

## ***CLEAN STEM Flash***

A Timely Climate and Energy E-Learning Series to Use and Share

December 17th, 2020

### **Topic: Permafrost and Climate Change**

Permafrost is ground that is below 32°F/0°C for two years or more. The Arctic, Antarctic, and high mountainous regions all have permafrost. When permafrost thaws, gasses that have been locked up in the ground are released. These gasses then contribute more to the Greenhouse Effect and warming intensifies, causing more permafrost to thaw. This vicious cycle continues and is already having effects on coastal Arctic towns. In this newsletter, you will find two resources on permafrost: 1) an activity that has students explore real data and Google Earth, and 2) a video that discusses thawing permafrost in Alaska. We have also included an article describing a recent study on permafrost in Alaska, or rather the lack of it.

#### **CLEAN Resource Feature**

##### **Activity: [How Permanent is Permafrost?](#)**

This activity provides a rich collection of print and media resources about scientists studying permafrost in Alaska and Siberia. It engages students in using real data to study permafrost changes in Siberia. First students investigate on a local level and then extrapolate their findings to the global scale. This resource is suitable for online learning.

*Audience: Middle School, High School, College Lower*

**Browse CLEAN for more activities on [Permafrost](#).**

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and team up with fictional students in Chersky, Russia to investigate possible causes of thawing permafrost in Siberia and other Arctic regions. Students explore the nature of permafrost and what the effects of thawing permafrost mean both locally and globally. Next, students use a spreadsheet to explore soil temperature data from permafrost boreholes and surface air temperature datasets from in and around the Chersky region for a 50-year time span.

### **CLEAN Resource Feature**

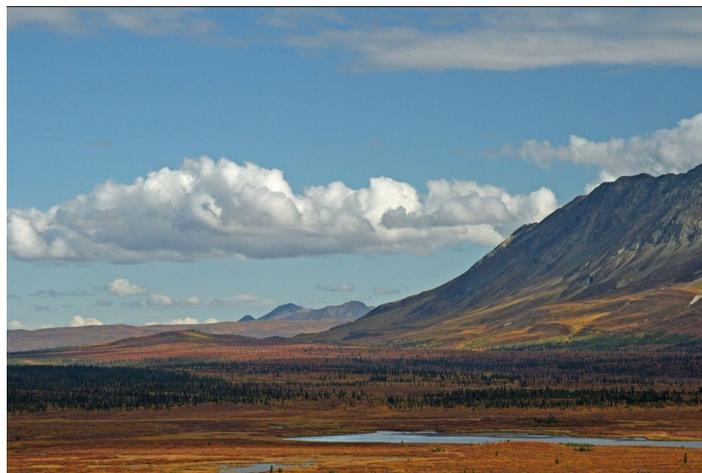
#### **Video: [Changing Planet: Thawing Permafrost and Methane](#)**

The video reviews the impacts of warming temperatures on the thawing of permafrost in the Arctic with potential release of the greenhouse gas methane. In addition, thawing permafrost damages the infrastructure of communities and facilities at high latitudes.

*Audience: Middle School, High School, College Lower, Informal*

**Take a look at some more CLEAN videos focused on [Permafrost](#).**

This video introduces the basics of thawing permafrost. There are interviews with Alaskan permafrost scientists who discuss the impacts of climate change on the Alaskan landscape. Dramatic results are shown, including sink holes forming on the landscape and beneath buildings, roads, and other infrastructure, causing some communities to relocate.



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This Washington Post article discusses a recent study on Alaskan Permafrost. The study has identified a coastal area of Arctic Alaska where there is not any detectable permafrost. They have also discovered areas where they thought there would be deep permafrost, but instead it is only 16m down. These findings suggest that the coastal degradation due to climate change will already begin impacting communities in Alaska. There is also the remaining question of when this change occurred; was there never any permafrost in that area or did it rapidly thaw before we had a chance to know it was there? It is important to note that though the article says that permafrost is "melting," that is not true. Permafrost does not melt, it thaws. If it melted the ground would disappear! (Think about it like you thaw a piece of frozen chicken, you don't melt it!).

If the article is not accessible try clearing your cookies/cache or view on a new web browser.

Photo credit: Markus Eckerstorfer (distributed via [imageo.egu.eu](http://imageo.egu.eu))



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