

# Table 3:

## Documenting and Displaying Climate Change Using Proxy Data Sources

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# STEAMed 2021: Exploring the Intersections of Global Humanities and STEM through Climate Change





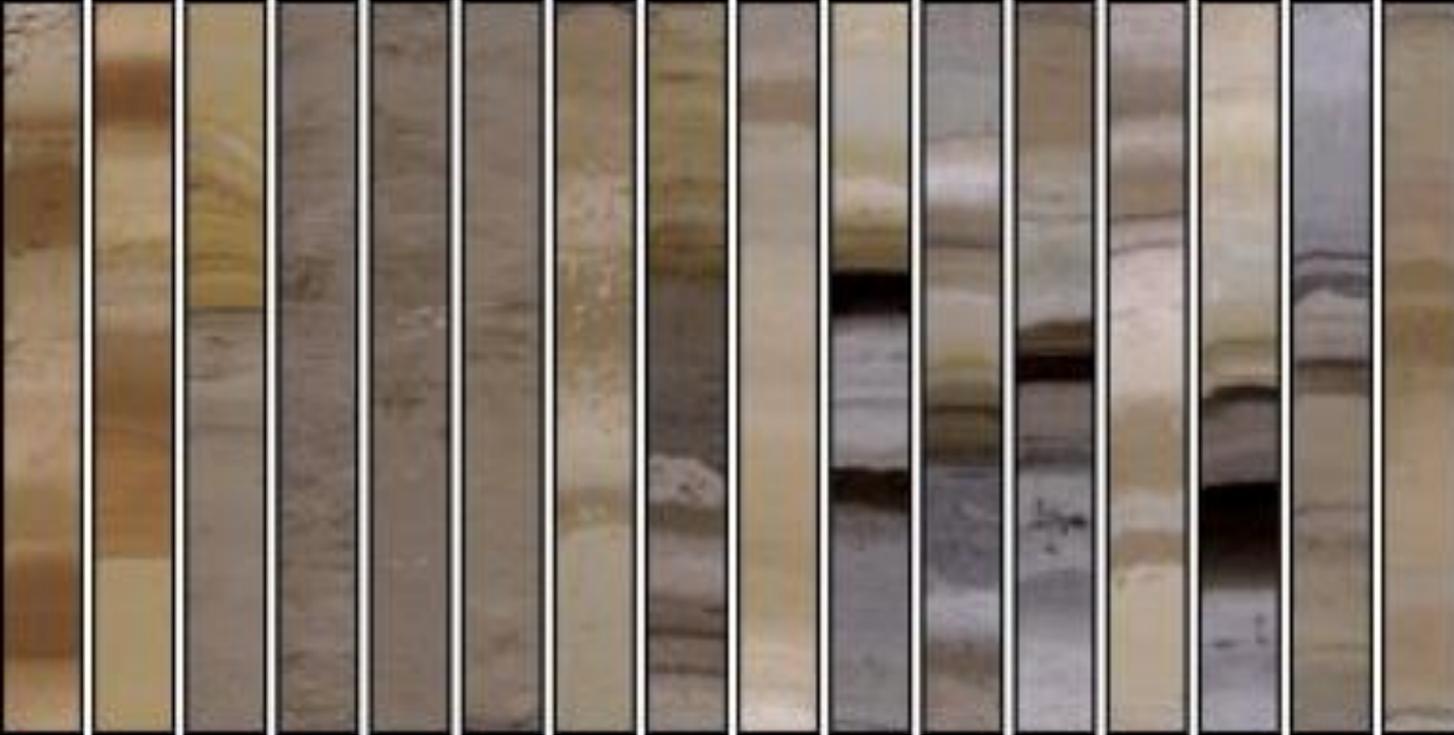
## What is a proxy data source?

A stand-in for instrument data

Documents past climate change

Documents present climate change where instruments are scarce or non-existent

Documents present climate change in novel ways that may appeal to diverse audiences



Source: NASA Earthobservatory

## Sediment Cores

Climate clues...

- Fossils of temperature-sensitive organisms
- Pollen
- Salts from evaporation
- Iceberg detritus
- Volcanic cooling events
- Traumas from asteroid or comet impacts



## Glacial Ice Cores

Climate clues...

- Air bubbles trapping ancient atmosphere
- Past CO<sub>2</sub> concentration
- Volcanic events
- Ratio of H<sub>2</sub><sup>18</sup>O/H<sub>2</sub><sup>16</sup>O (the lower the ratio, the colder the climate)

Source: National Ice Core Laboratory



Source: [eos.tufts.edu](https://eos.tufts.edu)

## Glacial Lake Varves

Climate clues...

- Light color = sand/silt
- Dark color = fine clay
- Sand/silt settle out when lake is ice-free
- Clay settles out when lake is ice-covered
- Relatively thick clay layer correlates with cold climate
- Annual record



## Tree Growth Rings

Climate clues...

- One light/dark pair of rings produced each year
- Narrow rings correlate with drought
- Photo shows Douglas fir from Arizona

Source: Daniel Griffin, [fronterasdesk.org](http://fronterasdesk.org)



Source: Smithsonian Magazine, 4 Dec 2015

## Human Artifacts

Climate clues...

- Gravesites in Norse settlements on coast of Greenland
- Native American and First Nations settlements



## Visual Arts of the Past

Climate clues...

- Impossible scenes in today's climate—ice skating on Amsterdam canals
- Influence of the "Little Ice Age"

*Winter Landscape*, Pieter Breughel the Younger, 1601

Source: Pushkin Museum of Fine Arts, Moscow, Russia



# Proxy Data that Documents Present Climate Change

Schuylkill Center  
Tempestry Project

