



# **Younger Dryas**

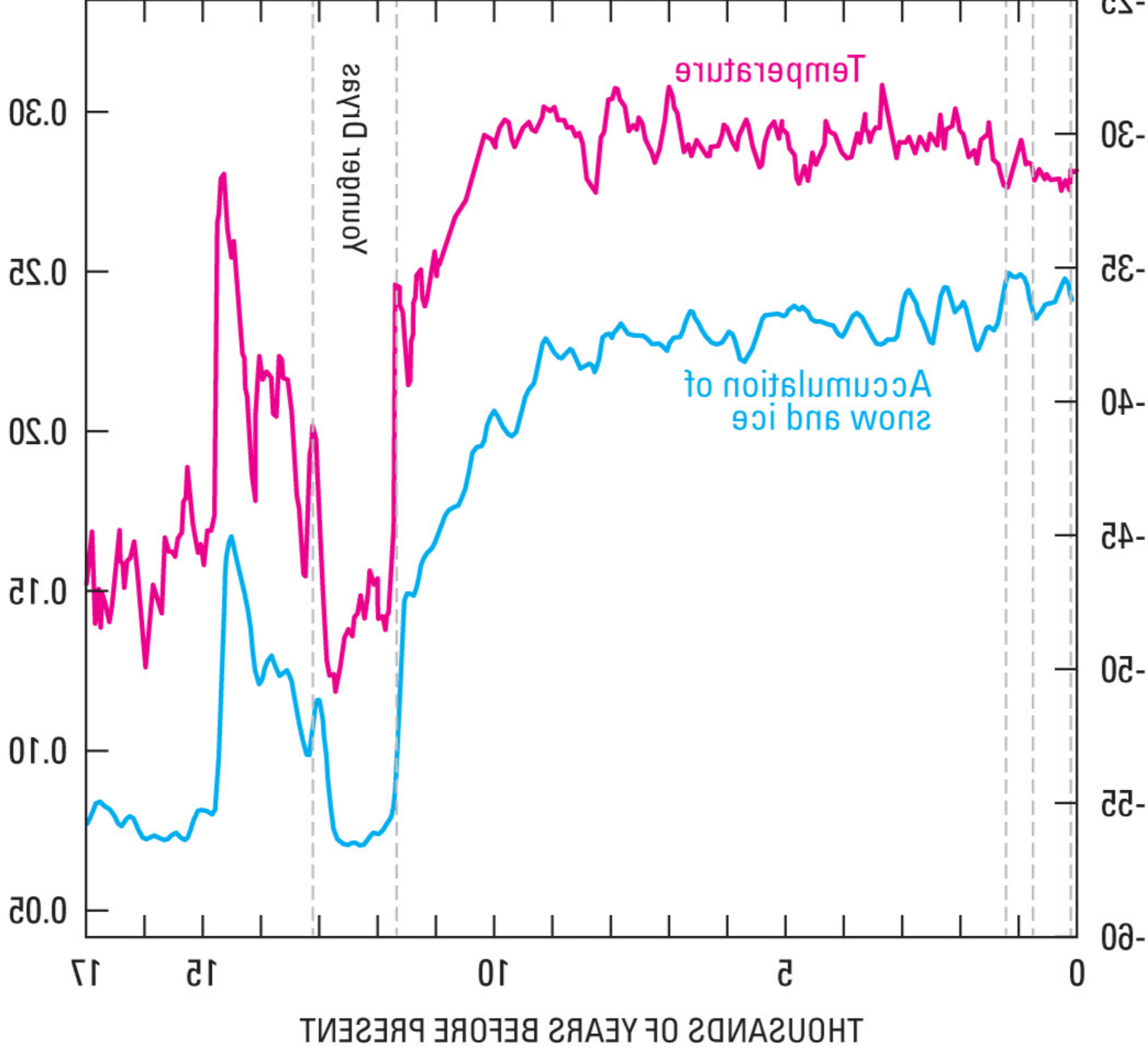
**Cause and Effect**

**by Matthew West**

# What was it?

- Abrupt global climate change
- During an interglacial period (warming), the global climate suddenly became cooler again
- Then rapidly returned to the previous warming trend
- Mass extinctions of Megafauna
- Extinction of the Clovis people of North America
- Named after the *Dryas octopetala*, a species of plant whose remains are found in deposits of this age and are indicative of cold climate

ACCUMULATION, IN METERS PER YEAR



THOUSANDS OF YEARS BEFORE PRESENT

Accumulation of snow and ice

Temperature

Pleistocene Epoch  
Holocene Epoch

Medieval warm period  
Little Ice Age

Younger Dryas

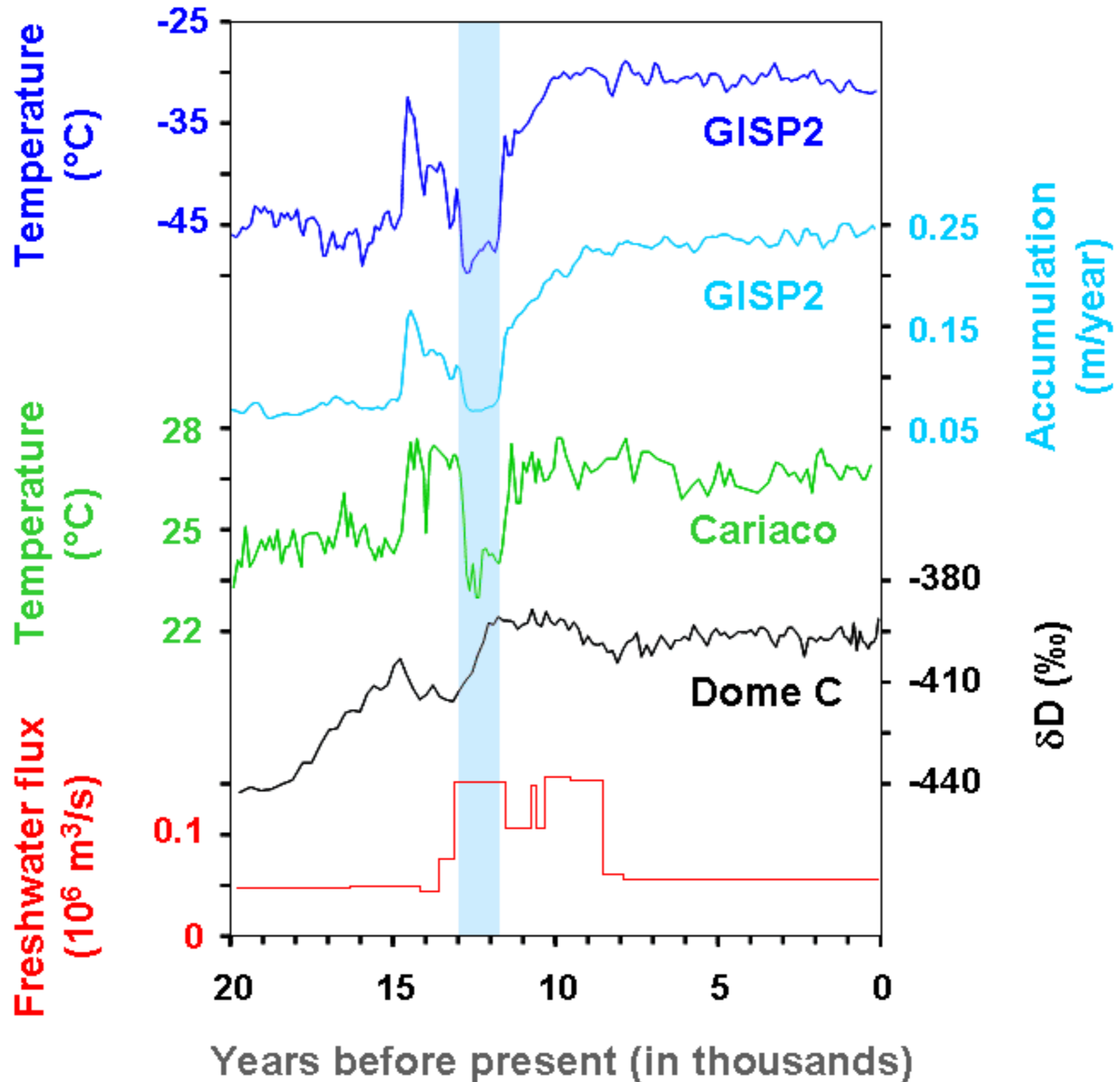
AIR TEMPERATURE, IN DEGREES CELSIUS

# When was it?

- At the end of the Pleistocene, about 13,000 ybp, global temperatures returned to glacial conditions: the Younger Dryas cold climate anomaly
- It abruptly ended 11,500 ybp and the warming trend that led to the Holocene returned
- (The Older Dryas occurred about 14,000 ybp and lasted 200 years)

# Why was it?

- During this time, the Laurentide ice sheet was rapidly melting, adding freshwater to the ocean.
- Just prior to the Younger Dryas, meltwater fluxes were rerouted from the Mississippi River to the St. Lawrence River. Possible catastrophic draining of Lake Agassiz.
- Geochemical evidence from ocean sediment cores supports this.
- Northerly routing of meltwater slowed the ocean's thermohaline circulation, shutting down heat transfer to the poles.



# Why was it?

- A sedimentary layer containing iridium grains and glass-like carbon with nanodiamonds, found at many northern hemisphere sites around the age of the Younger Dryas boundary, is evidence of a meteor impact.
- Ice in the Hiawatha glacier ice is at least 79,000 years old
- Second crater believed to be older than the Pleistocene.

# Resources

- Younger Dryas
  - <https://www.ncdc.noaa.gov/abrupt-climate-change/The%20Younger%20Dryas>
  - <https://pubs.geoscienceworld.org/gsa/geology/article/38/4/383/130267/what-caused-the-younger-dryas-cold-event>
- Greenland Craters
  - <http://www.geologypage.com/2018/11/huge-crater-discovered-in-greenland.html>
  - <https://www.nasa.gov/feature/goddard/2019/nasa-finds-possible-second-impact-crater-under-greenland-ice>