

Investigation: What connects these things?

The Year with no Summer

Notes for teachers

Either

- 1) Give each small group a selection of pieces of evidence (selected on the basis of the ability of the group) and ask them between them to work out what the connection is. Or
- 2) Hand out all the pieces of evidence, one to each student. They may not show anyone else their clue, but should read it out or describe it. Students should then work together to find out what the event was and how it was linked to the evidence they received.

You may like them just to consider the volcanic activity, or also take into the account the solar Dalton Minimum and Little Ice Age.

“I had a dream, which was not all a dream.

The bright sun was extinguish'd, and the stars

Did wander darkling in the eternal space,

Rayless, and pathless, and the icy earth

Swung blind and blackening in the moonless air;

Morn came and went – and came, and brought no day,

And men forgot their passions in the dread

Of this desolation; and all hearts

Were chill'd into a selfish prayer for light”

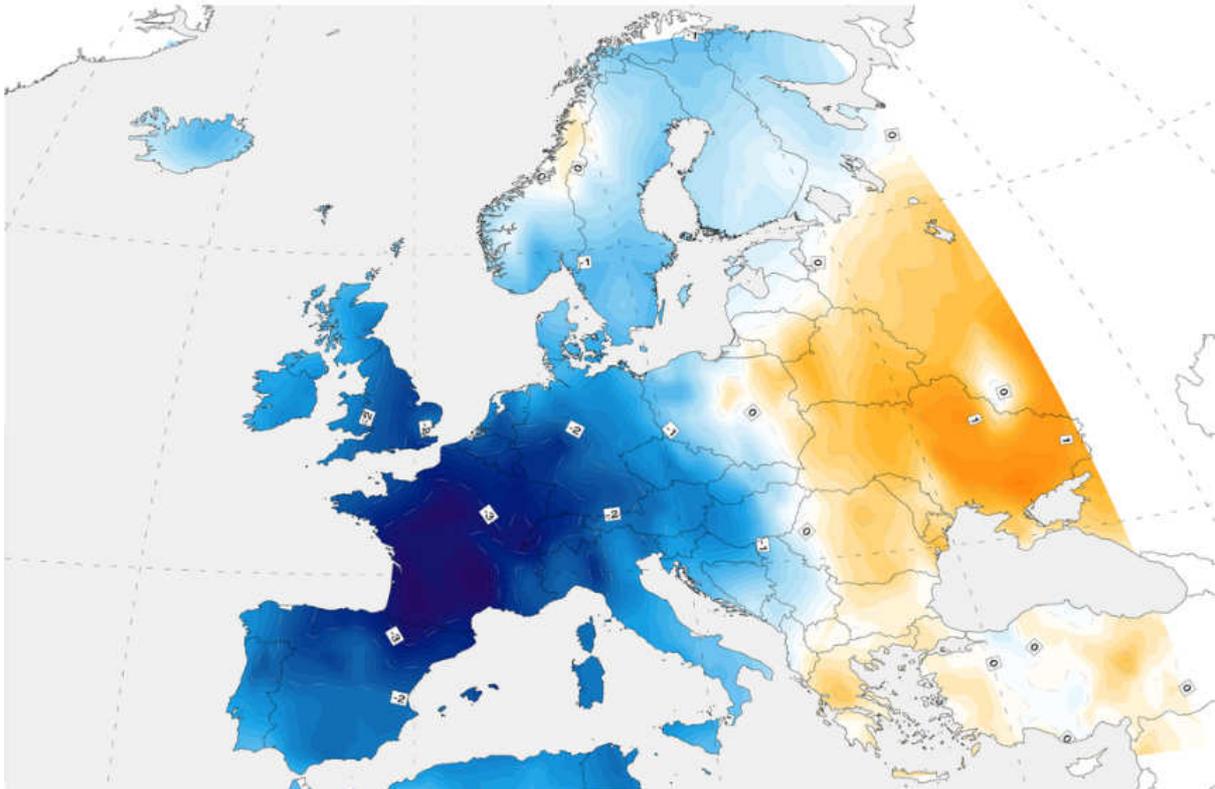
Lord Byron, 1816





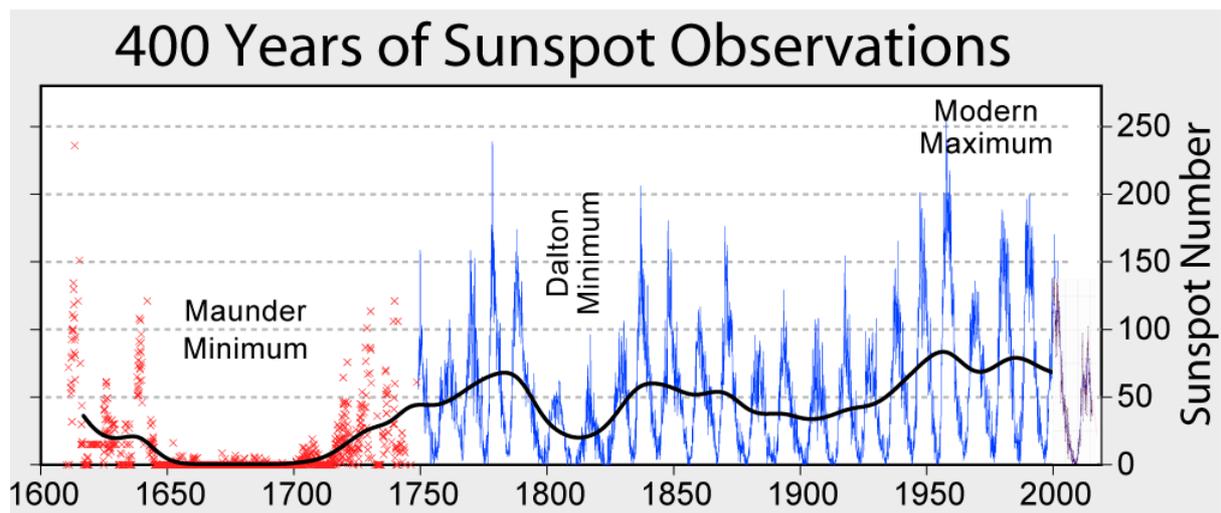
Chichester Canal, painted in 1828 by J.M.W. Turner

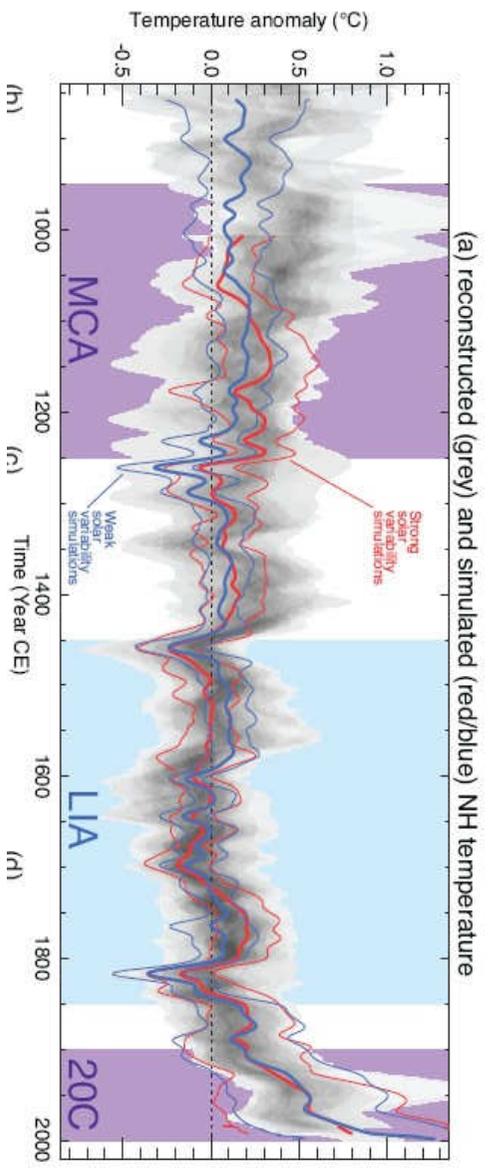
1816 Summer Temperature Anomaly



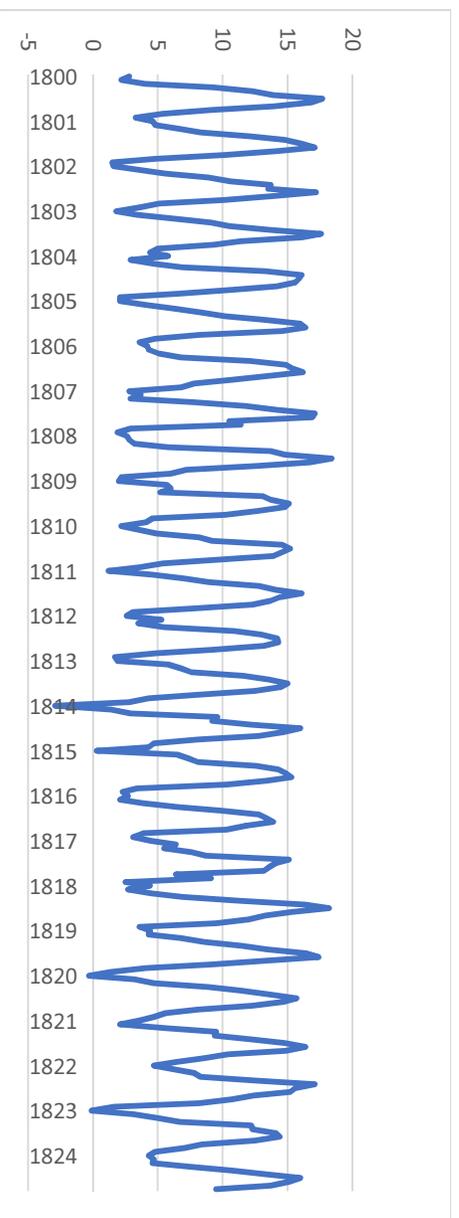


Tambora, Indonesia, 1815, La Soufriere, Saint Vincent (1812) and Mayon in the Philippines (1814)





Central England Temperature data for 1800-1825, temperature in °C



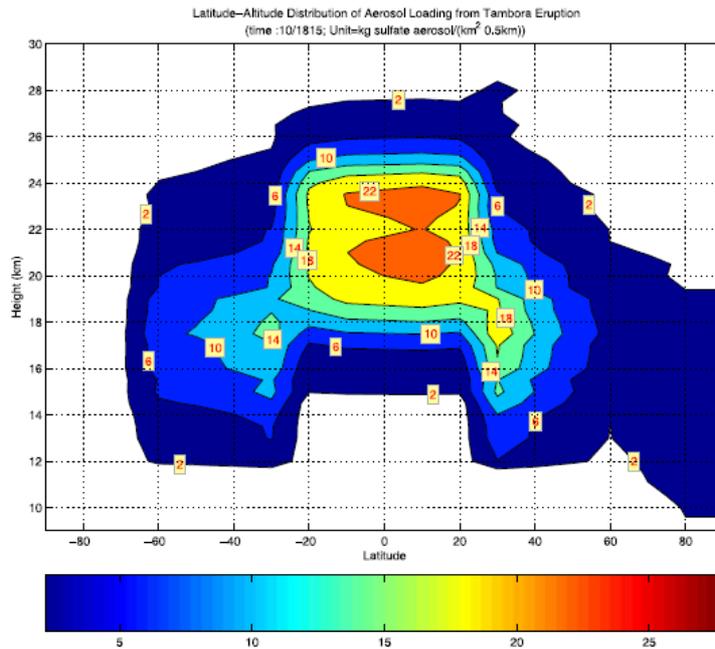


Figure 7. Latitude-altitude distribution of sulfate aerosol loading for October 1815, 6 months after the Tabora eruption.

From Gao et al., 2008, Volcanic Forcing of climate over the last 1500 years, Journal of Geophysical Research

Some statistics

12,000 people on the Island of Sumbawa died as a result of the explosion, including two whole kingdoms

44,000 people died of famine in Lombok

English and French wheat harvests failed in 1816

Complete harvest failure in southern Germany

2,000 starving people rioted in Dundee, summer 1816

65,000 people starved to death in Ireland

In 1817, 11.5% of Parisians described as destitute

Many thousands of people migrated around Europe, with tens of thousands leaving northern England, Ireland and northern Germany for North America.

In Switzerland, the death rate was 56% higher in 1817 than in 1815.

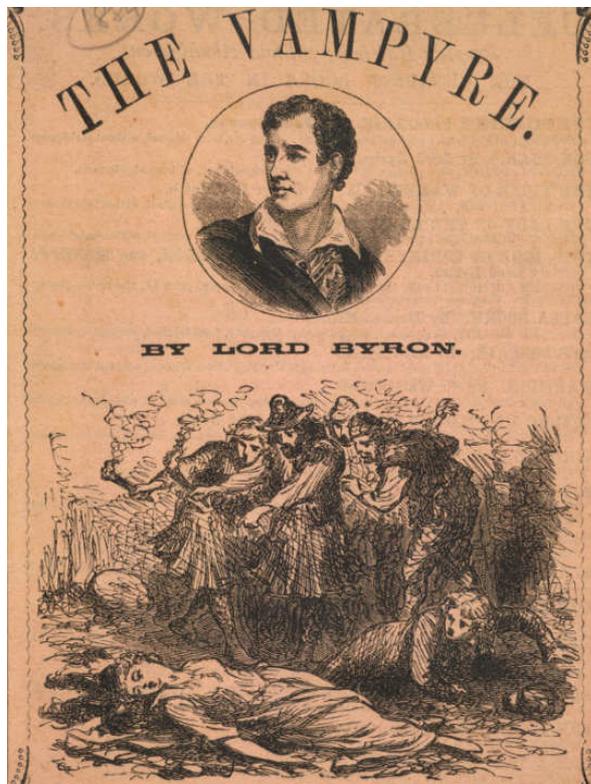


“This was succeeded, for nearly an hour, by a tremendous motion of the earth, distinctly indicated by the tremor of large window frames; another comparatively violent explosion occurred late in the afternoon, but the fall of dust was barely perceptible. The atmosphere appeared to be loaded with a thick vapour: the Sun was rarely visible, and only at short intervals appearing very obscurely behind a semi-transparent substance”

A British resident of eastern Java, April 11th 1815

On 5 April 1815 the crew of the British East India Company cruiser the Benares, anchored at Makassar in Sulawesi, heard what they thought was the sound of cannon-fire, drifting in from the south. The nascent Dutch East Indies had been under temporary British rule for the previous four years, and there had been sporadic unrest across the archipelago. The captain of the Benares assumed that more trouble was brewing, and he set sail to investigate. But after three days of scouting out pirate hideaways he had found nothing untoward and he returned to port bemused. But then, on the night of 10 April, there were more concussions from the south, “in quick succession, sometimes like three or four guns fired together”. They were so loud, the captain reported, that the Benares rocked back and forth in the calm waters of the harbour. “It was apparent”, he wrote, “that some extraordinary occurrence had taken place”.

<http://www.historyinanehour.com/2012/11/16/tambora-eruption-1815/>



(not actually by Byron)

