V43J-0310: The 2018 Kilauea eruption along the East Rift Zone is becoming voluminous enough to cause substantial global warming just like other extensive, effusive, sub-aerial, basaltic lava flows found worldwide.

But the eruption stopped 8 days after the abstract deadline. The warming effects were minimal.

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The greatest warming and mass extinctions were contemporaneous with the largest basalt flows in Earth history.

Siberian Basalts
- 251 Ma
- 7,000,000 km²

Central Atlantic Magmatic Province
- 201 Ma
- 11,000,000 km²

Deccan Basalts
- 66 Ma
- 500,000 km²

During extrusion of the Siberian basalts, equatorial ocean temperatures exceeded 40°C with major acidity. There was widespread acid rain and substantial ozone depletion.
The greatest ozone depletion ever observed followed the 1991 Pinatubo eruption, the largest since 1912.
Lavas from Bárðarbunga volcano in central Iceland covered 85 km\(^2\) of land in 6 months, a rate of 14 km\(^2\) per month.

Lavas flowed out from Bárðarbunga volcano in central Iceland, from Aug 29, 2014 to February 28, 2015, the largest basaltic eruption since 1783.

A rate of 14 km\(^2\) per month.

2016 was the hottest year on record. Temperatures rose from 2014 to 2016 at a rate five-times faster than they had risen from 1970-1998 when warming appears caused by ozone depletion caused by production of CFC gases.
The greatest concentrations of volcanic sulfate per century recorded in the GISP2 borehole under Summit Greenland began with the Preboreal warming around 12,000 ka and continued for 2500 years. The second greatest concentrations began with the Bølling warming 15,000 ka. The continuity of volcanism is shown by the circled numbers, which are the number of contiguous ice layers containing volcanic sulfate.

This volcanism was located in Iceland and it was basaltic.

Sub-glacial basaltic volcanic eruptions build vertically through the ice forming broad-shouldered tuya or table mountains.

Cosmogenic $^3$He measurements of basalts on top of these tuya show that their final eruptive phases were either during the Bølling or the Preboreal warmings (Licciardi et al. 2007).

Basaltic lava flows covering 700 to 950 km$^2$ in Iceland and in the Craters of the Moon area of the Snake River Plain in Idaho were contemporaneous with periods of sudden warming throughout the Holocene. There is still a great deal of work needed to identify large basalt fields formed during this period and to determine the precise dates of eruption.
Basaltic lavas form in sub-aerial rift zones and typically occur at the end of geologic time units during rapid changes in climate.

The Paleocene-Eocene rapid warming occurred as Norway rifted from Greenland.
Ozone depletion after the Pinatubo eruption caused warming of up to 3.5°C from December 1991 to February 1992 before aerosol cooling became widespread.
Lavas on the lower East Rift of Kilauea volcano in Hawaii covered 36 km² of land in 3 months, a rate of 12 km² per month.

Lavas flowed out of the East Rift from May 3 to August 9, 2018 at a rate similar to Bárðarbunga but only lasting half as long.

A rate of 12 km² per month

This was a rate much faster than usual in Hawaii. The Puu Oo eruption began in January 1983. By the end of 2016, lava had been extruded over an area of 144 km², only 0.36 km² per month.

Changes in ozone or global temperatures, if they occurred, were too small to resolve over this 3 month period.
The footprints of climate change in ice cores: Erratic sequences of rapid warming followed by slow, incremental cooling over millennia

25 times in the past 120 ka, air in Greenland was warmed within years apparently due to basaltic eruptions in rift zones, but cooled slowly and incrementally over millennia apparently due to aerosols formed by large explosive eruptions that reflected sunlight cooling Earth 0.5°C for 2 to 4 years. Several large eruptions per century led to incremental cooling.

Cooling the ocean surface for a few years affects ocean temperatures for nearly a century (Gleckler et al., 2006). Thus several major, explosive, volcanic eruptions per century over millennia can increment the world oceans down into ice-age conditions. (Sea level modelling by Gregory et al., 2006.)
Large basaltic provinces tend to punctuate the geologic time scale. They appear to cause the sudden changes in climate and species.
How does extensive basaltic volcanism cause global warming?

Periods of sudden global warming throughout Earth history are contemporaneous with extensive basaltic lava flows covering hundreds to millions of square kilometers. The larger the flow, the greater the warming, the longer the warming lasts, and the greater the associated ocean acidification and mass extinctions.

All volcanic eruptions of sufficient size are observed to deplete the ozone layer most likely by emission of chlorine and bromine gases. The depletion and related warming is greatest in winter months. Major explosive eruptions also form aerosols in the lower stratosphere that cause net cooling.

Basaltic magmas contain 10 to 100 times more volatiles per cubic kilometer than more evolved magmas (Palais and Sigurdsson, 1989; Freda et al., 2005; Self et al., 2008; Webster, Baker, and Aiuppa, 2018).

There is still work to be done to understand how chlorine and bromine emitted at the surface can rise into the stratosphere without being washed out. Convection of heat above the hot lavas must play a role.
Ozone depletion explains global warming throughout Earth history in far greater detail, with far greater precision than greenhouse-warming theory.

The Globe Warmed One Degree Centigrade Since 1970

But, greenhouse warming theory is mistaken!

In fact, it is not even physically possible!

A blanket of greenhouse gases can slow cooling but cannot cause heating.

A body of matter cannot be heated by absorbing its own radiation.

Matter can only be heated by absorbing radiation from a hotter body.

Hotter bodies contain much higher amplitudes and frequencies of oscillation of all the bonds holding matter together as shown by Planck's Law.

Warming from 1970 to 1998 was caused by humans depleting the ozone layer, allowing more very hot solar ultraviolet-B radiation to reach Earth.

Get much more detail at Booth 650 in the Exhibit Hall.