

V51E-3083

Climate Throughout Geologic Time Was Cooled by Sequences of Explosive Volcanic Eruptions Forming Aerosols That Reflect and Scatter Ultraviolet Solar Radiation and Warmed by Relatively Continuous Extrusion of Basaltic Lava that Depletes Ozone, Allowing More Solar Ultraviolet Radiation to Reach Earth

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Two Fundamentally Different Types of Volcanism

Effusive volcanoes



Bárðarbunga, Iceland, 8/14 to 2/15

Magma type: primitive basalt

Eruption height: generally < 2 km

Duration: months to millennia

Aerosols: do not form in the
lower stratosphere

CAUSE GLOBAL WARMING

Explosive volcanoes



Pinatubo, Philippines, 6/91

Magma type: evolved

Eruption height: up to 36 km

Duration: hours to days

Aerosols: formed in the
lower stratosphere

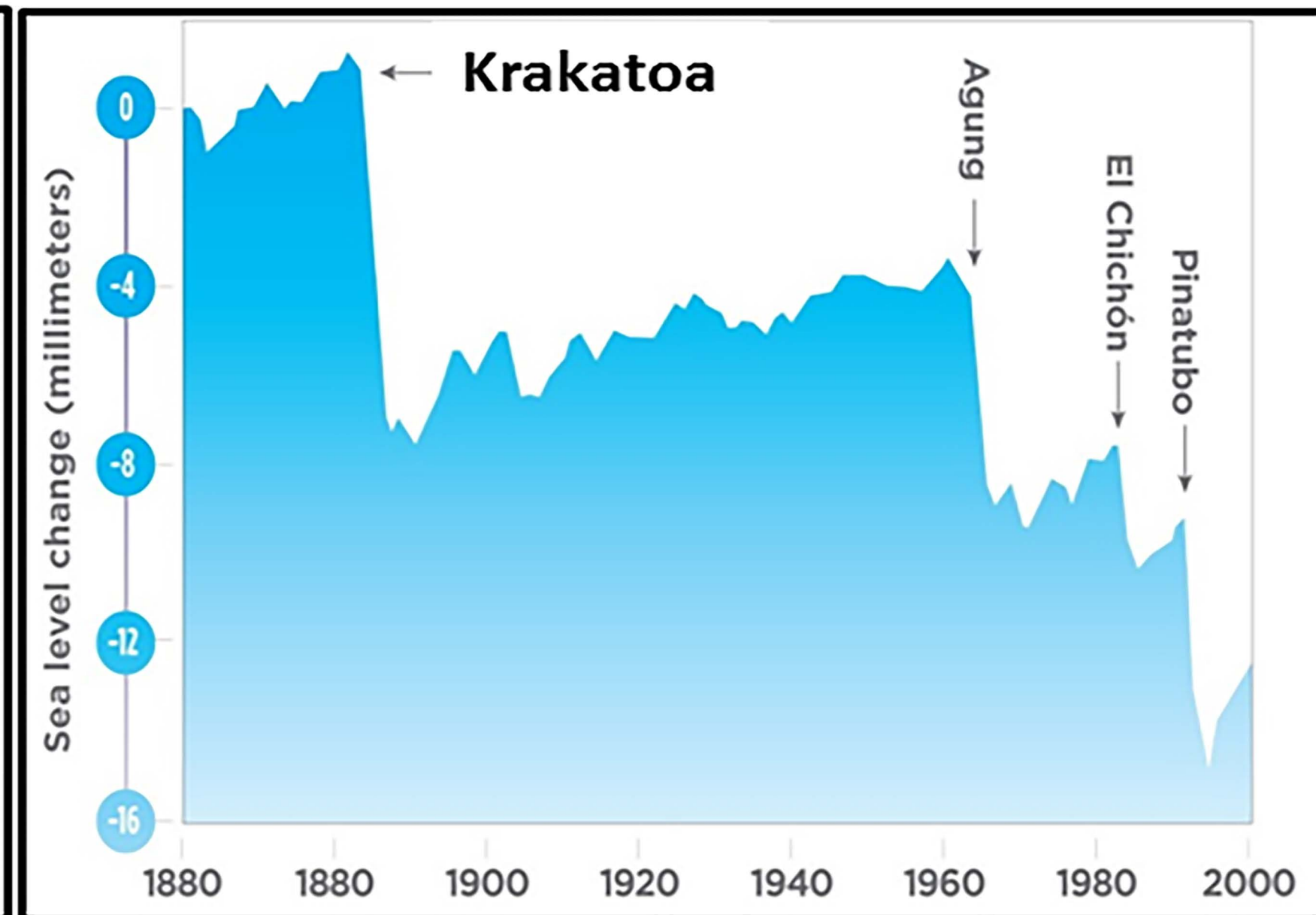
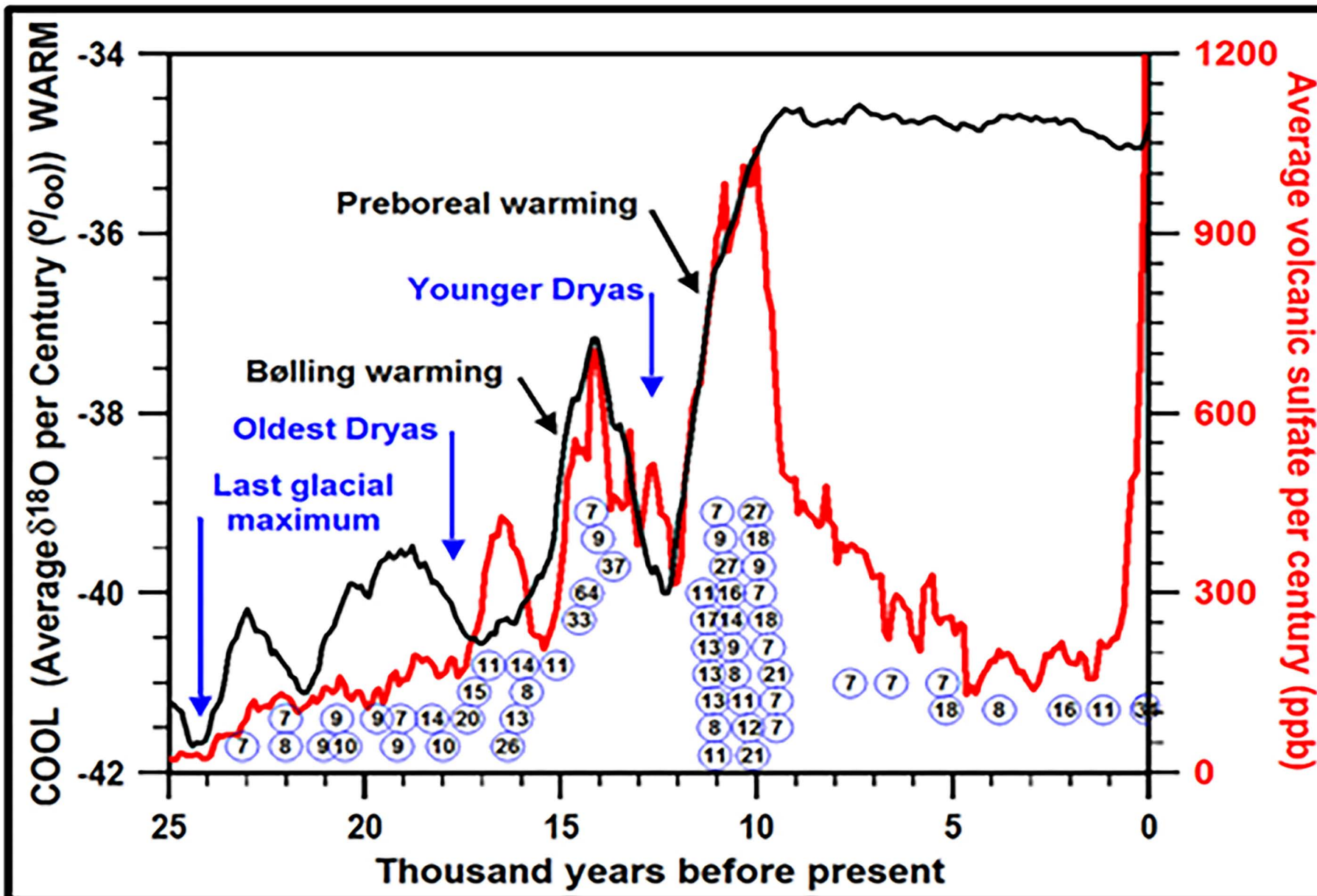
CAUSE GLOBAL COOLING

Climate Throughout Geologic Time Appears To Be a Balance Between

Duration and continuity of major effusive volcanism causing global warming

and

Frequency of major explosive volcanism causing cumulative global cooling



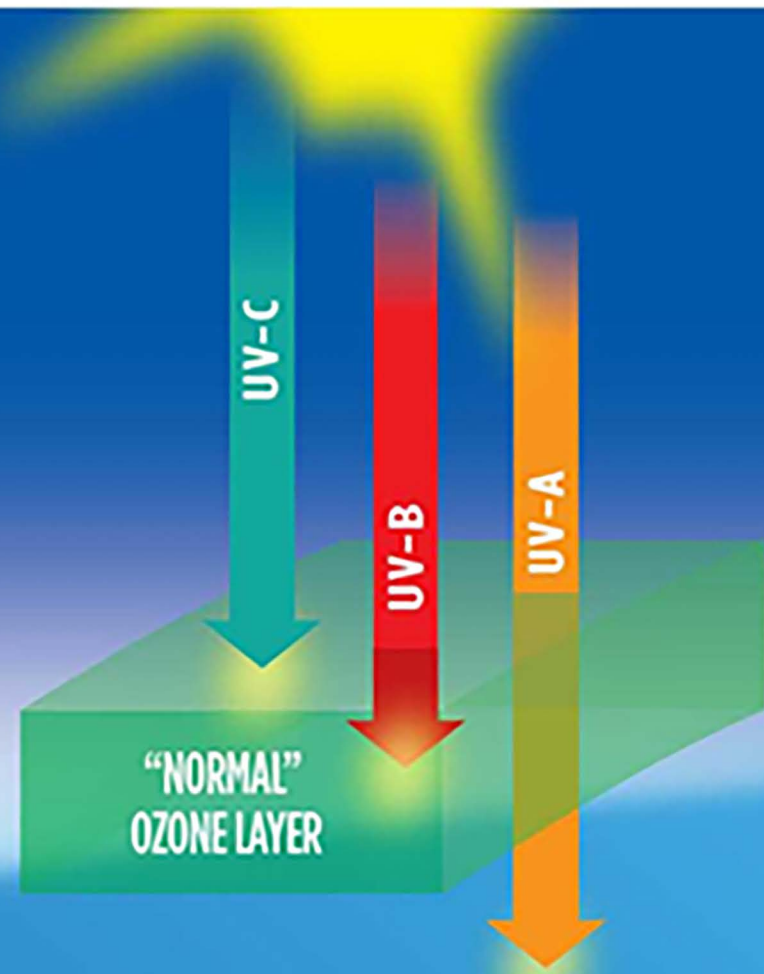
Circles contain the number of contiguous layers with sulfate, implying continuity of volcanism

NORMAL CONDITIONS

UV-C keeps atmosphere warm

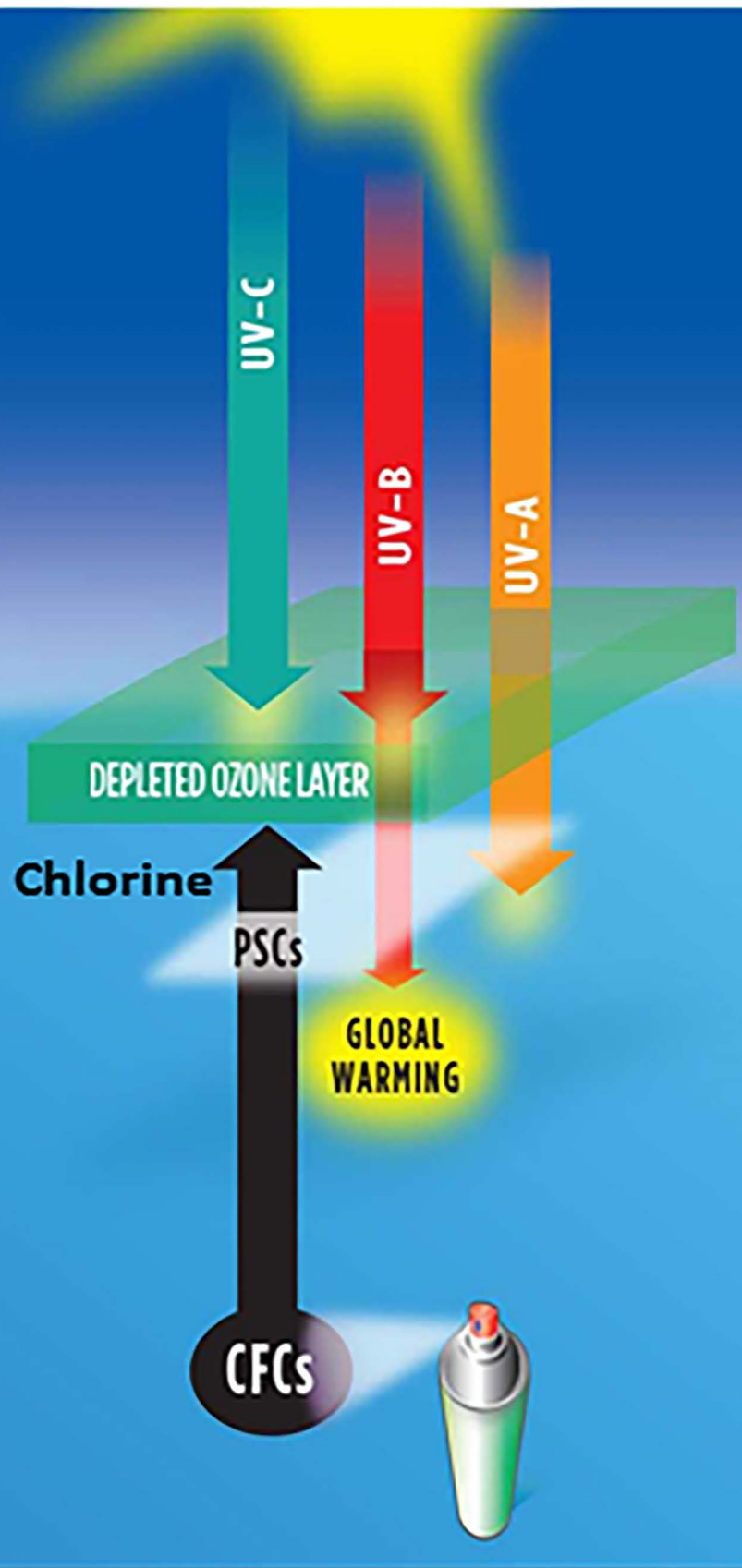
UV-B keeps ozone layer warm

UV-A & sunlight keeps Earth warm



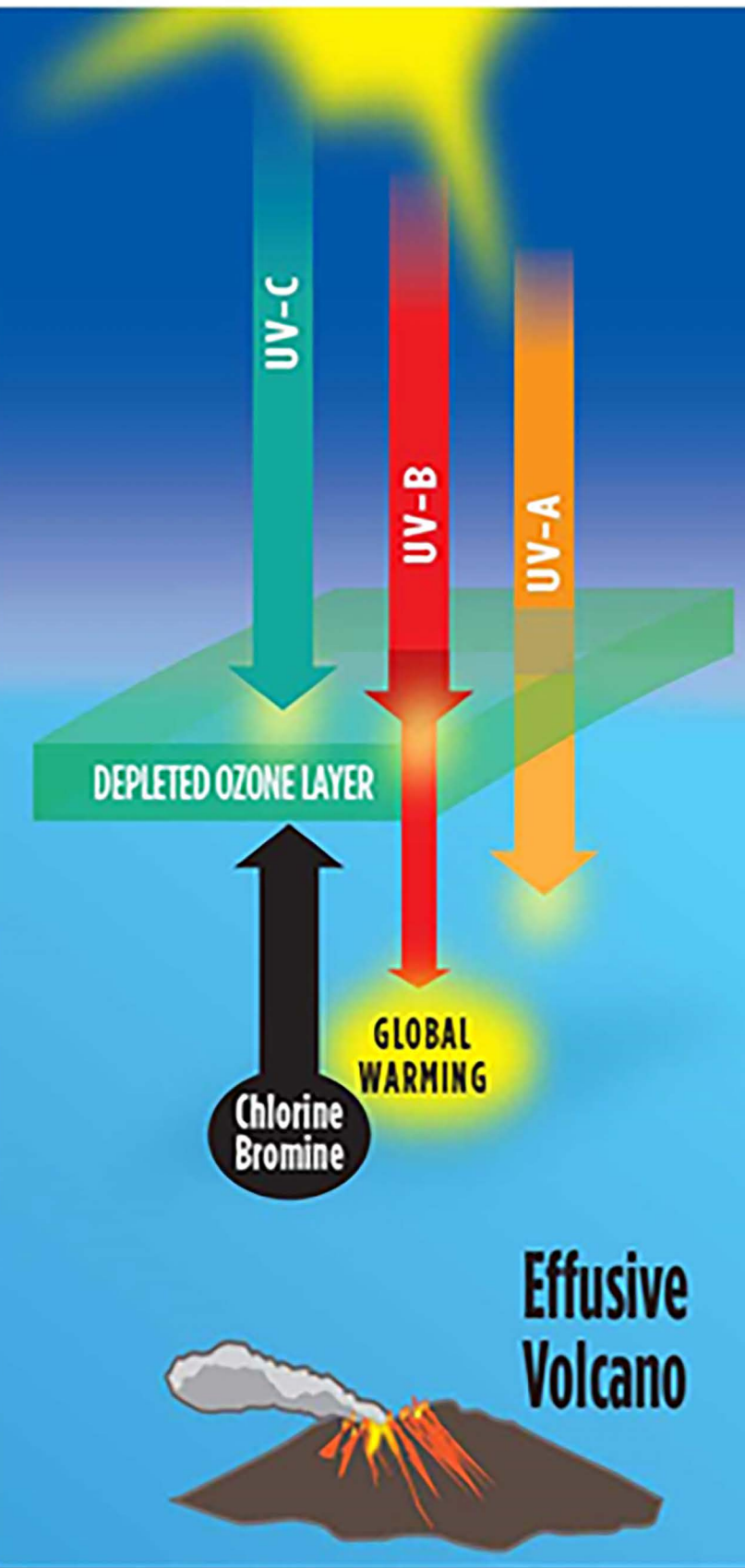
GLOBAL WARMING

CFCs in polar stratospheric clouds (PSCs) release chlorine depleting ozone cooling ozone layer & warming Earth



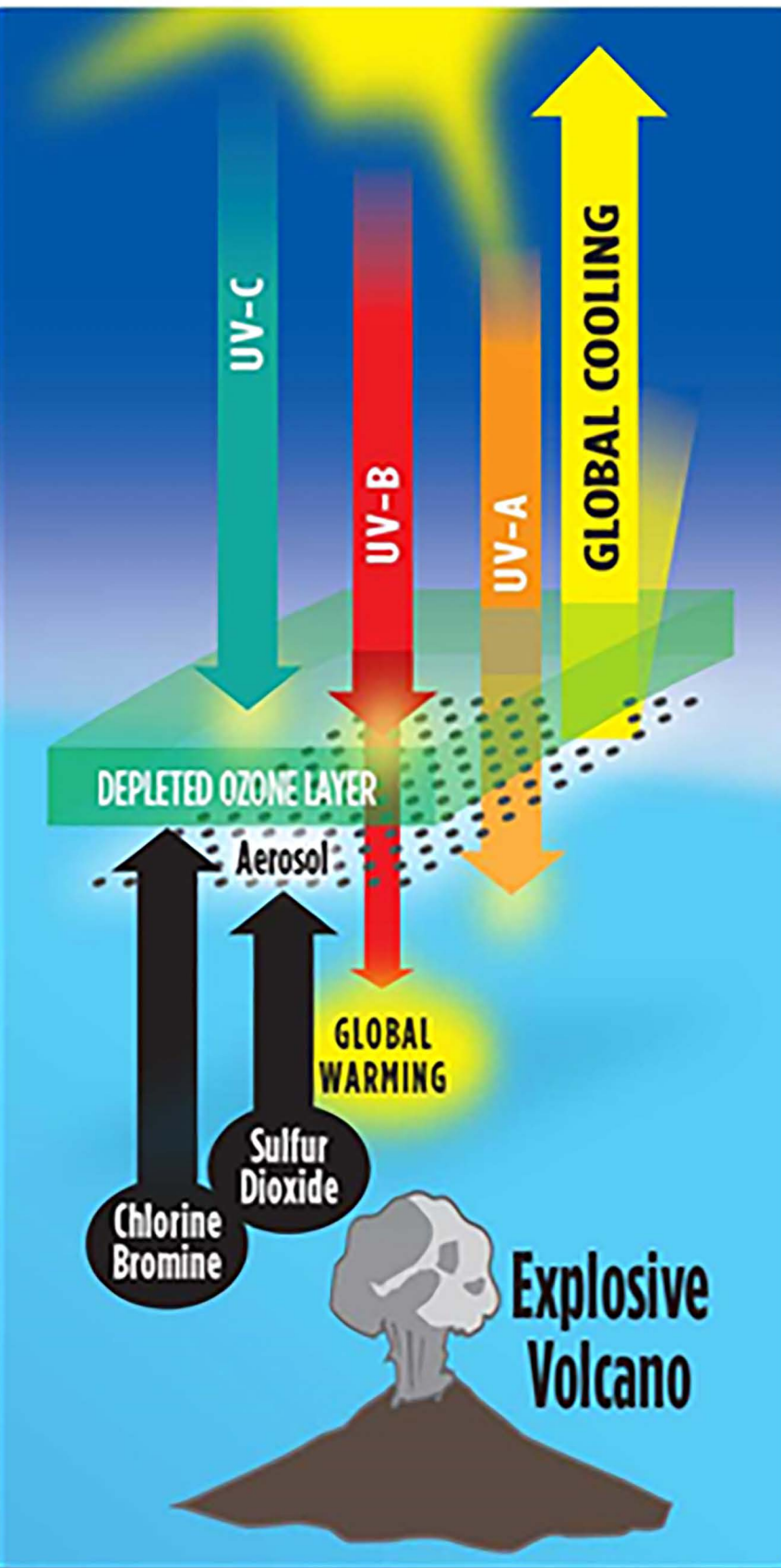
GLOBAL WARMING

Volcanoes release **Chlorine & Bromine** depleting ozone cooling ozone layer & warming Earth



GLOBAL COOLING

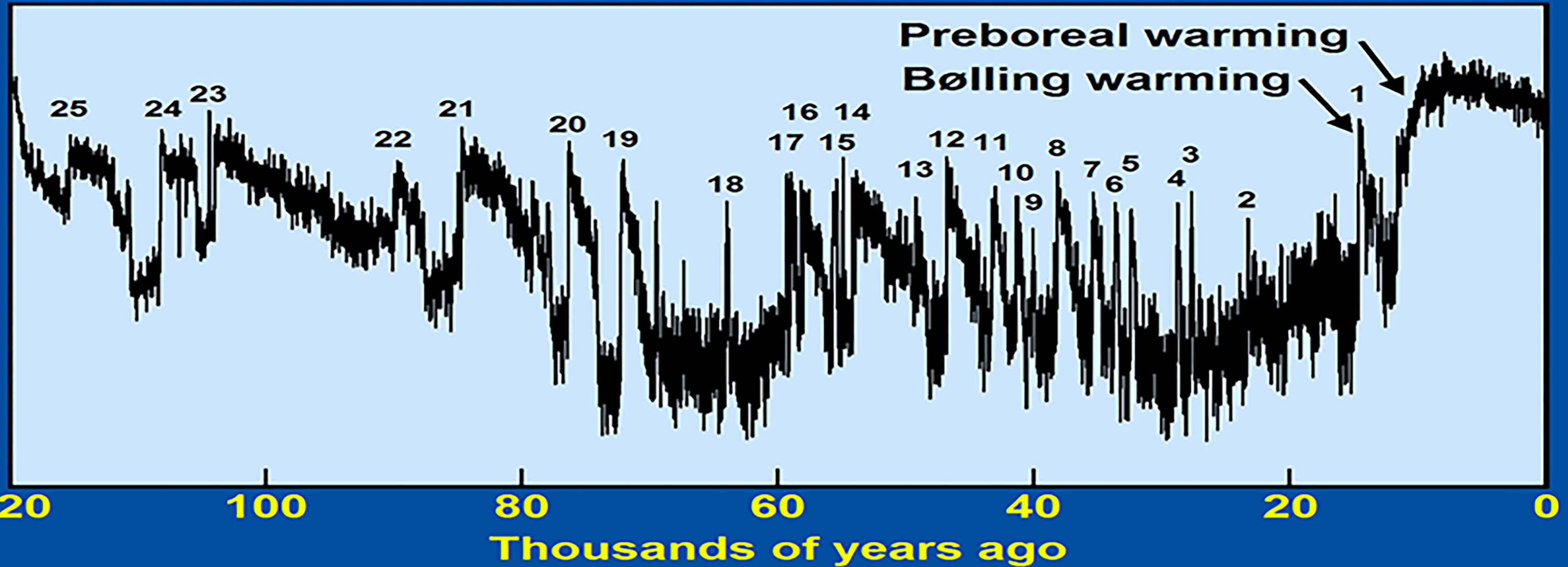
Explosive volcanoes also eject **Sulfur Dioxide** into stratosphere forming aerosols that reflect & disperse sunlight causing net cooling of Earth



Dansgaard-Oeschger Sudden Warming Events

Every 4000 years on average, recurrent effusive volcanism in Iceland repeatedly warmed the world out of ice-age conditions within years, but without continuing volcanism, the ocean cooled the world more slowly back into ice-age conditions. The ocean contains nearly all of the heat.

Warm

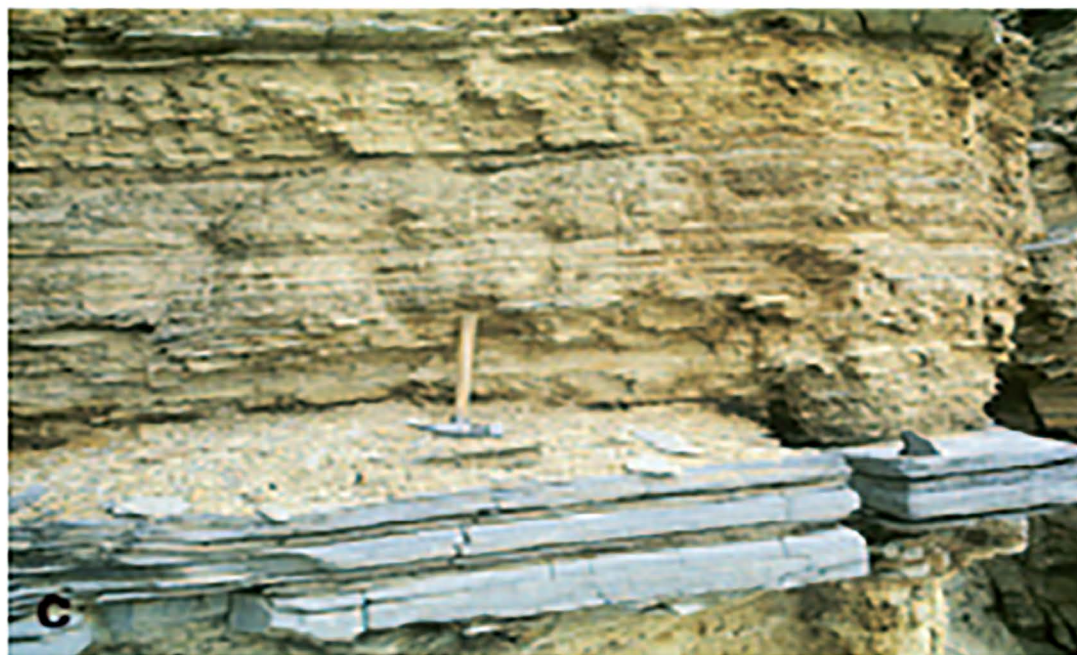
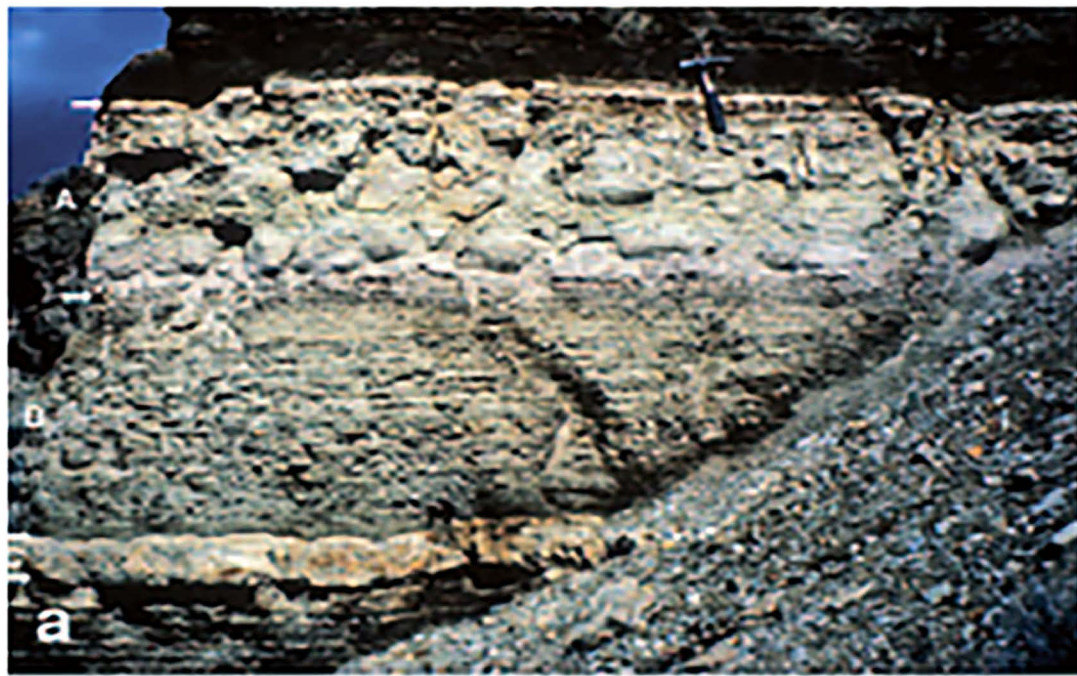


Cold

How can such sudden onsets and such rapid cycling be explained by greenhouse warming theory?

Similar Rapid Cycling in the Eocene Green River Formation in Wyoming

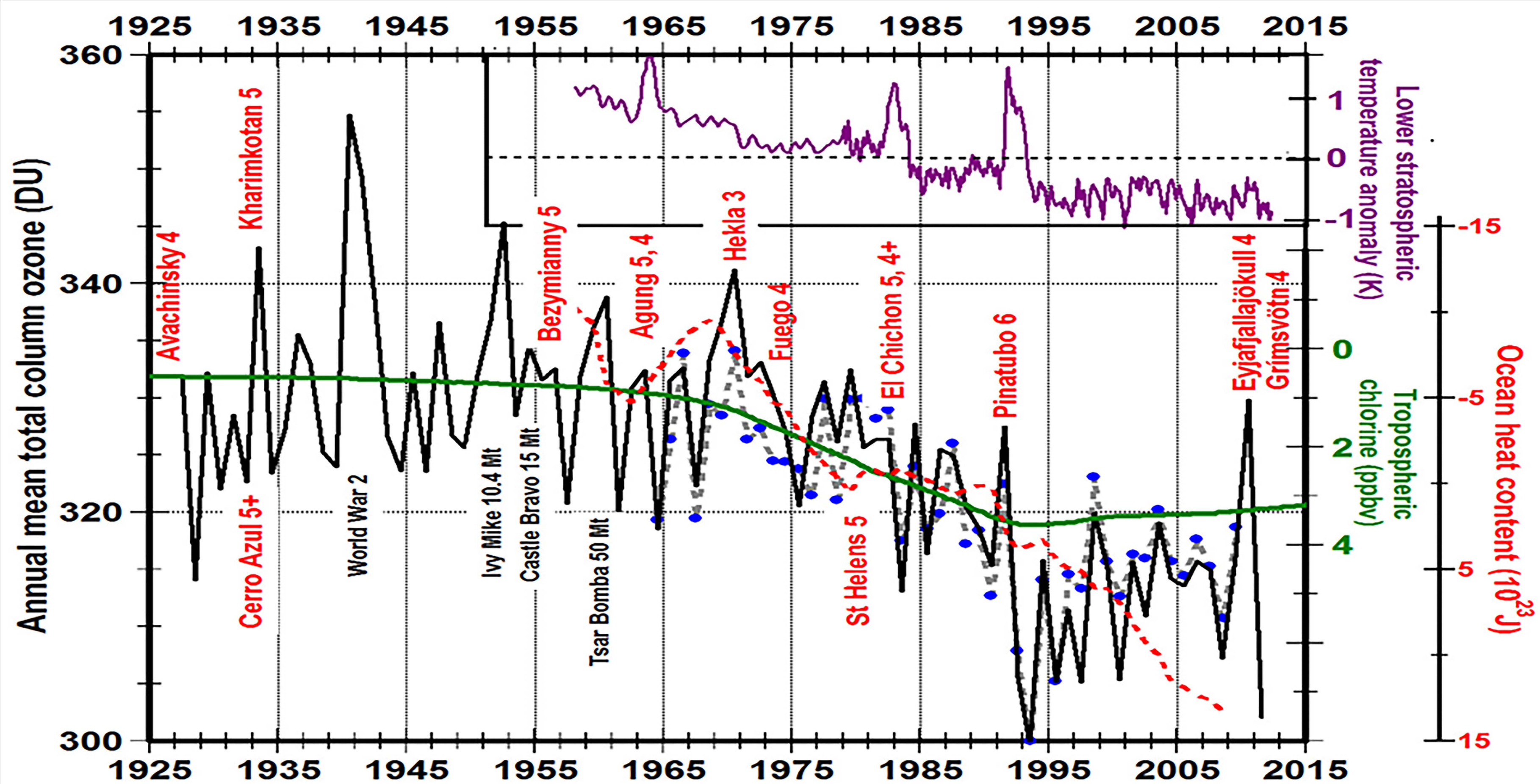
Rapid cycling between hot, moist conditions, as in the modern oil-shale-forming environments in Florida, to very hot, dry conditions, as in modern trona forming environment at Lake Magadi in Kenya, leads to banded sediments, like those below from the Green River Formation (Surdam, 2013)



Mud Lake Florida



Lake Magadi, Kenya

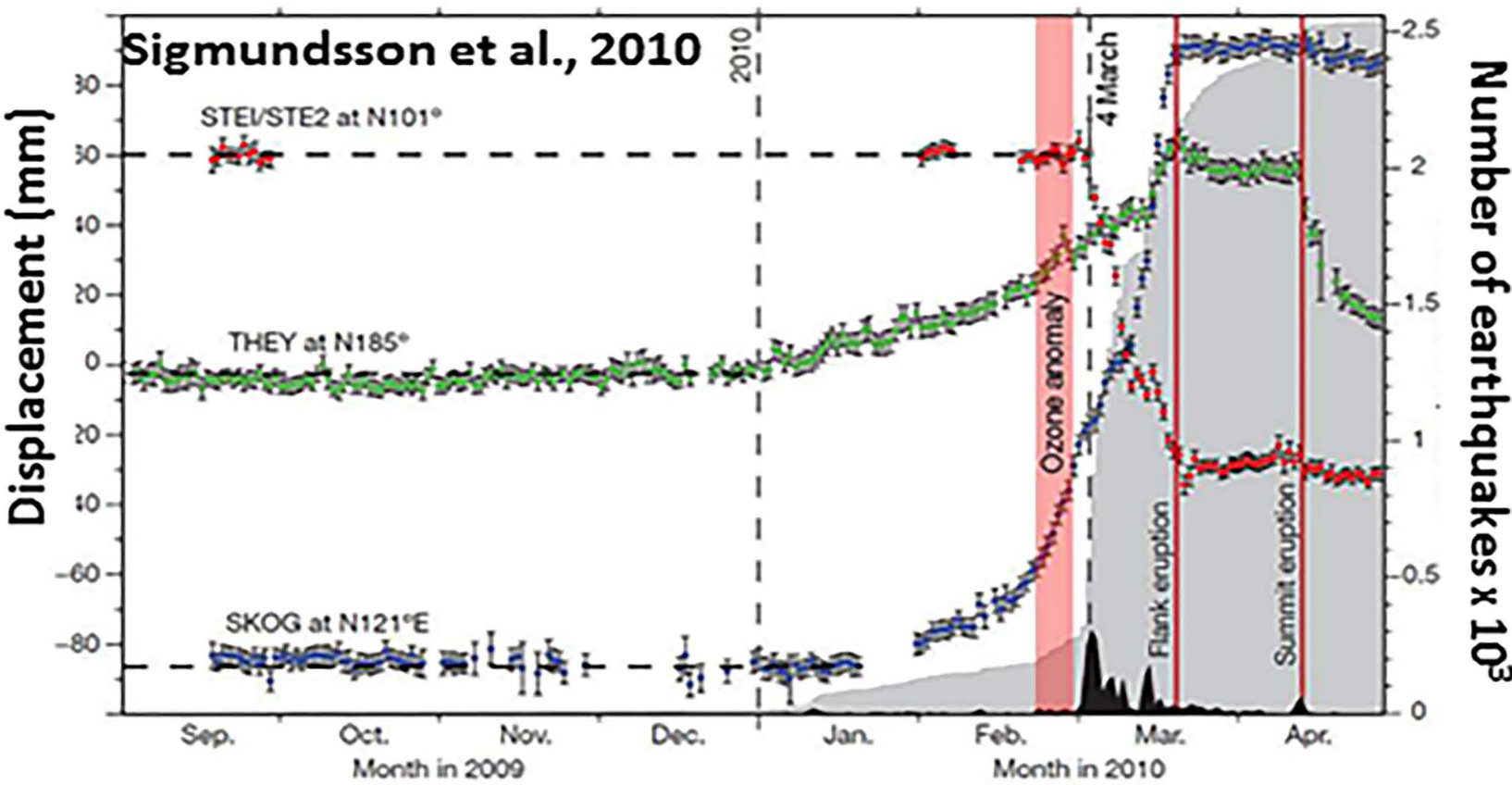


Annual mean total column ozone (black line) peaks during years with major volcanic eruptions and then drops precipitously by more than twice as much during the following year, causing a cooling in the lower stratosphere (purple line) and warming of Earth. The green line shows annual mean tropospheric chlorine (y-axis inverted). The dashed red line shows increase in ocean heat content (y-axis inverted).

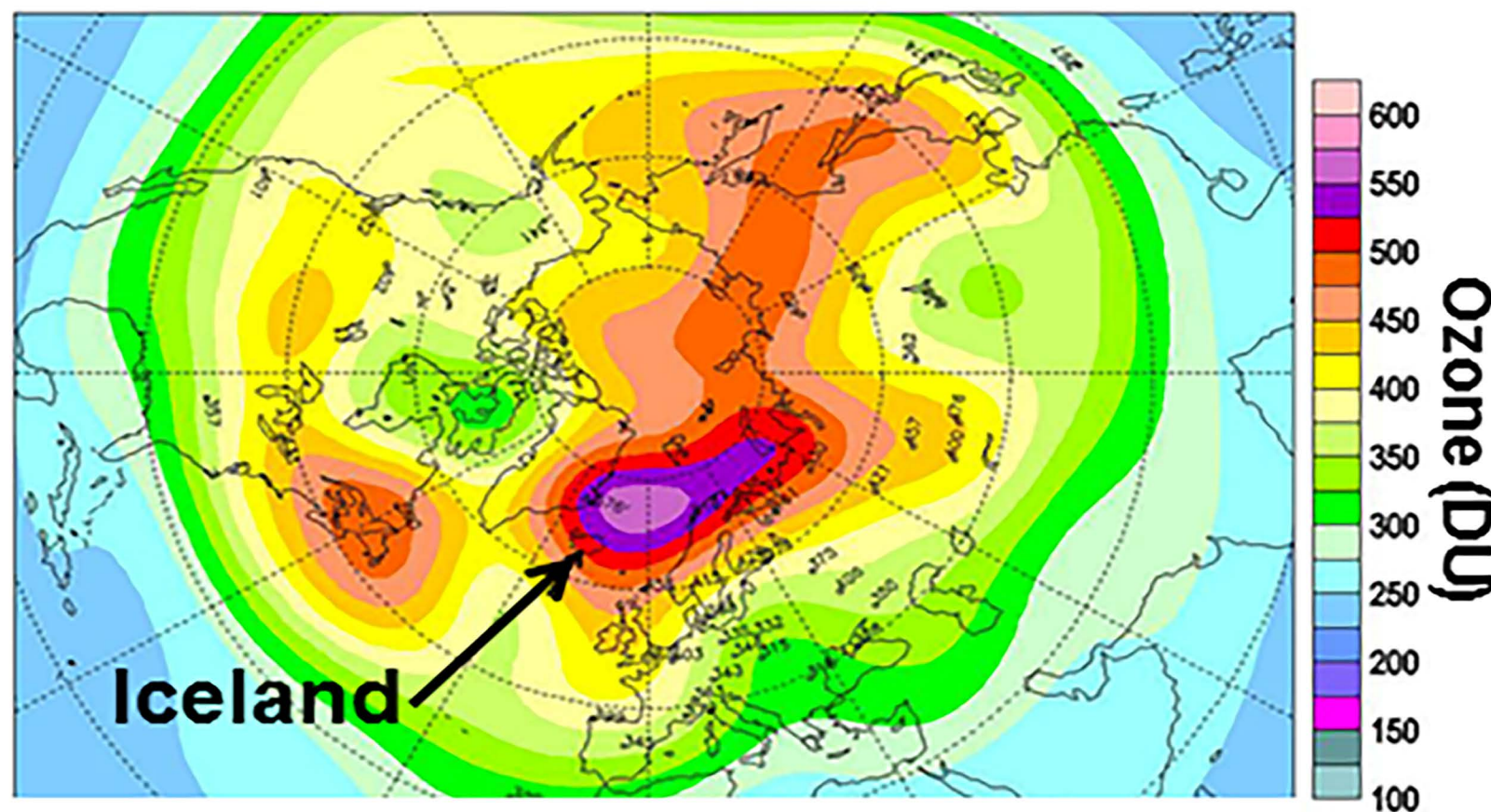
Pre-Eruption Ozone

Ozone Depletion and Weather

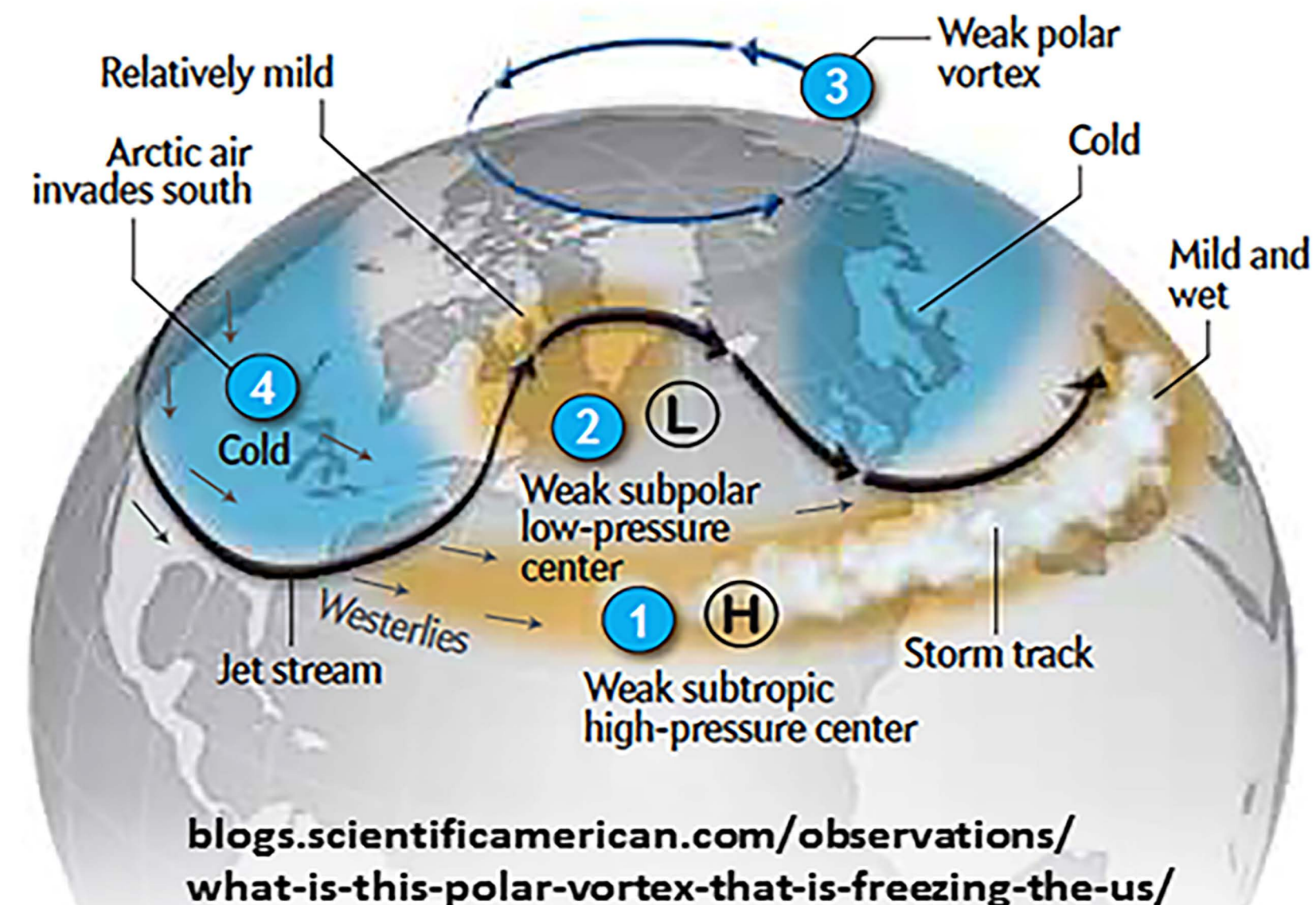
Ozone depletion causes the polar vortex to become stronger, colder, and more persistent. This can cause the jet stream to meander more and progress from west to east more slowly. Dobson noted in the 1920s a close relationship between daily ozone deviations and surface high and low pressure regions.



Ozone increased 70% above Iceland just as deformation and earthquake data shown above suggest magma began moving up from 5 km depth



exp-studies.tor.ec.gc.ca/clf2/e/ozoneworld.html



For More information

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WHAT REALLY CAUSES GLOBAL WARMING?

Greenhouse Gases or
Ozone Depletion?

PETER LANGDON WARD, PHD

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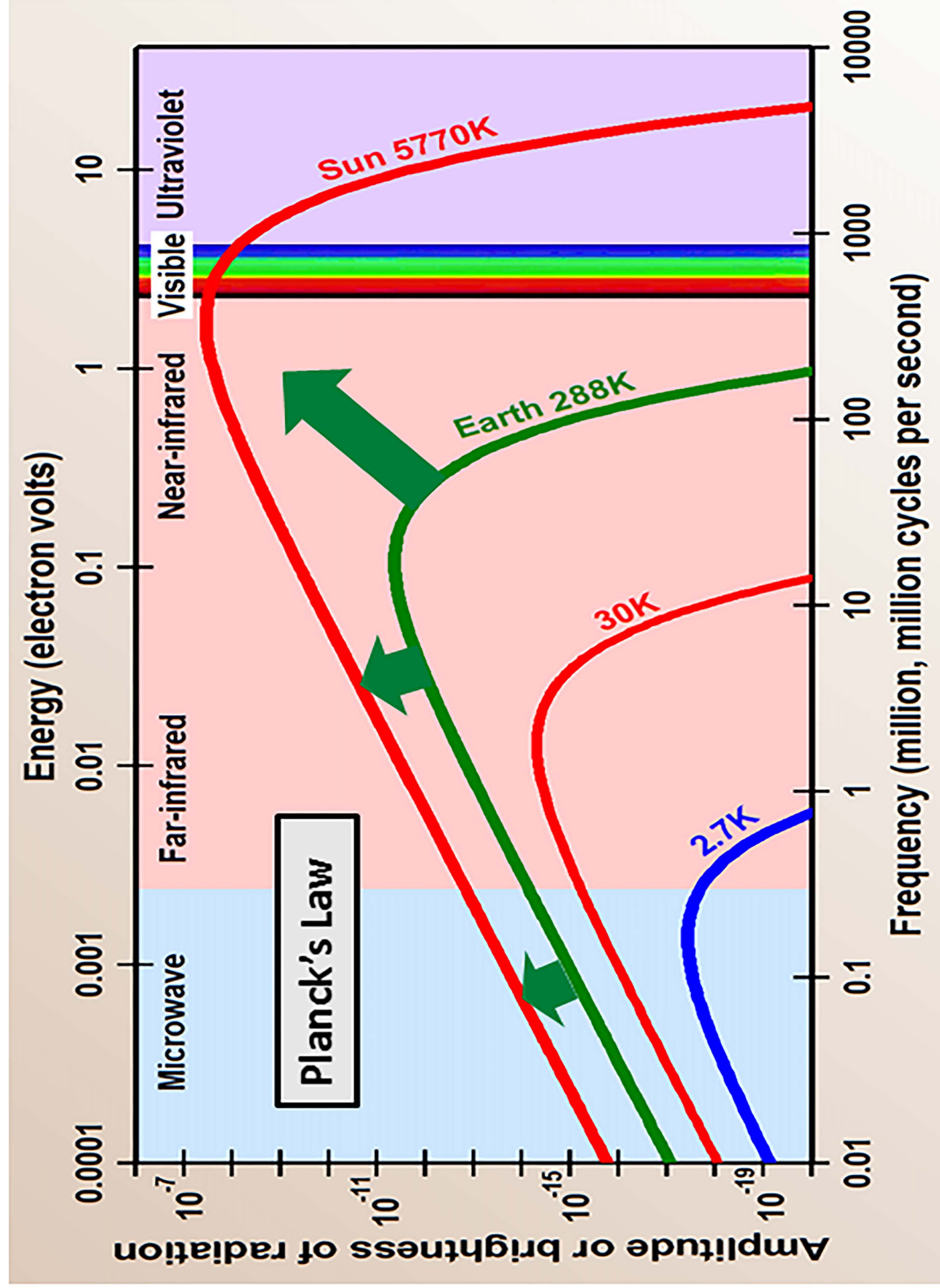
OzoneDepletionTheory.info

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Global Warming Is Caused by Less O₃ – Not More CO₂

1. The microscopic chemical bonds holding matter together oscillate between attractive and repulsive electrodynamic forces, giving rise to macroscopic temperature.
2. The heat capacity of matter is dependent primarily on the number of degrees of freedom of these oscillations.
3. Heating matter increases the amplitude of bond oscillations at each frequency and increases the frequency at which peak amplitude occurs.
4. When matter reaches thermal equilibrium, the spectrum of frequencies and associated amplitudes on its surface are described by Planck's Law.
5. These oscillations on the surface of matter induce an electromagnetic field in space containing the same frequencies (colors) and amplitudes (brightness) that are flowing away from the matter in much the same manner as a radio station transmits its frequency and amplitude.



6. **Frequencies in the electromagnetic field do not interact with each other and do not change as they propagate over galactic distances. Amplitudes, on the other hand, decrease by one over the square of the distance travelled as they spread out over the surface of an expanding sphere.**
7. **Oscillations in matter and in space constitute thermal energy which, in space, is quantized by invariant frequency. Thermal energy is also quantized because it is equal at each frequency to the frequency times the Planck constant. Energies of radiation over a range of frequencies are not additive.**
8. **The solar, ultraviolet thermal energy that reaches Earth when ozone is depleted, is at least 48 times more energetic, at least 48 times “hotter,” than infrared energy absorbed by greenhouse gases. There simply is not enough thermal energy absorbed by greenhouse gases to have a major effect on global warming.**
9. **Computer programs used to quantify greenhouse-gas theory overestimate infrared energies because they assume that thermal energy travels in space as waves, for which energy is a function of amplitude squared, that energies are additive over bandwidth, and that frequencies interact and change over distance – all properties very different from the observed behavior of radiation in space described above.**
10. **Heat flows from hot to cold. According to Planck’s Law, radiation from a body of mass does not have high enough frequencies or amplitudes to warm the emitting body as assumed by greenhouse-gas theory. Warming radiation can only come from a warmer body.**

More details at ozonedepletiontheory.info

YouTube Video at tinyurl.com/ozone-depletion-theory

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