


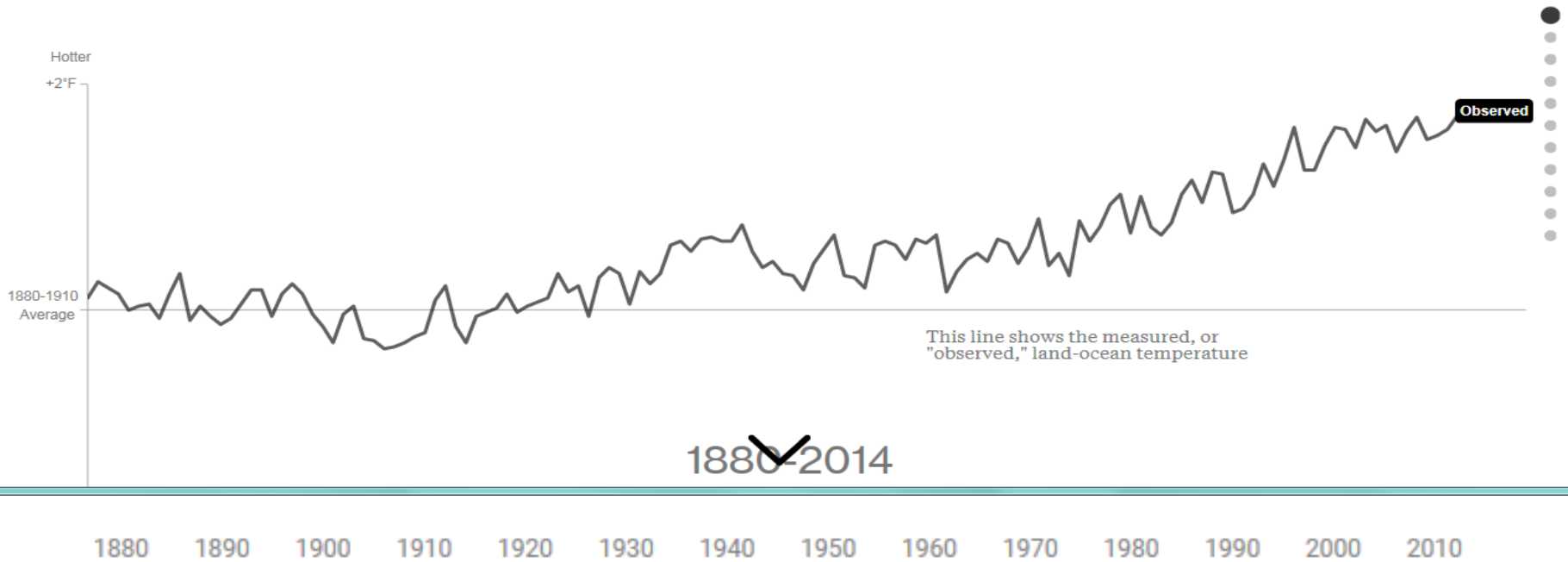
Hva gjør kloden varmere?

- Er det fordi Jorden vipper litt i banen rundt Solen?
- Er det fordi Solens temperatur varierer?
- Er det pga. vulkansk aktivitet på Jorden?
- Avskoging?
- Ozon-forurensning?
- Aerosol-forurensning?
- Eller er det klimagasser (CO_2 , CH_4 ,)?

What's Really Warming the World?

By Eric Roston  and Blacki Migliozi  | June 24, 2015

Skeptics of manmade climate change offer various natural causes to explain why the Earth has warmed 1.4 degrees Fahrenheit since 1880. But can these account for the planet's rising temperature? Scroll down to see how much different factors, both natural and industrial, contribute to global warming, based on findings from NASA's Goddard Institute for Space Studies.



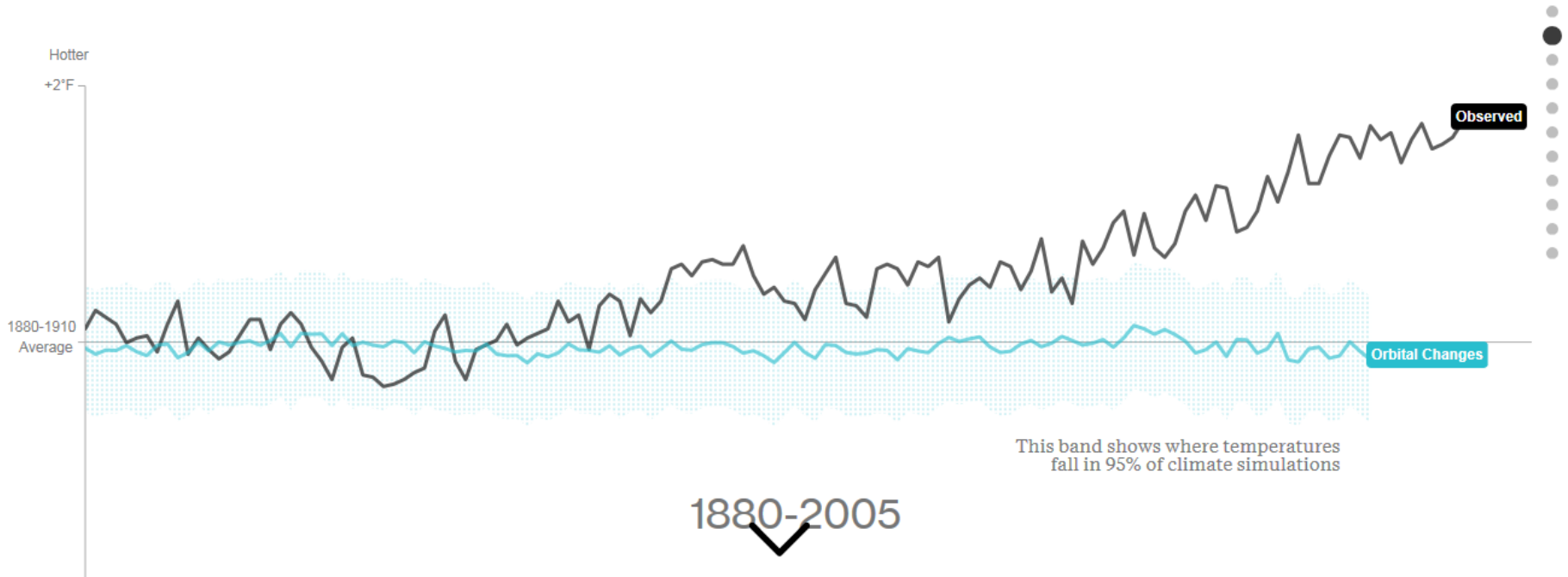
The National Aeronautics and Space Administration

<https://www.bloomberg.com/graphics/2015-whats-warming-the-world/>

<https://data.giss.nasa.gov/gistemp/graphs/>

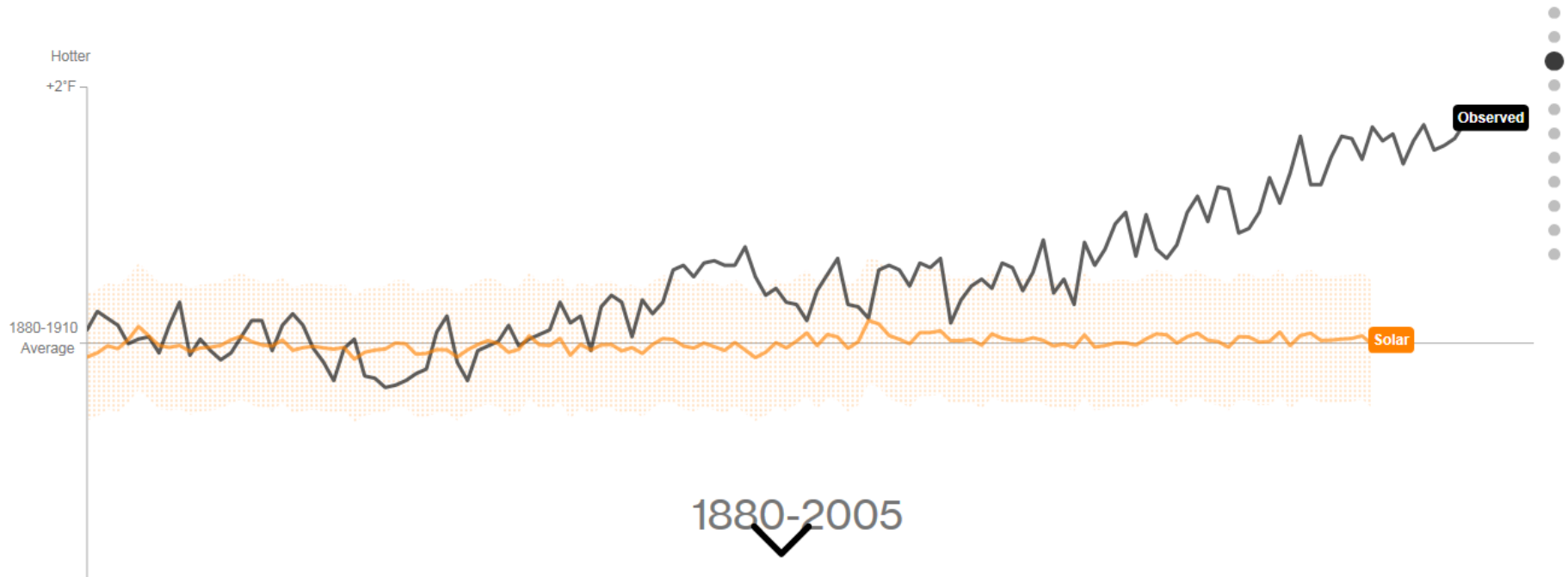
Is It the Earth's Orbit?

The Earth wobbles on its axis, and its tilt and orbit change over many thousands of years, pushing the climate into and out of ice ages. Yet the influence of orbital changes on the planet's temperature over 125 years has been negligible.



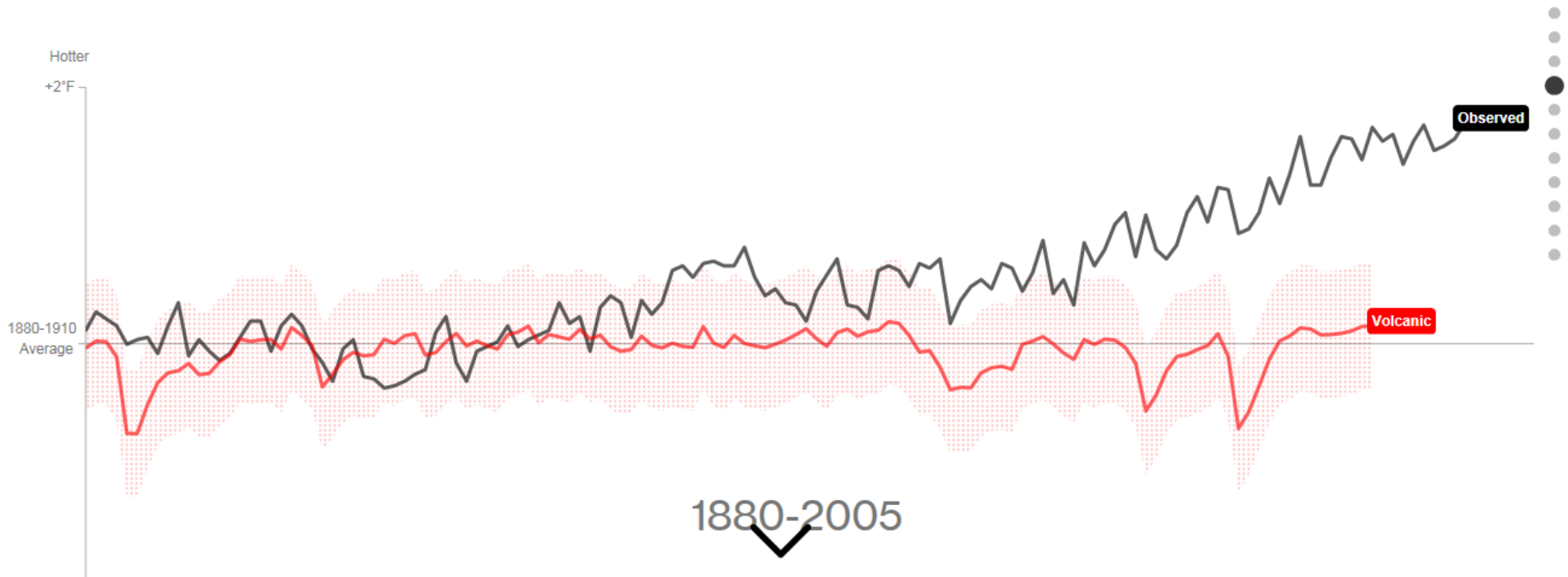
Is It the Sun?

The sun's temperature varies over decades and centuries. These changes have had little effect on the Earth's overall climate.



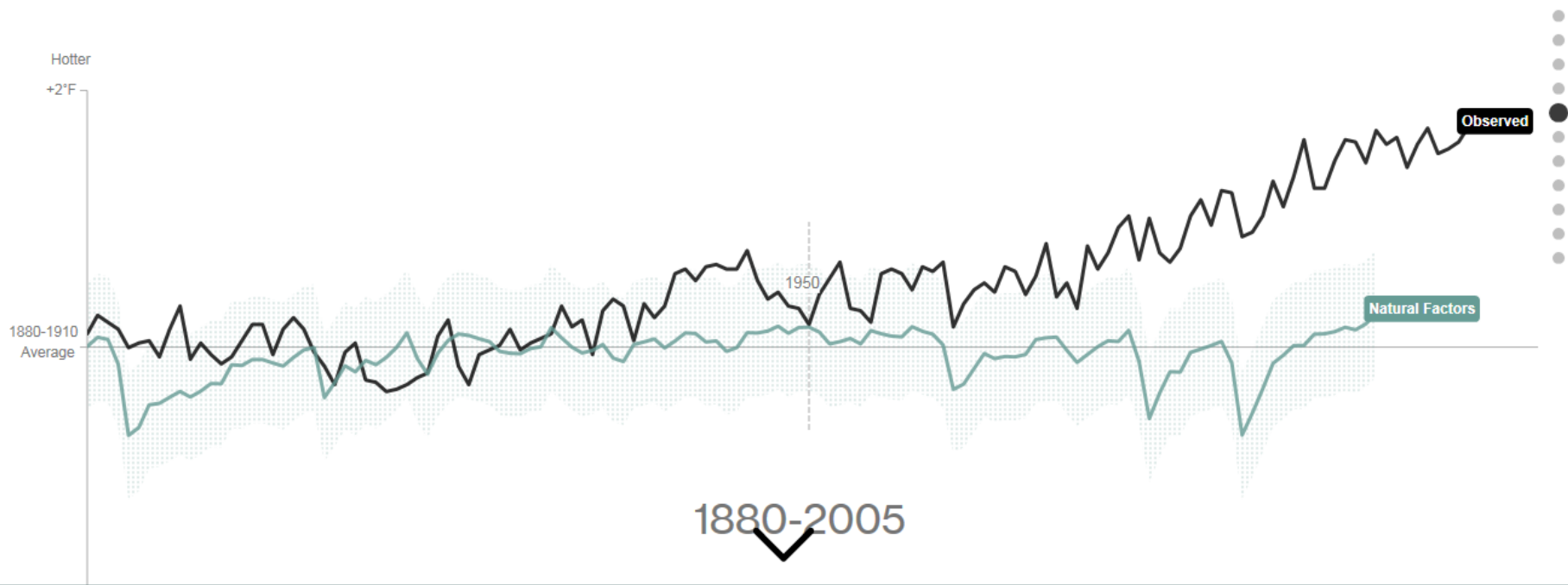
Is It Volcanoes?

The data suggest no. Human industry emits about 100 times more CO₂ than volcanic activity, and eruptions release sulfate chemicals that can actually cool the atmosphere for a year or two.



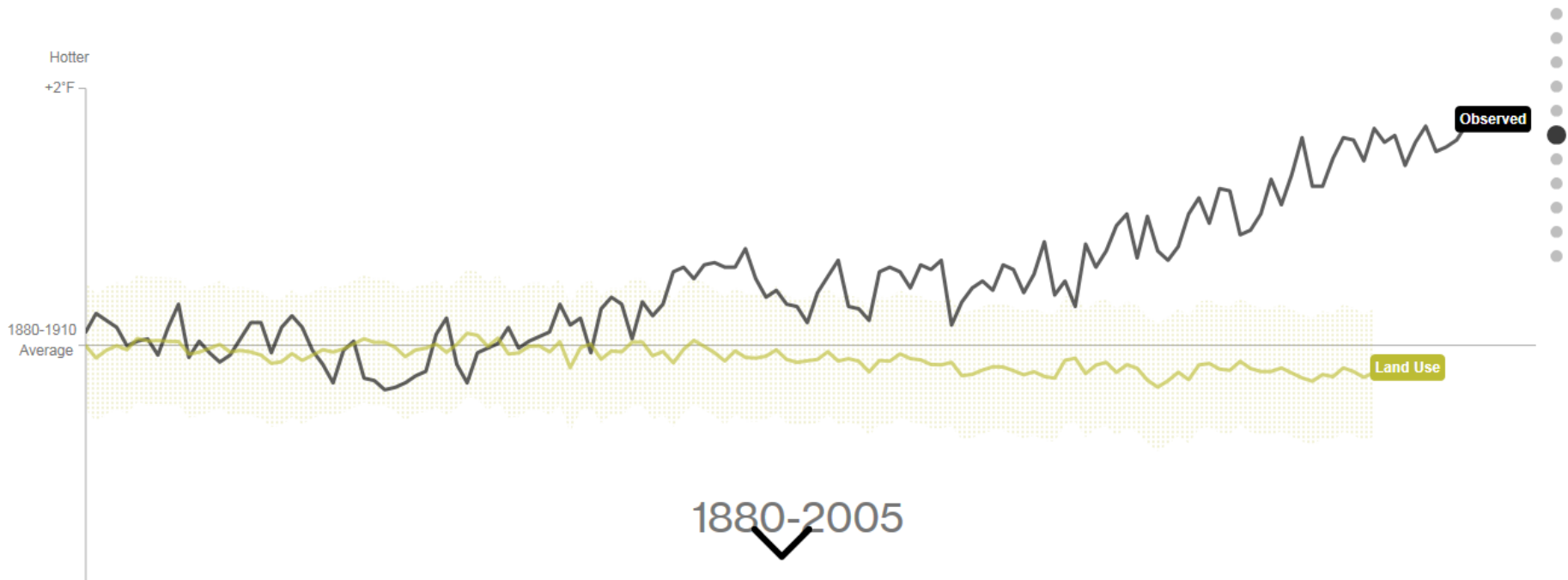
Is it All Three of These Things Combined?

If it were, then the response to natural factors should match the observed temperature. Adding the natural factors together just doesn't add up.



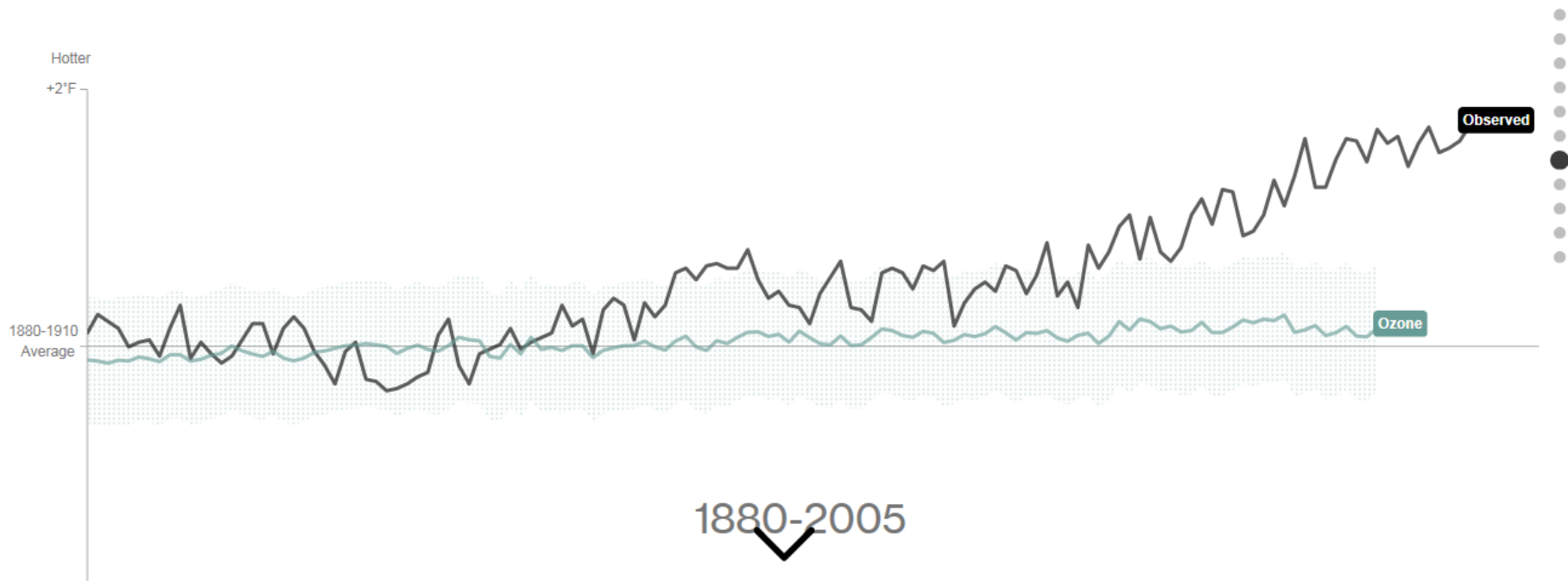
So If It's Not Nature, Is It Deforestation?

Humans have cut, plowed, and paved more than half the Earth's land surface. Dark forests are yielding to lighter patches, which reflect more sunlight—and have a slight cooling effect.



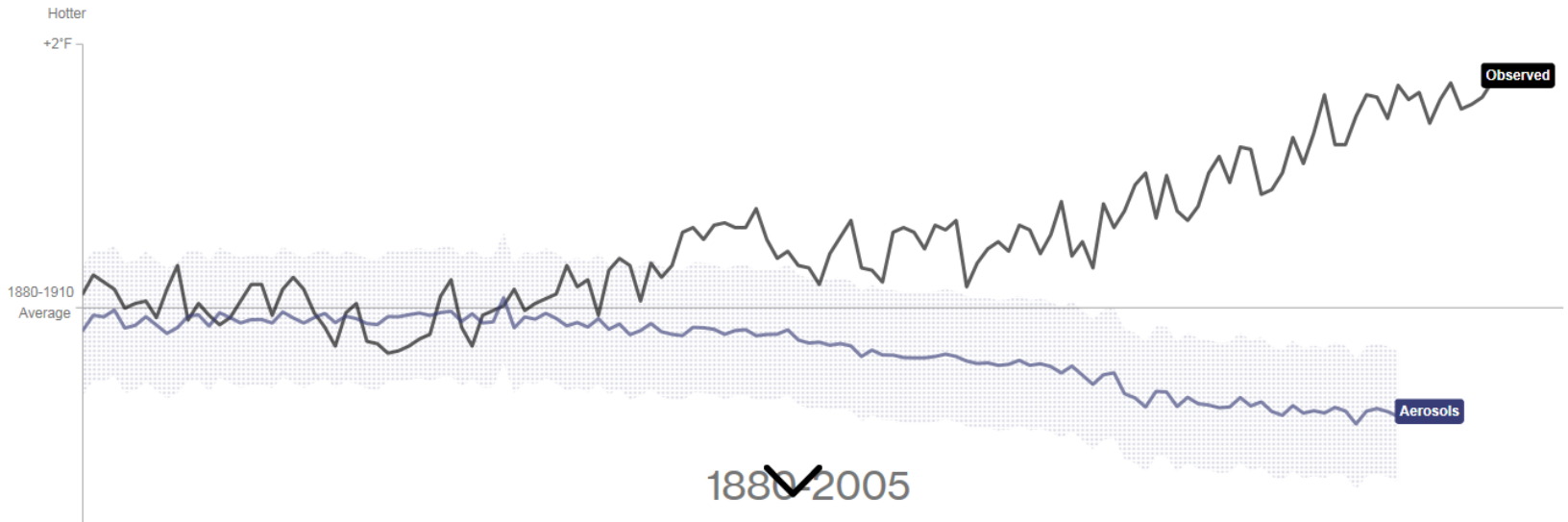
Or Ozone Pollution?

Natural ozone high in the atmosphere blocks harmful sunlight and cools things slightly. Closer to Earth, ozone is created by pollution and traps heat, making the climate a little bit hotter. What's the overall effect? Not much.



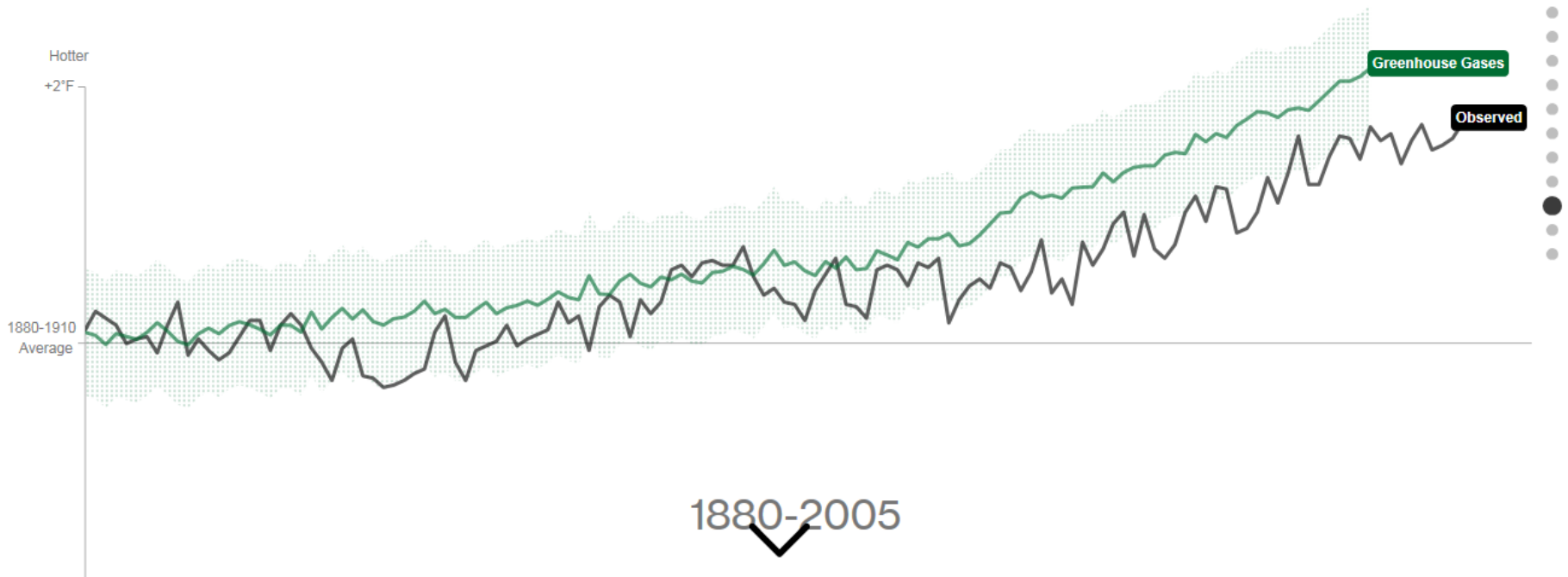
Or Aerosol Pollution?

Some pollutants cool the atmosphere, like sulfate aerosols from coal-burning. These aerosols offset some of the warming. (Unfortunately, they also cause acid rain.)



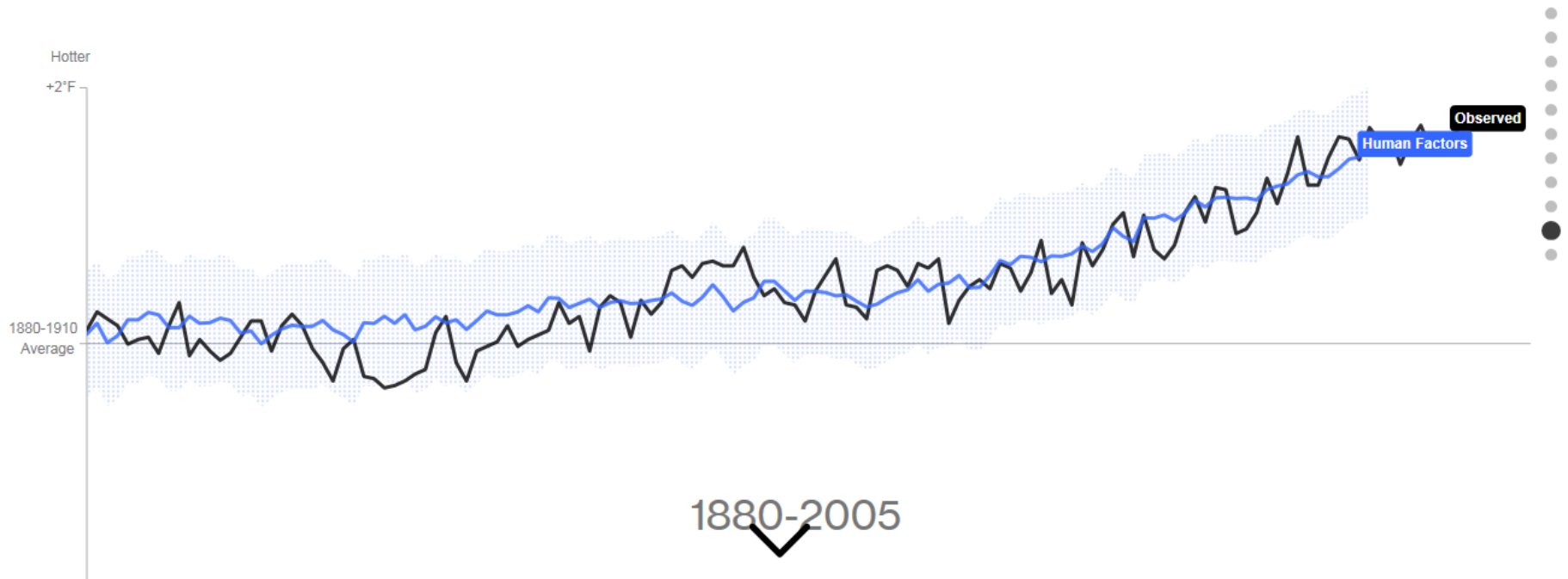
No, It Really Is Greenhouse Gases.

Atmospheric CO₂ levels are 40 percent higher than they were in 1750. The green line shows the influence of greenhouse gas emissions. It's no contest.

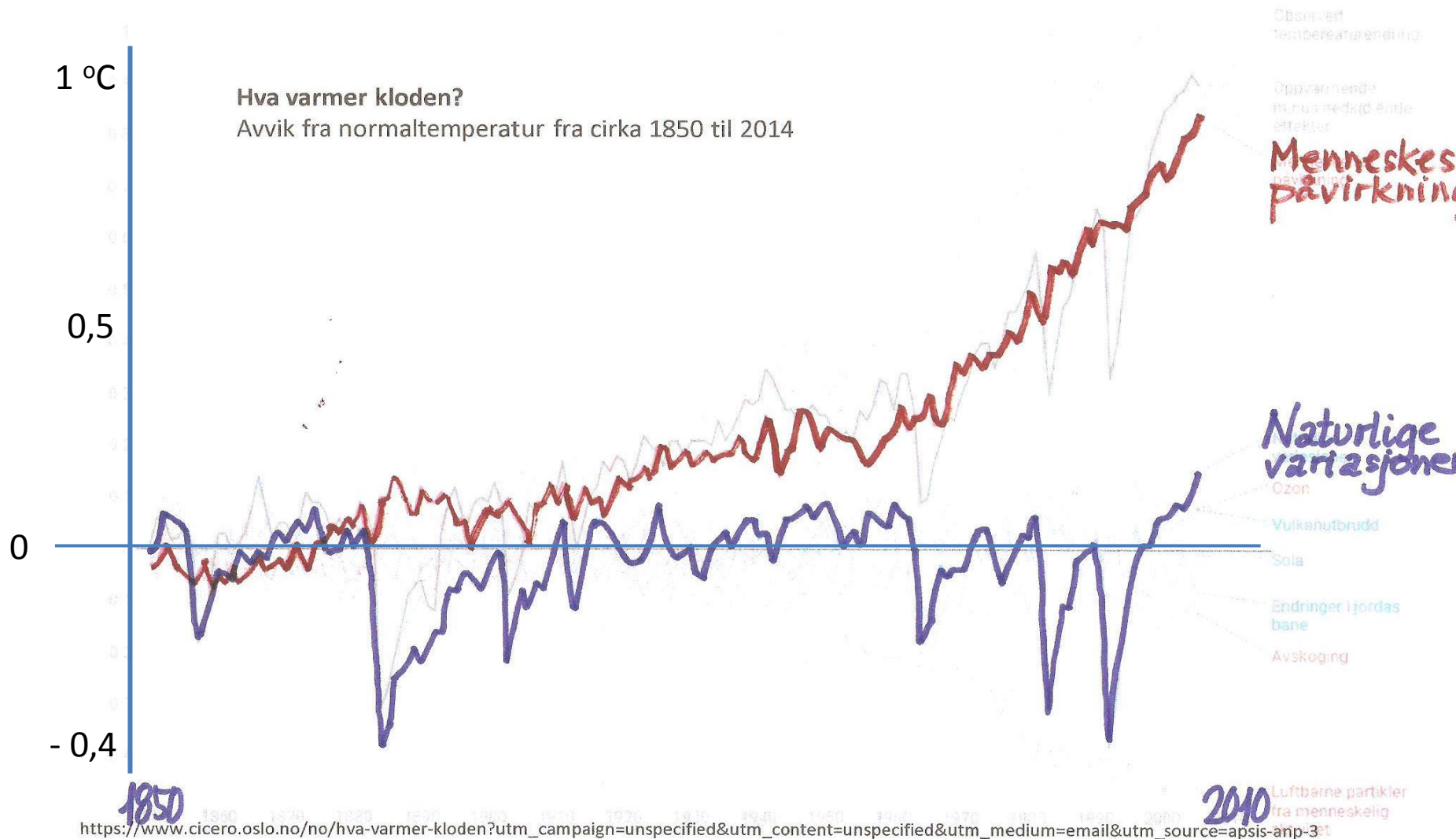


See for Yourself

Greenhouse gases warm the atmosphere. Aerosols cool it a little bit. Ozone and land-use changes add and subtract a little. Together they match the observed temperature, particularly since 1950.



HVA VARMER KLODEN?



https://www.cicero.oslo.no/no/hva-varmer-kloden?utm_campaign=unspecified&utm_content=unspecified&utm_medium=email&utm_source=apsis-anp-3

source: 'What's really warming the world' - Get the data - Created with Datawrapper

Klimafysikk på 3 minutter (1)

- Jorden
 - Radius = 6 400 km, troposfære 1,2 – 1,5 km med gasser. N, O₂, H₂O, CO₂, CH₄, N₂O, Ar, O₃
 - Temperatur overflate land og hav ca. 14 °C
- Solen sender ut kortbølget stråling - *ultrafiolett*
 - En del går tvers igjennom atmosfæren og varmer opp Jordens overflate
- Jorden sender ut langbølget varmestråling – *infrarødt*
 - Fanges opp av molekylene i atmosfæren

Klimafysikk på 3 minutter (2)

CO₂, metan, lystgass og vanndamp **absorberer infrarødt** og molekylene varmes opp



atmosfæren varmes opp



havet og landmassene varmes opp



hele kloden varmes opp



Tilbakekoblingsmekanismene begynner å virke

Noen harde fakta

- **Ca 40 milliarder tonn CO₂ slippes ut årlig.**
 - Ca 1850 milliarder tonn CO₂ siden 1850
 - Mye tas opp av planter og trær. Havet tar unna en del – og blir surere og surere.
- **2015: Den globale middeltemperaturen har økt med én grad i forhold til førindustriell tid.**
- Beregninger sier at **2-graders oppvarming** er grensen for når «det kan tippe over».
- En annen måte å sette grensen er **400 ppm CO₂-ekvivalenter**. Den ble overskredet i 2016.
- **Med 2,5 % økning i årlig utslipp, vil den globale middeltemperaturen ha økt med 2 °C i 2026.**

«You know as well as I do that a man is measured by the amount of pollution he creates.»



"YOU KNOW AS WELL AS I DO THAT A MAN IS MEASURED BY THE AMOUNT OF POLLUTION HE CREATES."