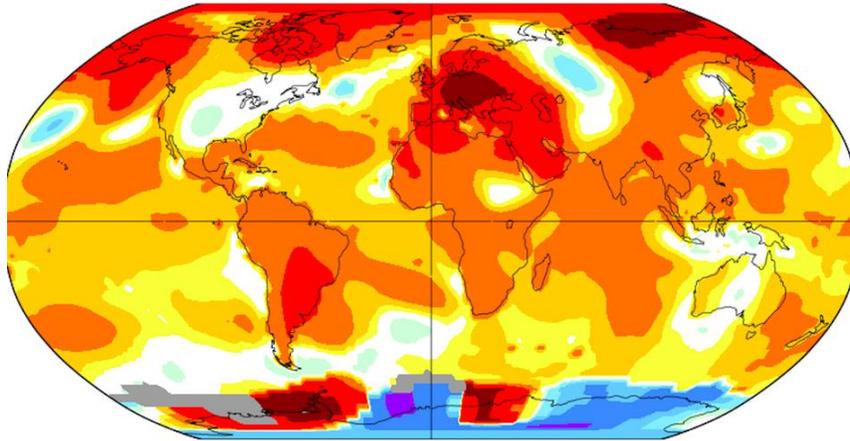


## June was the warmest June ever recorded, but there's a bigger problem



Average June temperatures in 2019.

*Image: NASA GISS*

By [Mark Kaufman](#)

In 139 years of record-keeping, this June was the warmest June ever recorded. But June 2019 also revealed a deeper warming reality.

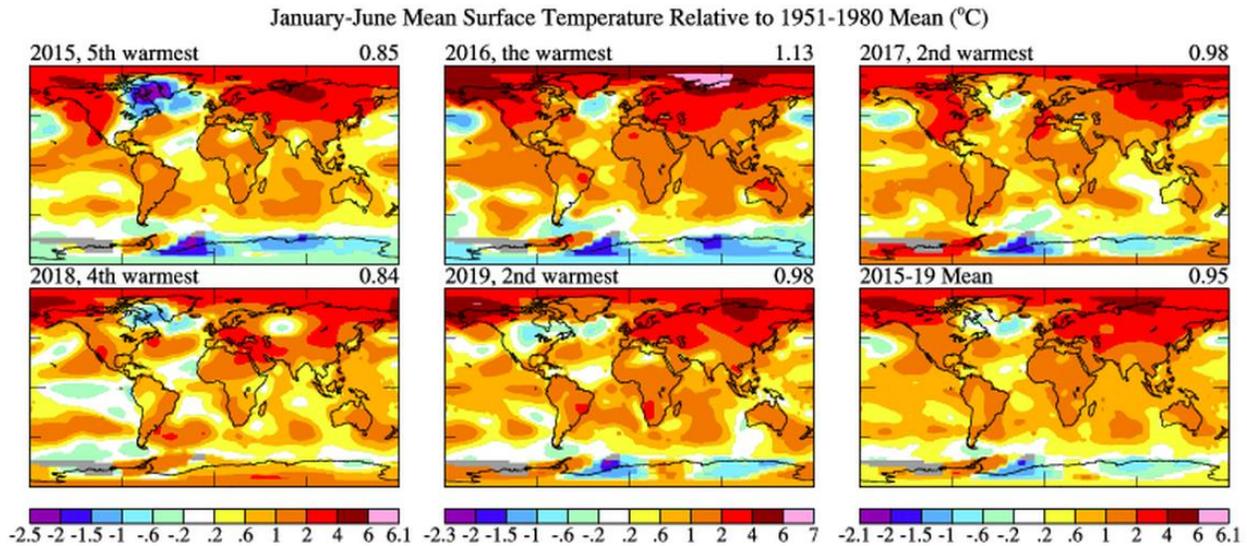
The first half of 2019, January through June, finished up as the second warmest half-year on record, newly released [NASA data shows](#). On top of that, each of the last five January through Junes are now the *five warmest* such spans on record. Only 2016 started off hotter than 2019.

"At this point, the inexorable increase in global temperatures is entirely predictable," said Sarah Green, an environmental chemist at Michigan Technological University. She noted that NASA's updated data is added proof that climate models have [accurately predicted](#) Earth's continued warming as heat-trapping gasses [amass](#) in the atmosphere.

"As we have [shown](#) in recent [work](#), the record warm streaks we've seen in recent years simply cannot be explained without accounting for the profound impact we are having on the planet through the burning of fossil fuels and the resulting increase in atmospheric greenhouse gas concentrations," added climate scientist Michael Mann, the director of the Earth System Science Center at Penn State University.

Indeed, atmospheric carbon dioxide concentrations, already at their highest levels in [at least 800,000 years](#), are now accelerating at rates that are [unprecedented](#) in both the historic and geologic record.

"The latest numbers are just another reminder that the impacts of human-caused warming are no longer subtle," said Mann. "We're seeing them play out in terms of both unprecedented extreme weather events and the sorts of planetary-scale temperature extremes betrayed by these latest numbers."



The warmest January through June on record.

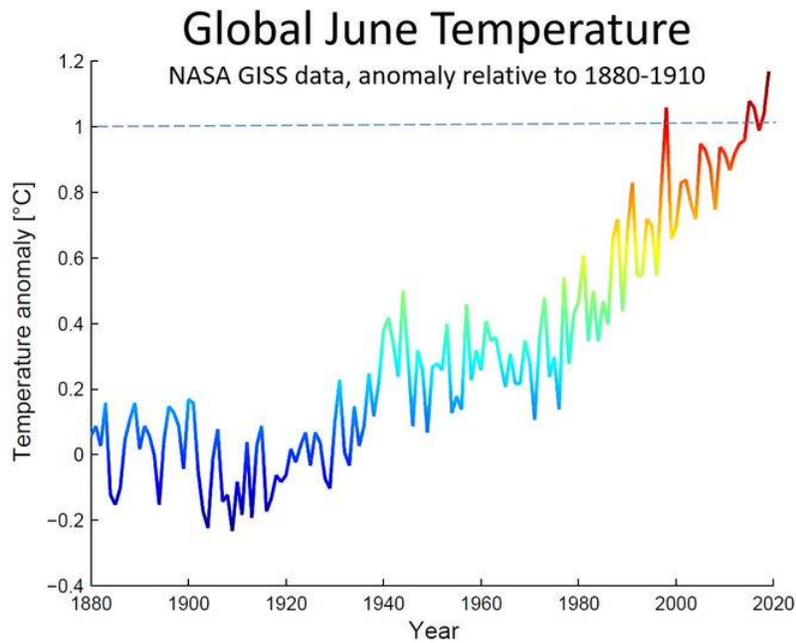
*Image: NASA GISS*

The well-predicted consequences of this heating are now unfolding. Here are some, of many, examples:

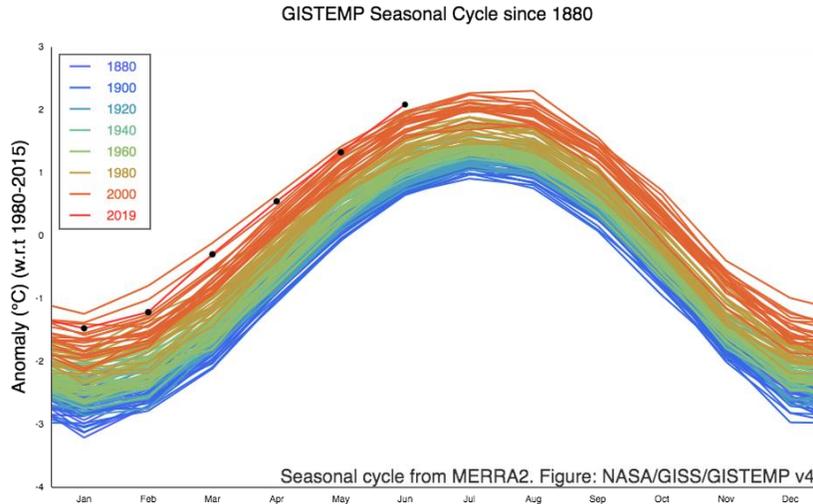
- Warming climates have [doubled](#) the amount of land burned by wildfires in the U.S. over the last 30 years, as plants and trees, [notably in California](#), get baked dry.
- Greenland — home to the second largest ice sheet on Earth — is [melting at unprecedented rates](#).
- The last 12 months have been the [wettest 12 months in U.S. history](#), leading to [widespread flooding](#) around the nation (For every 1 degree Celsius, or 1.8 degrees Fahrenheit, of warming, the air can hold [7 percent more water](#).)
- [The Arctic is on fire](#).
- Ocean temperatures are [going up, and up, and up](#).
- Since 1961, Earth's glaciers lost 9 trillion tons of ice. [That's the weight of 27 billion 747s](#).
- Heat waves are increasing in duration and frequency, while [smashing records](#).
- Daily high record temperatures are [dominating](#) daily low records.

Overall, the atmosphere is experiencing an [accelerated upward temperature climb](#), though there are some ups and downs within the greater warming trend. This is due to natural climatic influences, particularly from events like [El Niño](#), which can give global temperatures an added kick.

"The year-to-year variations of the global temperature may be affected by El Niño, etc., but in the long-term [global temperature] keeps increasing steadily," said NASA Goddard Institute for Space Studies scientist Makiko Sato, who helped prepare the June climate observations.



This June was "easily" the warmest June on record, NASA noted, and overall, this year's January through June temperatures were 1.4 degrees Celsius (or 2.5 degrees Fahrenheit) above average temperatures in the late 1800s.



Seasonal temperature trends

*Image: NASA GISS*

2019 will almost certainly end up being one of the hottest years on record. This is in line with another stark trend. Eighteen of the 19 warmest years on record have occurred since 2001 — and the [five hottest years](#) have occurred in each of the last five years. (It's not just the first half of each year setting records.)

"This is further evidence that temperatures will keep rising until government policies that decrease greenhouse gas emissions are actually implemented," emphasized Green.