



Sun Blamed for Warming of Earth and Other Worlds

By [Ker Than](#)
LiveScience Staff Writer
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Earth is heating up lately, but so are [Mars](#), [Pluto](#) and other worlds in our [solar system](#), leading some scientists to speculate that a change in the [sun's](#) activity is the common thread linking all these baking events.

Others argue that such claims are misleading and create the false impression that rapid global warming, as Earth is experiencing, is a natural phenomenon.

While evidence suggests fluctuations in solar activity [can affect](#) climate on Earth, and that it has [done so](#) in the past, the majority of climate scientists and astrophysicists agree that the sun is not to blame for the current and historically sudden uptick in global temperatures on Earth, which seems to be mostly a mess created by our own species.

Wobbly Mars

Habibullo Abdussamatov, the head of space research at St. Petersburg's Pulkovo Astronomical Observatory in Russia, recently linked the [attenuation of ice caps on Mars](#) to fluctuations in the sun's output. Abdussamatov also blamed solar fluctuations for Earth's current global warming trend. His initial comments were published online by National Geographic News.

"Man-made greenhouse warming has [made a] small contribution [to] the warming on Earth in recent years, but [it] cannot compete with the increase in solar irradiance," Abdussamatov told *LiveScience* in an email interview last week. "The considerable heating and cooling on the Earth and on Mars always will be practically parallel."

But Abdussamatov's critics say the Red Planet's recent thawing is more likely due to natural variations in the planet's orbit and tilt. On Earth, these wobbles, known as [Milankovitch cycles](#), are thought to contribute to the onset and disappearance [ice ages](#).

"It's believed that what drives climate change on Mars are orbital variations," said Jeffrey Plaut, a project scientist for NASA's Mars Odyssey mission. "The Earth also goes through orbital variations similar to that of Mars."

As for Abdussamatov's claim that solar fluctuations are causing Earth's current global warming, Charles Long, a climate physicist at Pacific Northwest National Laboratories in Washington, says the idea is nonsense.

Hot Topic



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“That’s nuts,” Long said in a telephone interview. “It doesn’t make physical sense that that’s the case.”

In 2005, Long’s team [published a study](#) in the journal *Science* showing that Earth experienced a period of “solar global dimming” from 1960 to 1990, during which time [solar radiation](#) hitting our planet’s surface decreased. Then from the mid-1990’s onward, the trend reversed and Earth experienced a “solar brightening.”

These changes were not likely driven by fluctuations in the output of the Sun, Long explained, but rather increases in atmospheric [clouds](#) or aerosols that reflected solar radiation back into space.

Other warming worlds

Others have pointed out anomalous warming on other worlds in our solar system.

Benny Peiser, a social anthropologist at Liverpool John Moores University who monitors studies and news reports of [asteroids](#), [global warming](#) and other potentially apocalyptic topics, recently quoted in his daily electronic newsletter the following from a blog called Strata-Sphere:

“Global warming on [Neptune's](#) moon [Triton](#) as well as [Jupiter](#) and Pluto, and now Mars has some [scientists] scratching their heads over what could possibly be in common with the warming of all these planets ... Could there be something in common with all the [planets](#) in our solar system that might cause them all to warm at the same time?”

Peiser included quotes from recent news articles that take up other aspects of the idea.

“I think it is an intriguing coincidence that warming trends have been observed on a number of very diverse planetary bodies in our solar system,” Peiser said in an email interview. “Perhaps this is just a fluke.”

In fact, scientists have alternative explanations for the anomalous warming on each of these other planetary bodies.

The [warming on Triton](#), for example, could be the result of an extreme southern summer on the moon, a season that occurs every few hundred years, as well as possible changes in the makeup of surface ice that caused it to absorb more of the Sun’s heat.

Researchers credited [Pluto's warming](#) to possible eruptive activity and a delayed thawing from its last close approach to the Sun in 1989.

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And the recent [storm activity](#) on Jupiter is being blamed on a recurring climatic cycle that churns up material from the gas giant's interior and lofts it to the surface, where it is heated by the Sun.

Sun does vary

The radiation output of the Sun does fluctuate over the course of its [11-year solar cycle](#). But the change is only about one-tenth of 1 percent—not substantial enough to affect Earth's [climate](#) in dramatic ways, and certainly not enough to be the sole culprit of our planet's current warming trend, scientists say.

“The small measured changes in solar output and variations from one decade to the next are only on the order of a fraction of a percent, and if you do the calculations not even large enough to really provide a detectable signal in the surface temperature record,” said Penn State meteorologist Michael Mann.

The link between solar activity and global warming is just another scapegoat for human-caused warming, Mann told *LiveScience*.

“Solar activity continues to be one of the last bastions of contrarians,” Mann said. “People who don't accept the existence of anthropogenic climate change still try to point to solar activity.”

The Maunder Minimum

This is not to say that solar fluctuations never influence Earth's climate in substantial ways. During a 75-year period beginning in 1645, astronomers detected almost no sunspot activity on the Sun. Called the “[Maunder Minimum](#),” this event coincided with the coldest part of the [Little Ice Age](#), a 350-year cold spell that gripped much of Europe and North America.

Recent studies have cast doubt on this relationship, however. New estimates of the total change in the brightness of the Sun during the Maunder Minimum suggest it was only fractions of a percent, and perhaps not enough to create the global cooling commonly attributed to it.

“The situation is pretty ambiguous,” said David Rind, a senior climate researcher at NASA Goddard Institute for Space Studies, who has modeled the Maunder Minimum.

Based on current estimates, even if another Maunder Minimum were to occur, it might result in an average temperature decrease of about 2 degrees Fahrenheit, Rind said.

This would still not be enough to counteract warming of between 2 to 12 degrees Fahrenheit from greenhouse gases by 2100, as predicted by the latest Intergovernmental Panel on Climate Change (IPCC) [report](#).

LiveScience staff writer Andrea Thompson contributed to this article.

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