



This is the print version of the [Skeptical Science](http://sks.to/cosmic) article '[It's cosmic rays](http://sks.to/cosmic)', which can be found at <http://sks.to/cosmic>.

What's the link between cosmic rays and climate change?

What The Science Says:

Cosmic ray counts have increased over the past 50 years, so if they do influence global temperatures, they are having a cooling effect.

Climate Myth: It's cosmic rays

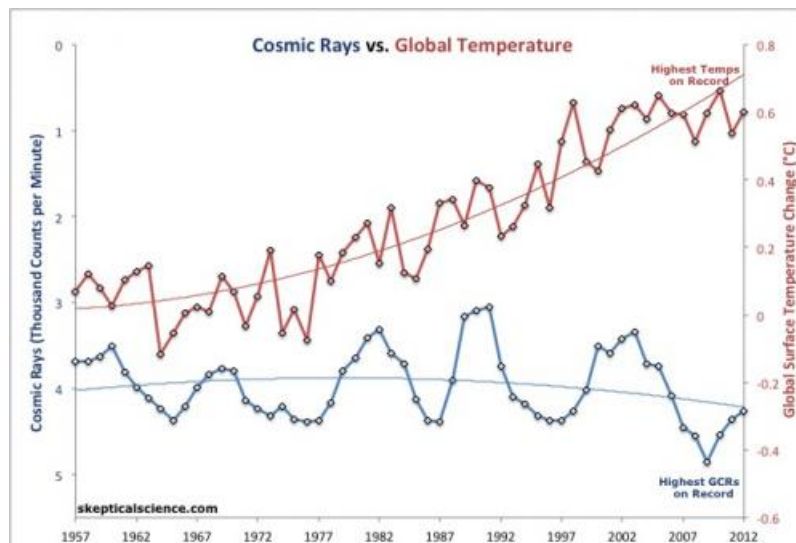
"When the Sun is active, its magnetic field is better at shielding us against the cosmic rays coming from outer space, before they reach our planet. By regulating the Earth's cloud cover, the Sun can turn the temperature up and down. ... As the Sun's magnetism doubled in strength during the 20th century, this natural mechanism may be responsible for a large part of global warming seen then." ([Henrik Svensmark](#))

The galactic cosmic ray (GCR) warming hypothesis is based on the premise that GCRs can "seed" clouds, and clouds reflect sunlight. So if there are fewer GCRs reaching Earth (because a strong solar magnetic field is deflecting them away), the hypothesis says there will be fewer clouds, more sunlight reaching the Earth's surface, and thus more global warming.

So more solar activity means a stronger solar magnetic field, which means fewer GCRs reaching Earth, which hypothetically means fewer clouds and more warming.

The body of scientific research has determined that [GCRs are actually not very effective at seeding clouds](#). However, the hypothesis is also disproven just by examining the data. Over the past five decades, the number of GCRs reaching Earth has increased, and in recent years reached record high numbers. This means that if the GCR-warming hypothesis is correct, this increase in GCRs should actually be causing global cooling over the past five decades, and particularly cold temperatures in recent years.

On the contrary, while GCRs are up, global temperatures are also way up, and temperatures in recent years reached record highs.



Annual average GCR counts per minute (blue - note that numbers decrease going up the left vertical axis, because lower GCRs should mean higher temperatures) [from the Neutron Monitor Database](#) vs. annual average global surface temperature (red, right vertical axis) [from NOAA NCDC](#), both with second order polynomial fits.



The Skeptical Science website by [Skeptical Science](#) is licensed under a [Creative Commons Attribution 3.0 Unported License](#).





Skeptical Science explains the science of global warming and examines climate misinformation through the lens of peer-reviewed research. The website won the Australian Museum 2011 Eureka Prize for the Advancement of Climate Change Knowledge. Members of the Skeptical Science team have authored peer-reviewed papers, a [college textbook on climate change](#) and the book [Climate Change Denial: Heads in the Sand](#). Skeptical Science content has been used in university courses, textbooks, government reports on climate change, television documentaries and numerous books.



The [Skeptical Science](#) website by Skeptical Science is licensed under a Creative Commons [Attribution 3.0 Unported License](#).