This is the print version of the Skeptical Science article 'It's aerosols', which can be found at http://sks.to/aerosols.

Aerosols have partially masked human-caused global warming

What The Science Says:
The global dimming trend reversed around 1990 - 15 years after the global warming trend began in the mid 1970's.

Climate Myth: It's aerosols
Is a Thinning Haze Unveiling the Real Global Warming? (Kerr 2007) points out that the sunlight-reflecting haze that cools much of the planet seems to have thinned over the past decade or so. If real, the thinning would not explain away a century of global warming but it might explain the unexpectedly strong global warming of late, the accelerating loss of glacial ice and much of rising sea levels.

The global dimming trend reversed around 1990 - 15 years after the global warming trend began around 1975. So it can't explain what began the global warming trend. Aerosols have a cooling effect on Earth's climate. When aerosols thin, the result is a lack of cooling, not a warming effect. That's not just semantics - take aerosols out of the equation and in the absence of any other forcings, global temperatures would remain steady.

So what is driving the warming? In the past, solar variations have been the main driver in climate change. A comparison of solar activity and temperature over the past 1150 years shows a close correlation between solar activity and temperature. However, the correlation ends around 1980 when temperatures started rising but solar levels remained steady.

Another suspect in climate change is cosmic radiation which is thought to increase cloud cover (hence cooling the earth). However, again there has been no correlation between temperature and cosmic ray flux since 1970. In fact, all the usual suspects in natural climate change - volcanic activity, orbit wobbles, solar variations are conspicuous in their absence over the past 30 years of long term global warming.

The only forcing that causes warming and also correlates with current temperature rises is atmospheric CO2. It's risen 100 parts per million over the past 120 years - in the past, that kind of change has taken 5,000 to 20,000 years. As CO2 rose over the 20th century, the only mystery has been why global temperatures actually cooled from 1950 to 1980. I even read one study in 1980 where the researcher posed the question "why aren't we seeing any global warming with all this CO2 in the air?"

The answer is now apparent with recent studies in aerosol levels and global dimming. Atmospheric aerosols caused a global dimming (eg - less radiation reaching the earth) from 1950 to 1985. In the mid-80's, the trend reversed and radiation levels at the Earth's surface began to brighten. From 1950 to the mid-80's, the cooling effect from aerosols was masking the warming effect from CO2. When aerosol cooling ended, the current global warming trend began.

Intermediate rebuttal written by John Cook

Update August 2015:

Here is a related lecture-video from Denial101x - Making Sense of Climate Science Denial

[*see video at **this link**.*]

This rebuttal was updated by Kyle Pressler in September 2021 to replace broken links. The updates are a result of our call for help published in May 2021.

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 CommonsAttribution 3.0 Unported License.