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

Satellite microwave energy million times too small to cause global warming

What The Science Says:
A generous estimate of the energy generated by satellites is around 1 million times too small to cause global warming.

Climate Myth: It's satellite microwave transmissions
Global Warming history completely coincides with the history of artificial satellites and the use of microwave frequencies from outer space. Satellite antennas transmit UHF and higher microwaves frequencies all over the planet. Sending oscillating microwaves from an antenna inside a vacuum through an electromagnetic field through a dielectric material, such as water, creates radio frequency heating at the molecular level (source: Global Warming and Microwaves).

According to UCS Active Satellite database, they know of 873 active satellites, for which those whose total power is known average around 3,200 Watts. The biggest was 18,000 Watts. To be generous, let us assume there are 1,000 satellites averaging 5,000 Watts. That yields 5 MegaWatts total. This is equivalent to about 5 big (but not biggest) windmills.

Suppose they were all orbiting about 6500km from the center of the Earth (i.e., Very Low Earth Orbits) and all the power was being radiated towards the Earth (it isn't). The surface of a 6500km sphere is about 530 million square kilometres which means the incoming energy would be 5 Mega Watts / 530M km^2 which is equivalent to ~ 1 Watts/km^2 or 0.000001 Watts/m^2.

In other words, the sum amount of energy being emitted towards the Earth from orbiting satellites is no more than 0.000001 Watt/m^2. The IPCC AR4 (Figure SPM.2) gives total net anthropogenic forcing as 1.6 Watts/m^2.

So, the energy required for satellites to cause global warming is off by a factor of around one million.

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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.

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