

## The Sun Can Cause Climate Change

Recent stories claim the Sun is not the cause of global warming or climate change. It is a classic example of exploitation of public lack of knowledge. It is also an example of focusing on one part of a very complex climate system as the Intergovernmental Panel on Climate Change (IPCC) has done with CO<sub>2</sub>. Claims were made that solar brightness only varied by 0.07 percent in the 11 year cycle as noted in this [Foxnews article](#).

This sounds like a miniscule amount but like so much these days it needs context. It is a small amount of 100 percent, but it does acknowledge that even this small amount can cause temperature change. Calculations show a change of 6 percent in brightness can explain all the temperature change in the Earth's history. So a 0.07 percent change is significant.

The article talks about a second form of solar effect on weather but does not explain it is a different form altogether. In fact, there are three forms of variations in the way the Sun affects weather and climate.

Item 1. Changes in the physical Sun/Earth relationship are generally known as the Milankovitch Effect. These include:

- a) changes in the orbit from almost circular as at present to extreme ellipse approximately 22,000 years ago;
- b) changes in the tilt of the Earth from 21.5° to 24.5° (different people use slightly different numbers);
- c) and changes in the position of the Earth at critical points in the annual orbit around the Sun.

Item 2. We have known for along time that there is a very strong relationship between the number of sunspots and global temperature. Basically when numbers are high the Earth is warm and when they are low the Earth is cold. The difficulty for science is high correlations do not necessarily mean cause and effect. The mechanism appears to be provided by what is known as the Svensmark Theory. This is the one referred to in the article as an alternative theory. Changes in the Sun we see as sunspots are correlated with changes in the Sun's magnetic field. These changes vary the amount of low cloud and like the shutters in a greenhouse vary global temperature.

Item 3. Changes in brightness are technically known as variation in the electromagnetic spectrum, which are changes in the heat and light the earth receives. This is the one referred to as the 0.07 percent not adequate to explain the recent global temperatures.

The study that claims the Sun does not explain current temperature changes makes the same mistake as the IPCC reports as it examines only one part of solar influence. Items 1 and 2 above are not included in the IPCC climate models.