Solar activity greater in late 20th century, but not responsible for global warming

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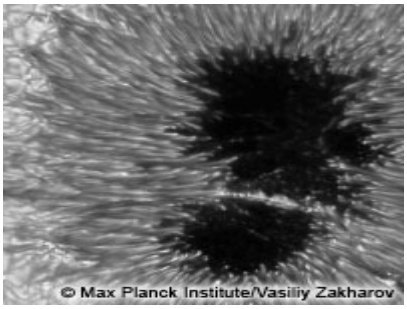

Research led by scientists from Finland has found that solar activity increased in the late 20th century, but that this cannot be the sole reason for global warming.

The research, headed by Dr Ilya Usoskin from Sodankyla Geophysical Observatory (Oulu unit), included researchers from Germany, Italy, India and Russia, who examined the residues of the radioactive isotope Titanium 44 in meteorite samples which hit the Earth at precisely recorded times.

Sunspot activity has been monitored as far back as the early 17th century, but ways to quantify the effects of this activity have remained inconclusive.

In the past, researchers had used samples of Beryllium 10 or Carbon 14 in organic matter or ice cores to measure solar activity, as they are also created by cosmic rays passing through the Earth. However, the levels of these isotopes seem to be influenced by unknown terrestrial processes - possibly climactic or geological. The team decided to use meteorite samples because their make-up would not be influenced by this terrestrial activity, and instead would have orbited the sun prior to impact, and so have been exposed to the Sun's activity.

Titanium 44 is created in the meteorite due to direct interaction with the Sun's cosmic rays. When the meteorite crashes, the production of Titanium 44 stops. The researchers are then able to measure the solar activity at that time. The team examined 19 meteorites, stretching back 235 years. Sunspot activity could then be

measured against Titanium 44 samples in the meteorites.

The team found 'a model based on the sunspot number record is consistent with the data on 44Ti activity in meteorites', according to the paper, published in the journal Astronomy and Astrophysics. The paper concludes that using Titanium 44 'offers an excellent test of the solar activity reconstructions in the past as it is free of not precisely known terrestrial effects.'

Some researchers believe that it is solar activity that is responsible for the global warming phenomenon, not the build-up of carbon dioxide in the atmosphere. If the solar activity theory is correct, then the rising temperatures would be an anomaly, and not something to be unduly worried about.

Not so, says Dr Usoskin, who spoke to CORDIS News, citing colleagues from Sodankylä Geophysical Observatory who have researched this area. 'There was quite an agreement between solar activity and rising temperatures into the 1970s. However, then solar activity declined, or stayed the same, but the temperatures on Earth continued to rise. So you cannot say that it is only a solar effect,' he said.

Countries

Germany, Finland, India, Italy, Russia

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