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'Global dimming' is darkening the globe: experts

Updated Sat. Jul. 29 2006 11:43 PM ET

Andy Johnson, CTV.ca News

Global dimming may be the yin to global warming's yang.

The theory is that the amount of sunlight, or solar energy, falling on the earth has been dropping steadily over the past 50 years or so.

That could mean, scientists believe, that global dimming is actually mitigating the effects of global warming.

That sounds quirky and intriguing at first, but a closer investigation turns up some frightening results.

One of the first people to observe the phenomenon was an English scientist named Gerry Stanhill, according to the BBC.

Stanhill was studying Israel's sunlight records from the 1950s to the present, when he discovered a sharp decline of 22 per cent.

Sensing that he was on the cusp of something big, Stanhill began looking at similar sets of records from all over the world, and found strikingly similar results.

In the U.S., the decline was 10 per cent, in parts of the former Soviet Union it fell by a frightening 30 per cent, and in parts of the U.K. sunlight dropped by as much as 16 per cent in some areas.

Overall, the drop averaged out to between one and two per cent for each decade from the 50s forward.

Stanhill published his results in 2001, but they were met with skepticism by his colleagues.

However, it turns out that a geography researcher named Atsumu Ohmura at the Swiss Federal Institute of Technology had turned up a set of similar data in the mid-1980s.

At that time, Ohmura found that solar radiation hitting the earth

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had fallen by more than 10 per cent in 30 years.

"I was shocked. The difference was so big that I just could not believe it," he told the U.K.'s Guardian newspaper.

Both sets of figures, though they received little recognition in the scientific community, indicate that sunlight was becoming extinct.

But by the mid-1980s, evidence already showed the planet was heating up. So suggestions that solar radiation was on the decline were almost laughable, and Stanhill and Ohmura were largely ignored.

In 2001, however, Stanhill and another researcher, Shabtai Cohen at Israel's Volcani Centre began gathering all the research together.

They proved that on average, the earth had experienced an annual drop in solar radiation from 0.23 to 0.32 per cent between 1958 and 1992.

That woke up some scientists who began to question why the earth seemed to be getting hotter if sunlight is declining.

The answer is fascinating. Global dimming seems to be caused by air pollution. As pollutants from vehicles, factories, power plants and the like make their way into the atmosphere, they carry with them tiny particles such as ash and soot compounds.

Those particles reflect sunlight away from the earth, and the greater the presence of these particles, the greater the effect on the amount of solar radiation that reaches the surface.

The phenomenon can be witnessed when a volcano erupts, sending massive amounts of sulphate particles into the upper atmosphere. They can cause a strong, temporary cooling of the earth.

Scientists also believe particle pollution has an impact on the composition of clouds.

Because particles seed water droplets within clouds, polluted clouds contain more water droplets than they would otherwise. The more water droplets a cloud contains, the more sunlight it reflects back into space.

That theory has scientists hypothesizing that dimming is also effecting rainfall cycles by shielding the world's oceans from the full effect of the sun, and reducing evaporation.

There are even suggestions that dimming has helped bring on droughts and monsoons in the Sahara and Asia.

And the most alarming possible effect of dimming is that it may have offset the full effects of global warming and the greenhouse effect.

Dr. Peter Cox, one of the world's top climate modellers, told the BBC that could be very bad news.

He expects CO2 levels in the earth's atmosphere -- which acts as the fuel for the greenhouse effect -- to continue to rise in the

years to come.

Meanwhile, the world's industrial nations seem to finally be reining in particle pollution. Ironically, that could be the catalyst that speeds up global warming.

"We're going to be in a situation, unless we act, where the cooling pollutant is dropping off while the warming pollutant is going up," Cox said. "That means we'll get reduced cooling and increased heating at the same time, and that's a problem for us."

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