

Look forward to a darker world

'Global dimming' may stop the Earth overheating.

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Scattered light helps plants suck up carbon dioxide.

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It's official: the world is getting darker. Scientists are now agreed that as cloud cover and particles in the atmosphere increase, the amount of radiation reaching us from the Sun is falling. And while some are nervous to raise the idea, they think the effect may help protect us from global warming.

The phenomenon, called global dimming, has been quietly discussed in scientific circles for the past decade or so. Since the late 1950s, scientists have observed a 2-4% reduction in the amount of solar radiation reaching the Earth's surface, thought to be caused by particles and clouds in the atmosphere scattering the light.

But previous studies have been confined to the Northern Hemisphere, so many scientists have questioned whether this is a localized effect, or if it even exists at all.

Advocates of the idea now have the evidence they need to convince the sceptics. A presentation by Australian scientists to the Joint Assembly of the American and Canadian Geophysical Unions in Montreal on Monday has shown that the effect is also found south of the equator.

Michael Roderick and Graham Farquhar from the Australian National University in Canberra found that evaporation rates across Australia, measured using continually replenished pans of water, have fallen significantly over the last 30 years, a sure sign that less direct sunlight is reaching the surface. The decline matches the effect seen in the northern hemisphere. "This proves that it is a global phenomenon," says Roderick.

But he is not dismayed by the result. He has recently advised the Australian government that global dimming may not necessarily be a bad thing. "The standard dogma is that Australia will dry out [with global warming], but that's just not right. The world is actually getting less arid," he insists.

In fact, Roderick sees global dimming as part of a possible negative feedback loop working against global warming. Burning fossil fuels not only increases carbon dioxide levels in the atmosphere; it also pumps tiny particles into the air. Meanwhile higher temperatures increase the amount of cloud cover. The clouds and particles help to block the Sun's rays, and the scattered light they allow through actually boosts plants' absorption of carbon dioxide, the principle greenhouse gas. This would help to keep carbon dioxide levels stable, argues Roderick, protecting the planet from runaway global warming.

Plants on steroids

"Diffuse light is like putting plants on steroids," Roderick explains. Scattered light takes a zigzag path, bathing every part of a plant's leaves in light instead of just one surface. Even if the overall amount of light is lower, this can increase the plant's rate of photosynthesis and more carbon dioxide is removed from the atmosphere.

Plants in Northern European greenhouses might suffer, however, because they are so desperate for light that any reduction may affect their growth.

This week's conference is the first time that all the leading scientists in the field have met, and it finally puts global dimming firmly on the research map. But Shep Cohen from the Institute of Soil, Water and Environmental Sciences, Bet Dagan, Israel, says that some of his colleagues are still nervous talking about the topic, in case it is seen as an excuse not to worry about global warming.

However he points out that understanding global dimming is essential for working out the best strategies for tackling pollution and climate change. For example, the half measure of filtering out particles while continuing to pump carbon dioxide into the air could destabilise the relationship between the two and increase global warming even more, he warns.

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