

# The Mother of All Feedbacks?

by GWYNNE DYER

Just like this year, last year the heat wave extended from parts of India to Bangladesh and Myanmar, and all the way to Thailand. This year it went further east, into the Philippines. So, it's the same pattern, said Prof. Krishna AchutaRao of the Indian Institute of Technology. I do not particularly buy into this idea that El Niño is the cause.

That is the burning question, not just for South and Southeast Asia but for the entire world. A heat wave is a random phenomenon that comes and goes in certain seasons for a period of some days. A climate feedback is forever.

April to June, before the monsoon arrives, is always the hottest part of the year in South Asia, but now it's breaking all bounds.

On May 6, the Indian Meteorological Department reported: Yesterday, maximum temperatures were 44-45°C over Telangana, interior Karnataka, and north Madhya Pradesh; in the range of 42-44°C in southeast Uttar Pradesh, West Bengal, Tamil Nadu and Coastal Andhra Pradesh.

Crazy hot all over the place, in other words.

The actual numbers are lower in regions farther from the equator, but the average global temperature for each of the past 11 months has been the hottest the world has ever experienced in that month.

So obviously something big is happening, but what? Is it just a big El Niño, a heating of the surface waters of the eastern Pacific that happens every three to seven years. That would be nice, because it would mean it's cyclical and will go away again in due course.

Or is it confirmation of climate scientist Jim Hansen's claim that the average global temperature is going to jump half a degree C. He says that new rules on pollution are cutting back hard on the sulphur dioxide emissions that used to reflect a lot of incoming sunlight back into space and therefore cool the planet.

Or have we triggered a big feedback in some natural system that we were not aware of? There's about a dozen potential tipping points that we do know about: the collapse of the West Antarctic ice sheet, the melting of the permafrost, a switch from rainforest to savannah in the Amazon, etc. but there may be a few that we don't know about yet.

So, which is it? It's very unlikely to be El Niño, because this one was not particularly strong. Besides, it peaked in December and has been fading away ever since, while global temperatures go on breaking records.

Jim Hansen's proposed explanation is a contender, because the 'brown clouds' that used to hang over big Chinese cities and the 'ship track' clouds from the exhaust gases of 60,000 giant tankers and container ships did reflect enough sunlight to have a significant cooling effect. Cleaning up those emissions was bound to drive up the temperature.

Alas, the dates don't match very well. The emissions from Chinese factories and ocean-going ships were reduced over a period of about fifteen years, whereas the 'non-linear' jump in average global temperature began just a year ago. Moreover, some scientists doubt that the amount of cooling that was lost is big enough to explain the scale of the heating.

I say 'alas', because this leaves us with the least desirable explanation: the sudden activation of an unknown feedback. And remember how this stuff works. The heating that human beings have already caused carries us across a 'tipping point' we cannot see, and that unleashes a feedback: warming from non-human sources that we cannot turn off.

The likeliest candidate for a new mystery feedback is the world's oceans. Since we began burning fossil fuels in a big way two

centuries ago, they have absorbed around a quarter of the carbon dioxide that humans emitted. More importantly, they have soaked up around 90% of the excess heat.

Now they may be giving some of it back. In the past thirteen months the average sea surface temperature worldwide has soared. According to the European Union's Copernicus Climate Service, it is now at an all-time global high of 21.09°C.

There was not enough data about the behaviour of the deep ocean currents to put the ocean heat sink on most climate scientists' list of potential feedbacks. However, many always feared there would be a limit how much heat the oceans could contain over the long run.

We may be about to find out where the limit is, and it could be the Mother of All Feedbacks. Or maybe it will turn out to be a false alarm this time. The fact that we don't even know which yet illustrates the depth of our ignorance, and the scale of our peril.