

Monsoon gloom strikes South Asia

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"A POPULATION of a billion and a half depends on this rain," says Veerabhadran Ramanathan. Unfortunately, the South Asia monsoon that brings this rain may be losing strength thanks to global warming and the brown haze of pollution that hangs over the Indian Ocean.

This wasn't supposed to happen. If global warming was heating the Indian Ocean uniformly, then the result ought to be increased evaporation and higher monsoon rainfall over south Asia. Instead, rainfall over India has decreased by 5 to 8 per cent since the 1950s.

Now, Ramanathan and colleague Chul Eddy Chung of the Scripps Institution of Oceanography in La Jolla, California have an explanation for the anomaly. By combining measurements of sea surface temperatures and pollution in their regional climate models, they found that while sea surface temperatures near the equator have increased around 0.6 °C over the last 50 years, the northern Indian Ocean has not warmed.

In fact, it may even have cooled because sunlight is being absorbed by the "brown cloud" above it. Without the normal summer temperature gradients over the region, the monsoon cycle is suppressed (*Journal of Climate*, vol 19, p 2036). "It's causing a tendency for the rain systems to move south and not to hit land," Ramanathan says.

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