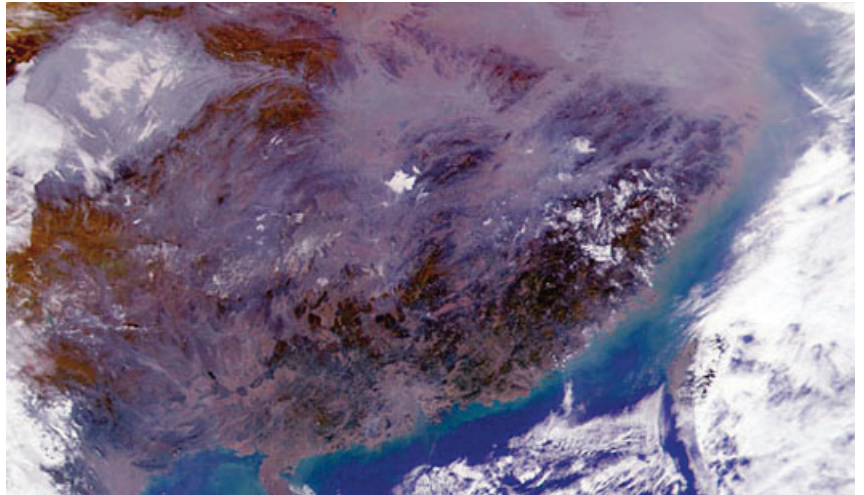


Haunting Asia, a brown cloud blots out sun

By Andrew Jacobs
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*A satellite image shows a dense blanket of polluted air over central eastern China covering the coastline around Shanghai.
(NASA/Goddard Space Flight Center)*

BEIJING: A noxious cocktail of soot, smog and toxic chemicals is blotting out the sun, fouling the lungs of millions of people and altering weather patterns in large parts of Asia, according to a report released Thursday by the United Nations.

The byproduct of automobiles, slash-and-burn agriculture, wood-burning kitchen stoves and coal-fired power plants, these plumes of carbon dust rise over southern Africa, the Amazon basin and North America but are most pronounced in Asia, where so-called atmospheric brown clouds are dramatically reducing sunlight in many Chinese cities and leading to decreased crop yields in swaths of rural India, says a team of more than a dozen scientists who have been studying the problem since 2002.

Combined with evidence that greenhouse gases are leading to a rise in global temperatures, the report's authors called on governments rich and poor to address carbon emissions.

"The imperative to act has never been clearer," Achim Steiner, executive director of the United Nations Environment Program, said in Beijing, where the report, "Atmospheric Brown Clouds:

Regional Assessment Report With Focus on Asia," was released.

The brownish haze, sometimes more than a mile, or 1.6 kilometers, thick and clearly visible from airplanes, stretches from the Arabian Peninsula to the Yellow Sea.

In the spring it sweeps past North and South Korea and Japan. Sometimes the cloud drifts as far west as California. The report identifies 13 cities as brown-cloud hotspots, among them Bangkok, Cairo, New Delhi, Seoul and Tehran. In some Chinese cities, the smog has reduced sunlight by as much as 20 percent since the 1970s, the report says.

Rain can cleanse the skies, but some of the black grime that falls to earth ends up on the surface of the Himalayan glaciers that are the source of water for billions of people in China, India and Pakistan.

The result: The glaciers that feed into the Yangtze, Ganges, Indus and Yellow rivers are absorbing more sunlight and melting quicker, researchers say.

According to the Chinese Academy of Sciences, those glaciers have shrunk 5 percent since the 1950s and at the current rate of retreat could shrink by an additional 75 percent by 2050.

"We used to think of this brown cloud as a regional problem, but now we realize its impact is much greater," said Veerabhadran Ramanathan, who led the UN scientific panel. "When we see the smog one day and not the next, it just means it's blown somewhere else."

Although their overall impact is not entirely understood, Ramanathan, a professor of climate and ocean sciences at the University of California in San Diego, said the clouds might be affecting rainfall in parts of India and Southeast Asia, where monsoon rainfall has been decreasing in recent decades, and central China, where devastating floods have become more frequent.

He said some studies suggested the plumes of soot that block the sun have led to a 5 percent decline in the growth of Asian rice harvests since the 1960s.

For those who breathe the toxic mix, the impact can be deadly. Henning Rodhe, a professor of chemical meteorology at Stockholm University, estimates that 340,000 people in China and India die each year from cardiovascular and

respiratory diseases that can be traced to the emissions from coal-burning factories, diesel trucks and kitchen stoves fueled by twigs.

"The impacts on health alone is a reason to reduce these brown clouds," he said, adding that in China about 3.6 percent of the nation's annual gross domestic product, or \$82 billion, is lost to the health effects of pollution.

The scientists who worked on the report said the blanket of haze hovering over Asia and other parts of the world might be mitigating the worst effects of greenhouse gases by absorbing solar heat or reflecting it away from the earth. Greenhouse gases, by contrast, tend to trap the warmth of the sun and lead to a rise in ocean temperatures.

Steiner, the head of the UN environment program, said the findings complicated the global-warming narrative. The brown clouds mask the impact of the greenhouse gases, he said: Without the blocking effect of the smog, he said, climate change would be far worse.

"All of this points to an even greater and urgent need to take on emissions across the planet," he said.