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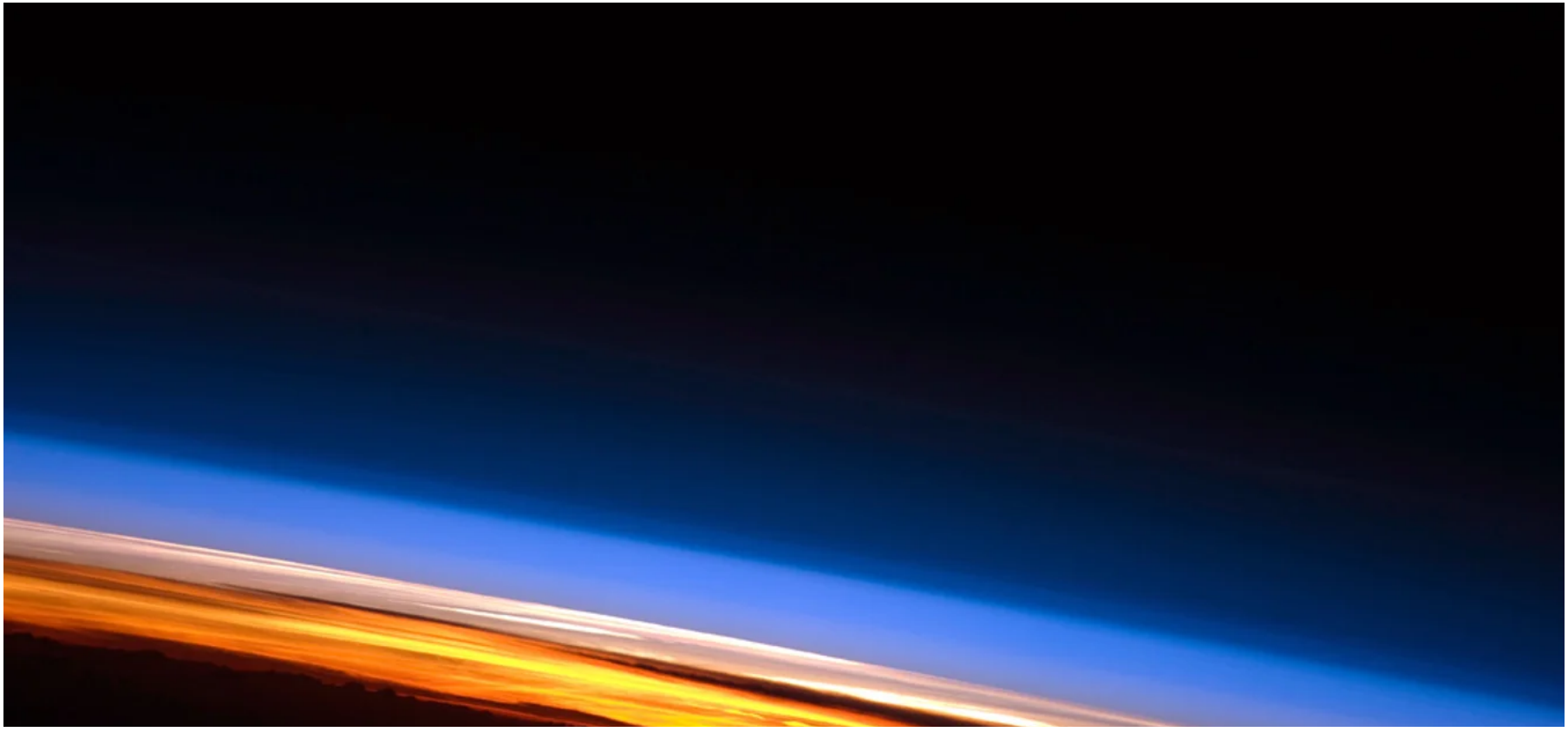
How the U.S. Cracked Down on a Potent Greenhouse Gas

The U.S. government is celebrating some success at reining in emissions of a potent greenhouse gas called SF_6, which traps 25,000 times more heat than CO_2 does over a century-long timescale

BY JOHN FIALKA & E&E NEWS



Credit: NASA/JSC

Climate Change

CLIMATEWIRE | NOAA is celebrating a rare event: progress by the United States in detecting what is believed to be the world's most potent greenhouse gas, and then working with businesses to reduce its emissions.

It is called sulfur hexafluoride, or SF6. While its abundance in the atmosphere is relatively small, according to a NOAA report released last week, the gas traps 25,000 times more heat in the atmosphere than CO2 does over a centurylong time scale. And its emissions are likely to influence the Earth's climate for thousands of years.

SF6 is emitted from electrical insulation and high voltage equipment that transmits and distributes

electricity. NOAA reported that its emissions have declined by 60 percent in the United States between 2007 and 2016, in large part because of industry-made voluntary reductions and a mandatory EPA reporting requirement that began in 2011.

"This is a great example of the future of greenhouse gas emissions tracking, where inventory compliers and atmospheric scientists work together to better understand emissions and shed light on ways to further reduce them," said Steve Montzka, a senior staff scientist at NOAA's Global Monitoring Laboratory.

Montzka, a co-author of a report on the subject published by the journal *Atmospheric Chemistry and Physics*, said the finding also has helped raise the Environmental Protection Agency's earlier estimates of SF6 emissions.

They are higher in the winter than in the summer because southern power companies typically service their power equipment in the winter and leaky power equipment in the north often emits SF6 from aging sealing materials in colder weather.

Worldwide, over the past decade, more SF6 has escaped as a trace gas and that has "substantially increased due to growing energy demand," according to the journal's study.

SF6 is described as having the largest known global warming potential among

greenhouse gases such as CO2 that can last in the atmosphere a 100 years or more. The journal reported that SF6's life in the atmosphere can range from 580 years to 3,200 years. It is primarily used in electrical circuit breakers and high-voltage gas-insulated switchgear.

NOAA used "top-down" sampling techniques, using aircraft and tall towers to take air samples at various elevations, and "bottom-up" efforts to measure emissions by companies and ground-based power facilities. Some state governments also helped track them.

Lei Hu, a physical scientist with NOAA and lead author of the journal's study, said the United Nations must encourage more cooperation between companies and regulators to detect emissions of such potent gases.

One of the breakthroughs in the United States, she noted, was the discovery of emissions from a large plant in Metropolis, Ill., that produced SF6 as an ingredient for insulating materials in electric equipment, but was not reporting it. The plant closed in 2010.

"That was the first step," she said, recognizing the gap between the large amounts of the potent greenhouse gas detected and the low emissions reported in the area.

Without worldwide detection and mitigation efforts, the climate impact of SF6 will continue to rise, the journal's study warned.

It said "large uncertainties remain in the magnitude and distribution of SF6 emissions on national and regional scales."

Most of the national emissions reported to the United Nations come from developed nations and China. But they only account for 50 percent of the global SF6 emissions found in atmospheric observations taken from 1990 to 2007.

JOHN FIALKA is a reporter with *E&E News*.

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