

## **Wind is blowing China's air pollution 'straight across' to the US West Coast**

By Barbara Tasch, Business Insider

In the San Francisco Chronicle, Tuesday, Aug. 11, 2015

A new study links the increase in ozone precursor emissions in Asia to increased levels of ozone over the US's West Coast.

In the study, published Monday, a team of six researchers from US and Dutch universities found that ozone concentrations over China increased by about 7% between 2005 and 2010 and that ozone traveling in the air from China has reached the western part of the US, challenging the reduction of ozone levels there.

China's meandering pollution likely offset the 2005-10 reduction in ozone that had been expected following US policies aimed at reducing emissions, by roughly 43%, the researchers found.

Over that period, the US government put in place emission-reducing measures and curbed the production of ozone-forming nitrogen oxides by 20% on the West Coast, according to Wageningen University. Yet that did not improve the quality of the air especially in terms of ozone reduction.

And the increased air pollution in Asia might be at least partly to blame.

Lead researcher Willem Verstraeten of Wageningen University in the Netherlands said in statement that the "dominant westerly winds blew this air pollution straight across to the United States."

He added: "As a manner of speaking, China is exporting its air pollution to the West Coast of America."

The researchers determined what was happening by using satellite measurements of nitrogen oxide and ozone and combining it with a chemistry transport model to identify "the causes of increasing ozone levels and analyze intercontinental transport of ozone pollution for the first time ever," according to Verstraeten.

When levels of ozone are high in the lower atmosphere (this type of ozone is referred to as "bad ozone," or ground-level ozone) they have dangerous effects on human health and are a main component of smog.

High levels of ground-level ozone act as a greenhouse gas, contributing to pollution and climate change. ("Good ozone," on the other hand, is a natural component of the Earth's upper atmosphere and helps protect us from the sun's harmful UV rays.)

The researchers say this shows that the fight against increasing ozone levels and climate change must be global. "Local measures to improve air quality certainly help, but the real solution lies in a global strategy," Verstraeten said.

The study concluded that "air quality and regional climate change mitigation policies could eventually have limited impact if not considered in a global context, at least for free-tropospheric O<sub>3</sub> and its precursors."

## **Air pollution from China undermining gains in California, Western states**

By Steve Scauzillo, San Gabriel Valley Tribune

In the L.A. Daily News, Monday, Aug. 10, 2015

Aside from smartphones, toys and computers, China exports a different kind of product into the western United States — air pollution.

A study released Monday by the Jet Propulsion Laboratory and NASA found that smog-forming chemicals making their way across the Pacific Ocean from China are undermining the progress California has made in reducing ozone, the most caustic component in L.A. smog.

From 2005 through 2010, western states have cut ozone-forming air pollutants by 21 percent, but the NASA/JPL study found no drop at all when measuring smog-forming gases in the midtroposphere, located 10,000 to 30,000 feet above ground level.

Just under half of what should have been a 2 percent drop was offset by China's contribution, stemming from a 21 percent rise in ozone-forming pollutants emitted by car tailpipes and coal plants from a robust Chinese economy during the six years studied. Slightly more than half was due to natural causes — stratospheric ozone descending through the sky as a result of cyclical atmospheric winds helped by an El Niño in 2009-2010, the scientists concluded.

"The contribution from China increased steadily throughout the study, and we don't know what will happen to it in the future because it depends on human rather than natural factors," said JPL scientist Jessica Neu, co-author of the study with Willem Verstraeten, an atmospheric chemist at Wageningen University in the Netherlands. The study was published Monday in the online journal Nature Geoscience.

"In a manner of speaking, China is exporting its air pollution to the West Coast of America," Verstraeten told the online publication phys.org.

About half of the pollutants in the midtroposphere reach the surface as ozone and affect the air people breathe, Neu said. Ground-level ozone causes shortness of breath, eye irritation and sore throats, and long exposure can prematurely age the lungs and cause lung disease, according to the U.S. Environmental Protection Agency and hundreds of studies done in Southern California.

Previous studies published in the Journal of Geophysical Research-Atmospheres in 2012 estimated Asian pollution accounts for about 20 percent of the total ozone pollution in the spring in the western states such as California, Oregon, Washington, Montana and Wyoming. Some scientists estimate Asian air pollution pushes Southern California above the 75 part per billion federal hourly ozone standard for about 53 percent of the recorded exceedances.

The most recent study quantifies the impact of Chinese air pollution on the West Coast. It also raises the issue of whether countries need to treat smog as a global pollutant that knows no borders.

"This is the first time we are showing, even if you are making big efforts to reduce your emissions, what other countries are doing could offset that," Neu said.

Ozone in the midtroposphere also acts as a greenhouse gas, absorbing radiation in a similar way as carbon dioxide, Neu said. By reducing ozone, greenhouse gases that cause global climate change are reduced, she said.

Joe Lyou, president of the Coalition for Clean Air and Gov. Jerry Brown's appointee to the South Coast Air Quality Management District governing board, said he hopes the JPL study will give air pollution control managers in all countries more answers in the fight for clean air.

"Our point of view is, air pollution should be cleaned up everywhere, including China," Lyou said. "The things we've done in reducing our air pollution, China can adopt."