

Pollution-detecting aircraft hunts for gas leaks

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(Phys.org)—University of California, Davis, atmospheric scientist Stephen Conley is flying over the spine of California, tracing 600 miles of Pacific Gas and Electric Co.'s natural gas pipeline for methane leaks. Specialized instruments on Conley's plane allow UC Davis researchers to detect gas leaks several miles downwind from the source.

"What sets us apart is we use [atmospheric science](#) to solve the problem," Conley said. "We can do things with a little plane that you can't do any other way."

Once the plane detects the [pollution sources](#), PG&E workers can repair the leak, which reduces the amount of methane, a potent greenhouse gas, released into the air.

PG&E's transmission pipeline is routinely surveyed each year, typically by ground crews. But accessing rural areas with difficult terrain can be time consuming, expensive and unsafe for crews on the ground. Aerial surveys often look for dead vegetation as an indicator of [gas leaks](#).

Researchers say, however, that airplane surveys conducted with scientific instruments enable them to gather the information more accurately, quickly, cheaply and safely than other available methods.

"This has implications for pipeline operators across the country," said UC Davis [atmospheric scientist](#) Ian Faloona. "If we can do aerial control with instrumentation, it could be replicated throughout the nation and

world."

But not just any plane can detect natural gas leaks.

The research plane's technology includes a greenhouse gas analyzer, an instrument that measures methane plumes in real time. Conley also developed a differential GPS system to get precise wind readings. Accurate wind readings play a vital role in detecting sources of greenhouse gases, such as [methane](#).

UC Davis' partnership with PG&E to survey the pipeline began in late 2011, with three test flights over 300 miles of transmission lines. The current surveying project began in November and is expected to be complete in December. The project area stretches from Sonoma to Fresno. The data collected will be used to enhance pipeline safety throughout PG&E's service area.

The plane's ability to source pollutants has also been used to detect leaks at fracking operations and investigate the amount of ozone pollution that enters the United States from distant sources.

Provided by UC Davis

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