

MANOA



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## **Turning Money into Thin Air: Fugitive Natural Gas Impacts in Utah**

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Date:Wednesday, March 8, 2017Refreshments:3:00pm at MSB courtyardFree Cookies, Coffee & Tea Provided<br/>(Please Bring Your Own Cup)Seminar Time:3:30pmLocation:Marine Sciences Building, MSB 100

## **Abstract:**

Natural gas is touted as a clean alternative to coal. Some call it a "bridge fuel" that allows the U.S. to transition away from coal to energy sources that incur fewer environmental impacts. However, our natural gas infrastructure is imperfect in its production and delivery of natural gas. Losses of natural gas to the atmosphere (fugitive emissions) represent monetary losses for the energy industry and increase its environmental impacts.

Methane is the primary component of natural gas. It acts as a potent greenhouse gas and is an ozone pre-cursor with effects on both climate and health. One study suggests the climate impacts of natural gas are worse than coal, if fugitive emissions exceed 2% of production. This means the estimation and monitoring of fugitive emissions are essential to assess the impact of natural gas on climate.

In this seminar, I will introduce the Lagrangian Estimation of Aircraft-derived Fluxes (LEAF) method to estimate methane emissions from aircraft observations collected during field campaigns held in the Uinta Basin of Utah -- an area with a recent boom in natural gas production due to hydraulic fracturing. LEAF identifies emission signatures from aircraft observations, and then uses the Stochastic Time-Inverted Lagrangian Transport (STILT) model to identify emission sources. LEAF is a flexible framework for emission estimation that is more broadly applicable to aircraft-based field campaigns than other methods commonly used.

Through the use of LEAF, we can answer questions about the Uinta Basin such as: Is natural gas truly a "bridge fuel" or is it a climate bridge to nowhere? How much money did the natural gas industry lose? The answers to these questions and more will be discussed.