Job Summary

The Department of Atmospheric Sciences at the University of Washington has a Postdoctoral Scholar position open to join our research team working on improving our understanding of the methane cycle in past and modern atmospheres. Applicant will develop and utilize box models, linear inverse models, and deep learning models (U-nets, PINNs, …) to represent the methane cycle in a computationally efficient manner. These models will both inform and be trained using global chemistry-climate models. These efficient representations of the methane cycle will ultimately be used to constrain the drivers of variations in atmospheric methane the oxidative capacity of the troposphere using both satellite and isotopologue ($\delta^{13}C$-CH_4, δD-CH_4, $^{14}CH_4$, and ^{14}CO) measurements.

Responsibilities for the position include:

- Development of efficient box models, linear inverse models, and deep learning models
- Constrain drivers of methane variations using isotopologue measurements and satellite observations
- Interact with researchers developing chemistry-climate models
- Communicate results in peer-reviewed literature and conference presentations

The position will be funded for one year from the date of hire with future years of funding contingent on performance. The position will remain open until filled.

Project Summary

Fate, **E**missions, and **T**ransport of **CH_4** (**FETCH$_4$**; https://fetch4.github.io/) is an international collaboration of scientists from 19 institutions across 7 countries that is co-led by the University of Washington and the University of Rochester. The project is supported by Schmidt Future's Virtual Earth Research Institute (VESRI). The central focus of the project is to improve our understanding of the methane cycle and better represent the important methane-feedback mechanism in climate models. To achieve this, the FETCH$_4$ team will make new isotopologue measurements in both Greenland ice cores and air samples from 11 stations around the world. These isotopogolgue measurements provide unique chemical fingerprints that will allow the team to isolate the role of individual aspects of the methane cycle such as fossil fuel emissions. These new measurements will be used in combination with satellite observations to estimate individual sources of atmospheric methane as well as the chemical sink of methane. In tandem, the team will develop modeling capability to simulate these isotopologues in global climate models and then accelerate the climate models with machine learning. These computationally efficient models will be used to help interpret the isotopologue measurements and improve the representation of the important methane feedback mechanism in global climate models.

Minimum Qualifications

A Ph.D. in atmospheric sciences or related field (oceanography, environmental sciences, geosciences, chemistry, statistics, data sciences, computer sciences or other quantitative science or engineering field) is required at the time of hire. Successful candidate will have a demonstrated ability to conduct data analyses and communicate results in peer-reviewed literature and presentations. Experience using atmospheric models, computer programming (python or Fortran), high performance computing, or machine learning is desired.

To apply, please submit the following by email to turneraj@uw.edu:

1. A cover letter highlighting your interest and why you feel you would be a good fit for FETCH$_4$, as well as to which institution(s) you are interested in applying.
2. Your Curriculum Vitae.
3. Contact information of 4 individuals who could provide a letter of recommendation.

The University of Washington values candidates who have experience working in settings with students from diverse backgrounds and possess a strong commitment to improving access to higher education for historically underrepresented students.

Individuals from historically underrepresented groups, such as minorities, women, qualified persons with disabilities and protected veterans are encouraged to apply. Veterans' preference is extended to qualified applicants, upon request and consistent with University policy and Washington state law. Upon request, reasonable accommodations in the application process will be provided to individuals with disabilities.

To inquire about this posting, email **turneraj@uw.edu**