

Post-Doctoral Position in Isotopic Composition of Methane in Ice Core Records

Position

The College of Earth, Ocean and Atmospheric Sciences and Center for Oldest Ice Exploration (COLDEX) are seeking applicants for a 2-year post-doctoral position investigating the isotopic composition of methane in ice core records. The OSU ice core laboratory (<https://icecore.ceoas.oregonstate.edu>) has successfully implemented and applied a sample preparation system linked to a continuous flow GC-IRMS instrument and we are currently capable of routine measurements of $\delta^{13}\text{C}$ of CH_4 in ice core samples. The post doc will take on the expansion of our capabilities to measurement of δD of CH_4 and apply both isotopic systems to several outstanding problems in past CH_4 biogeochemistry, including the mechanisms controlling abrupt increases in CH_4 during interglacial periods, the controls on CH_4 during and before the mid-Pleistocene, and sources of enrichments in CH_4 in the basal layers of Antarctic ice cores at Allan Hills. The latter two projects will use ice samples collected as part of the COLDEX NSF Science and Technology Center (www.coldex.org).

This is a full-time position within the College of Earth, Ocean and Atmospheric Sciences (CEOAS) at Oregon State University, funded by the US National Science Foundation. The initial appointment will be for one year with the intention of renewal for a second year assuming satisfactory progress. The start date has some flexibility but ideally would be in winter or spring of 2024. The postdoc will work under the mentorship of Professor Ed Brook, and work closely with other members of the OSU Ice Core laboratory and the larger group of participants in COLDEX. The successful applicant will be appointed as a post-doctoral scholar at OSU; information about minimum salary ranges, benefits and other aspects of post-doctoral positions can be found at <https://gradschool.oregonstate.edu/postdocs>.

Responsibilities

The successful candidate will adapt our existing extraction line/preconcentration system and mass spectrometric methods to measure δD of CH_4 in ice samples. This will include testing and developing sample handling, purification and pre concentration methods, testing measurement precision, accuracy and standardization, and full documentation of methods and procedures. The successful candidate will also interpret new ice core records they develop in terms of past climatic and environmental conditions, participate in COLDEX-related events, meetings and professional development opportunities, collaborate with scientists at OSU and other collaborating institutions, disseminate scientific results in peer-reviewed publications and presentations at scientific meetings, assist in the training of undergraduate and graduate students, actively participate in the operations of the OSU ice core lab and its facilities, and participate in outreach and professional development activities at OSU and with COLDEX. Polar fieldwork in Antarctica is a possibility though neither required nor guaranteed. Travel to other laboratories and the NSF Ice Core Facility in Denver, CO, may be required as part of the position.

Qualifications

Applicants must have a PhD in a relevant area, such as paleoclimate, glaciology, biogeochemistry or Earth sciences at the start of the position, excellent written and verbal communication skills in English, some experience in numerical data analysis (for example in Matlab or Python), hands-on experience with laboratory geochemistry or related measurement methods, effective problem-solving skills, the ability to formulate and design research independently, and motivation to solve scientific research problems and work well within a team of researchers. Ability to work in laboratory walk-in freezers is required.

Preferred qualifications include demonstrated strong laboratory, quantitative and other technical skills, experience with relevant analytical techniques and instrumentation including stable isotope mass spectrometry, continuous flow isotope ratio mass spectrometry, analysis of trace gases in air, and/or related techniques.

Application

Applications received by January 1, 2024, will be given full consideration. To apply, please send: (1) a cover letter describing academic experience, qualifications, motivation and interest in the position; (2) a curriculum vitae, including current employment and contact information and (3) names, addresses, telephone numbers, and email addresses of three professional references. Depending on the number of applicants, referees may be contacted only for a short list of top candidates. Please send these documents as one pdf file. We strongly encourage applicants from under-represented groups (including people of color, women, people with disabilities, and LGBTQ+ candidates) to apply.

Application materials should be sent to Dr. Ed Brook at edward.brook@oregonstate.edu. For questions regarding this position please also contact Dr. Brook. Learn more about COLDEX at <https://coldex.org>. Learn more about the OSU Ice Core and Quaternary geochemistry lab at <https://icecore.ceoas.oregonstate.edu/>.