Atmospheric Inverse modelling of GHG fluxes

The Global Change Research Institute together with Institute of Microbiology both being part of the Czech Academy of Sciences and Czech University of Life Sciences set out ambitious vision of move the true understanding to carbon dioxide and nitrous oxide sources, sinks and fluxes from the rural landscape. This will be achieved by combining ambitious monitoring program with the state-of-the-art atmospheric modelling. For this mission we are seeking a postdoctoral specialist with experience in atmospheric inverse modelling of land-atmosphere exchange fluxes of green-house gas (GHG) fluxes at landscape to regional level in the conditions of Central Europe. This position is part of the new AdAgriF project (https://adagrif.cz/) which, in addition to monitoring GHG fluxes, aims to understand how agricultural and forest management are specifically contributing to the overall GHG budget and how these managements can be altered to maximise the potential for climate change mitigation. The position will be embedded within an interdisciplinary research team that is conducting experimental, observational, and modelling studies focussing on GHG cycle processes at plant-cell, through ecosystems to regional scale.

The main work tasks can be summarised as follows:

- ✓ Combine a numerical weather prediction model with Lagrangian transport and land surface models and *in situ* GHG concentrations measurements from a new cluster of atmospheric towers within the inverse modelling framework to simulate land-atmosphere exchange fluxes at local to regional scales.
- ✓ Exploit multidisciplinary data sources to be integrated into landscape scale inversion including e.g. surface-based and airborne observations from recent monitoring campaigns in the Czech Republic, or satellite retrievals.
- ✓ Explore the connection between land cover, land use, and land management with GHG fluxes.
- ✓ Conduct atmospheric inversions to evaluate the performance of upgraded biosphere process-based models for simulation of landscape to regional GHG fluxes in the Czech Republic at very high spatial resolution. The interpretation of process model results will be conducted jointly with project team colleagues contributing to modelling results and *in situ* measurements.

The ideal candidate should meet the following requirements:

- ✓ Higher education degree (PhD) in atmospheric or natural sciences (e.g. meteorology, geoscience, or environmental physics).
- ✓ Experience in studying surface-atmosphere exchange processes with atmospheric approaches is a prerequisite.
- ✓ Experience in one or several of the following disciplines is expected: atmospheric transport modelling, boundary layer meteorology, observation and interpretation of time series of GHG concentrations, and inverse optimisation techniques.
- ✓ Solid experience in scientific programming (R, Python, Julia, etc.) is essential.
- ✓ Strong record of publication.
- ✓ We seek a flexible and proactive person who is able to work independently and in a larger team.
- ✓ Very good written and spoken English is essential.

Terms of employment:

This is a full-time post-doctoral position to be filled from January 2024 (or sooner) with current funding guaranteed at least for 48 months.

We offer a collaborative work environment with a friendly and supportive team that fosters growth and creativity. Our office is located in Brno, known for its rich activities, exquisite coffee, fine dining, and beautiful architecture. Beyond our institute, we offer to engage and collaborate with international scientists who are recognised experts in their field, offering a unique opportunity for mentorship and growth. We offer a flexible work arrangement including a freedom of adjustable work hours and the option to work partly remotely.

To apply

For informal enquiries, contact Dr. Milan Fischer at fischer.milan@gmail.com

To submit your application, send the following documents to jobs@czechglobe.cz. Shortlisted candidates will be notified with interviews:

- your academic CV
- the names and contact details of 2 referees
- cover letter that addresses the person specification provided above