NILU – Norwegian Institute for Air Research (180 employees) aims to increase the understanding of processes and effects of climate change, of the composition of the atmosphere, of air quality and of hazardous substances. The institute holds a strong position both on the national and international level within its core fields of research.

Post-doctoral position (3 years)

In the framework of the new ERC (European Research Council) Advanced Grant project COMTESSA (Camera Observation and Modelling of 4D Tracer Dispersion in the Atmosphere), we offer a post-doc position at the forefront of basic atmospheric research. The successful candidate will contribute to the following tasks:

- Development of six UV SO_2 camera systems
- Characterization and testing of UV and TIR SO_2 cameras
- Organization and participation in field experiments in Norway and abroad
- Scientific data analysis, interpretation and publication of results

The successful applicant is expected to have a strong background in the following:

- Atmospheric/experimental physics or equivalent (PhD degree)
- Ground-based or satellite remote sensing and/or imaging
- Radiation/trace gas retrieval in the TIR and/or UV wavelengths region

It is required that the candidate is proficient in computer programming and it will be beneficial to have experience in one or more of the following:

- Development of optical remote sensing instruments
- Python programming
- Development of data acquisition/analysis software
- Image and/or signal processing
- Tomography

The successful candidate will be part of a highly interdisciplinary and productive team and shall therefore be interested in collaboration with radiative transfer and atmospheric dispersion modellers, for joint analysis and publication of COMTESSA results. Consequently, we expect this project to substantially advance the career perspectives of the candidate.

Further information on COMTESSA: COMTESSA will push the limits of our understanding of turbulence and plume dispersion in the atmosphere by bringing together full four-dimensional (space and time) observations of a (nearly) passive tracer (sulfur dioxide, SO_2), with advanced data analysis and turbulence and dispersion modelling

Observations will be made with six cameras sensitive to ultraviolet (UV) radiation and three cameras sensitive to infrared (IR) radiation. The SO_2 camera systems will be designed specifically for this project where high sensitivity and fast sampling is important

Controlled puff and plume releases of SO_2 will be made from a tower, which will be observed by all cameras, yielding multiple 2D images of SO_2 integrated along the line of sight. The simultaneous observations will allow - for the first time - a tomographic reconstruction of the 3D tracer concentration distribution at high space and time resolution. Special turbulent phenomena (e.g. plume rise) will be studied using existing SO_2 sources (e.g. smelters, power plants, volcanoes

Analysis of the novel campaign observations will deepen our understanding of turbulence and tracer dispersion in the atmosphere. For instance, for the first time we will be able to extensively measure the concentration probability density function (PDF) in a plume not only near the ground but also at higher altitudes; quantify relative and absolute dispersion; estimate the value of the Richardson-Obukhov constant, etc. We will also use the data to evaluate state-of-the-art LES and Lagrangian dispersion models and revise their underlying parameterizations

COMTESSA's vision is that the project results will lead to large improvements of tracer transport in all atmospheric models

Our main office is located at Kjeller, just outside Oslo. We have extensive collaboration with national and international research institutes and universities, so travel activities are to be expected as part of the work. Details about NILU can be found at www.nilu.no.

Informal enquiries about the available position can be directed to Senior Scientist Andreas Stohl, ast@nilu.no

Application, CV, scanned copies of certificates and degrees (include all higher education/university level) and recommendation letters should be sent as one complete pdf-file to NILU (nilu@nilu.no) as soon as possible and no later than 15 February 2016.

We perform background check in our recruiting process.