RESEARCHER IN REMOTE SENSING OF SUN-INDUCED FLUORESCENCE (M/F)

Permanent contract | Fulltime/40h | Belvaux

Your work environment

The Luxembourg Institute of Science and Technology (LIST) is a Research and Technology Organization (RTO) active in the fields of materials, environment and IT. By transforming scientific knowledge into technologies, smart data and tools, LIST empowers citizens in their choices, public authorities in their decisions and businesses in their strategies.

https://www.list.lu/

You will be part of the LIST Environmental Research and Innovation department

As part of a Research and Technology Organization (RTO), the work of the Environmental Research and Innovation (ERIN) Department is focusing on some of the major environmental challenges our society is facing today (e.g. adaptation to climate change, ecosystem resilience, sustainable energy systems, efficient use of renewable resources, environmental pollution prevention and control).

To this end, the mission of the ERIN department is:

(1) to conduct impact-driven scientific research and development, as well as technological innovation;

(2) to support companies in the implementation of new environmental regulations and advise governments on determining sustainable policies for the future, with the objectives of:

- Analysing, managing and exploiting sustainable resources (water, air, soil, renewable energy, bioresources).
- Reducing the environmental impact of human consumption and production activities.

Within the ERIN department, the 'Environmental Sensing and Modelling' (ENVISION) unit contributes to this mission by carrying out impact-driven research, geared towards monitoring, forecasting and predicting environmental systems in a changing world. An interdisciplinary team of around 50 scientists, engineers, post-docs and PhD candidates is developing new environmental process understanding, alongside new tools and technologies – operating at unprecedented spatial and temporal scales.

Embedded into the ENVISION unit, the 'Remote sensing and natural resources modelling' research group capitalizes on a blend of remote sensing data obtained from space- and air-borne platforms, as well as *in-situ* measured data, for producing information on the status of natural resources for public and private stakeholders.

Job reference: ERIN-2020-040

Application file:

- A CV (which includes lists of publications and secured funding)
- A motivation letter
- References names of two or three referees

Apply online:

https://www.list.lu/en/jobs/researchers/job-offer/erin-2020-040/?no_cache=1&cHash=4c7bd128ddd227b06a09ee63a52b1863

Your working environment

The research department

https://www.list.lu/en/research/erin/

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What you will be doing

To strengthen its activities in environmental remote sensing, ecosystem modelling and Earth Observation (EO) applications, LIST is offering a permanent position for a researcher in Remote Sensing of solar-induced fluorescence (SIF).

Remote sensing of chlorophyll fluorescence is a growing and dynamic research field that has the potential to provide innovative tools for assessing plant ecophysiological status and photosynthetic function at multiple scales.

At the ENVISION unit, we share the ambition to advance knowledge in understanding linkages between canopy SIF and physiological and eco-hydrological functions for managed and natural vegetation. We develop applications in precision agriculture and viticulture, forest management, eco-hydrology, plant phenotyping and Earth Observation. You will contribute to these common goals by measuring and modelling canopy SIF over time and along environmental gradients – from plot to landscape scales. You will use and develop further synergies of SIF measurements along with hyperspectral and thermal infrared data to detect and understand causes of plant stress.

By developing and leading the research topic of solar induced fluorescence you will complement and strengthen the existing skillset within the 'Remote sensing and natural resources modelling' research group. You will have to craft, submit and supervise innovative and ambitious proposals to national and international competitive funding programs. For this, you shall leverage in-house competences in optical and microwave remote sensing, precision agriculture and viticulture, hydrology and ecology and information technology. You will lead efforts related to the dissemination, communication and valorisation of the results obtained – including publications in leading peer-reviewed journals, patents, prototypes and licences.

You will develop / contribute to RDI projects by:

- Analysing SIF data from airborne (FLEX campaigns) and spaceborne (ISS- Orbiting Carbon Observatory 3) platforms and in the future from the Earth Explorer - Fluorescence Explorer (FLEX) mission
- Performing simulations using state-of-the-art models (e.g., SCOPE)
- Developing new generation models of ecosystem productivity using SIF and other remote sensing domains
- Developing excellent research proposals to secure funding at national and international level
- Contributing to the development of partnerships and networks at national and international level
- Contributing to the technical content of new research proposals and commercialisation projects
- Disseminating and publish the results in top ranked scientific journals

Moreover, you will contribute to the dissemination, valorisation and transfer of RDI results through:

- Software licensing
- Participation in the drafting of technical reports, scientific articles, patents and inventions
- Participation in the implementation of technological solutions (proof-of-concepts, prototypes)

Which profile we are looking for

Educational background

- PhD in remote sensing, environmental sciences, geo-ecology, environmental engineering, forestry, biophysics (or related subjects)

Required seniority

- Minimum 5-year research experience after completion of PhD

Technical skills

- Advanced knowledge in remote sensing of vegetation
- Excellent knowledge in plant ecophysiology, photosynthesis, and chlorophyll fluorescence
- Excellent skills in measuring and modelling sun-induced fluorescence at leaf and canopy levels
- Advanced knowledge of remote sensing techniques (radiative transfer modelling, machine learning, image classification, multivariate statistics)
- Proven experience in linking SIF-indices with ecological and eco-hydrological processes (GPP, ET, etc.)
- Good knowledge of EO toolkits (e.g., SNAP, EnMAP box, QGIS, etc.)
- Good programming skills (e.g. Matlab, R, IDL, etc.)
- Experience in organisation of field campaigns
- Excellent communication skills in presenting scientific research, and writing papers in scientific journals, technical reports and proposals
- Communicative and willing to learn, self-organized, and creative
- Ability to work both independently and collaboratively in an international team across the ENVISION RDI unit

Language skills

- Excellent English is mandatory

Interested ? Please apply online

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