



Research scientist on weather-based index selection to anticipate yield loss before harvest as part of the CLAND Convergence Institute

at INRA and LSCE

Context:

The CLAND Institute of Convergence project (www.cland.lsce.ipsl.fr) funded by the French national research agency for ten years gathers the efforts of more than 100 researchers in the Paris Saclay area from key institutions in the field of climate change impacts, sustainable agriculture, ecosystem services, environmental impacts and land use socio-economics. The scientific challenge tackled by CLAND is to integrate research in modeling climate change, food and fiber production, biodiversity dynamics, ecosystem functioning and land-use socio-economics, together with data syntheses to understand key feedbacks and assess risks and sustainable options for integrated management of land ecosystems. CLAND spans the full range of disciplines necessary to make breakthroughs in the integrated assessment of the interplay between climate change and land use and management.

Job description:

The job holder will consider a large range of weather-based indices and variables related to crop yields (from simple average temperature to crop model outputs) and evaluate their ability to anticipate yield losses before harvest (from a few month to a few days before harvest). Evaluation of indices will be conducted from global datasets including crop yields and weather time series, at various spatiotemporal resolutions. He/She will assess the proportions of yield losses correctly classified by the considered weather indices, and the proportion of wrong classifications, i.e., anticipated yield loss in the absence of actual yield loss (false positive), absence of anticipated yield loss in case of actual yield loss (false negative). This approach will be applied in several geographical areas (especially, in Europe, America, Africa, and China) to rank weather indices according to their predictive performances. In particular, he/she will assess the capabilities of a range of selected weather indices to anticipate yield loss before harvest under past, current, and future climate conditions. The results of the weather index assessment described above will be used to explore the practical interest of weather index, e.g., explore the ability of weather-based index crop insurances to help mitigate adverse consequences of yield loss for farmers

Responsibilities and tasks:

- Format yield and weather databases at different spatio-temporal scales
- Define and compute relevant weather-based indices
- Assess the capabilities of weather indices to anticipate yield loss
- Estimate technical basis risk of weather index crop insurances

Required education, experience and skills:

Applicants should hold an engineering degree or PhD and have experience in one or several of the following subjects: time series analysis, data mining, statistical modelling, machine learning, econometrics.

Furthermore, applicants should have:

- strong analytical skills to work with large and multiple datasets,
- a good knowledge of standard statistical methods,
- a good knowledge of R,
- a proven ability to work in a team and network with a range of scientists.

Location:

INRA AgroParisTech Thiverval-Grignon (<https://www6.versailles-grignon.inra.fr/agronomie>), or LSCE campus in Gif sur Yvette (<http://www.lsce.ipsl.fr>), with regular visits to the other site. Regular visits to different teams of the Cland project (<http://cland.lsce.ipsl.fr>) for collaboration, seminars and conferences.

Collaborations:

The job holder will be under the direct supervision of D. Makowski and T. Ben-Ari (INRA researchers).

Other collaborations: P. Ciais (LSCE), N. Guilpart (AgroParisTech), and B. Schauburger (PIK, LSCE) in CLAND.

Contract duration:

Fixed-term period of 24 months with possibility of an extension.

How to apply:

Applicants should submit a complete application package by email to David Makowski (david.makowski@inra.fr) and Tamara Ben-Ari (tamara.ben-ari@inra.fr), and should include (1) a curriculum vitae including most important recent publications, (2) statement of motivation, and (3) names, addresses, phone numbers, and email addresses of at least two references.

The position is available from 01/03/2018 and will remain open until filled with review of applications and interviews. Salary follows national directives including full social and health benefits, and is adjusted for work experience.