

18/06 : Oceans as a predictor for daily rainfall risk

Company: Weather Logistics Ltd

Supervisor: Dr Christopher Nankervis, Chief Technology Officer and Founder

Location: Ingenuity Centre, The University of Nottingham Innovation Park, NG7 2TU

Company Description:

Weather Logistics provides and manages its own software algorithm that delivers unique daily insights into the risk of extremes and consecutive weather events at a local scale and up to 15 weeks in advance. Its system architecture is designed using feedback from agricultural customer trials to tackle food security, increasing crop yields and quality while reducing environmental and financial costs in the field.

A recent economic review by the University of Cambridge in collaboration with the Smith Institute demonstrates the high value of its forecast in the horticultural industry. Internal validation indicates a marked accuracy improvement over competitor forecasts. We are trailing our forecasts with the UK's main supplier of fresh salads to supermarkets, and a top 6 carrot producer that in combination oversee £0.5bn of produce.

The CTO offers strong technical leadership and provides expertise in data analysis and established connections with stakeholders. His recent consultancy experience has involved software development and validation for Ag-Space's international digital agricultural platform and a collaborative flood risk assessment for Standard & Poor's. He has prior experience supporting graduate projects and an EC funding Climate KIC Pioneer.

Project Description:

This project will explore how sea surface temperature (SST) of the North Atlantic Ocean can be used as a predictor for UK rainfall. Previous studies have focused on the relationship between SST and long-term weather averages, however this project will explore daily variability in summer rainfall at a local scale. Forecasts of this type deliver unique information for planning and mitigation. The project will build upon an existing forecast system to predict weather risks.

The goal of the placement is to establish spatial features of SST that are correlated to summer rainfall types (persistent wet/dry days, local thunderstorms, weather system fronts, extreme wet events etc) at different locations in the UK. Time series data for UK rainfall types/categories will therefore be provided for a selection of UK weather observation sites.

Historical satellite measurements of sea temperature will be used as a predictor, provided from the ESA Along-Track Scanning Radiometer (ATSR) as spatially gridded datasets from 1991 to present. This will firstly be accessed, downloaded and processed using the ESA Climate

Change Initiative Data Portal Toolbox, using community Python code, processing and visualisation tools to facilitate the analysis.

Technical support and end-user requirement discussions will focus the outcome toward and early prototype development or proof of technical feasibility. Insights will later be incorporated into our existing software architecture with the view to start customer trials during summer 2018. One or more visits will be made to stakeholders.

Applicant Specification:

- A STEM graduate, with some computer programming experience.
- A clear understanding of risk/probability-based approaches or predictive systems
- Demonstrated ability to solve complex problems
- Ability to clearly communicate to non-technical audiences
- Self-motivation and technical leadership qualities are essential.

Further details:

8 weeks minimum fixed term contract to be agreed with successful candidate but nominally with a start date on or before 7 March, 2018. Salary is £1,500 per calendar month.

Closing Date for Applications: 15th February, 2018

Applications will be through the online form attaching a CV, before the closing date. They will be checked for eligibility and forwarded to the employer.