

JOB DESCRIPTION

Vacancy reference:	SRF29526
Post Title:	PDRA in numerical methods for data assimilation with big data
Grade:	Grade 6
School/Department:	Meteorology
Reports to:	Prof Sarah L Dance
Responsible for:	N/A

Purpose

To develop new and efficient methods for data assimilation with large, non-uniform observational datasets.

Main duties and responsibilities

The Department of Meteorology at the University of Reading invites applications for a postdoctoral research position, funded by the EPSRC project "Data Assimilation for the Resilient City" (DARE) – (<https://research.reading.ac.uk/dare/>). Data assimilation is an emerging mathematical technique for improving predictions from large and complex forecasting models, by combining uncertain model predictions with a diverse set of observational data in a dynamic feedback loop. The goal of the project is to use Data Assimilation tools and techniques to create a step-change in skill for numerical predictions of urban natural hazards. As we move towards the era of exascale computing, a key issue is the ability to process large volumes of uncertain observation data efficiently. The research undertaken by the post holder will develop new methods initially in an idealized system, to underpin quantitative use of a diverse range of large observation datasets.

The post holder will

- Develop new data assimilation implementation schemes, using ideas from fast multipole methods
- Develop improved understanding of observation uncertainty for a diverse range of observation datasets
- Collaborate with project partners such as the University of Leeds and Met Office.
- Contribute to the writing of papers and reports for publication in leading academic journals and other relevant media.
- Disseminate research findings through participation in workshops, conferences, etc.

Supervision received

The successful candidate will report to Prof Sarah L. Dance (Meteorology/Mathematics & Statistics). Detailed supervision will be given.

Supervision given

None

Contact

The successful candidate will be based at the University of Reading, Department of Meteorology but with close contact with colleagues in Mathematics & Statistics. The candidate will be expected to collaborate with several project partners including, but not limited to, the Institute for Environmental Analytics, University of Leeds, Met Office.

Terms and conditions

This is a full-time, fixed term post of up to 20 months. The post holder will be resident in the UK for the entire period of this contract. There are no specified hours of work, but you will be required to work such hours as are necessary to carry out the duties associated with the post. Overtime is not payable.

This document outlines the duties required for the time being of the post to indicate the level of responsibility. It is not a comprehensive or exhaustive list and the line manager may vary duties from time to time which do not change the general character of the job or the level of responsibility entailed.

Date assessed:

PERSON SPECIFICATION

Job Title	School/Department
PDRA in numerical methods for data assimilation with big data	Meteorology

Criteria	Essential	Desirable
Skills Required	<ul style="list-style-type: none"> • Able to communicate effectively, both orally and in writing. • Strong analytical and problem solving skills • Able to write and adapt computer programs. 	<ul style="list-style-type: none"> •
Attainment	<ul style="list-style-type: none"> • Have (or expect shortly to obtain) a PhD or equivalent experience, in mathematics, a quantitative physical science, or engineering • A good honours degree in mathematics, a quantitative science or engineering subject 	<ul style="list-style-type: none"> • Appropriate publication record
Knowledge	<ul style="list-style-type: none"> • Scientific Computing/Numerical analysis 	<ul style="list-style-type: none"> • Data assimilation • Numerical weather prediction • Remote sensing • Parallel computing
Relevant Experience	<ul style="list-style-type: none"> • Postgraduate level research in a computational, physical, mathematical or engineering science. • Experience giving oral presentations and writing scientific papers 	<ul style="list-style-type: none"> • Postgraduate experience in numerical analysis • Postgraduate experience in data assimilation • Postgraduate experience in remote sensing • Postgraduate experience in supercomputing
Disposition	<ul style="list-style-type: none"> • Self-motivated with the ability to take initiative • Team working - able to interact constructively and proactively with both internal and external collaborators, and attend national and international meetings and conferences. 	

Other	<ul style="list-style-type: none">• Able to communicate effectively, both orally and in writing.• Strong analytical and problem solving skills• Able to write and adapt computer programs.•	
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Completed by: S. L. Dance	Date: 26/7/2019
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