DEPARTMENT OF PHYSICS

# Job description and selection criteria

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| **Job title** | **Postdoctoral Researcher** |
| **Division** | **Mathematical, Physical & Life Sciences (MPLS)** |
| **Department** | **Physics** |
| **Location** | **Atmospheric, Oceanic and Planetary Physics (AOPP), Clarendon Laboratory, Parks Road, Oxford OX1 3PU** |
| **Grade and salary** | **Grade 07S : £29,099 - £35,788 p.a.** |
| **Hours** | **37.5** |
| **Contract type** | **Fixed-term (42 months)** |
| **Reporting to** | **Professor Tim Palmer / Dr Laure Zanna** |
| **Vacancy reference** | **101890** |
| **Closing date** | **29th February 2012** |
| **Additional information** | **One post available** |

# Introduction

## The University

The University of Oxford is a complex and stimulating organisation, which enjoys an international reputation as a world-class centre of excellence in research and teaching. It employs over 10,000 staff and has a student population of over 20,000.

Most staff are directly appointed and managed by one of the University's 130 departments or other units within a highly devolved operational structure - this includes 5,600 'academic-related' staff (postgraduate research, computing, senior library, and administrative staff) and 2,850 'support' staff (including clerical, library, technical, and manual staff). There are also over 1,600 academic staff (professors, readers, lecturers), whose appointments are in the main overseen by a combination of broader divisional and local faculty board/departmental structures. Academics are generally all also employed by one of the 38 constituent colleges of the University as well as by the central University itself.

Our annual income in 2009/10 was £879.8m. Oxford is one of Europe's most innovative and entrepreneurial universities: income from external research contracts exceeds £367m p.a., and more than 60 spin-off companies have been created.

For more information please visit www.ox.ac.uk

## Mathematical, Physical & Life Sciences Division

The Mathematical, Physical and Life Sciences (MPLS) Division is one of the four academic divisions of the University of Oxford. We have over 6,000 students and research staff, and generate over half of our funding from external research grants.

The MPLS Division's 10 departments and 3 interdisciplinary units span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our research addresses major societal and technological challenges and is increasingly interdisciplinary in nature. We collaborate closely with colleagues in Oxford across the medical sciences, social sciences and humanities.

Today's scientific research not only crosses traditional subject boundaries, but also transcends national boundaries: MPLS scientists collaborate with researchers from around the world, and play leading roles in many international projects.

For more information please visit: http://www.mpls.ox.ac.uk/home

## Department of Physics

Oxford Physics is one of the largest and most eminent departments in Europe – pursuing forefront research alongside training the next generation of leaders in Physics.

With an academic staff of almost one hundred our activities range from fundamental particles to the furthest reaches of the universe to manipulating matter on an atomic scale. Oxford physicists are probing new ways to harness solar energy, modelling the Earth's

atmosphere to predict the future climate, exploring computation on the quantum scale and executing calculations that reveal the fundamental structure of space and time.

For more information please visit: http://www2.physics.ox.ac.uk/

**Atmospheric, Oceanic & Planetary Physics (AOPP)**

The post-holder will be based in the Atmospheric, Oceanic and Planetary Physics sub-department (Robert Hooke Building Annexe), which is one of the six sub-departments that together make up the Department of Physics; these are Astrophysics, Atomic and Laser Physics, Atmospheric, Oceanic and Planetary Physics, Condensed Matter Physics, Particle Physics and Theoretical Physics. Members of all sub-departments take part in research, teaching and matters such as examinations, discussion of syllabi, lectures and liaison with undergraduates and postgraduate students.

For more information please visit:

http://www2.physics.ox.ac.uk/research/atmospheric-oceanic-and-planetary-physics

## Job description

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|---|---|
| **Research topic** | Representing uncertainty in ocean observations and the ocean model, for coupled ensemble data assimilation and ensemble extended-range prediction |
| **Principle Investigator / supervisor** | Professor Tim Palmer & Dr Laure Zanna |
| **Project team** | Predictability of Weather and Climate Group |
| **Project web site** | http://www2.physics.ox.ac.uk/research/predictability-of-weather-and-climate |
| **Funding partner** | Natural Environment Research Council (NERC) |
| **Recent publications** | |
| **Technical skills** | |

### Overview of the role

We are looking for a postdoctoral researcher in the Predictability of Weather and Climate group (http://www2.physics.ox.ac.uk/research/predictability-of-weather-and-climate) within the sub-Department of Atmospheric, Oceanic and Planetary Physics (AOPP). This post will be available from April 1st 2012, for up to 42 months.

This position is funded by a NERC research grant awarded to Professor Tim Palmer and Dr Laure Zanna. The work will build on developments initiated at ECMWF, firstly to develop more stochastically based sub-grid parameterisations for the ocean component of the ECMWF coupled model forecast system and secondly to study coupled model predictability using oceanic singular vectors. It is expected that the successful applicant will work closely with scientists from ECMWF, and will use the supercomputing facilities there.

The successful applicant is expected to work closely with Professor Palmer and Dr Zanna to develop research strategies, and will take responsibility for the relevant model developments. The results will be presented at national and international meetings as well as published in peer reviewed publications, and may lead to implementations in operational weather and climate models.

### Responsibilities/duties

- The development of original research and analysis strategies
- Responsibility for the relevant model development
- Setting up integrations on local computing and remote supercomputing facilities
- The presentation of the results at national and international meetings and their publication in high-impact peer-reviewed journals
- Liaising with scientists in operational centres, for possible implementation of code in operational weather and climate models.
- Contribution to the intellectual life of the research group, including meetings and collaborations, as required

## Selection criteria

Applicants should have a doctorate in climate physics or a related field and ideally a strong numerical modelling background. The candidates we are seeking should have a sound knowledge of either comprehensive weather or climate models, or some experience with multi-scale nonlinear dynamical systems and/or stochastic modelling from other areas of physics. The candidates should have the drive to perform novel research of international standing in a dynamic working environment and should be willing to work with scientists in operational weather and climate prediction centres.

### Essential

- Good first degree and doctorate in physics or mathematics
- Good understanding of climate physics
- Background in numerical modelling of nonlinear systems
- Excellent computing skills, including the knowledge of UNIX/Linux, FORTRAN and other high-level languages
- Demonstrated drive and ability to perform novel research of international standing
- The curiosity and ability to analyse complex phenomena and to summarise the findings in peer-reviewed publications

### Desirable

- Doctorate in climate physics
- Experience with the development of global climate models

## How to apply

If you consider that you meet the selection criteria, click on the **Apply Now** button on the 'Job Details' page and follow the on-screen instructions to register as a user. You will then be required to complete a number of screens with your application details, relating to your skills and experience. When prompted, please provide details of two referees and ask them to forward their reference to Monika Porada (Porada@atm.ox.ac.uk) **by noon on the closing date** or indicate whether we can contact them if you have been short-listed. You will also be required to upload a CV and supporting statement. The supporting statement should describe what you have been doing over at least the last 10 years. This may have been employment, education, or you may have taken time away from these activities in order to raise a family, care for a dependant, or travel for example. Your application will be judged solely on the basis of how you demonstrate that that you meet the selection criteria outlined above and we are happy to consider evidence of transferable skills or experience which you may have gained outside the context of paid employment or education.

Please save all uploaded documents to show your name and the document type.

All applications must be received by **midday** (UK time) on the closing date stated in the online advertisement.

Should you experience any difficulties using the online application system, please email recruitment.support@admin.ox.ac.uk.

To return to the online application at any stage, please click on the following link www.recruit.ox.ac.uk.

**Please note that you will be notified of the progress of your application by automatic e-mails from our e-recruitment system. Please check your spam/junk mail regularly to ensure that you receive all e-mails.**