Department of Physics
Clarendon Laboratory
Parks Road, Oxford OX1 3PU

UNIVERSITY OF OXFORD

Job description and selection criteria

Job title	Postdoctoral Research Assistant in Ocean Modelling
Division	Mathematical, Physical and Life Sciences Division
Department	Department of Physics
Location	Atmospheric, Oceanic and Planetary Physics, Clarendon Lab, Parks Road, Oxford, OX1 3PU
Grade and salary	Grade 7: £30,434 – £37,394 per annum
Hours	Full time - 37.5 hours per week
Contract type	Fixed-term for 32 months; funded by a fixed-term NERC research contract, starting date flexible.
Reporting to	Professor David Marshall
Vacancy reference	119325
Additional information	Closing date: Midday (UK time) on 30th September 2015

Athena SWAN Silver Award

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 11,000 staff and has a student population of over 22,000.

Our annual income in 2013/14 was £1,174.4m. Oxford is one of Europe's most innovative and entrepreneurial universities: income from external research contracts exceeds £478.3m p.a., and more than 80 spin-off companies have been created.

Oxford is a collegiate university, consisting of the central University and colleges. The central University is composed of academic departments and research centres, administrative departments, libraries and museums. There is a highly devolved operational structure, which is split across four academic divisions, Academic Services and University Collections and University Administrative Services. For further information, please see: www.ox.ac.uk/staff/about_the_university/new_to_the_university/structure_of_university.

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

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.

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 focused on key interdisciplinary issues. We collaborate closely with colleagues in Oxford across the medical sciences, social sciences and humanities, and with other universities, research organisations and industrial partners across the globe in pursuit of innovative research geared to address critical and fundamental scientific questions.

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

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/

Sub-department

The post-holder will be based in the Atmospheric, Oceanic and Planetary Physics sub-department, 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, with a seventh function (Central Physics) providing administrative and technical support to these sub-departments. 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.

Athena Swan Charter

The University of Oxford is a member of the Athena SWAN Charter and holds an institutional Bronze Athena SWAN award. The Department of Physics holds a departmental Silver Athena award in recognition of its efforts to introduce organisational and cultural practices that promote gender equality in SET and create a better working environment for both men and women.

Job description

Research topic	Subpolar ocean dynamics and teleconnections
Principal Investigator / supervisor	Professor David Marshall
Project team	Professor Helen Johnson (Department of Earth Sciences)
Project web site	www.ukosnap.org
Funding partner	The funds supporting this research project are provided by the Natural Environment Research Council (under the international OSNAP project).
Recent publications	See http://www2.physics.ox.ac.uk/contacts/people/marshalld www.earth.ox.ac.uk/~helenj/work/publications/
Technical skills	Ability to work with state-of-the-art ocean circulation models; strong background in physical, mathematical and/or computational science.

Overview of the role

This post is part of the UK contribution to the international “Overturning in the Subpolar North Atlantic Program” (OSNAP) to deliver a step change in understanding of the physics of subpolar gyre processes and their impact on climate variability. The objective of this post is to identify the teleconnections between subpolar forcing anomalies (surface wind and buoyancy forcing anomalies, and interior buoyancy anomalies, including those measured by the OSNAP observational array) and the strength and structure of the subpolar gyre and overturning circulation at lower latitudes. This will be achieved through a combination of adjoint modelling at non-eddying resolution, high-resolution eddy-permitting forward modelling and theoretical analysis. As well as unravelling the contributions of local and remote wind and buoyancy forcing to the subpolar gyre, the overturning circulation and other climatically relevant metrics such as heat transport, this will aid the design of a longer term

monitoring system and the attribution of heat content changes. This post provides an outstanding opportunity to work on cutting edge questions in ocean dynamics and modelling, as part of a major international research programme.

Responsibilities/duties

The post holder will be responsible for:

1. Designing, implementing and analysing a suite of adjoint model calculations to explore the sensitivity of key ocean circulation metrics in the subpolar North Atlantic to surface wind and buoyancy forcing, and to interior anomalies observed by the OSNAP array.
2. Designing, implementing and analysing forward model experiments at higher, eddy-permitting resolution motivated by the adjoint model results.
3. Interacting with the wider UK and International OSNAP community through attendance at key national and international meetings, participation in online dialogues, and collaboration with OSNAP partners as appropriate.
4. Contributing to the intellectual life of the Physical Oceanography Group at Oxford.
5. Timely dissemination of results through international peer-reviewed publications, conference and project meeting presentations, and online media.

The post-holder will have the opportunity to teach. This may include lecturing, small group teaching, and tutoring of undergraduates and graduate students. The post-holder will also have the opportunity to broaden their skills through participation in an OSNAP research cruise if desired.

Selection criteria

Essential

1. Strong numerical modelling skills
2. Proven track record of strong and productive original research in physical, mathematical or computational science.
3. A PhD in a physical, mathematical or computational science or be very close to obtaining one.
4. Demonstrated ability to work successfully with complex numerical models on high-performance computers.
5. Demonstrated ability to design, implement and analyse a portfolio of numerical calculations to address specific research questions.
6. Proven organisational skills and demonstrable ability to work independently as well as part of a team
7. Excellent interpersonal skills.

8. Strong verbal and written communication skills, including the ability to present results to non-specialist scientific audiences.
9. Ability and willingness to acquire strong understanding and knowledge of ocean dynamics and their role in climate variability

Desirable

1. Experience of working with ocean and/or climate models.
2. Experience of working with the MITgcm and/or adjoint models.
3. Knowledge of Physical Oceanography and/or Climate Physics.
4. Knowledge of Fluid Dynamics.

Pre-employment screening

Please note that the appointment of the successful candidate will be subject to standard pre-employment screening, as applicable to the post. This will include right-to-work, proof of identity and references. All applicants must read the candidate notes on the University's pre-employment screening procedures, found at:

https://www.ox.ac.uk/about/jobs/preemploymentscreening/.

All academic and related posts (any grade above grade 5) are subject to the University's retirement policy. The University operates an employer justified retirement age, for which the retirement date is the 30 September immediately preceding the 68th birthday. Applicants should be aware that any employment beyond the University's retirement age is subject to approval through the procedures outlined at:

www.admin.ox.ac.uk/personnel/end/retirement/acrelretire/ejra/.

Working at the University of Oxford

For further information about working at Oxford, please see:
www.ox.ac.uk/about_the_university/jobs/research/

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 indicate whether we can contact them at this stage. You will also be required to upload a CV, publication list and supporting statement which explains how you meet the selection criteria for the post. The supporting statement should explain your relevant experience which may have been gained in 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** on the closing date stated in the online advertisement.

Information for Priority Candidates

A priority candidate is a University employee who is seeking redeployment owing to the fact that he or she has been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing departments.

If you are a priority candidate, please ensure that you:

- attach your redeployment letter to your application

- explain in your covering letter how you meet the selection criteria for the post.

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

Further help and support is available from
http://www.ox.ac.uk/about_the_university/jobs/support/

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.