

# Department of Physics

Clarendon Laboratory  
Parks Road, Oxford OX1 3PU



## Job description and selection criteria

<b>Job title</b>	Postdoctoral Research Assistant in Climate and Ocean Physics
<b>Division</b>	Mathematical, Physical and Life Sciences Division
<b>Department</b>	Department of Physics
<b>Location</b>	Atmospheric, Oceanic & Planetary Physics (AOPP), Clarendon Laboratory, Parks Road, Oxford OX1 3PU
<b>Grade and salary</b>	Grade 7: £30,434 – £37,394 per annum
<b>Hours</b>	Full time – 37.5 hours per week
<b>Contract type</b>	Fixed-term for 17 months; funded by a NERC standard grant
<b>Reporting to</b>	Prof. Laure Zanna
<b>Vacancy reference</b>	119831
<b>Additional information</b>	Closing date: Midday (UK time) on Monday 9 <sup>th</sup> November 2015



## **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](http://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/>

## Atmospheric, Oceanic & Planetary Physics (AOPP) Sub-department

The post-holder will be based in the Atmospheric, Oceanic & 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

<b>Research topic</b>	Eddy-Mean Flow Interaction and (Stochastic) Sub-grid parametrization
<b>Principal Investigator / supervisor</b>	Prof. Laure Zanna
<b>Project team</b>	Climate and Ocean Physics
<b>Project web site</b>	<a href="#">Research Website</a>
<b>Funding partner</b>	Natural Environment Research Council (NERC)
<b>Recent publications</b>	<a href="#">Porta Mana &amp; Zanna, Oc. Modelling (79), 2014</a>

### Overview of the role

Applications are invited for a postdoctoral researcher to work in the Climate and Ocean Physics Group, based within the sub-department of Atmospheric, Oceanic and Planetary Physics at the University of Oxford. The post is available immediately and for 17 months.

The successful applicant will work closely with Prof Laure Zanna to develop novel and creative approaches (e.g. based on stochastic physics, non-viscous fluids ...) to represent eddy-mean flow interactions in the next generation of ocean climate models. The work will build upon recent projects carried out within the [Climate and Ocean Physics Group](#). The aim of the work is to provide new insights on the role of mesoscale eddies in setting the large-scale ocean flows (e.g., Gulf Stream, Antarctic Circumpolar Current) and their impact on climate variability and predictability. The aims will be achieved by using some combination of theoretical, observational and numerical analysis. The details will be agreed in discussion with the successful applicant.

The candidates should have the drive to perform novel research of international standing in a dynamic working environment and should be willing to engage with scientists in Oxford

and at other research centers. Ultimately, the candidate will be provided with an excellent opportunity to work on a key problem in climate science, namely the effect of sub-grid scale processes onto the large-scale flow (e.g., energy backscatter, low-frequency variability, atmospheric regimes) and also inform new parametrizations of ocean mesoscale eddies to improve our climate forecasting capability.

## **Responsibilities/duties**

The post holder will be responsible for:

1. The development of original research and analysis strategies to build an understanding of the role of ocean eddies in climate and their representation in numerical models
2. Developing and testing numerical simulations at different resolutions alongside with analysis of data
3. Management of their own research activity, including involvement in key decisions on research directions, methodologies and research responsibilities and the use of computational resources
4. Timely dissemination of results through national and international meeting presentations, and high-impact peer-reviewed publications
5. Contribution to the intellectual life of the Climate and Ocean Physics group.

The post-holder will have the opportunity to teach. This may include lecturing, small group teaching, and tutoring of undergraduates and graduate students.

## **Selection criteria Essential**

1. A PhD in a physical, mathematical, computational or engineering science or be very close to obtaining one
2. Demonstrated drive and ability to lead and perform original research of international standing in physical, mathematical or computational science
3. Strong background in applied physics (e.g., nonlinear dynamics, fluid dynamics, statistical mechanics, stochastic physics)
4. Proven experience in numerical modelling of nonlinear systems and/or analysis of complex datasets
5. Excellent computing skills, including the knowledge of Linux or UNIX based operating systems, and other high level programming languages
6. Ability to analyse complex phenomena using theoretical and numerical approaches to understand ocean and climate dynamics and to summarise the findings in peer-reviewed publications
7. Excellent written and verbal communication skills.

## Desirable

1. Knowledge of geophysical fluid dynamics
2. Experience with running and analyzing ocean and/or climate models
3. Experience with analyzing high-resolution ocean and/or atmospheric datasets

## 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/](http://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/](http://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 with a full up-to-date peer-reviewed publication list, a brief statement of research, and a 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.

<b>Information for Priority Candidates</b>
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*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](mailto:recruitment.support@admin.ox.ac.uk)

Further help and support is available from [http://www.ox.ac.uk/about\\_the\\_university/jobs/support/](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](http://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.