



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Seismology

School of Earth and Environment, Faculty of Environment



Salary: Grade 7 (£32,548 – £38,833 p.a.)

Please note that due to funding limitations an appointment is unlikely to be made above £35,550

Reference: ENVEE1188

Closing date: 29 October 2017

Interviews are expected to be held on Monday 20 November 2017

Fixed term for three years (external funding)

Research Fellow in Seismology

School of Earth and Environment, Faculty of Environment

Are you an ambitious researcher looking for your next challenge? Do you have a background in seismology? Do you want to further your career in one of the UK's leading research intensive Universities?

Based in the [Institute of Geophysics and Tectonics \(IGT\)](#), you will contribute to a [Natural Environment Research Council \(NERC\)](#) funded project which aims to better understand the uncertainty in earthquake locations and magnitudes in local and regional settings. Joining a group of researchers using seismic methods to understand Earth processes you will work closely with [Dr Andy Nowacki](#) in Leeds in collaboration with [Professor Andrew Curtis](#) in Edinburgh and Dr Brian Baptie at the [British Geological Survey](#). As part of the Edinburgh Interferometry Project (EIP), a consortium of researchers and industry partners researching ways to improve the imaging and monitoring of the Earth's subsurface, you will have the opportunity to visit both EIP and the BGS in Edinburgh in addition to engaging with project partners including the Oil and Gas Authority, INGV, Italy, and the EIP industrial sponsors.

Specifically you will extend existing Monte Carlo methods to jointly locate earthquakes, estimate their magnitudes, and map the subsurface seismic velocity structure whilst for the first time determining the fully covariant uncertainties between these important quantities. You will then apply the method to datasets including the aftershock sequence from the 2016 M6.0 Amatrice, Italy event and mine collapse earthquakes from New Ollerton, Nottinghamshire, imaging the seismicity and subsurface velocity here and elsewhere. You will then use your new models to test how traditional magnitude calculations may be susceptible to unknown uncertainties. An improved understanding of magnitude and location uncertainty will help us build testable models of Earth structure and monitor industrial activity more robustly.

With a PhD (or close to completion) in geophysics, physics or earth sciences, or a closely allied discipline, you will also have extensive experience with scientific programming and software development. Experience in locating local seismicity and with local seismic tomography is desirable.



What does the role entail?

As a Research Fellow your main duties will include:

- Working with [Dr Andy Nowacki](#) and with Professor Andrew Curtis and Dr Brian Baptie, in support of the research grant to ensure the project is successfully completed;
- Developing a method to jointly infer the subsurface seismic velocity structure and earthquake parameters, and applying the method to datasets of seismic arrival times;
- Creating a synthetic dataset of seismic arrival times and using this to validate the new joint velocity–hypocentre inference method;
- Generating and pursuing original research ideas in imaging seismicity and subsurface seismic structure;
- Developing research objectives and contributing to the direction of the research project and team, including, preparing proposals for funding in collaboration with colleagues where appropriate;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Communicating or presenting research results through publication or other recognised forms of output;
- Preparing papers for publication in leading international journals and independently writing reports;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the research culture of the School, where appropriate;
- Contributing to the training of both undergraduate and postgraduate students, where appropriate, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.



What will you bring to the role?

As a Research Fellow you will have:

- A PhD (or be close to completion) in geophysics, physics or earth sciences, or a closely allied discipline;
- Extensive experience with scientific programming and software development;
- Demonstrated experience of investigating a geophysical problem using seismic or computational methods;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;
- Excellent written and verbal communication skills including presentation skills and the ability to communicate effectively with a wide range of stakeholders;
- Proven ability to manage competing demands effectively, responsibly and without close support;
- A proven ability to work well both individually and in a team;
- A strong commitment to your own continuous professional development.

You may also have:

- A track record of high-quality, peer-reviewed publications in geophysics and seismology;
- Experience in locating local seismicity and with local seismic tomography;
- Experience of forward numerical modelling of seismic wave propagation;
- Experience of linearised or fully nonlinear inversion;
- Experience of using high-performance computing (HPC) environments;
- Experience in computing earthquake magnitudes from seismic data.

How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.



Contact information

To explore the post further or for any queries you may have, please contact:

Dr Andy Nowacki, Leverhulme Early Career Fellow

Tel: +44 (0)113 343 9630

Email: A.Nowacki@leeds.ac.uk

Additional information

Find out more about the [Faculty of Environment](#) and our [School](#).

Find out more about our [Research](#).

Find out more about Equality and Inclusion and Athena Swan in the [Faculty](#) and the [University](#).

Working at Leeds

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.

Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at disclosure@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

