Job Title: Postdoctoral Research Associate in GIS for Environmental Health
Grade: 7
Salary: £34,189 to £39,609 per annum
Department: Centre for Environmental Health and Sustainability, Health Sciences
Hours/Contract: Full-time, fixed term contract for 18 months (available immediately)
Reference: 759

Role Purpose
This specialised post involves using spatial databases and geographical information systems (GIS) to estimate environmental exposures, with a focus on environmental noise. You will have experience of manipulating and analysing data within a GIS (e.g. ArcGIS; PostGIS; QGIS), applying environmental models using scripting languages (e.g. R, Python, SQL), and analyzing environmental data using statistical software (e.g. R, STATA, SPSS).

The post involves running existing scripts to apply the UK (Calculation of Road Traffic Noise; CRTN) and European-wide (Common Noise Assessment Methods in Europe; CNOSSOS-EU) road traffic noise models to estimate residential noise levels. These data will be integrated in a GIS along with data on rail and aircraft noise provided by external partners. You will also be involved in analysing the relationship of measured noise levels with measured ultra-fine particles (UFP) from a current study at Gatwick airport. You will be responsible for maintaining large datasets and assist or lead in the production of scientific and technical reports. The models and data on noise levels will be used to undertake outdoor residential exposure assessment and provide data on noise level exposures to planned epidemiological studies.

The funding for this post relates to four externally funded project: 1) MRC-funded ANCO - long-term cardiovascular impacts of aircraft noise near major airports in the UK, 2) NIHR-funded RISTANCO - effects of the day-to-day variability in flight paths related to Heathrow airport on hospital admissions and deaths from cardiovascular disease, 3) MRC-funded METAHIT – UK-wide effects of transport interventions on residential exposure to road traffic noise, and 4) MRC-funded CLUE – the relationship of cognitive development and noise exposure for children living in London.

You will be based in the Centre for Environmental Health and Sustainability (CEHS). CEHS is a new enterprise within the University of Leicester with the overarching aim to improve human health and the health of the environment through cutting edge multidisciplinary research. Noise is one of the primary research themes within CEHS.

You will report to Professor John Gulliver who is lead investigator at University of Leicester for noise modelling and exposure assessment.

<table>
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<tr>
<th>Main Duties and Responsibilities</th>
<th>% Time</th>
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<tbody>
<tr>
<td>Working closely with Professor John Gulliver, and partner researchers at University of Leicester and other universities, to apply noise models to undertake noise exposure assessment for epidemiological studies</td>
<td>40</td>
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<tr>
<td>Collate, integrate, and analyse data on rail and/or aircraft noise from external sources and use these data to estimate residential exposures</td>
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<td>Analyse the relationship of spatial distributed measurements of noise levels and ultra-fine particles (UFP) from the area around Gatwick airport to inform a study on the potential of UFP to confound studies on the relationship of noise and health (ANCO project)</td>
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</table>
### Job Summary

- Undertake model evaluation studies comparing noise level measurements with modelled noise levels from ‘in-house’ models or from data supplied by external partners
- Writing up analyses for publication in peer-reviewed journals
- Participating in seminars and work-in-progress meetings within the Centre and with external partners
- To ensure that all research activities undertaken are in compliance with the 'Research Code of Conduct' operated by the University

### Internal and External Relationships

The University of Leicester is leading on two of the studies: ANCO and RISTANCO. Both of these studies have external partners in London. Cambridge University lead on the METAHIT project; other partners are at London universities and Norway. Imperial College London lead on the CLUE project; other partners are at King’s College London. The projects are UK focused but will have international significance and therefore results will be presented at both UK and overseas conferences.

### Planning and Organising

You will be responsible for the day-to-day management and progress of the various project elements in relation to specified milestones and deliverables. Regular meetings will be held between the post-holder and Professor John Gulliver, which will sometimes involve Professor Anna Hansell (Centre Director and lead investigator on ANCO and RISTANCO); occasional meetings will be held, either in person or via Skype, with external project partners. You will be required to effectively manage your own time to deliver on the priorities of the post, and arrange meetings as required in order to respond to challenges and to facilitate progress.

### Qualifications, Knowledge and Experience

#### Essential

- A PhD (or equivalent experience) in environmental exposure science, GIS, environmental science, applied acoustics, or a relevant discipline*
- Experience of applying environmental models within or linked to spatial databases and/or GIS*
- Experience in modifying and automating GIS processes with R, Python or related languages*
- Experience of analysing environmental data using statistical techniques*
- Experience of handling large and complex data sets on population and the environment*
- Practical experience of using GIS software in an analytical context*

#### Desirable

- A good understanding of the development and use of environmental exposure data in epidemiological analyses*
- Experience of noise modelling*
- Experience of establishing parallel processing for models on high performance computers (HPC)*
- Project management experience
Job Summary

- Project management experience*
- Experience of protocol and report preparation*
- Experience of preparation of manuscripts for scientific journals*

Skills, Abilities and Competencies

Essential
- An excellent command of computers, and common (e.g. MS Office) and specialist GIS (e.g. ArcGIS, QGIS, PostGIS) and statistical (e.g. R, STATA and/or SPSS) software packages*
- Excellent written and oral communication skills
- Excellent organisational and time management skills
- Excellent interpersonal skills
- Ability to learn quickly in new areas of work
- Ability to work independently and as part of an international team
- High level of proficiency in English, sufficient to undertake research and administrative activities utilising English Language materials and to communicate effectively with staff and students*

Desirable
- Ability to take the initiative and be a self-starter

*Criteria to be used in shortlisting candidates for interview

VITAL

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Equality and Diversity

We believe that equality, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.