



## THE POST

<b>College:</b>	<a href="#"><u>College of Engineering, Mathematics and Physical Sciences</u></a>
<b>Post:</b>	<b>Postdoctoral Research Fellow / Senior Research Fellow</b>
<b>Reference No:</b>	<b>P82973</b>
<b>Grade:</b>	<b>F / G</b>
<b>HERA:</b>	<b>RFEL / SRF</b>
<b>Reporting To:</b>	<b>Prof Albert Chen</b>
<b>Responsible For:</b>	<b>Research into flood modelling software development, applications and analysis</b>

This full-time post is available immediately for a fixed term of 24 months.

## Job Description

### **Main purpose of the job:**

The successful applicant will focus on expanding the capacity of the Centre for Water Systems' existing methodologies and models to simulate the flood dynamics in various natural and manmade environments more accurately and efficiently. The post will adopt parallel computing technologies, real-time rainfall and radar observations and other environmental sensing information, and numerical weather predictions to provide near real-time flood nowcasting and forecasting. The post will further evaluate flood impacts for risk-based early warning, and assess the risk under future climate and socioeconomic scenarios in order to develop solutions for climate change adaptation.

The post will be supervised by Prof Albert Chen and Prof Slobodan Djordjevic.

### **Main duties and accountabilities (Postdoctoral Research Fellow level):**

1. To undertake research as appropriate to the field of study. The responsibilities may include all or some of the following:
  - Design, code and test the software for flood modelling;
  - Acting as principal investigator on research projects;
  - Developing research objectives, projects and proposals;
  - Conducting individual or collaborative research projects;
  - Identifying sources of funding and contributing to the process of securing funds;
  - Extending, transforming and applying knowledge acquired from scholarship to research and appropriate external activities;
  - Writing or contributing to publications or disseminating research findings using media appropriate to the discipline;
  - Making presentations at conferences or exhibiting work in other appropriate events;
  - Assessing, interpreting and evaluating outcomes of research;
  - Developing new concepts and ideas to extend intellectual understanding;
  - Resolving problems of meeting research objectives and deadlines;
  - Developing ideas for generating income and promoting research area;
  - Developing ideas for application of research outcomes;
  - Deciding on /following research programmes and methodologies, often in collaboration with colleagues and sometimes subject to the approval of the head of the research programme on fundamental issues.

2. To contribute to teaching and to be involved in the assessment of student knowledge including assisting in the supervision of student projects and in the development of student research skills.
3. To act as research team leader including:
  - Mentoring colleagues with less experience and advising on their professional development;
  - Coaching and supporting colleagues in developing their research techniques;
  - Supervising the work of others, for example in research teams or projects;
  - Developing productive working relationships with other members of staff;
  - Co-ordinating the work of colleagues to ensure equitable access to resources and facilities;
  - Dealing with standard problems and help colleagues to resolve their concerns about progress in research.
4. To routinely communicate complex and conceptual ideas to those with limited knowledge as well as to peers using high level skills and a range of media.
5. To present the results of scientific research to sponsors and at conferences.
6. As determined by the nature of the project and at the direction of the PI, to plan, co-ordinate and implement research programme activity including:
  - Managing the use of research resources and ensuring that effective use is made of them;
  - Monitoring and reporting on the use of research budgets;
  - Helping to plan and implement commercial and consultancy activities;
  - Where appropriate, to plan and manage own consultancy assignments;
  - To use research resources, laboratories and workshops as appropriate and to take responsibility for conducting risk assessments, reducing hazards and for the health and safety of others.
7. To engage in continuous professional development and to be responsible for continually updating knowledge and understanding in field of study or specialism and for developing skills.

This job description summarises the main duties and accountabilities of the post and is not comprehensive: the post-holder may be required to undertake other duties of similar level and responsibility. Please visit the Human Resources website to view the Research Fellow role profiles

**Person Specification (Postdoctoral Research Fellow level):**

Applicants will possess a relevant PhD or equivalent qualification/experience in a related field of study. The candidates must demonstrate:

Competency	Essential	Desirable
Attainments/Qualifications	PhD or equivalent qualification/experience in hydraulic engineering or related field.	
Skills and Understanding	<p>Excellent skills in programming languages C/C++ and Python.</p> <p>Experience in GPU computing and programming with CUDA.</p> <p>Software development and repository management experience.</p> <p>Sufficient knowledge in the discipline and of research methods and techniques to work within established research programmes.</p>	<p>Experience in programming language Fortran.</p> <p>Experience in HPC and/or cloud computing, MPI and OpenMP applications.</p> <p>Expertise in data analytics, machine learning and visualisation.</p> <p>Good understanding in environmental sciences.</p> <p>Experience in GIS software</p>

	Ability to communicate effectively, both orally and in writing.	applications and modelling using GDAL.
Prior Experience	Undergraduate-level knowledge in a relevant discipline. Experience of managing research projects and research teams.	Experience in using academic and/or commercial hydrological, hydraulic, and drainage modelling software.  Experience in water quality modelling.  Experience of conducting risk assessments and understanding of health and safety legislation.
Behavioural Characteristics	Ability to work unsupervised and to use initiative.  Able to maintain accurate research records.  Able to communicate material of a specialist or technical nature.  Able to liaise with colleagues and students.  Actively participate as a member of a research team.  Engage in continuous professional development.  Excellent written and verbal communication skills.  Able to communicate complex and conceptual ideas to a range of groups.  Evidence of the ability to collaborate actively within the Institution and externally to complete research projects and advance thinking.  Able to participate in and develop external networks.  Able to balance the pressures of research, administrative demands and competing deadlines.	

#### **Informal Enquiries**

Before submitting an application you may wish to discuss the post further by contacting Prof Albert Chen [a.s.chen@exeter.ac.uk](mailto:a.s.chen@exeter.ac.uk).

### **Main duties and accountabilities (Senior Research Fellow level):**

1. To undertake research as appropriate to the field of study. The responsibilities may include all or some of the following:
  - Design, code and test the software for flood modelling;
  - Acting as principal investigator on research projects;
  - Developing research objectives, projects and proposals;
  - Conducting individual or collaborative research projects;
  - Identifying sources of funding and contributing to the process of securing funds;
  - Extending, transforming and applying knowledge acquired from scholarship to research and appropriate external activities;
  - Writing or contributing to publications or disseminating research findings using media appropriate to the discipline
  - Making presentations at conferences or exhibiting work in other appropriate events;
  - Assessing, interpreting and evaluating outcomes of research;
  - Developing new concepts and ideas to extend intellectual understanding;
  - Resolving problems of meeting research objectives and deadlines;
  - Developing ideas for generating income and promoting research area;
  - Developing ideas for application of research outcomes;
  - Deciding on /following research programmes and methodologies, often in collaboration with colleagues and sometimes subject to the approval of the head of the research programme on fundamental issues.
2. To contribute to teaching and to be involved in the assessment of student knowledge including assisting in the supervision of student projects and in the development of student research skills.
3. To act as research team leader including:
  - Mentoring colleagues with less experience and advising on their professional development;
  - Coaching and supporting colleagues in developing their research techniques;
  - Supervising the work of others, for example in research teams or projects;
  - Developing productive working relationships with other members of staff;
  - Co-ordinating the work of colleagues to ensure equitable access to resources and facilities;
  - Dealing with standard problems and help colleagues to resolve their concerns about progress in research.
4. To routinely communicate complex and conceptual ideas to those with limited knowledge as well as to peers using high level skills and a range of media and to present the results of scientific research to sponsors and at conferences.
5. To present the results of scientific research to sponsors and at conferences.
6. As determined by the nature of the project and at the direction of the PI, to plan, co-ordinate and implement research programme activity including:
  - Managing the use of research resources and ensuring that effective use is made of them;
  - Monitoring and reporting on the use of research budgets;
  - Helping to plan and implement commercial and consultancy activities;
  - Where appropriate, to plan and manage own consultancy assignments;
  - To use research resources, laboratories and workshops as appropriate and to take responsibility for conducting risk assessments, reducing hazards and for the health and safety of others.
7. To engage in continuous professional development and to be responsible for continually updating knowledge and understanding in field of study or specialism and for developing skills.

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**Person Specification (Senior Research Fellow level):**

Applicants will possess a relevant PhD or equivalent qualification/experience in a related field of study. The candidates must demonstrate:

Competency	Essential	Desirable
Attainments/Qualifications	PhD or equivalent qualification/experience in hydraulic engineering or related field.  Be an internationally recognised authority in the subject area.	
Skills and Understanding	Excellent skills in programming languages C/C++, Python and Fortran.  Experience in GPU computing and programming with CUDA.  Experience in HPC and/or cloud computing, MPI and OpenMP applications.  Software development and repository management experience.  Experience in GIS software applications and modelling using GDAL.  Sufficient knowledge in the discipline and of research methods and techniques to work within established research programmes.  Ability to communicate effectively, both orally and in writing.	Expertise in data analytics, machine learning and visualisation.  Good understanding in environmental sciences.
Prior Experience	Experience in using academic and/or commercial hydrological, hydraulic, and drainage modelling software.  Undergraduate-level knowledge in a relevant discipline.  Experience of managing research projects and research teams.	Experience in water quality modelling.  Experience of conducting risk assessments and understanding of health and safety legislation.
Behavioural Characteristics	Ability to work unsupervised and to use initiative.  Able to maintain accurate research records.  Able to communicate material of a specialist or technical nature.  Able to liaise with colleagues and	

	<p>students.</p> <p>Actively participate as a member of a research team.</p> <p>Engage in continuous professional development.</p> <p>Excellent written and verbal communication skills.</p> <p>Able to communicate complex and conceptual ideas to a range of groups.</p> <p>Evidence of the ability to collaborate actively within the Institution and externally to complete research projects and advance thinking.</p> <p>Able to participate in and develop external networks.</p> <p>Able to balance the pressures of research, administrative demands and competing deadlines.</p>	
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#### **Terms & Conditions**

Our Terms and Conditions of Employment can be viewed [here](#).

#### **Further Information**

Please see our [website](#) for further information on working at the University of Exeter.