



POSITION DESCRIPTION

Department of Infrastructure Engineering
School of Electrical, Mechanical and Infrastructure Engineering
Melbourne School of Engineering

Lecturer in Computational Hydrology and Water Forecasting

In line with the special measure H103/2014 provided for under section 12 of the Equal Opportunity Act 2010 (VIC), the Melbourne School of Engineering strongly encourages applications from suitably qualified female candidates.

POSITION NO	0042923
CLASSIFICATION	Lecturer (Level B)
SALARY	\$95,434 - \$113,323 per annum
SUPERANNUATION	Employer contribution of 17%
EMPLOYMENT TYPE	Full-time continuing position available The Melbourne School of Engineering is strongly committed to supporting diversity and flexibility in the workplace. Applications for part-time or other flexible working arrangements will be welcomed and will be fully considered subject to meeting the inherent requirements of the position.
OTHER BENEFITS	http://about.unimelb.edu.au/careers/working/benefits
CURRENT OCCUPANT	New
HOW TO APPLY	Online applications are preferred. Go to http://about.unimelb.edu.au/careers , under 'Job Search and Job Alerts', select the relevant option ('Current Staff' or 'Prospective Staff'), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	Prof QJ Wang Tel +61 3 8344 9781 Email quan.wang@unimelb.edu.au <i>Please do not send your application to this contact</i>

For information about working for the University of Melbourne, visit our websites:
about.unimelb.edu.au/careers
joining.unimelb.edu.au

Position Summary

Observing, modelling and forecasting terrestrial water and vegetation states and processes at a range of spatial and temporal scales is a critical area of water research to tackle a broad range of emerging water challenges. With recent advances in hydrological remote sensing and coupled earth system modelling, combined use of observation and modelling techniques is increasingly important for tackling the challenges and to integrate process knowledge in various parts of the terrestrial water system that provides more comprehensive water information to help manage water and environmental issues.

This position is one of the recently created full-time continuing 'Water and Environmental Engineering' academic positions in the Melbourne School of Engineering. The successful applicants appointed in this cluster hire will enhance collaboration and expand the scale and visibility of water research and teaching at The University of Melbourne. This exciting development will build on the existing team of water researchers who have a strong culture of collaboration, a well-established international research profile and extensive industry-linkages across the water sector in Australia. The School aims to make a significant contribution to a sustainable water future for Australia and other parts of the world experiencing water scarcity and hazards by both generating knowledge and educating engineers to implement this knowledge for society.

This position will be expected to develop an independent and internationally recognised research portfolio in a sub-discipline of computational hydrology and water forecasting complementary to the current water research strengths in Melbourne School of Engineering. You will collaborate to enhance interdisciplinary research within the University and with outside organisations. You will also be expected to contribute to teaching and curriculum development within engineering and to further develop your professional education skills. The successful candidate will make a significant contribution to achieving the aims of the Water and Environment Program within the Melbourne School of Engineering (described in section 3.1). Appointed in Infrastructure Engineering, you will be expected to provide research leadership in your area of expertise, including project development and planning, project management, and supervision of research staff and postgraduate students.

The University seeks to increase the diversity of its workforce and the representation of women in areas they have been traditionally under-represented. Consistent with this, MSE is seeking to increase the representation of women in the academic workforce across engineering disciplines. Under a Special Measure, under Section 12 (1) of the Equal Opportunity Act 2010 (Vic) the School is seeking to lift the representation of women from 20% in 2014 to at least 25% over the next 5 years, and strongly encourages applications from suitably qualified female candidates.

1. Selection Criteria

1.1 ESSENTIAL

- ▶ A PhD or equivalent research experience in environmental engineering, earth system sciences, environmental sensing, applied mathematics, computing sciences or a related discipline;
- ▶ Demonstrated research experience in mathematical, statistical and computer modelling of biophysical systems, in dealing with large data sets, and in using high performance computing, relevant to hydrological modelling and ensemble forecasting.

- ▶ A relevant research track record as evidenced by research publications in high-quality journals, conferences and technical reports, and by successes in technology transfer to industry;
- ▶ Demonstrated potential to achieve the highest levels of scholarship in engineering research;
- ▶ Capacity to teach effectively and develop high quality learning experiences and assessment tools across a broad range of subjects, including the capacity to develop and deliver seminars and lectures and other teaching activities;
- ▶ Excellent communication and interpersonal skills to engage with industry, government, research groups, diverse student cohort and a variety of other stakeholders;
- ▶ Demonstrated ability to work as part of a team, and build rapport with all levels of staff within a diverse work environment;
- ▶ A willingness and ability to supervise graduate research students;
- ▶ Excellent interpersonal, written and oral communication skills;
- ▶ Exhibited commitment to the highest standards of scientific and ethical integrity.

2.2 DESIRABLE

- ▶ Research experience in ensemble hydrological forecasting, including analyses of climate and hydrological data, post-processing of forecasts from weather and climate models, catchment water balance and river routing modelling, hydrological model prediction updating and uncertainty quantification, and verification of ensemble forecasts;
- ▶ Skills in Bayesian statistical modelling and in computer coding using C++ and Python.

2. Key Responsibilities

2.1 RESEARCH – ADVANCEMENT OF THE DISCIPLINE

- ▶ Conduct high-quality research in the areas of computational hydrology, water forecasting and use of forecasts for water resources management;
- ▶ Actively engage academic and industry partners to establish effective collaborations between multidisciplinary groups across the school, the university, and national and international research/industry partners in the areas of water monitoring and modelling;
- ▶ Contribute to knowledge through scholarship, publications in leading journals and with leading publishers, and presentations;
- ▶ Contribute to the success of the research and innovation program within the Water and Environment Program in the Melbourne School of Engineering;
- ▶ Proactively seek funding opportunities to develop a program of research.

2.2 TEACHING AND LEARNING

- ▶ Contribute to delivery of relevant subjects in the Master of Engineering, Specialised Masters or in engineering and breadth subjects taught in the University's New Generation Undergraduate degrees, as directed by the Head of Department or Deputy Head (typically coordinating and delivering 2-2.5 subjects per year)

- ▶ Teach subjects to a standard that delivers a high quality learning experience for students;
- ▶ Ensure availability for consultation with students that fosters their learning;
- ▶ Initiation and development of high quality, innovative subject material;
- ▶ Act as Subject Coordinator with responsibility for the design, development, coordinated delivery and ongoing improvement of that subject and keep the Teaching Liaison Coordinator informed of changes to personnel and/or requirements;
- ▶ Assist with supervision of graduate research students.

2.3 ENGAGEMENT

- ▶ Build and foster partnerships with industry, government, collaborators at other Universities and other stakeholders that contribute to the engagement of teaching and research in the wider community engagement;
- ▶ Actively participate in professional activities including consulting, workshops, meetings of professional societies and short courses for external participants.

2.4 SERVICE AND LEADERSHIP

- ▶ Drive and lead departmental committees and/or projects as required;
- ▶ Participate in administrative functions as required;
- ▶ Undertake Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in Section 4.

3. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the University's People Strategy 2015-2020 and policies that address diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people's age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised.

4. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

<http://safety.unimelb.edu.au/topics/responsibilities/>

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

5. Other Information

5.1 MELBOURNE SCHOOL OF ENGINEERING

www.eng.unimelb.edu.au

The Melbourne School of Engineering is one of Australia's leading Engineering Schools and aims to be the school of choice for the highest performing students and research staff in Australia and within the Times Higher Education Supplement top ten Schools of Engineering internationally by 2020.

The Melbourne School of Engineering's MSE2025 strategy and the University's broader Growing Esteem strategy target research excellence, outstanding teaching and increasing societal impact of its research. MSE2025 has a particular focus on strengthening engagement with industry, government and the community and to meet this challenge, the school has established three innovation platforms that will support cross-faculty research programs in areas of strategic applied research opportunity. One of these is the Green Industries Platform.

The Water and Environment Program is one of the first programs formed within this initiative. It builds on the Water Productivity Blueprint developed for the Carlton Connect initiative in 2014. The Water and Environment Program aims to make an important contribution to a sustainable water future both in Australia and worldwide, and build an outstanding international reputation for excellence in water research, innovation and education.

Fundamental to this mission is an expanding scale of effort in areas with high societal impact and research opportunity, across four sub-programs: River Basins; Agriculture; Water Infrastructure; and Environmental Management. Specifically, we will undertake research and development, with a select group of partners, to achieve the following impacts:

- ▶ Future proofing **River Basins** by stress testing water plans under climate change;
- ▶ Boosting **agricultural** multi-factor productivity through improved sensing, forecasts, analytics, and control;
- ▶ Reducing cost, energy use and environmental impact of **water infrastructure** systems through integrated system planning, treatment innovation and recycling; and
- ▶ Increasing the return on investment from **environmental** water by operationalizing evidence-based **management** and optimising environmental water use.

Innovations in these areas will be fuelled by research excellence with a critical mass that makes MSE internationally visible for its leadership in water science and technology. These areas are well aligned to nourish our Master of Engineering and other teaching programs by contact with cutting-edge practice and research.

The transformation will be realised by: mobilising institutional-level engagement with the key industry partners; recruiting academics with strong industry networks and to fill critical skill gaps; appointing a Project Manager to coordinate a professional client-centred approach; building the necessary professional skills across the research team; and establishing a strong team dynamic to deliver on large initiatives.

The high-level program aims are:

- ▶ To increase the excellence, scale, visibility and impact of water research at The University of Melbourne.
- ▶ To enhance research-industry engagement at national and international levels that will facilitate the increase in Category 2-4 research income.
- ▶ To achieve an overall external funding income (combined Category 1-4) of at least A\$5M p.a. by 2020. External revenue can be considered “as a proxy” for delivering impact.
- ▶ To develop new and improved methodologies and technologies that will enhance the quality of water information for improved decision making.
- ▶ To develop an online education and training program in sustainable water management that builds skills and capability for industry, government and communities.

5.2 THE UNIVERSITY OF MELBOURNE

The University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The University offers staff many benefits and prospective staff are encouraged to view the following web links:

www.unimelb.edu.au

www.growingesteem.unimelb.edu.au

www.unimelb.edu.au/careers

The University of Melbourne has an exceptional breadth of expertise in water research including across the Faculties of Engineering, Law, Business and Economics and Science with expertise in fields across the breadth of water science, policy and planning. The University also has a number of interdisciplinary institutes that complement the discipline depth of our Faculties, including the Melbourne Sustainable Society Institute, the Melbourne Social Equity Institute and the Melbourne School of Government. On an institutional level, water is a central theme in our sustainability and resilience agenda, comprising one of three Grand Challenges identified by the University's *Research at Melbourne Strategy*.

<http://research.unimelb.edu.au/research-at-melbourne/our-strategy>

5.3 EQUITY AND DIVERSITY

Another key priority for the University is access and equity. The University of Melbourne is strongly committed to an admissions policy that takes the best students, regardless of financial and other disadvantage. An Access, Equity and Diversity Policy Statement, included in the University Plan, reflects this priority.

The University is committed to equal opportunity in education, employment and welfare for staff and students. Students are selected on merit and staff are selected and promoted on merit.

5.4 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University. Comprehensive information about the University of Melbourne and its governance structure is available at

www.unimelb.edu.au/unisec/governance.html