# Position Details

## Research Scientist/Engineer-CSOF5

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| The following information is for applicants |
| Advertised Job Title | Coastal Hydrodynamic Modeller |
| Job Reference | 89049 |
| Tenure | Indefinite Full-time, Part-time |
| Salary Range | AU$102,724 - $111,165 + up to 15.4% super |
| Location(s) | Hobart, TAS |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * All Candidates
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| Position reports to the | Research Team Leader |
| Client Focus – Internal | 30% |
| Client Focus – External | 70% |
| Number of Direct Reports | 0 |
| Enquire about this job | **Contact** Emlyn Jones via email at emlyn.jones@csiro.au or phone +61 3 6232 5483 |
| How to apply | Apply online at <https://jobs.csiro.au/> Internal applicants please apply via **Jobs Central**If you experience difficulties when applying, please email careers.online@csiro.au or call 1300 984 220. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the areas that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

**Child Safety**

CSIRO is committed to the safety and wellbeing of all children and young people involved in our activities and programs. View our [Child Safe Policy](https://www.csiro.au/en/about/policies/child-safe-policy).

### Role Overview

The role of Research Scientist Staff in CSIRO is to conduct innovative research leading to scientific achievements that are aligned with CSIRO's strategies. They may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. They will have the opportunity to build and maintain networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts.

This position is located in the Coastal Hydrodynamic Modelling (CHM) team who along with the Coastal Biogeochemical Modelling team sit within the Marine Systems Modelling and Informatics group in the Coastal and Oceanic Systems Program of the CSIRO Environment Business Unit.

The two teams develop and apply integrated, multi-disciplinary models, linking hydrodynamics, sediment dynamics and biogeochemical processes, to address a wide range of coastal environmental issues. This group includes experienced physical and biogeochemical / ecological modellers, and strong technical software support.

The successful candidate will be a hydrodynamic modeller with skills in the development, implementation and interpretation of unstructured hydrodynamic circulation models in waters from estuaries to the upper continental slope.

This position requires a strong background in understanding and developing numerical methods used in unstructured hydrodynamic models, and application of those models to shelf, coastal and estuarine systems. The successful candidate will be a key member of a multidisciplinary group of scientists working on projects to address environmental management issues in the coastal zone.

### Duties and Key Result Areas

1. Incorporate novel approaches to existing or new scientific investigations into unstructured hydrodynamic methods by adapting and/or developing original concepts and ideas. In particular, contribution to the areas of horizontal and vertical mesh discretization, the numerics of momentum advection and diffusion, and tracer transport are sought.
2. By direct involvement, and collaboration across disciplines, contribute to the application of unstructured hydrodynamic models to address issues arising in the marine coastal zone.
3. Be responsible for client liaison, model implementation and calibration and dissemination of model results for existing projects in an independent manner.
4. The group has developed and operates a sophisticated modelling package (Environmental Modelling Suite, EMS). The appointee will adopt and apply this package, and further routine and strategic development in collaboration with other scientists. Also, the appointee will contribute to strategic development of modelling tools and frameworks supporting EMS.
5. Initiate, manage and execute externally funded projects within imposed time and budget limitations.
6. Disseminate results through seminars, conferences, reports and scientific publications.
7. Contribute to meeting mission and business unit objectives as required, or as directed by the Team, Research Group Leader or the Chief.
8. Communicate effectively and respectfully in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
9. Work effectively as part of a multi-disciplinary research team to undertake independent scientific investigations and carry out associated tasks under the guidance of more senior Research Scientists/Engineers.
10. Adhere to the spirit and practice of CSIRO’s Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
11. Other duties as directed.

**Essential Criteria:**

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A PhD (or an equivalent combination of qualifications and research experience) in a relevant field such as physical oceanography, applied fluid dynamics or mathematics. Several years of postdoctoral experience, and a demonstrated record of **innovative development and implementation** of three-dimensional hydrodynamic models to address issues related to coastal, shelf and estuarine circulation.
2. Strong written and oral communication skills including a demonstrated publication history of authorship on scientific papers in peer reviewed journals, preparation of reports and presentation of the results of scientific investigations at national and international conferences and stakeholder meetings.
3. Demonstrated experience in integrating novel numerical methods into unstructured mesh hydrodynamic models and demonstrated ability in interpreting coastal dynamics from unstructured hydrodynamic model output.
4. Demonstrated ability to undertake original, creative and innovative research by generating and pursuing novel ideas and solutions to scientific research problems as part of a multi-disciplinary research team or independently.
5. Demonstrated advanced skills in mathematics, numerical methods and computer programming. Extensive experience with Linux/UNIX-based systems and highly developed programming skills in languages such as C/C++, FORTRAN, Python and MATLAB.

**Desirable**

1. Experience in developing and/or implementing TRiSK numerics in unstructured mesh models.
2. Working knowledge of unstructured meshing algorithms.
3. Experience with code optimisation techniques, such as vectorisation or efficient parallelisation via OpenMP/MPI.
4. In addition to expertise in physical oceanographic modelling, familiarity with other disciplines undertaken in the team such as sediment, carbon chemistry, optical or biogeochemical modelling and data assimilation.

## **Required Competencies:**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others’ reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate responses by adapting/creating and testing alternative solutions.
* **Independence:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of change.

Special Requirements

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [Environment Business Unit - CSIRO](https://www.csiro.au/en/about/people/business-units/Environment) for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted