# Position Details

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

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| The following information is for applicants | |
| Advertised Job Title | CSIRO Postdoctoral Fellowship in Next-Generation GHG Modelling |
| Job Reference | 96461 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$96,329 to AU$105,517 pa (pro-rata for part-time)  plus up to 15.4% superannuation |
| Location(s) | Canberra, ACT |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Team Leader – Accounting and Function |
| Client Focus – Internal | 0% |
| Client Focus – External | 100% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Senani Karunaratne via email at [senani.karunaratne@csiro.au](mailto:senani.karunaratne@csiro.au) or phone +61 2 6218 3698 |
| 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](mailto: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

**CSIRO Early Research Career (CERC) Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant research experience. These Fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system;
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Fellows **are appointed for three years or full time equivalent.**

Given the increased attention on the climate change and the effects of land management and natural disturbances, the assessment and surveillance of land resources have become crucial elements in guiding the management of the Australian landscape to a more sustainable practice. The nutrients biogeochemical cycles are directly related to greenhouse gas (GHG) cycling and land productivity. Traditional survey-based approaches are not scalable or economically feasible for monitoring these key attributes across the Australian landscape.

The development of a next-generation process-based GHG model aims to fulfil this requirement by building a cutting-edge, process-based biogeochemical cycling model that suits Australian conditions and generates much-needed temporal outputs for continental-scale monitoring of carbon and nutrient dynamics. The CERC Fellow will lead a key component of the development and integration of soil invertebrate module with this next-generation process-based model development and will closely work with other modellers. The focus will be on the contribution of termites in soil ecosystems, exploring their involvement in the cycling of soil organic matter and nutrients within Australian ecosystems. The objective is to comprehend their overall impact on greenhouse gas (GHG) budgets, model integration and spatio-temporal analysis.

This position is embedded in the CSIRO Agriculture and Food Sustainability Program with national and international collaborations. In addition, the CERC Fellow will have the opportunity to partner with other CSIRO initiatives such as the Towards Net Zero Emissions Mission and the Valuing Sustainability Future Science Platform. The position is a key part of the Terrestrial Ecosystem Research Network (TERN) GHG modelling work lead by CSIRO.

### Duties and Key Result Areas

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + Participate and contribute to engagements with peers and key stakeholders to obtain feedback and guidance on the project and ensure outputs produced are not only scientifically sound, but also 'fit for purpose' and therefore impactful in terms of having large uptake.
  + Undertake regular reviews of relevant literature and patents and carry out research investigations requiring originality, creativity and innovation.
  + Use gathered mechanistic understanding and existing supporting datasets to develop key soil invertebrate sub-module to integrate into the 'next-generation process-based GHG model'.
  + Design and conduct landscape-scale experiments to gather primary datasets to support the soil invertebrate sub-module development, including but not limited to gathering GHG datasets and analysis of other soil attributes, including quantifying measurable biological district forms of soil carbon fractions/pools to support model development.
  + Co-design the integration of the invertebrate soil module with other research scientists.
  + Carryout model testing, calibration, validation, true-up, and model uncertainty assessment.
  + Produce at least three high-quality scientific and/or engineering papers suitable for publication in quality journals, for client reports, and for the granting of patents.
  + Work effectively as a member of a multi-disciplinary, international and regionally dispersed research team, to undertake independent scientific investigations and carry out associated tasks under broad guidance from other Research Scientists.
  + Proactively undertake development to grow effective researcher capabilities to support career goals.
  + Adhere to the spirit and practice of CSIRO’s Values, Code of Conduct, Health, Safety and Environment procedures and policy and diversity initiatives.
* Other duties as directed.

The CERC Fellow learning, development and training programis developed between the CERC Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellow’s capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

## **Selection Criteria**

**Please ensure that a written response addressing both the essential and desirable selection criteria is submitted and included at the end of the cover letter.**

#### Essential

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

1. A doctorate (or will shortly satisfy the requirements of a PhD). The doctorate must be in a relevant discipline area, such as GHG modelling, process-based modelling, and model integration, Environmental Engineering, Ecology, agricultural modelling.

Please note: To be eligible for this role you must have **no more than 3 years** (or full time equivalent) of relevant research experience.

1. Demonstrated skills on GHG modelling (process-based) and nutrient biogeochemical cycling, model development and integration, calibration, validation, and uncertainty assessment.
2. Demonstrated experience and excellent skills in programming, including (but not limited to) R, Python, and Fortran, including data manipulation, model development and integration, and the ability to use high-performance computer (HPC) facilities including spatial application of process-based models.
3. Sound knowledge of modern data management practices to ensure reproducibility and traceability of research, such as the deposition of data in publicly available repositories and the use of version control systems.
4. Ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.
5. Demonstrated track record of high-level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.
6. A sound history of publication in peer-reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
7. A clear record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
8. A current driver's licence or have the ability to obtain an Australian driver's licence.

## **Desirable**

1. Experience and willingness to learn mechanistic understanding of soil invertebrates on GHG.
2. Experience and willingness to engage in design and lead field data collection campaigns.
3. Experience and willingness to gather primary datasets to support model development, e.g., use of the GHG analysers (e.g., Picarro) and quantification of measurable forms of soil carbon and nitrogen fractions using physical fractionation, thermal and other soil organic matter characterisation approaches.
4. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.

## **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 response by adapting/creating and testing alternative solutions.
* **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **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 changes.

To be appointed as a CERC Fellow within CSIRO, candidates are required to have **submitted** their doctoral thesis at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 ($93,267). Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

Special Requirements

Appointment to this role is subject to provision of a pre-employment background check and may be subject to other security/medical/character clearance requirements.

* The successful candidate will undertake a pre-employment background check. Please note that individuals with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- https://ielts.com.au/

**Our value proposition**

We want CERC Fellows to join our world class science, engineering and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

Find out more about our CSIRO Early Research Career (CERC) Fellow Experience Employee Value Proposition (EVP) [here](https://www.csiro.au/postdoctoral-fellowships).

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and CSIRO [Agriculture and Food](https://www.csiro.au/en/Research/AF) 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