# 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 Soil Organic Matter Dynamics and Quantification  |
| Job Reference | 96406 |
| 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 – Soil Process & Function |
| Client Focus – Internal | 0% |
| Client Focus – External | 100% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact either Dio Antille via email at dio.antille@csiro.au or phone +61 2 6218 3835; or Senani Karunaratne via email at 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 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.**

There is growing interest in utilising the measurable soil fractions of both organic carbon and nitrogen to support next-generation process-based GHG models and soil functions. The fractionation method developed by CSIRO, which underpins the national greenhouse gas inventory for the land sector, relies on physical fractionation coupled with the chemical characterization of the carbon to quantify the charcoal-like material in soil. The CERC Fellow's work builds on the existing capabilities but expands into coupling the quantification of both biologically significant organic carbon and nitrogen in soils. There is a growing appetite to use carbon and nitrogen process-based models instead of carbon-only models for GHG projects to account for fluxes and adequately represent GHG emissions when using models.

The CERC Fellow will work on cutting-edge technologies to quantify these measurable fractions using the thermal stability of the soil organic matter, coupling the physical protection that comes from soil aggregates formulation. The CERC Fellow will lead the development of next-generation analytical pipelines to measure those biologically significant soil organic matter fractions, aiming to reduce the cost of measuring these fractions and make these technologies readily available for real-world applications. The availability of these measurable fractions will reduce the uncertainty of process-based GHG models and enable the development of indices for environmental monitoring programs on soil health.

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 Terrestial 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.
* Comprehensive review of existing soil organic matter fractionation methods and their applications.
* Estimate the various forms of soil organic carbon and nitrogen fractions, considering their physical protection, chemical, and thermal stability.
* Design and conduct landscape-scale and laboratory experiments to collect primary datasets enable to supporting the development of a next-generation soil organic carbon and nitrogen fractionation pipeline. This includes gathering field datasets and analysing other soil attributes, as well as quantifying measurable biological distinct forms of soil carbon fractions to support model development.
* Development of an analytical pipeline that is cost-effective and time-efficient for estimating the next generation of soil organic carbon and nitrogen fractions.
* 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 section 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 soil science, agriculture, environmental science, biogeochemistry, ecology.

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. Theoretical and hands-on-experience on soil organic matter fractionation frameworks.
2. Design and conduct landscape and laboratory scale experiments related to soil organic matter fractionation.
3. Ability to use a variety of analytical instruments to develop high-throughput analytical pipeline to quantify biologically significant soil organic matter fractions including but not limited to physical wet sieving gear, C/N thermal-ramping analysers, IR spectroscopy.
4. Demonstrated experience and excellent skills in modern data science (statistical/machine learning analysis) and programming, using R, Python (but not limited to).
5. 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.
6. 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.
7. A sound history of publication in peer-reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
8. Ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.
9. A clear record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
10. A current driver's licence or have the ability to obtain an Australian driver's licence.

## **Desirable**

1. Experience with integrating generated analytical datasets with GHG process-based models.
2. Experience with soil physical measurement and modelling.
3. 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