# 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 Spatial-temporal soil carbon modelling |
| Job Reference | 71223 |
| Tenure | Specified Term of 3 years  Full-time or Part-time |
| Salary Range | AU$86,434 to AU$94,679 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Canberra, ACT |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * Australian/New Zealand Citizens and Australian Permanent Residents * Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible candidates) |
| Position reports to the | Senior Research Scientist – Soil Carbon |
| Client Focus – Internal | 90% |
| Client Focus – External | 10% |
| Number of Direct Reports | 0 |
| Enquire about this job | 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](mailto:careers.online@csiro.au) or call 1300 984 220. |

### Role Overview

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years of relevant postdoctoral work 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 Postdoctoral Fellows **are appointed for three years or part time equivalent.**

To unlock the potential benefits from soil carbon projects, we need to simultaneously reduce the cost and increase the quality of data necessary to adapt the existing and approved methodological framework for carbon accounting to one that can utilise remotely sensed data streams.  Achieving this will not only provide low-cost abatement to mitigate climate change while emissions in other sectors are reduced but also provides an opportunity to use carbon market financing to improve Australia's soil assets. The CERC postdoctoral fellow will lead the development of 'Next-generation national dynamic space-time empirical soil carbon model'. The outcome of this research will improve soil carbon stock accounting at the national level to enhance Australia's national carbon accounting system. This will create the basis for improved uptake of carbon farming under the Emissions Reduction Fund or other market mechanisms.  In co-development with end-users including the Federal Government, the project will:

1. Use available geospatial products to better represent spatial and temporal variations in land management practices, incorporating mechanistic understanding of soil carbon processes
2. Develop an empirical model using modern spatial machine learning modelling frameworks
3. Test candidate models with different scaling methods to overcome current issues inherent in models that rely upon limited and scattered soil carbon datasets
4. Spatially resolve associated uncertainty of estimates to identify regions with less predictive power. This will guide future collection of additional ground truth datasets

### Duties and Key Result Areas

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

* Participate and contribute to engagements with peers, government 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.
* Use soil carbon datasets and geospatial datasets to develop spatial-temporal soil carbon empirical models.
* Introduce mechanistic understanding of soil carbon to develop empirical models through deriving innovative covariates.
* Design and conduct landscape-scale experiments to test the developed models and model uncertainty.
* Produce at least three high quality scientific and/or engineering papers suitable for publication in quality journals, for client reports and 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.
* Adhere to the spirit and practice of CSIRO's Values, Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Other duties as directed.

[**The CERC Postdoctoral Fellow learning and development program**](http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships)is developed between the CERC Postdoctoral Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellows' 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

## **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.

## **Selection Criteria**

#### 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) in a relevant discipline area, such as agricultural modelling, spatial data science, applied remote sensing.

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

1. Ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.
2. 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.
3. A sound history of publication in peer-reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
4. A clear record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
5. Demonstrated skills in processing (e.g. automation) of time series remotely sensed and GIS datasets to derive innovative covariates to be incorporated into spatial-temporal empirical model development.
6. Demonstrated experience and excellent skills in programming including (but not limited to) R, Python including data manipulation, model development using statistical and machine learning algorithms, and ability to use high-performance computer (HPC) facilities.
7. A current driver's licence or have the ability to obtain an Australian drivers' licence.

## **Desirable**

1. Experience with mechanistic/process-based understanding of soil carbon/agriculture system modelling (e.g. RothC model, Century).
2. Experience and willingness to engage in field data collection campaigns and setup and carry-out short-term laboratory experiments.
3. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.

To be appointed as a CERC Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD 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 ($83,687). 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 may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

* The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* The successful candidate may be required to undertake a pre-employment medical examination prior to commencement.
* 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 Postdoc 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.

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

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](http://www.csiro.au/)!

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

* 1. People First
  2. Further Together
  3. Making it Real
  4. Trusted

Find out more about CSIRO [Agriculture and Food](https://www.csiro.au/en/Research/AF)