# 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 Natural Disaster Modelling |
| Job Reference | 80029 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$89,926 to AU$98,504 pa + up to 15.4% superannuation |
| Location(s) | Canberra (Black Mountain), ACT |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian/New Zealand Citizens, Australian Permanent Residents and Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible onshore candidates) |
| Position reports to the | Project Leader (Senior Research Scientist, Ecology) |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 1 |
| Enquire about this job | Contact Dr. Robert Godfree via email at Robert.Godfree@csiro.au or phone +61 4 59 849 262 |
| 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 area 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).

### 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 full-time or equivalent.**

The frequency and severity of droughts, bushfires and other natural disasters are increasing as the global climate changes. Because these events can severely degrade natural ecosystems, conservation managers are seeking new ways to quantify and manage their impacts on biodiversity as they unfold. This postdoctoral fellowship will contribute to CSIRO’s objective of developing innovative scientific solutions to natural disaster management that enhances the resilience and value of our natural environments. The opportunity is based within National Research Collections Australia, which contains CSIRO’s natural history collection, and is part of CSIRO’s Collection and Marine Infrastructure Business Unit.

The Postdoctoral Fellow will work as part of a multidisciplinary team of ecologists, data scientists and geospatial modellers that are collaborating to develop a platform for rapid prediction and visualisation of the threats posed by natural disasters to the natural environment. The team is mainly based at the Australian National Herbarium, Canberra, with additional collaborators in the Atlas of Living Australia (ALA), CSIRO Data61, CSIRO Land and Water, the Australian National University (ANU) and Parks Australia.

The Postdoctoral Fellow will apply their knowledge of state-of-the-art biogeographical modelling, including AI/ML approaches, to develop high quality geospatial datasets and predictive models that integrate climate, biophysical and biodiversity data as extreme events unfold. They will contribute to the development of a computing platform and cloud infrastructure required for dissemination of the data. They will also collaborate to identify additional sources of data and model outputs that will be of immediate value to the biodiversity management community and to scale models appropriate to research goals.

The postdoctoral fellow will play a key role in contributing to CSIRO’s science delivery by:

• constructing models that simulate the current severity and extent of drought and fire using near real-time climate and remote sensing data,

• quantifying the impacts of drought and fire on plant species based on continent-wide specimen and trait datasets,

• applying natural language processing, deep learning and/or other AI/ML techniques to enhance the quality of plant specimen databases and species distribution models, and

• working with external conservation managers to identify plant species, communities and ecosystems that are likely to be increasingly threatened by extreme events under climate change.

The fellow will have the opportunity to vary their specific research according to their interests, background, skill-building expectations, relationships with other stakeholders and collaborators, and natural disasters that occur during their contract.

### Duties and Key Result Areas:

In collaboration with the team of research scientists and engineers, the postdoctoral fellow will:

* Lead research into new geospatial modelling techniques to better understand the impacts of natural disaster events on Australian biodiversity.
* Carry out innovative, impactful research of strategic importance to CSIRO that will be well positioned to lead to novel and important scientific outcomes.
* Recognise and exploit opportunities for innovation and the generation of new theoretical perspectives, and progress opportunities for the further development or creation of new lines of research.
* Record, manage, and analyse data/information using relevant domain data science techniques.
* Work with potentially sensitive information of CSIRO and/or research or commercial partners.
* Proactively undertake development to grow effective researcher capabilities to support career goals.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* 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

## **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). The doctorate must be in the discipline of spatial modelling, preferably with significant experience in AI/ML applications to data analytics.

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

1. Experience in the development of predictive geospatial models or species distribution modelling.
2. Experience with analysis of large and complex meteorological, biodiversity or geophysical data sets.
3. A high level of skill in Python, R or other programming language(s) (e.g., C, C++, Perl).
4. 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/or international conferences.
5. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
6. A record of science innovation and creativity, including the ability and willingness to incorporate novel ideas and approaches into scientific investigations.
7. **The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**

## **Desirable:**

1. Skill in one or more of Natural Language Processing, neural networks and deep learning.
2. Knowledge of advanced biogeographical techniques such as network analysis or joint distribution modelling.
3. Knowledge of Australian ecosystems and plant communities.

To be appointed to this CERC Fellowship role within CSIRO, candidates will be expected to commence employment by 30 June 2022. 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 ($87,068). 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.
* 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/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 [National Collections and Marine Infrastructure](https://www.csiro.au/en/about/people/business-units/NCMI)

Find out more about CSIRO [Data61](https://www.csiro.au/en/about/people/business-units/Data61)