# Postdoctoral Research Fellows (CSOF 4)

Role summary for potential applicants

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| Advertised Job Titles**:** | Digiscape Postdoctoral Research Fellow - Model-data fusion for short-term growth forecasts of tropical crops |
| Reference Number**:** | 30690 |
| Classification**:** | CSOF4 |
| Salary Range: | AU$78 k to AU$88 k plus up to 15.4% superannuation |
| Location**:** | St Lucia, QLD |
| Tenure: | Fixed three-year term |
| Relocation assistance**:** | Provided to successful candidates, if required. |
| Applications are open to: | Australian Citizens Only  Australian Citizens and Permanent Residents Only   * All Candidates |
| Functional Area**:** | Postdoctoral Research Fellow |
| % Client Focus - Internal: | 70% |
| % Client Focus - External: | 30% |
| Reports to the: | Science Leader, Dr Peter Thorburn |
| Number of Direct Reports: | n/a |

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| **Role Overview:** |
| **Postdoctoral Fellowships** at CSIRO provide opportunities to scientists and engineers, who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships will help launch their careers, provide experience that will enhance their career prospects, and facilitate the recruitment and development of potential leaders for CSIRO.  Future Science Platforms (FSPs) are a major new CSIRO initiative. FSPs are multi-year investments in frontier science that will reinvent and create new industries for Australia. [Digiscape](http://my.csiro.au/Business-Units/Future-Science-Platforms/Digiscape-FSP.aspx) is the FSP that is creating next-generation decision tools to transform the agriculture and land management sector. To achieve this aim, Digiscape will bring to bear cutting edge climate science; new sources of locally and remotely sensed data; informatics for agro-ecosystems; rigorous analysis of uncertainties; and innovation in both the ICT and social dimensions of systems integration. The successful candidate for this position will therefore join a cohort of early-career researchers and engineers who will combine their individual disciplinary contributions into mission-focussed R&D.  One goal of this research is to reduce the impact of sugarcane farming on Australia’s world renowned Great Barrier Reef by helping farmers to assess the productivity and environmental consequences of their fertiliser management. This position will undertake research into the development of a simplified simulation model for sugarcane that produces a 2-12 month forecast of crop growth. We intend to develop a model that is updated continuously using real time remote data (e.g. satellite images) coupled with biophysical data and models, and produces uncertainty bands. The forecasts and error signal will be used in an adaptive learning paradigm to create “situational awareness” on-farm that that results cane farmers having an increased ability to make and evaluate management decisions that lead to both on-farm and environmental co-benefits. This is one of two complementary postdoctoral fellowships; the other will develop an on-farm environmental impact component for the same information system. |

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| **Duties and Key Result Areas:** |
| * Develop and test a simplified crop growth modelling and visualisation package using CSIRO‘s Digiscape software infrastructure and modelling framework, using real time data to provide 2-12 month crop biomass forecasts with uncertainty estimates that can be used by farmers to assess their management actions. * Under the direction of senior research scientists, carry out innovative, high impact research of strategic importance to CSIRO that will lead to novel and important scientific outcomes. * Work effectively as a researcher as part of a multi-disciplinary national research team, to undertake independent scientific investigations and carry out/delegate associated tasks. * Engage clients and interact with farmers and industry consultants to deliver practical research outcomes in a professional manner. * Adhere to the spirit and practice of CSIRO’s values, health, safety and environment plans and policies, diversity initiatives and Zero Harm goals. * Other duties as directed.   ***CSIRO’s postdoctoral training program***is developed between the Postdoctoral Fellow and a CSIRO scientist. 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   <http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships> |

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| **Selection Criteria:** |
| *Under CSIRO policy only those who meet all essential criteria can be appointed*  ***Pre-Requisites:***   1. **Education/Qualifications:** A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline, such as agri-informatics, simulation modelling, remote sensing and/or computer science with an agricultural application.   ***Please note:*** *To be eligible for this role you must have* ***no more than 3 years*** *of relevant postdoctoral experience.*   1. **Communication: High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including at national and international conferences.** 2. **Publications: A record of publication in quality, peer reviewed journals.** 3. **Behaviours:** A history of professional and respectful behaviour and attitude in a collaborative environment.   ***Essential Criteria:***   1. Demonstrated ability to develop and test crop growth models using contemporary approaches. 2. An ability to use, model-data assimilation approaches (e.g. ensemble Kalman filtering) to provide statistical uncertainty of forecasts. 3. A demonstrated familiarity with and application of environmental modelling software frameworks such as APSIM, OMF or others. 4. Evidence of high quality written and oral communication skills as achieved through high-level reporting, publication, presentation abilities. 5. A record of science innovation and creativity, plus the ability & willingness to incorporate novel ideas and approaches into scientific investigations.   **Desirable Criteria:**   1. Ability to develop web based visualisations of model outputs using contemporary approaches. 2. Experience managing and analysing satellite datasets, image processing and GIS. 3. Possession of an Australian C class (motor car) license. 4. Ability to travel to field sites and other locations for short times (e.g. 5 days).   **CSIRO Values:**  As Australia’s Innovation Catalyst, CSIRO has strategic actions underpinned by behaviours aligned to Excellent science, Inclusion, trust & respect, Health, safety & environment and Deliver on commitments.  In your application and at interview you will need to demonstrate alignment with these behaviours.  **Eligibility:**  To be appointed as a 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 *($78,479).* 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.  ***Other special requirements:***  *Candidate must be willing to travel, within Australia.*  *Appointment to this role may be subject to conditions including security/medical/character clearance requirements. Applicants who are not Australian Citizens or Permanent Residents may be required to undergo additional security clearance processes; which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).-* [*http://www.ielts.org/default.aspx*](http://www.ielts.org/default.aspx) |

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| **Other Information:** |
| **How to Apply**  Please apply for this position online at [www.csiro.au/careers](http://www.csiro.au/careers) using reference number 31330. You may be asked to provide additional information (online) relevant to the selection criteria. If so, then responding will enhance your application so please take the time to provide relevant succinct answers. Applicants who do not provide the information when requested may not be considered.  If you experience difficulties applying online please call +61 1300 984 220 during Australian business hours and someone will be able to assist you. Outside business hours please email: [csiro-careers@csiro.au](mailto:csiro-careers@csiro.au).  **Referees**:  If you do not already have the names and contact details of two previous supervisors or academic/ professional referees included in your resume/CV please add these before uploading your CV.  **Contact:**  If after reading the selection documentation you require further information please contact:  Dr Peter Thorburn via email: Peter.Thorburn@csiro.au or phone: +61 417 073 173  Please do not email your application directly to Dr Thorburn. Applications received via this method will not be considered.  **About CSIRO**  Australia is founding its future on science and innovation. Its national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.  Find out more! [www.csiro.au](http://www.csiro.au).  **CSIRO Agriculture and Food,** our researchers are helping Australian farmers and industry improve productivity and sustainability across the agriculture sector - <http://www.csiro.au/en/Research/AF> |