



EcoCommons

The platform of choice to analyse and model ecological and environmental problems

EcoCommons' vision is to give Australian practitioners and researchers access to trusted, world-leading ecological and environmental modelling tools.

Through a three year (2020-2023), \$5 million investment from nine partner institutions, EcoCommons will transform ecological and environmental research by creating a trusted single platform for digital modelling and analysis needs. Our aim is to significantly reduce the time and wrangling needed to get from data to decisions to enable solutions for our environment and its future.

EcoCommons is set for early impact as it builds upon the work of well-regarded established platforms like the [Biodiversity and Climate Change Virtual Laboratory \(BCCVL\)](#), [ecocloud](#), and the training portal [ecoEd](#), as well as the [Collaborative Species Distribution Modelling \(CSDM\)](#), which together support more than 7000 researchers based at over 400 different organisations in more than 35 countries worldwide.

Enabled by the [NCRIS-funded Australian Research Data Commons](#), EcoCommons aims to facilitate best practice for modelling across many domains and jurisdictions.

Our business model is flexible, scalable and readily able to create partnerships to address organisational needs.

Who is EcoCommons for?

Researchers



Access curated data, trusted models, customisation and cutting-edge virtual labs with JupyterLabs/R/Python that can reduce working time from days to hours.

Decision-makers



Make trusted analysis and reporting easier with credible data and models, and easy reuse and reproducibility to assist in translating research into decision-making.

Educators



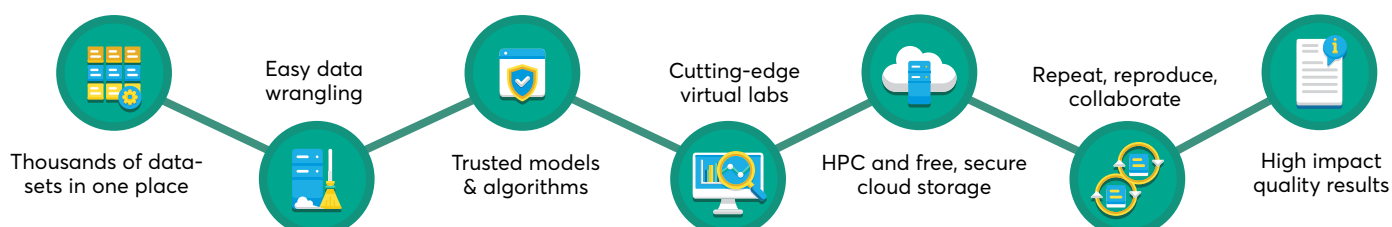
Get ready-to-use workshop modules and practical guides that can immediately be integrated into curriculum, academic training, and industry development.

Students



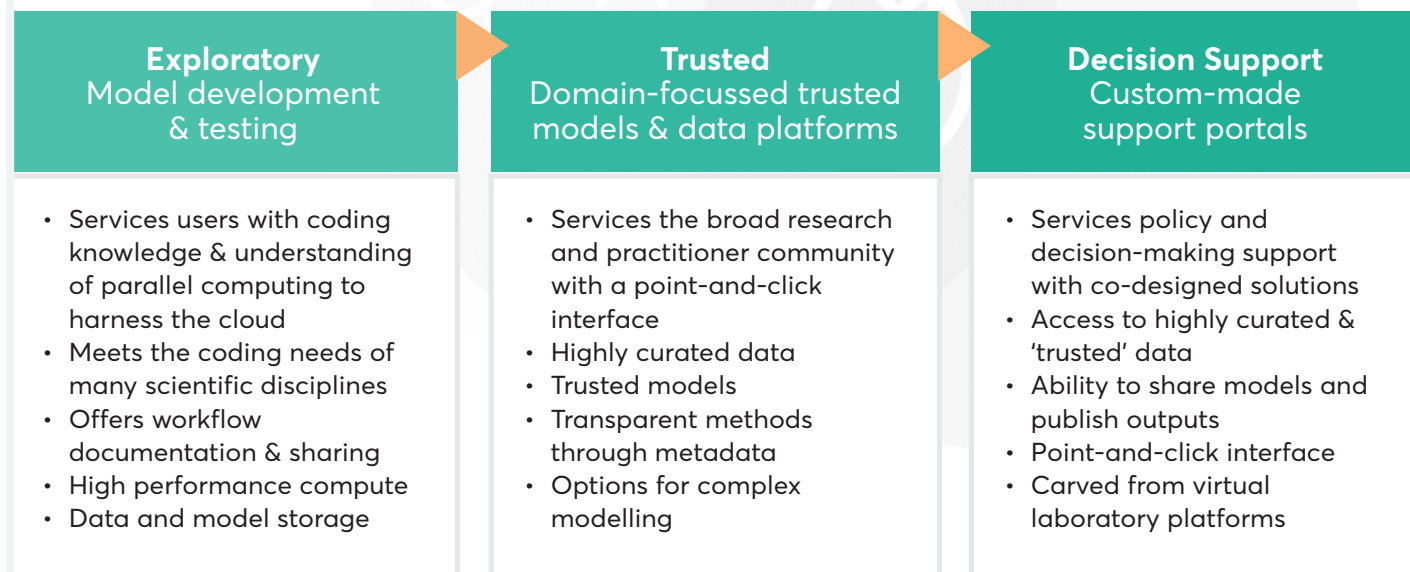
Browse step-by-step guides that turn theory into practice with limited coding required for data quality, ecology, spatial analysis and environmental management.

What does EcoCommons offer?



Pipeline from research to decision support

The EcoCommons platform is designed to enable a 'pipeline' from data ingestion and curation, to model development and testing, to decision support. It is based on new approaches and existing best-practice services.



How do we operate?

Data

EcoCommons offers a toolbox of common approaches to help find and access data. This includes access to national spatial layers, national ecological and environmental datasets, and connection into a large range of other data through providers such as ALA, AURIN, AuScope and more. EcoCommons supports and strengthens existing national research infrastructure facilities specialised in the provision of data by making it more accessible and fit-for-purpose for researchers and decision-makers.

Trust and transparency

EcoCommons offers peer-reviewed, quality-assured models for immediate use in specified applications. Beyond these, users are free to run their own models or to create, code and configure beyond the base model suite. Models are able to be stored with metadata and digital object identifiers to ensure transparency and repeatability for future use. Users can securely import their own data or keep their data private.

Modelling

EcoCommons can be used to address any problem where data is put into analytical workflows to model ecological and environmental challenges. Our platforms have been used to generate a broad range of published research:

- Predicting the distribution of invasive alien species;
- Rapid assessment of future species habitat suitability;
- Assessing risk to the conservation status of temperate rainforest from exposure to mining, commercial logging, and climate change;
- Running sensitivity analyses to address robustness and configuration options of models to predict geospatial distribution of migratory species.

Reuse of platform

EcoCommons' core technology platform offers benefits to other research domains and uses. It will make its code and infrastructure available through open-source models enabling interested parties to reuse infrastructure. It is envisaged that a model of co-development and shared infrastructure can be utilised across various sectors.

Scientific focus areas

- Species distribution modelling
- Climate change projections
- Biodiversity analyses
- Biosecurity risk mapping
- Agriculture and farming
- Natural resource management
- Emergency response (e.g. fires, floods, pests, diseases)
- Strategic environmental management planning



EcoCommons established services

Currently, four services sit under the EcoCommons umbrella.

One of the primary reasons that EcoCommons was formed was to build upon the success of several well-regarded established services and expand their reach under one banner with new functionality and readily configurable portals that can be tailored to specific user communities. The current services are:



The **Biodiversity and Climate Change Virtual Laboratory (BCCVL)** is a 'one-stop modelling shop' that simplifies the process of biodiversity-climate change modelling. It includes a point-and-click tool for species modelling and predictions on the impact of climate change. The original version of BCCVL was built on 2014 NeCTAR funding and has continuously evolved, currently hosting 6000 users from universities (research and education), industry and government in Australia and over 35 countries around the globe. Over 110,000 experiments have been run since 2014.

Visit: bccvl.org.au



The **ecocloud** platform delivers cloud-based computing tailored to ecological data and researchers. The platform brings together servers, storage, databases, coding languages, training, analytics and more over the internet to offer faster solutions, flexible resources and ongoing support. It contains a command-line virtual environment and serves as an environment to develop and test new models.

Ecocloud was developed in 2018 and has presently more than 900 users from academia, industry and government with the user base continuously growing.

Visit: ecocloud.org.au



The **Collaborative Species Distribution Model (CSDM)** is a proof-of-concept (PoC) program funded by the Department of Agriculture, Water and the Environment (DAWE), the Queensland Department of Environment and Science (DES) and the New South Wales Department of Planning and Environment (DPIE) to build a platform that offers scientifically robust species distribution models (SDMs) to support transparent decision-making by government at state, territory and federal levels. The CSDM PoC represents EcoCommons' ability to enable decision-support with custom-made secure portals and it continues to attract interest across many domains and jurisdictions.

Visit: csdm.org.au



ecoEd is a training and skills development pilot program for university lecturers, researchers and industry professionals. The program is intended to enhance the translation of Australia's eResearch infrastructure to the ecoscience community by educating and upskilling the next generation of environmental scientists and managers. ecoEd materials combine theoretical concepts with real-world applications, covering topics from data quality and ecology to spatial analysis and environmental management. The training program is embedded in approximately 15 undergraduate and postgraduate curricula and has had over 8000 views of the online open course material.

Visit: ecoed.org.au

EcoCommons: partnering for a better future

Recent technologies have enabled consistent and continuous collection of ecological data at high resolutions across large spatial extents. The challenge remains, however, to bring this data together and expose it to methods and tools that generate meaningful information about the environment, and lead to solutions to environmental socio-economic problems.

EcoCommons removes the technical barriers of the past. By providing seamless access to data, analytics and models, it will enable ecological and environmental practitioners and researchers to concentrate on solving their research challenge, rather than repeatedly finding data and configuring models.

The platform is being built (2020 - 2023) with a focus on accessibility, flexibility and scalability

that will allow EcoCommons to offer both free-of-charge services to the research community, and customised solutions to address specific organisational needs.

Over the next three to five years, our goal is create an efficient, powerful and trusted platform that provides Australian practitioners and researchers with access to trusted, world-leading ecological and environmental modelling tools.

We welcome opportunities to showcase EcoCommons to you and discuss partnerships and collaborations.

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Our partners

We would like to acknowledge the support of our key investor the NCRIS-funded Australian Research Data Commons and eight partner institutions: ALA, CEBRA at the University of Melbourne, CSIRO, Griffith University, Macquarie University, QCIF, TERN, University of NSW. QCIF is the lead organisation.

We also recognise our national and international collaborators that have committed in-kind support and technical advice to the program.



Australian Research Data Commons

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