ACCESS Training Day Schedule 2025

Tuesday, Sep. 9th	Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions
9 - 9:30am	*Arrival*	*Arrival*	*Arrival*	*Arrival*
9:30 - 11:00am	Unlocking the power of Xarray and Dask for large data analysis	Advanced Git	--	Unstructured sessions
11:00 - 11:15am	*Morning tea*	*Morning tea*	*Morning tea*	*Morning tea*
11:15am - 12:45pm	Unlocking the power of Xarray and Dask for large data analysis *(continued)*	Advanced Git *(continued)*	--	Unstructured sessions *(continued)*
12:45 - 1:45pm	*Lunch*	*Lunch*	*Lunch*	*Lunch*
1:45 - 3:15pm	Hands-on training in machine learning models with PyEarthTools	Git workflows and GitHub best practices	Evaluating ENSO in ACCESS Models for CMIP7	Unstructured sessions
3:15 - 3:30pm	*Afternoon tea*	*Afternoon tea*	*Afternoon tea*	*Afternoon tea*
3:30 - 5:00pm	Hands-on training in machine learning models with PyEarthTools *(continued)*	Git workflows and GitHub best practices *(continued)*	Evaluating ENSO in ACCESS Models for CMIP7 *(continued)*	Unstructured sessions *(continued)*

Please note: the schedule may be subject to minor changes.

Training Day 2025 Sessions

Session Title	Brief Description	Learning Objectives	Intended Audience	Pre-requisites
Advanced Git *Instructor: Micael Oliveira*	Learn how to use Git more effectively by becoming familiar with more advanced concepts and commands. If you have been using Git at a basic level but would like to understand what a commit is, what really happens during a merge, what the difference is between a merge and a rebase, or how to fix mistakes, then this tutorial is for you.	• Understand what a Git directed acyclic graph (DAG) is. • Learn how more advanced Git commands work (merge, rebase, restore etc.), and how they change DAG. • Learn how to undo and fix common mistakes when using Git.	• All backgrounds, domains, and career stages. • Those who want to improve their Git skills.	• Working knowledge of **basic Git commands** (add, commit, pull, push).
Git workflows and GitHub best practices *Instructor: Micael Oliveira*	This session builds on the *Advanced Git* session, taking the next step by focusing on Git workflows and GitHub best practices. Specifically, we will explain some common Git workflows used by developers to collaborate efficiently and share some best practices when using GitHub.	• Exposure to common Git workflows in software development. • Understanding of how to best use Git and GitHub for scientific software development.	• Those who want to use Git and GitHub for scientific software development. • All domains and career stages.	• Attendance at the session ***Advanced Git***. **OR all of the following:** • Working knowledge of **advanced Git commands** (merge, rebase, restore etc.) • Basic familiarity with **GitHub**

Session Title	Brief Description	Learning Objectives	Intended Audience	Pre-requisites
Unlocking the power of Xarray and Dask for large data analysis *Instructors: Jemma Jeffree, Paige Martin, and Thomas Moore*	The python packages Xarray and Dask underpin the analysis of large datasets such as climate model output, reanalysis, or observations. As such, these packages are key tools for climate scientists. However, both packages remain an enigma to many of the scientists who use them. This session will provide you with the skills to optimise your analysis code – ie, improve both speed and memory usage – with Xarray and Dask, focussing specifically on climate model output on Gadi. We will explain what happens "under the hood" of both libraries, and build on this understanding, with additional techniques, to boost code performance.	To answer the questions: • What does it mean to write good code, and why should you bother? • How can Xarray and Dask help with this objective, and what do they actually do? • Why does chunking matter, and how should you choose chunks? • How do you troubleshoot performance issues in your Dask workflows? • When does it not make sense to use Dask?	• Any scientist who analyses large datasets in NetCDF or Zarr files with python (or who would like to) • Tailored to scientists who use Xarray, but who find Dask troublesome	• Familiarity with scientific programming in **Python** • Basic familiarity with **Xarray** (i.e., you have previously used Xarray to open a dataset, and done some analysis (such as calculating a mean) on that data. If you're not yet familiar with Xarray, this tutorial is a good place to start) • Active **NCI account**
Hands-on training in machine learning models with PyEarthTools *Instructor: Tennessee Leeuwenburg*	This session will take you through several applied, real-world machine learning projects to gain a hands-on understanding of the tools and processes for applied machine learning research. You will use PyEarthTools framework to train three models and gain an understanding of how to apply machine learning to your own projects.	• A brief introduction to core techniques of machine learning, and how to apply to your own projects. • 1: Train your own global earth system model. • 2: Train a climate bias correction model. • 3: Train a model to perform observations quality control. • Examples include deep neural networks based on PyTorch, and a gradient-boosted decision tree based on XGBoost.	• Those who want to use machine learning for Earth system science. • Those interested in model development of observational data handling. • All backgrounds, domains and career stages.	• The ability to run and execute a **Jupyter Notebook**. • A basic knowledge of **Python** and of **meteorological data**. • An NCI account is not required, but may be the preferred platform for most participants. If you do not use NCI, some local machine setup will be required in advance.

Session Title	Brief Description	Learning Objectives	Intended Audience	Pre-requisites
Evaluating ENSO in ACCESS Models for CMIP7 *Instructors: Romain Beucher and Felicity Chun*	This session will focus on how to evaluate ENSO in ACCESS models ahead of CMIP7. We'll give an overview of the evaluation framework being developed by ACCESS-NRI and show how it can help make ENSO evaluation more consistent and easier to run. We'll walk through the ACCESS-ENSO-Recipes, which provide practical examples and workflows that participants can adapt to their own work. We'll also touch on simple ways to prepare raw model outputs so they can be used in these workflows. The session will include time for discussion and feedback to help shape future development.	• Learn how to run standard ENSO evaluations using current workflows • Understand what the ACCESS-ENSO-Recipes offer and how to use them • Get tips on preparing model output for analysis • Share feedback on evaluation needs for CMIP7	• Anyone involved in ACCESS model development or interested in evaluating ENSO for CMIP7.	• Familiarity with **Gadi** and the ability to run a **JupyterLab** session on the **Australian Research Environment (ARE)** • Some experience with **Python** and the ***conda/analysis3*** environment • Active **NCI account**
Unstructured sessions: run • **ACCESS-ESM1.5** • **ACCESS-OM2** • **ACCESS-rAM3** • **CABLE**	These self-guided sessions are for **those who want to get started running an ACCESS model**. ACCESS-NRI staff will be on hand to answer questions and clarify concepts. There is **no formal instruction** - participants will follow online documentation on how to run a model (the Run a Model section of the ACCESS-Hive Docs for ACCESS-ESM1.5, ACCESS-OM2, and ACCESS-rAM3 or CABLE documentation) and go at their own pace.	• Run an ACCESS climate model • Explore documentation and tools relevant to ACCESS models • Chat with ACCESS-NRI staff to clarify concepts and model approaches	• Anyone interested in running one of the listed models	• Basic understanding of climate modeling concepts and terminology • Basic familiarity with the command line • Active **NCI account** • **No previous experience** running a climate model is required
Unstructured sessions for advanced users: alpha/beta release testing • **ACCESS-ESM1.6** • **ACCESS-AM3** • **ACCESS-CM3** • **ACCESS-OM3**	These self-guided sessions are for **experienced model users** who want to contribute to the testing of alpha and beta releases of climate models. ACCESS-NRI staff will be on hand to answer questions, support troubleshooting, and gather input. There is **no formal instruction** - participants will work independently or in small groups.	• Gain experience with pre-released versions of climate models • Contribute to the improvement of climate models and documentation • Gain experience documenting issues for model developers	• Advanced users with significant experience running ACCESS climate models	• Significant experience running ACCESS climate models on Gadi • Ability to debug model code and interpret error logs • Active **NCI account**