The Climate Data Enhanced Virtual Laboratory (Climate DEVL)

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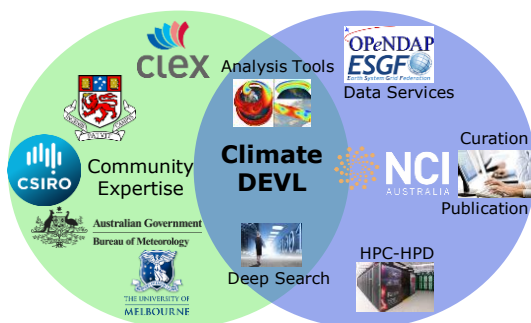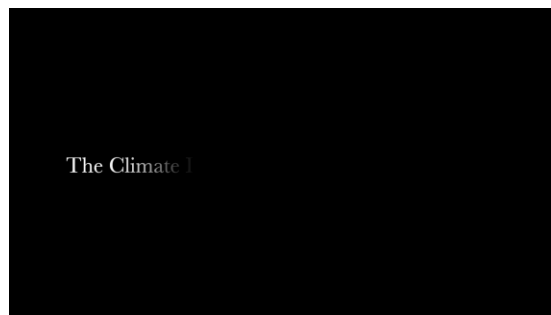
NCI AUSTRALIA

Enhancing climate research capabilities in Australia

The Coupled Model Intercomparison Project phase 6 (CMIP6) is an internationally coordinated endeavour designed to improve our understanding of climate change, with potential to provide improved capabilities to inform policy makers and industries on the consequences of future climate.

Challenges

CMIP6 will be the biggest climate dataset to date, requiring close collaboration between HPC facilities, climate modelling groups, and climate scientists.

Findable	**Accessible**	**Interoperable**	**Reusable**
Order 10^6 datasets, >100 models and 287 experiments.	Largest climate data collection to date, expect ~18PB.	A diverse range of communities and scientific areas.	netCDF4 format, CF-conventions, diverse user-base.
Discoverability, search capabilities, metadata standards and PIDs for citation.	Australian and international replica priority variables need to be accessible.	Coordinated standardisation and documentation enforced and managed.	Tools to work with the data that are customisable and high performance.

The Climate DEVL is a collaboration that brings together the capabilities of NCI, international federations and Australian climate data experts to provide the complex software and data management needed for Australian CMIP6 research.

International collaboration - World Climate Research Program

International community tools through the Earth System Grid Federation (ESGF)
- ES-DOC (model documentation)
- ESGF web node (data publishing)
- ESGF web search/database (data finding)
- ERRATA service (provenance)
- PrePARE (data QC for publication)
- Synda (data replication)

es-doc Earth System Documentation

SYNchronise your DAta

Host authoritative copies of high use data • | • *High capacity links to other data nodes*
Publish Australian data products • | • *Data download and DRS conformance*
NCI ESGF node • | • *ESGF software*

eResearch platform - NCI

- metadata search capabilities
- publishing software
- managed data replication
- QC checks for data publishing
- analysis & visualisation environment

Community priorities on data/tools • | • *Install + support tools*
Specialised tools (e.g., CleF) • | • *Deep search capabilities*
Australian CMIP data contributions • | • *Provide data curation/management service*

Image Source: http://www.bom.gov.au/climate/

Community partnerships - CLEX, BoM, CSIRO

- representation of climate community
- support Australian CMIP6 climate models
- development of specialised tools:
  - CleF climate data finder to search and request data
  - CWSLab and pipeline: user focused flexible workflows
  - model post-processing and evaluation tools

CLEX
Analysis Tools
OPeNDAP ESGF Data Services
Community Expertise
Climate DEVL
Curation
NCI AUSTRALIA
Publication
CSIRO
Australian Government Bureau of Meteorology
THE UNIVERSITY OF MELBOURNE
Deep Search
HPC-HPD

ardc
NCRIS National Research Infrastructure for Australia
An Australian Government Initiative
Australian Government Bureau of Meteorology
Australian Government Geoscience Australia
Australian Government Australian Research Council
CSIRO
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