

# ACCESS-ESM and CMIP6

Australia's Earth System Model

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OCEANS AND ATMOSPHERE

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# ACCESS-ESM components

	ACCESS-1.3	ACCESS-1.4 (ESM1)	ACCESS-ESM1.5	ACCESS-CM2
Atmosphere	UM7.3 approx. GA1 (no dust)	UM7.3 approx. GA1	UM7.3 approx. GA1	UM10.6 GA7.1
Land	CABLE1.8	CABLE2.2.3 (CASA-CNP)	CABLE2.4 (CASA-CNP)	CABLE2.5
Coupler	OASIS3.2-5	OASIS-MCT	OASIS-MCT	OASIS-MCT
Sea ice	CICE4.1	CICE4.1	CICE4.1	CICE5
Ocean	MOM4.1	MOM4.1 (WOMBAT)	MOM5 (WOMBAT)	MOM5
	CMIP5 submission		CMIP6 submission	CMIP6 submission

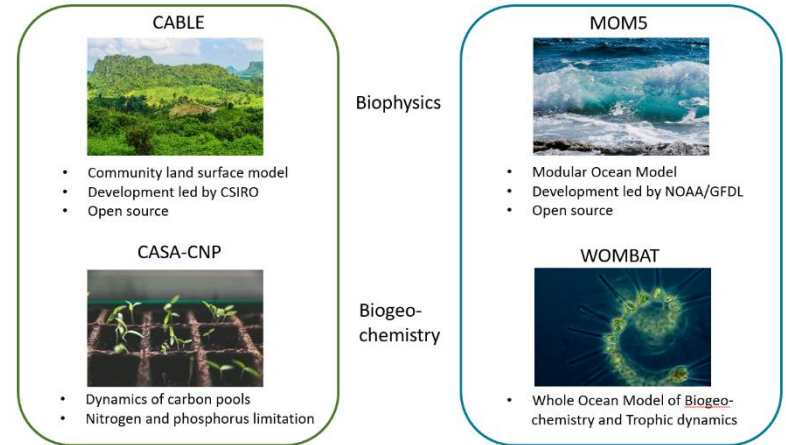
# ACCESS-ESM1.5 – changes from ESM1

## 1. Land – CABLE improvements

- Land carbon conservation
- Land use and land cover change (LULCC)
- Re-tuned productivity for most PFTs

## 2. Ocean – MOM upgrade

- MOM5 (additional diagnostics for CMIP6)
- New biogeochemical parameter set



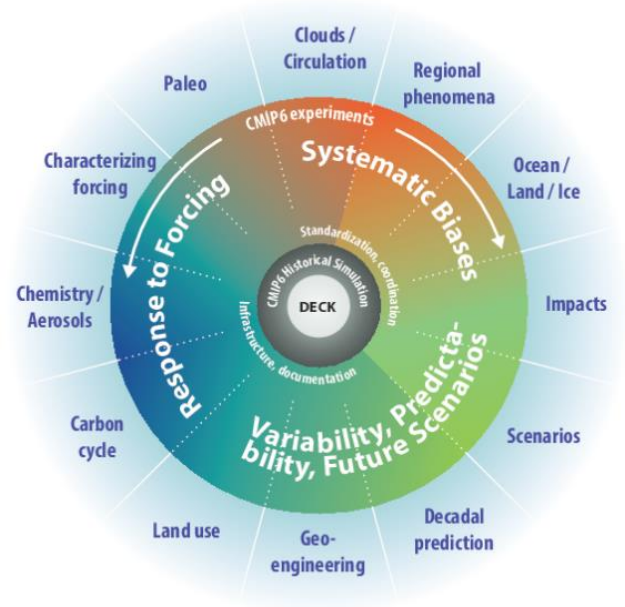
## Set-up and performance:

- Atmosphere and land: N96 (**1.875°x1.25°**), Ocean **1°x1°**
- Set-up on NCI using **288 cores** (sandy bridge) or **308 cores** (broadwell)
- Runtime: approx. **3 hours** per simulation year, Resources: approx. **1KSU** per simulation year

# ACCESS-ESM1.5 and CMIP6

## Deck and Historical simulation

- piControl [PI-01] (500/500)
- 1pctCO2 [PI-1pct-01] (150/150)
- abrupt-4xCO2 [PI-4xco2-01] (150/150)
- historical [HI-02] (165/165)
- historical ensemble member [HI-03] (80/165)
- historical ensemble member [HI-04] (80/165)
- esm-piControl [HI-EDC-01] (300/500)
- esm-hist [HI-EDC-02] (20/165)
- amip [] (0/36)



All results available on raijin in </short/p66/txz599/archive/{experimental}>

# ACCESS-ESM1.5 and CMIP6

## C4MIP

- 1pctCO2-bgc [PI-1pct-bgc-01] (150/150)
- 1pctCO2-rad [PI-1pct-rad-01] (150/150)
- hist-bgc [HI-bgc-01] (100/165)
- esm-ssp858 [] (0/85)

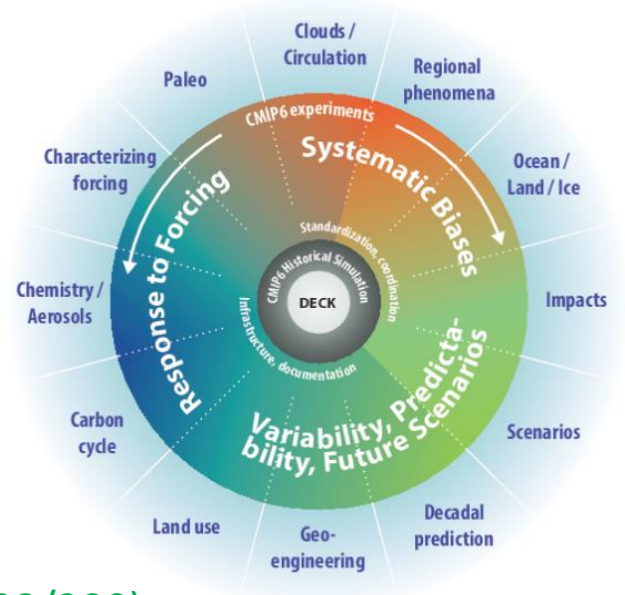
## CDRMIP

- CDR-pi-pulse negative [PI-EDC-pulse-01] (100/100)
- CDR-pi-pulse positive [PI-EDC-pulse-02] (100/100)
- CDR-reversibility [PI-1pct-rev-01, PI-rev-01] (140/140, 200/200)

## ScenarioMIP

- SSP1-2.6, SSP2-4.5, SSP3-7.0, SSP4-8.5

## PMIP (UNSW)



# Summary and Outlook

- Progress with CMIP6 simulations, but ...
- Set-up of AMIP runs (including RFMIP)
- Set-up of scenario runs
- Sanity checks and analysis of current simulation results
- Contribution to MIPs before publishing on ESG
- Model description paper needs to be finalized
- CMORisation of all model output + publishing on ESG

## **Acknowledgments:**

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# Thank you

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