

Next-generation climate model data



Explore the latest projected climate trends with NARClIM2.0

The NSW and Australian Regional Climate Modelling (NARClIM) project is the NSW Government’s trusted source of regional climate projections to inform climate risk assessments, planning, and research into the impacts of climate change.

NARClIM2.0 is the third generation of regional climate modelling led by the NSW Government. It provides continuous climate model data from 1951 to 2100 for multiple global greenhouse gas emissions scenarios at the highest resolution currently available for south-east Australia.

Design improvements

The design of NARClIM2.0 was guided by detailed stakeholder consultation and feedback. It incorporates global climate models and emissions scenarios from the latest Coupled Model Intercomparison Project Phase 6 (CMIP6) used by the Intergovernmental Panel on Climate Change (see Table 1).

Through dynamic downscaling methods using current Weather Research and Forecasting (WRF) regional climate models, NARClIM2.0 delivers projections at 4km resolution for south-east Australia and 20km for Australasia (Figure 1).

Climate projections at 4km resolution are able to explicitly simulate convective processes which are important drivers for many extreme weather events such as storms and extreme rainfall.

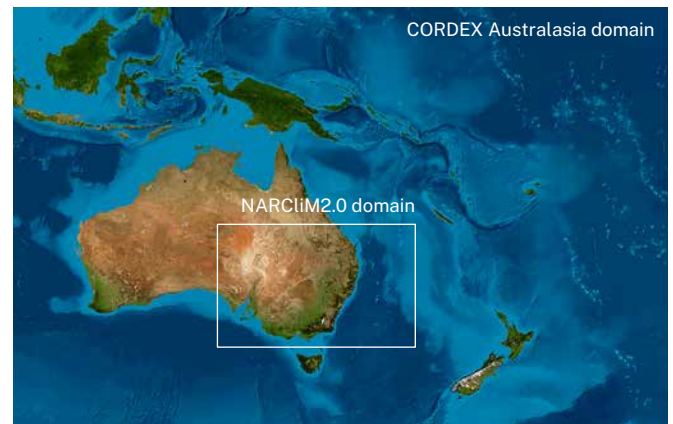


Figure 1: Map of Coordinated Regional Downscaling Experiment (CORDEX) domain with inset box for the NARClIM domain

<p>5 Global Climate Models</p>	<p>2 new Regional Climate Models</p>	<p>Data at hourly to monthly timescales</p>	<p>Representing nearly 3,000 years of data!</p>
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Project features	NARClIM1.0	NARClIM1.5	NARClIM2.0
Release year	2014	2021	2024–25
Years simulated	1990–2009, 2020–2039, 2060–2079	1951–2100 ¹	1951–2100
Grid cell resolution (NARClIM domain/CORDEX Australasia domain)	10km/50km	10km/50km	4km/20km
Vertical levels in the atmosphere	30	30	45
Global climate models (GCM) used in combination with regional climate models (RCM)	4 CMIP3 models: CGCM3.1, CSIRO-Mk3.0, ECHAM5, MIROC3.2	3 CMIP5 models: ACCESS1.0, ACCESS1.3, CanESM2	5 CMIP6 models: ACCESS-ESM1-5, EC-Earth3-Veg, MPI-ESM1-2-HR, NorESM2-MM, UKESM1-0-LL
Number of RCMs and WRF ² version	3 (WRF3.3)	2 (WRF3.6.0.5)	2 (WRF4.1.2)
Emissions scenarios simulated	SRES A2 ³	RCP4.5, RCP8.5 ⁴	SSP1-2.6, SSP2-4.5, SSP3-7.0 ⁵
Number of GCM/RCM model combinations (ensemble members)	12	12	30
Reanalysis dataset used ⁶	NCEP:1950–2009	ERA-Interim: 1979–2013	ERA5: 1979–2020

Notes: 1. The NARClIM1.5 RCMs driven by ACCESS1-0 and ACCESS1-3 GCMs simulate to 2100; the NARClIM1.5 RCMs driven by the CanESM2 GCM simulate to 2099 owing to the CanESM2 GCM not simulating for 2100 at the time of NARClIM1.5 production. 2. Weather Research and Forecasting (WRF) model. 3. Special Report on Emissions Scenarios (SRES) A2 is the 'business-as-usual' scenario. 4. Representative Concentration Pathways (RCP) for moderate (RCP4.5) and very little (RCP8.5) emissions mitigation. 5. Shared Socioeconomic Pathways (SSP); SSP1-2.6 and SSP3-7.0 data available from 2024 and SSP2-4.5 data available in 2025. 6. National Centers for Environmental Predictions (NCEP); ERA = ECMWF (European Centre for Medium-Range Weather Forecasts) Re-Analysis Interim (2015) and ERA5 (2020).

Using NARClIM

NARClIM provides data for approximately 150 climatic variables, for example, rainfall, temperature, humidity, air pressure, wind speed, and solar radiation. Data range from monthly to hourly outputs for different variables.

NARClIM data and downstream products are useful for a range of applications. For example, practitioners with experience in climate science can use the data to inform a climate risk assessment or natural hazards and infrastructure planning.

Explore the resources, case studies, and guidance materials on the AdaptNSW website to see how end-users have effectively integrated NARClIM data into their work.

Find out more

Visit the AdaptNSW website to access NARClIM data and information for your region, including climate change snapshots and an interactive NSW climate projection map.

Technical questions about NARClIM data can be directed to narclim@environment.nsw.gov.au

Our partners

The NARClIM project is led by the NSW Government with support from the Australian Capital Territory, South Australian, Victorian, and Western Australian governments; the University of New South Wales, Murdoch University; and National Computational Infrastructure Australia.