

Project details	
<b>ESCC Project No. &amp; Title(s)</b>	2.6: Regional climate projections science, information and services
<b>Project Leader(s)</b>	Michael Grose (LCI) Rob Colman (DCI)
<b>Deliverable(s)</b>	CMIP5 model feedbacks
<b>Data/software Manager</b>	Claire Trenham

Research output data collection, tool or software URLs if applicable
Climate feedback 'kernel' analysis software

Description (complete for data, tools and software)	
<b>Title</b>	Climate feedback 'kernel' analysis software
<b>Description</b>	Software to perform radiative feedback analysis on CMIP5 models, originally based on method of Soden et al, (2007).
<b>Temporal &amp; spatial extent</b>	N/A
<b>Lineage</b>	Independently derived.
<b>Credit</b>	Author: L. Hanson
<b>Keywords</b>	Feedback, kernels, radiation
<b>ABS Fields of Research Category / Subcategory*</b>	04 Earth Sciences 0401 Atmospheric sciences

\*These are listed in <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1297.02020?OpenDocument>

Attribution/IP (complete for data, tools and software)	
<b>Owning organisation</b>	Bureau of Meteorology
<b>Collaborating organisations</b>	CSIRO
<b>Primary contact for this data</b>	Christine Chung <a href="mailto:christine.chung@csiro.au">christine.chung@csiro.au</a>
<b>Lead researcher</b>	Robert Colman
<b>Contributors</b>	Lawson Hanson <a href="mailto:lawson.hanson@bom.gov.au">lawson.hanson@bom.gov.au</a>
<b>Access</b>	This software is a research product, and is not for public release. For enquiries refer to primary contact.
<b>* Licencing</b>	This software is a research product, and is not for public release. For enquiries refer to primary contact.

Required field

Related materials: publications, tools, websites, related input data. Please provide full citations for publications, data and software.	
Details	URL
Colman, R.A. and L.I. Hanson, 2013: On atmospheric radiative feedbacks associated with climate variability and change. <i>Climate Dynamics</i> , 40, 475-492, doi 10.1007/s00382-012-1391-3	<a href="https://doi.org/10.1007/s00382-012-1391-3">https://doi.org/10.1007/s00382-012-1391-3</a>

Technical details	
<b>For data:</b>	N/A

<b>Total size of this data collection</b>	
<b>For data:</b>	N/A
<b>Total number of files</b>	
<b>Current location of files (data or software)</b>	Bureau of Meteorology (Melbourne)
<b>Format(s)</b>	PYTHON scripts
<b>Associated tool(s)/ dependencies</b>	N/A
<b>Proposed publication host</b>	N/A

Project details	
<b>ESCC Project No. &amp; Title(s)</b>	5.3: Regional climate change projections science and delivery
<b>Project Leader(s)</b>	Michael Grose
<b>Deliverable(s)</b>	A rapid assessment of Australian projections coming from CMIP6, and the production of a publication to be included in IPCC AR6.
<b>Data/software Manager</b>	Claire Trenham

Research output data collection, tool or software URLs if applicable
Code to produce data associated with Grose et al 2020 "Insights from CMIP6 for Australia's future climate" published via Zenodo <a href="https://doi.org/10.5281/zenodo.3698369">https://doi.org/10.5281/zenodo.3698369</a> and hosted on NCI's gitlab.

Description (complete for data, tools and software)	
<b>Title</b>	CMIP6 analysis code
<b>Description</b>	This repository contains code (scripts and notebooks) and some supporting data contributing to the manuscript entitled "Insights from CMIP6 for Australia's future climate" by Grose et al (2020), <a href="https://www.essoar.org/doi/pdf/10.1002/essoar.10501525.1">https://www.essoar.org/doi/pdf/10.1002/essoar.10501525.1</a> in Earth's Future.
<b>Temporal &amp; spatial extent</b>	Global, mid-20 <sup>th</sup> century to 2100
<b>Lineage</b>	Code created by researchers attributed by the DOI publication. Input data the CMIP6 collection held at NCI under projects oi10 and fs38. Output data not published in favour of publishing the code for greater reproducibility.
<b>Credit</b>	World Climate Research Programme's Working Group on Coupled Modelling, which is responsible for CMIP, and we thank the climate modeling groups for producing and making available their model output. For CMIP the U.S. Department of Energy's Program for Climate Model Diagnosis and Intercomparison provides coordinating support and led development of software infrastructure in partnership with the Global Organization for Earth System Science Portals. <a href="https://opus.nci.org.au/display/CMIP/CMIP+Data+Citation">https://opus.nci.org.au/display/CMIP/CMIP+Data+Citation</a>
<b>Keywords</b>	Climate, climate change, Australia
<b>ABS Fields of Research Category / Subcategory*</b>	37 Earth Sciences 3701 Atmospheric sciences 3702 Climate change science 3708 Oceanography

\*These are listed in <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1297.02020?OpenDocument>

Attribution/IP (complete for data, tools and software)	
<b>Owning organisation</b>	Various
<b>Collaborating organisations</b>	Various
<b>Primary contact for this data</b>	<a href="mailto:Claire.Trenham@csiro.au">Claire.Trenham@csiro.au</a>
<b>Lead researcher</b>	Francois Delage
<b>Contributors</b>	Francois Delage; Sugata Narsey; Christine Chung; Jules Kajtar; Kewei Lyu; Harun A. Rashid; Michael R. Grose; Surendra Rauniyar; Margot Bador; Scott Wales; Mandy Freund; Ghyslaine Boschat

<b>Access</b>	Publicly available from NCI's Gitlab ( <a href="https://git.nci.org.au/ct5255/cmip6-analysis">https://git.nci.org.au/ct5255/cmip6-analysis</a> )
<input type="checkbox"/> <b>Licencing</b>	Apache License 2.0

Related materials: publications, tools, websites, related input data. Please provide full citations for publications, data and software.	
Details	URL
Grose, M.R., Narsey, S., Delage, F.P., Dowdy, A.J., G., Chung, C., Kajtar, J.B., Rauniyar, S., Freund, M. H., Zhang, X., Wales, S., Trenham, C., Holbrook, N. Alexander, L., Arblaster, J.M., Power, S.. (2020). Ins Australia's Future Climate. Earth's Future. DOI: <a href="https://doi.org/10.1029/2019EF001469">10.</a>	<a href="https://doi.org/10.1029/2019EF001469">https://doi.org/10.1029/2019EF001469</a>
Climate Change in Australia website	<a href="https://www.climatechangeinaustralia.gov.au/en/">https://www.climatechangeinaustralia.gov.au/en/</a>
Input data: CMIP6 Australian data (fs38), CMIP6 replicated data (oi10), CMIP6 regrided data (lp01) held at NCI	<a href="https://gadi.nci.org.au/g/data/fs38/publications/CMIP6/">gadi.nci.org.au:g/data/fs38/publications/CMIP6/</a> <a href="https://gadi.nci.org.au/g/data/oi10/replicas/CMIP6/">gadi.nci.org.au:g/data/oi10/replicas/CMIP6/</a> <a href="https://gadi.nci.org.au/g/data/lp01/CMIP6/">gadi.nci.org.au:g/data/lp01/CMIP6/</a>
NESP Hub presentations	<a href="http://nespclimate.com.au/insights-into-australias-future-climate-from-new-global-climate-modelling/">http://nespclimate.com.au/insights-into-australias-future-climate-from-new-global-climate-modelling/</a> <a href="https://www.youtube.com/watch?v=xOYan8Byg4g&amp;t=3s">https://www.youtube.com/watch?v=xOYan8Byg4g&amp;t=3s</a>

Technical details	
<b>For data:</b> <b>Total size of this data collection</b>	7.8MB
<b>For data:</b> <b>Total number of files</b>	56 files
<b>Current location of files (data or software)</b>	<a href="https://git.nci.org.au/ct5255/cmip6-analysis">https://git.nci.org.au/ct5255/cmip6-analysis</a> and via <a href="https://doi.org/10.5281/zenodo.3698369">https://doi.org/10.5281/zenodo.3698369</a>
<b>Format(s)</b>	Various - .sh, .py, .ncl, .mat
<b>Associated tool(s)/dependencies</b>	
<b>Proposed publication host</b>	NCI; Zenodo

Project details	
<b>ESCC Project No. &amp; Title(s)</b>	5.3: Regional climate change projections science and delivery
<b>Project Leader(s)</b>	Michael Grose
<b>Deliverable(s)</b>	Future climate in Australia under Paris Agreement global targets (1.5°C and 2°C global warming since pre-industrial).
<b>Data/software Manager</b>	Claire Trenham

Research output data collection, tool or software URLs if applicable
Webpages on Climate Change in Australia: <a href="https://www.climatechangeinaustralia.gov.au/en/changing-climate/future-climate-scenarios/global-warming-levels/">https://www.climatechangeinaustralia.gov.au/en/changing-climate/future-climate-scenarios/global-warming-levels/</a>

Description (complete for data, tools and software)	
<b>Title</b>	Global warming levels
<b>Description</b>	These pages display average temperature and precipitation data for regional Australia under various levels of global warming as well as information about how warming levels are calculated, lenses and implications. Code to produce the underlying data available on request.
<b>Temporal &amp; spatial extent</b>	1850-2100, Australian CCiA regions and states.
<b>Lineage</b>	Code created by Round, Trenham, Narsey and Delage. Input data the CMIP5 collection held at NCI under projects rr3 and al33, ACORNsat data. Output data in NCI project r87, available at NCI on request. Code available at NCI on request.  Written content created by Grose, Boschat et al and reviewed by external experts, with thanks.
<b>Credit</b>	World Climate Research Programme's Working Group on Coupled Modelling, which is responsible for CMIP, and we thank the climate modeling groups for producing and making available their model output. For CMIP the U.S. Department of Energy's Program for Climate Model Diagnosis and Intercomparison provides coordinating support and led development of software infrastructure in partnership with the Global Organization for Earth System Science Portals.  <a href="https://opus.nci.org.au/display/CMIP/CMIP+Data+Citation">https://opus.nci.org.au/display/CMIP/CMIP+Data+Citation</a>
<b>Keywords</b>	
<b>ABS Fields of Research Category / Subcategory*</b>	37 Earth Sciences 3701 Atmospheric sciences 3702 Climate change science 3708 Oceanography

\*These are listed in <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1297.02020?OpenDocument>

Attribution/IP (complete for data, tools and software)	
<b>Owning organisation</b>	CSIRO
<b>Collaborating organisations</b>	BoM
<b>Primary contact for this data</b>	<a href="mailto:Claire.Trenham@csiro.au">Claire.Trenham@csiro.au</a>
<b>Lead researcher</b>	Michael Grose

<b>Contributors</b>	Michael Grose, Ghyslaine Boschat; Sugata Narsey; John Clarke, Claire Trenham, Tim Erwin, Vanessa Round
<b>Access</b>	public
<input type="checkbox"/> <b>Licencing</b>	<a href="https://www.climatechangeinaustralia.gov.au/en/terms-of-use/">https://www.climatechangeinaustralia.gov.au/en/terms-of-use/</a>

<b>Related materials: publications, tools, websites, related input data. Please provide full citations for publications, data and software.</b>	
<b>Details</b>	<b>URL</b>
Grose, M.R., Narsey, S., Delage, F.P., Dowdy, A.J., G., Chung, C., Kajtar, J.B., Rauniyar, S., Freund, M. H., Zhang, X., Wales, S., Trenham, C., Holbrook, N. Alexander, L., Arblaster, J.M., Power, S.. (2020). Ins Australia's Future Climate. Earth's Future. DOI: <a href="https://doi.org/10.1029/2019EF001469">10.</a>	<a href="https://doi.org/10.1029/2019EF001469">https://doi.org/10.1029/2019EF001469</a>
Climate Change in Australia, Global warming levels pages	<a href="https://www.climatechangeinaustralia.gov.au/en/changing-climate/future-climate-scenarios/global-warming-levels/">https://www.climatechangeinaustralia.gov.au/en/changing-climate/future-climate-scenarios/global-warming-levels/</a>
Input data: CMIP5 data (rr3, al33), CCIa intermediate products (e.g. regional masks) and supporting code libraries (r87, dk7) held at NCI	<a href="http://gadi.nci.org.au/g/data/rr3/publications/CMIP5/">gadi.nci.org.au/g/data/rr3/publications/CMIP5/</a> <a href="http://gadi.nci.org.au/g/data/al33/replicas/CMIP5/">gadi.nci.org.au/g/data/al33/replicas/CMIP5/</a> <a href="http://gadi.nci.org.au/g/data/r87/shapefiles">gadi.nci.org.au/g/data/r87/shapefiles</a> <a href="http://gadi.nci.org.au/g/data/dk7/">gadi.nci.org.au/g/data/dk7/</a>

<b>Technical details</b>	
<b>For data:</b> <b>Total size of this data collection</b>	
<b>For data:</b> <b>Total number of files</b>	
<b>Current location of files (data or software)</b>	
<b>Format(s)</b>	.html, netCDF
<b>Associated tool(s)/dependencies</b>	
<b>Proposed publication host</b>	NCI; Climate Change in Australia

Project details	
<b>ESCC Project No. &amp; Title(s)</b>	5.3: Regional climate projections science and delivery
<b>Project Leader(s)</b>	Michael Gross
<b>Deliverable(s)</b>	CORDEX-Australasia data
<b>Data/software Manager</b>	Jason Evans

Research output data collection, tool or software URLs if applicable
Data located at NCI's ESGF node ( <a href="https://esgf.nci.org.au">https://esgf.nci.org.au</a> )

Description	
<b>Title</b>	CORDEX-Australasia
<b>Description</b>	These data includes datasets published for AUS-44 domain by institution 'UNSW' with driving model CSIRO-BOM-ACCESS1-0 Experiments include the historical, RCP4.5 and RCP8.5
<b>Temporal and Spatial Extent</b>	CORDEX-Australasia domain, 1950-2100.
<b>Lineage</b>	WRFV3.6
<b>Credit</b>	UNSW and NSW DPIE
<b>Keywords</b>	Coupled modelling, CORDEX, CMIP5, climate, climate change
<b>ABS Fields of Research Category / Subcategory*</b>	37 Earth Sciences 3701 Atmospheric sciences 3702 Climate change science 3708 Oceanography

\*These are listed in <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1297.02020?OpenDocument>

Attribution/IP (complete for data, tools and software)	
<b>Owning Organisation</b>	UNSW
<b>Collaborating Organisations</b>	UNSW & NSW DPIE
<b>Primary contact for this data</b>	Jason Evans <a href="mailto:jason.evans@unsw.edu.au">jason.evans@unsw.edu.au</a>
<b>Lead Researcher</b>	Jason Evans <a href="mailto:jason.evans@unsw.edu.au">jason.evans@unsw.edu.au</a>
<b>Contributors</b>	Jason Evans, Giovanni Di Virgilio, Fei Ji, Eugene Tam
<b>Access</b>	Publicly available at NCI's ESGF Node ( <a href="https://esgf.nci.org.au">https://esgf.nci.org.au</a> )
<b>Licencing</b>	CC BY-SA 4.0 Consult <a href="http://is-enes-data.github.io/cordex_terms_of_use.pdf">http://is-enes-data.github.io/cordex_terms_of_use.pdf</a> for terms of use governing CORDEX output, including citation requirements and proper acknowledgment.

Related materials: publications, tools, websites, related input data. Please provide full citations for publications, data and software.	
Details	URL
WRF description	<a href="http://www2.mmm.ucar.edu/wrf/users/docs/technote/v3_technote.pdf">http://www2.mmm.ucar.edu/wrf/users/docs/technote/v3_technote.pdf</a>
Local data copy at NCI on Gadi in project fs38	<a href="https://gadi.nci.org.au/g/data/rr3/publications/CORDEX">gadi.nci.org.au/g/data/rr3/publications/CORDEX</a>
NCI Data Catalogue record	<a href="https://geonetwork.nci.org.au/geonetwork/srv/eng/catalog.search#/metadata/f5881_7755_8168_3041">https://geonetwork.nci.org.au/geonetwork/srv/eng/catalog.search#/metadata/f5881_7755_8168_3041</a>
Evaluation of ERA-Interim driven run	Di Virgilio G, Evans JP, Di Luca A, Olson R, Argüeso D, Kala J, Andrys J, Hoffmann P, Katzfey JJ, Rockel B. 2019. Evaluating reanalysis-driven CORDEX regional climate models over Australia:

	model performance and errors. <i>Climate Dynamics</i> , 53(5): 2985–3005. <a href="https://doi.org/10.1007/s00382-019-04672-w">https://doi.org/10.1007/s00382-019-04672-w</a> .
Evaluation and projections of GCM runs	Evans JP, Di Virgilio G, Hirsch AL, Hoffmann P, Remedio AR, Ji F, Rockel B, Coppola E. 2020. The CORDEX-Australasia ensemble: evaluation and future projections. <i>Climate Dynamics</i> . <a href="https://doi.org/10.1007/s00382-020-05459-0">https://doi.org/10.1007/s00382-020-05459-0</a> .
Assessment of Added Value	Di Virgilio G, Evans JP, Di Luca A, Grose MR, Round V, Thatcher M. 2020. Realised added value in dynamical downscaling of Australian climate change. <i>Climate Dynamics</i> , 54(11): 4675–4692. <a href="https://doi.org/10.1007/s00382-020-05250-1">https://doi.org/10.1007/s00382-020-05250-1</a> .

Technical details	
<b>For data: Total size of this data collection</b>	13 TB (39TB total collection)
<b>For data: Total number of Files</b>	>10,000
<b>Current location of files (data or software)</b>	<a href="https://gadi.nci.org.au/g/data/rr3/publications/CORDEX/output/AUS-44/UNSW/CSIRO-BOM-ACCESS1-0">gadi.nci.org.au/g/data/rr3/publications/CORDEX/output/AUS-44/UNSW/CSIRO-BOM-ACCESS1-0</a>
<b>Format(s)</b>	netCDF4
<b>Associated tool(s)/ dependencies</b>	netCDF
<b>Proposed publication host</b>	NCI; Earth System Grid Federation (ESGF)