

Annual report 2020 for domain Australasia

Scientific highlights

- First evaluation of the CORDEX-Australasia ensemble and assessment of the future projected changes. (Evans et al., 2020)
- Evaluation of the added value in the CORDEX-Australasia ensemble and development of new index "Realised Added Value (RAV)" to quantify this (Di Virgilio et al., 2020)
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Summary of each workshop/activity held during the year

Title, date, short description, location, website, links	Responsible person/-s	Funder
Regional climate projections and applications. Jan 2020. Conference session on regional climate projections including CORDEX at the Australian Meteorology and Oceanography conference held in Fremantle Australia. http://amos-2020.w.amos.currinda.com/	Jason Evans, Marcus Thatcher	

Domain related publications during the year

Title, journal and link to publication	Author/-s	Date
Realised added value in dynamical downscaling of Australian climate change. Climate Dynamics https://doi.org/10.1007/s00382-020-05250-1	Di Virgilio G, Evans JP, Di Luca A, Grose MR, Round V, Thatcher M	June 2020
The CORDEX-Australasia ensemble: evaluation and future projections. Climate Dynamics. https://doi.org/10.1007/s00382-020-05459-0	Evans JP, Di Virgilio G, Hirsch AL, Hoffmann P, Remedio AR, Ji F, Rockel B, Coppola E	September 2020

Planned activities for next year

Conference session on regional climate projections including CORDEX at the Australian Meteorology and Oceanography in Feb 2021 - "Regional climate projections and applications". Conveners: Jason Evans and Marcus Thatcher.

Conference session at the Modelling and Simulation Society of Australia and New Zealand conference MODSIM 2021 in Nov/Dec 2021 - "Projections of regional climate change: from modelling to applications". Convener: Jason Evans.

Conference session at the Asia-Oceania Geosciences Society (AOGS) 2021 - "Regional Climate Downscaling and CORDEX: Challenges and Prospects". Conveners: Dong-Hyun Cha, Shuyu Wang, Koji Dairaku, Fredolin Tangang, and Jason Evans

Additional relevant information

Other news from CCAM group

- Over the past 9 months UQ have used 2020 version of CCAM with 35 vertical levels and C288 (~36km global) stretched to ~10 km over whole of Australia and completed 9 experiments with RCP85 for Access1.3 x 2, Access1-0 x 1, CanESM2 x 2, CESM-CAM5, MPI-EMS-LR x 1 and NorESM1-M x 1 for 1970-2099 period. Data was saved every 3 hrs interval. x2 means experiment was run in both atmospheric only and coupled ocean CCAM model.
- Data for rnd24, tmean, tmin and tmax were extracted from raw model output at 5km AWAP grid and was bias corrected using non-parametric BC method. Subsequently heatwaves, extreme precipitation and rainfall indices, SPI drought were derived from above simulations at 5 km over Australia. At 10 km FFDI, Haines index, mean climate and TC detection were completed.
- Preparation for CMIP6 are progressing, UQ have converted matlab scripts to python for SST/sea ice BC and testing trying to have consistent SST/sea ice fields. Downloaded all available SSTs and sea ice from all SSPs for CMIP6 and will product SST/sea ice for CCAM. Hope to run CMIP6 soon. Marcus Thatcher (CSIRO) has provided ERA5 data for CCAM run plan to run CMIP6 version of CCAM with ERA5.

TERN has published two datasets.

1) Historical Heatwaves in Australia - <https://portal.tern.org.au/historical-heatwaves-australia/21807>

2) Queensland Future Climate Data -

<https://dap.tern.org.au/thredds/catalog/CMIP5QLD/catalog.html>

J. Sytkus (UQ)

Compounding impact of deforestation on Borneo's climate during El Niño events.	Chapman, S., Sytkus, J. I., TRANCOSO, R., Salazar, A., Thatcher, M. J., Watson, J. E., ... & McAlpine, C. A.	Environmental Research Letters 2020, 15(8) 084006.
Heatwaves intensification in Australia: a consistent trajectory across past, present and future.	Trancoso, R., Sytkus, J., Toombs, N., Ahrens, D., Wong, K. K. H., & Dalla Pozza, R.	Science of The Total Environment, 2020, 742, 140521.

If more space is needed just add rows in the table.

The report should be sent to ipoc@cordex.org before the 15th November each year.