

Supplementary material

Report authorship and production team

Coordinating lead authors and editorial team

Neil Sims and Blair Trewin

Project coordinator

Colette Leary

Project advisors

John Clarke and Lynette Bettio

Section lead authors

Naomi Benger, Pep Canadell, Chris Chapman, Michael Grose, Benoit Legresy, Zoe Loh, Jannatun Nahar, Acacia Pepler, Hamish Ramsay, Phil Reid, Bronte Tilbrook, Blair Trewin and Xuebin Zhang.

Section contributing authors

Nada Derek, Catia Domingues, Andrew Dowdy, David Etheridge, Ming Feng, Ben Hague, Paul Krummel, Sugata Narsey and Bea Peña-Molino.

Communications

Chris Gerbing and Sharon Cooper

Graphic design

Siobhan Duffy

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References, further reading and notes

Many sections in this report draw on the Working Group I part of the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (<https://www.ipcc.ch/report/ar6/wg1/>), released in 2021 (hereafter referred to as IPCC AR6). Specific IPCC assessment findings or material used are cited in the individual sections below. The full citation for the IPCC report is:

IPCC (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. <https://doi.org/10.1017/9781009157896>.

General climate information

State of the Climate 2012: <http://www.bom.gov.au/state-of-the-climate/2012/Climate-Snapshot-2012-Brochure.pdf>

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World Meteorological Organization WMO 'Statement on the Status of the Global Climate' <https://public.wmo.int/en/our-mandate/climate/wmo-statement-state-of-global-climate>

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Fifth US National Climate Assessment, 2023: <https://nca2023.globalchange.gov/>

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Kennaook/Cape Grim greenhouse gas data: <https://www.csiro.au/greenhouse-gases/>

CSIRO Oceans and Atmosphere: Sea-level data, Sea-Level Rise: <https://research.csiro.au/slrwavescoast/sea-level/>

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Global Climate Observing System: <https://gcos.wmo.int/en/home>

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Report at a Glance

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The figure showing global temperatures is adapted and updated from Figure 4 in the World Meteorological Organization (WMO) Statement on the Status of Global Climate in 2012 (WMO_1108). Global temperature data used are a mean of four different global data sets as described in IPCC AR6 Section 2.3.1.1.3 and Table 2.3.

Citations for key points are in the associated sections below.

Australia's changing climate

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Box 2 – Australian temperatures and global warming

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Box 3 – Extreme rainfall, climate change and flood risk

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Snowfall

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Oceans

Sea surface temperature

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- The assessment of the contribution of ice sheet melting to global sea level rise draws from IPCC AR6 Table 9.5.
- Data sources for the figures are as follows:
- Figure 1. Sea-ice extent values are calculated from satellite passive-microwave ice concentration data obtained from the National Snow and Ice Data Center (Cavalieri et al. 1996, updated annually for 1979–2021, and Maslanik and Stroeve 1999 for 2022).
 - Figure 2. Duration values are calculated from satellite passive-microwave ice concentration data obtained from the National Snow and Ice Data Center (Cavalieri et al. 1996, updated annually for 1979–2021, and Maslanik and Stroeve 1999 for 2022).

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Data in figures in the Greenhouse Gases section are from in situ observations by CSIRO and the Bureau of Meteorology (commencing Kennaook/Cape Grim, Tasmania, 1976) and the Advanced Global Atmospheric Gases Experiment (Krummel, 2014; Prinn, 2018) (global, including Kennaook/Cape Grim, commencing 1978) and from measurements of flask air samples (global, including Kennaook/Cape Grim, commencing 1992), the Kennaook/Cape Grim Air Archive (1978-2023) at the CSIRO GASLAB (Aspendale, Melbourne), and air from Antarctic firn (compacted snow) and ice cores measured at CSIRO GASLAB and ICELAB (Aspendale, Melbourne).

The Global Carbon Budget figure is adapted from Friedlingstein, P., and coauthors. (2023). <https://doi.org/10.5194/essd-15-5301-2023>

The Australian Carbon Budget figure is from the NESP Climate Systems Hub and Global Carbon Project, with data as described in Villalobos Y. and coauthors (2023). <https://doi.org/10.1029/2023GB007845>

Future climate

Knutson, T., and coauthors. (2020). Tropical Cyclones and Climate Change Assessment: Part II: Projected Response to Anthropogenic Warming. *Bulletin of the American Meteorological Society* 101, 3, E303-E322. <https://doi.org/10.1175/BAMS-D-18-0194.1>

Information is drawn from the following IPCC reports, notably AR6:

- Future temperature and heat extremes: Chapter 11.3, Atlas 6.4 and Interactive Atlas
- Rainfall and drought: Chapters 8.3, 8.4, 11.6, 12.4.3, Atlas 6.4 and Interactive Atlas
- Extreme rainfall: Chapters 8.3, 8.4, 11.4 and 12.4.3
- Tropical cyclones and storms: Chapters 11.7 and 12.3
- Coastal and marine: Box 9.2, Chapters 9.6, 12.3.5 and 12.4.3
- Compound events: 11.8, 12.4 and Special Report on the Ocean and Cryosphere in a Changing Climate, Chapter 6

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