State of the Climate 2024

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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:

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General climate information

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State of the Climate 2016:
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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.

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Australia's changing climate

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Box 1 – Changes in weather systems and climate influences

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Snowfall

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Oceans

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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).
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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

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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