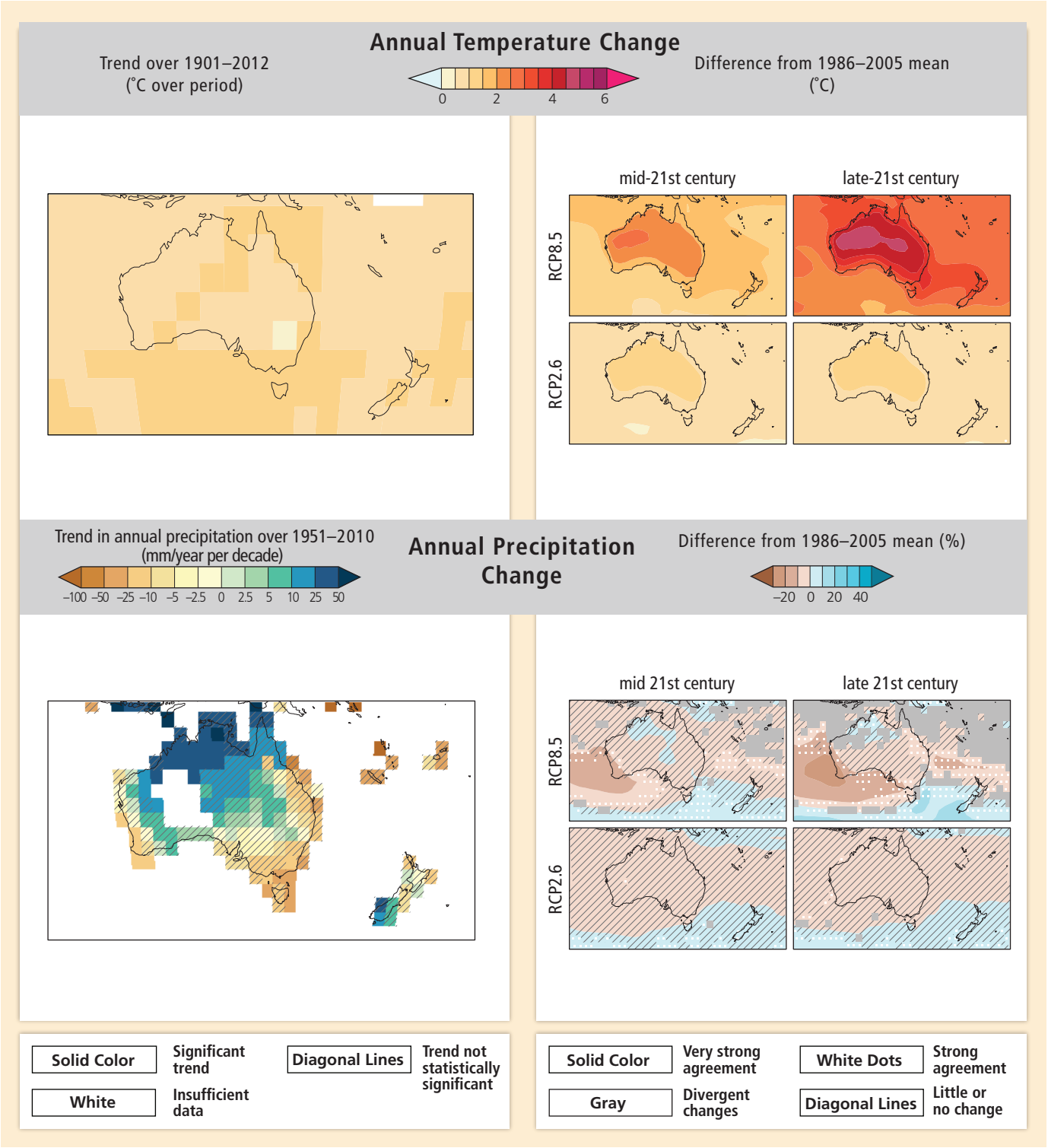

Observed and projected changes in annual average temperature and precipitation. (Top panel, left) Observed temperature change from 1901–2012. (Bottom panel, left) Observed precipitation change from 1951–2010. (Top and bottom panel, right) Projected temperature and precipitation changes for 2046–2065 and 2081–2100 under RCP2.6 and 8.5, relative to 1986–2005. [WGII AR5 Figure 25-1]

Key regional risks from climate change in Australasia and the potential for reducing risk through mitigation and adaptation. Key risks result from high hazard, high vulnerability, and/or high exposure. They are identified based on assessment of the literature and expert judgments. Risk levels are estimated through the 21st century for the current state of adaptation and for a hypothetical highly adapted state. [WGII AR5 Table 25-8]

Climate-related drivers of impacts

Warming trend | Extreme temperature | Drying trend | Extreme precipitation | Snow cover | Sea level rise | Damaging cyclone | Ocean acidification

Level of risk & potential for adaptation

Potential for additional adaptation to reduce risk

Risk level with **high** adaptation | Risk level with **current** adaptation

Key risk	Adaptation issues & prospects	Climatic drivers	Timeframe	Risk & potential for adaptation
Impacts can be delayed but now appear very difficult to avoid entirely, even with combined globally effective mitigation and planned adaptation				
Significant change in community composition and structure of coral reef systems in Australia (*high confidence*) [25.6.2, 30.5, Boxes CC-CR, CC-OA]	Ability of corals to adapt naturally appears limited and insufficient to offset the detrimental effects of rising temperatures and acidification.Other options are mostly limited to reducing other stresses (water quality, tourism, fishing) and early warning systems; direct interventions such as assisted colonization and shading have been proposed but remain untested at scale.		Present Near term (2030–2040) 1.5°C Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high
Loss of montane ecosystems and some native species in Australia (*high confidence*) [25.6.1]	Direct adaptation options are limited, but reducing other stresses such as pests and diseases, predator control and enhancing connectivity of habitats provides immediate co-benefits; need to consider facilitating migration and assisted colonisation.		Present Near term (2030–2040) 1.5°C Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high
Impacts have the potential to be severe but can be reduced substantially by globally effective mitigation combined with adaptation				
Increased frequency and intensity of flood damage to infrastructure and settlements in Australia and New Zealand (*high confidence*) [Table 25-1, Boxes 25-8, 25-9]	Significant adaptation deficit in some regions to current flood risk. Effective adaptation includes land-use controls and relocation as well as protection and accommodation of increased risk to ensure flexibility.		Present Near term (2030–2040) 1.5°C Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high
Constraints on water resources in southern Australia (*high confidence*) [25.5.1, Boxes 25-2, 25-9]	Water resources already struggling to meet unrestrained demand in many locations and exacerbated by projected population growth; effective adaptation relies on combination of demand and supply mechanisms.		Present Near term (2030–2040) 1.5°C Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high
Increased morbidity, mortality and infrastructure damages during heat waves in Australia (*high confidence*) [25.7.4, 25.8.1]	Vulnerability is exacerbated by population growth and aging; transport and power infrastructure already severely stressed during heat waves in many regions, with significant financial costs from future upgrades.		Present Near term (2030–2040) 1.5°C Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high
Wild fire damages to ecosystems and settlements and risks to human life in southern Australia and many parts of New Zealand (*high confidence*) [Table 25-1, Box 25-6]	Part of integrated landscape management; trade-offs between different management objectives and settlement patterns and goals (biodiversity versus protection of human life and property).		Present Near term (2030–2040) 1.5°C Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high
Impacts whose severity depends on changes in climate variables that span a particularly large range; the most severe end would present major challenges				
Increasing risks to coastal infrastructure and low-lying ecosystems in Australia and New Zealand, with widespread damages toward the upper end of projected sea level rise ranges (*high confidence*) [25.6, 25.10, Box 25-1]	Adaptation deficit in some locations to current coastal erosion and flood risk. Successive building and protection cycles constrain flexible responses. Effective adaptation includes land-use controls and ultimately relocation as well as protection and accommodation.		Moderate sea level rise (AR5 WGI 13.5; Box 25-2): Present, Near-term (2030-2040) 1.5°C, Long-term (2080-2100) 2°C, 4°C High end sea level rise: Present, Near term (2030–2040) 1.5°C, Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high
Significant reduction in agriculture production in the Murray-Darling Basin and far south-eastern and south-western Australia (*high confidence*) [25.2, 25.6.1, 25.7.2, Table 25-1, Boxes 25-2, 25-5]	Immediate co-benefits from improved management of over-allocated water resources and balancing competing demands, but the extreme dry end would threaten agricultural production as well as ecosystems and some rural communities.		Wet end of scenario (25.2, 25.5.2, Figure 25-4): Present, Near-term (2030-2040) 1.5°C, Long-term (2080-2100) 2°C, 4°C Dry end of scenario: Present, Near term (2030–2040) 1.5°C, Long term (2080–2100) 2°C, 4°C	Very low / Medium / Very high

photo: Maeslant storm surge barrier in Rotterdam, Netherlands. © Asahi Shimbun / Getty Images