

**DEPARTMENT OF INDUSTRY, SCIENCE, ENERGY AND RESOURCES****Attachment A****TALKING POINTS (AS AT 11AM MONDAY 9 AUGUST)****Headline messages****Release of *IPCC Sixth Assessment Report – The Physical Science Basis***

- We welcome the latest assessment from the Intergovernmental Panel on Climate Change.
  - It provides an update to our understanding of climate science, including the rates, causes and possible trajectories of global warming.
- The Australian Government accepts the science of climate change,
  - and the IPCC’s key finding that “It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.”
- The IPCC’s report reinforces the need for a coordinated, global effort to reduce emissions.
- The IPCC is a trusted source of scientific advice and its work continues to inform the Australian Government.
  - Australian experts have made a significant contribution to the science underpinning this report.
  - The Australian Government is an active participant in IPCC processes.

**Australia’s Approach to Emissions Reduction**

- Australia is resolutely committed to the Paris Agreement and to taking practical and ambitious action to reduce emissions to keep within reach the goal of limiting warming to 1.5 degrees, and to reach net zero as soon as possible, preferably by 2050.
- Our focus is on developing practical, scalable solutions that will enable Australia to reach net zero, while partnering with other countries to decarbonise and grow our economies.
- Australia is on the front line of climate change and we are committed to protecting our unique biodiversity and ecosystems that support our prosperity
  - Australia has joined the High Ambition Coalition for Nature and People and is committed to protecting 30 per cent of land and of ocean by 2030.

### *Australia has a clear plan*

- Australia is focussed on the cost of new and emerging low emissions technologies to become cost competitive with existing approaches.
- Australia has developed a Technology Investment Roadmap to accelerate low emissions technology deployment
  - the roadmap will guide around \$20 billion of Australian Government investment over the decade to 2030
  - we expect to leverage more than \$80 billion of total investment (from private sector and governments) by 2030.
- The roadmap sets stretch goals for priority emissions technologies, to accelerate their deployment both in Australia and overseas
  - our priority technologies include clean hydrogen, carbon capture and storage, low carbon materials like steel and aluminium, long duration energy storage and soil carbon.
- Removing the green premium – the price difference between current technologies and low emissions solutions – is the key to widespread global adoption.

### *We have a strong track record of achievement*

- Australia is on track to exceed our 2030 emissions reduction target of 26-28 per cent below 2005 levels
  - we have reduced emissions by over 20% between 2005 and 2020, compared to the OECD average of six per cent (2005 to 2018).
- Since 2017, more than \$35 billion has been invested in renewable energy in Australia
  - Australia is deploying new wind and solar at ten times the global average per person.
- We have the world's highest uptake of rooftop solar – one in four households have rooftop solar systems.
- Our Clean Energy Finance Corporation is the world's largest green bank, which has mobilised over \$9.1 billion for clean energy projects with a total value over \$31 billion.
- The Australian Renewable Energy Agency has mobilised over \$1.7 billion in grant funding to accelerate Australia's shift to affordable and reliable renewable energy, supporting projects with a total value of \$6.9 billion.
- Our \$2.55 billion Emissions Reduction Fund is one of the world's largest and most robust carbon offset schemes
  - it has already delivered more than 66 million tonnes of abatement with an average cost of around \$12 per tonne.

*We are collaborating with international partners, and supporting our neighbours to tackle climate change*

- International collaboration through practical projects is crucial to lowering the cost of low emissions technologies across global supply chains.
- We have pledged \$1.5 billion in climate finance over 2020-2025, including \$500 million in support of our Pacific neighbours to deploy renewable energy and strengthen resilience in climate impacts
  - in recent years, over 70 per cent of Australia's climate finance through bilateral, regional and global programs has benefited Small Island Developing States and least developed countries in the Indo-Pacific
- The Australian Climate Finance Partnership will mobilise innovative private sector investments in low emissions and climate-resilient solutions in South-East Asia and the Pacific.
- The Government has committed \$60 million to develop a high-integrity carbon offset scheme in our Indo-Pacific region.

### Climate Science and Adaptation

- Australia's practical action on emissions reduction goes hand-in-hand with our practical action on climate adaptation.
- It is clear that our climate is already changing and that we need to adapt to that in all scenarios.
- The Australian Government is taking strong action to build climate resilience for our future generations.
  - Australia has committed to developing a new National Climate Resilience and Adaptation Strategy and committed to submit an Adaptation Communication to the UNFCCC ahead of COP26
  - our new Strategy will provide a clear and practical pathway for building the resilience of our communities and the economy to a changing climate and include a future vision for successful adaptation in accordance with the Paris Agreement.
- Our world-class science institutions play a major part in our local and global adaptation efforts through provision of crucial southern hemispheric climate science and information
- The Australian Government has committed over \$500 million in science to prepare Australia for future climate risks, such as
  - \$149 million for the next phase of the National Environmental Science Program, a long-term commitment to fund environment and climate research to help build resilience

- it includes a cross-cutting climate adaptation mission and \$38 million for a new Climate Systems Hub to advance understanding of Australia’s climate and its extremes, and to inform climate adaptation solutions for Australia.
- The Australian Government is investing \$210 million to establish the Australian Climate Service, a world class capability in climate information and services.
- Since signing the Paris Agreement in 2015, we’ve committed over \$15 billion to enhancing Australia’s resilience through making our natural resources, environment and water infrastructure more resilient to the challenges we face in our climate, including drought and natural disasters. This figure includes significant commitments such as
  - Over \$2billion to increase the resilience of the Great Barrier Reef
  - \$5 billion to support farmers and communities prepare for future drought under the Future Drought Fund
  - \$3.5 billion to build water infrastructure that will strengthen drought resilience in our rural and regional communities under the National Water Grid Authority
  - \$1 billion under the National Landcare Program towards sustainable agricultural outcomes.

### Possible questions and answers

***If global temperature increase is likely to reach 1.5°C in the near term (2021-2040), why should we take any further action? Is it too late to act on climate change? Should we focus on adaptation and give up on mitigation?***

- It will be hard to limit warming to 1.5°C – that’s been understood for some time.
- The more greenhouse gases are emitted to the atmosphere, the more temperatures will increase.
  - The intensity and frequency of extreme climate events such as agricultural droughts, and fire weather will increase as temperatures rise.
- This means we need to continue global efforts to reduce emissions.
- And we will also need to adapt to changes in temperature as a result of past and current emissions
- Australia is committed to the Paris Agreement and its goals, as well as to achieving net zero emissions as soon as possible, and preferably by 2050
  - while ambition and targets are important, it is ultimately action and achievements that matter for the planet. When we make commitments, we meet them, and we are on track to meet and beat our 2030 target.

- ‘if’ and ‘when’ are not in dispute, we are focused on ‘how’ we will reach net zero.
- We want to reduce emissions in a way that enables and transforms industries through the power of technology and economics, not taxes that eliminate them and the jobs and livelihoods they support and create.

***If global temperature increase is likely to reach 1.5 °C in the near term (2021-2040), does Australia need to meet net zero before 2050 to meet Paris Agreement goals?***

- Australia is committed to the Paris Agreement and its goals, as well as to achieving net zero emissions as soon as possible, and preferably by 2050
  - while ambition and targets are important, it is ultimately action and achievements that matter for the planet. When we make commitments, we meet them, and we are on track to meet and beat our 2030 target.
  - our track record is one of reducing emissions faster than our developed country peers. Between 2005 and 2018, Australia’s emissions fell faster than Canada, New Zealand, Japan, Korea or the United States. Over that same period, half of G20 members actually increased their emissions.
  - achieving the goals of the Paris Agreement will require coordinated, global action, including from the top 3 largest emitters: China, the US and the European Union, which collectively account for more than half of global emissions.
  - overcoming the climate challenges facing us is a shared responsibility.
  - our Technology Investment Roadmap is a comprehensive plan to invest in the technologies we need to bring emissions down, here and around the world.
  - the Government has committed to invest \$20 billion in new energy technologies by 2030, to drive at least \$80 billion of total public and private investment over the decade.
  - in the 2021-22 Budget, the Government committed \$565.8 million to drive new international partnerships to make low emissions technologies cheaper. Already this year new partnerships have been announced with Germany, Singapore, Japan and the United Kingdom.
  - ‘if’ and ‘when’ are not in dispute, we are focused on ‘how’ we will reach net zero.
  - Australia has always valued engaging in multilateral forums and will continue to play a constructive role to encourage international cooperation as we collectively confront the challenges that climate change poses.

***Do you accept the science of the latest IPCC report?***

- Yes, the IPCC is a trusted source of scientific advice and its work continues to inform the Australian Government.
- The IPCC presents a review of the available scientific literature. It does not prescribe specific policy actions or prescribe policy actions or comment on any particular country's policies.
- Scientists have presented the latest available science, which we will review and take into account in our deliberations on climate change policy.

***Why should I trust the science? Are the climate models accurate?***

- The IPCC doesn't rely on individual models - it uses multiple models to estimate a range and the average of future climate change.
- Previous climate change projections from the IPCC have been confirmed by real-world observations.
  - Past IPCC estimates of global temperature, extreme events and other changes in global systems have proven accurate.
  - The IPCC climate models have accurately predicted the observed increases in extreme heat events, large-scale changes in rainfall patterns, and increases in land and ocean temperature.
  - IPCC projected increases in overall global temperature increase from 1988 to 2019 have been very close to how climate actually warmed.

***Does the report make recommendations to governments?***

- The IPCC does not prescribe policy actions or comment on any particular country's policies.
  - It presents a review of the available scientific literature, to inform governments understanding of climate change.

***What does the report say about the long-term temperature goals of the Paris Agreement?***

- The report finds that global surface temperature around 2050 will be higher than today under all emission scenarios considered in this Report.
- Global warming levels of 1.5°C and 2°C above preindustrial levels will be exceeded by the end of the 21st century under all but the two lowest CO<sub>2</sub> emission scenarios, which include varying levels of net negative emissions.

***What does the IPCC say about the feasibility of limiting global warming to 1.5°C?***

- This report does not make an assessment of the feasibility of limiting global warming to 1.5°C.
  - It focuses on the climate response to a range of emission scenarios.
- Under all the emission scenarios assessed, there is 50 per cent, or greater, chance that global warming will reach 1.5°C in the near term (2021-2040).

***What does the report say about the importance of methane reductions? Should we be taking more/early action on methane?***

- The Report finds that, from a physical science perspective, limiting human-induced global warming to a specific level requires reaching at least net zero CO<sub>2</sub> emissions, along with strong reductions in other greenhouse gas emissions.
  - And that, strong, rapid and sustained reductions in methane emissions would also limit the warming effect resulting from declining aerosol pollution and would improve air quality.
- The Australian Government wants to reduce emissions in a way that enables and transforms industries through the power of technology and economics, not taxes that eliminate them and the jobs and livelihoods they support and create.
- Australia is supporting emerging technologies to reduce methane emissions, including abatement of fugitive methane, waste-to-energy and recycling and livestock feed technologies.
  - The \$6 million Methane Emissions Reduction in Livestock (MERiL) program, provides grants to organisations in the livestock industry to engage producers to help measure the productivity and emissions reduction benefits of low emission feed technologies while increasing livestock producers' and service providers' experience with these technologies.
  - The Government has committed a new \$1.2 billion Technology Co-Investment Facility to invest in low emissions technologies. This includes \$59.6 million to support a National Soil Carbon Innovation Challenge and develop and trial technologies to deliver methane-inhibiting feed supplements to grazing livestock.
  - The Emissions Reduction Fund also supports the reduction of methane emissions across its agriculture, waste, mining and land sectors.

***What does the report say about the use of negative emission technologies to limit global warming?***

- This Report assesses the effects of negative emission technologies on the carbon cycle and climate.
- Analysis of the ecological and socioeconomic dimensions of negative emissions is covered in the forthcoming IPCC reports on adaptation and mitigation, to be released in February and March 2022 respectively.

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***Have you read the report?***

- I have been briefed on the Summary for Policy Makers that has been publicly released.
- I understand that the IPCC will release the full report, which is over 2000 pages, in the near future.

***Was Australia involved in the preparation and approval of this Report?***

- Australia participated in the IPCC meeting of governments that approved this report.
  - We supported approval of the Summary for Policy Makers that is an accurate and balanced assessment of the evidence base, policy-neutral, not prescriptive and within the agreed scope of work.
- The Department of Industry, Science, Energy and Resources participated in reviews of the draft report, inviting comments from Commonwealth, State and Territory Government agencies.
- The Australian Government provided travel support to fourteen Australian experts, selected by the IPCC Bureau, to participate in author meetings to develop this report.

- Australian scientists participated as authors and review editors in nine of the report's twelve chapters.
- Australian research and literature has also been taken into account in the development of the report.

### ***What is the IPCC?***

The IPCC is a scientific body under the United Nations. It does not conduct any research nor does it monitor climate related data or parameters.

It reviews and assesses the most recent scientific, technical and socio-economic information, produced worldwide, relevant to the understanding of climate change.

It is not a policy decision making body but rather provides policy makers with a scientific basis for their decision making.

The IPCC's main activities are the preparation of:

- comprehensive Assessment Reports on climate change;
- practical guidance to assist Parties to the international climate change treaties prepare national greenhouse gas inventories; and
- Special Reports on various topics, including *Global warming of 1.5°C*, released in 2018.

### ***What does the report say about the link between climate change and specific extreme weather events?***

- Climate change is linked to increases in the frequency and severity of a number of extreme weather events including heat waves and extreme rainfall events.
  - Continued warming is likely to bring further increases in such extreme weather events.

### ***Does the report say anything specific to Australia about climate and specific extreme weather events?***

- While the summary is focused on global and regional changes in the climate system, the summary makes a number of findings for Australia
  - including that there has been an increase in “hot extremes” and “agricultural drought” with confidence in human contribution to the observed changes rated as high and low respectively.

- The summary also states that an observed increase in fire weather is identified “on all inhabited continents” including Australia.
  - These findings are largely consistent with the State of the Climate 2020 report, produced by BoM and the CSIRO.

### ***What does the report say about “tipping points”?***

- The IPCC report notes that low-likelihood, high-impacts linked to tipping points cannot be ruled out.
  - These represent critical thresholds beyond which earth systems may reorganise, often abruptly and/or irreversibly.
  - However, the report does not include tipping points within the climate scenarios it considered due to the uncertainty in the underlying science.

### ***What does the report say about projections for sea level rise?***

- The report estimates that global mean sea level will continue to rise over the 21st century, with a rise of between 0.28 and 1.01 meters relative to the 1995–2014 average, depending on the emissions scenario considered.
  - This means the frequency of extreme sea level events is expected to increase in the 21st century.

### ***What do the findings mean for the Great Barrier Reef/ How are you managing the impacts?***

- The IPCC Report reinforces the ongoing need for Australia’s long-term adaptive planning approach to protect the Reef. The centrepiece of this is the Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan).
- Australia is accelerating efforts under the Reef 2050 Plan.
  - We are taking action on climate change, improving water quality and coastal habitats, tackling outbreaks of crown-of-thorns starfish, addressing pollution and protecting threatened and migratory species.
- The Australian and Queensland governments are investing more than \$3 billion from 2014-15 to 2023-24 to implement the Reef 2050 Plan.
  - More than \$2 billion of this is from the Australian Government – an unprecedented investment.

### ***Your own report into the Great Barrier Reef says that at 1.5 degrees Celsius that the Reef will not survive – does this not now mean it should be on the in danger list?***

- The Australian Government has said time and again that global warming is the greatest threat to the reef and that is why we are investing so heavily in adaptation and resilience strategies.

- This report highlights that there is a threat to reefs around the world - not just the Great Barrier Reef - and Australia's position has always been to look at the issue in that context and not to single out one nation over another under the pretext of the World Heritage Committee.

***What is the Government doing to manage climate impacts on threatened fauna and flora?***

- The Australian Government's new ten-year Threatened Species Strategy was released in May 2021.
- The Strategy identifies climate change adaptation and resilience as one of eight key action areas that are fundamental to the recovery of threatened species and where the Australian Government will focus and build on efforts.
- The new Strategy will be underpinned by consecutive 5-year Action Plans – with the first Action Plan to be released later this year. Each Action Plan will identify priority species and places, outline specific actions to improve the trajectory and condition of species and places and set targets to measure progress

***What do the report findings mean for the approval of major projects under the EPBC Act?***

- The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is the Australian Government's central piece of environmental legislation.
  - It provides for the protection of nationally and internationally important flora, fauna, ecological communities, internationally important wetlands, the protection and conservation of heritage and the promotion of the conservation of biodiversity.
  - If there are likely to be significant impacts on nationally protected matters from any proposed development, including fossil fuel projects, I must rigorously consider the impacts on nationally protected matters.
  - Projects are considered on a case-by-case basis and I take seriously my responsibilities under the EPBC Act to protect the environment.

***What does the report finding mean for drought in Australia?***

- The Australian Government's current policy approach to drought is in line with the latest science. It acknowledges that drought is likely to become more frequent, more severe and longer lasting in many regions due to climate change.
- Drought is an enduring feature of the Australian landscape. It has significant economic, social and environmental impacts.
- That is why the Australian Government is helping farmers and their communities prepare for, manage and recover from drought. Learning to live with and adapt to this drought cycle will help make Australian farming more productive and profitable, better protect our land and water, and strengthen the rural communities it supports.

- The Australian Government is working with state and territory governments to coordinate approaches to drought policy and programs through the National Drought Agreement.
- It is also implementing its [Drought Response, Preparedness and Resilience Plan](#), which focuses on long-term resilience and preparedness as well as immediate action for those in drought and support for their wider communities.
- The Australian Government has committed more than \$11.1 billion to drought-related measures since 2018-19.
- The \$5 billion Future Drought Fund provides secure, continuous funding for drought resilience initiatives. It helps Australian farms and communities prepare for the impacts of drought.

DEPARTMENT OF INDUSTRY, SCIENCE, ENERGY AND RESOURCES

Attachment B

Handling strategy: Release of the IPCC’s Sixth Assessment Report on Climate Science - AR6 Climate Change 2021: The Physical Science Basis

9 August 2021

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ABOUT THIS HANDLING STRATEGY

This handling strategy was prepared by the Department of Industry, Science, Energy and Resources (DISER) in consultation with the Department of Agriculture, Water and the Environment (DAWE), Department of Foreign Affairs and Trade (DFAT) and Department of the Prime Minister and Cabinet (PM&C). The talking points will be updated in consultation with the same agencies in the lead up to and following the release of the report’s Summary for Policymakers (SPM) – expected 6pm 9 August 2021.

DISER led the Australian delegation participating in the approval of the SPM, in its role as IPCC Focal Point. The Australian delegation also included officials from DAWE and DFAT. This handling strategy sets out the responsibilities of each Minister and the roles of each Departments in relation to this IPCC report and its implications.

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The Minister for Energy and Emissions

Reductions is the responsible Minister for Australia’s emissions targets and emissions reporting.

Minister Ley, as the Minister for the Environment with responsibility for climate science, also has a lead role in responding to the report. s33(a)(iii)

The Australian Government supports the rigour of the IPCC's reporting process, having provided feedback during consultation periods. s33(a)(iii)

Consistent with comments provided through the consultation period, the Australian Government supports the IPCC's findings including that "It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred."

## KEY FINDINGS

**Climate Change 2021: The Physical Science Basis** provides an update on the latest climate science, including the rates, causes and likely future trajectories of global warming and other changes to the climate system. The report's Approved Summary for Policymakers conveys 14 high level statements across four topics (refer to [Attachment D](#) of the Ministerial submission to Minister Taylor MS21-001201):

- The current state of the climate
- Our possible climate futures
- Climate information for risk assessment and regional adaptation
- Limiting climate change

### Key findings in the Summary for Policymakers:

1. "From a physical science perspective, **limiting human-induced global warming to a specific level requires limiting cumulative CO<sub>2</sub> emissions, reaching at least net zero CO<sub>2</sub> emissions, along with strong reductions in other greenhouse gas emissions.** Strong, rapid and sustained reductions in CH<sub>4</sub> emissions would also limit the warming effect resulting from declining aerosol pollution and would improve air quality." [D1]
2. "**Scenarios with low or very low GHG emissions (SSP1-1.9 and SSP1-2.6) lead within years to discernible effects on greenhouse gas and aerosol concentrations,** and air quality, relative to high and very high GHG emissions scenarios (SSP3-7.0 or SSP5-8.5). Under these contrasting scenarios, **discernible differences in trends of global surface temperature would begin to emerge from natural variability within around 20 years,** and over longer time periods for many other climatic impact-drivers (*high confidence*)."[D2]
3. "Global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered. **Global warming of 1.5°C and 2°C will be exceeded during the 21st century** unless deep reductions in CO<sub>2</sub> and other greenhouse gas emissions occur in the coming decades." [B1]
4. "...**Crossing the 2°C global warming level in the mid-term period (2041–2060)** is *very likely* to occur under the very high GHG emissions scenario (SSP5-8.5), *likely* to occur under the high GHG emissions scenario (SSP3-7.0), and *more likely than not* to occur in the intermediate GHG emissions scenario (SSP2-4.5)." [B1.2]

5. “Under the five illustrative scenarios, in the near term (2021-2040), **the 1.5°C global warming level** is *very likely* to be exceeded under the very high GHG emissions scenario (SSP5-8.5), **likely to be exceeded under the intermediate and high GHG emissions scenarios (SSP2-4.5 and SSP3-7.0)**, *more likely than not* to be exceeded under the low GHG emissions scenario (SSP1-2.6) and *more likely than not* to be reached under the very low GHG emissions scenario (SSP1-1.9).” [B1.3]
  - i. “Furthermore, for the very low GHG emissions scenario (SSP1-1.9), it is *more likely than not* that global surface temperature would decline back to below 1.5°C toward the end of the 21st century, with a temporary overshoot of no more than 0.1°C above 1.5°C global warming.” [B1.3]
6. “Global surface temperature in any single year can vary above or below the long-term human-induced trend, due to substantial natural variability. **The occurrence of individual years with global surface temperature change above a certain level**, for example 1.5°C or 2°C, relative to 1850–1900 **does not imply that this global warming level has been reached.**” [B1.4]
7. “... Relative to 1995-2014, the **likely global mean sea level rise** by 2100 is 0.28-0.55 m under the very low GHG emissions scenario (SSP1-1.9), 0.32-0.62 m under the low GHG emissions scenario (SSP1-2.6), 0.44-0.76 m under the intermediate GHG emissions scenario (SSP2-4.5), and 0.63-1.01 m under the very high GHG emissions scenario (SSP5-8.5),
  - i. and by 2150 is 0.37-0.86 m under the very low scenario (SSP1-1.9), 0.46- 0.99 m under the low scenario (SSP1-2.6), 0.66-1.33 m under the intermediate scenario (SSP2-4.5), and 0.98-1.88 m under the very high scenario (SSP5-8.5) (*medium confidence*).
  - ii. Global mean sea level rise above the *likely* range – approaching 2 m by 2100 and 5 m by 2150 under a very high GHG emissions scenario (SSP5-8.5) (*low confidence*) – cannot be ruled out due to deep uncertainty in ice sheet processes.” [B5.3]
8. “... Due to relative sea level rise, **extreme sea level events that occurred once per century in the recent past are projected to occur at least annually at more than half of all tide gauge locations by 2100** (*high confidence*). Relative sea level rise contributes to increases in the frequency and severity of coastal flooding in low-lying areas and to coastal erosion along most sandy coasts (*high confidence*).” [C2.5]
9. “**Many changes in the climate system become larger in direct relation to increasing global warming.** They include increases in the frequency and intensity of hot extremes, marine heatwaves, and heavy precipitation, agricultural and ecological droughts in some regions, proportion of intense tropical cyclones as well as reductions in Arctic sea ice, snow cover and permafrost.” [B2]
10. “**Low-likelihood, high-impact outcomes** could occur at global and regional scales even for global warming within the very likely range for a given GHG emissions scenario. The probability of low-likelihood, high impact outcomes increases with higher global warming levels (*high confidence*). Abrupt responses and **tipping points of the climate system**, such as strongly increased Antarctic ice sheet melt and forest dieback, cannot be ruled out (*high confidence*).” [C3.2]

Although the Summary for Policymakers is globally focused, it does provide regional information.

**Two findings that specifically reference Australia are included in the SPM, they address projections for floods and droughts:**

- i. “At 2°C global warming and above, the level of confidence in and the magnitude of the change in droughts and heavy and mean precipitation increase compared to those at 1.5°C. Heavy precipitation and associated flooding events are projected to become more intense and frequent in the Pacific Islands and across many regions of North America and Europe (*medium to high confidence*). These changes are also seen in some regions in **Australasia** and Central and South America (*medium confidence*).” [C.2.3]
- ii. “Several regions in Africa, South America and Europe are projected to experience an increase in frequency and/or severity of agricultural and ecological droughts with *medium to high confidence*; increases are also projected in **Australasia**, Central and North America, and the Caribbean with medium confidence.” [C.2.3]
- iii. “A small number of regions in Africa, **Australasia**, Europe and North America are also projected to be affected by increases in hydrological droughts, and several regions are projected to be affected by increases or decreases in meteorological droughts with more regions displaying an increase (*medium confidence*). Mean precipitation is projected to increase in all polar, northern European and northern North American regions, most Asian regions and two regions of South America (*high confidence*).” [C.2.3]

These findings are consistent with those findings from the *State of the Climate 2020* report, produced by BoM and the CSIRO.

A finding in the SPM on the attribution of compound extreme events to human influence draws on Australian science presented in chapters 11 and 12:

- i. “Human influence has likely increased the chance of compound extreme events since the 1950s. This includes increases in the frequency of concurrent heatwaves and droughts on the global scale (*high confidence*); fire weather in some regions of all inhabited continents (*medium confidence*); and compound flooding in some locations (*medium confidence*).” [A.3.5]

## SENSITIVITIES

1. The SPM reports that global warming of 1.5°C is expected to be reached in the near term (2021-2040).
  - a. Stakeholders may misinterpret the finding to suggest that warming has already exceeded 1.5°C or is likely to be exceeded in early to mid-2020s.
  - i. The IPCC defines a crossing point as the period when the global temperature increase, averaged across a 20 year period, exceeds a specified temperature threshold. The SPM reports that surface temperature in 2001-2020 was 0.99 [0.84-1.10]°C higher than 1850-1900 (A.1.2).

- b. Stakeholders may compare this finding to a similar finding in IPCC's Special Report on Global Warming of 1.5°C (SR1.5, 2018) and infer that 1.5°C will be crossed earlier than expected or that warming is accelerating beyond previous estimates. Our understanding is that this is not the case.
  - i. SR1.5 reported that warming was likely to reach 1.5°C between 2030 and 2052 if warming was held to 2017 warming rates. The AR6 notes that all scenarios show the warming rate increasing after 2017 and uses these projections to estimate the crossing time.
  - ii. The SPM notes that these findings are not comparable due to this methodology improvement, as well as new datasets that increases the estimate of historical warming in AR6 by around 0.1°C. (B.1.3, A.1.2)
  - iii. These methodology improvements do not significantly alter the IPCC's reported global carbon budgets for holding temperature increase to 1.5°C or other temperature levels over the longer term (D.1.3).
2. The SPM reaffirms the importance of reducing CO<sub>2</sub> emissions to net zero for stabilising warming, which is not the case for all greenhouse gases. (D.1)
  - a. The report does not answer the question on whether reaching 1.5°C global warming in the "near term" (2021-2040) has implications for the timeframe to reach net zero CO<sub>2</sub> required to hold temperature to 1.5°C (currently "around 2050") over the longer term. This issue will be covered in the upcoming IPCC AR6 *Mitigation of Climate Change* scheduled for release in March 2022.
3. The SPM identifies the role of methane emissions reductions while demonstrating that, in the long term, temperatures can be stabilised with positive, although declining, methane emissions (SPM Figure 4).
  - a. Stakeholders might use the report's release as an opportunity to amplify calls for near term action to reduce methane emissions, noting its greater warming impact compared to carbon dioxide on a tonne for tonne basis, over a 100 year time horizon.
  - b. The SPM finds "strong, rapid and sustained reductions" in methane emissions would also limiting the warming effect of declining aerosol pollution and would improve air quality (D.1). Aerosol emissions are expected to decline because of decreasing burning of fossil fuels, as well as pollution controls.
4. s33(a)(iii)

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## Report approval process

The Intergovernmental Panel on Climate Change (IPCC) met at a virtual session on 26 July to 6 August 2021 to finalise the Summary for Policymakers of the Working Group I contribution to the IPCC's Sixth Assessment Report – *AR6 Climate Change 2021: The Physical Science Basis*. IPCC member governments considered the report's Summary for Policymakers and approved the text line-by-line (42 pages).

The Australian Delegation comprised officials from the Department of Industry, Science, Energy and Resource (DISER), the Department of Agriculture, Water and the Environment (DAWE) and the Department of Foreign Affairs and Trade (DFAT). DISER, as the National Focal Point for the IPCC, will work closely with DAWE, as policy lead for climate science.

IPCC report authors provided a final negotiating text to government delegations two days before the start of the session that incorporated comments received from governments during the final government distribution of the report (3 May – 20 June 2021).

IPCC Communications is preparing for a public release of the approved report following a press briefing, scheduled for Monday 9 August 2021 (6pm Canberra time). The report's Summary for Policymakers will be released at that time, the underlying chapters (over 2,000 pages) will be made available following any necessary updates to reflect changes to the summary report.

## BACKGROUND

The Intergovernmental Panel on Climate Change is the United Nations body for assessing the science related to climate change. The IPCC does not conduct its own research. This report provides an assessment and synthesis of peer-reviewed literature on climate science, accepted for publication by 31 January 2021.

The Sixth Assessment Report was requested by IPCC member governments at the 41<sup>st</sup> Session of the IPCC, in February 2015. DISER, as IPCC National Focal Point, contributed to the report's development when it agreed to its scope at the IPCC 46<sup>th</sup> Plenary Session in October 2017 and provided comments during two Government Reviews of draft reports, in June 2020 and June 2021. DISER nominated Australian experts to participate in its development, of which 14 were selected by the IPCC Bureau to contribute as authors or review editors. Experts from outside the Australian Government were supported by Department of Foreign Affairs and Trade through the International Climate Change Engagement Fund.

This report provides an update on the latest climate science, including the rates, causes and likely future trajectories of global warming and other changes to the climate system. It focuses on the climate response to a set of emissions scenarios. The impacts of these scenarios on human and natural systems will be the topic of the second AR6 report – *AR6 2022: Impacts, Adaptation and Vulnerability*, due for release in February 2022. The feasibility or likelihood of individual scenarios is

not part of the assessment and will be addressed in the third report, *AR6 2022: Mitigation of Climate Change*, to be finalised in March 2022. The AR6 Synthesis Report will provide an integrated view of climate change, as the final part of the AR6 and is due for release in September 2022.

## DETAILED RESPONSES TO THE REPORT

Talking points are provided to the office as part of Minister briefing (DISER MS21-001201, DAWE [MS21-002639](#)), and also via the DISER media team to the Minister's media advisers as per the usual protocol. Talking Points will be updated (with time/date stamp) by relevant Departments as necessary and provided to the office.

### Departmental roles and responsibilities

#### Department of Industry, Science, Energy and Resources

DISER will be the central point of contact for media enquiries regarding emissions reductions and targets, climate finance in Australia including ARENA and CEFC, Australia's commitment to the Paris Agreement and IPCC processes. The DISER media team will:

- work with the line area to prepare any additional key messages and talking points to those provided below, for use by all stakeholders as required
- draft a media release if required
- be the central point of contact for media enquiries
- direct relevant media enquiries to the Department of Agriculture, Water and the Environment media team and the Department of Foreign Affairs and Trade media team.
- where appropriate, coordinate responses to complex written media enquiries.

#### Department of Agriculture, Water and the Environment

The Department of Agriculture, Water and the Environment is the point of contact for media enquiries regarding climate science and adaptation in Australia. The Department of Agriculture, Water and the Environment media team will:

- handle enquiries about climate science, climate change impacts and adaptation in Australia, action on oceans and coral reefs, Australian Antarctic science, action on blue carbon ecosystems.
- where appropriate, liaise with the DISER media team and line areas on other enquiries and agree on a handling strategy on a case by case basis.

The Department of Agriculture, Water and the Environment will lead on communicating the findings of the report to government and wider audiences, following its release.

#### Department of Foreign Affairs and Trade

The Department of Foreign Affairs and Trade is the point of contact for media enquiries regarding international climate finance and international climate change adaptation. The Department of Foreign Affairs and Trade media team will:

- handle enquiries about climate finance (including the Green Climate Fund) and international climate change adaptation, which will be forwarded to DFAT's media team for response.
- where appropriate, liaise with the DISER media team and line areas on other enquiries and agree on a handling strategy on a case by case basis.

## Stakeholders and contacts

### 1. Australian Delegation at the IPCC Plenary:

Name	Position	Email and phone
Rob Sturgiss Head of Delegation	General Manager, National Inventory Systems and International Reporting Branch, Climate Change Division, DISER	<a href="mailto:Rob.Sturgiss@industry.gov.au">Rob.Sturgiss@industry.gov.au</a> s22
s22	Assistant Manager, Inventory Reporting and Engagement, Climate Change Division, DISER	s22 <a href="mailto: @industry.gov.au">@industry.gov.au</a> s22
s22	Assistant Manager, Modelling Agriculture and Geospatial, Climate Change Division, DISER	s22 <a href="mailto: @industry.gov.au">@industry.gov.au</a> s22
s22	A/g Assistant Manager, Inventory, Reporting and Engagement, Climate Change Division, DISER	s22 <a href="mailto: @industry.gov.au">@industry.gov.au</a> s22
s22	Assistant Director, Climate Science and Services, Climate Adaptation and Resilience Division, DAWE	s22 <a href="mailto: @awe.gov.au">@awe.gov.au</a> s22
s22	Director, Climate Adaptation and Resilience Negotiations Section, Sustainability and Climate Change Branch, DFAT	s22 <a href="mailto: @dfat.gov.au">@dfat.gov.au</a> s22
s22	Assistant Director, Climate Adaptation and Resilience Negotiations Section, Sustainability and Climate Change Branch, DFAT	s22 <a href="mailto: @dfat.gov.au">@dfat.gov.au</a> Ph: s22 Mob: s22
s22	Climate Adaptation and Resilience Negotiations Section, Sustainability and Climate Change Branch, DFAT	s22 <a href="mailto: @dfat.gov.au">@dfat.gov.au</a>

s22	Climate Adaptation and Resilience Negotiations Section, Sustainability and Climate Change Branch, DFAT	s22	<a href="mailto:dfat.gov.au">@dfat.gov.au</a>
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## 2. Department of Industry, Science, Energy and Resources:

Name	Position	Email and phone
Helen Bennett	Head of Division, Climate Change Division IPCC National Focal Point	<a href="mailto:Helen.Bennett@industry.gov.au">Helen.Bennett@industry.gov.au</a> s22
s22 (Key contact) Wed-Fri	Manager, Inventory, Reporting and Engagement Team, National Inventory Systems and International Reporting Branch, Climate Change Division	s22 s22 <a href="mailto:industry.gov.au">@industry.gov.au</a>
s22 (Key contact) Mon-Tues	A/g General Manager, National Inventory Systems and International Reporting Branch, Climate Change Division	s22 s22 <a href="mailto:industry.gov.au">@industry.gov.au</a>
s22	Manager, International Climate Policy and Negotiations, International Climate and Technology Division	s22 s22 <a href="mailto:industry.gov.au">@industry.gov.au</a>
s22	Manager, Energy and Climate Change Communications	s22 <a href="mailto:industry.gov.au">@industry.gov.au</a>
s22	Media	s22 <a href="mailto:industry.gov.au">@industry.gov.au</a>

## 3. Department Agriculture, Water and the Environment:

Maya Stuart-Fox	First Assistant Secretary, Climate Adaptation and Resilience Division	<a href="mailto:Maya.Stuart-Fox@awe.gov.au">Maya.Stuart-Fox@awe.gov.au</a> s22
Nick Post	Assistant Secretary, Climate Science and Services, Climate Adaptation and Resilience Division	<a href="mailto:Nicholas.Post@awe.gov.au">Nicholas.Post@awe.gov.au</a> s22
s22 (Key contact)	Director, Climate Science and Services, Climate Adaptation and Resilience Division	s22 s22 <a href="mailto:awe.gov.au">@awe.gov.au</a>
s22	Climate Science and Services, Climate Adaptation and Resilience Division	s22 s22 <a href="mailto:awe.gov.au">@awe.gov.au</a>
s22	Director, Antarctica and the Global System, Australian Antarctic Division	s22 s22 <a href="mailto:awe.gov.au">@awe.gov.au</a>

		s22
s22	Manager, International Relations Office of the CEO, Bureau of Meteorology	s22 <a href="mailto:">@bom.gov.au</a> s22
s22	DAWE Media team	s22 <a href="mailto:">@environment.gov.au</a> s22 <a href="mailto:">@agriculture.gov.au</a>
s22	DAWE Media team	s22 <a href="mailto:">@environment.gov.au</a> s22
s22	National Media Manager Bureau of Meteorology	s22 <a href="mailto:">@bom.gov.au</a> s22

#### 4. Department of Foreign Affairs and Trade

Name	Position	Email and phone
Ruth Stone	Assistant Secretary, Sustainability and Climate Change Branch, Multilateral Policy Division	<a href="mailto:Ruth.Stone@dfat.gov.au">Ruth.Stone@dfat.gov.au</a>
s22	Director, Climate Adaptation and Resilience Negotiations Section, Sustainability and Climate Change Branch	s22 <a href="mailto:">@dfat.gov.au</a> s22
s22	Director, Sustainability and Climate Change Branch	s22 <a href="mailto:">@dfat.gov.au</a>
s22 (Key contact)	Assistant Director, Climate Adaptation and Resilience Negotiations Section, Sustainability and Climate Change Branch	s22 <a href="mailto:">@dfat.gov.au</a> s22
s22	Senior Policy Officer, Sustainability and Climate Change Branch	s22 <a href="mailto:">@dfat.gov.au</a> s22
s22	Senior Policy Officer, Sustainability and Climate Change Branch	s22 <a href="mailto:">@dfat.gov.au</a>
DFAT media team		s22 <a href="mailto:">@dfat.gov.au</a>

#### 5. Department of the Prime Minister and Cabinet

Name	Position	Email and phone
s22	Senior Advisor, Climate Change, Industry, Infrastructure & Environment Division	s22 <a href="mailto:">@pmc.gov.au</a> s22
Climate Change team	Advisor, Climate Change, Industry, Infrastructure & Environment Division	s22 <a href="mailto:">@pmc.gov.au</a>

### Requests for interview/comment

Requests for comment from the Minister/s will be referred to the respective Ministers' media advisers.

### Web content

We will not be providing a link to the report on our website, it will be available on the IPCC website.

## DEPARTMENT OF INDUSTRY, SCIENCE, ENERGY AND RESOURCES

MS21-000810

**To:** Minister for Energy and Emissions Reduction (For Decision)

**Cc:** Minister for Industry, Science and Technology

**FINAL GOVERNMENT REVIEW OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE SIXTH ASSESSMENT REPORT OF CLIMATE SCIENCE**

**Timing:** Routine – by Friday 18 June 2021 (comments are due to the IPCC by 20 June)

<b>Recommendation:</b>			
1. That you agree to the submission of the review comments to the IPCC on the draft IPCC report, <i>Climate Change 2021: The Physical Science Basis, Summary for Policymakers</i> , to be submitted by the Department in its role as National Focal Point.			
			<b>Agreed / Not agreed</b>
<b>Minister:</b>		Date:	
<b>Comments:</b>			
<b>Clearing Officer:</b> Sent 3/6/2021	Rob Sturgiss	General Manager, NISIR Branch	Ph: s22 Mob: s22
Contact Officer:	s22	Manager, Inventory Reporting and Engagement	Ph: s22 Mob: s22

**Key Points:**

1. The Intergovernmental Panel on Climate Change (IPCC) has circulated its draft report, *The Physical Science Basis* for government review until 20 June 2021.
  - a. Your approval is sought to submit the review comments at **Attachment A**, to the IPCC authors, on behalf of the Australian Government.
  - b. Submitted comments will enter the public domain when the final report is published (expected 9 August 2021) and will be attributed to the Australian Government.
2. *The Physical Science Basis* provides an update on the latest climate science, included the rates, causes and likely future trajectories of global warming and other changes to the climate system. You approved Australia's comments on an earlier draft in June 2020 (MS20-001925).
  - a. The current draft report's Summary for Policymakers (SPM) is at **Attachment B**.
  - b. Key findings, including those specific to Australia, are summarised at **Attachment C**.
3. Most of Australia's earlier comments have been addressed in the current draft.
  - a. Consistent with our customary approach, the proposed new comments are designed to enhance clarity and readability, and present a balanced, evidence-based assessment, ensuring that the summary statements are consistent with the report.

- b. In particular we seek a more consistent application of the IPCC's conditional and probabilistic language.
  - c. This is the final opportunity to provide feedback to the report's authors, ahead of the government approval session of the SPM, scheduled to commence on 26 July 2021.
4. s33(b)

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5. This report provides an assessment and synthesis of peer-reviewed literature accepted for publication by 31 January 2021. The IPCC does not conduct its own research.
- a. Australia is strongly represented in IPCC processes. 40 Australian experts are participating in the development of the AR6, supported by the Department of Foreign Affairs and Trade.

### **Sensitivities and Handling**

- 6. Although the IPCC and its assessments are policy-neutral and make no recommendations, the report is likely to intensify calls for governments to update and enhance actions and support under the Paris Agreement once approved, including at the 26<sup>th</sup> Conference of the Parties to the UNFCCC, in November 2021.
- 7. As for previous IPCC reports, we will prepare a handling strategy in consultation with the Minister for the Environment and your office.

8. While the draft report is not intended for public distribution, there is a risk that it may be leaked to the media prior to its approval.
  - a. In this case, talking points are provided at **Attachment D**.
  - b. Any media enquiries regarding climate science should be referred to the Minister for the Environment.

**Data referenced:**

9. IPCC, 3 May 2021, *Climate Change 2021: The Physical Science Basis Summary for Policymakers* (see **Attachment B**).

**Consultation: YES**

10. The Department has consulted across the Portfolio and with other commonwealth, state and territory government agencies, to inform Australia's comments at **Attachment A**,
  - a. including the Department of Agriculture, Water and the Environment (DAWE), which has policy responsibility for climate science.

**ATTACHMENTS**

- A:** Proposed review comments to be submitted to the IPCC by 20 June 2021
- B:** Draft Summary for Policymakers, *The Physical Science Basis, 3 May 2021*
- C:** Key findings of the draft report, including those relevant to Australia
- D:** Talking Points (if required): leaked IPCC report findings

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## Attachment A

## Proposed comments for submission to the IPCC (due 20 June 2021)

No	Chapter	From page	From line	To page	To line	Category	Comment	From Column will be deleted before submission
1	Summary For Policymakers	0	0	0	0	substance	Suggest including at the beginning or end of the document a list of terms and abbreviations for the reader. For example, information about the SSPs, the SR abbreviation, radiative forcing, an explanation of the basic reference period (1850-1900) and which parts of the analysis use a different reference period, what are agents of climate change etc. Suggest the 'likelihood' interpretation is taken out of note 5 and included in a table in the beginning. Suggest including a small table with the list of the scenarios and a short explanation for each, eg page 14 row 24 where the SSP1-1.9 is described as a combination of 5 models.	CSIRO
2	Summary For Policymakers	0	0	0	0	substance	Compared to previous reports, there seems to have been an editorial decision to make more statements that are qualitative and general. These can be clearer than detailed projections and hence useful to policy makers. However, they also risk sounding trite (eg HS.4, H.S.6.5). Where possible, please include context about conclusions that represent changes in knowledge since the AR5, or reference the models/simulations involved, to reassure policy makers that the statements are supported by new evidence.	DISER
3	Summary For Policymakers	0	0	0	0	editorial	Suggest reconsidering the use of the "Headline Statement" labelling. If a prefix is to be used throughout the SPM, suggest using one that identifies the statements as from the WG1 SPM. This single prefix also obscures the useful context of which SPM section a statement comes from.	DISER
4	Summary For Policymakers	3	0	3	0	substance	Suggest correcting the likelihood statement in footnote 5: 'more likely than not >50–100%', which should read '>50%'.	CSIRO

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5	Summary For Policymakers	3	0	3	0	substance	Suggest including a box to summarise key improvements from AR5 in terms of the modelling. Given there are debates in terms of whether we know enough about climate change progression and possible future pathways, it would be good to see a summary of what improvements have been made in the modelling. For example the sentence on p19, R27-28 should be in that table "A key development since the AR5 has been the quantification of when climate responses to emissions reductions would emerge above natural variability."	CSIRO
6	Summary For Policymakers	3	0	3	0	editorial	Suggest authors provide an example of how the referencing system works. Curly brackets, vs square brackets and what abbreviations such as TS.1 mean. Policymakers and staff will not be immediately aware of all the abbreviations used. Consider having a list to be distributed with the SPM.	CSIRO
7	Summary For Policymakers	3	0	3	0	editorial	Suggest making footnote 5 more prominent, for example as a separate page or Box.	CSIRO
8	Summary For Policymakers	4	4	4	4	editorial	Suggest rephrasing: "changes to date" is ambiguous without reference to a starting point - e.g., is this since industrialisation, since the last glacial maximum etc.	BoM
9	Summary For Policymakers	4	10	4	11	editorial	Consider rephrasing: change "an established fact" to "It is a scientifically established fact", or simply, "Human influence has warmed the climate system ..." This wording is in the underlying chapter as well.	CSIRO DAWE
10	Summary For Policymakers	4	11	4	11	substance	Suggest rephrasing: 'rapid' is a relative term. Better to state 'decadal scale' to make clear the time scale in which the changes have occurred.	DAWE
11	Summary For Policymakers	4	15	4	15	substance	Consider updating the data: We do not understand why values for 2019 are provided for concentrations of CH4 and CO2, as temperature data in the next line goes to 2020.	DAWE
12	Summary For Policymakers	4	16	4	17	substance	For consistency with other parts of the report, please include N <sub>2</sub> O concentrations in this sentence.	DISER
13	Summary For Policymakers	4	18	4	18	editorial	Consider edit for consistency: We question why Figure SPM.1 and SPM.2 are referenced against this statement, as the change in concentrations do not feature in either figure.	CSIRO
14	Summary For Policymakers	4	20	4	26	substance	H.S.1.2 contains useful information. Suggest separating it into two points, with a new paragraph sub-point starting at "From 1850-1900 to 2010-2019 ..." The first statement is observed, the second two sentences are	DAWE

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							statements of attribution, and thus are inferences based on inputs and reasoning in addition to the observations.	
15	Summary For Policymakers	4	20	4	20	substance	Suggest this sentence needs some clarification to avoid ambiguity. Should read "Global *average* surface temperature was 1.09 [0.95 to 1.20] °C higher in *the decade* 2011–2020 than *in the* 1850–1900 period *taken as representing the preindustrial climate.*"	DAWE
16	Summary For Policymakers	4	28	4	31	substance	Suggest the statements about tropospheric warming and stratospheric cooling are separated into two distinct sentences, as the two phenomena are attributed to different drivers.	DAWE
17	Summary For Policymakers	4	31	4	31	substance	Please clarify what is meant by 'lower stratospheric cooling'. Suggest 'stratospheric cooling' is sufficient, as 'lower stratospheric cooling' doesn't follow from previous sentence which says the stratosphere has cooled.	CSIRO
18	Summary For Policymakers	4	34	4	34	editorial	Suggest rephrasing: 'land precipitation' to 'precipitation over land'.	CSIRO
19	Summary For Policymakers	4	38	4	38	editorial	Suggest rephrasing: 'that was very likely caused in part', this text does not read well.	CSIRO
20	Summary For Policymakers	4	41	4	44	substance	Please clarify whether the statements for the Arctic and Antarctic covering "since the late 1970s" and "since 1979" refer to same period.	DISER
21	Summary For Policymakers	4	43	4	44	substance	Please re-write to provide more accurate information, this statement is misleading: 'Antarctic sea-ice area has experienced no significant overall change since 1979'. The underlying observations in Chapter 9 are that there has been no significant long-term trend in Antarctic sea ice, mostly because a large negative excursion over 2016-2020 interrupted a significant long-term increasing trend up to 2015. So the net temporal result obscures temporal variability, and indeed the net spatial result obscures significant regional variability. The statement therefore has three problems: (i) it doesn't clearly define whether it refers to temporal or spatial change since 1979 (ii) it overlooks significant periods of temporal change (iii) it overlooks significant regional change. The statement uses the term "overall change" which doesn't help, as it is even more imprecise than the term "net change" as in the TS2.5. It would have been preferable to separate out the correct	DAWE

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							observation of no significant *trend* and then talk about temporal and regional variability.	
22	Summary For Policymakers	5	7	5	7	substance	Suggest including a confidence level for this statement, or rephrasing: 'Global mean sea level increased by 0.20 [0.15 to 0.25] m between 1901 and 2018'. The lack of confidence statement following this sentence implies it is a statement of fact. Can we be confident about the precision of the central estimate and range quoted given uncertainties in data, methods of estimation etc.?	CSIRO
23	Summary For Policymakers	5	7	5	10	substance	Please add context to clarify why the observational period is split into 1901-1990 and 2006-2018, while the attribution statement is post 1970.	DISER
24	Summary For Policymakers	5	19	5	33	substance	Suggest including the temperatures from paleoclimate archives in the right-hand frame to demonstrate that where the palaeo-proxy temperatures and historical temperature overlap in time they are coherent with each other.	DAWE
25	Summary For Policymakers	5	21	5	31	editorial	Suggest including the note 15 from page 10 to explain the reference period used 1850 – 1900: The multi-century period prior to the onset of large-scale industrial activity around 1750. The reference period 1850–1900 is used to approximate pre-industrial global surface temperature.	CSIRO
26	Summary For Policymakers	5	22	5	22	substance	Suggest revisiting "The rate of global mean sea level rise beginning around 1900 has risen faster." As written, this implies the "acceleration" is faster.	BoM
27	Summary For Policymakers	5	28	5	28	editorial	Suggest the caption of figure SPM-1 should also explain the CMIP6, or refer reader to that page or section.	CSIRO
28	Summary For Policymakers	5	30	5	30	editorial	Suggest revise for accuracy: Is the 5-95% range the very likely range? If so, please maintain consistency with the rest of the caption.	DISER
29	Summary For Policymakers	5	36	5	49	substance	SPM 2 risks misinterpretation. SPM2 a shows contributions to warming in degrees C over 1850-1900 to 2010-2019. SPM2 b indicates contributions to warming over 1750 to 2019 also in degrees C, but there is no observed warming 1750 to 2019. Suggest SPM 2 b is removed, or alternatively the contributions should be expressed in radiative forcing watts per meter squared.	DAWE

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30	Summary For Policymakers	5	38	5	38	editorial	Suggest that the 'two lines of evidence' mentioned in the title of the figure are included in the caption e.g. Assessed contributions to observed warming based on ...	CSIRO
31	Summary For Policymakers	5	46	5	47	editorial	Suggest adding to the end of this sentence "... and all of these effects are included in the bar labelled CH4", for clarity.	DISER
32	Summary For Policymakers	6	3	6	3	substance	Suggest redrafting "has contributed to drought in particular during the dry season over most land", it is vague and could be clarified.	BoM
33	Summary For Policymakers	6	6	6	10	substance	Suggest separating the statement comparing the current GHG concentrations to the past 800 thousand years from that comparing to the last 2 million years. We have direct measurements of atmospheric CO <sub>2</sub> and other GHGs in ice core air bubbles for the past 800 thousand years. For earlier periods CO <sub>2</sub> concentrations are inferred from marine and terrestrial indirect proxies, as Chapter 2 makes clear.	DAWE
34	Summary For Policymakers	6	17	6	17	editorial	Suggest clarification: "During the last decade" in this sentence is ambiguous - it could refer to the decadal average, or to an individual year in the last decade.	DISER
35	Summary For Policymakers	6	19	6	16	editorial	Suggest clarification: It is not clear whether "retreat" refers to the glacier extent, or the rate of change.	DISER
36	Summary For Policymakers	6	22	6	23	editorial	Suggest clarification: Is the sentence describing an increase in the rate, or just the rate of SLR? Please re-word.	CSIRO
37	Summary For Policymakers	6	24	6	24	editorial	Suggest clarification: "since the ending of the last ice age" is unclear. Does this include the period of rapid warming at the end of the ice age, or not?	DISER
38	Summary For Policymakers	6	25	6	26	substance	Suggest correction to read: 'Acidification of the open surface ocean is greater now, and has been increasing faster, than anytime in at least the last 26 thousand years (very high confidence).'	BoM
39	Summary For Policymakers	6	29	6	29	substance	Suggest clarification: 'Climate change is already affecting every regions across the globe...' Figure SPM 3 shows a number of regions where the figure indicates 'no significant change'. The text needs to be consistent with the figure. Suggest it reads 'most' or 'many'.	DAWE
40	Summary For Policymakers	6	35	6	35	substance	Consider adding a sentence about the relevance of compound events to disasters in Footnote 10.	DISER

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41	Summary For Policymakers	6	39	6	41	substance	Suggest including the basis for the "subset", similar to the percentage provided for marine heatwaves.	DISER
42	Summary For Policymakers	7	20	7	20	substance	Suggest clarification: Should this sentence refer to "compound extreme events" as in line 23?	DISER
43	Summary For Policymakers	7	27	7	51	editorial	Suggest including 'ecological drought' in the diagram legend, to make clear that panel comprises both agricultural and ecological drought.	DAWE
44	Summary For Policymakers	7	29	7	29	editorial	Suggest clarification: Figure SPM.3 captioning and header: "Climate change is already affecting every region across the globe". However the IPCC AR6 regions depicted do not include Antarctica, or indeed oceans. Some work is required to give context to "IPCC AR6 regions" and note this point clearly in the caption.	DAWE
45	Summary For Policymakers	8	1	8	3	substance	Suggest clarification: This statement would be more useful if it included information about what understanding has been strengthened. If not quantitative statements, a description of variables for which understanding has strengthened (eg ECS, RF, energy imbalance...)	DISER
46	Summary For Policymakers	8	7			editorial	Suggest clarifying note 11: 'agent or process of the climate system'. Please describe 'agent' and a 'process'.	CSIRO
47	Summary For Policymakers	8	7	8	7	editorial	Suggest clarification: 'Since 1750 ..' could include a parenthetical phrase to note this is a different baseline year than the 1850-1900 baseline period adopted to represent global 'preindustrial' average temperature.	DAWE
48	Summary For Policymakers	8	8			substance	Suggest including an explanation of how energy is accumulated in the climate system due to greenhouse gases concentrations increasing.	CSIRO
49	Summary For Policymakers	8	9	8	10	substance	Suggest clarification: "...a rate of energy increase ... that is 20% larger than the value for 2011 assessed by AR5." This risks being misread as saying there was a 20% rise in energy imbalance between 2011 and 2019. However the energy gain from 1750 to 2019 has been revised and re-assessed as 20% larger than that previously assessed for 1750 to 2011 by AR5. The chapter text finds that the 20% arises from 'upwards revisions of [GHGs'] radiative efficiencies and a 22 +0.10 W m <sup>-2</sup> from re-evaluation of the ozone and stratospheric water vapour ERF".	DAWE

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50	Summary For Policymakers	8	9	8	9	substance	Please clarify that this is effective radiative forcing. Using a descriptive term here hinders understanding, especially of comparison with earlier reports. If necessary, expand the explanation in the footnote. As it stands, the "rate of energy increase" in this statement is easily confused with the "rate of energy gain" in H.S.4.2	DISER
51	Summary For Policymakers	8	10	8	12	editorial	Suggest rephrasing, as this may be hard to understand for many readers. Instead: "The climate system *net* energy gain is less than that associated directly with climate drivers because as the Earth warms it emits more energy to space, *and this partly offsets the gain from climate drivers.*" [or similar]	DAWE
52	Summary For Policymakers	8	14	8	18	editorial	Suggest clarification: Please define the technical term 'Global primary energy consumption' as it could be confused e.g. with energy captured by primary productivity. Add a definition or describe the meaning. e.g. global *human* primary energy consumption. Also the rate of energy gain in the climate system (in Wm <sup>-2</sup> ) is being compared to a rate of energy consumption that is usually expressed in TWh. Suggest give the TW or TWh conversion of the rate of energy gain and give the value of TWh global primary energy consumption in 2018, to make it more clear what is being done with this comparison.	DAWE
53	Summary For Policymakers	8	16	8	16	substance	Suggest rephrasing: unclear what is mean by 'global primary energy consumption'.	BoM
54	Summary For Policymakers	8	21	8	23	substance	Suggest rephrasing, a negative percentage contribution is not meaningful.	DISER CSIRO
55	Summary For Policymakers	8	33	8	37	substance	Suggest rephrasing, as this section appears contradictory. It says the assessment of ECS, and thus of projected warming, has a narrower range and lower mean value than derived from models. Then it states this report presents projections "fully consistent" with the assessment of climate sensitivity. Readers may wonder if the projections are based on something other than those models. Suggest an introductory sentence or two such as "Equilibrium climate sensitivity assessed from multiple lines of evidence, provides the basis for an assessed range of future warming. Individual climate models also have intrinsic equilibrium sensitivity which, for the collection of latest generation of climate models has a higher mean value	BoM DAWE

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							and larger spread than the latest assessment based on models as well as other lines of evidence. This leads to an assessed..."	
56	Summary For Policymakers	8	35	8	37	substance	Please clarify the basis of the assessment of climate sensitivity (eg add "... from observations")	DISER
57	Summary For Policymakers	8	70	8	70	editorial	Suggest additional information is added to note 13: For those not familiar with the assumptions of doubling CO <sub>2</sub> emissions, can the estimated pre-industrial level be specified?	CSIRO
58	Summary For Policymakers	9	17	9	19	substance	Suggest including data to improve the usefulness of this sentence is not useful. Perhaps include a quantitative statement of the agreement and variance.	DISER
59	Summary For Policymakers	9	25	9	25	editorial	Suggest providing an example of what 'y' means (eg 'y' is a radiative forcing of 1.9 in W m <sup>2</sup> ). Suggest also cross reference to the part of the report that further explains the SSP pathways.	CSIRO
60	Summary For Policymakers	9	31	9	31	editorial	Suggest further explanation is needed: ie include the level of emissions at the starting point. That is, in chart SPM.4 the starting point is 40 Gt CO <sub>2</sub> /yr (and other levels for other GHGs). Also explain this value is the level of emissions which was estimated/measured in 2015.	CSIRO
61	Summary For Policymakers	9	34	9	50	substance	Suggest clarification: The figure shows projected time series of climate drivers including greenhouse gases (CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> ), and SO <sub>2</sub> . In the bottom bar graphs, the 'negative' warming is given as 'anthropogenic aerosols.' Is the figure using sulphur dioxide as a proxy for aerosols? If so the caption should state that clearly.	DAWE
62	Summary For Policymakers	10	1	10	5	substance	Suggest rephrasing to use conditional and probabilistic language: "Global surface temperature around 2050 will be higher than today under all emission scenarios considered in this Report" eg: "Global surface temperature around 2050 *would* [or are extremely likely to] be higher than today under *any* emission scenarios considered in this Report." [*all* the emissions scenario considered in this report will not occur, and it is not which if any will occur]	DAWE
63	Summary For Policymakers	10	2			substance	Suggest rephrasing for clarity: The sentence starting with "Global warming levels of 1.5oC and 2oC.." gives the impression the two lowest CO <sub>2</sub> emissions scenarios can keep warming under 1.5 deg. In fact, only one	CSIRO

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							scenario keeps warming at around 1.5 deg and the two lowest scenarios keep warming to 2 degrees. Suggest two separate sentences.	
64	Summary For Policymakers	10	8	10	8	substance	Suggest reviewing the text for accuracy: The footnote for 'Compared to 1850-1900 ...' states this as 'The multi-century period prior to the onset of large-scale industrial activity around 1750.'	DAWE
65	Summary For Policymakers	10	8	10	8	substance	Suggest rephrasing: The first sentence of footnote 15 describes the preindustrial, but is footnoted to "1850-1900". This could be addressed by swapping the order of the two sentences in the footnote and rewording slightly.	DISER
66	Summary For Policymakers	11	2	11	2	editorial	Suggest "peak" would read better than "decline" in this sentence.	DISER
67	Summary For Policymakers	11	9	11	9	editorial	Please clarify: In which direction does the estimate for SSP5-8.5 differ from the others?	DISER
68	Summary For Policymakers	11	31	11	32	substance	Suggest including a short explanatory text to indicate what 'statistically significant' refers to, in: 'Every additional half a degree of global warming causes statistically significant increases in temperature extremes'. The underlying chapter also does not make this clear. 'Statistically significant' in, or relative to, historical data?	DAWE
69	Summary For Policymakers	11	31	11	33	substance	Suggest clarifying that these changes are expected from simulations or projections (also in the rest of the H.S.6 statements).	DISER
70	Summary For Policymakers	11	38	22	37	substance	Suggest rephrasing for accuracy: In a number of places in the text it is stated something *will* happen. This usage is also in some of the underlying chapters (11). This should be minimised, and replaced as much as possible with conditional and probabilistic language such as "is projected to" or "is likely to" or "is virtually certain to" in the SPM and in the accompanying chapters. The projected changes presented in WG1 are mainly scenario-dependent and need to be distinguished from forecasts or predictions - which are not the main focus of the WG1 report.	DAWE
71	Summary For Policymakers	11	38	11	39	editorial	Suggest clarification. It is unclear whether the increase described is over present levels, or after warming has stabilised at 1.5°C.	DISER

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72	Summary For Policymakers	12	1	12	7	substance	Suggest rephrasing for accuracy. Several parts of this text say extremes 'will' intensify or 'will' increase. Please express as 'will likely' or 'is projected to' or 'is likely to' etc. The accompanying figure SPM6, uses 'will likely occur' placing the extremes in probabilistic context.	DAWE
73	Summary For Policymakers	12	19	12	25	substance	Suggest clarification to include the intent of Figure SPM.5 Panel a): It is not clear why the observed data and the simulated data are put together. The first sentence of the caption should clarify the intent: for example could read 'Comparison of actual and simulated data for global temperature annual mean change'. Verb is missing from second sentence -> 'Observed temperature data is from Berkeley...'	CSIRO
74	Summary For Policymakers	12	21	12	21	editorial	Consider reword for accuracy: As this is a surface temperature dataset, "horizontal" is redundant. Consider "spatial" instead.	DISER
75	Summary For Policymakers	12	27	12	27	editorial	Suggest provide an example on how to interpret the standard deviation change in Figure SPM.5 Panel d). While degrees, precipitation change in percentage terms is easier to understand, what does the standard deviation change mean for people on the ground? Maybe give an example: at +1.0 SD what type of soil moisture change can people be expected to observe?	CSIRO
76	Summary For Policymakers	13	20	13	21	editorial	Suggest rephrase for accuracy: The severity will not depend on the projected changes, but rather on the actual changes in large-scale circulation (presumably from among a range of projections).	DISER
77	Summary For Policymakers	13	35	13	35	substance	Suggest clarification: 'abrupt and irreversible' - state on what time scales changes would be 'abrupt' and/or 'irreversible'. Note HS9 (p. 14, line 40) uses 'irreversible' but appropriately states the time scale on which change would be 'irreversible'.	BoM DAWE
78	Summary For Policymakers	13	44	13	45	substance	Suggest clarification: Over what variable(s) is this figure averaged?	DISER
79	Summary For Policymakers	13	44	13	45	substance	Suggest clarification: Why is the value reported here for the last six decades, and not consistent with what's presented in Figure SPM.7?	DISER
80	Summary For Policymakers	14	1	14	3	editorial	Suggest clarification: The sentence uses scenarios (plural) but only one example is given. Please clarify if this is the only one of the core scenarios with this behaviour.	DISER

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81	Summary For Policymakers	14	2	14	2	substance	Suggest rewording the following: 'the growth rates of CO2 removed by the land and oceans are expected to decrease' to 'the rates of CO2 removal by the land and oceans are expected to decrease'.	BoM
82	Summary For Policymakers	14	6	14	6	substance	Suggest mentioning in what decade it is more likely for the land sink to turn into a sink for each scenario. Or mention in text when that happens for the most optimistic scenario. In this way, the reader would get the idea that any other scenario means land sinks become sources even sooner.	CSIRO
83	Summary For Policymakers	14	11	14	12	substance	Suggest clarification: It is unclear whether the further amplification of warming is the net (overall) effect of all studied ecosystem responses, or just of some selected ones individually.	DISER
84	Summary For Policymakers	14	40	14	41	editorial	Suggest adding glaciers to this phrase, to read: "...the ocean, ice sheets, glaciers and ..."	DAWE
85	Summary For Policymakers	14	45	14	46	editorial	Suggest rephrase for accuracy, to include ice mass loss: ie "... from ocean thermal expansion and ice mass loss, which ..."	DAWE
86	Summary For Policymakers	15	2	15	2	Substance	Suggest clarification: It is surprising that projected ice sheet mass loss is only "high confidence" given current observed trends. Suggest this should be "Very high confidence"	DAWE
87	Summary For Policymakers	15	3	15	5	editorial	Suggest rephrasing for accuracy: "Poorly understood ice sheet destabilization processes" don't contribute to sea level. Suggest change to "Ice sheet destabilization processes could lead to the ice sheets contributing more than ...", and delete "poorly understood," as the confidence is already attributed as "likely" and it already says "could". An additional sentence could be added saying "Uncertainties in projections of future ice sheet mass change are large due to poorly understood ice sheet destabilization processes."	DAWE
88	Summary For Policymakers	15	4			substance	Suggest clarification: it is difficult to reconcile the 'more than one additional meter of sea level increase' with the dotted line in Figure SPM.8 labelled 'Adding low confidence processes'. The line does not appear to be more than 1 m above the SSO5-8.5 curve or range.	CSIRO
89	Summary For Policymakers	15	11	15	12	substance	Suggest rephrasing for accuracy: the sentence states '...extreme sea level events *will* occur annually ..' but then states two different percentages for two different SSPs. *Both* SSPs will not happen. The text should read: '...extreme sea level events *are projected to* occur annually ..'	DAWE

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90	Summary For Policymakers	15	11	15	13	editorial	Suggest rephrasing for clarity: The use of 'once per century' could be confusing here without context. Suggest could be replaced with 'Rare events that have occurred on once per century frequencies, will become annual by 2100...'	DAWE
91	Summary For Policymakers	15	11	15	12	substance	Sea level rise information expressed in this way is useful. Suggest qualifying "about 60%", and replacing "or" with "and" – as we are not facing a choice between these two scenarios, but rather considering the range between them.	DISER
92	Summary For Policymakers	15	14	15	14	editorial	Suggest "... ice sheet mass loss ..." or "... mass loss from the ice sheets ...".	DAWE
93	Summary For Policymakers	15	17	15	17	substance	Please clarify the source of these estimates.	DISER
94	Summary For Policymakers	15	20	15	21	substance	Suggest clarification: '...3 million years ago, when atmospheric CO2 levels were at levels comparable to today'. Should read '3 million years ago, when atmospheric CO2 levels are inferred to have been at levels comparable to today'. We do not have direct measurements of atmospheric CO2 from 3 million years ago and must infer from proxies such as boron isotopes in marine carbonates.	DAWE
95	Summary For Policymakers	15	26	15	45	substance	Suggest clarification for SPM 8d: There is a sea-level rise trajectory labelled 'Adding low confidence processes'. Caption should indicate which SSP these are added to (is it SSP5-8.5?).	DAWE
96	Summary For Policymakers	16	21	16	23	editorial	Please clarify whether this intends to mean one or two actual decades, or periods of one to two decades.	DISER
97	Summary For Policymakers	16	27	16	27	substance	Suggest clarification: Why use the term 'land precipitation'? Does it mean that Ocean precipitation will not be affected?	CSIRO
98	Summary For Policymakers	17	7	17	14	substance	Suggest rephrase for accuracy: The paragraph is confusing given inclusion of Antarctica for "All regions" in terms of 1) agriculture and health and 2) confidence attributed to change. We do not agree that this level of confidence is appropriate for Antarctica. Suggest Antarctica is mentioned in separate sentence.	DAWE
99	Summary For Policymakers	17	13	17	13	editorial	Suggest clarification: 'further decreases of what?' Suggest this reads 'decreases in ice'; or 'decreases in each of these Climatic Impact Drivers.	CSIRO

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100	Summary For Policymakers	17	18	17	18	editorial	Suggest clarification: should this read "At 2 C..."?	DISER
101	Summary For Policymakers	17	28	17	29	substance	Please clarify what it means for these changes to "accumulate".	DISER
102	Summary For Policymakers	17	38	17	40	substance	Please clarify whether this is over all the core scenario projections.	DISER
103	Summary For Policymakers	17	38	17	40	substance	Suggest review the need for this statement, which seems to largely repeat H.S.9.3.	DISER
104	Summary For Policymakers	17	40	17	40	editorial	Please review, the sentence is incomplete 'most sandy coasts and..?'	CSIRO DISER
105	Summary For Policymakers	18	1	18	7	substance	Suggest clarification: which parts of this statement represent advances since AR5?	DISER
106	Summary For Policymakers	19	3	19	3	editorial	Suggest clarification: Rapid discharge events can occur not just due to collapse. Suggest wording can be modified to include "rapid discharge".	DAWE
107	Summary For Policymakers	19	7	19	10	substance	Suggest revising for accuracy: The confidence in this statement does not match the accompanying chapter. Box 11.2 states "the future occurrence of LLHI events linked to climate extremes is generally associated with low confidence." It also should be made clear many types of LLHI events are not represented by the GCMs generally used to project climate changes and extremes in the WG1 report. Suggest stating that many of these LLHI events are anticipated on conceptual and/or other physically plausible grounds not currently included in GCMs.	DAWE
108	Summary For Policymakers	19	12	19	13	editorial	Suggest clarification: Replace "but" with "and". These statements are not in opposition, but complement each other.	DISER
109	Summary For Policymakers	19	17	19	19	substance	Suggest clarification: Can any probability be assigned to this statement (since H.S.10.2 estimates the likelihood of an eruption)?	DISER
110	Summary For Policymakers	19	31	19	33	substance	Suggest including a statement about the changes in emissions of N <sub>2</sub> O, consistent with its inclusion in Figure SPM.4.	DISER
111	Summary For Policymakers	19	37	19	38	substance	Suggest clarification: TCRE is a function of the present climate (ie this relationship does not apply throughout geological time).	DISER
112	Summary For Policymakers	20	1	20	1	editorial	Suggest clarification: amend to 'Over the period 1850–2019, a total of 2390 ± 240 (1 standard deviation) GtCO <sub>2</sub> of anthropogenic was emitted'.	DAWE

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113	Summary For Policymakers	20	1	20	1	editorial	Suggest revise the units to be consistent with H.S.13.1: e.g. express both as GtCO <sub>2</sub> (with PgC in parentheses).	DAWE
114	Summary For Policymakers	20	3	20	3	substance	Suggest change 'quantified' to 'estimated' for consistency with Table SPM 2.	DAWE
115	Summary For Policymakers	20	3	20	6	substance	It's not clear what is the meaning of "...could increase or decrease... by at least..". Is there a number bigger than 220 GtCO <sub>2</sub> for which a more certain statement could be made?	DISER
116	Summary For Policymakers	20	11	20	15	substance	Suggest revising Table SPM 2 for clarity. Percentiles (17th, 33rd etc.) are used to communicate probability of a given carbon budget producing a given warming. This is overly technical and meaning could be missed. It would be more consistent with the rest of the report if the table were adjusted to use the IPCC likelihood ranges instead (likely, very likely etc.).	DAWE
117	Summary For Policymakers	20	11	20	15	editorial	If you retain the percentiles, please include the word 'percentile' in the first or last column (e.g. 83rd percentile). The explanation is included in the caption and that is logical, but it seems easier to read quickly through the table when the word percentile is there.	CSIRO
118	Summary For Policymakers	20	11	20	15	substance	Suggest including the Global Carbon Budget initiative, to advise policymakers that a yearly estimate of global GtCO <sub>2</sub> emissions is provided each year.	CSIRO
119	Summary For Policymakers	21	2	21	4	editorial	Suggest inserting "that", ie "In a similar way that a fraction..."	DISER
120	Summary For Policymakers	21	11	21	17	editorial	Suggest rephrasing for accuracy: One might interpret this sentence to mean that the choice of metric changes the projected temperature. The final sentence might also lead readers to wonder 'what new metric approaches'? Suggest instead: 'warming-equivalent metric approaches'.	DAWE
121	Summary For Policymakers	21	20	21	22	substance	Suggest clarification: This text may be read as saying the contributions of GHGs are *driven* by levels of air pollution control. Whereas GHG emissions can occur independently of, or despite air pollution controls (e.g. SO <sub>2</sub> scrubbers on coal fired power plants; NO <sub>x</sub> controls on vehicles).	DAWE
122	Summary For Policymakers	21	33	21	48	editorial	Suggest adding horizontal dashed lines at 1.5C and 2C of warming, linked to vertical lines from the SSPs in Figure SPM 10. This would show readers visually what the respective emissions budgets are for the 1.5 and 2C warming thresholds.	DAWE

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123	Summary For Policymakers	22	22	22	23	substance	Suggest rephrasing for accuracy: This is written in present tense but refers to possible future events in SSPs, not present changes. Suggest: "Stringent emissions reductions *would* have immediate and sustained effects..."	DAWE
124	Summary For Policymakers	22	31	22	31	substance	Suggest rephrasing for accuracy: This is written in present tense but refers to possible futures (2040) in SSPs, not present changes. Should be written: "Stringent emissions reductions *are projected to* ..."	DAWE
125	Summary For Policymakers	23	1	23	1	editorial	Suggest making a thicker arrows in SPM1: going from the left 1850 to 2020, and the top arrow where text says "The last decade..."	CSIRO
126	Summary For Policymakers	23	1	23	1	substance	Suggest rephrasing for readability: The text in the caption a) "Changes in global surface temperature reconstructed from paleoclimate archives" is a better description to use in the figure than "10-year smoothed reconstructed temperature." Same for b) text in the caption and figure.	CSIRO
127	Summary For Policymakers	23	1	23	1	editorial	Suggest clarification: Text inset in this first figure of the SPM figure refers to 'current interglacial' and 'Holocene'. These are technical terms -- likely unclear to policymakers. Suggest add to caption the approximate time period in years: "current interglacial period (past ~10,000 years) prior to industrialization".	DAWE
128	Summary For Policymakers	24	1	24	1	substance	Suggest clarification in the presentation of information Figure SPM.1 and Figure SPM.2. From the bar in Fig 2 we can conclude that the upper limit of the range is what is used in Figure 1 for the observed T increase (the black line). Is that the case? If so, Figure 1 should say that the black line represents the upper bound of the range. If it is not the case, please explain why Figure 2 show a bar reaching around 1.1C, while the black line in Figure 1 shows values around 1.2 to 1.3 C? Also in SPM2, it seems that the bar of 'Net human influence' is the same as 'Observed warming'? If so, it's redundant to have it. If not, please explain in the notes how that bar is derived.... it seems that is just the sum of the other four bars?	CSIRO
129	Summary For Policymakers	25	0	25	0	substance	Suggest rephrasing the header and caption of Figure 3 for accuracy: changing 'every' to 'most'. The figures in panels a, b and c show us that there are regions where there is insufficient evidence, and even in some there is no change, therefore it is misleading to say that climate change is affecting every region across the globe.	CSIRO

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130	Summary For Policymakers	25	0	26	0	editorial	Suggest correcting Figure SPM.3 captioning and header to for accuracy around the presentation of the IPCC AR6 regions. Header states "Climate change is already affecting every region across the globe". However the IPCC AR6 regions depicted do not include Antarctica, or indeed oceans. Some work is required to give context to "IPCC AR6 regions" and note this point clearly in the caption and correct the header.	DAWE
131	Summary For Policymakers	25	0	25	0	editorial	Suggest adding a note in the legend that the letters inside the hexagons refer to the WG1 reference regions.	DAWE
132	Summary For Policymakers	25	0	25	0	editorial	Suggest clarification: Is the flip in colours in Figure 3, panels b and c, made on purpose? It is confusing because they are not necessarily the opposite, and some can interpret them as opposite things. Please consider different colours between panels b and c, as done in panel a.	CSIRO
133	Summary For Policymakers	33	0	33	0	editorial	Figure SPM.7. Suggest including the dot in the scenario names, e.g. SSP1-1.9 instead of SSP1-19.	CSIRO
134	Summary For Policymakers	36	1	36	10	substance	To help avoid potential confusion in thinking Australia doesn't have fire weather increases, the key on the right side of the map could be worded to better match the content in the more detailed CID colour wheels below the map, or perhaps the key on the right side of the map could perhaps be removed given the details already provided below the map.	BoM
135	Summary For Policymakers	36	1	36	1	editorial	Suggest clarification: The term "GWL" is not defined in the SPM (used in Fig SPM.9 panel a) and b)), please provide more information.	DISER
136	Summary For Policymakers	36	1	36	1	editorial	Fig SPM.9. Please use an icon with 6-fold symmetry to represent "snow and ice".	DISER
137	Summary For Policymakers	37	0	37	0	editorial	Suggest including the total number of regions considered to be used as a reference point In Panel b). For example, when looking at the bar chart, we read 50 regions will have climatic impact drivers increase in terms of 'Mean air temperature'. However we do not know whether those 50 are all the (possible) regions considered. Suggest a circle which says 'xx regions in total' under the bar chart.	CSIRO
138	Summary For Policymakers	38	1	38	1	editorial	Suggest adding right-hand vertical axis indicators for improved readability.	DISER

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**ATTACHMENT D****Talking points (if required):**

Response to disclosure of confidential draft IPCC report, *Climate Change 2021: The Physical Science Basis*

- This is a draft report undergoing review by governments around the world, including Australia.
- IPCC reports are the product of multiple drafting and review processes to promote an objective, comprehensive and evidence-based assessment of current information.
- It is premature to make any comment on the content of this report.
- The final report is expected to be made publicly available in August 2021.
- The Government accepts the science, there is no dispute that climate change is having an effect on global weather patterns.
- The Government is taking action to deliver lower emissions and build climate resilience.
- Australia is investing over \$15 billion in natural resource management, water infrastructure, drought and disaster resilience and recovery,
  - Including about \$760 million in climate science and adaptation research and services.