

## Foreword

It is unequivocal that human activities have heated our climate. Recent changes are rapid, intensifying, and unprecedented over centuries to thousands of years. With each additional increment of warming, these changes will become larger, resulting in long-lasting, irreversible implications, in particular for sea level rise. United Nations Secretary-General António Guterres has stated that 'the evidence is irrefutable' and 'we see the warning signs in every continent and region'.

The Working Group I contribution to the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report provides a reality check on climate change. We now have a much clearer picture of the past, present and possible future climates, and this information is essential for understanding where we are headed, what can be done, and the multiple facets of a changing climate to prepare for, in every region. Unless deep reductions in greenhouse gas emissions occur in the coming decades, global warming of 1.5°C and 2°C above pre-industrial levels will be exceeded during the 21st century.

The new Working Group I Report structure integrates multiple lines of scientific evidence within each chapter and provides robust knowledge relevant for policymaking through the end-to-end assessment of key topics. This more holistic approach has resulted in a report that provides a better understanding of the climate system, for both past and future changes, with a new emphasis on climate information for regions, which is critical for informing adaptation and risk management strategies. Today, many decisions remain grounded in the experience of past climate variability. This report provides a solid basis for taking into account future changes that need to be considered in today's decisions, with increased relevance for climate services, to enhance adaptation and resilience to climate change and curb greenhouse gas emissions.

The journey of this report reflects extraordinary efforts by all contributors under exceptional circumstances. The COVID-19 pandemic, which started during the review of the Second Order Draft, disrupted the process. However, the early response of Working Group I, through the hard work of the authors, review editors, chapter scientists, the Technical Support Unit, and Bureau members, made it possible to deliver a report that meets the most stringent science quality standards, thanks to the in-depth, broad review process, with an exhaustive, robust, rigorous and transparent assessment of the latest state of climate science knowledge. We commend the additional efforts taken, including by all reviewers from the research community and government representatives who adapted to a new way of working to complete this vital report. Our particular appreciation goes to the Working Group I Co-Chairs Valérie Masson-Delmotte and Panmao Zhai for their leadership throughout the process. Their extraordinary efforts ensured that this robust and clear report is available to the world today.

This Working Group I contribution to the IPCC's Sixth Assessment Report covers important new advances in climate science that provide an invaluable input into climate negotiations and decision-making, with an emphasis on key conditions that, from a physical science basis, are needed to limit global warming and inform risk assessment and regional adaptation. The report was welcomed at the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change. It will also inform the 2023 global stocktake. Unless there are deep reductions in global greenhouse gas emissions, the goal of limiting warming well below 2°C and close to 1.5°C will be out of reach.

The science is unequivocal, the changes are unprecedented, and there is no more time for delay.



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