10 NEW INSIGHTS IN CLIMATE SCIENCE

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Rising emissions have locked-in future climate impacts, but the scale of damage still depends on action taken now – new climate science report reveals

STOCKHOLM – Past emissions have already committed the planet to higher temperatures, further sea-level rise and other long-term impacts, while new research shows the resulting economic and social costs are greater than previously understood. Yet rapid emissions cuts can still reduce the scale of the damage, and advances in climate science are making it increasingly possible to trace responsibility for harm already happening.

These findings are among the 10 major developments highlighted in the 2026/2027 **10 New Insights in Climate Science** report. Produced by more than 70 scientists from nearly 30 countries, the annual synthesis translates complex research into accessible, concise insights to inform high-stakes decisions.

Published today, the report warns how overshooting 1.5°C of warming carries rapidly escalating risks of irreversible impacts for oceans, glaciers, and permafrost, with consequences for livelihoods and economic activity for decades to come.

“The evidence is unequivocal: 1.5°C is a limit that we cross at our own risk. Beyond it, the risks of cascading and potentially irreversible climate impacts increase, with every additional tenth of a degree making them more severe,” said **Johan Rockström, director of the Potsdam Institute for Climate Impact Research, co-chair of The Earth League and a member of the report’s editorial board**.

A joint initiative of Future Earth, The Earth League, and the World Climate Research Programme, the 10 New Insights highlights how some sea-level rise is already irreversible due to past emissions, but that the ultimate magnitude still depends strongly on how quickly the world cuts greenhouse gases.

“The ocean has been our planet’s shock absorber. Because heat takes decades to penetrate ocean depths, today's emissions effectively lock in further warming and sea level rise,” said **Wendy Broadgate, Global Hub Director at Future Earth and a member of the report’s editorial board**. “Deep, rapid emissions cuts are the only way to limit these risks”

The report also focuses on advances in attribution science which allow researchers to link emissions from specific countries, companies and sectors to specific climate impacts. This emerging evidence base is already being used to strengthen litigation, inform loss-and-damage negotiations and sharpen debates over responsibility and finance.

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“Attribution science is moving from ‘climate change is happening’ to ‘this emitter contributed to this harm’,” said **Timothy Naish, WCRP Chair and a member of the report’s editorial board**. “This changes the conversation on accountability, liability and who should pay for the damages we are already seeing.”

Other insights in the report examine accelerating continental drying and freshwater loss; the evolution of climate obstruction and disinformation; and the way geopolitics is shaping an increasingly uneven global energy transition. Taken together, the 10 insights point to a narrowing window for action but one that is still open, showing us what is already locked in, what can still be avoided, and where policy can have the greatest effect.

“The 10 New Insights again highlight the urgency to take action to limit global warming,” said **Peter Schlosser, University Vice President and Director General, Global Futures Laboratory, Arizona State University, and co-chair of the Earth League.** “Climate change is not an abstract concept. Its adverse effects are increasingly visible as we are moving through a period of accelerated warming and the associated extremes felt by more and more people around the globe.”

Full list of 10 insights (2026/2027):

1. **Ocean heat uptake**: The ocean continues to absorb record amounts of heat, locking in further warming for years to come and increasing climate risks. Deep emissions cuts are critical to stop this.

2. **Accelerating sea-level rise**: Melting glaciers and ice sheets are driving rising seas. Some change is already irreversible, but rapid mitigation can still limit future rise.

3. **Continental drying**: Climate change and growing water use are causing the rapid loss of freshwater across continents, threatening water security, ecosystems, and food production.

4. **Impacts of overshooting 1.5°C**: The further warming rises above 1.5°C, and the longer it stays there, the greater the risk of irreversible impacts and the more emissions cuts, carbon removal, and adaptation will be required.

5. **Food systems are key levers**: Transforming food systems, particularly through more plant-rich diets, can deliver major benefits for climate, biodiversity, and health, but must be done carefully and fairly.

6. **The true social cost of carbon**: The economic damages caused by carbon emissions are substantially higher than previously estimated, and every extra ton of CO_2 carries additional risk.

7. **Attributing climate impacts to emitters:** Advances in attribution science now allow linking the emissions from specific actors to specific climate impacts, strengthening the evidence available for accountability, litigation and loss and damage.

8. **Fair and effective climate clubs:** Linking climate action to trade measures can encourage decarbonization, but the same measures may also impose disproportionate costs and challenges on developing economies.

9. **Climate obstruction:** Intentional efforts to delay climate action have evolved from science denial toward subtler tactics, including greenwashing, misleading solutions, and spreading digital disinformation at scale.

10. **Geopolitics and the energy transition:** Geopolitical instability can accelerate the clean-energy transition for some countries, while deepening fossil-fuel reliance for others, with growing risks of an unequal global transition.

NOTES TO EDITOR:

For more information, join our webinar presenting the report at 15-16:00 CEST on Tuesday, October 6. Register: https://council.science/events/10-new-insights-climate-insights-2026/

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About the *10 New Insights in Climate Science*: Produced by a global team of leading scientists and experts, the *10 New Insights in Climate Science* synthesises the most critical advances in climate research from the past 18 months. A joint initiative by Future Earth, The Earth League, and the World Climate Research Programme, the report strives to be a trusted source of evidence-based information on the most pressing findings in climate research.

About Future Earth: Future Earth is a global network of researchers developing and synthesising knowledge to support transformations towards sustainability. With a strong focus on systems-based approaches, Future Earth seeks to deepen our understanding of complex Earth systems and human dynamics across different disciplines and leverage this understanding to underpin evidence-based policies and strategies for sustainable development.

About The Earth League: The Earth League is an international alliance of institutional and individual members, who work together to respond to issues such as climate change, depletion of natural resources, land degradation, water scarcity, and food security. While addressing existing and emerging problems created by resource use beyond our planet's capacity, the Earth League explores how problems can be anticipated and avoided through strategic action and innovation.

About the World Climate Research Programme (WCRP): Since 1980, WCRP has coordinated international climate research, bringing together scientists worldwide to build the knowledge behind major climate assessments, from the IPCC to the Paris Agreement. Jointly sponsored by the World Meteorological Organization (WMO), the International Science Council (ISC), and UNESCO-IOC, WCRP is the world's longest-running initiative dedicated to coordinating international climate research. This research helps governments, communities, and people everywhere understand the climate system, informing how we plan energy systems, secure food supplies, and build resilient infrastructure.