CASE STUDY: Improved information on global wildfires to support decision making

Executive Summary: The Climate Science for Service Partnership (CSSP) Brazil project has contributed towards improved global understanding of how climate change and human activities are increasing wildfire risk, providing policymakers with accessible, evidence-based information to support climate adaptation, disaster risk reduction, and wildfire management. Through international scientific collaboration and accessible policy relevant publications, the initiative is strengthening decision-making, improving preparedness for future wildfire impacts, and helping governments and organisations build resilience to growing climate-related risks.

The Challenge: Climate change is having a very real and observable impact on the intensity of wildfires. More frequent and intense droughts, along with increasingly frequent fire-favourable weather, are reducing the amount of moisture held in vegetation and are priming landscapes for more regular, severe and intense fires. At the same time, human activities and land use change can exacerbate wildfire risk, especially in tropical forests. Mitigating and adapting to this increase in wildfire potential are growing priorities for policymakers around the world, including in international development and humanitarian planning. National and international organisations are seeking to consolidate evidence of changing wildfire risk and establish best practices for disaster risk reduction.



Forest wildfire, September 2020 in Monte Alegre do Sul, Sao Paulo, Brazil

The Approach: Scientific evidence is key to this ambition, and work under the Climate Science for Service Partnership (CSSP) Brazil co-leads a new State of Wildfires project. It represents a new effort to present useful, annually updated wildfire information to the public and policymakers and provides an opportunity to communicate the latest CSSP Brazil cutting-edge research on the topic to help deliver impact.

The State of Wildfires project is co-led by the University of East Anglia, UK Centre for Ecology & Hydrology (UKCEH), European Centre for Medium Range Weather Forecasts (ECMWF) and the Met Office, along with partners from every vegetated continent including significant contributions from CSSP Brazil in-country partners the National Institute for Space Research (INPE) and National Center for Monitoring and Early Warning of Natural Disasters (CEMADEN). Two annual reports have so far been published, covering the 2023-24 and 2024-25 fire seasons, providing an overview of global fire activity, with relevance to local,

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national and international policymakers, cataloguing the incidence, drivers, predictability and future of wildfires around the world. The information advocates for improvements in fire observation and recording, better long-range forecasting of fires, including the use of artificial intelligence (AI), improved attribution of fires to climate change, and enhanced projections of future wildfire activity. Such improvements in wildfire science will provide commensurate improvements in future reports, increasing their usefulness.

Pathway to Impact: The information presented in the reports provides a convenient and useful resource for decision makers in several areas, including conservation, climate mitigation and adaptation, and impacts management. Wildfires can have severe impacts on both a very local scale and a national or international scale. These impacts are affected by climate change and could increase under likely future climate scenarios. Improved decision making around wildfires will allow for better preparedness and reduced impacts which will contribute towards the foundations of a stable economy, a key milestone in the UK Governments Plan for Change. This is vital to ensuring the United Kingdom remains resilient and responsive in the face of potential future shocks.



Wildfire in the Amazon forest, Brazil

The report is the product of a major scientific collaboration and a fine example of international cooperation between the Met Office, UK partners, and international partners including Brazil, showcasing UK science and upholding international research goals. The report provides benefits for all partners and can facilitate further collaboration between policymakers, as well as scientists, working in this key area. As of 11 February 2025, the report has been viewed over 16k times and downloaded over 3k times, cited in 4 publicly available policy documents and covered by 258 news outlets from around the World, demonstrating its significant ongoing impact. It also supports the goals of the Science and Innovation Network and helping promote UK science in climate diplomacy, especially given the importance of the Amazon rainforest to Brazilian government policy.

Met Office Senior Climate Scientist and co-author on the report Dr Chantelle Burton said *"It is virtually certain that fires were larger during the 2023 wildfires in Canada and Amazonia due to climate change. We are already seeing the impact of climate change on weather patterns all over the world, and this is disrupting normal fire regimes in many regions. It is important for fire research to explore how climate change is affecting fires, which gives insights into how they may change further in the future."*

Maria Lucia Barbosa, Wildfire Scientist at the UKCEH and co-author of the report said; *"Extreme wildfire events are occurring every year across different regions of the world. Fire dynamics are highly complex and are rapidly shifting due to climate change and human activities and it's essential to understand the underlying drivers, both globally and locally, of wildfires to help inform mitigation efforts to minimise future occurrences."*

Published Papers

- Jones et al. (2024), State of Wildfires 2023–2024, *Earth System Science Data*. 10.5194/essd-16-3601
- Kelley et al. (2025), State of Wildfires 2024–2025, *Earth System Science Data*. 10.5194/essd-17-5377-2025
- *Burton et al. (2026), State of Wildfires 2025-2026, Earth System Science Data.* 10.5194/essd-2026-587

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