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Annual Climate Attribution Research Examines 2020 Extreme Weather Events

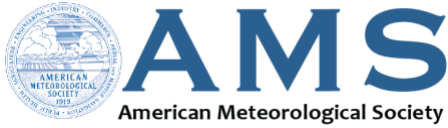
Report includes focus on the advance of rapid attribution methods

December 15, 2021 Boston, MA – Failed monsoon rains that reignited the southwestern US drought, massive flooding in central China, a spring heat wave in western Europe, and Siberian wildfires were some of the extreme weather events made more likely by human-caused climate change in 2020, according to new research published today in the *Bulletin of the American Meteorological Society (BAMS)*.

The 10th edition of the report, *Explaining Extreme Events in 2020 from a Climate Perspective*, presents 18 new peer-reviewed analyses of extreme weather across the world during 2020. It features the research of 89 scientists from nine countries looking at both historical observations and model simulations to determine whether and by how much climate change may have influenced particular extreme events.

The new report also contains several discussions on the state of rapid climate attribution research, including opportunities and challenges for providing accurate analysis in a timely frame.

“International efforts to increase the speed at which attribution studies can be performed highlights the growing demand for timely information about the impacts of climate change to inform decision making and policy,” said Keith Seitter, Executive Director of the American Meteorological Society. “Understanding how human-caused climate change is impacting extreme events today and in the future is critical for shaping how society will choose to respond to these impacts.”



One trend emerging in the past several years is a number of studies that found the influence of climate change actually reduced the risk of certain types of extreme events, typically a cold outbreak or heavy precipitation.

“This report reinforces the scientific consensus that human influence has created a new climate - one that is impacting extreme events today,” said Stephanie Herring, a NOAA climate scientist and editor of the *Explaining Extreme Events* report. “The weight of the evidence grows every year, and as humans continue to emit billions of tons of greenhouse gasses into the atmosphere, these extreme weather impacts are certain to increase.”

Here are findings from some of the research on 2020’s extreme weather published in this issue.

Drought

- A study that utilized several different model simulations and event-attribution methods suggests that climate change may have increased the likelihood that the Southwestern U.S. rainy-season monsoon would fail as it did in 2020, reigniting a multi-year drought that still shows no sign of relenting.

Heat

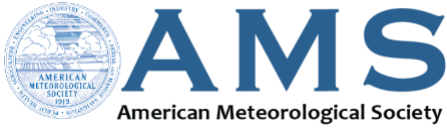
- Climate models simulations suggest that the extremely warm and wet winter over Northwest Russia in 2019 and 2020 was only possible due to climate change.
- Extremely warm temperatures in France in April 2020 would have been highly unlikely without human-caused climate change.
- Another heat wave in western Europe in May 2020 was made 40 times more likely by human caused climate change.
- Climate change has significantly increased the risk for heat extremes observed over South Korea like the hot and wet episodes experienced in summer 2020.

Cold

- Climate change decreased the likelihood of the exceptional April 2020 cold spell over Northern China by 80 percent.
- A cold air outbreak that swept across eastern China in January 2021 was less severe because of anthropogenic warming.

Fires

- Weather conditions that led to extreme wildfires in Siberia during 2020 were up to 80 percent more likely than a century ago as a result of global warming.



Heavy Precipitation & Flooding

- Climate change made precipitation and flooding in western Japan 15% more likely during July 2020.
- Climate change was responsible for a 50 percent increased likelihood of the heavy precipitation in Beijing during February 2020, the most since 1951.
- Four separate studies examined 2020's record-breaking annual Meiyu rains, where total precipitation along the Yangtze River in central China was the highest in 20 years, finding they were less likely and less intense than they would have been due to climate change.
- Computer models simulating a 2020's atmospheric composition estimated that climate change was responsible for 47 percent of the heavy rain amounts in southwestern China during August, and that climate change doubled the likelihood of such an event.

The extreme weather events studied in the 10 annual issues of the report were selected by individual researchers and do not represent a comprehensive analysis of events during that span. About 76 percent of the over 200 research findings published in this series identified a substantial link between an extreme event and climate change; about 24 percent did not.

Read the full [*Explaining Extreme Events* report.](#)