

# Climate change increased up to 20% the heavy rain of storm Boris that caused massive floods in Central Europe

<https://www.climameter.org/20240913-15-storm-boris>

The intense rainfall that led to massive floods in central Europe in September 2024 have been intensified due to human-induced climate change, according to a new rapid analysis by the ClimaMeter consortium. The group also found that natural climate variability may have also played a small role in further worsening the rain, but their contribution was smaller.

Between September 13 and September 15, Storm Boris brought torrential rains and severe flooding across Central and Eastern Europe, with rainfall exceeding 300 mm in several central European countries and causing rivers to overflow, resulting in widespread destruction. The storm claimed several lives, triggered dam failures, washed away bridges, and caused significant power outages and transport disruptions.

To analyze the drivers of this extreme meteorological event, scientists at ClimaMeter conducted a rapid analysis using a methodology based on historical meteorological information from the last 40 years. The researchers compared how similar low depression systems were at the end of the 20th century (1979-2001) and how they are now, in recent decades (2001-2023), when the effect of climate change has become more evident. The analysis also evaluates the contribution of natural climate variability.

Using this methodology, the scientists found that depressions akin to those that hit Central Europe are now up to 20% more intense. The analysis shows that climate change played an important role in fueling this heavy rainfall episode, as the contribution of natural climate variability alone can't explain the intensity of the observed event.

The analysis is part of [ClimaMeter](#), a research project funded by the European Union and the French National Centre for Scientific Research (CNRS). You can find the full report of the event on [www.climameter.org](http://www.climameter.org) and after the embargo ends, the report will appear on the ClimaMeter website. An explanation of the methodology used in ClimaMeter is available [here](#).

## Quotes

**Davide Faranda** ([davide.faranda@cea.fr](mailto:davide.faranda@cea.fr); +33681038467), CNRS, France, said:

“We are now experiencing the second 'flood of the century' in Eastern Europe within a single summer. But these are not just isolated natural disasters. Research shows that extreme rainfall is becoming more frequent and intense due to man-made climate change. Our ClimaMeter study confirms that fossil fuel emissions are intensifying precipitation events in Europe. Some of this rain originates from distant regions, as moisture evaporates from the Mediterranean and the tropical Atlantic. To stabilize the climate and prevent such events in the future, we must urgently stop burning coal in blast furnaces, gas in our homes, and petrol in our vehicles.”

**Tommaso Alberti** ([tommaso.alberti@ingv.it](mailto:tommaso.alberti@ingv.it)), Istituto Nazionale di Geofisica e Vulcanologia, Italy, said:

“Climate change has once again played a role in the recent floods that have hit Central and Eastern Europe. And this can be attributed to two main factors: (i) cold air from the north mixed with moisture from unusually warm Mediterranean and Black Sea surfaces, and (ii) a low-pressure system trapped by high-pressure zones. Our ClimaMeter analysis reveals that, although not unusual for the season, its severity in terms of precipitable water has been significantly increased by anthropogenic emissions. We urge global action starting from local and daily practices to mitigate the increasing intensity of storms like Boris.”

**Erika Coppola ([coppolae@ictp.it](mailto:coppolae@ictp.it)), The Abdus Salam International Centre for Theoretical Physics, Italy, said:**

“Once again, we are facing a disaster that, although well-forecasted, has still caused significant losses and damages. This is because the amplification of such events due to global warming is rendering current policies obsolete and ineffective in preventing these disasters. There is an urgent need to act: on one hand, by updating existing policies, and on the other hand, by implementing new mitigation and adaptation measures at the European level. “

**Bogdan Antonescu ([bogdan.antonescu@g.unibuc.ro](mailto:bogdan.antonescu@g.unibuc.ro)) Bucharest University, Romania, said;**

“Storm Boris is a stark reminder that the boundaries of what we consider 'extreme' weather are shifting rapidly due to human-induced climate change. In Romania, the record-breaking rainfall in Galati and Vaslui counties overwhelmed infrastructure and led to tragic loss of life, underscoring the urgent need for enhanced flood protection measures and climate adaptation strategies.”