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Behind the veil of extreme event attribution

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Since 2015, the community of extreme event attribution (EEA) has witnessed a scientific controversy between what is called a “risk-based approach” — estimating how the probability of event occurrence correlates with climate change — and a “storyline approach” — evaluating the influence of climate change on thermodynamic processes leading to the event. We confront those two approaches to the methodologies used in a collection of 105 case studies from 5 BAMS special issues on extreme events. We find that the controversy fails to describe the various ways to perform EEA. In order to go beyond the controversy, we define EEA, based on corpus of interviews conducted with researchers working in the field. EEA is the ensemble of scientific ways to interpret the question “is this event caused by climate change?” and answer it. In order to break down the subtleties of EEA, we decompose this initial question into three main problems a researcher has to deal with when framing an EEA case study. First, one needs to define the event of interest. Then, one has to determine the chain of causality behind the attribution, and the subsequent level of conditioning to parameters of interest. Finally, one has to determine how to represent climate change. We conjecture that the apparent dispute on EEA is connected to its perceived potential use by stakeholders outside of academia, and not to actual scientific practice.