

# Do disaster experiences impact public opinion on climate change in European countries?

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## Introduction

Public opinion has been identified as an essential factor for effective climate policy implementation, and many studies explore socio-economic determinants of public perception of climate change, its causes, and consequences. Besides, several analyses focused on how far experiencing events related to climate change (such as extreme and rapid weather events, temperature anomalies, and natural disasters) influence opinion on climate. (1984) “window of opportunity” thesis suggests that willingness to accept some climate policy increases during and shortly after an event but declines afterwards. Thus, the “window of opportunity” argument has profound climate change policy implications; at the same time, the mechanism is under-researched as existing studies offer a confusing picture of the issue.

Some studies claimed the impact of experience on opinion about climate change. Taking floods that occurred in England in 2015 as a case study of a disaster event, Demski et al. (2017) demonstrated that direct experience of flooding leads to an overall increased salience of climate change, while Spence et al. (2011) indicated that experience floods lead to more concern over climate change. In turn, the analysis based on four waves of a representative population survey in Germany and weather records from the postal code areas where respondents live showed that experiencing seasonal temperature changes influences personal climate change concerns and the willingness to mitigate climate change (Pfeifer & Otto, 2023).

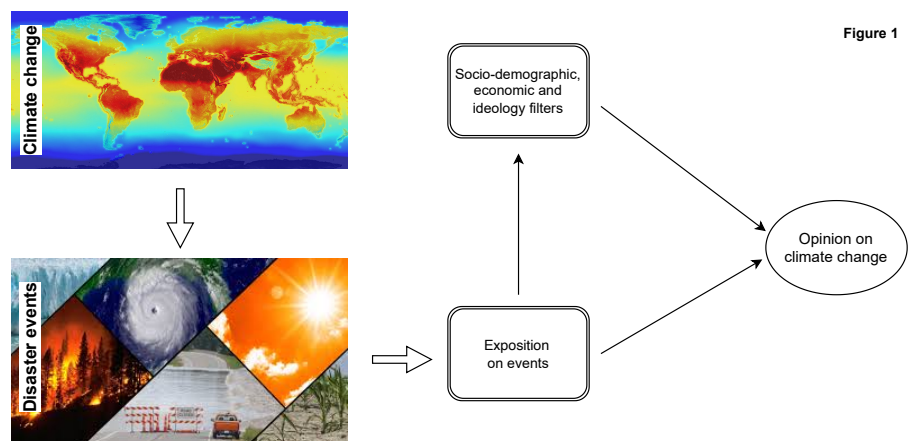
At the same time, several studies demonstrated no impact of disasters on public opinion. Based on the individual-level multi-wave panel survey data in Germany collected from 2016 to 2019 with weather data from 514 weather stations, Gärtner and Schoen (2021) indicated that personally experiencing unusual or extreme local weather did not shape people’s awareness of climate change. Similarly, a study by Whitmarsh (2008) conducted among flood sufferers in the south of England indicated that experience has negligible impact on understanding causes and accepting responses to climate change.

Besides, a few studies explored how individuals perceive changes in climate-related events over time and how specific weather events impact their subjective well-being. The findings of these studies suggest that people tend to notice and be affected by increases in events such as flooding and heavy rainfall, with potentially long-lasting effects on life satisfaction. For instance, Taylor et al. (2014) used the UK national survey data to demonstrate that heat waves and hot summers were perceived as less common during respondents' lifetimes, while flooding, periods of heavy rainfall, coastal erosions, and mild winters were perceived to have increased in frequency and cold winters were perceived to be unchanged. In turn, the study by von Möllendorff and Hirschfeld (2016) utilised German representative panel data (2000–2011) to demonstrate the significant reduction of life satisfaction due to storms, hail events, and floods; the effect from floods persists much longer.

Summarizing previous results, we can indicate that: (a) no explicit agreement can be found in the literature whether experiencing extreme climatic/weather conditions impacts peoples' opinion or behaviour; (b) a various set of socio-demographic, psychological and other contextual variables are claimed to influence perception of climatic/weather conditions and events; (c) studies vary conceptually and geographically, which makes it challenging to derive a model of the influence of experiencing the conditions and events on the opinion on climate change.

## Aims of the study

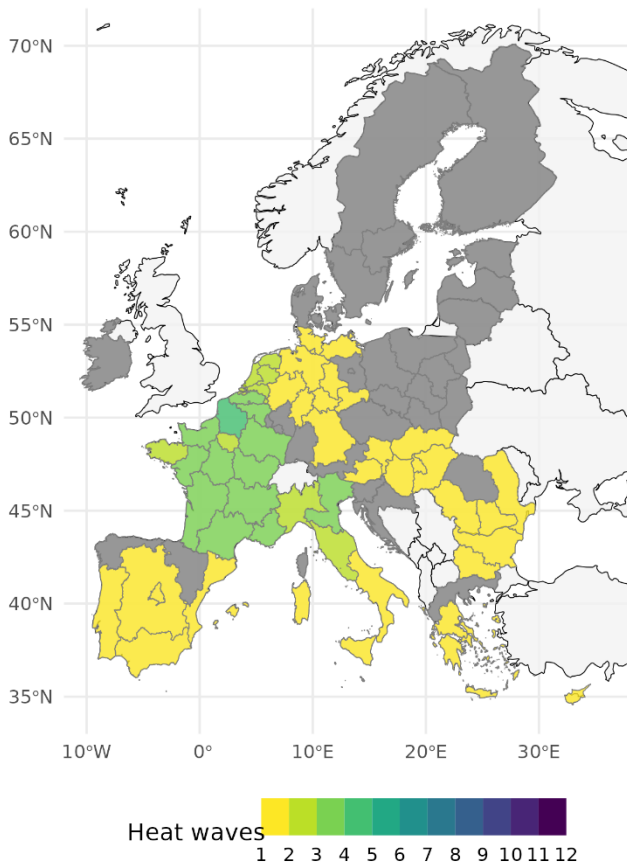
In this study, we aim to contribute to the discussion on the impact of direct experience of extreme weather events on public opinion about climate change. We assume the relationship between having experience and the perception of climate change is positive, i.e., individuals exposed to acute or long-term extreme weather events will perceive climate change more seriously compared to those exposed to extreme weather events less frequently. Besides, we hypothesized that the experience of extreme climate events weakens the dependence of climate change perception on the ideological and socio-economic filters. We contribute to the literature by analyzing whether a shift in public opinion due to extreme weather events exists and how it opens a "window of opportunity" for effectively implementing climate policy. The general framework of the analysis is presented in Figure above.



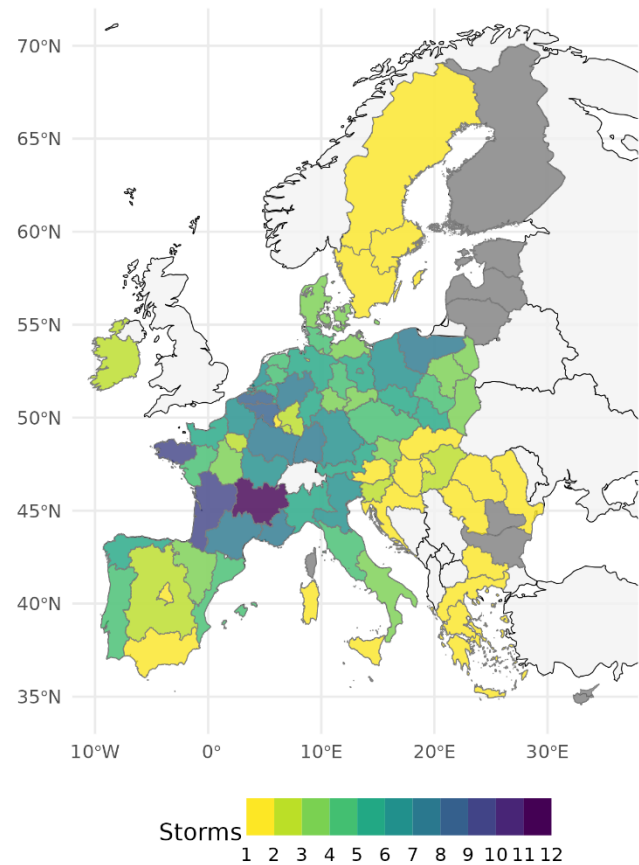
## Data and Methods

The study will rely on two data sources: 1) Eurobarometer (EB 95.1, spring 2021) survey conducted in all 27 EU member states and 2) Emdat (Emergency Events Database) records of natural disaster events for the period 2006-2020. Both databases provide location data (respondent place of residence, disaster occurrence), we apply NUTS1 locations to incorporate within-country diversities of opinions and structural conditions. Out of all the categories registered by EMDAT we focus on two, which have the highest salience in the context of climate change: “heat waves” and “storms”. Our dependent variable, taken from Eurobarometer, is derived from the question items regarding main challenges for Europe perceived by the respondent; at individual level the variable is binary: either the respondent mentioned “climate change” or not. Below we present the descriptive spatial distribution of the disaster variables. In our analysis, applying multi-level logistic regression we investigate the potential impact of disaster exposure on climate-change perceptions in the context of other variables both individual (left-right orientation, type of dwelling) and country-level characteristics (GDP per capita).

### Incidence of heat waves (2006-2020)



### Incidence of storms (2006-2020)



## References

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