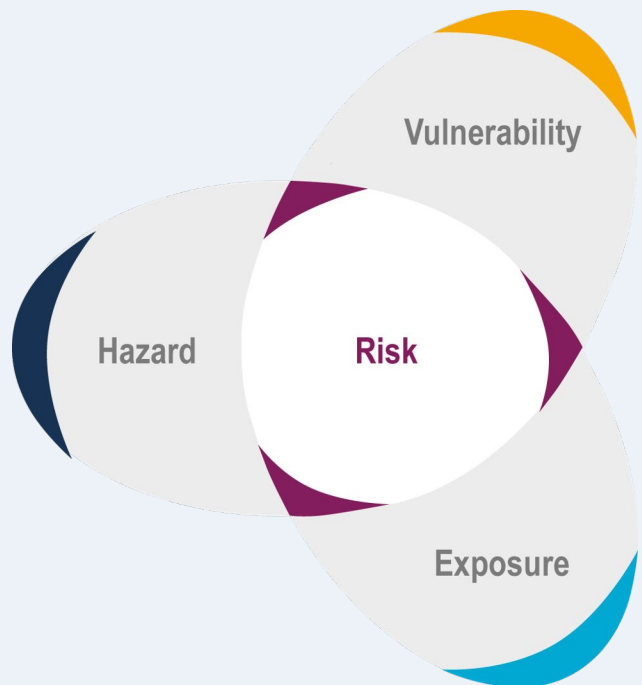


# Impact attribution I: food security, labor, and disaster impacts

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IPCC 2022

Increasing Levels of Carbon Dioxide and Short-Lived Climate Pollutants



Rising Temperature



Rising Sea Levels



Increasing Extreme Weather Events



Demographic, Socioeconomic, Environmental, and Other Factors That Influence the Magnitude and Pattern of Risks

- |   |                                 |
|---|---------------------------------|
| Geography   | Warning systems                 |
| Ecosystem change                                  | Socioeconomic status            |
| Baseline air and water quality                    | Health and nutritional status   |
| Agricultural and livestock practices and policies | Access to effective health care |

EXPOSURE PATHWAYS

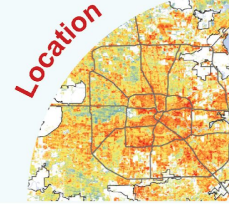
Extreme Weather Events	Heat Stress	Air Quality	Water Quality and Quantity	Food Supply and Safety	Vector Distribution and Ecology	Social Factors
<b>EXAMPLES OF HEALTH OUTCOMES</b>						
<ul style="list-style-type: none"> <li>Injuries</li> <li>Fatalities</li> <li>Mental health effects</li> </ul>	Heat-related illness and death	<ul style="list-style-type: none"> <li>Exacerbations of asthma and other respiratory diseases</li> <li>Respiratory allergies</li> <li>Cardiovascular disease</li> </ul>	<ul style="list-style-type: none"> <li>Campylobacter infection</li> <li>Cholera</li> <li>Cryptosporidiosis</li> <li>Harmful algal blooms</li> <li>Leptospirosis</li> </ul>	<ul style="list-style-type: none"> <li>Undernutrition</li> <li>Salmonella food poisoning and other foodborne diseases</li> <li>Mycotoxin effects</li> </ul>	<ul style="list-style-type: none"> <li>Chikungunya</li> <li>Dengue</li> <li>Encephalitis (various forms)</li> <li>Hantavirus infection</li> <li>Lyme disease</li> <li>Malaria</li> <li>Rift Valley fever</li> <li>West Nile virus infection</li> <li>Zika virus infection</li> </ul>	Physical and mental health effects of violent conflict and forced migration (complex and context-specific risks)

Haines & Ebi 2019

# Exposure and vulnerability vary across populations



- Historically redlined communities (BIPOC and low-wealth communities) are often hotter than other neighborhoods.
- Access to cooling centers is more limited in some areas.



- Certain populations are more vulnerable to extreme heat and have less access to healthcare.
- Socially isolated individuals may have less access to cooling centers.



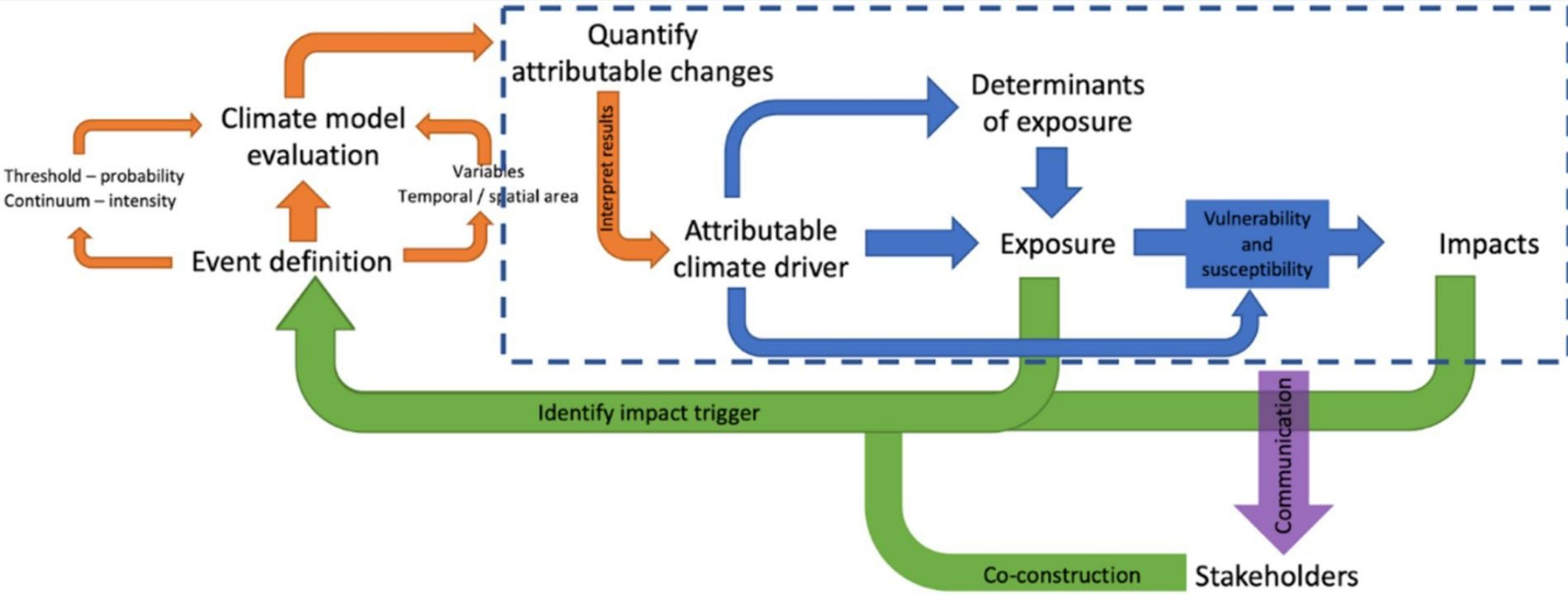
sts and the pairs limit the ford air-conditioning.

1 residents often es that provide tion against eat.



- COVID-19 protocols reduced the accessibility and effectiveness of cooling centers.
- Disadvantaged populations are more at risk for heat-related illnesses during power outages.

# Draft framework for attributing the impacts of extreme events to climate change. Different colors denote the different disciplines required for a successful impact attribution assessment



# Panelists

- **Dr Emmanuel Raju**
  - Director, Copenhagen Center for Disaster Research; Associate Professor of Disaster Risk Management, University of Copenhagen
- **Dr. Jonas Jagermeyr**
  - Associate Research Scientists, Columbia Climate School and NASA Goddard Institute for Space Studies; Leader of the Agricultural Sector in ISIMIP, Potsdam Institute for Climate Impact Research (PIK), Germany
- **Dr. Shouro Dasgupta**
  - Researcher, Fondazione Centro EuroMediterraneo sui Cambiamenti Climatici; Visiting Senior Fellow, Grantham Research Institute, London School of Economics