



# HOTSPOT OF CHANGES IN EXPOSURE TO MULTIVARIATE EXTREMES AT DIFFERENT GLOBAL WARMING LEVELS

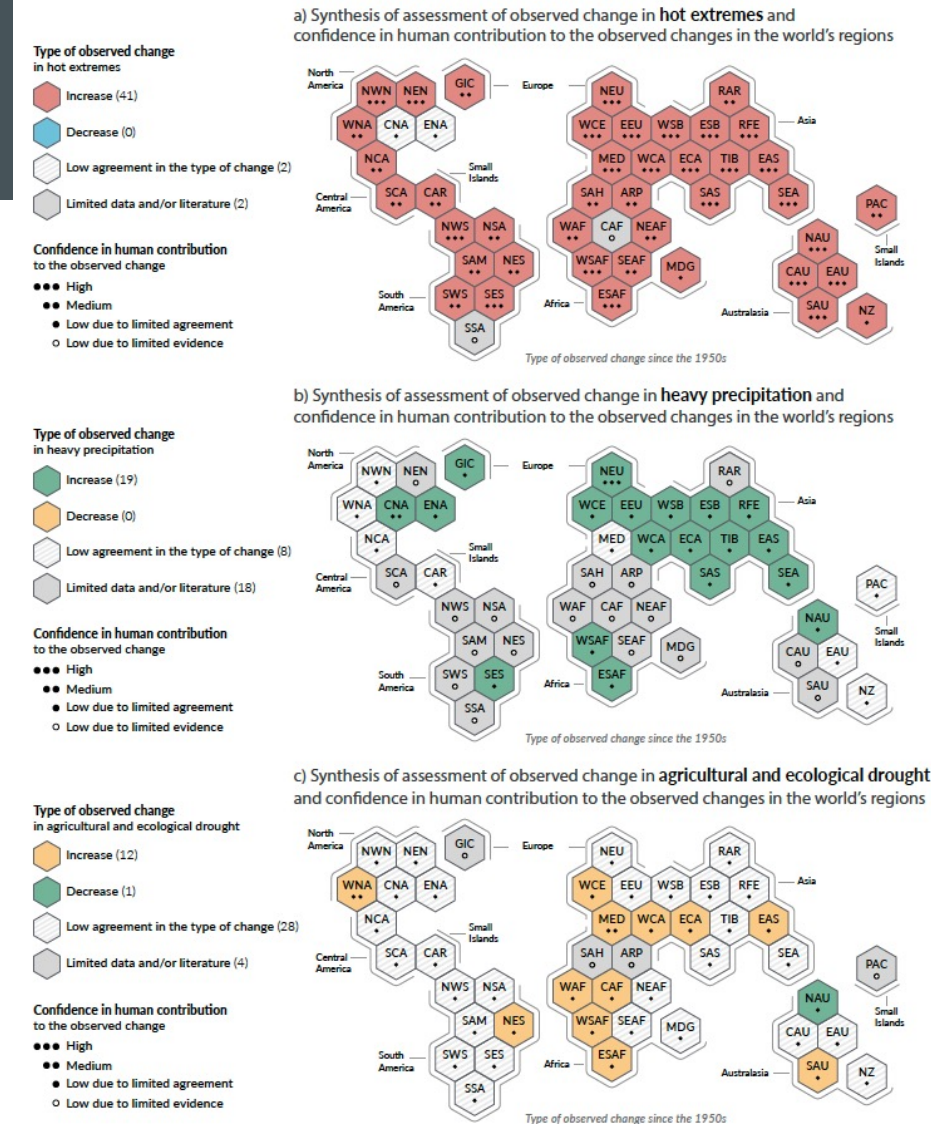
FULDEN BATIBENIZ, MATHIAS HAUSER, SONIA I. SENEVIRATNE

INSTITUTE FOR ATMOSPHERIC AND CLIMATE SCIENCE, ETH ZURICH, SWITZERLAND

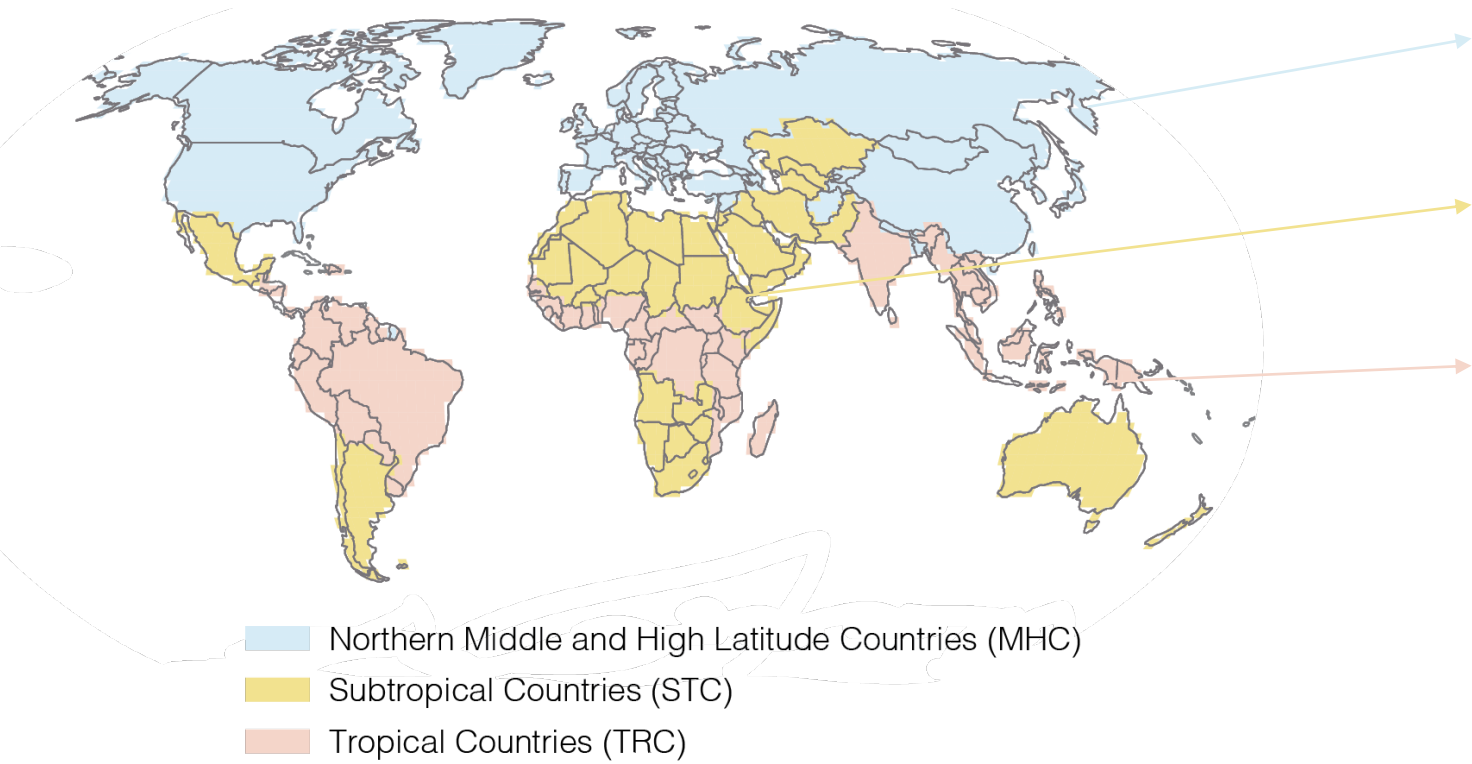
# MOTIVATION

- Providing information on changes in individual and concurrent extremes at 1°C, 1.5 °C, 2 °C and 3 °C warming levels.
- What are regional responses to the change in individual and coupled events?
  - Climate regions
  - Country
  - Population
- Concurrent events:
  - heat wave - drought,
  - maximum 1-day precipitation (rx1day) – extreme wind

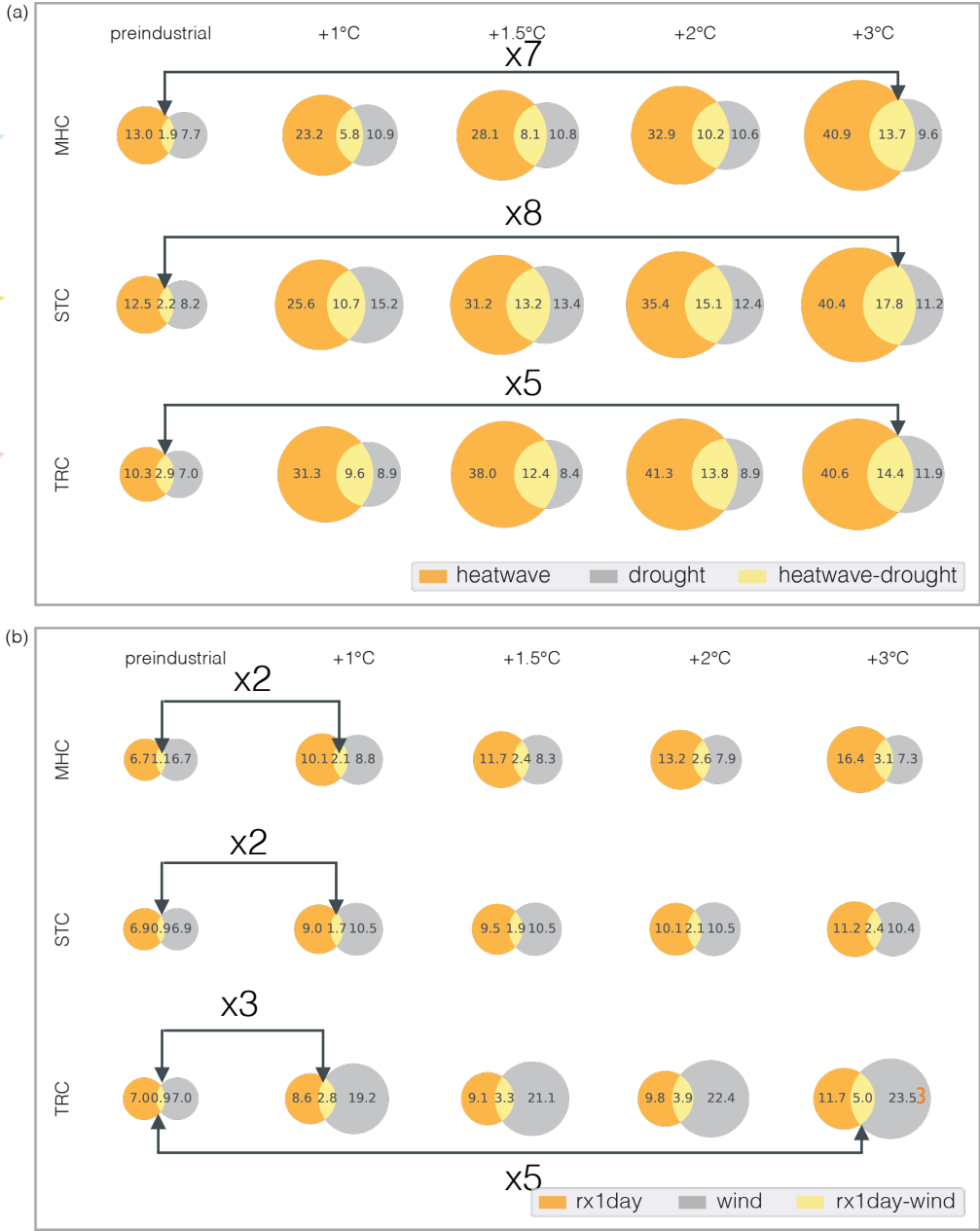
Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes



# FUTURE CHANGES OVER THE CLIMATE REGIONS



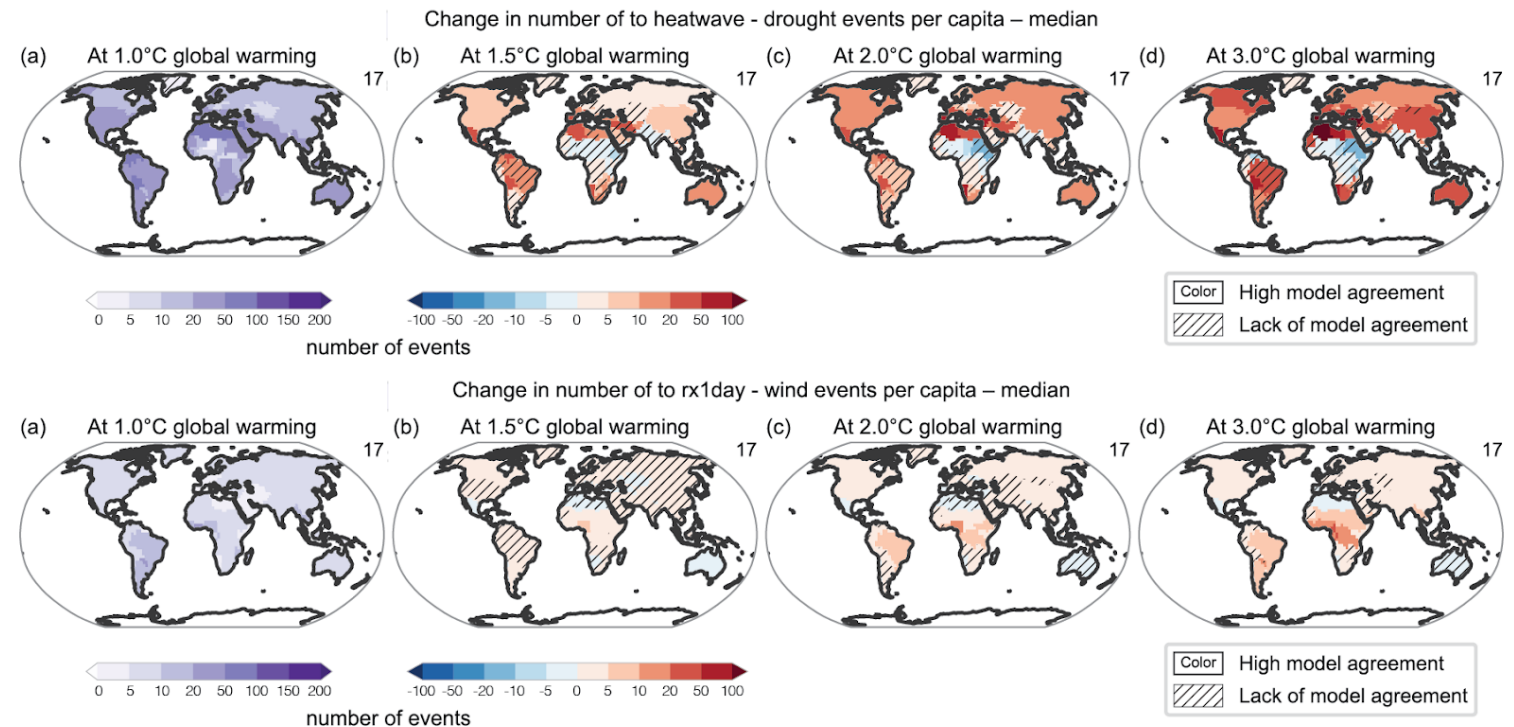
VENN DIAGRAMS: FREQUENCY OF COMPOUND EVENTS [%]



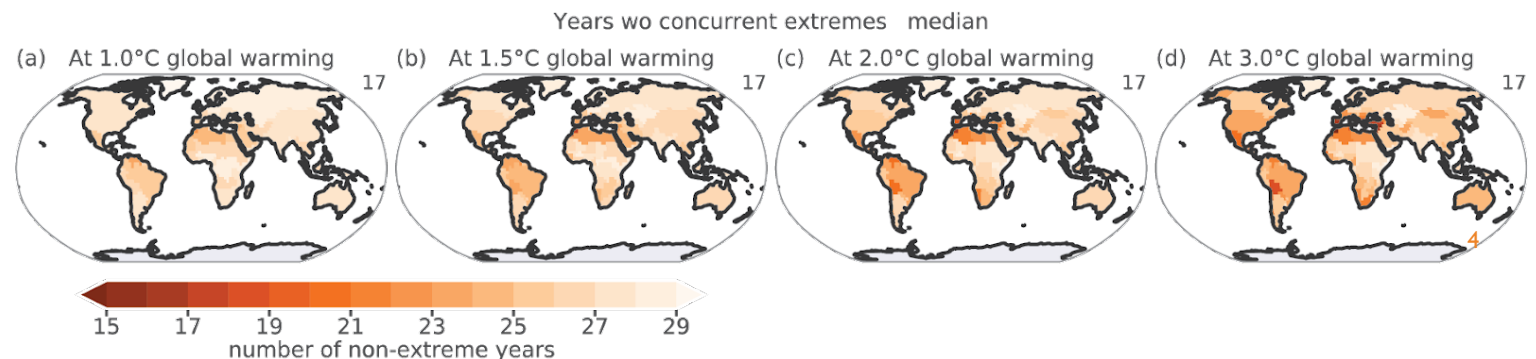


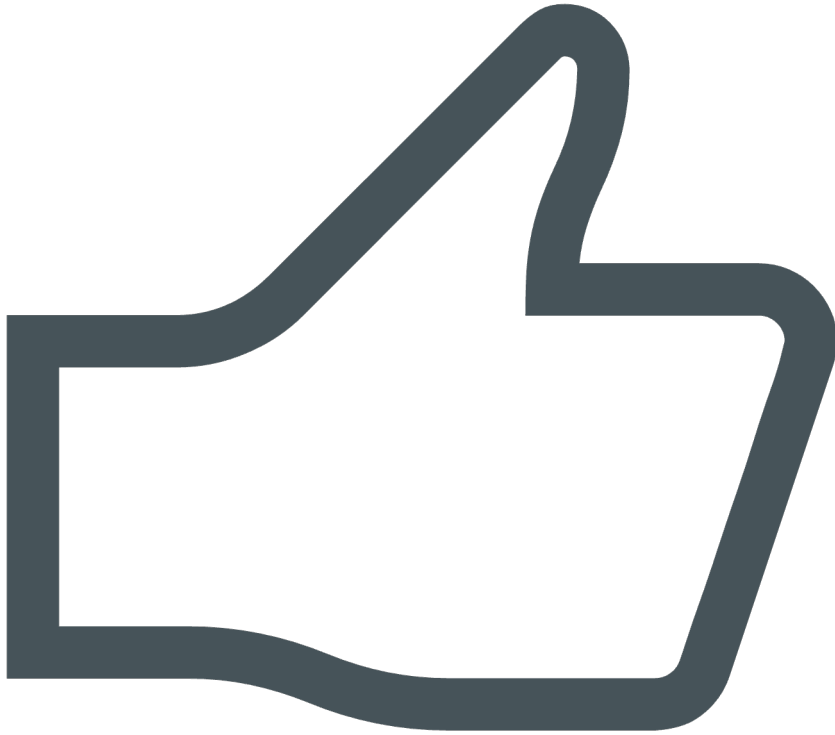
- All regions are affected by heatwave-drought but very clear signal is observed in subtropical countries.
- rx1day – wind are increasing the most in tropical countries.
- Concurrent extreme events are increasing as the climate changes.
- The frequency of the concurrent events will increase and timing of the events will change.

## NUMBER OF CONCURRENT EVENTS PER CAPITA



## NON-EVENT YEARS (OUT OF 30 YEARS)





Preprint of this work will be available soon with the following title: “Countries most exposed to individual and compound extremes at different global warming levels”.

# THANKS!

Contact: Fulden Batibenz

[fulden.batibenz@env.ethz.ch](mailto:fulden.batibenz@env.ethz.ch)

#### PICTURE REFERENCES

- <https://news.cgtn.com/news/2020-04-18/Chinese-plateau-province-sees-worst-drought-in-10-years-PMGdSN543e/index.html>
- <https://www.economist.com/europe/2021/08/07/turkeys-deadly-fires-raise-the-heat-for-erdogan>
- <https://www.haberturk.com/dunya/haber/849516-avrupayi-sel-aldi>
- <https://www.dw.com/en/climate-storms-cyclones-hurricanes-typhoons-explained/a-55521226>