

Results from COMPASS Work Package 1: Characterising compound extremes in current and future climates



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Objectives

Develop and validate of a modelling framework for the characterization of compound extremes in current and future climates.

Using existing datasets and modelling approaches

- Global to local modelling framework

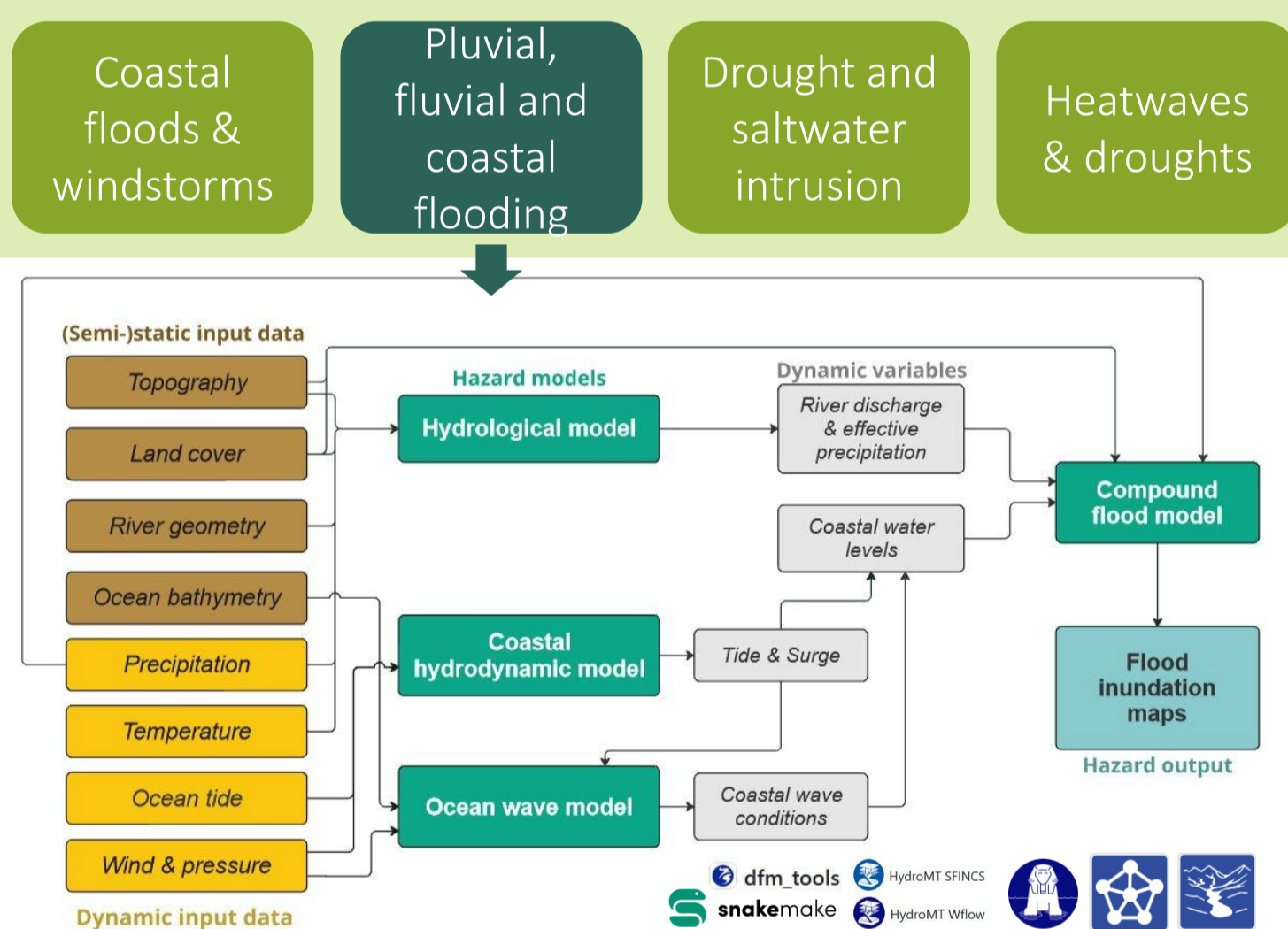
- Resolving compound drivers of tropical cyclones

Global to local modelling

- Utilizing global state-of-the-art static and dynamic datasets
- Dynamical downscaling of hazard drivers
- Exploring strengths and limitations of global-to-local modelling in impact attribution



Modelling framework

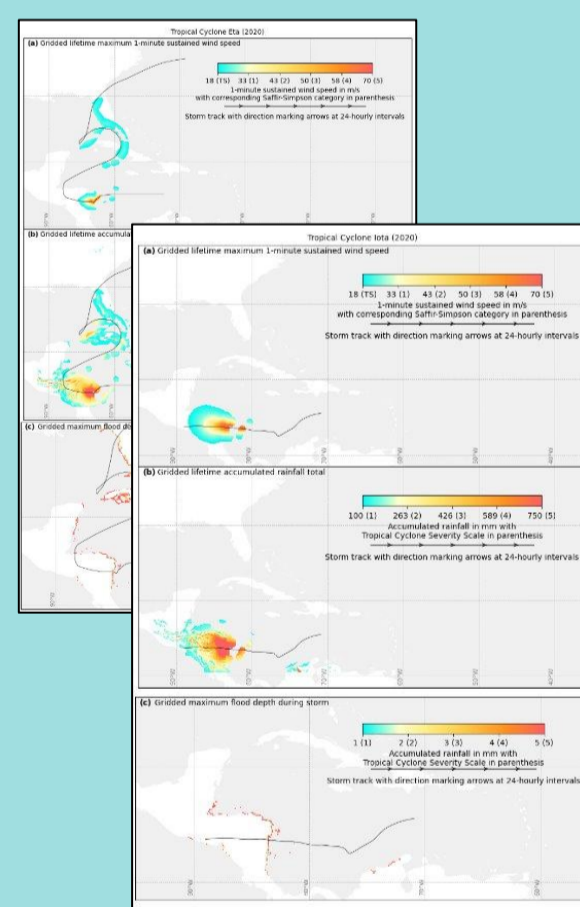


Utilizing open-source data and models
Open code sharing
Attention to reproducibility

Tropical cyclone drivers

Addressing lack of key driver data for tropical cyclones, we develop a dataset of tropical cyclone-affected areas:

- Historical TC tracks for 1950-2024 (IBTrACS)
- Max. wind, rainfall, coastal flood depth
- Hourly timeseries of key drivers for select TCs



Database serves as a basis to a counterfactual dataset and as input to impact modelling.

Output and resources

WP1 deliverables:

- Guidelines for compound extreme modelling [report]
- Compound extremes modelling framework [report & code]
- Dataset of tropical cyclone-affected areas [dataset]

Project deliverables are available via Zenodo and GitHub →

Zenodo repository (datasets, reports)

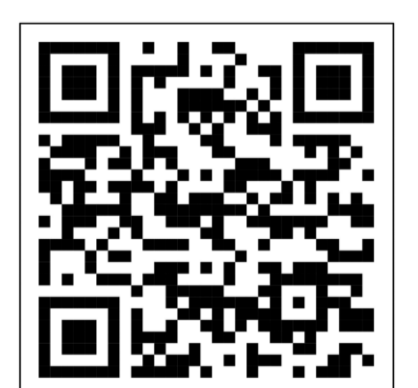


GitHub repository (code)



Interested?
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