Basic detection and categorisation of events

Robert Schlegel
Sorbonne Université

2023-07-24

Know the rules well, so you can break them effectively.
–Dalai Lama

Learn the rules like a pro, so you can break them like an artist.
–Pablo Picasso

We are interested in the **why** more than the **how**.

However, to evolve the **why** we need a deep understanding of the **how**.

But beware, if we focus on the **how**, we may get stuck in dogmatic thinking and forget the **why**.

How:

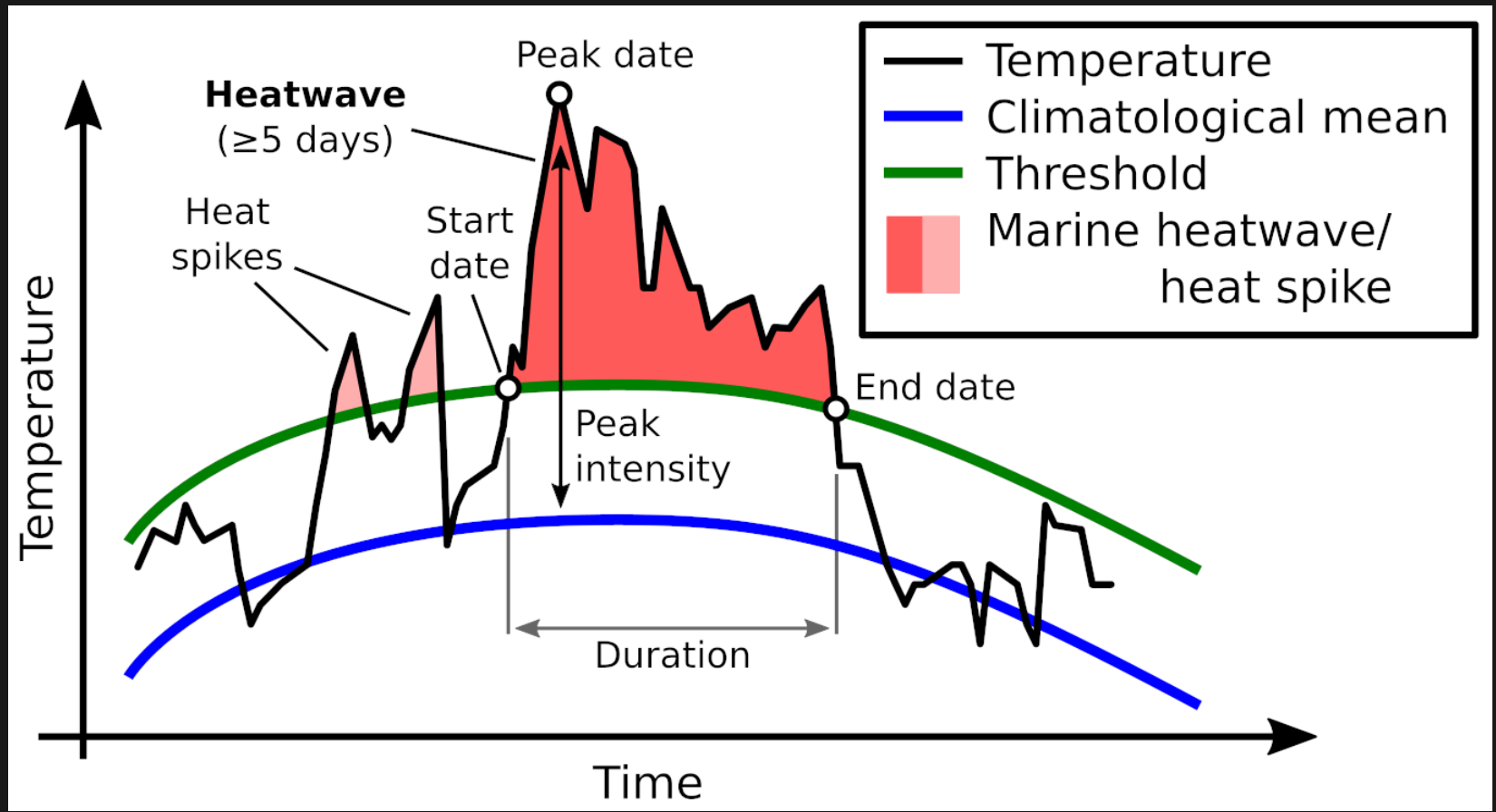
Statistical decomposition of temperature time series

Why:

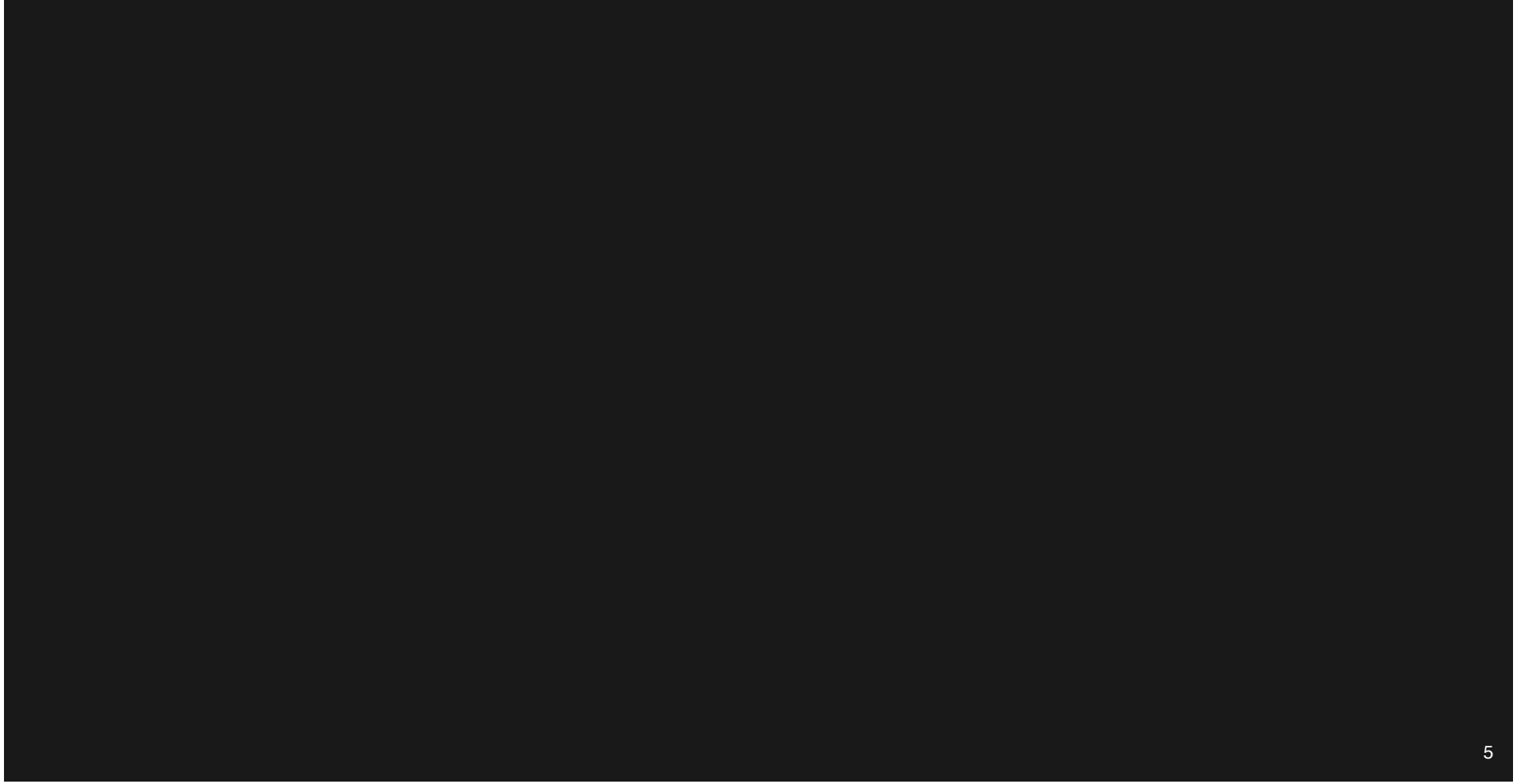
Reference point around which to investigate:

- physical forces of extreme temperature
- bio/ecological impacts of extreme temperature
- socio/economic impacts of extreme temperature

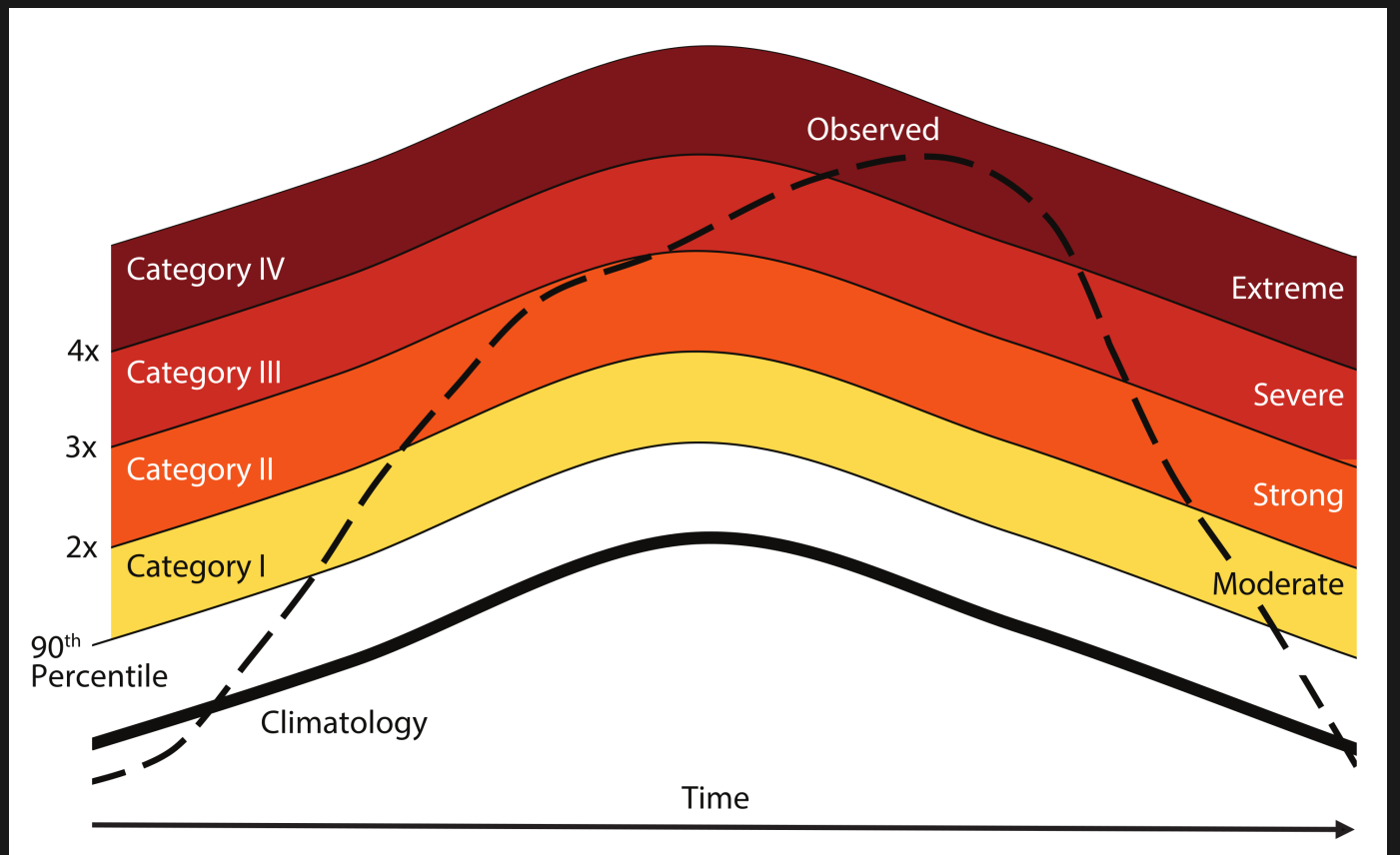
How - definition



Oliver; MHW International Working group



How - categories



Hobday et al. (2018) *Categorizing and Naming Marine Heatwaves*

Detecting extreme events

1. Pick a time series
2. Set the baseline period
3. Chose a threshold value
4. Detect consecutive days
5. Calculate metrics

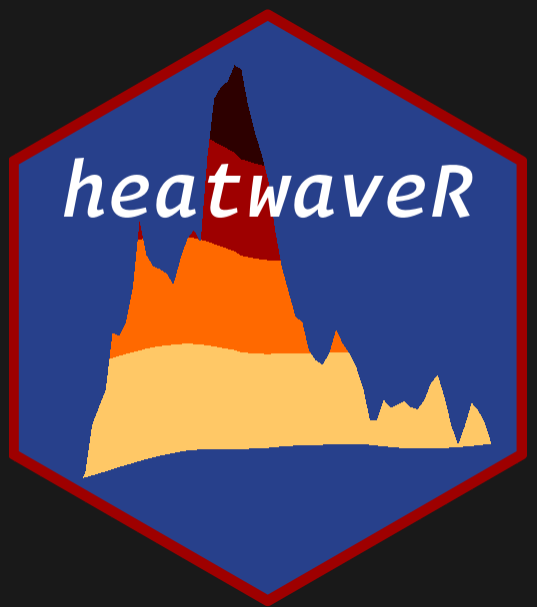
MHW demo

Scan me:

or click to activate MHW demo

Language of choice

R | python | MATLAB



https://robwschlegel.github.io/heatwaveR/index.html

Downloading data

Manual link | R | Python | MATLAB

NOAA GRIDDAP server

https://coastwatch.pfeg.noaa.gov/erddap/griddap/ncdcOisst21Ag

Why

Noah Smith ✓
@Noahpinion

We thought we had defeated the natural world because we defeated the animals and plants, but it turned out that they were only our fellow-travelers, struggling to survive. The real natural world is dust and fire and flood and hard radiation. It never sleeps and it always hungers.