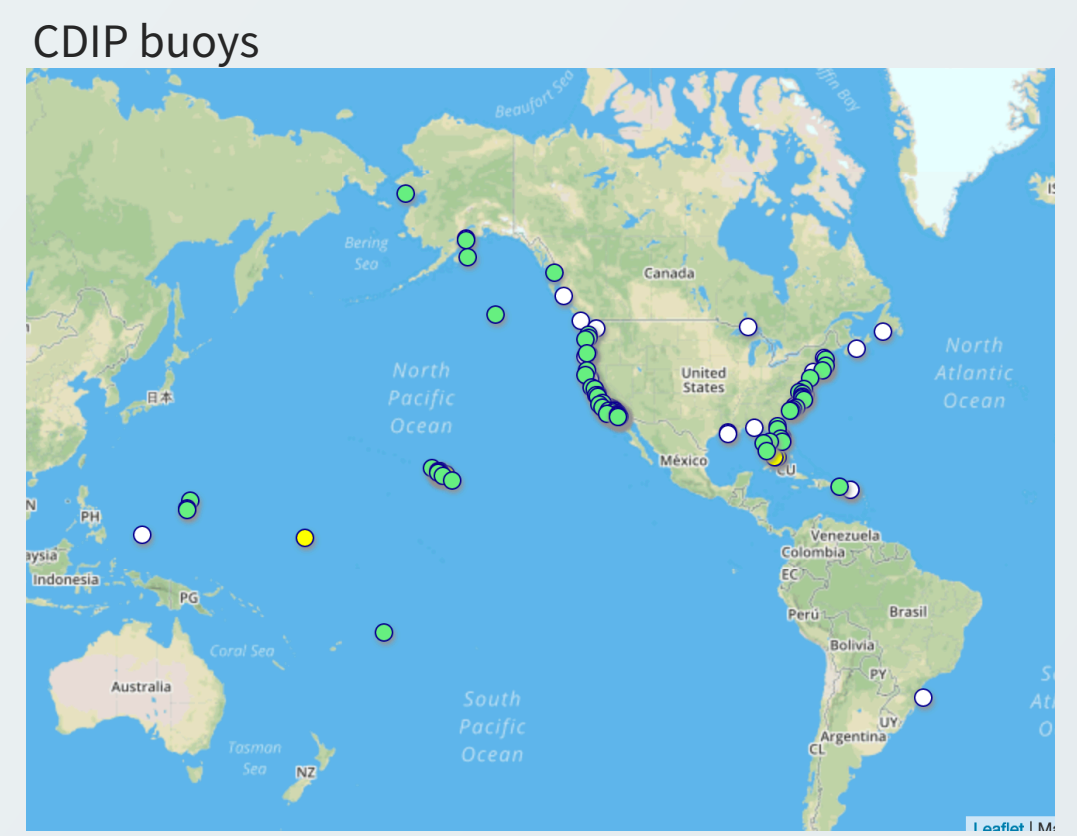


Real-World Rogue Wave Probabilities

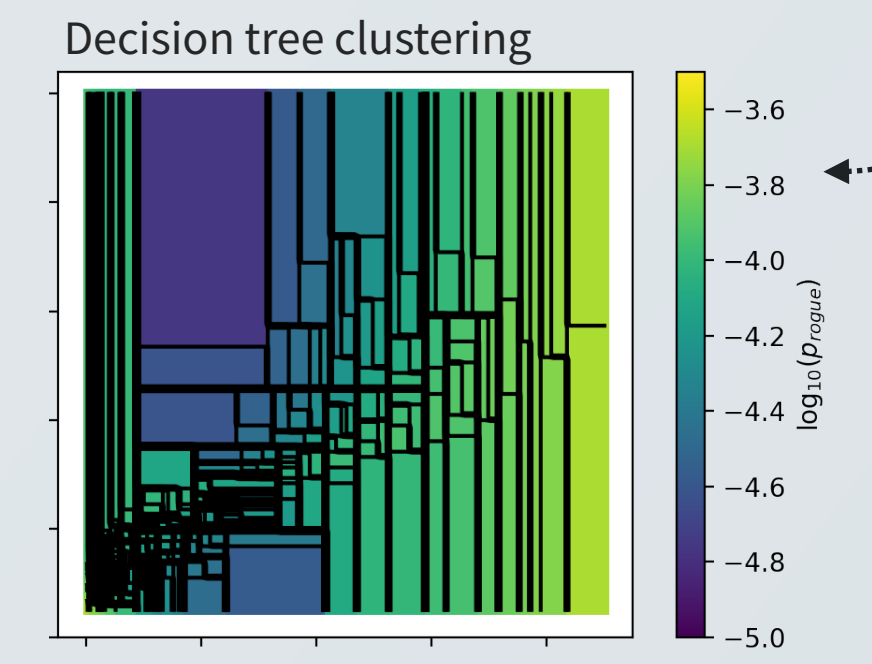
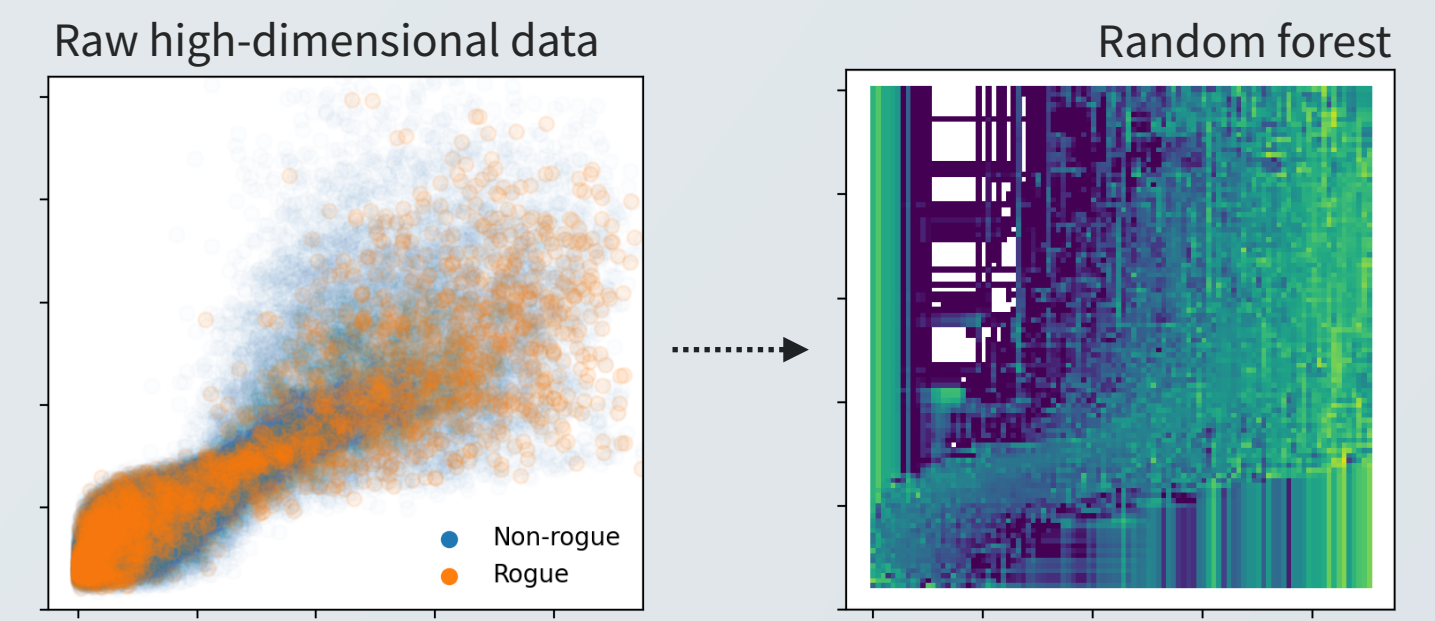
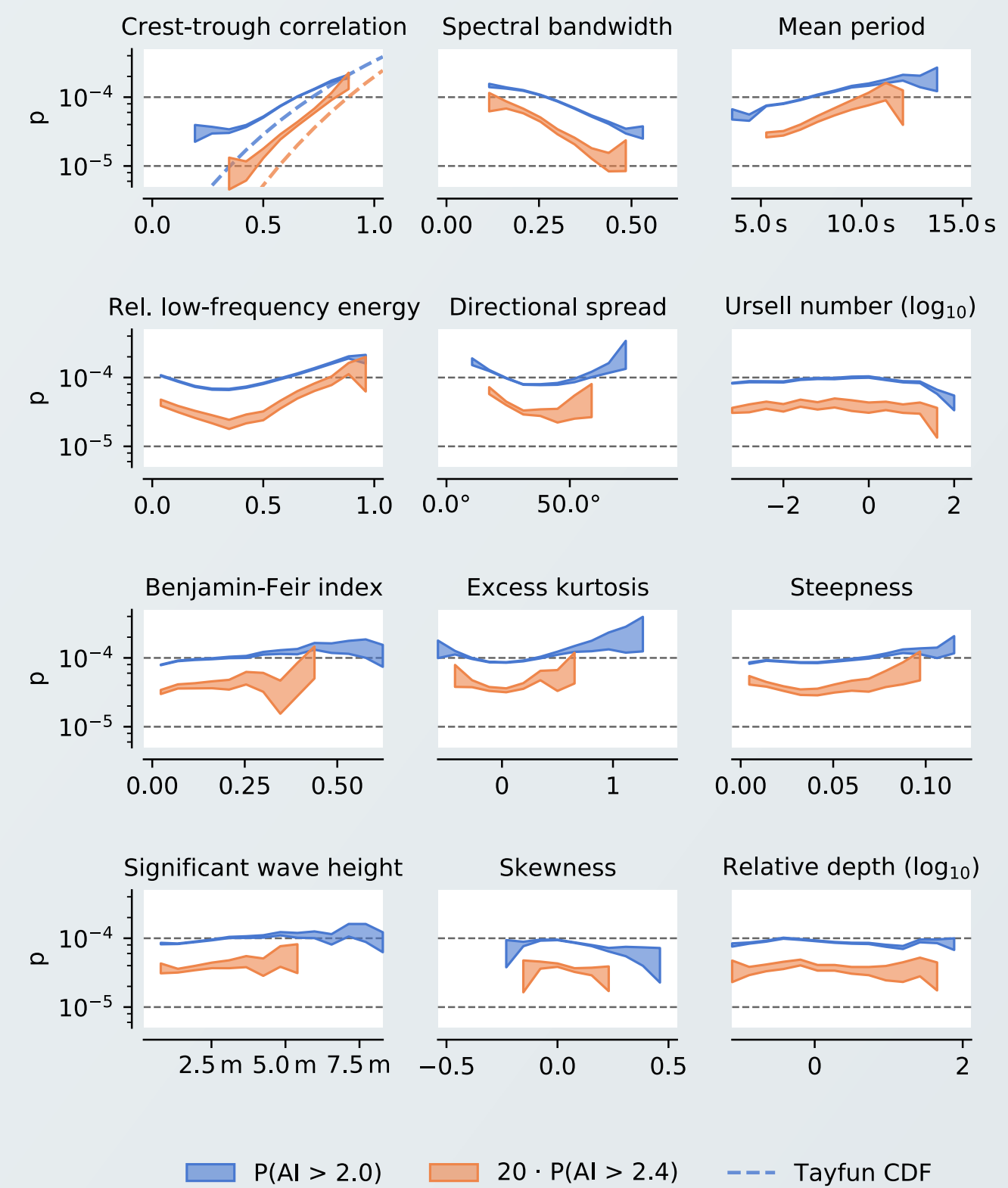
Dion Häfner, Johannes Gemmrich, Markus Jochum

Bandwidth effects are the dominant pathway to rogue waves in the ocean — even when looking at **all parameters** at the same time

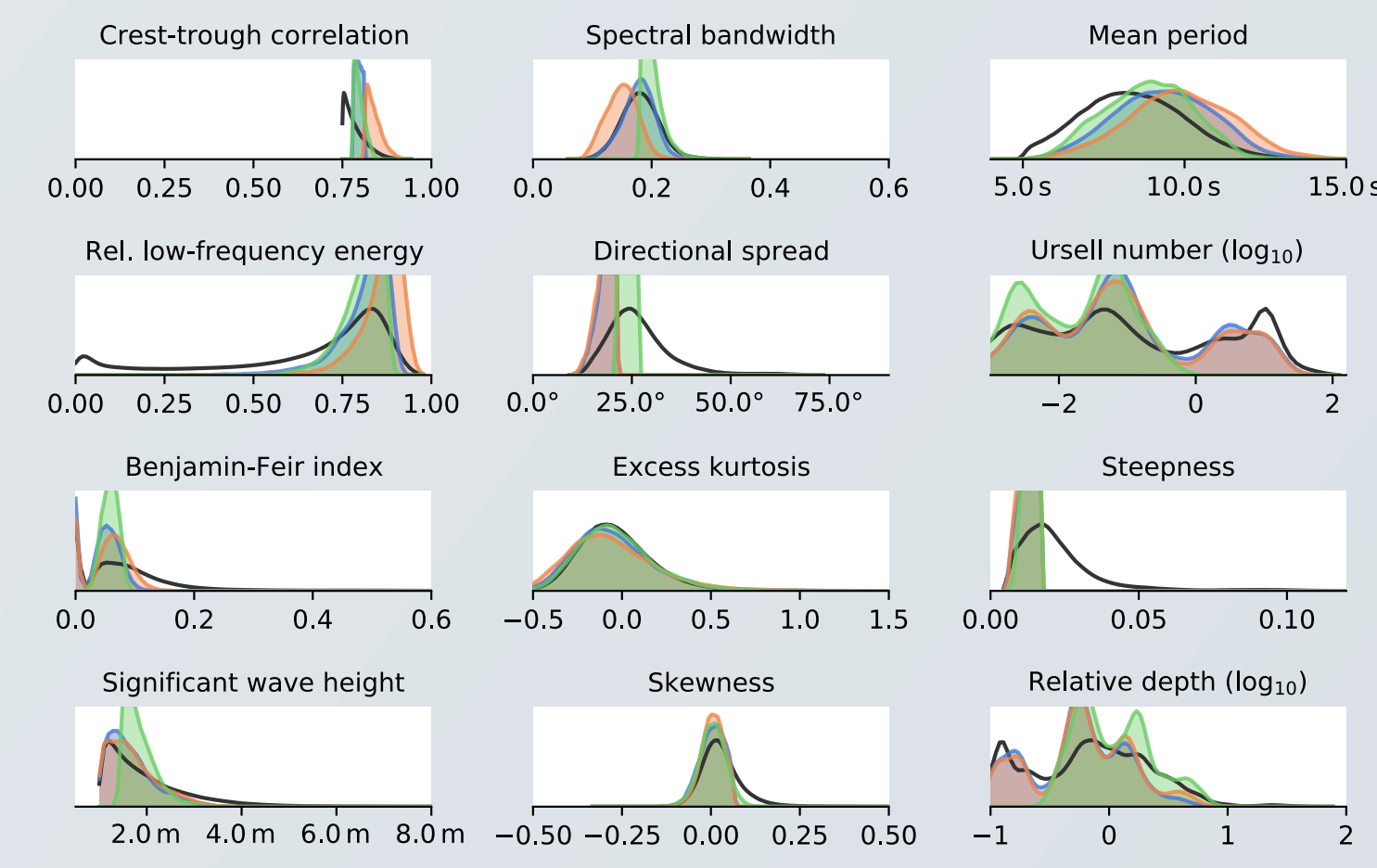


4 billion waves

Rogue wave probability as a function of sea state

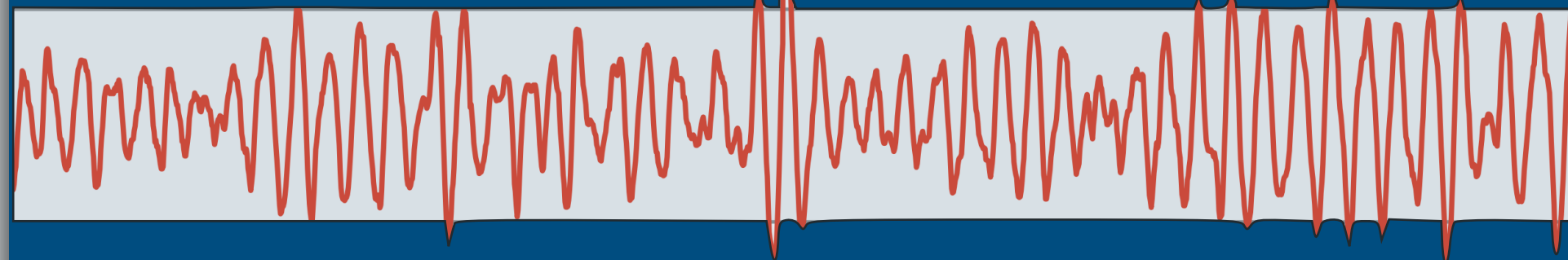


Parameter combinations with the highest rogue wave probability



Clusters

- All data with crest-trough correlation > 0.75
- $P(AI > 2.0) = 2.7e-04$ ($2.4e-04 - 3.0e-04$)
- $P(AI > 2.0) = 2.4e-04$ ($2.1e-04 - 2.7e-04$)
- $P(AI > 2.0) = 2.3e-04$ ($1.9e-04 - 2.7e-04$)



Häfner, Dion, Johannes Gemmrich, and Markus Jochum. "Real-world rogue wave probabilities." *Scientific reports* (2021, in press).