

# CEVE 543

## Data Science for Climate Risk Assessment

FALL 2023, RICE UNIVERSITY  
MWF, 11AM, KECK 107

Delve deep into the world of climate risks through CEVE 543, a project-focused course that will equip you with tools from statistics and machine learning to unravel the complexities of climate risks.

### Why it matters

Climate risk estimates shape real-world decisions in engineering design, financial regulation, local zoning, and more. Moreover, a **burgeoning job market in climate analytics, climate risk management, and physical risk modeling** offers a range of promising career options.

### Course organization

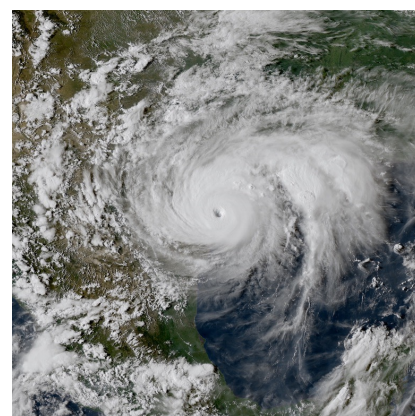
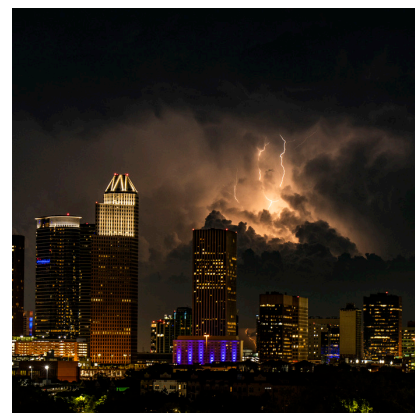
- *Module 1: Fundamentals.* Dive into probability, statistics, and machine learning.
- *Module 2: Downscaling.* Link global climate models to local observations and hazards.
- *Module 3: Frequency Analysis.* Quantify the probability of extreme climate risks using Extreme Value Theory.
- *Module 4: Weather Types.* Decode how weather patterns repeat and recur to drive risks on sub-seasonal to seasonal scales.

Engaging projects paired with modules 2-4 will provide context and motivation for specific methods we will develop.

### Meet the Instructor



An Assistant Professor at Rice University's Department of Civil and Environmental Engineering, James Doss-Gollin's research addresses the intersection of climate dynamics, water management, data science, and decision-making. He also teaches CEVE 521 (Climate Risk Management).



### What's new in 2023?

This fall, CEVE 543 weaves together **technical lectures, hands-on computational labs, and three projects** that illustrate how tools from machine learning and statistics can improve quantitative estimates of climate risks.

For more information visit <https://ceve543.github.io>