Leveraging Big Data to Manage Extreme Weather Risks
– perspective of an ecological economist –

Joséphine Gantois

Columbia University

November 12, 2019
Figure: Locations of tree ring sequences that overlap with the instrumental temperature record. Circle size indicates the number of tree cores sampled at each location.
Reconstructing High Temperature Extremes in the Past
[with Wolfram Schlenker]
Monitoring Flowering Phenology Using Satellite Imagery and Deep Learning
Monitoring Flowering Phenology Using Satellite Imagery and Deep Learning

Source: Planet data – Location: Carrizo Plain, California – Time: February 2017
Monitoring Flowering Phenology Using Satellite Imagery and Deep Learning

Source: Planet data – Location: Carrizo Plain, California – Time: March 2017 ‘superbloom’
Panel Topic:
Using Satellite Imagery and Machine Learning to Manage Extreme Weather Risks in Real Time

- **Time horizon:**
  - short: predict/monitor the next extreme event, improve short-term returns
  - long: characterize the future expected distribution of extreme weather events, build long-term resilience
    - climate risk disclosures: Julian Nyarko and Eric Talley

- **Spatial scale:**
  - influenced by policy goal
  - correlated nature of extreme events
  - implications for the need for ground-truth data for supervised models