



# The Capacity Center for Climate and Weather Extremes

**Greg Holland**

[c3we.ucar.edu](http://c3we.ucar.edu)



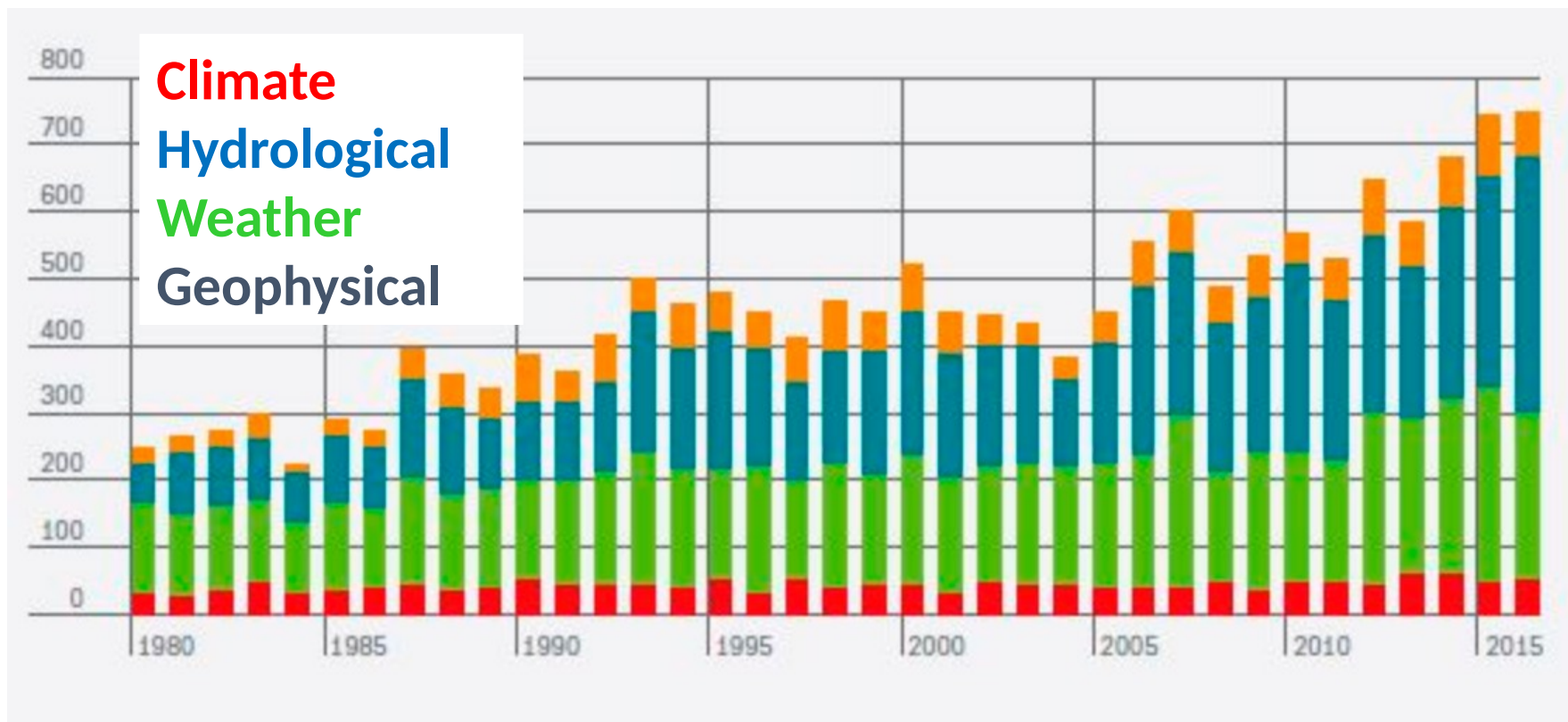
**Engineering for Climate Extremes Partnership**  
Workshops, Blogs, Videos, Newsletters, Tutorials.



**Rising Voices:** Collaborative Science with  
Indigenous Knowledge for Climate Solutions.



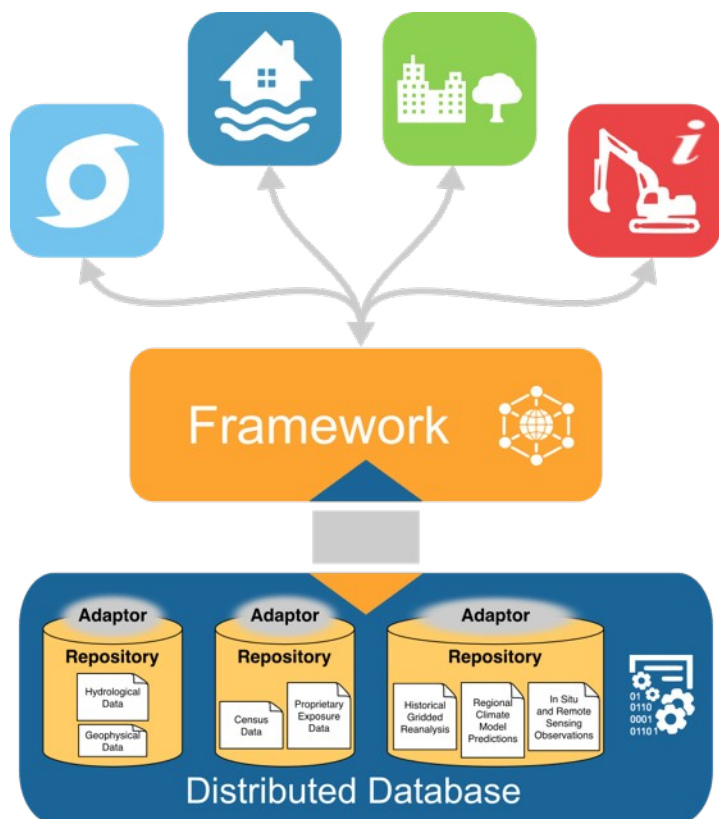
**Global Risk, Resilience, and Impacts Toolbox**  
Community Planning and Adaptation Resource.



(Munich Re)

- *Actionable science for community adaptation and planning*
- **Aiding Societal Actions**
- **to:**
  - *Increase Resilience*
  - *Improve Planning*
  - *Support Relocation*
  - *Etc.*





Community Tools

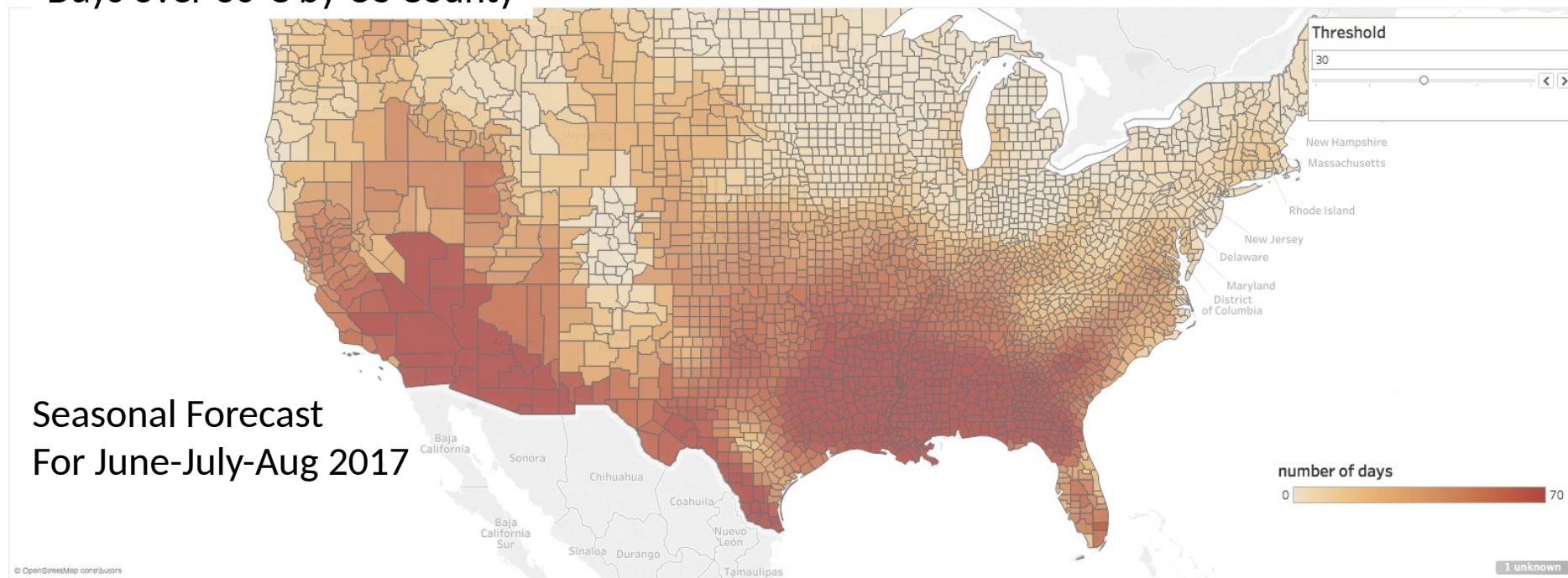
Engine

Data

*Collaboration with, e.g., Tableau, Willis TW, IAG, Geoscience Australia, OASIS, Academia.*



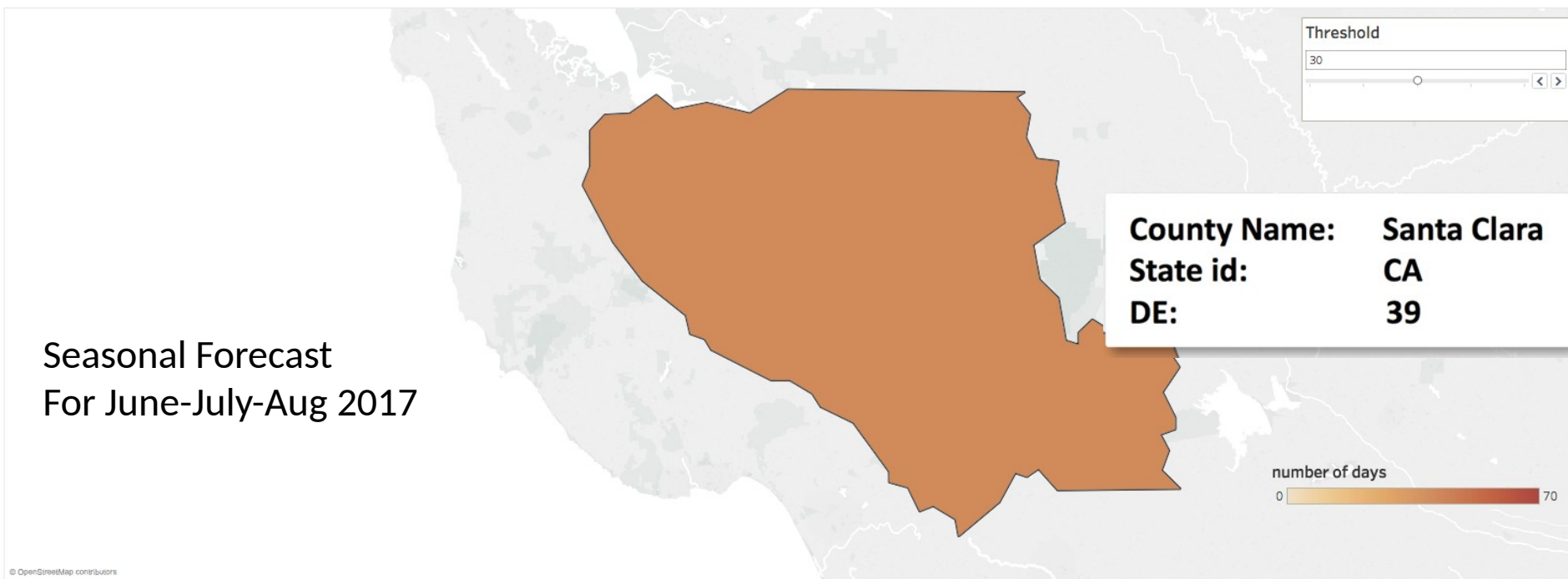
## D Days over 30°C by US County



Applicable anywhere on earth  
Temperature, Rain, Wind

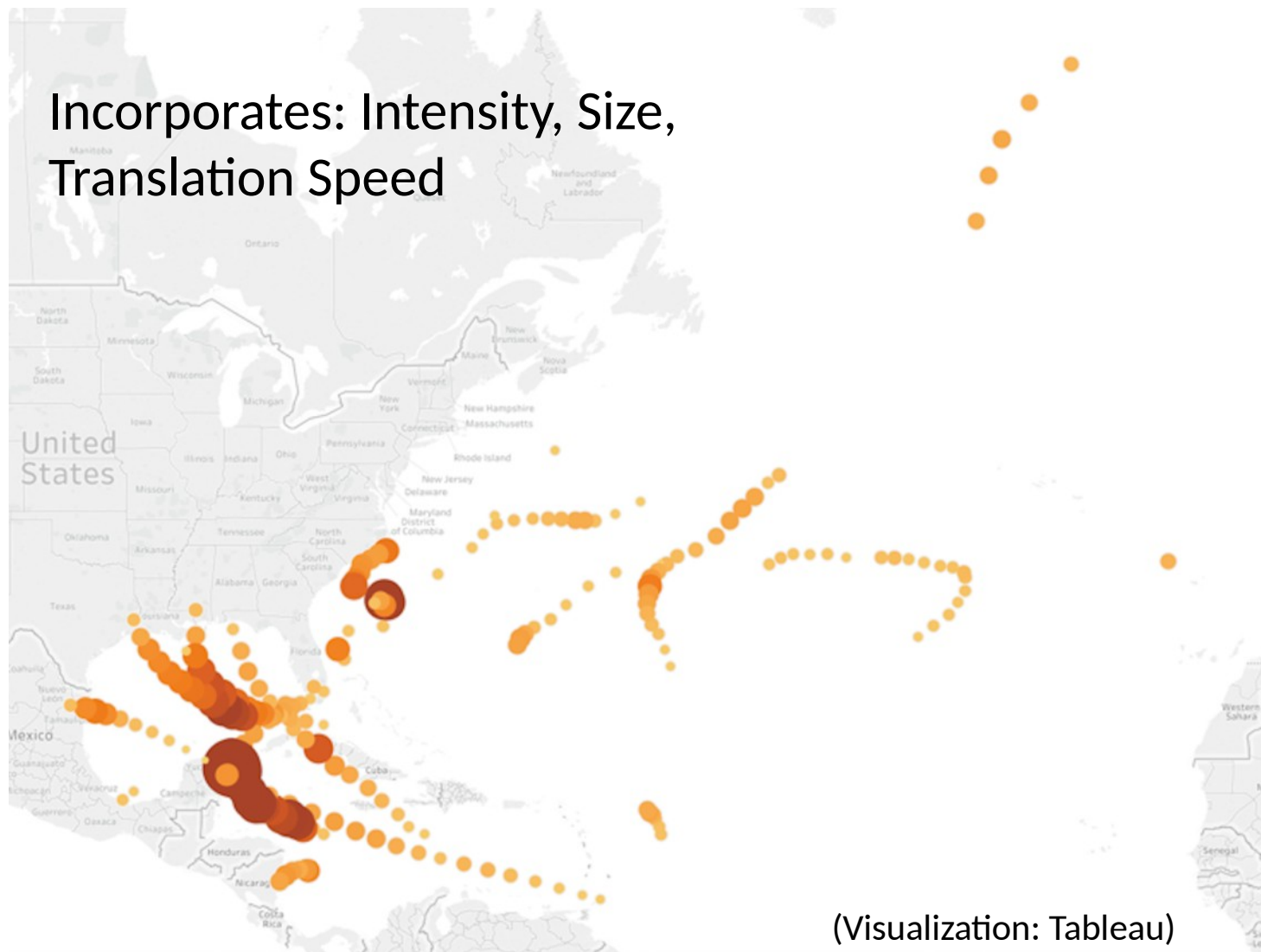
(Visualization: Tableau)

Days Exceeded



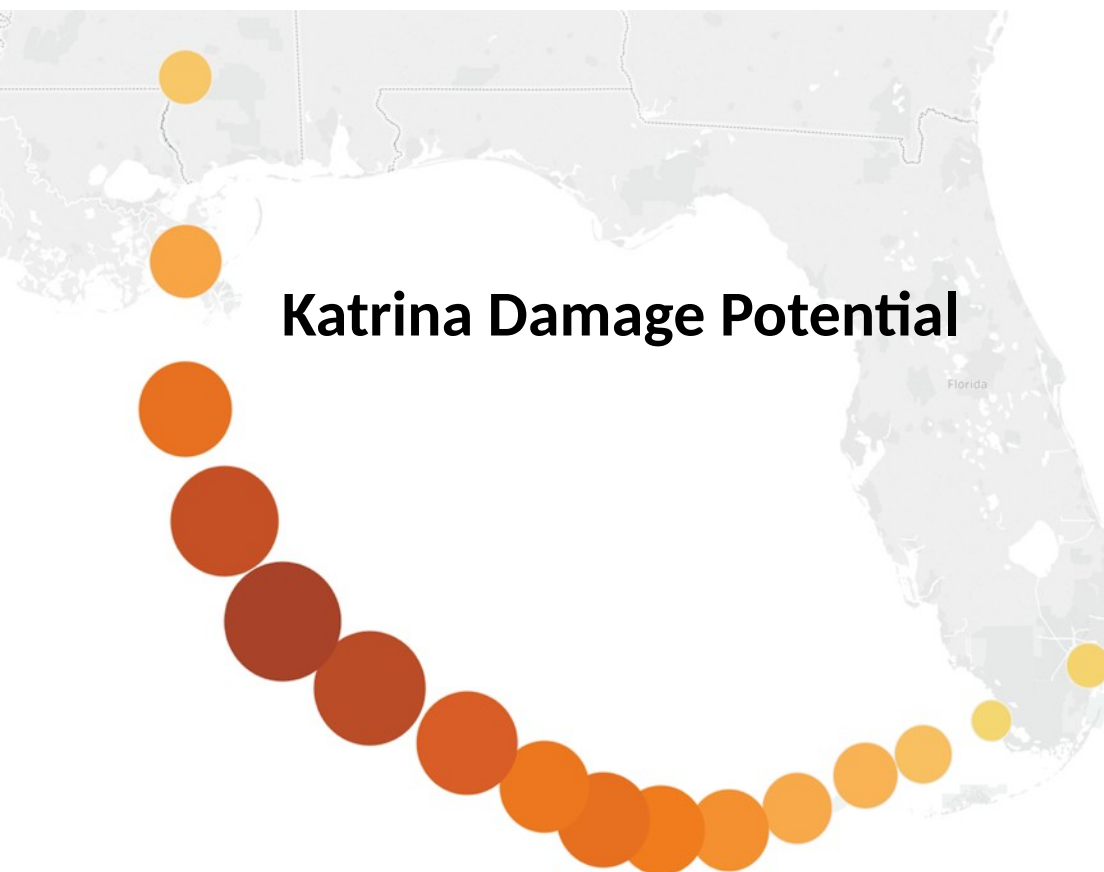
(Visualization: Tableau)

Incorporates: Intensity, Size,  
Translation Speed



(Visualization: Tableau)





## Katrina Damage Potential

### Forecast Probability Distributions:

- *Out to seven days*
- *Seasonal*
- *Decadal*

### Global Landfalling Cyclone Wind and Damage

- *Observed*
- *Synthetic*

(Visualization: Tableau)

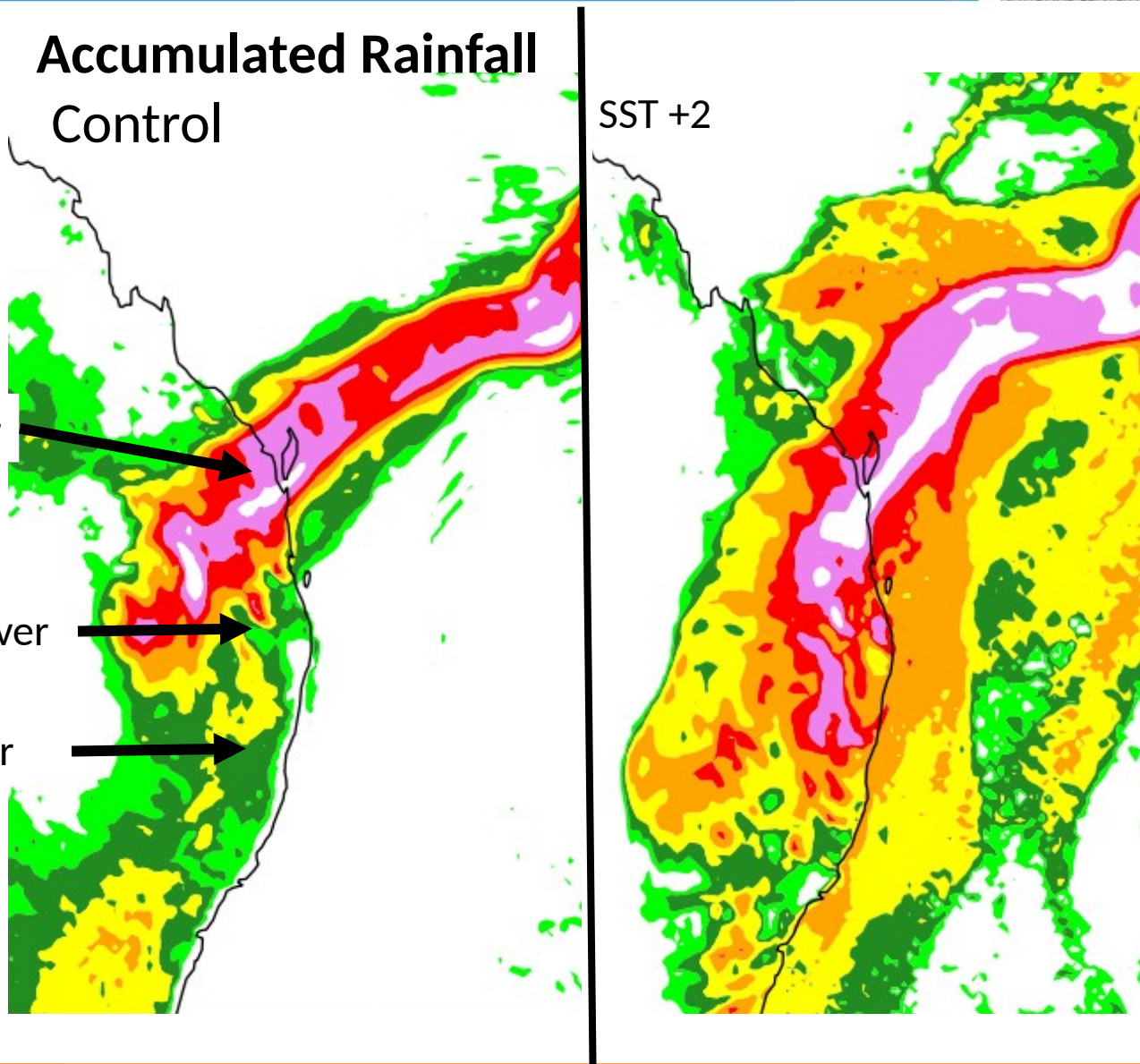
## Accumulated Rainfall Control

Burnett River

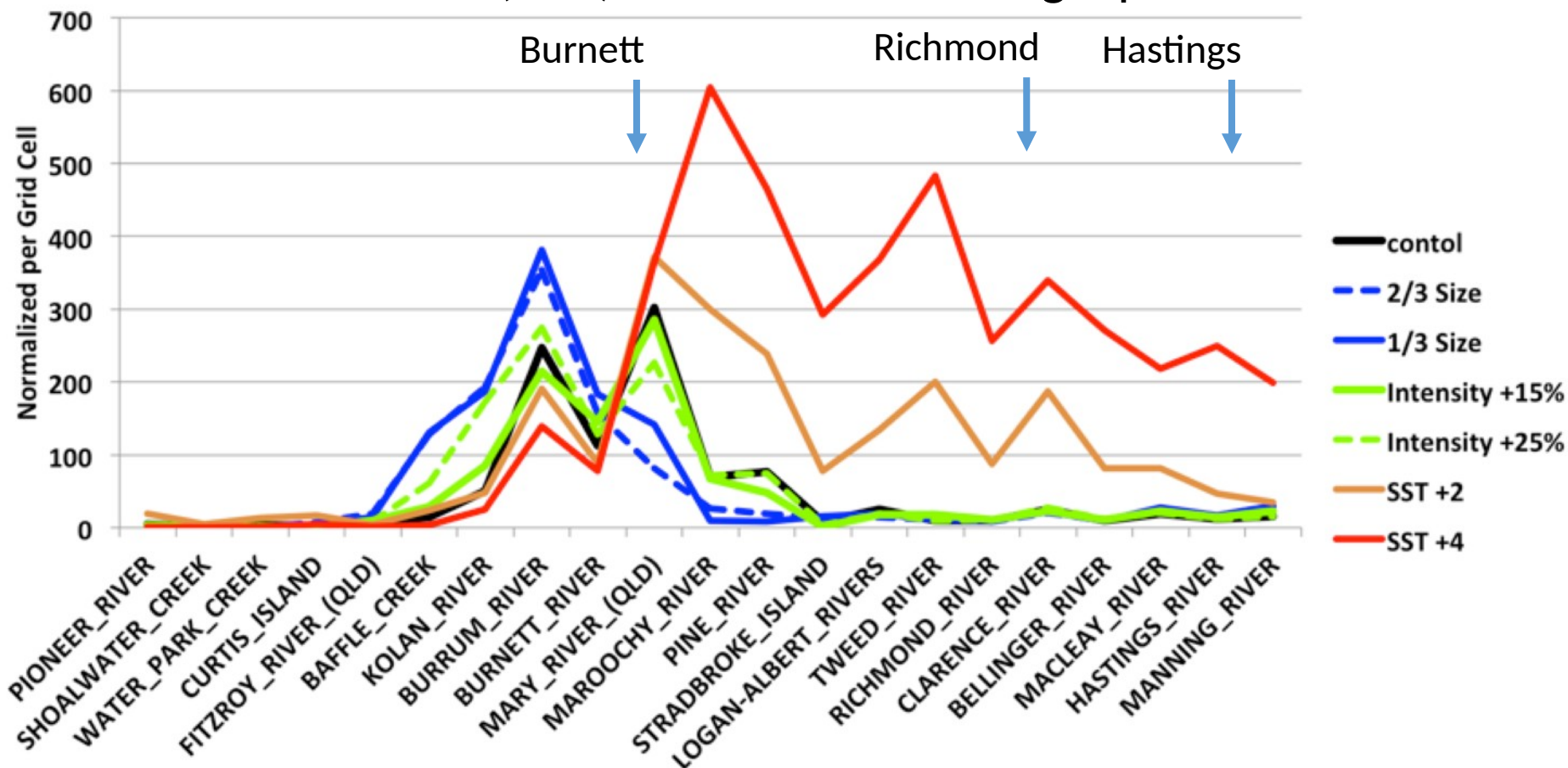
Richmond River

Hastings River

SST +2

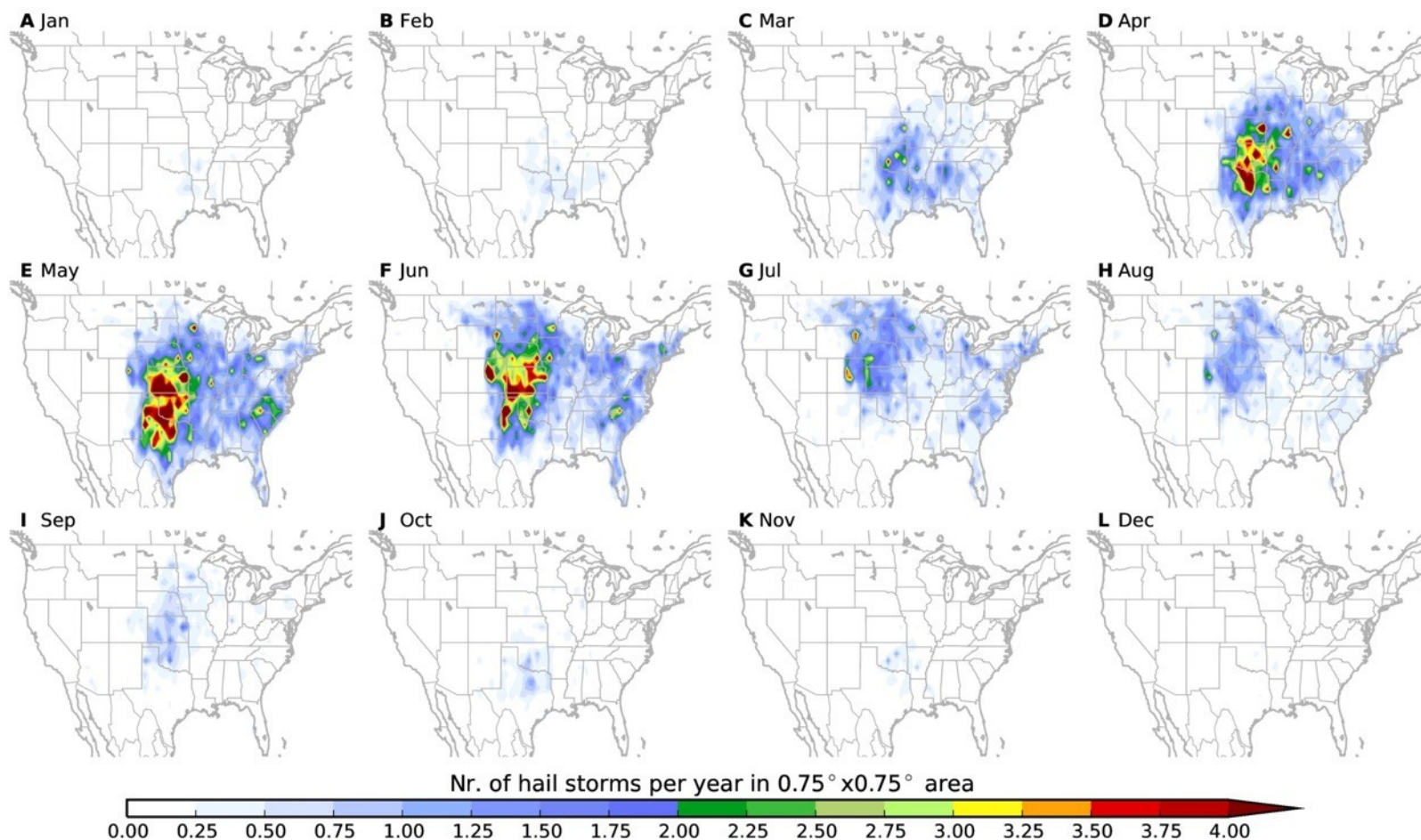


Total Rain (mm) 4x4 km areal average per basin

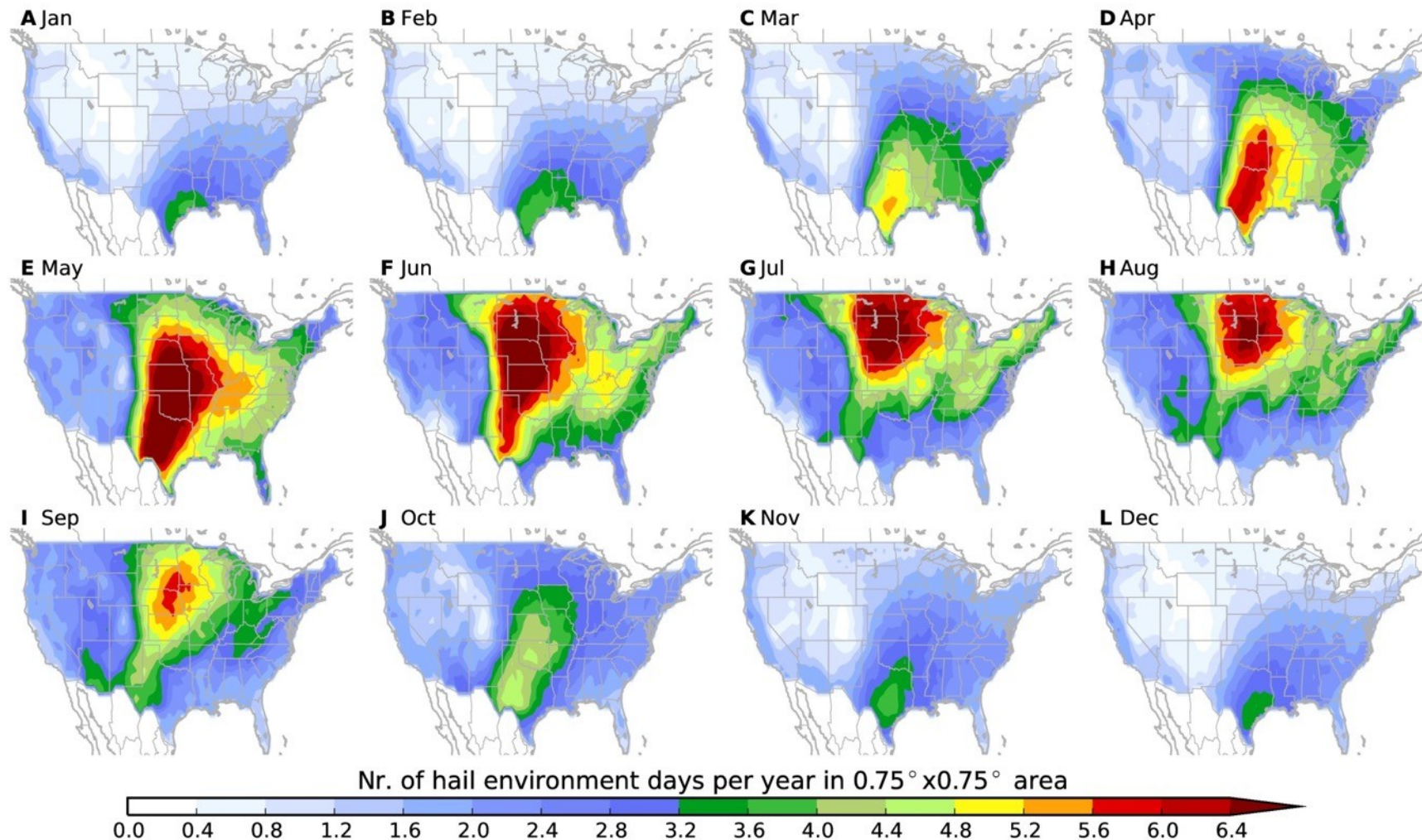




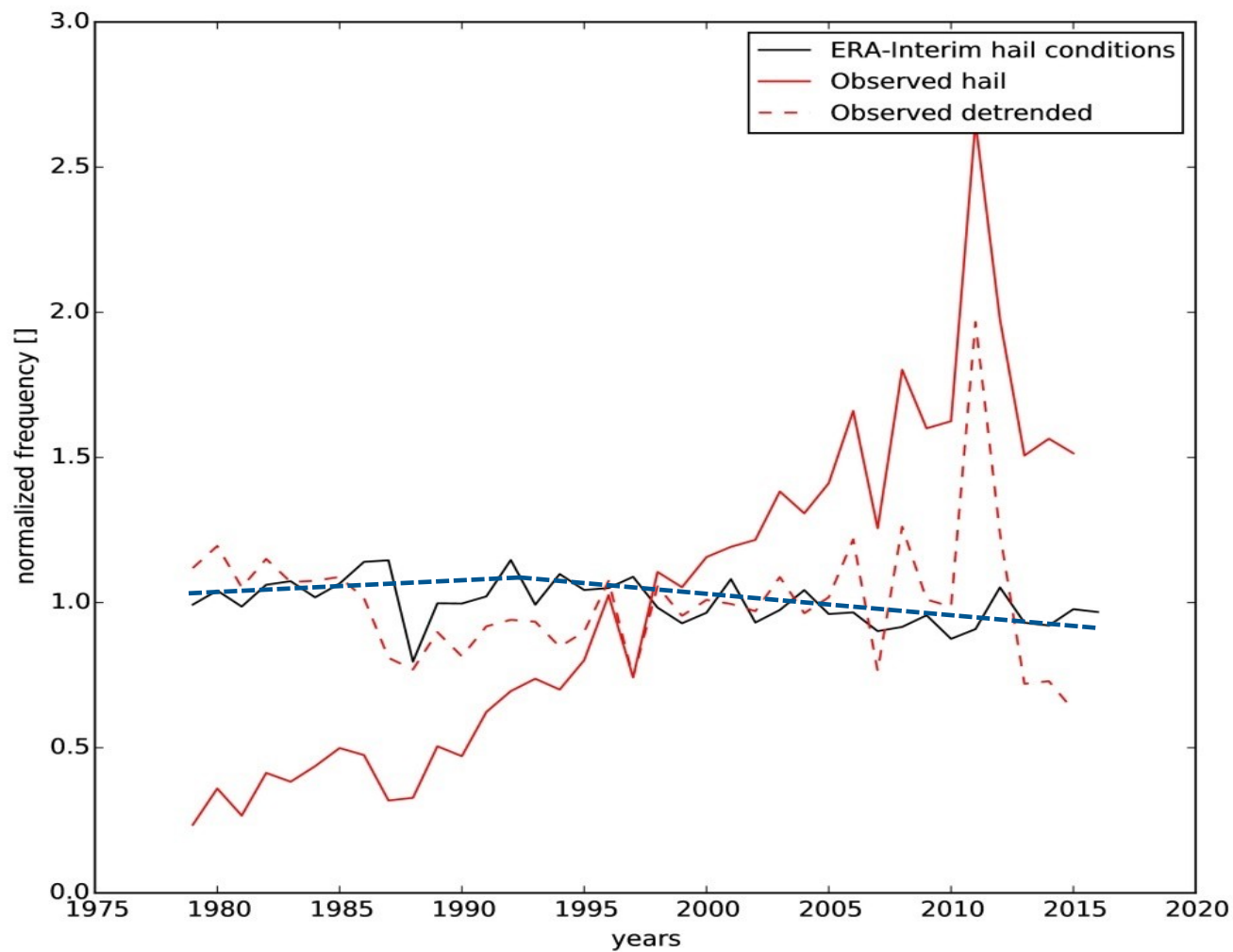
## Observed Average number of hail storms per month (1979-2015)



## Simulated Average number of hail storms per month (1979-2015)







- **C3WE**
  - ECEP
  - Rising Voices
  - GRRIT
- **Aiding Societal Actions to:**
  - *Increase Resilience*
  - *Improve Planning*
  - *Support Relocation*
  - *etc.*
- **Through a Peer-reviewed set of Appropriate Tools**

