The Capacity Center for Climate and Weather Extremes

Greg Holland
c3we.ucar.edu
C3WE Components

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.
Global Natural Disasters: Numbers

(Munich Re)
GRRIT Goals

- Actionable science for community adaptation and planning

- Aiding Societal Actions

  - to:
    - Increase Resilience
    - Improve Planning
    - Support Relocation
    - Etc.
Collaboration with, e.g., Tableau, Willis TW, IAG, Geoscience Australia, OASIS, Academia.
Seasonal Forecasts Days >30°C

Days over 30°C by US County

Seasonal Forecast
For June-July-Aug 2017

Applicable anywhere on earth
Temperature, Rain, Wind

(Visualization: Tableau)
Seasonal Forecast
For June-July-Aug 2017

County Name: Santa Clara
State id: CA
DE: 39

(Visualization: Tableau)
Cyclone Damage Potential

Incorporates: Intensity, Size, Translation Speed

(Visualization: Tableau)
Forecast Probability Distributions:
- Out to seven days
- Seasonal
- Decadal

Global Landfalling Cyclone Wind and Damage
- Observed
- Synthetic

(Visualization: Tableau)
Impact of Climate Change on Hurricane Rainfall

Accumulated Rainfall

Control

SST +2

Burnett River

Richmond River

Hastings River

C3WE

NCAR

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH
Assessing Hail Impacts: Climatology

Observed Average number of hail storms per month (1979-2015)
Simulated Average number of hail storms per month (1979-2015)
Trends in Hail Frequency

The graph shows the normalized frequency of hail over the years from 1975 to 2020. The lines represent different conditions:
- ERA-Interim hail conditions
- Observed hail
- Observed detrended

The graph indicates a trend of increasing normalized frequency of hail over time.
Summary

- **C3WE**
  - ECEP
  - Rising Voices
  - GRRIT

- **Aiding Societal Actions to:**
  - *Increase Resilience*
  - *Improve Planning*
  - *Support Relocation*
  - *etc.*

- **Through a Peer-reviewed set of Appropriate Tools**