



Climate Change & Catastrophic Trends: An Insurance Perspective

Prepared for the CAS Spring 2020 Meeting





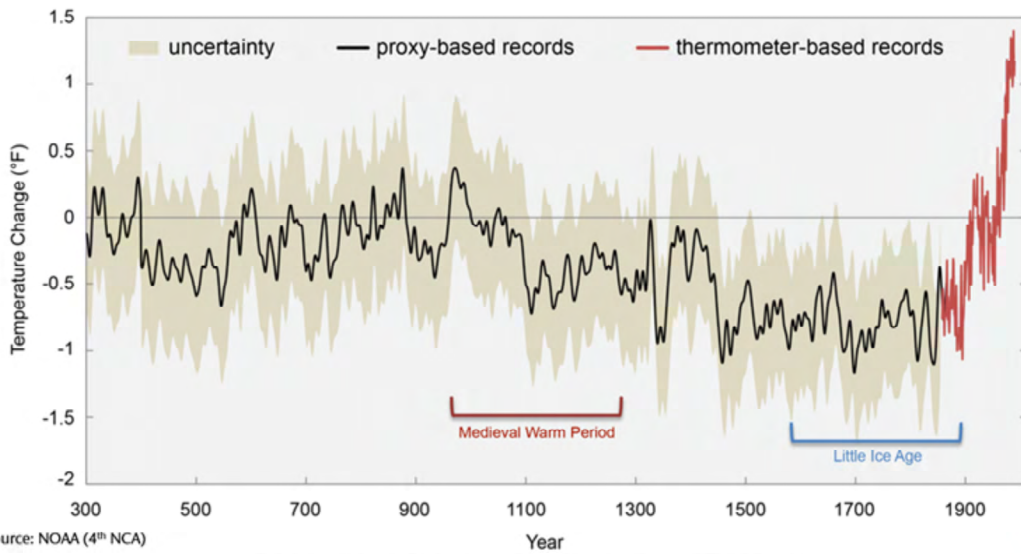
Climate Change: What We Know



What is Climate Change?

...in the simplest explanation possible...

Long-Term Global Temperature Trend



Source: NOAA (4th NCA)

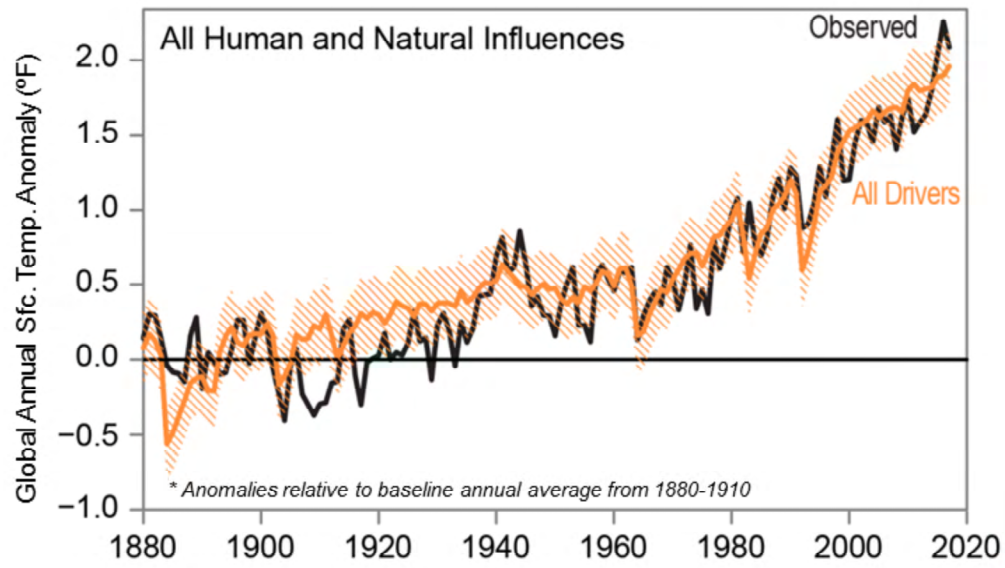
* Anomalies relative to baseline annual average 1901-2000

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What's Driving the Global Temperature Increase?



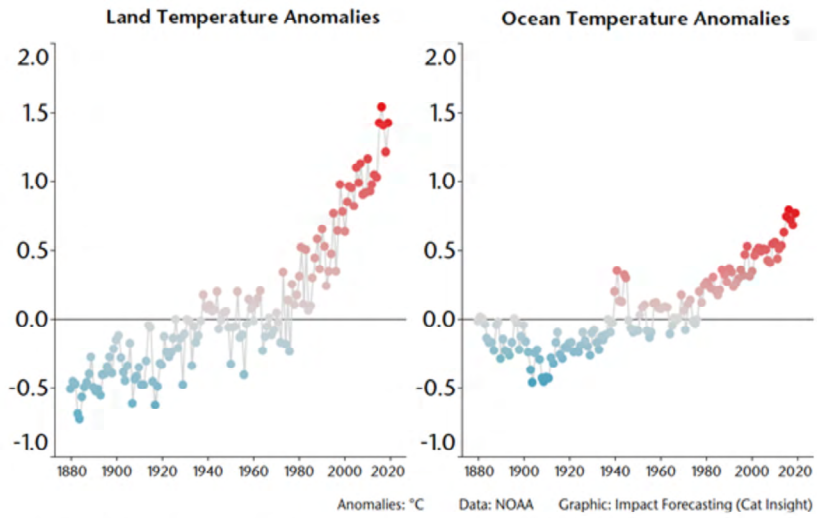
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Source: NOAA (4th NCA)

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Global Land & Sea Surface Temperatures are Rising



* Anomalies relative to baseline annual average from 1901-2000

25% of atmospheric carbon dioxide is absorbed by the ocean...

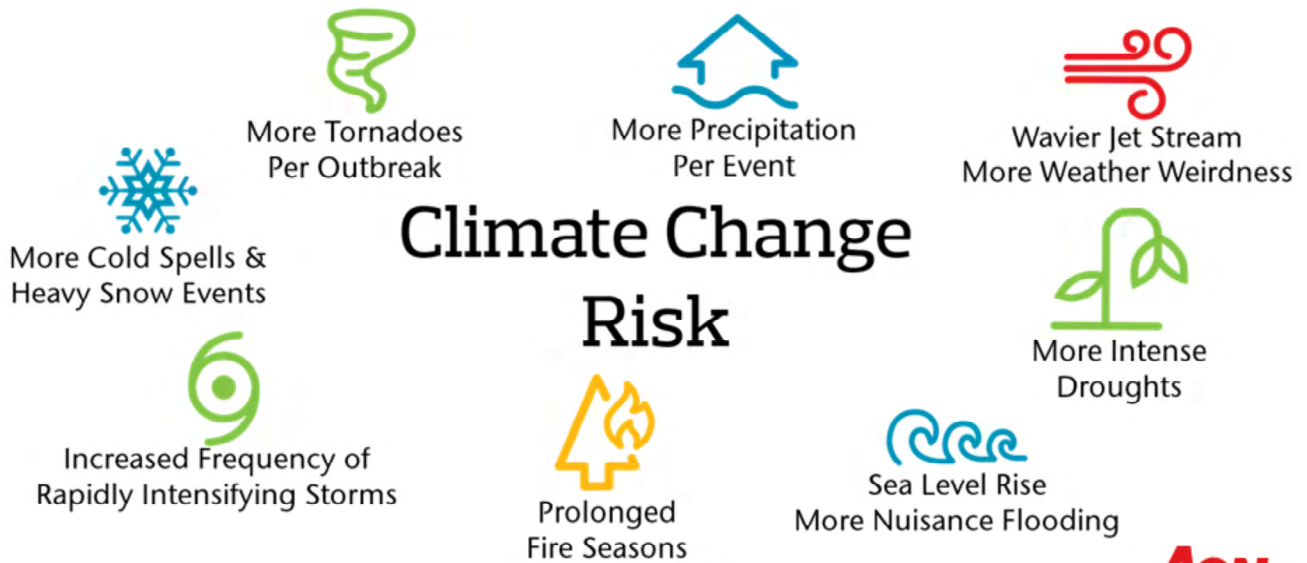
...But 93% of global warming is stored in the world's oceans

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What to expect in an era of climate change?

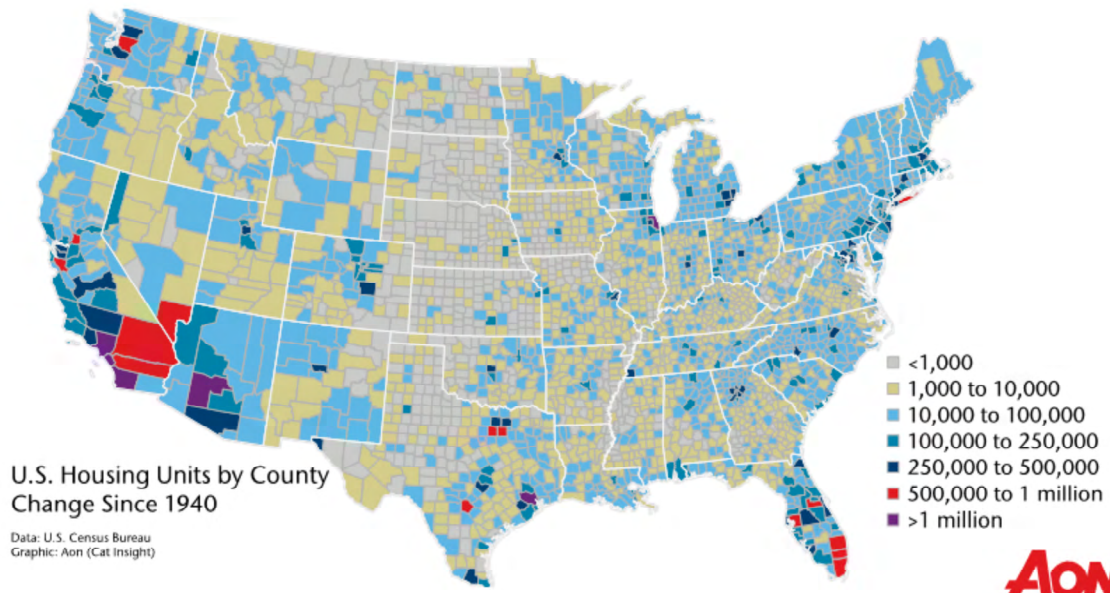


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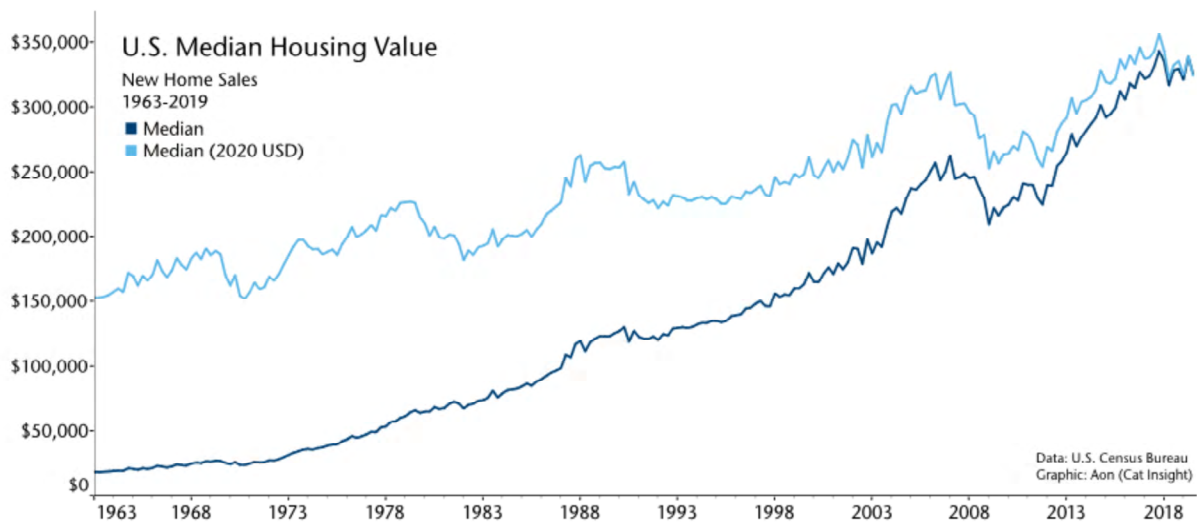
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Expanding Population. More Exposure. More Risk...



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... and Homes are Getting Bigger and More Expensive

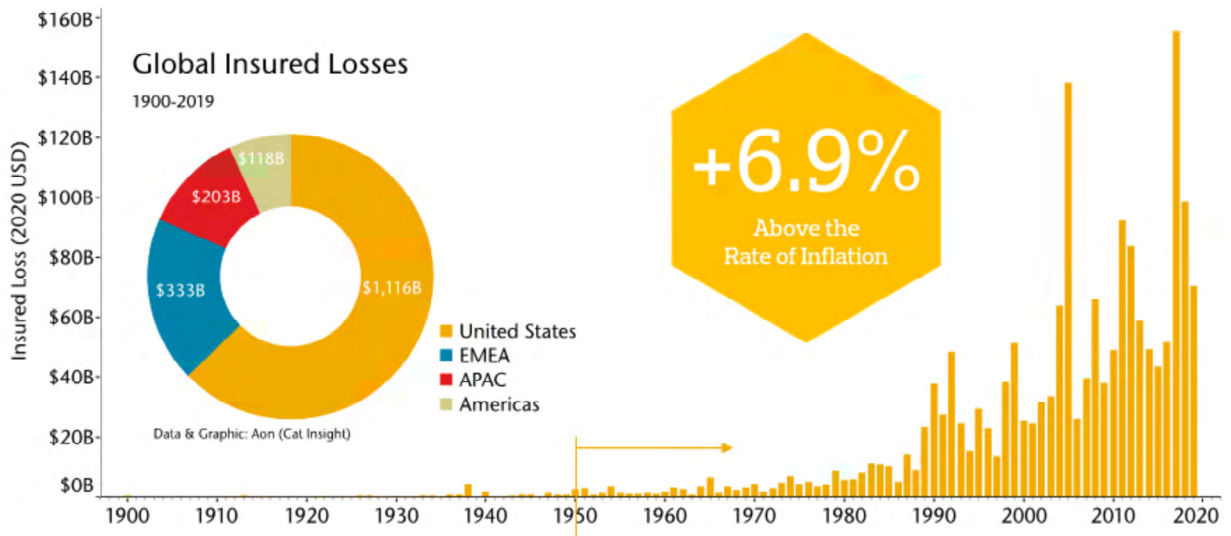


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Insured Weather Losses are Increasing



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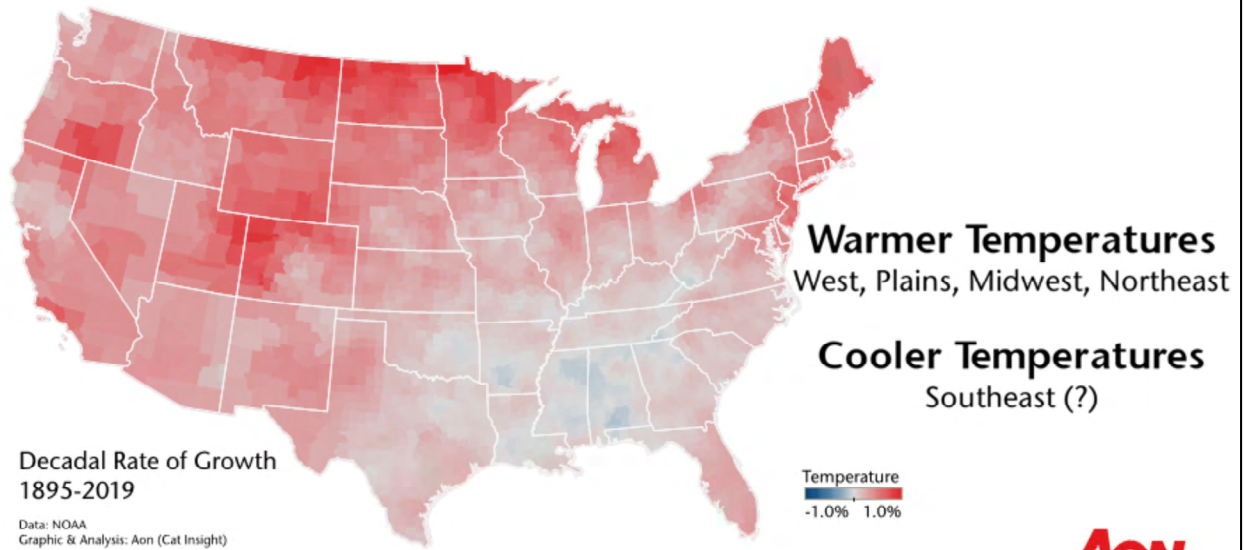
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Key Considerations Driving Weather Loss Trend

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Changing Temperature Patterns



Decadal Rate of Growth
1895-2019

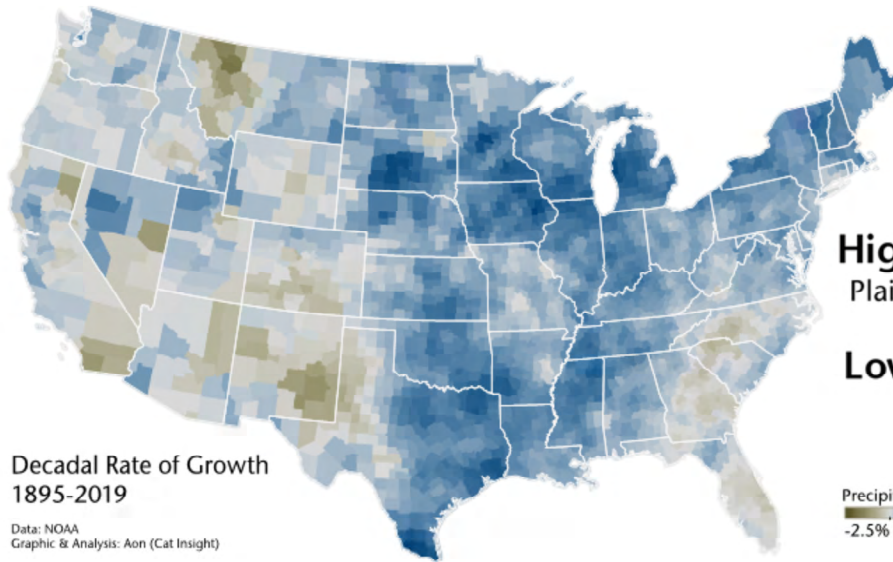
Data: NOAA
Graphic & Analysis: Aon (Cat Insight)

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Changing Precipitation Patterns



Higher Precipitation
Plains, Midwest, Northeast

Lower Precipitation
West, Southeast

Decadal Rate of Growth
1895-2019

Data: NOAA
Graphic & Analysis: Aon (Cat Insight)

Precipitation
-2.5% 2.5%

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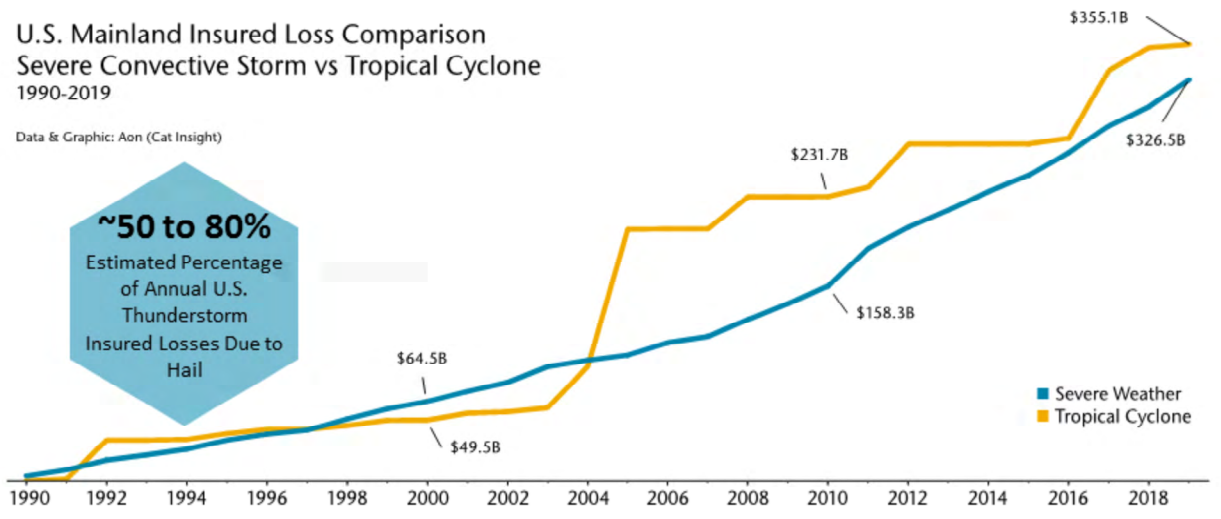
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Costlier for Insurers in the U.S. – SCS or Tropical Cyclone?

U.S. Mainland Insured Loss Comparison Severe Convective Storm vs Tropical Cyclone 1990-2019

Data & Graphic: Aon (Cat Insight)

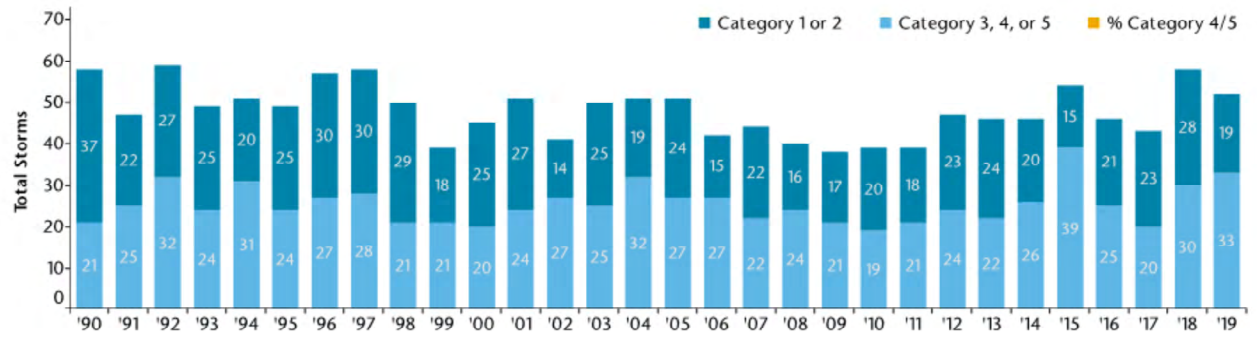


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Global Tropical Cyclones



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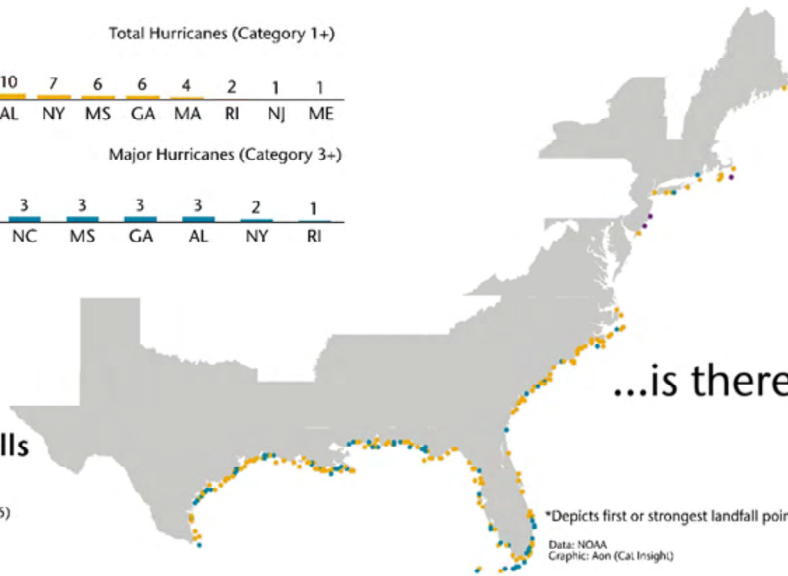
U.S. Mainland Hurricane Landfalls



U.S. Mainland Hurricane Landfalls

1851-2019

- Major Hurricane (Category 3, 4, or 5)
- Hurricane (Category 1 or 2)
- Extratropical



...is there a trend?

Depicts first or strongest landfall point

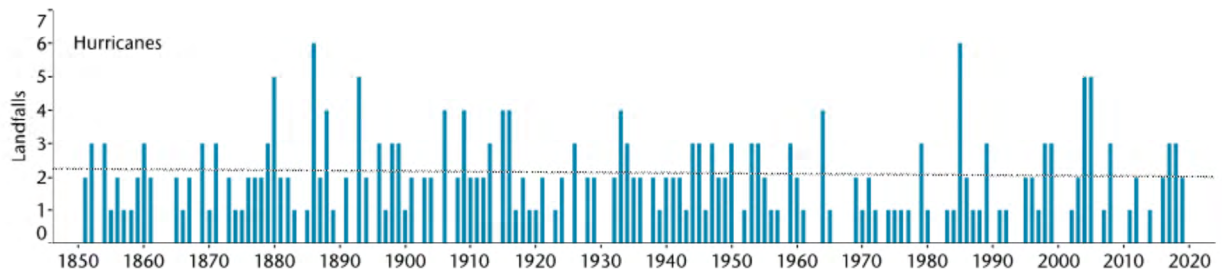
Data: NOAA
Graphic: Aon (Cali Insight)

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U.S. Mainland Hurricane Landfalls



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Socioeconomic Factors Increasing Hurricane Risk

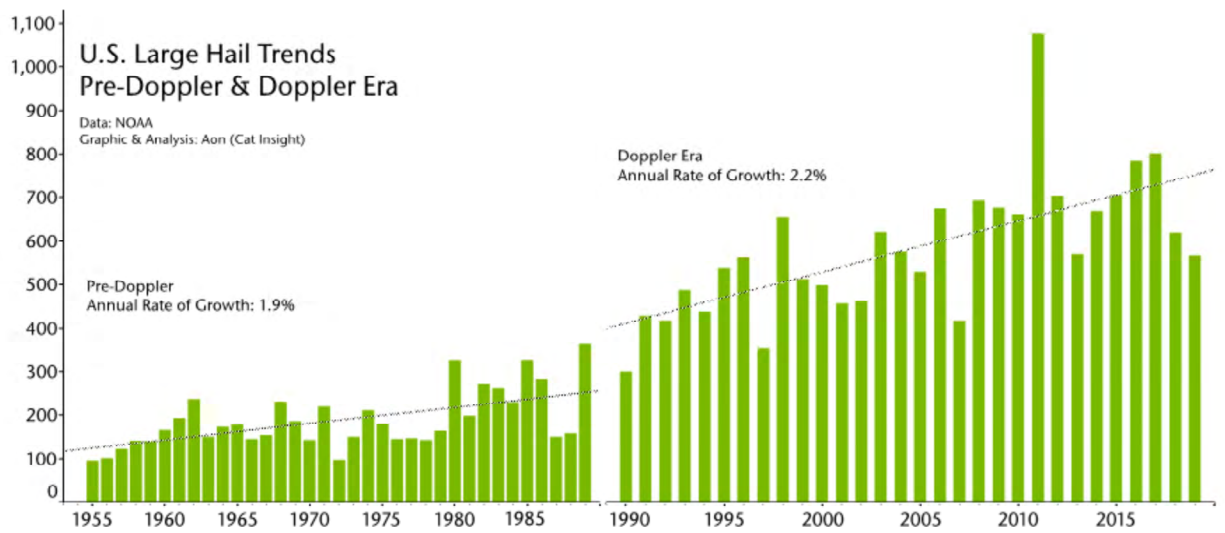


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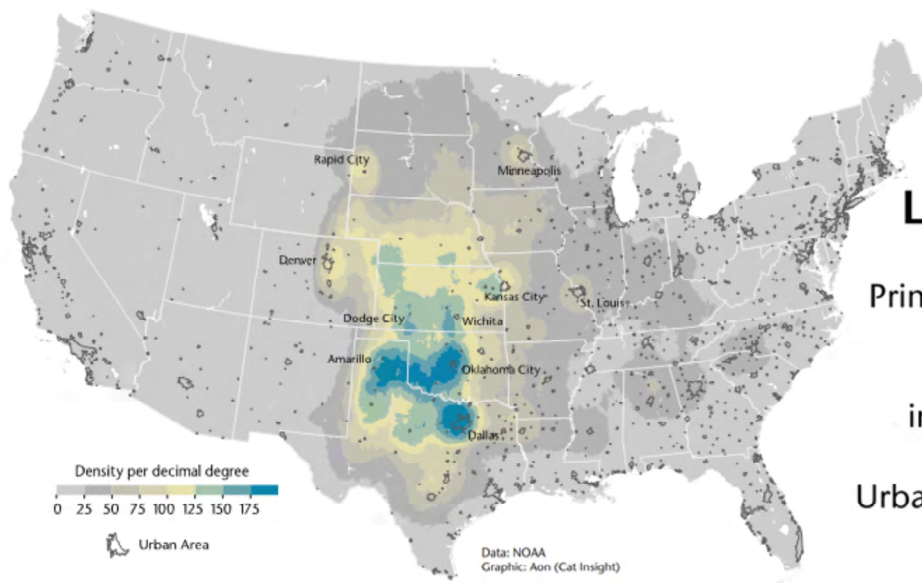
U.S. Large Hail (2"+) Trends



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Hail: Dominant Driver of Thunderstorm Impacts



Large Hail: 2"+

Primary Driver of SCS Loss

Highest Frequency
in Major Metro Areas

Urban Bias in NOAA Dataset

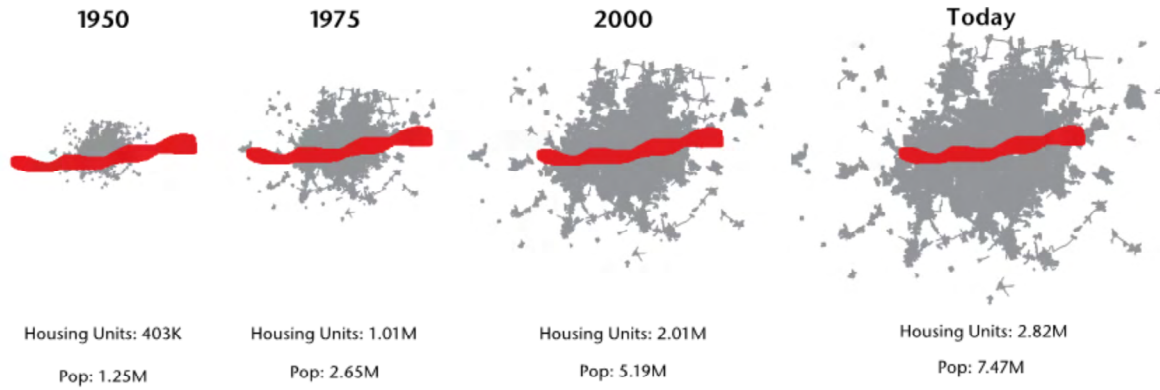
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Socioeconomic Impact of Expanding Urban Footprints: Hail

Dallas - Fort Worth, Texas Metroplex



*Totals include Collin, Dallas, Denton, Ellis, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise counties

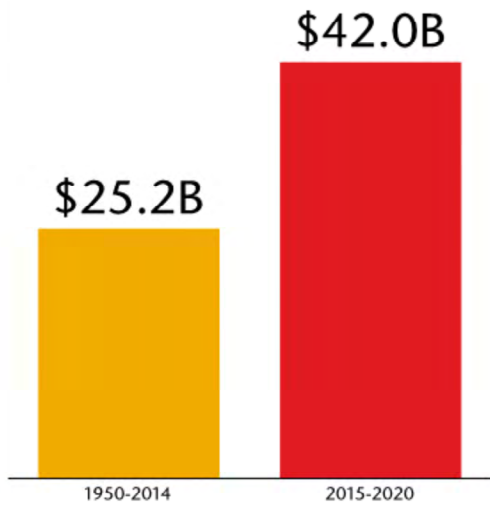
Based on work by Ashley, et al (2014) Data: U.S. Census Bureau Graphic: Aon (Cat Insight)

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Wildfires: A Growing Risk



9 of 14
Events have
Occurred Since
2015

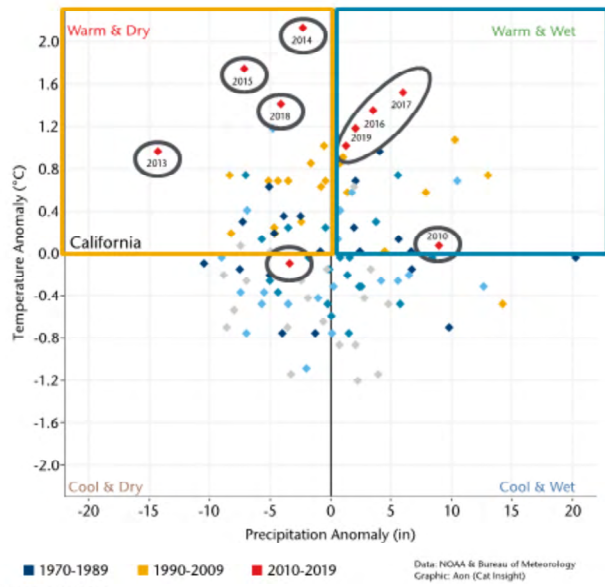
Losses in 2020 USD
Data & Graphic: Aon (Cat Insight)

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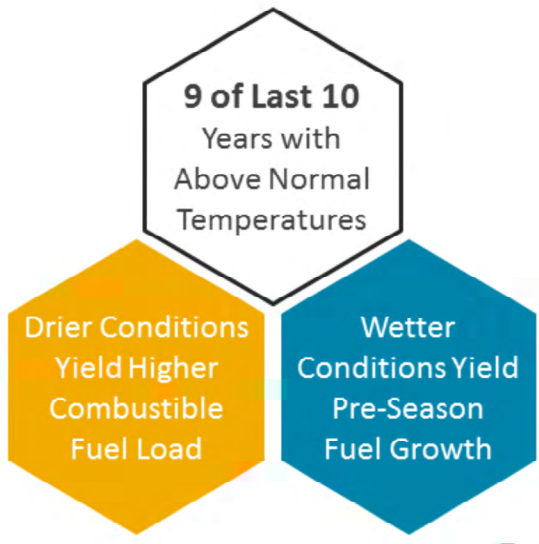
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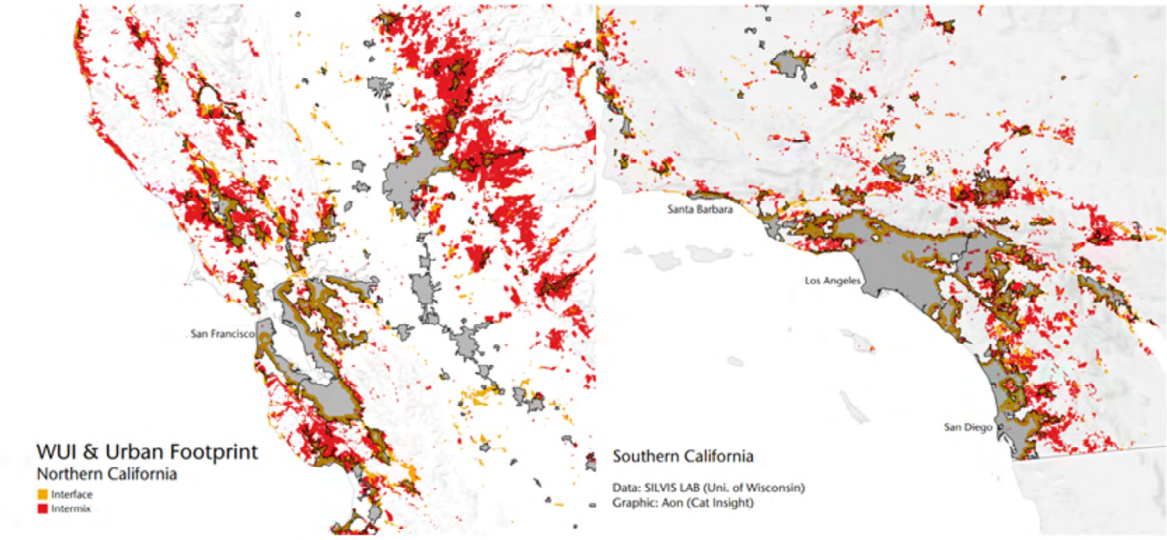
Extended Fire Seasons



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Socioeconomic Impact of Expanding Urban Footprints: Wildfire



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More Risk!

Predominant Driver of Increased Natural Disaster Losses

More People & Property in Highly Vulnerable Areas

Combination of More Intense Events & More “Stuff” in Harm’s Way?
Greater Loss Potential

Insurance is...

... getting better at acknowledging the reality of climate change.

... utilizing new scenario-based tools to analyze the risk, such as catastrophe models and the latest from the growing insurtech industry.

... working to identify and quantify changes to its business framework in order to adequately price for climate change risk.

Contact Information

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