
2019
AIR European
Seminars
London

Climate Change Perspectives

Peter Sousounis, PhD

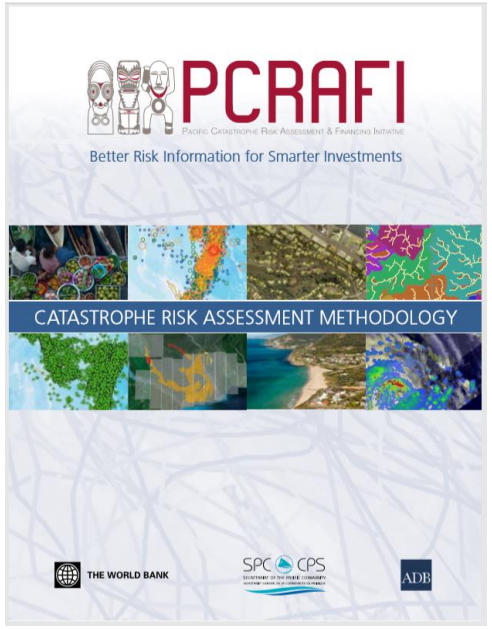
AIR

AIR Has a Long History of Focusing on Climate Change

2009

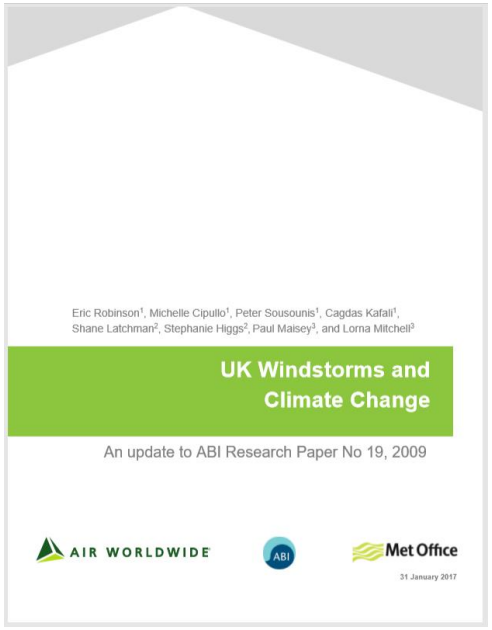
Association of British Insurers funds a study to look at climate change impacts to insured losses from UK windstorm, inland flood, and China typhoon

AIR provides climate change conditioned catalogues and loss estimates for a climate change study on the South Pacific funded by The World Bank



2013

2017



Association of British Insurers funds a follow-up study to look at climate change impacts to insured losses from UK windstorm

AIR and AER release a white paper on climate change impacts on cyclones, storms, floods, and fire

2017

AIR Climate Change Plans

Develop a research network to help guide climate change research to improve the catastrophe models we develop

Improve the consideration of climate change in catastrophe models

Conduct projects that promote global resilience to climate change

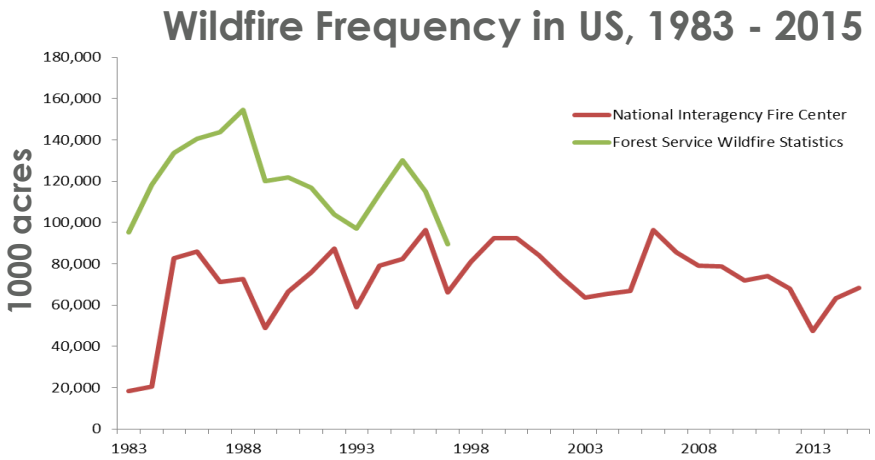
Formulate new solutions to help clients understand and manage their climate change risk

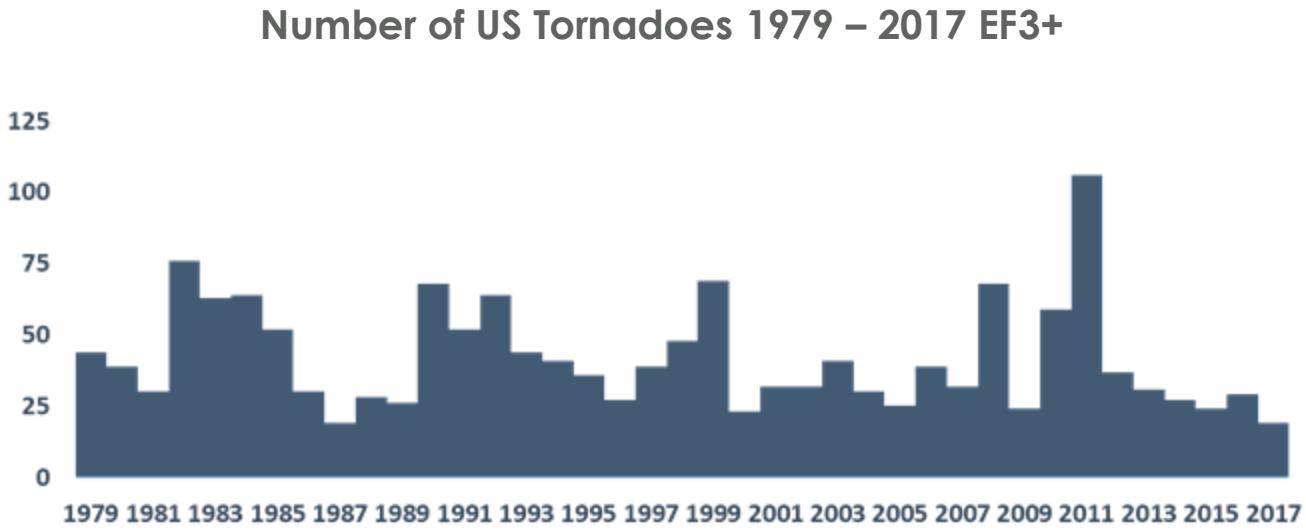
Expand climate change support to other sectors

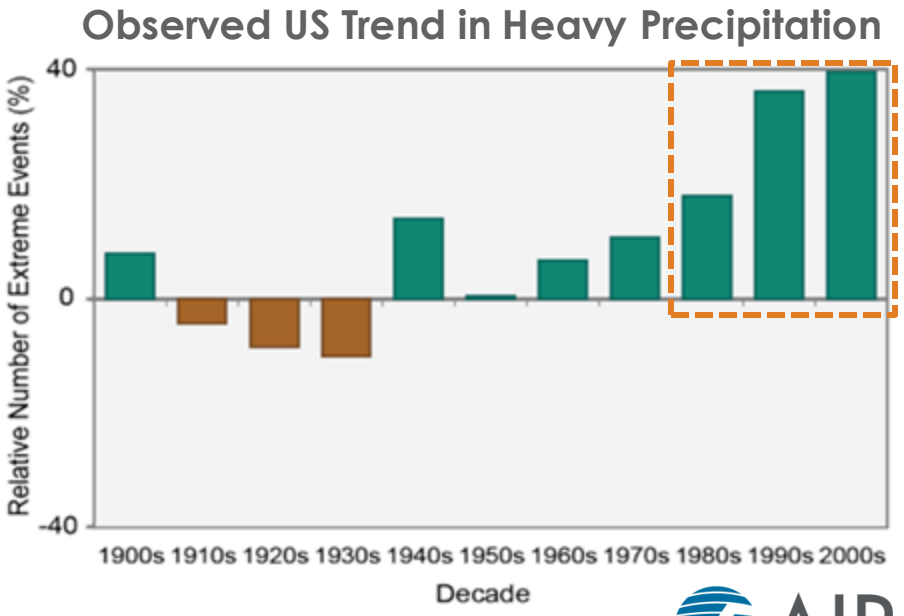
Provide thought leadership

Frequent Model Updates at AIR Incorporate Climate Change

- AIR models updated frequently
- Climate change continually folded in
- Latest digital terrain models (DTMs)
- Several models based on reanalysis data
- Reanalysis period typically 1979–2018

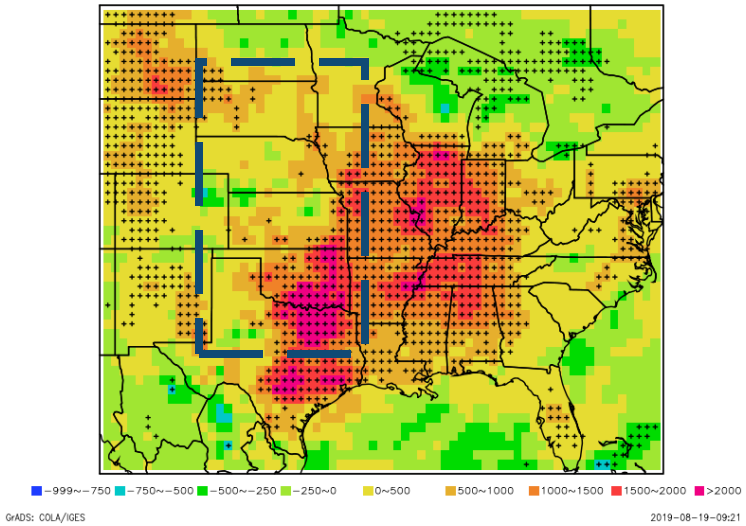




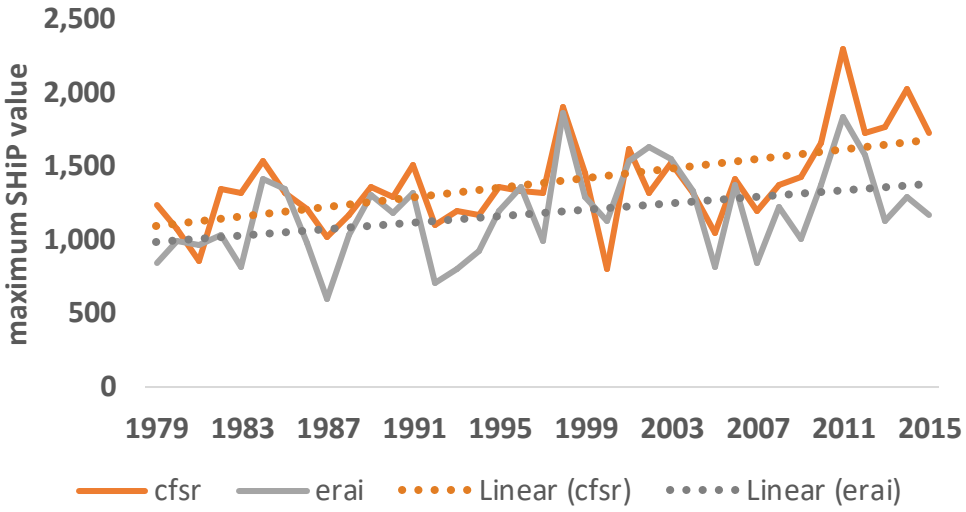


Severe Storm Environment Is Becoming More Favorable in the US

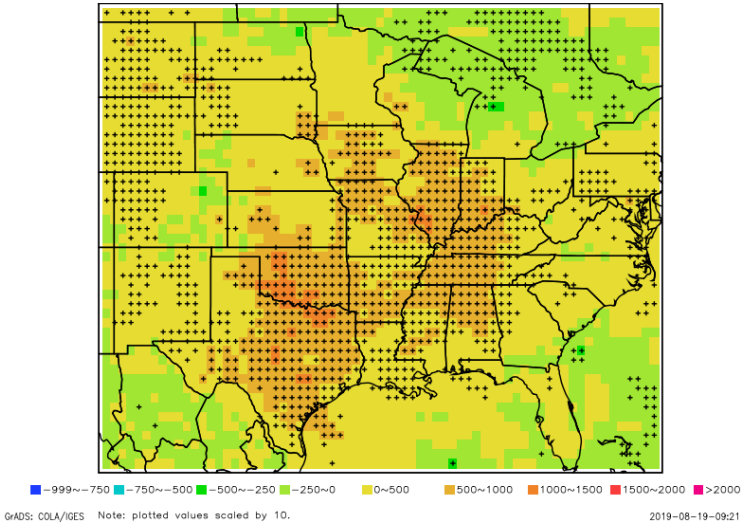
Significant Hail Parameter (SHiP) Max Value Trends
Mar–May 1979–2018



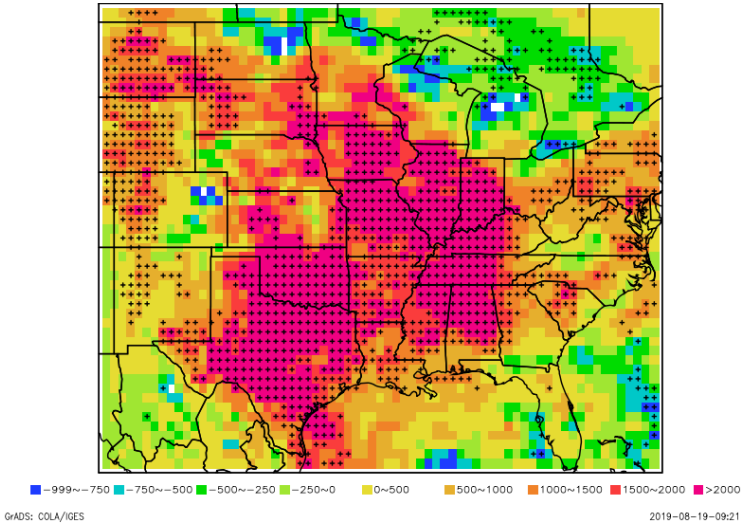
Great Plains Avg Max SHiP Mar–May



Significant Tornado Parameter (STP) Max Value Trends
Mar–May 1979–2018

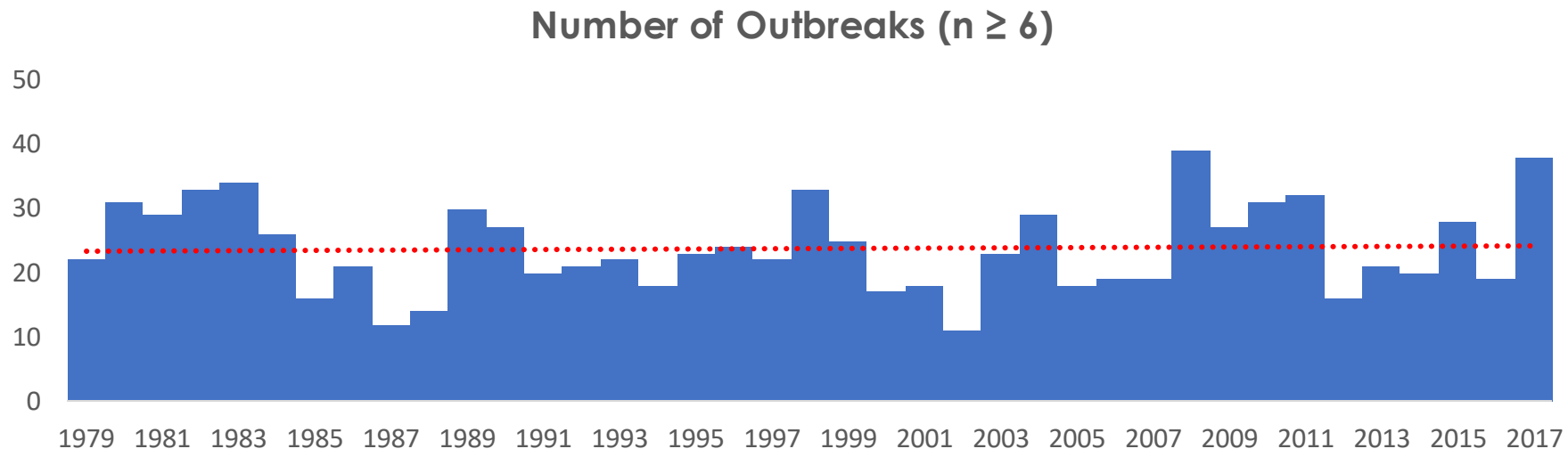


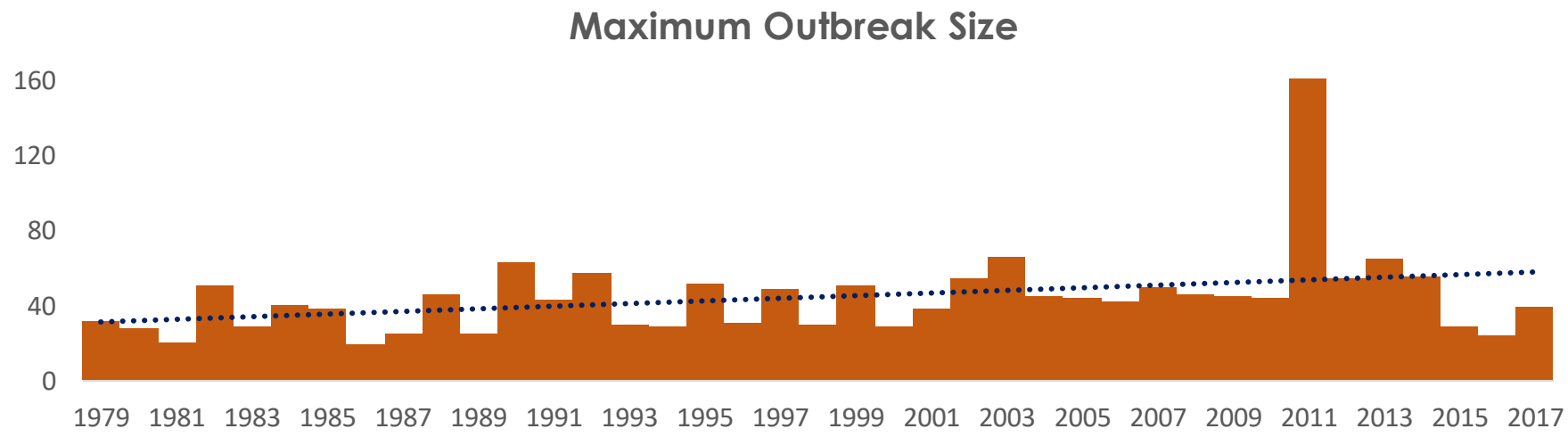
Energy Helicity Index (EHI) Max Value Trends
Mar–May 1979–2018



AIR

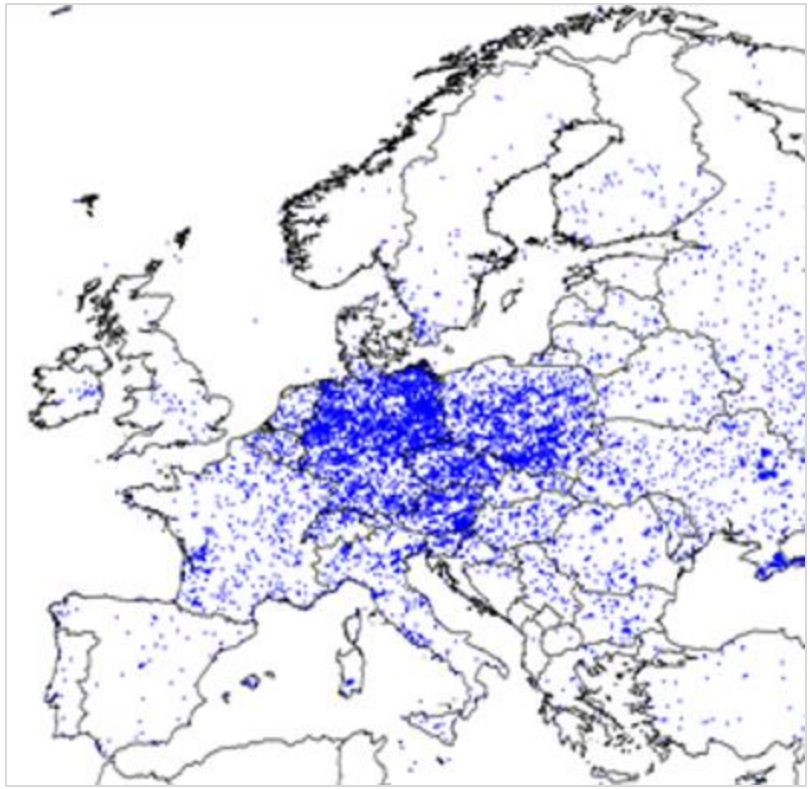
Some US Tornado Features Are Showing Trends

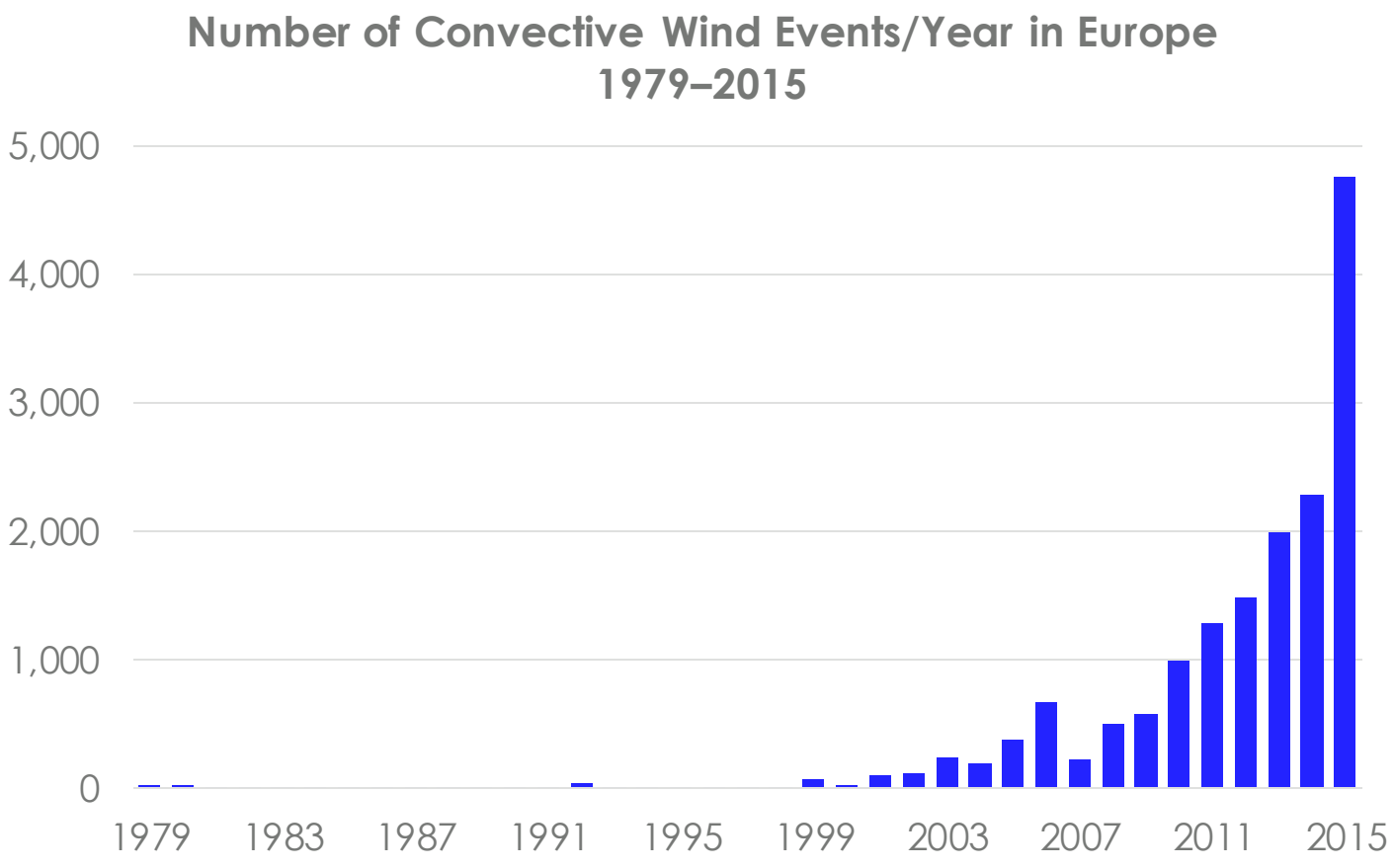




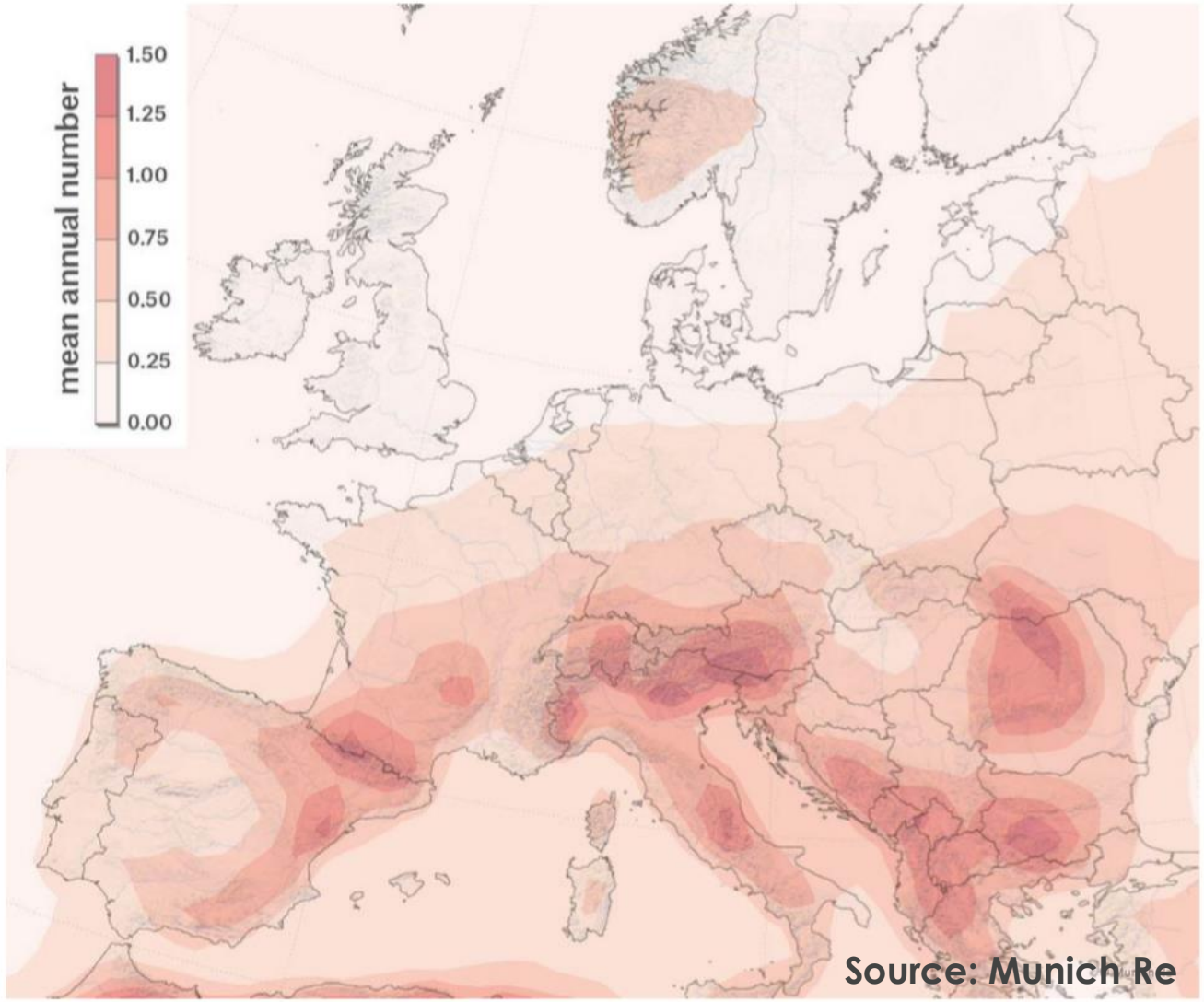
Severe Weather Reports Reflect Population Bias and Climate Factors

Wind

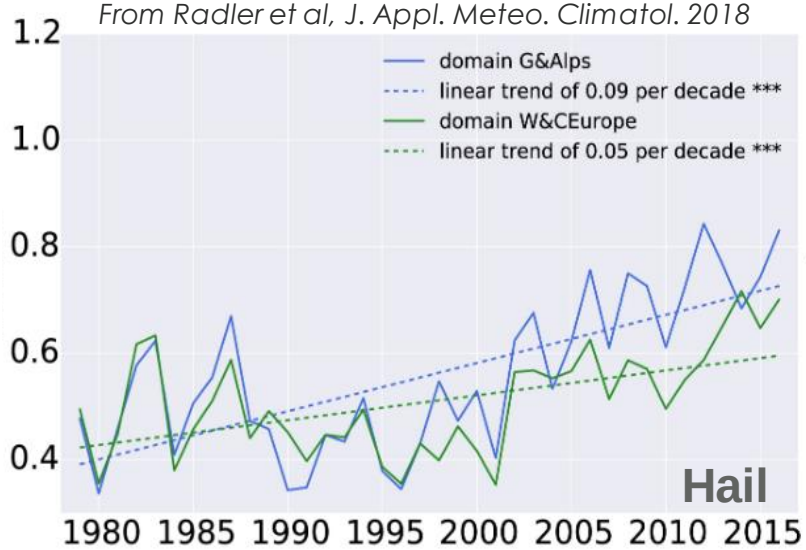


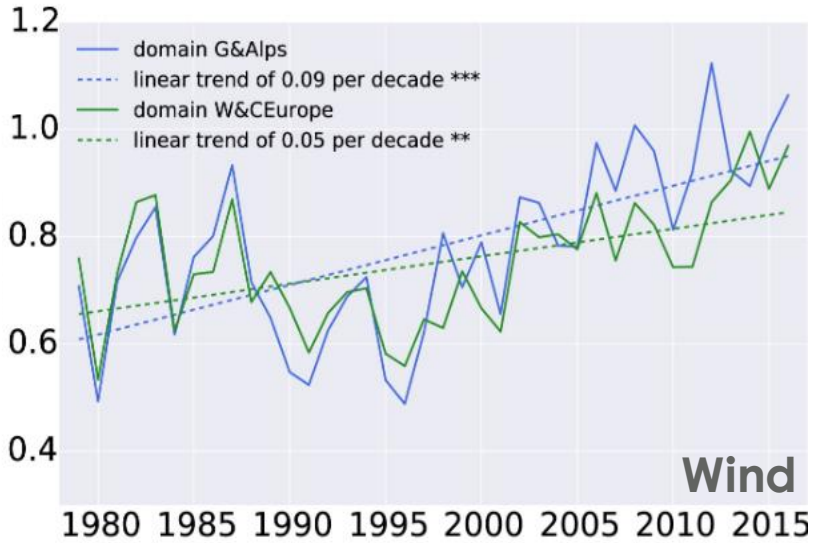


Climate Change Is Affecting European Severe Storms, Too



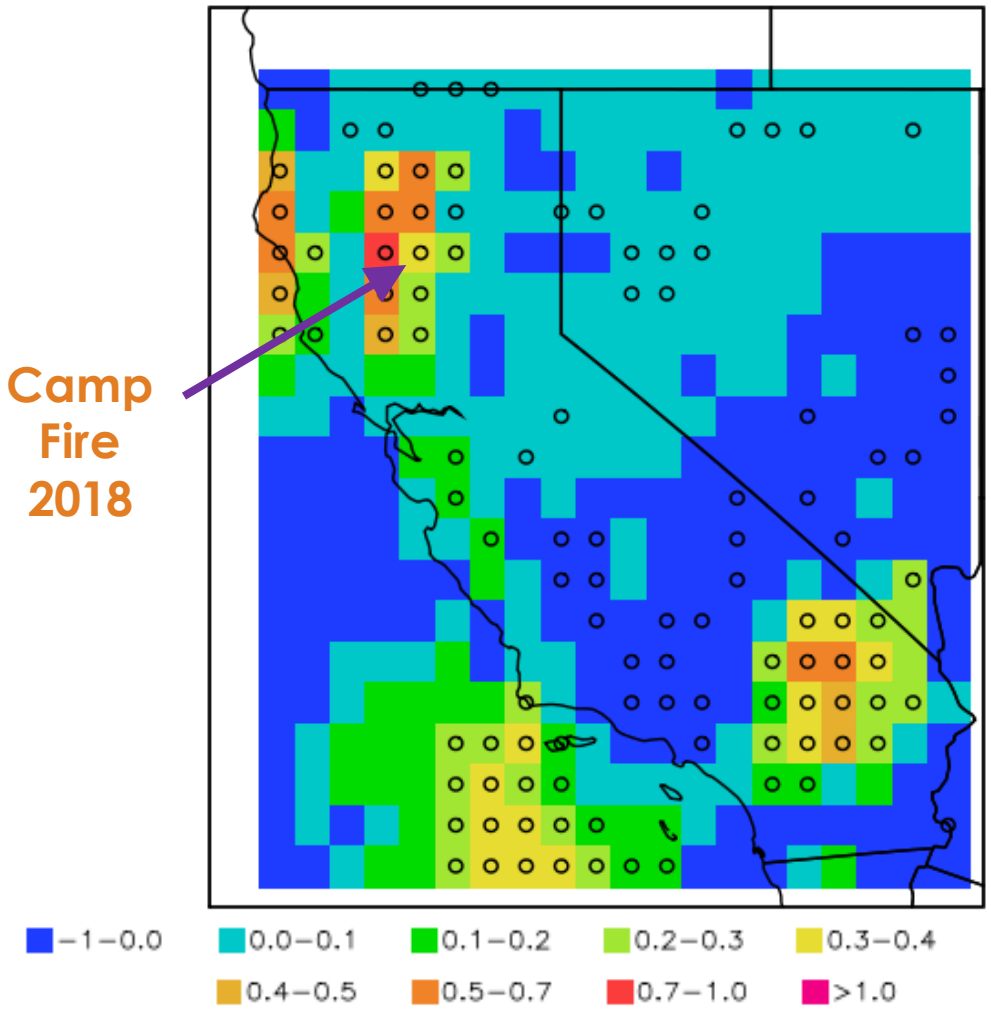
From Radler et al, J. Appl. Meteo. Climatol. 2018



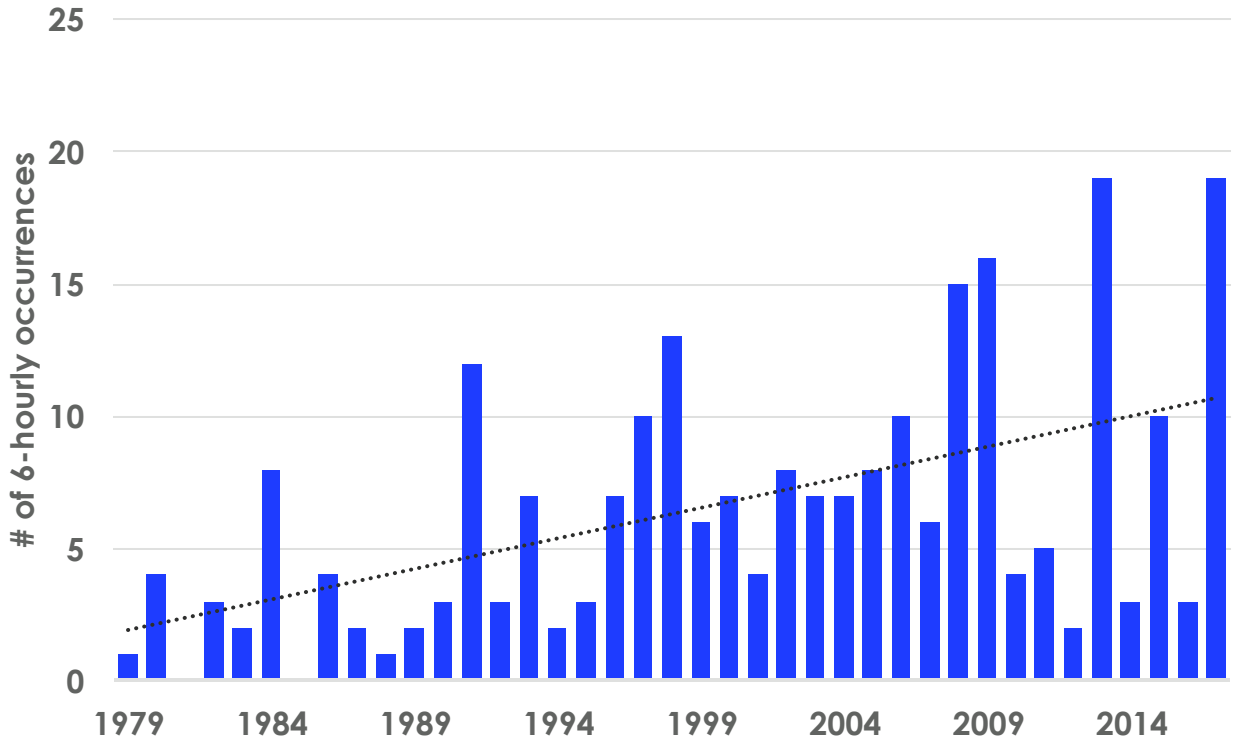


Trends Also Exist for Some Aspects of US Wildfire

Santa Ana Wind Trends 1979 – 2017

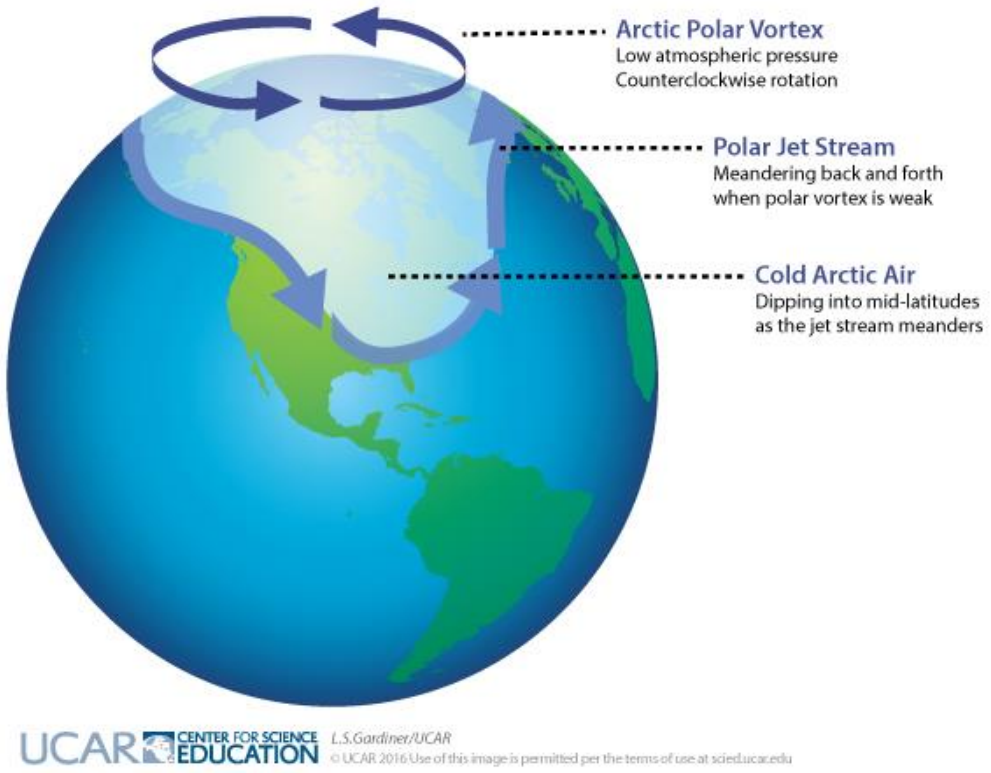


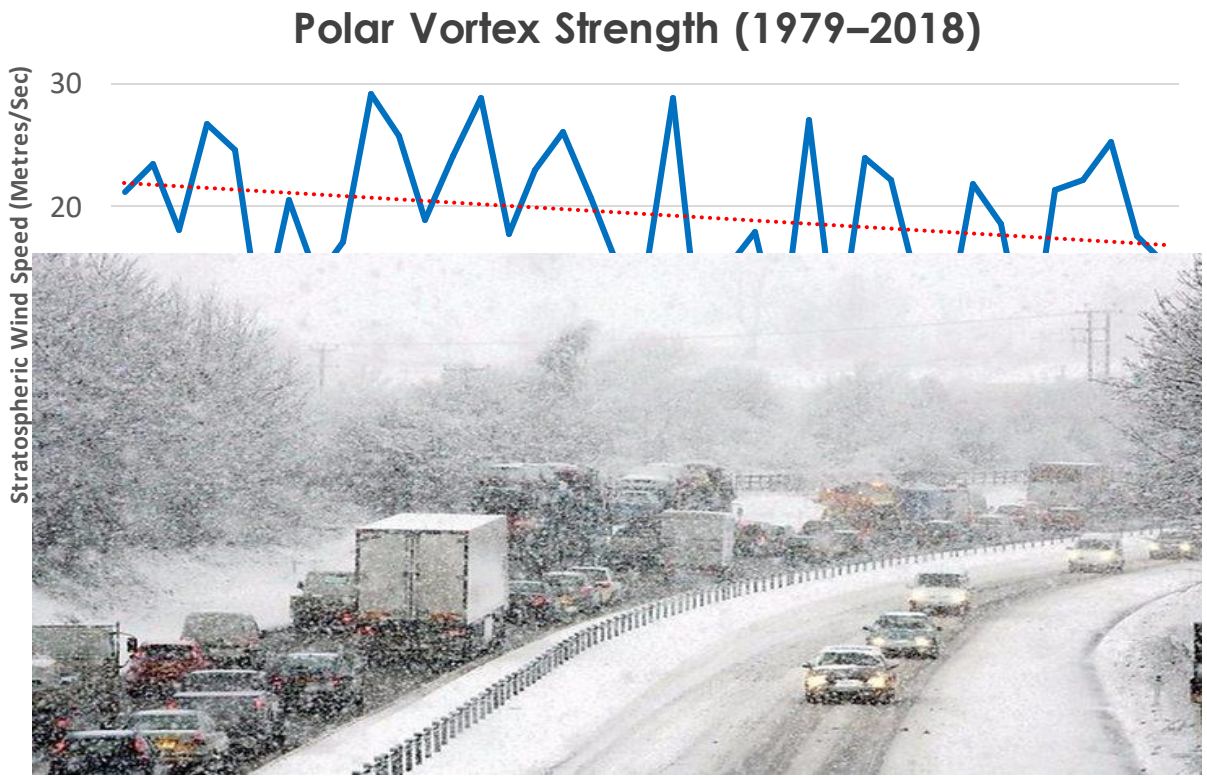
Autumn Diablo counts, Butte CA



AIR

Trends Also Found for Polar Vortex Strength

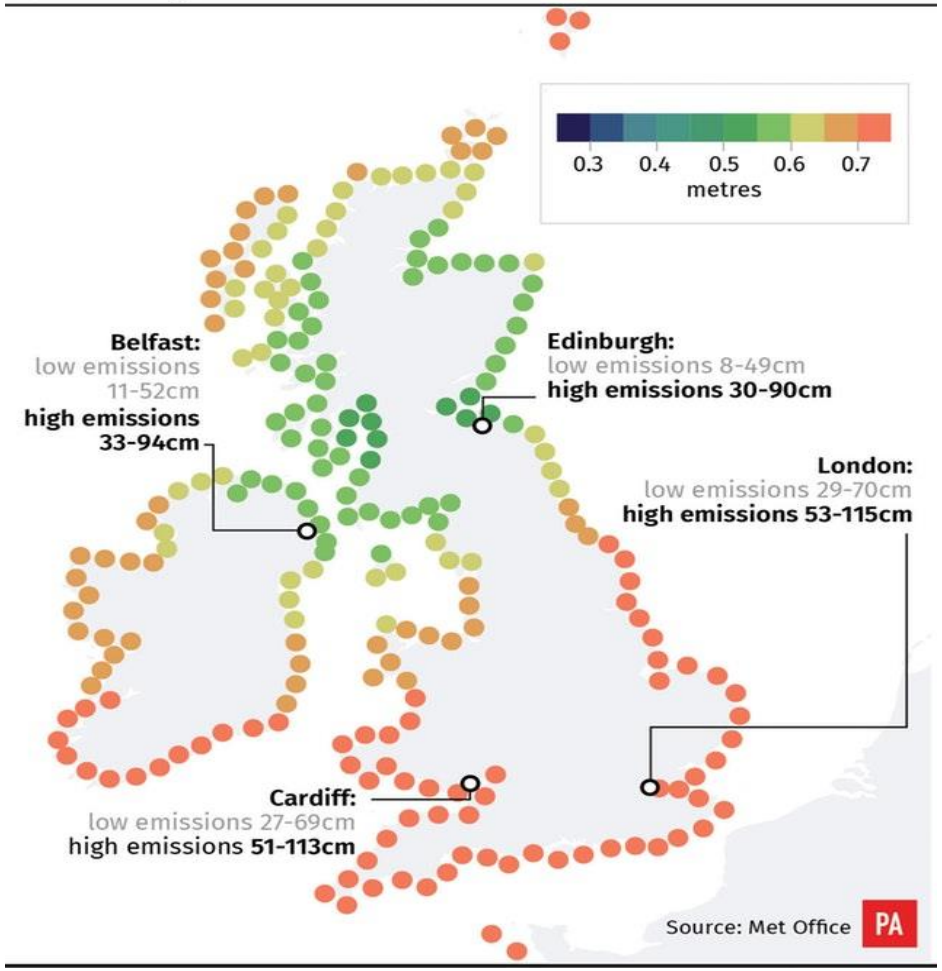




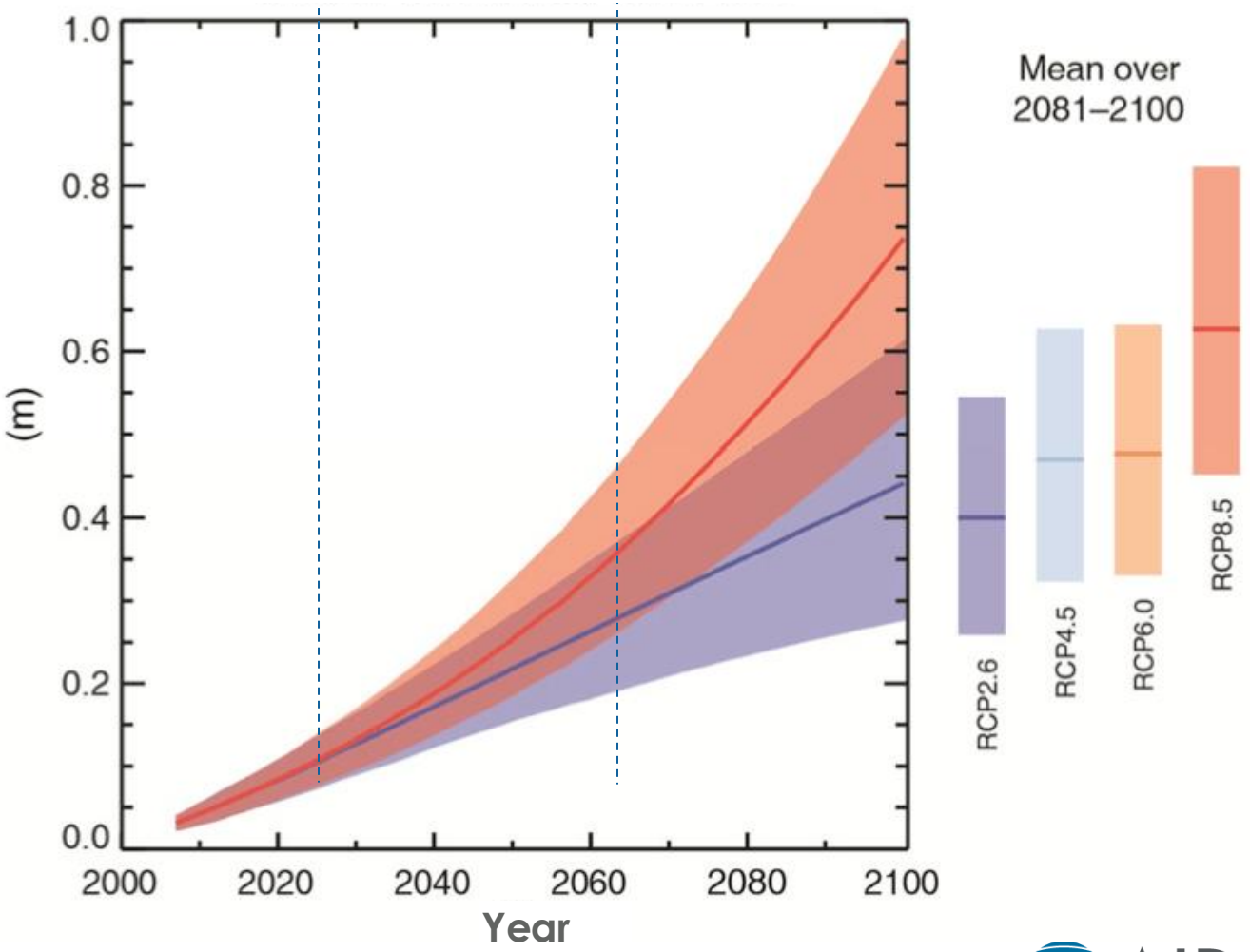
Parked on the M80 - Beast From the East Hits UK and much of Europe in Early Mar 2018

Sea Level Rise Will Continue

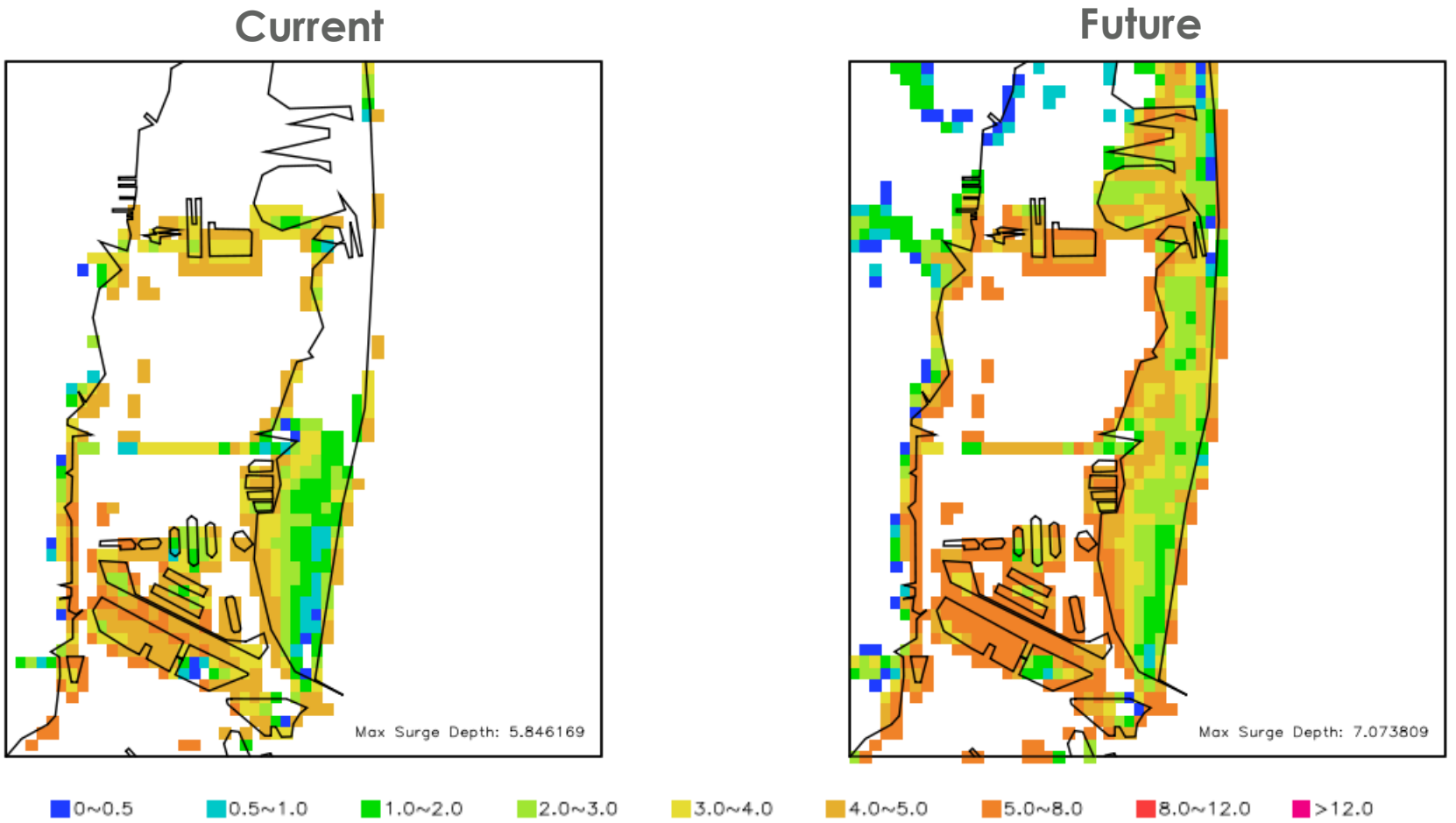
Projections for Rising Sea Levels by 2100 (with High Emissions)



Global Mean Sea Level Rise



Ongoing Study Is Helping Local Government Prepare for Future Catastrophes



Storm surge inundation height from an event in the AIR US hurricane model with current sea level (left) and from an additional 11 inches of sea level rise (right)

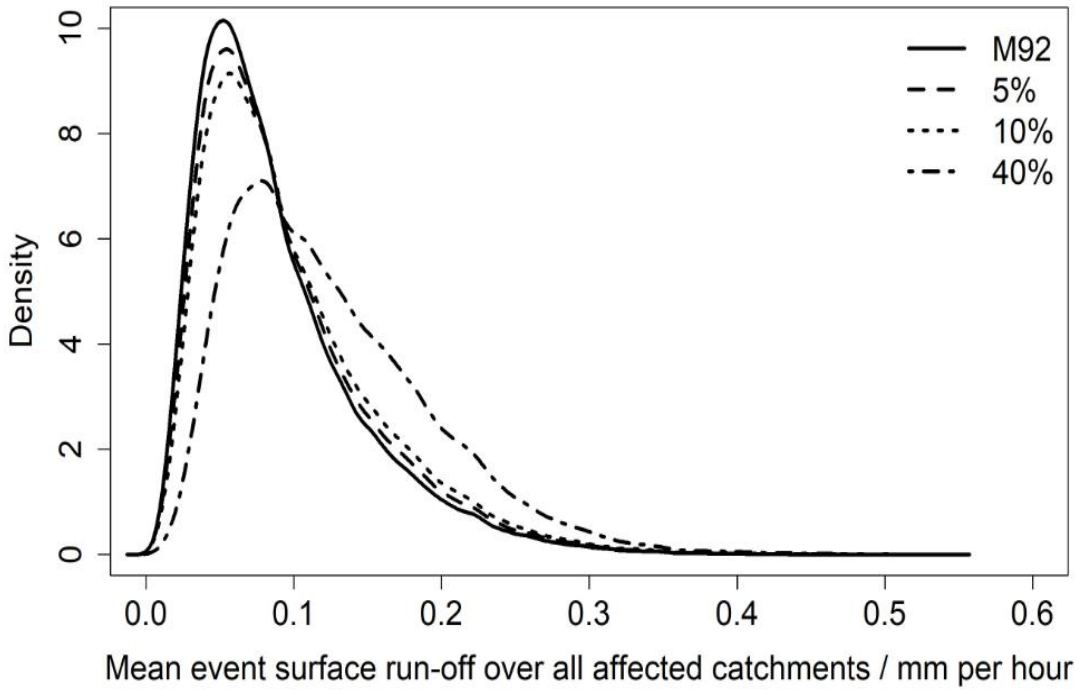
AIR Is Delivering Climate Change Scenarios for Stress Testing per PRA Guidelines

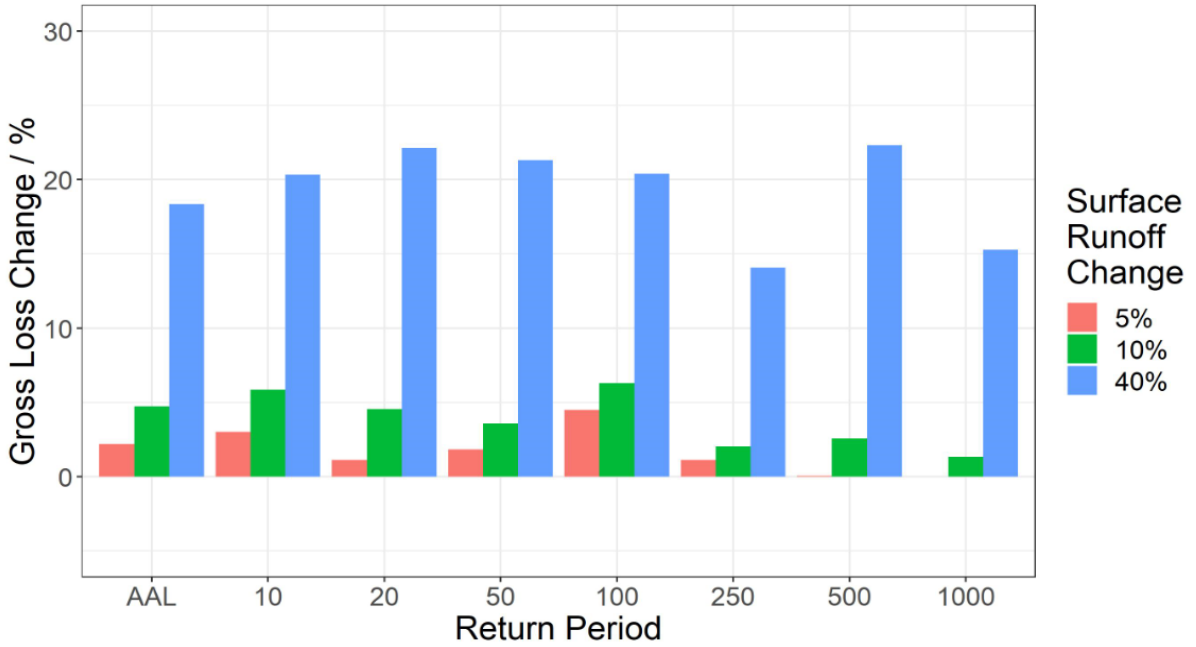
Sector	Assumptions	Physical Risks		
		Scenario A	Scenario B	Scenario C
US Hurricane Exposed LoBs: Hurricane	% increase in frequency of major hurricanes	● 5%	● 20%	● 60%
	Uniform increase in wind speed of major hurricanes	● 3%	● 7%	● 15%
	% increase in surface runoff resulting from increased tropical cyclone-induced precipitation (cumecs)	5%	10%	40%
	Increase in cm in average storm tide sea-levels for US mainland coastline between Texas and North Carolina; figures exclude wave setup and runup	● 10 cm	● 40 cm	● 80 cm
UK Weather Exposed LoBs: Flood, Freeze, and Subsidence	% increase in surface runoff resulting from increased precipitation (cumecs)	● 5%	● 10%	● 40%
	Uniform increase in cm in average storm tide sea-levels for UK mainland coastline	● 2 cm	● 10 cm	● 50 cm
	Increase in frequency of subsidence-related property claims using the worst year on record as a benchmark	3%	7%	15%
	Increase in frequency of freeze-related property claims using the worst year on record as a benchmark	5%	20%	40%

● AIR currently addressing

AIR Is Delivering Climate Change Scenarios for Stress Testing per PRA Guidelines

- **P**rudential **R**egulation **A**uthority recently defined climate change scenarios
- Changes in AAL and 1-in-100 year loss
- Results to be delivered to PRA by end of Oct 2019





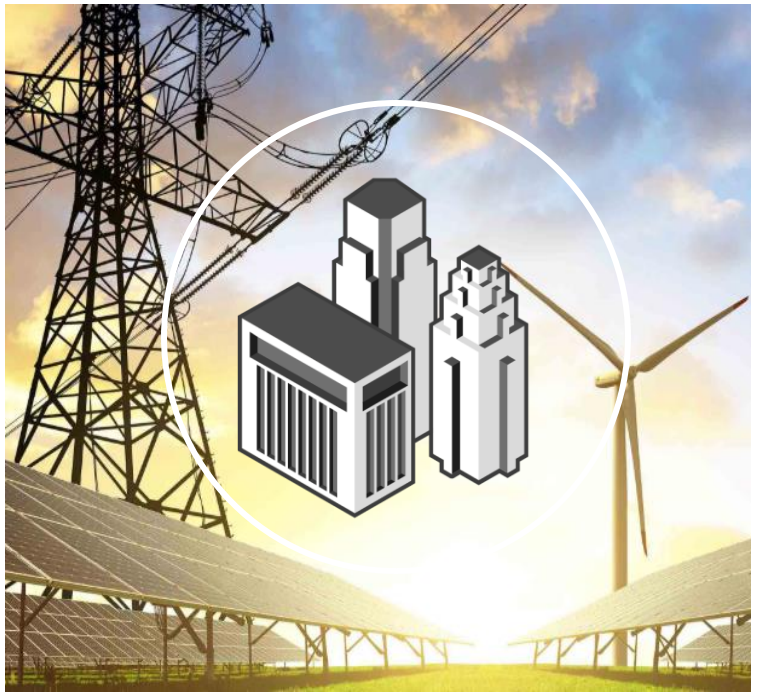
AIR

Expanding Climate Change Support to Other Sectors

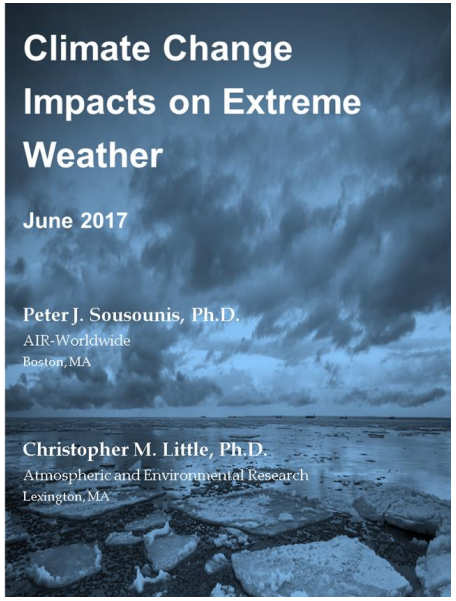
Casualty

Life and Health

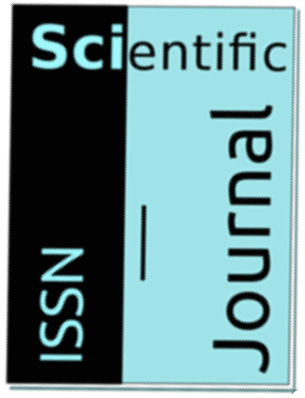
Corporation



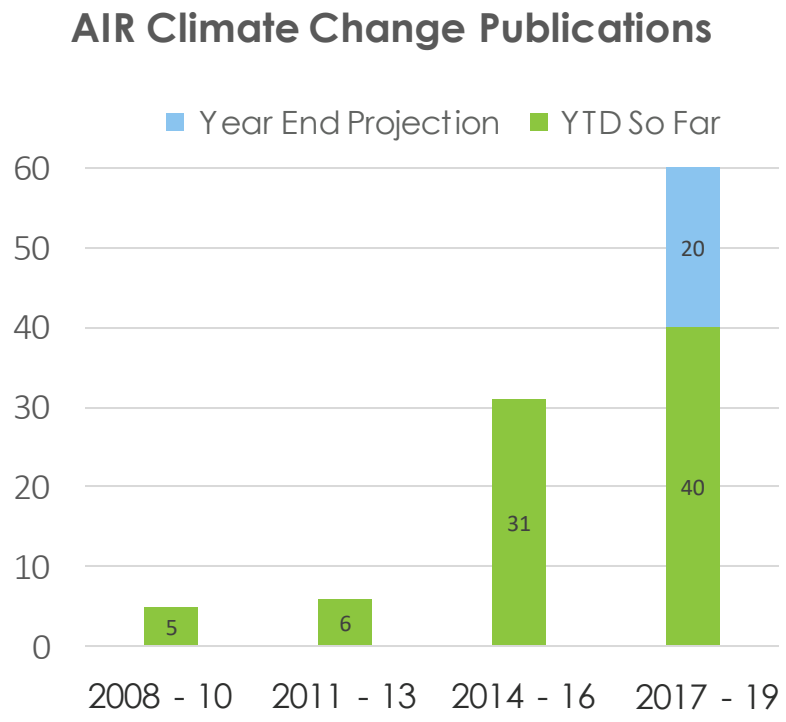
AIR Is Explaining Climate Change in Many Different Ways



White Papers



Scientific Journals



Blogs

Speaking Engagements

Panel Discussions

Summary

Completed multiple climate change initiatives and more are coming down the pipeline

Ongoing efforts to ensure current models reflect the current climate

Building our global resilience practice in areas related to climate change

Formulating ideas for additional solutions to help clients with climate change risk

Continuing to provide thought leadership in the arena of climate change

Questions?

AIR


2019
AIR European
Seminars
London