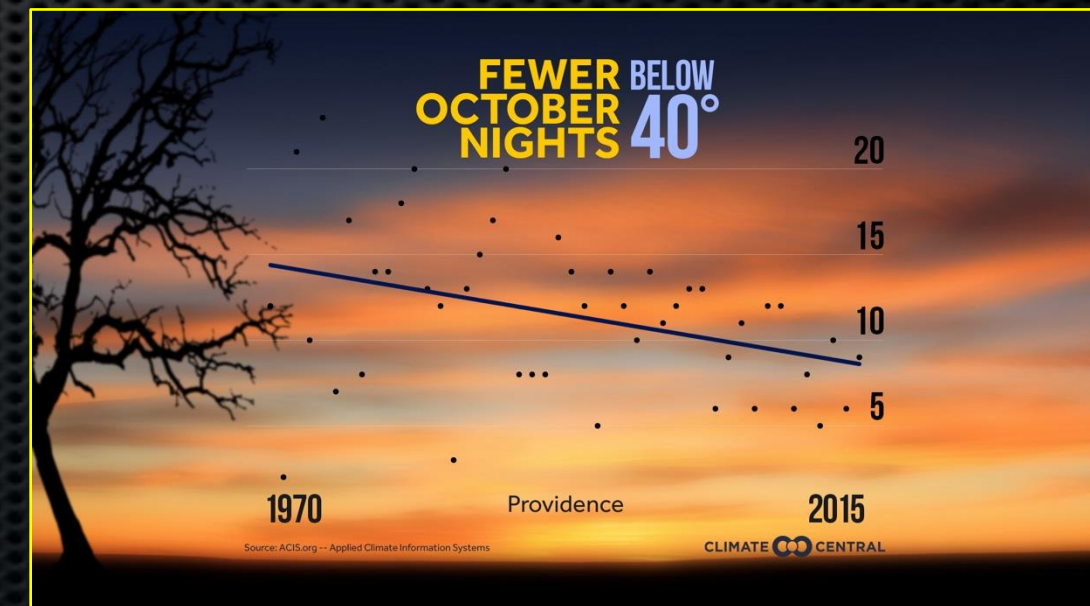
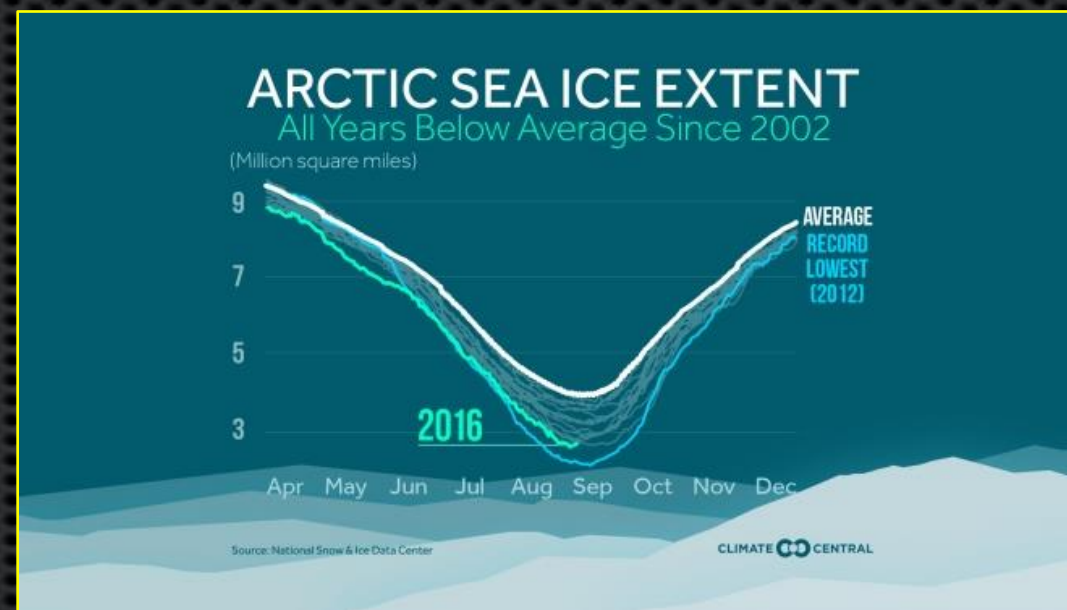
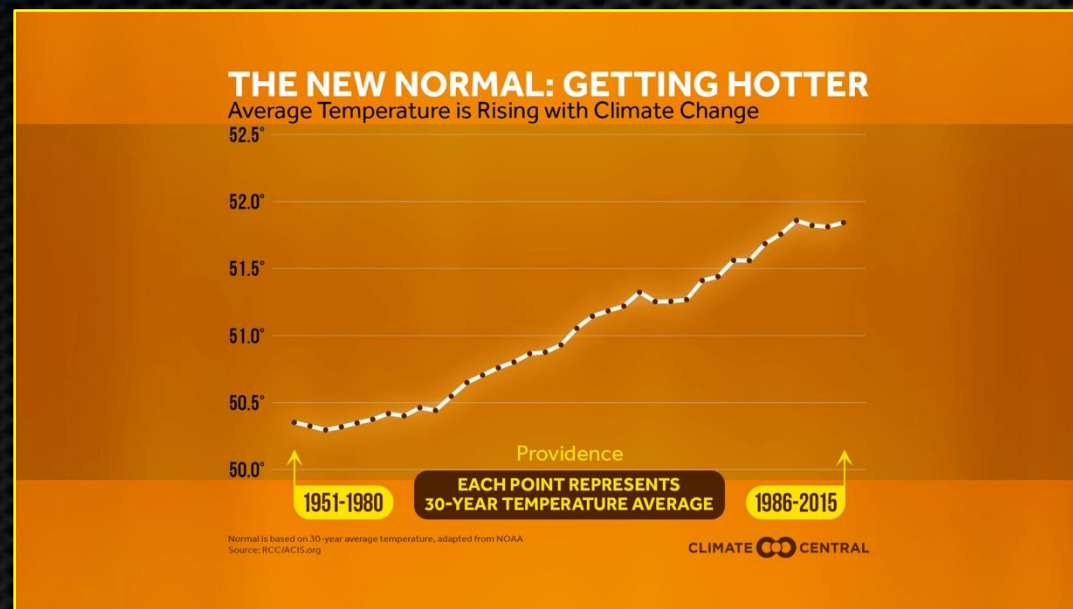


# Climate Central: Resources to Bridge Weather and Climate



Sean Sublette  
Meteorologist, Climate Central  
ssublette@climatecentral.org

# Quotables

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- **Weather is what you get. Climate is what you expect.** Mark Twain
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- **Weather is one inning in a baseball game. Climate is the whole season.** Adapted from Mike Nelson, ABC Denver

# Climate Central Origins

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# Climate Central Origins

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- **Goal is to communicate the science & impacts of climate change to the public**
- **We advance no specific policy, legislation, or technology to address climate change.**

# Climate Central Operations

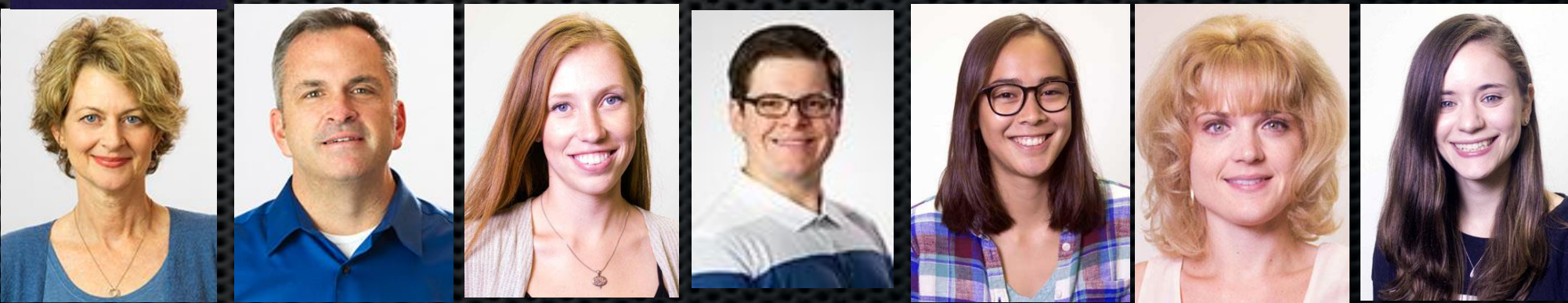
## Senior Scientists



## Research, Data Analysts



## Creative Team



## Journalism



# Climate Central Main Programs

- Sea Level Rise
- Research
- Journalism
- World Weather Attribution
- Climate Matters



## Sea Level Rise Upping Ante On 'Sunny Day' Floods

Published: Oct 17th, 2016

New report shows how coastal flooding is on the rise because of human-caused sea level rise.



CLIMATE MATTERS

Climate Matters  
@climate.matters

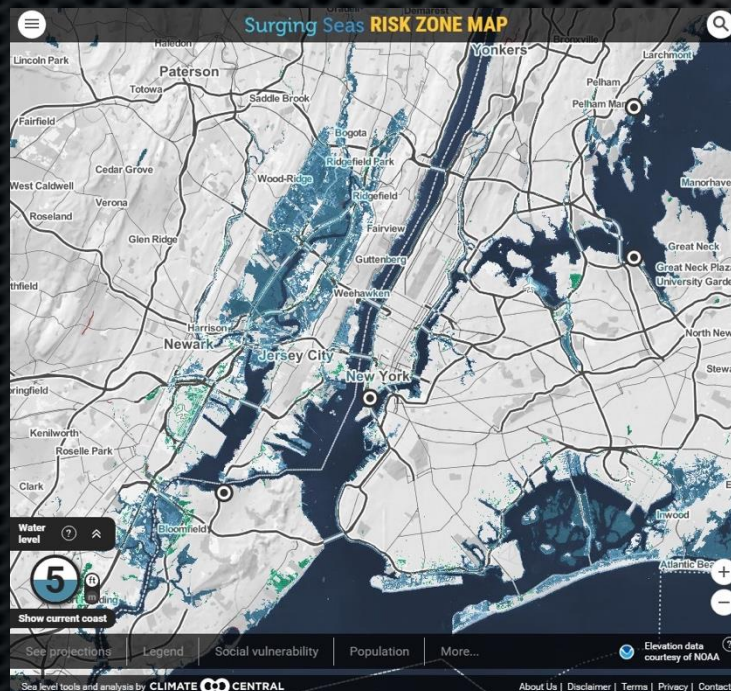
Home Likes About Videos More

Carl Parker at The Weather Channel on the climate...  
2 Likes · 45 views

Matt Zaffino at KGW in Portland, Oregon...  
3 Likes · 39 views

Jim Gandy at WLTX in Columbia, SC examines...  
3 Likes · 98 views

Amber Sullins at KNXV in Phoenix discusses the hot...  
2 Likes · 59 views



## This is What It's Like To Be a Young Climate Scientist

By Brian Kahn

Published: October 19th, 2016



This year is proving to be a momentous one for the climate. There have been both wildly depressing and wildly hopeful milestones. On the downside, carbon dioxide passed the symbolic 400 parts per million threshold permanently (in our lifetimes anyways), the planet is going to have its hottest year on record for the third year in a row and a rash ...

[Read More](#)

# Sea Level Rise

sealevel.climatecentral.org


- Compelling visuals
- 1-10 feet of rise
- Areas at risk
- Different scenarios
- Research reports



### COASTAL FLOOD FINGERPRINTS

There are human fingerprints on thousands of coastal floods in the U.S. since 1950. Explore why and where.

[Summary & Interactive](#) | [Report](#) | [Video](#)



### RISK ZONE MAP

Enter any global place

High-resolution coastal flooding and sea level rise maps with downloadable snapshots and local sea level projections at more than 1,000 global tide gauges.

[About](#) | [Map](#) | [Tools Comparison](#) | [Custom Analysis](#) | [Science](#)



### MAPPING CHOICES

Enter any global coastal place

See the sea levels that high vs. low carbon pathways lock in. Explore maps, 3-D fly-overs, images and analysis of dramatically different futures.

[Overview](#) | [Maps](#) | [Fly-overs](#) | [Images](#) | [Interactive](#) | [Report](#) | [Paper](#) | [About](#)

### Surging Seas RISK FINDER

Enter a U.S. coastal place

#### St. Petersburg, FL, USA

#### Summary

Scroll for full details | [Video intro](#)

Warming oceans and melting ice sheets are raising global sea levels. St. Petersburg area waters could rise 15 inches by 2050, and 4 feet or more by 2100, localizing from the intermediate high sea level scenario in the latest U.S. National Climate Assessment. [Jump to more projections & details](#)

This pathway suggests a 18% risk of flooding over 5 ft between today and 2030, and 46% between today and midcentury.

Some of what sits below 5 ft in St. Petersburg today (rounded figures):

- Population: 40,000
- High social vulnerability population: 10,000

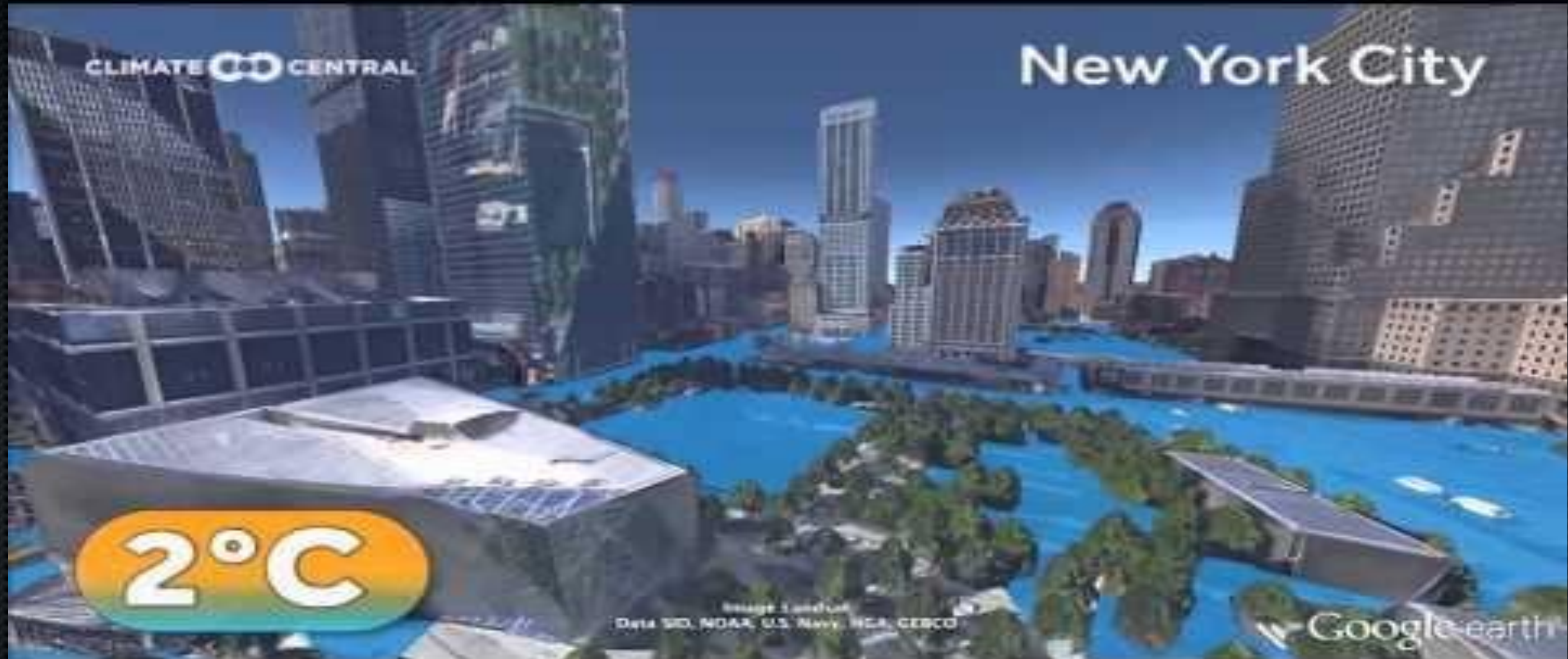
Projections, analysis, comparisons, and downloadable data and local reports about coastal flood and sea level threats to people, property and infrastructure.

- Hazardous: For cities, counties, states, ZIPs, and much more.
- [Jump to more variables & details](#)

[About](#) | [Video Tutorial](#) | [Tools Comparison](#) | [Custom Analysis](#) | [Science](#) | [Case Studies](#)

Sea level tools and analysis by CLIMATE CENTRAL

# Sea Level Rise – 2°C vs 4°C in New York City



- Full length research reports relating climate change and its impacts



## Sea Level Rise Upping Ante On 'Sunny Day' Floods

*Published: Oct 17th, 2016*

New report shows how coastal flooding is on the rise because of human-caused sea level rise.



## U.S. Faces Dramatic Rise in Extreme Heat, Humidity

*Published: Jul 13th, 2016*

Rising extreme heat and humidity in the U.S. cities threaten public health.



## More Mosquito Days Increasing Zika Risk in U.S.

*Published: Jul 27th, 2016*

The risk of mosquito-borne diseases, like Zika, is becoming more prevalent as our mosquito season gets longer.

- Full length research reports relating climate change and its impacts
- Feature interactives that complement the report

## Sea Level Rise Upping Ante On 'Sunny Day' Floods

Published: October 17th, 2016

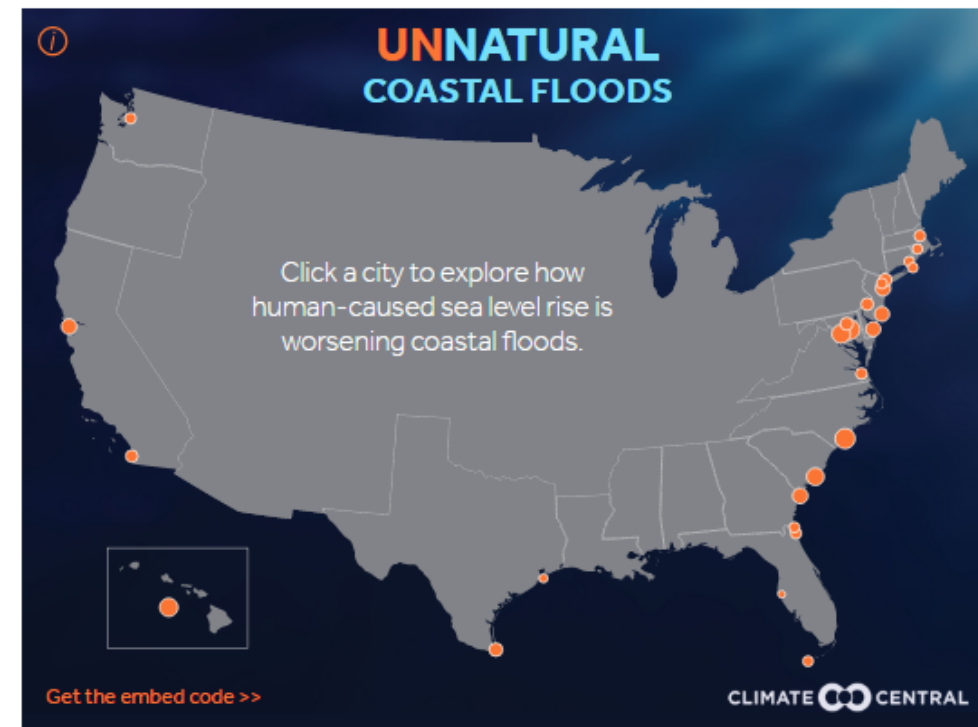


Research Report by Climate Central

Parts of the Atlantic Coast are still recovering from the onslaught of Hurricane Matthew, but even more flooding is on the way as local tides will reach some of their highest points of the year. With little chance to recover between events, coastal cities are facing a constant reminder that climate change has already tipped the scales toward more frequent and bigger floods.

When the earth, moon, and sun are in perfect alignment, gravity pulls the oceans to their highest tides, often afflicting coastal communities with minor or nuisance flooding that can close roads, inundate local businesses, erode beaches and cause sewage overflows. And as global warming accelerates sea level rise, these floods — often called sunny day floods — are increasing; in many locations they're occurring 10 or 20 times a year.

This week, points along the Atlantic and Gulf Coasts will be experiencing those highest of high tides — commonly known as king tides. But added to this natural tidal cycle are several inches of water brought on from an unnatural source: us. Rising temperatures over the past century — mostly fueled by our carbon emissions from fossil fuels — have caused sea levels to rise, which has made high tides even higher than they used to be in most places. And with sea level rise accelerating, this week's king tides, and the floods they will deliver, give us a preview of what everyday water levels will soon be like because of global warming.



- 2016 Online News Association Award for *Pulp Fiction*
- Bobby Magill – President of Society of Environmental Journalists
- 3-6 stories a week

## U.S. Senate Could Block Landmark HFC Climate Treaty

By John Upton  
Published: October 17th, 2016



The jubilation and relief that flowed from United Nations climate talks in Rwanda over the weekend may be short-lived in the U.S., where legal experts say the agreement risks being blocked by Republican senators. The agreement was struck weeks before a more all-encompassing global climate deal, the Paris agreement takes legal force, following its...

[Read More](#) ▶

## The World's Poorest Most at Risk From Drought, Conflict

By Brian Kahn  
Published: October 17th, 2016

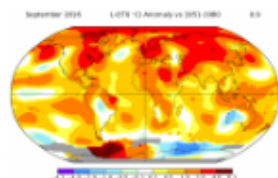


Agriculture is the key source — and in many cases, the only source — of income for many living in the developing world. When drought hits, it has the potential to take away everything and unravel the threads that stitch together society. New findings published Monday in the Proceedings of the National Academies of Science are part of a burgeoning ...

[Read More](#) ▶

## September an Exclamation Point on String of Hot Months

By Brian Kahn  
Published: October 17th, 2016



2016 is the year where abnormal has become the norm when it comes to the global temperature. New data from NASA shows that yet again, the planet had a record-warm month. September set a record with temperatures 1.6°F (0.91°C) above normal, besting the previous mark set in September 2014. It's the latest in a run of months — and years — where freak ...

[Read More](#) ▶

## Sea Level Rise Upping Ante On 'Sunny Day' Floods

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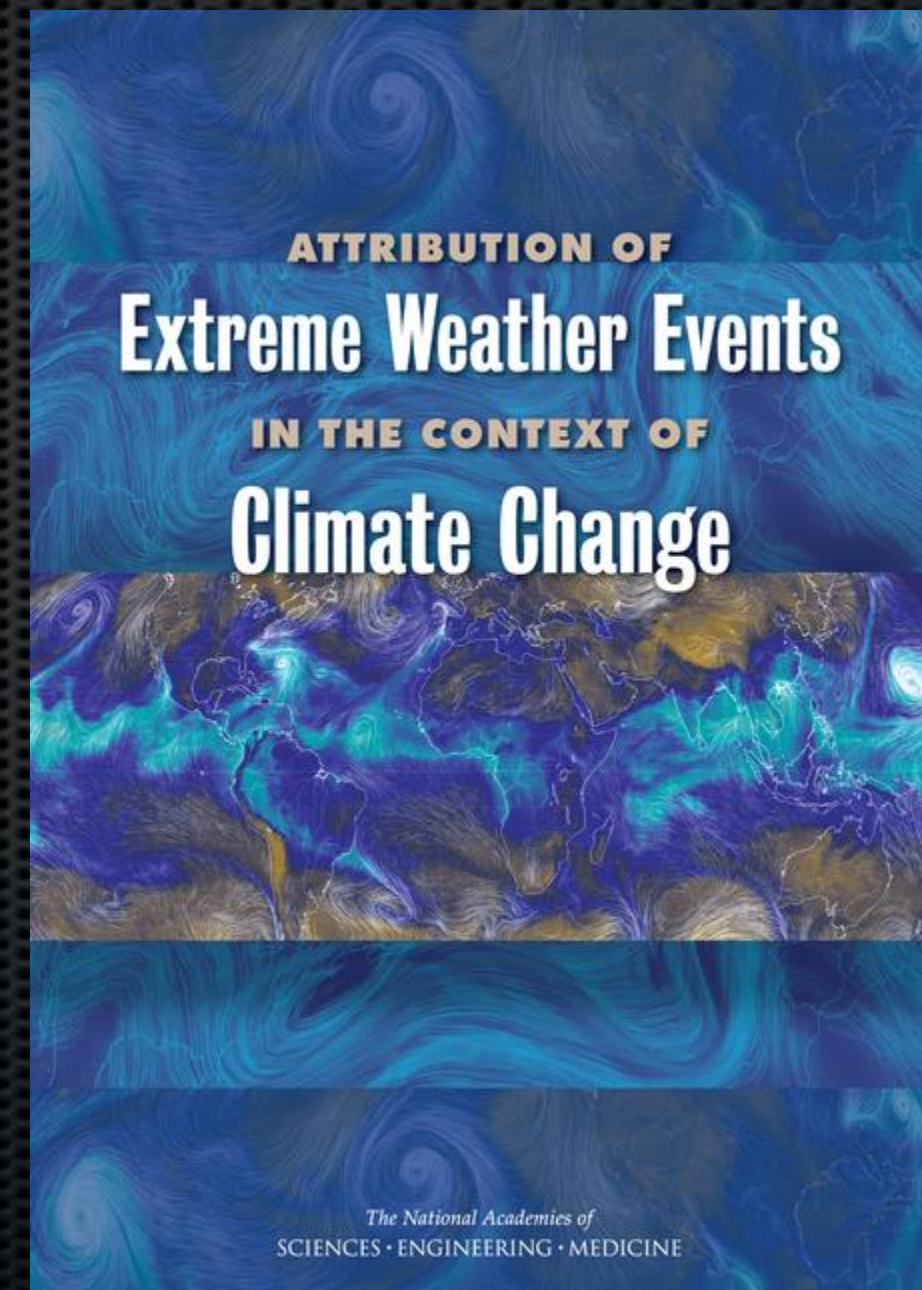


Parts of Atlantic Coast are still recovering from the onslaught of Hurricane Matthew, but even more flooding is on the way as local tides will reach some of their highest points of the year. With little chance to recover between events, coastal cities are facing a constant reminder that climate change has already tipped the scales toward more...

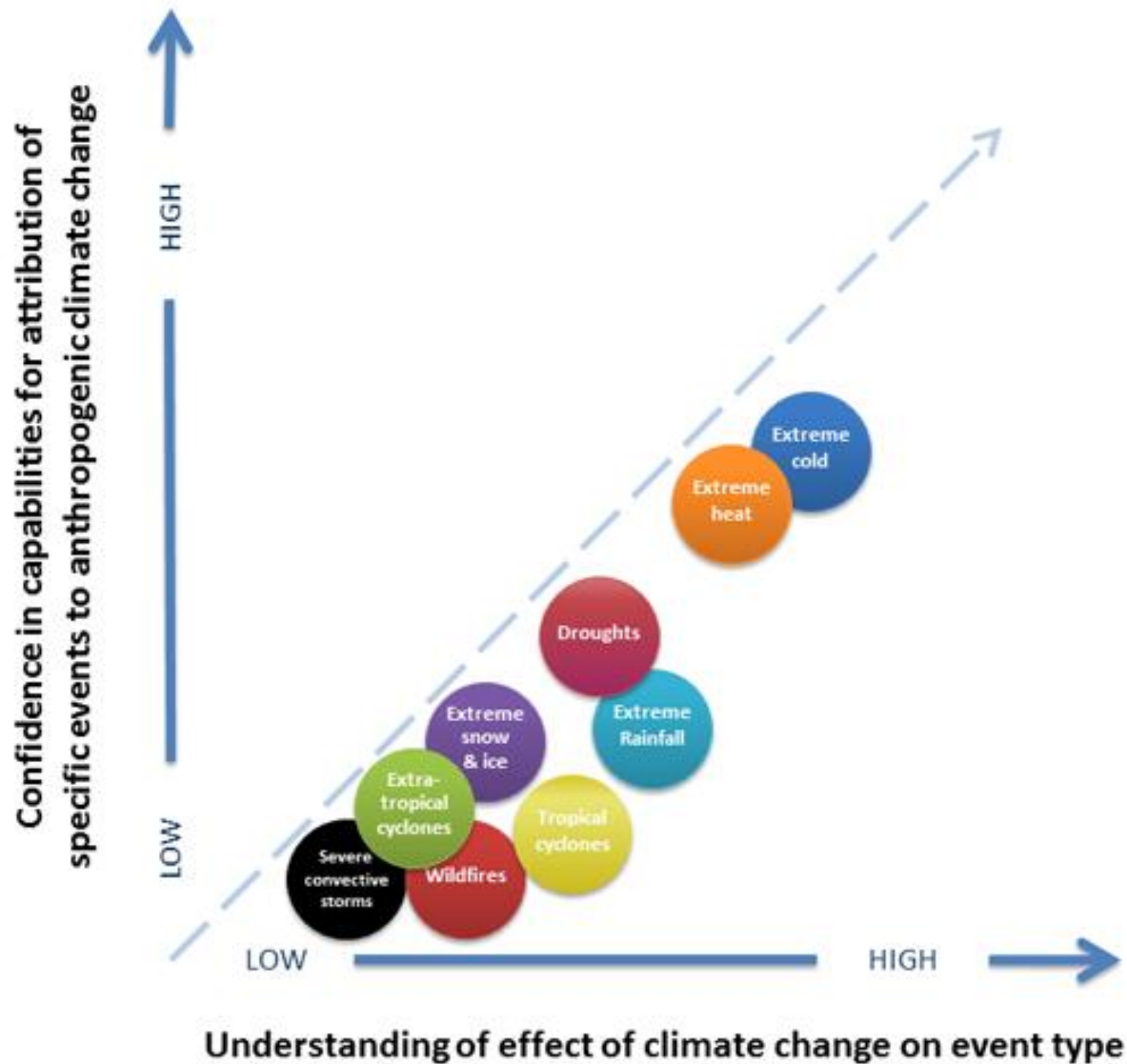
[Read More](#) ▶

“Scientists cautioned in the past that individual weather events couldn't be attributed to climate change. Now, with advances in understanding the climate science behind extreme events and the science of extreme event attribution, such blanket statements may not be accurate.”

- 2016 National Academies Report



# World Weather Attribution [www.climatecentral.org](http://www.climatecentral.org)



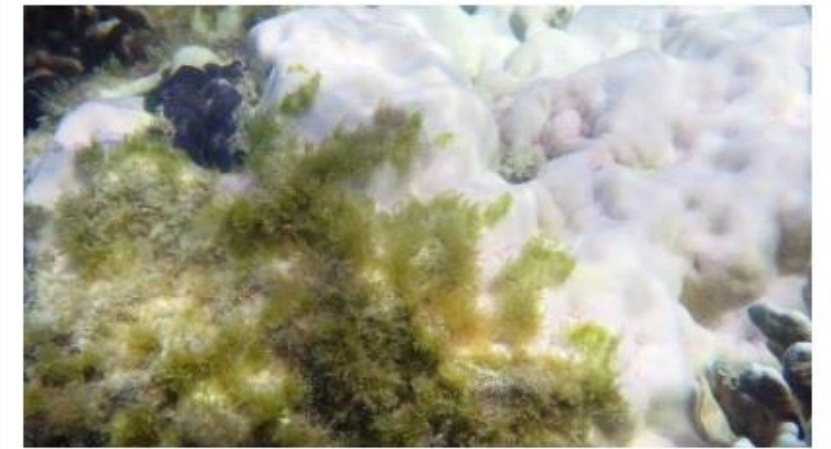
- Some things are more attributable than others
- Heat and (and lack of cold) have the strongest links
- Severe convective storms... not so much

# World Weather Attribution [www.climatecentral.org](http://www.climatecentral.org)

- How likely, or how much did climate change play a role in an extreme event
- Use of historical observations and modeled simulations
- Several partners



Louisiana Downpours (June 2016)



Great Barrier Reef (March 2016)



European Rainstorms (May 2016)



UK's Storm Desmond (Dec. 2015)



THE UNIVERSITY OF  
MELBOURNE



RED CROSS/RED CRESCENT  
CLIMATE CENTRE



International Federation  
of Red Cross and Red Crescent Societies  
The Netherlands + Red Cross

- **By comparing recent three-day precipitation extremes for the Central U.S. Gulf Coast region with the historical record and climate model simulations, the team found that an event like this is now expected to occur at least 40% more often than it was in our pre-industrial past. Precipitation intensity increased by roughly 10% as a result of human-caused climate change.**

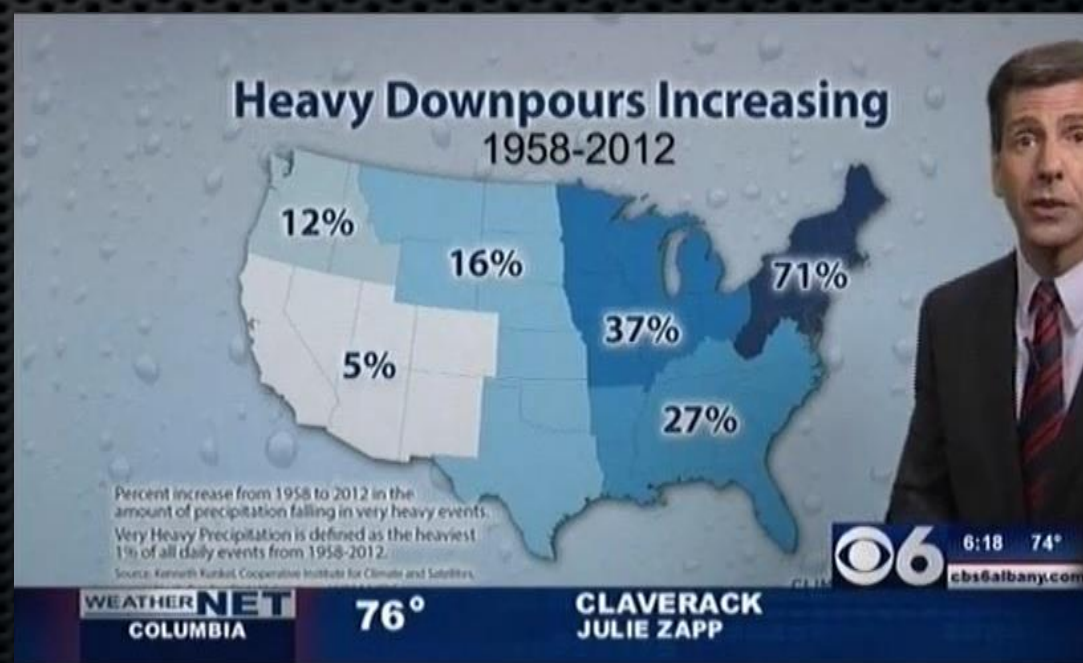
## Louisiana Floods



Submitted to *Hydrology and Earth System Sciences (HESS)*, – an interactive open access journal of the European Geosciences Union

# Climate Matters

- Weekly localized analysis, graphics, animations, and news
- Provide expert sound bites for a story
- Perform research and analysis for a story
- Host regular webinars – earn CBM professional development points
- Develop climate change workshops



# Climate Matters History

- **2010: started with NSF grant: George Mason, Yale, AMS, AGU, NWA**
- **2012: Climate Central launched a full-time program with 10 meteorologists**
- **2013: Opened to all broadcast meteorologists, starting rapid growth**
- **2014: Launched Spanish Climate Matters; earned new 3-yr NSF grant**
- **Program continues to expand**
  - **350 Local Broadcast Meteorologists**
  - **239 Stations (35 Spanish Language)**
  - **119 Markets**



# OCTOBER NIGHTS

NEW YORK CITY

## Climate Matters Mets In Action



Jim Gandy (WLTX) relates the stress on backyard tomatoes to the summer heat



Eric Sorensen (WQAD) brings the Iowa flooding into a climate context

## Social Media Facts

Fall is settling in. See the trend in October nights in NYC <http://buff.ly/2dCmbeG> via @climatecentral #climatematters



The number of major hurricanes in the Atlantic is creeping upward <http://buff.ly/2dcAW4n> via @climatecentral #climatematters

## FADING OCTOBER CHILL

The frequency of cool October nights is decreasing in most of the U.S.



Title: JPG • PNG  
No Title: JPG • PNG  
Loopable Background: MP4 • MOV

## Need more visuals and resources?

Visit our [archive](#) to explore all of the previously released Climate Matters.

Meteorological fall begins in September, but the season really comes into its own in October. The leaves begin to change, the days get shorter and football season kicks into high gear. And after a long hiatus, sweaters and jackets return to wardrobes as the cooler nights become more common. But as the planet warms from the increase in greenhouse gases, the number of October nights with sweater weather is decreasing in most of the U.S.

- Weekly story – designed to coincide with current events
- Highlight breaking climate news

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- Thumbnail image of the feature graphic(s), animations, and/or videos

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- Weekly story – designed to coincide with current events
- Highlight breaking climate news
- Text story to turn into a blog
- Thumbnail image of the feature graphic(s), animations, and/or videos
- Feature how broadcast meteorologists are using the information

**Brian Doogs**  
**WMTV**  
**Madison**



For Internal Use Only

Eric Sorensen  
WQAD  
Quad Cities



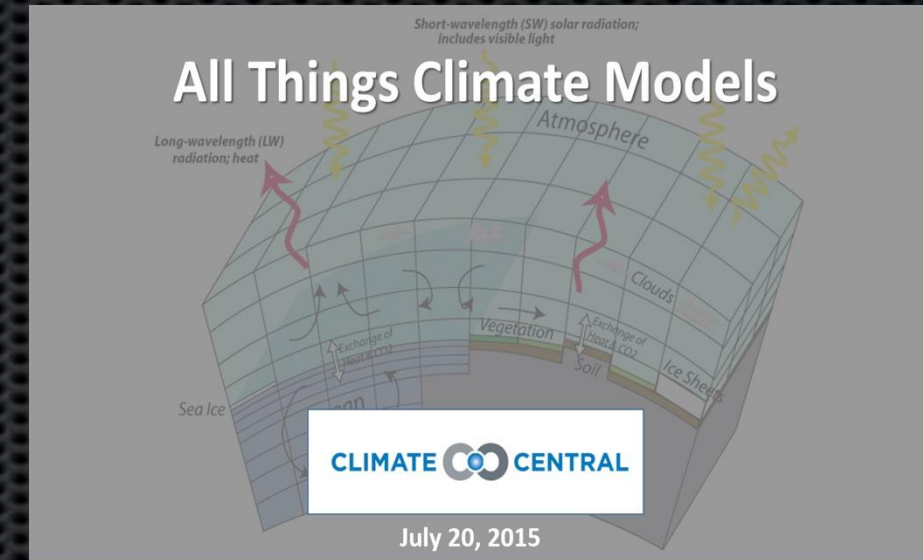
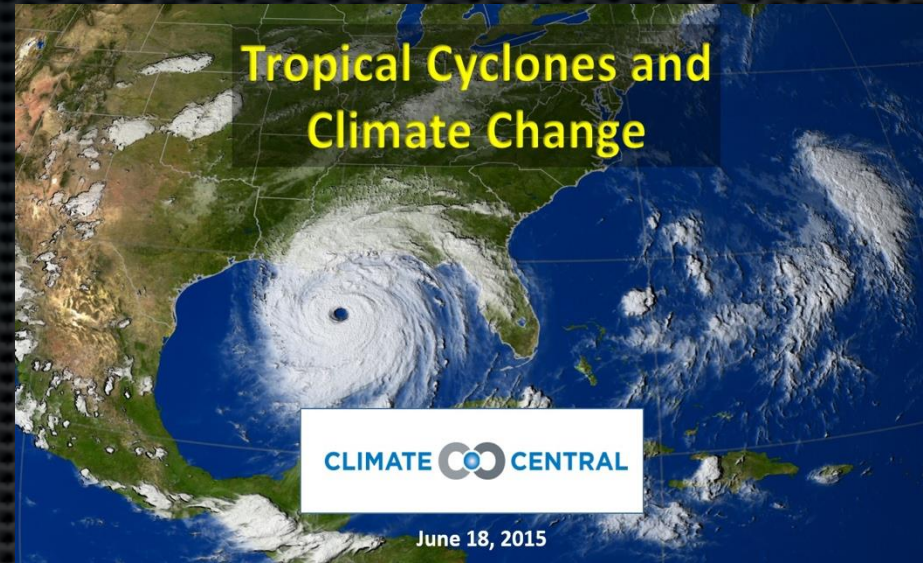
Emily Gracey  
WCIV  
Charleston, SC



For Internal Use Only

# Climate Matters

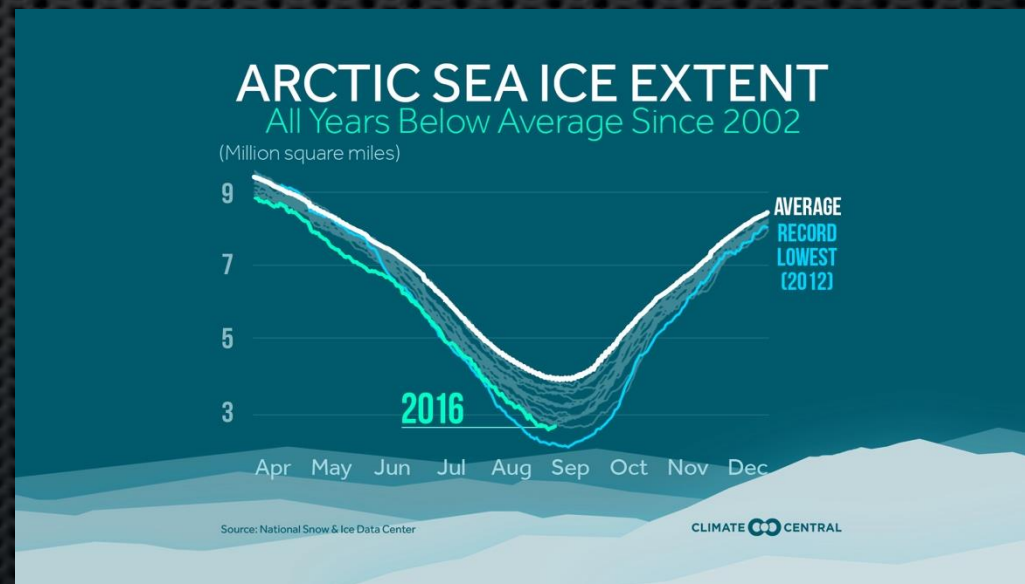
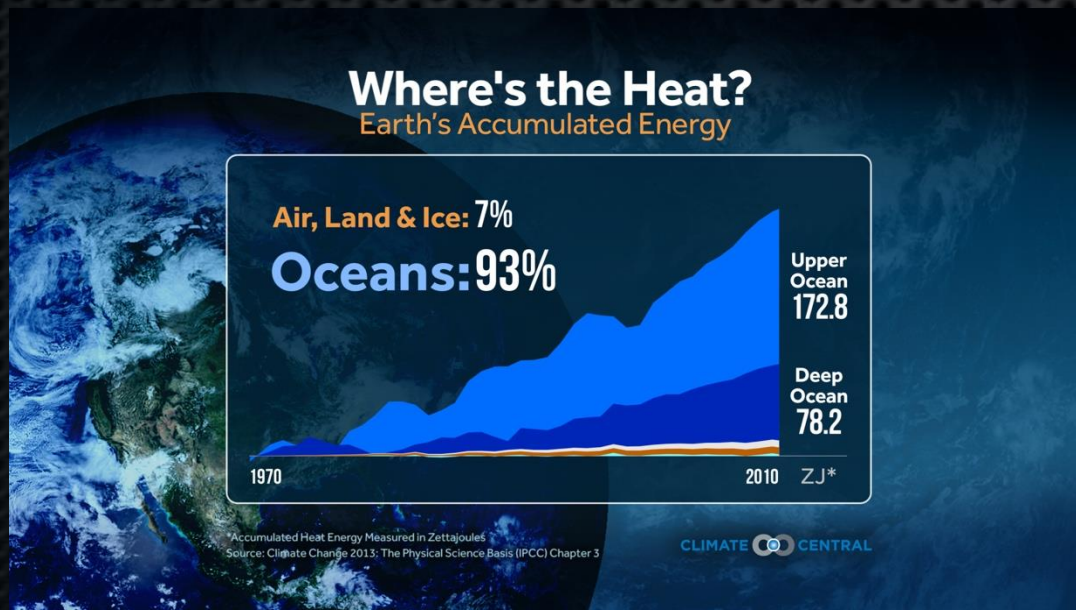
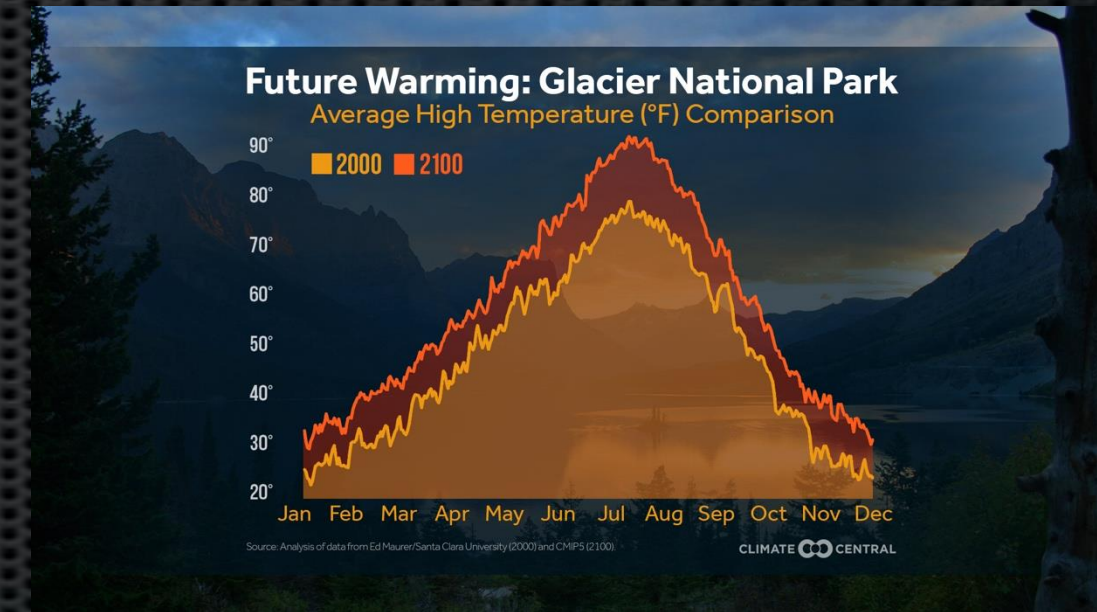
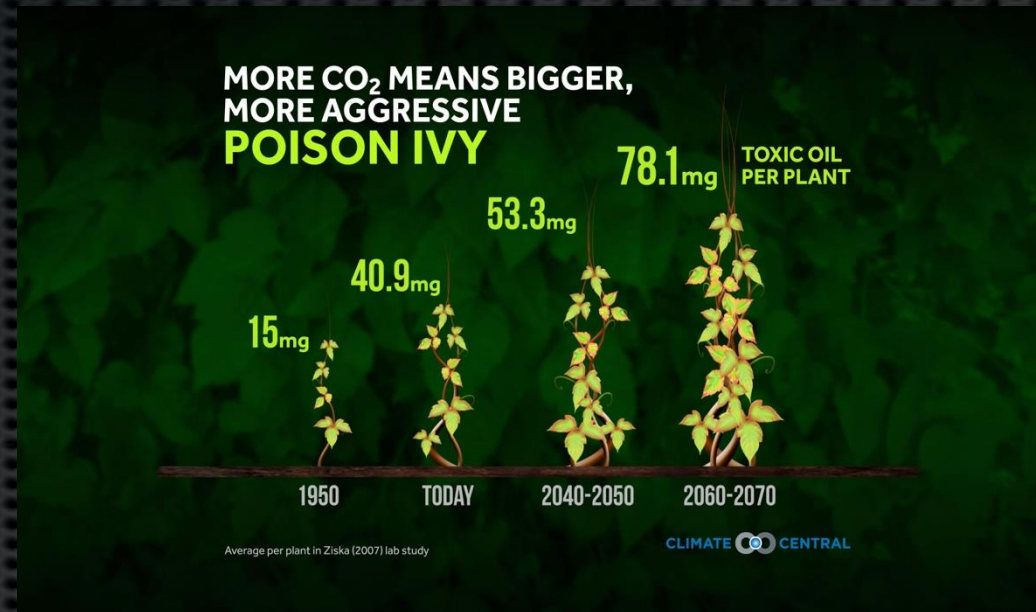
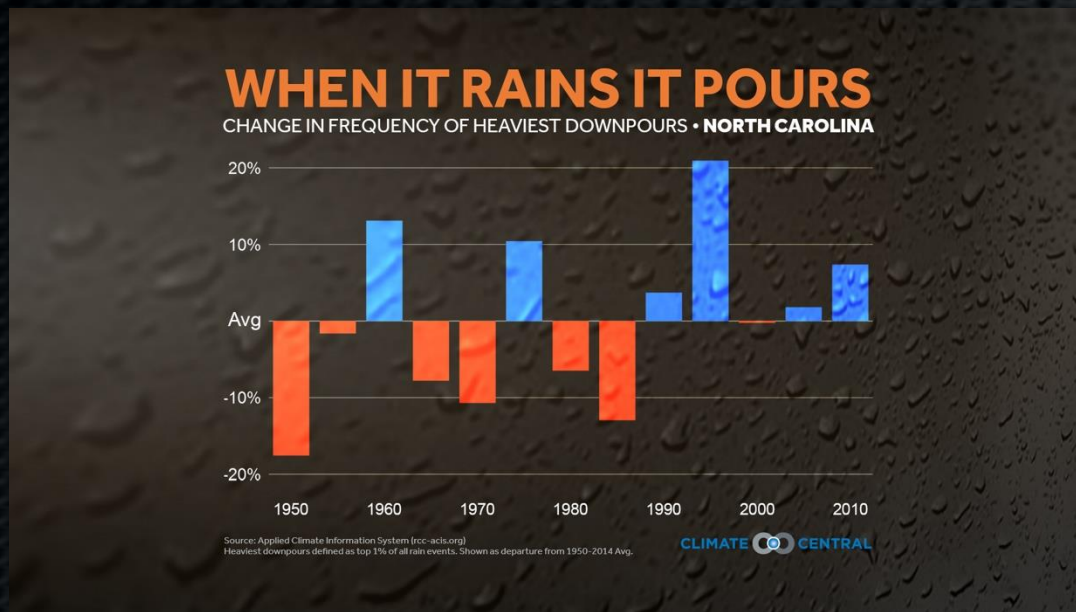
- Regular webinars on climate science topics
- All are archived
- Qualify as Professional Development points (0.25) toward CBM recertification



<http://www.climatecentral.org/workshops-and-webinars>

# Climate Matters – The Archive

<http://www.climatecentral.org/climate-matters>

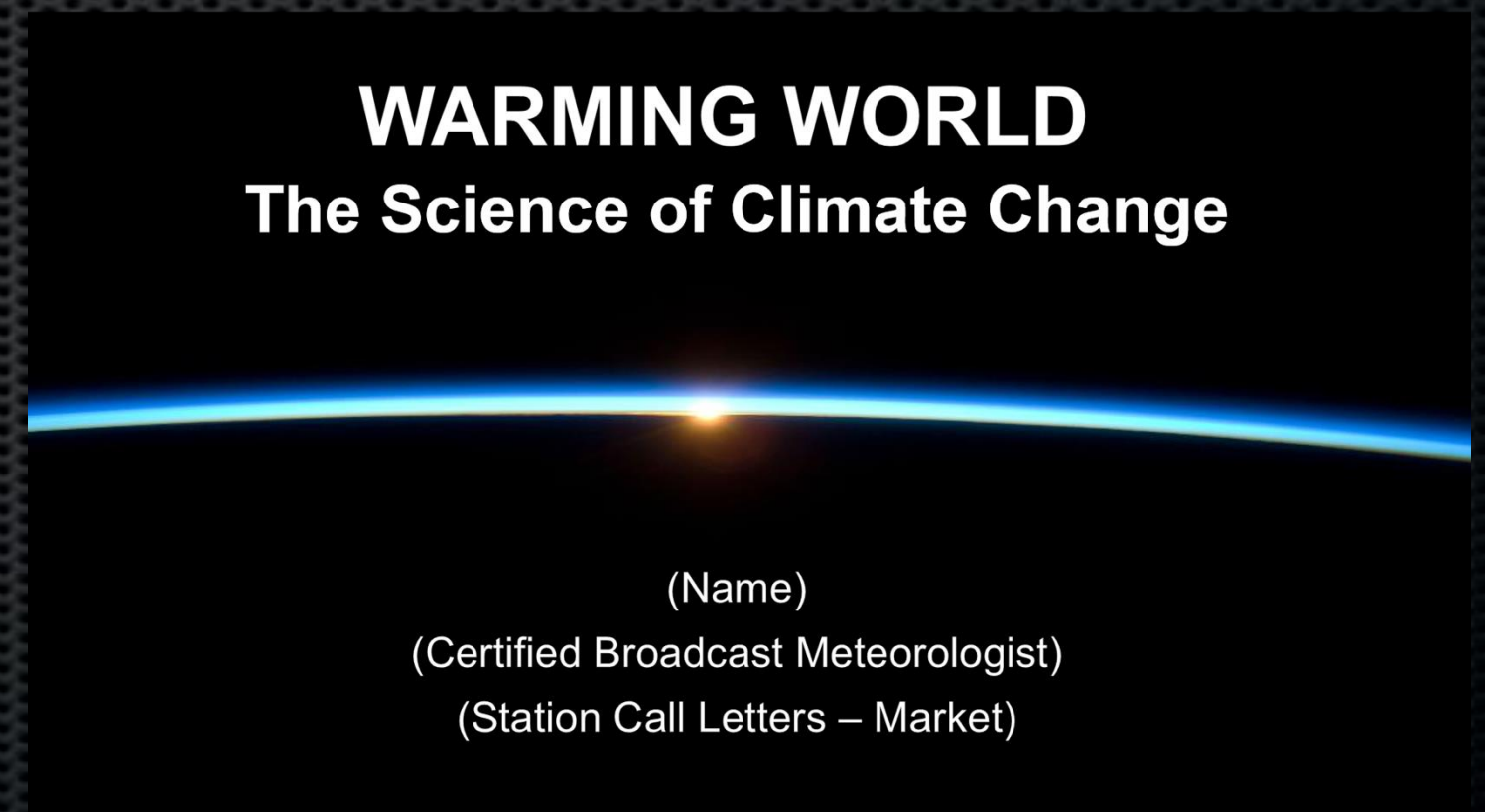


We are here to help you tell the climate and weather story

# Climate Matters – Outreach Presentation

[www.climatecentral.org/warming-world-science-of-climate-change-outreach](http://www.climatecentral.org/warming-world-science-of-climate-change-outreach)

- Provides a baseline presentation resource for meteorologists to use in their public outreach
- Has been designed for adult audiences without a science background
- Approved by the AMS



# WXshift – A weather/climate site



- [wxshift.com](http://wxshift.com)
- Combined weather and climate site
- Daily *local* weather with relevant climate story
- Searchable by city, state, and zip code

The screenshot displays the WXshift website interface for Providence, RI. The top navigation bar includes the WXshift logo, a search bar for city or zip code, and links for HOME, NEWS, and CLIMATE CHANGE. The current location is set to Providence, RI. The main content area features a large weather display showing a high of 81°F and a low of 54°F, with a 'Feels Like 82°' temperature and a 'Mostly Sunny' forecast. Below this, a 3-day forecast is provided: TODAY (Expect mostly sunny skies with temperatures remaining around the lower 80s this afternoon), TONIGHT (54°F, 5% precipitation), and TOMORROW (66°F, 24% precipitation). To the right, a graph titled 'Providence fall precipitation trends' shows precipitation in inches from 1970 to 2010, with a yellow line representing annual data and a white trend line. The graph shows significant variability, with a notable peak around 2005. At the bottom, there is a map of the region and a video player showing a person speaking.

# WXshift – A weather/climate site



- Videos that tie the weather and climate story together
- News stories from our editorial staff
- Guest bloggers from meteorologists across the country
- Always looking for new bloggers

The screenshot displays the WXshift website interface. At the top, there is a search bar with the text "Enter a city or zip code" and navigation links for "HOME", "NEWS", and "CLIMATE CHANGE". The current location is "PROVIDENCE, RI" with a temperature of "82°" and a range of "-81° / -54°".

The main content area features several articles and a prominent line graph. The graph is titled "On the Edge of 1.5°C" and shows "Global year-to-date anomalies from 1881-1910 baseline". The y-axis ranges from +0.8 to +1.6. The x-axis shows months from Jan to Dec. Four lines represent the years 2010, 2014, 2015, and 2016. The 2016 line is significantly higher than the others, indicating a record warm year. A text overlay on the graph reads: "The Hottest Months on Record Have Something in Common".

Below the graph are three article thumbnails:

- September an Exclamation Point on String of Hot Months**: "2016 is the year where abnormal has become the norm when it comes to the global temperature. New data from NASA shows that yet again, the planet had a record-warm month. ... [MORE](#)"
- Slow Motion Disaster: North Carolina Still Dealing With Historic River Flooding**: "As the cleanup from Hurricane Matthew progresses elsewhere, the rivers of eastern North Carolina continue to go through a historic flood brought on by the hurricane's ... [MORE](#)"
- Atlantic Coastal Flood Days**: "Sea level around the globe has risen about 8 inches since 1900, and three-quarters of that rise can be traced to human-caused warming. This rise has brought an increase ... [MORE](#)"

There is also a featured article on the right side: "Sea Level Rise Upping Ante On 'Sunny Day' Floods". "Parts of Atlantic Coast are still recovering from the onslaught of Hurricane Matthew, but even more flooding is on the way as local tides will reach some of their ... [MORE](#)"

# Links and Contacts

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## Climate Central

[www.climatecentral.org](http://www.climatecentral.org)

## WXshift

[www.wxshift.com](http://www.wxshift.com)

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## Sean Sublette

[ssublette@climatecentral.org](mailto:ssublette@climatecentral.org)