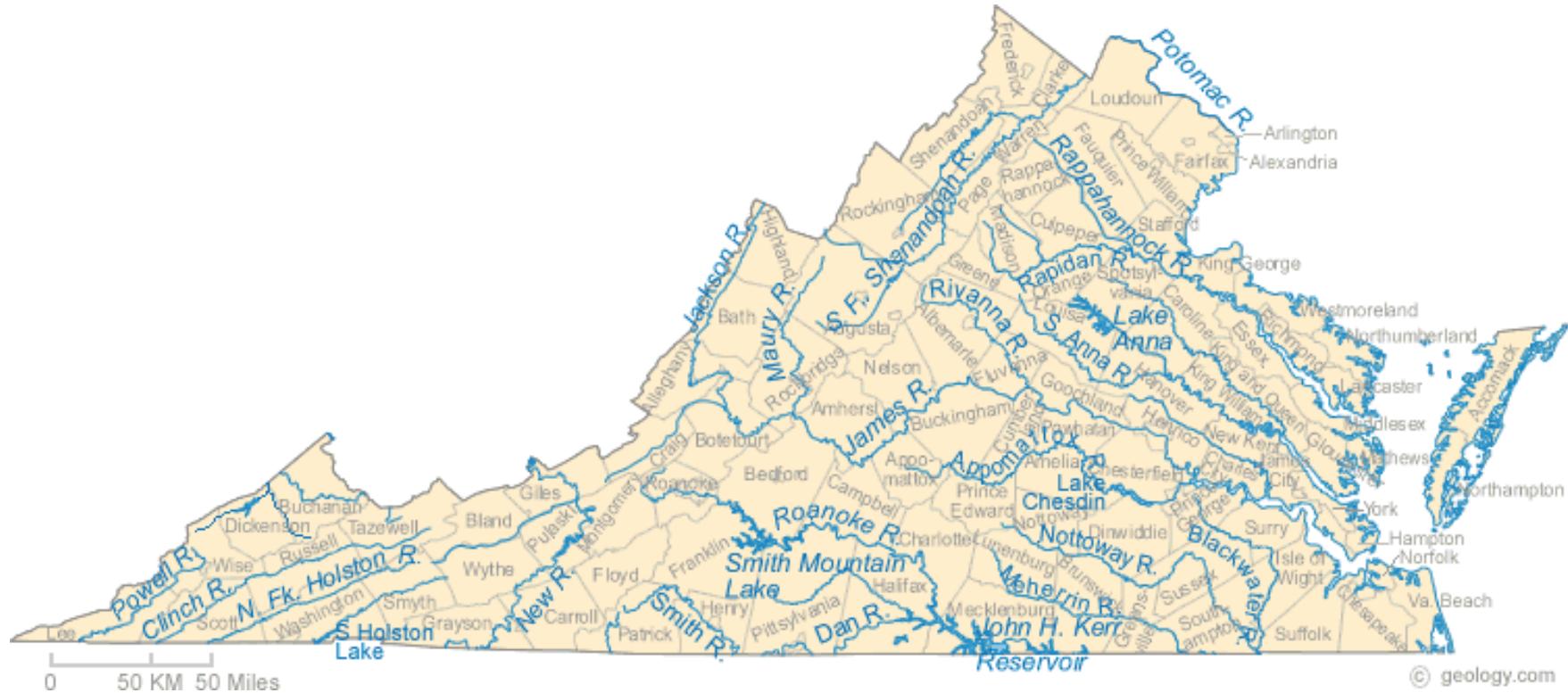


How will global warming of 2°C affect Virginia?



Observed and projected changes
in climate and their impacts



UMASS
AMHERST

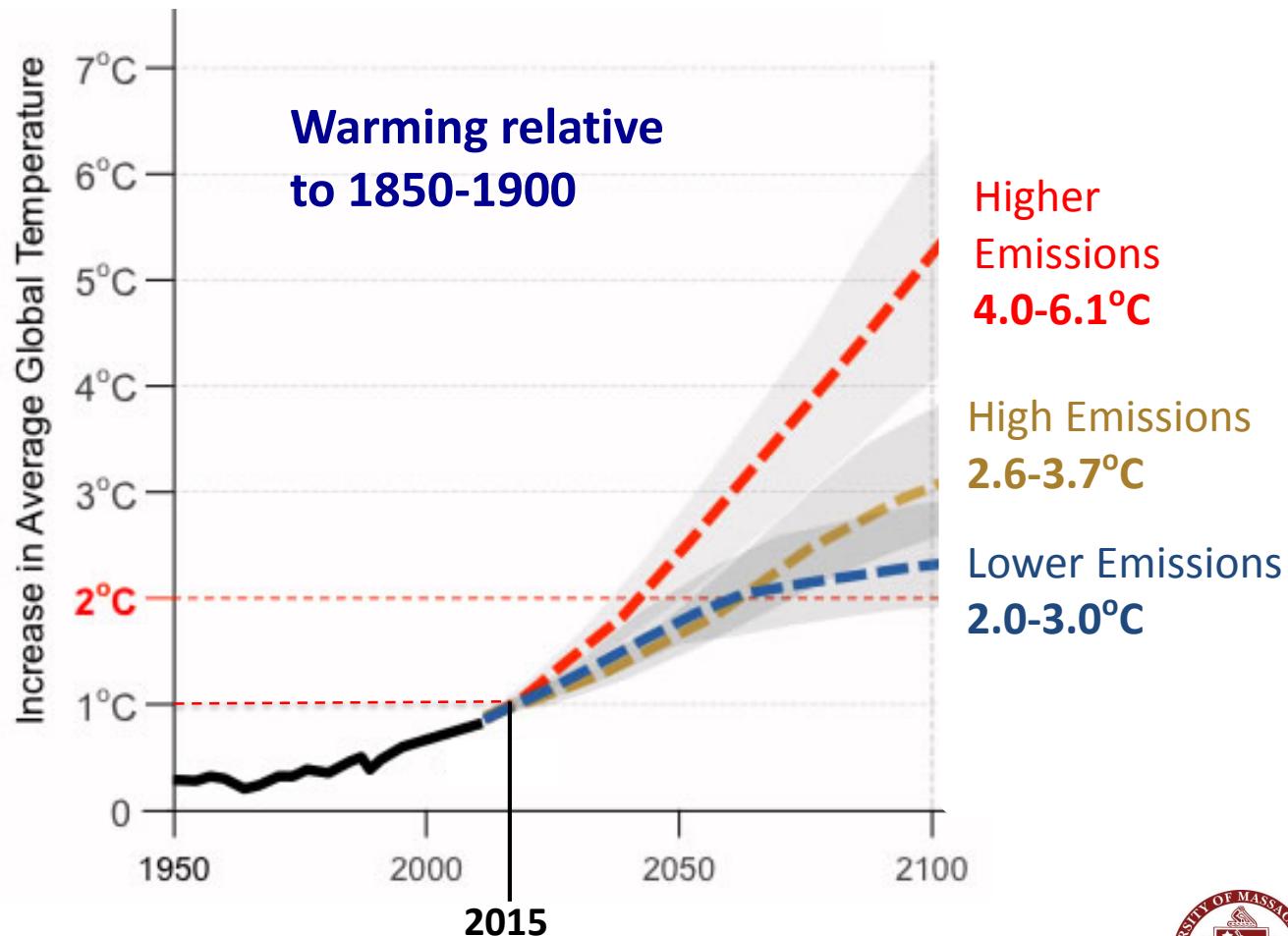
“To prevent dangerous interference with the climate system, the scientific view is that the increase in global temperature should be below 2°C [relative to pre-industrial levels]”.

- United Nations Framework on Climate Change, 2010

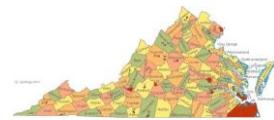
How will global temperatures change in the future?

The global average temperature has already increased by about 1°C (1.8°F) relative to pre-industrial levels.

Current CO₂ emissions are tracking the 'higher emissions' scenario; unless emissions are reduced, the 2°C threshold will be crossed before 2050.

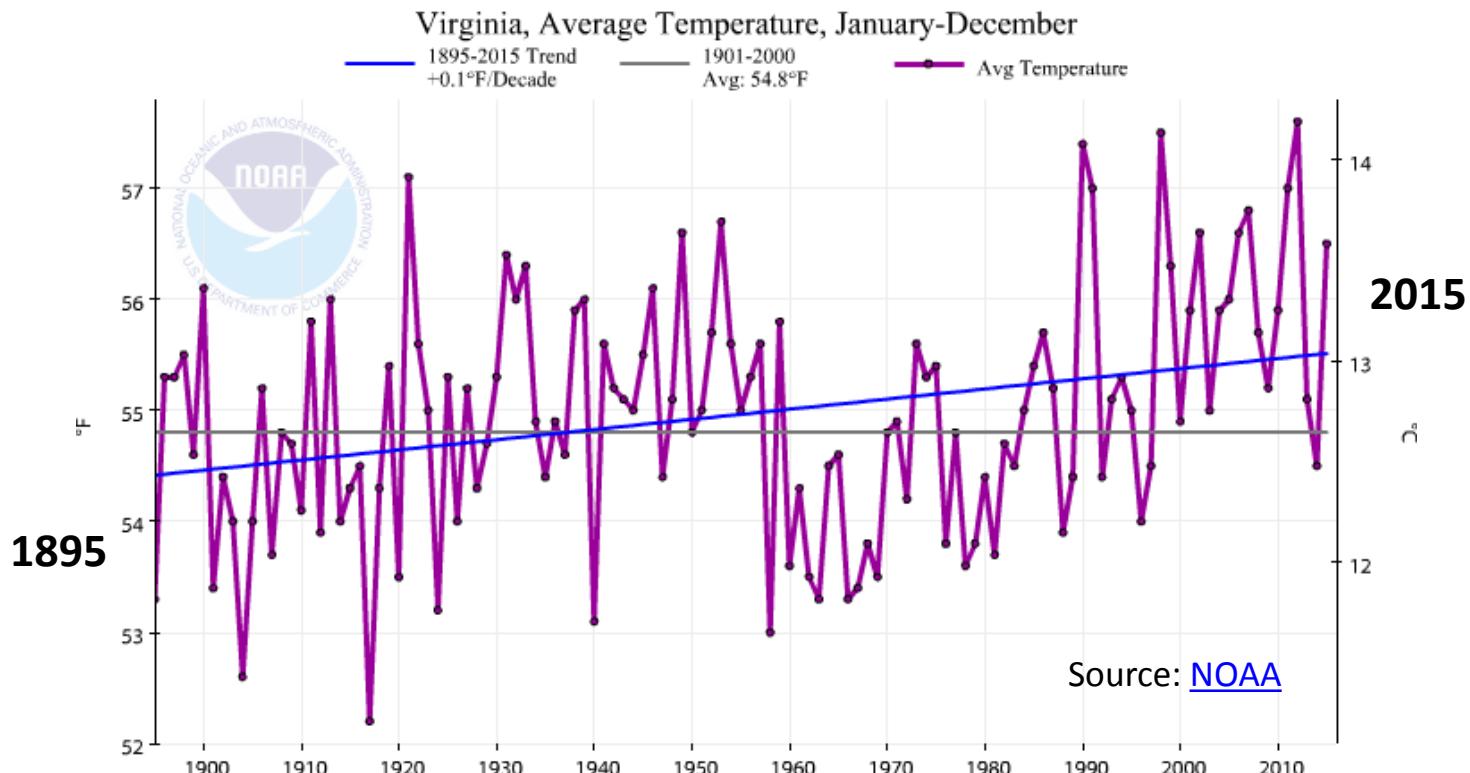


Warming in Virginia



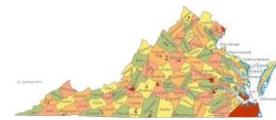
OBSERVATIONS

The annual mean temperature in VA has increased by about 1.1°F (0.6°C) since 1895.



In 17 out of the last 18 years, the annual mean temperature in VA exceeded the 20th-century average.

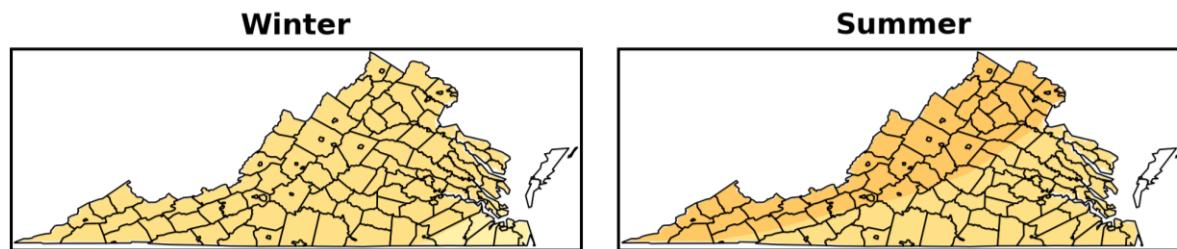
Warming in Virginia



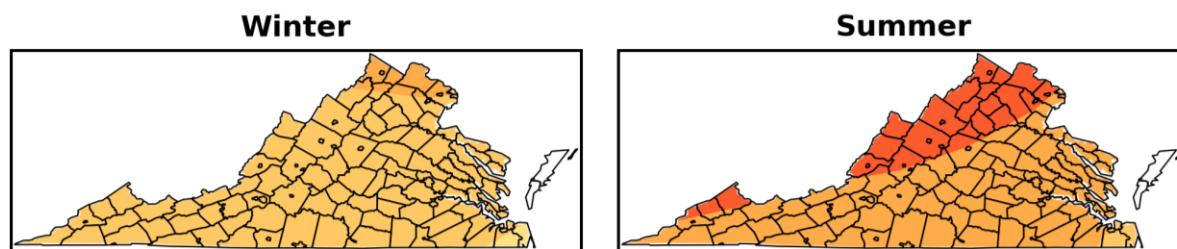
PROJECTIONS

In the next 50-60 years, when global warming crosses the 2°C threshold, VA average summer and winter temperatures are projected to increase by over 4°F (2.2°C) relative to pre-industrial levels.

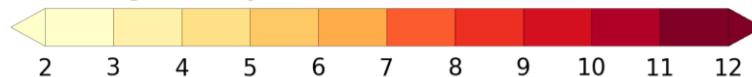
Lower
Emissions



Higher
Emissions



Warming in °F by 2070 relative to 1961-1990 mean



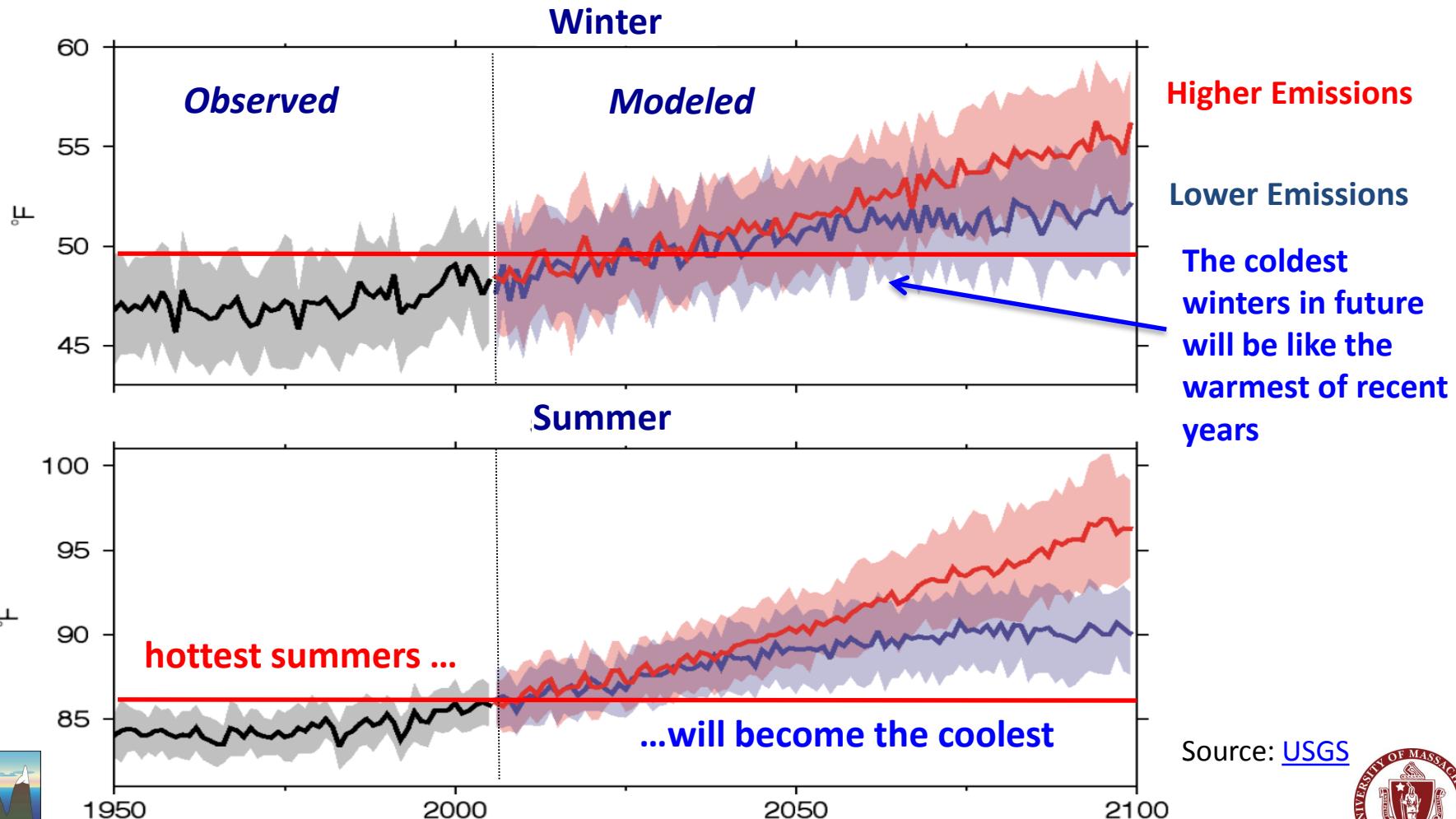
Source: produced by
CSRC, UMass Amherst

Warming in Virginia



PROJECTIONS

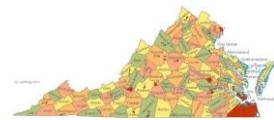
How warm will Winter and Summer temperatures become?



Source: [USGS](#)

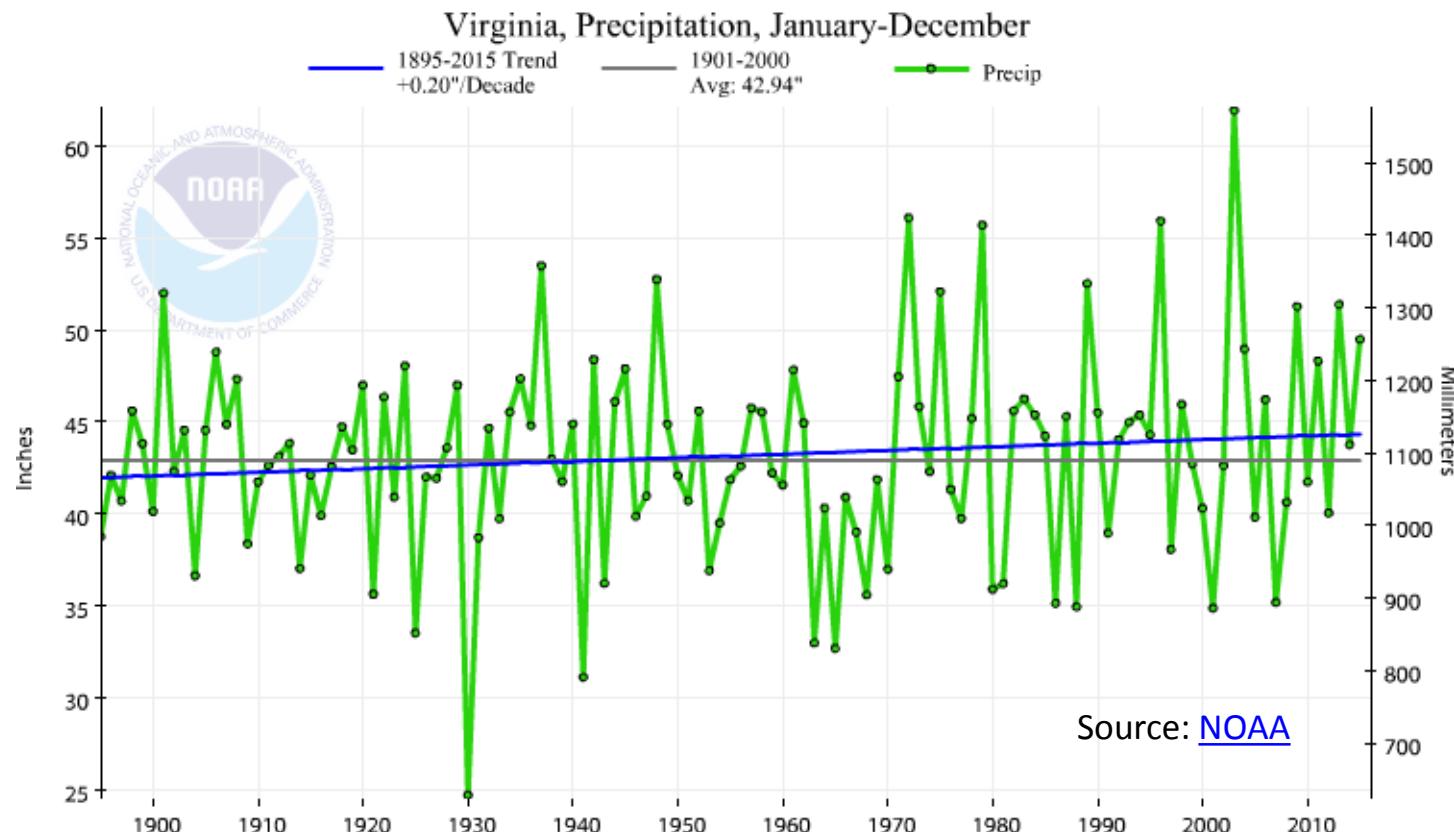


Rain and Snow in Virginia

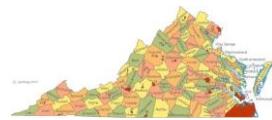


OBSERVATIONS

Annual total precipitation (rain + snow) has increased over the last few decades.

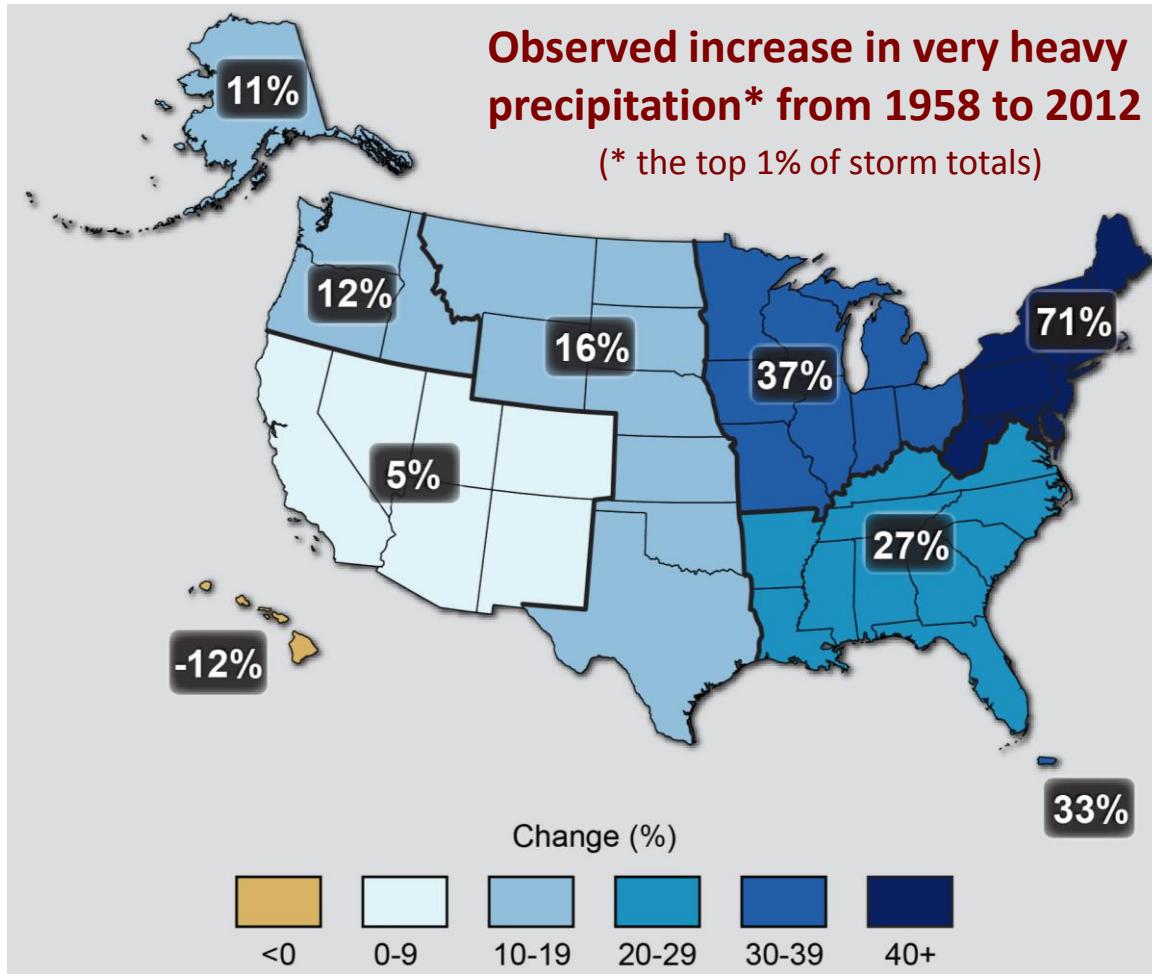


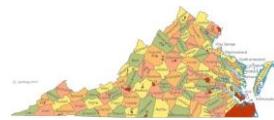
Very Heavy Rainfall



OBSERVATIONS

The amount of precipitation falling during intense multi-day events has increased in the Northeast and Mid-Atlantic US.





Flash Flooding

**Flash flooding submerges
cars in Reston, VA, 2011**



Source: Karen Goff/ Patch

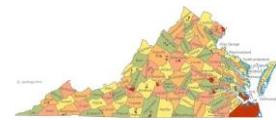
**Flash floods and heavy rains submerge
streets in Alexandria, VA, 2015**



Source: RedBrickTown.com

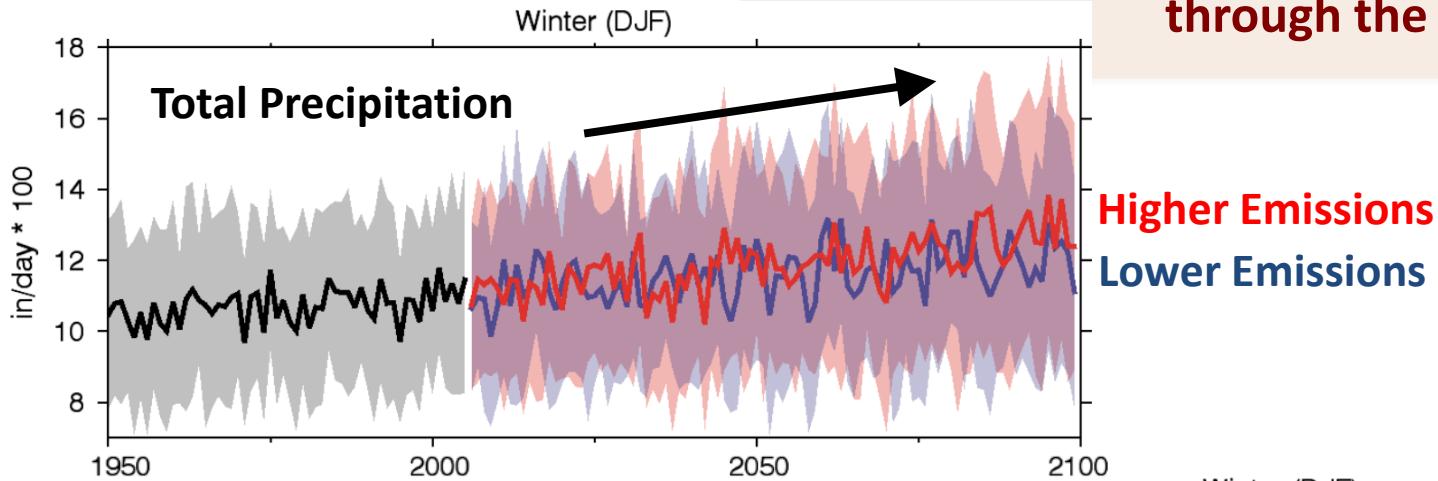


Rain and Snow in Virginia

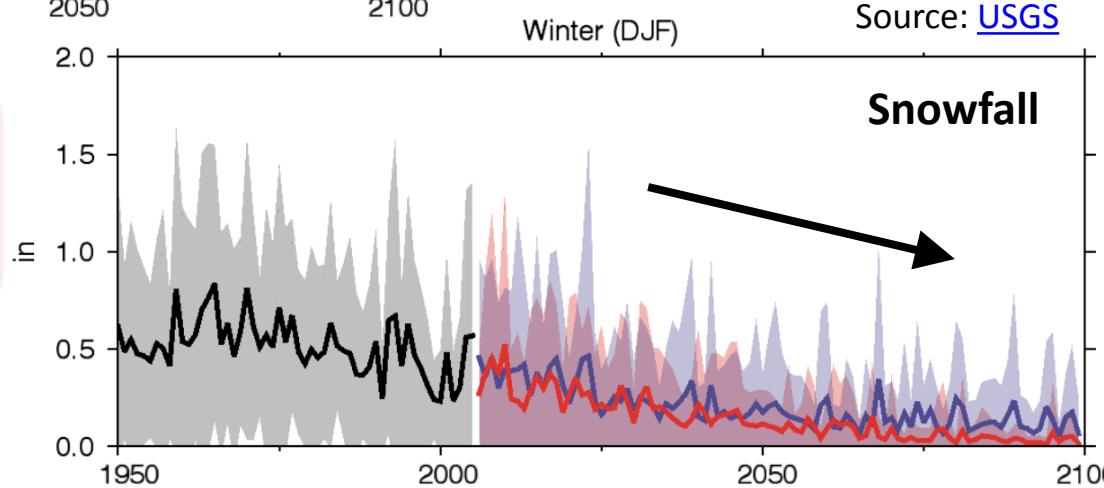


PROJECTIONS

Winter precipitation is projected to increase through the 21st century.



Due to increasing temperatures, there will be more rain and less snow.



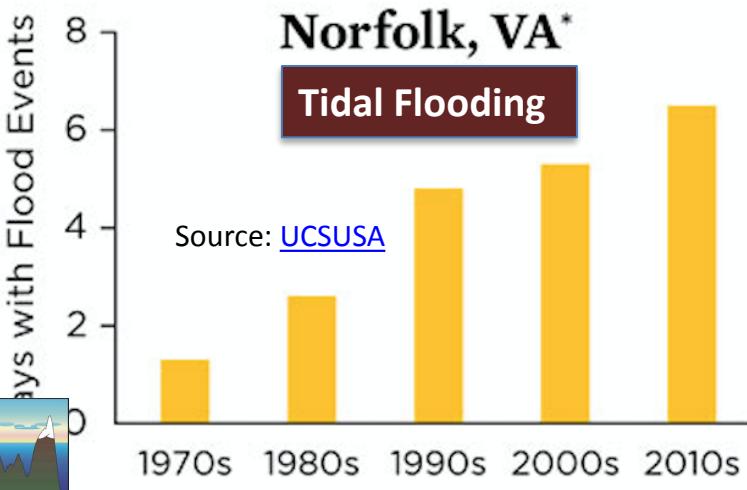
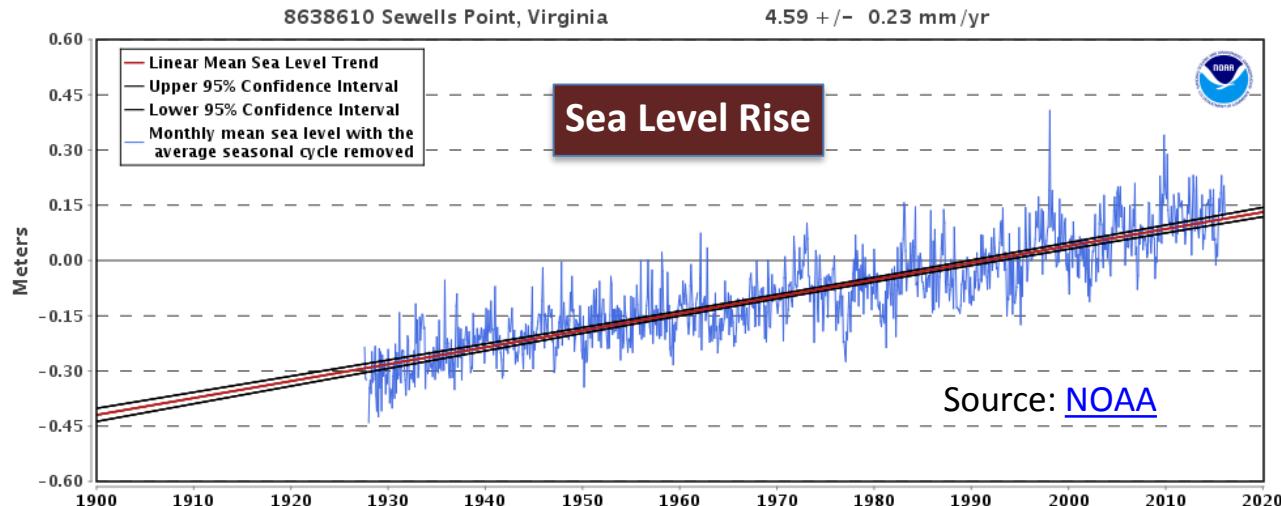
Projected changes in rainfall in summer are uncertain.

Sea Level Rise



OBSERVATIONS

Over the last century, sea level has risen by about 1.2 feet around Norfolk, VA.

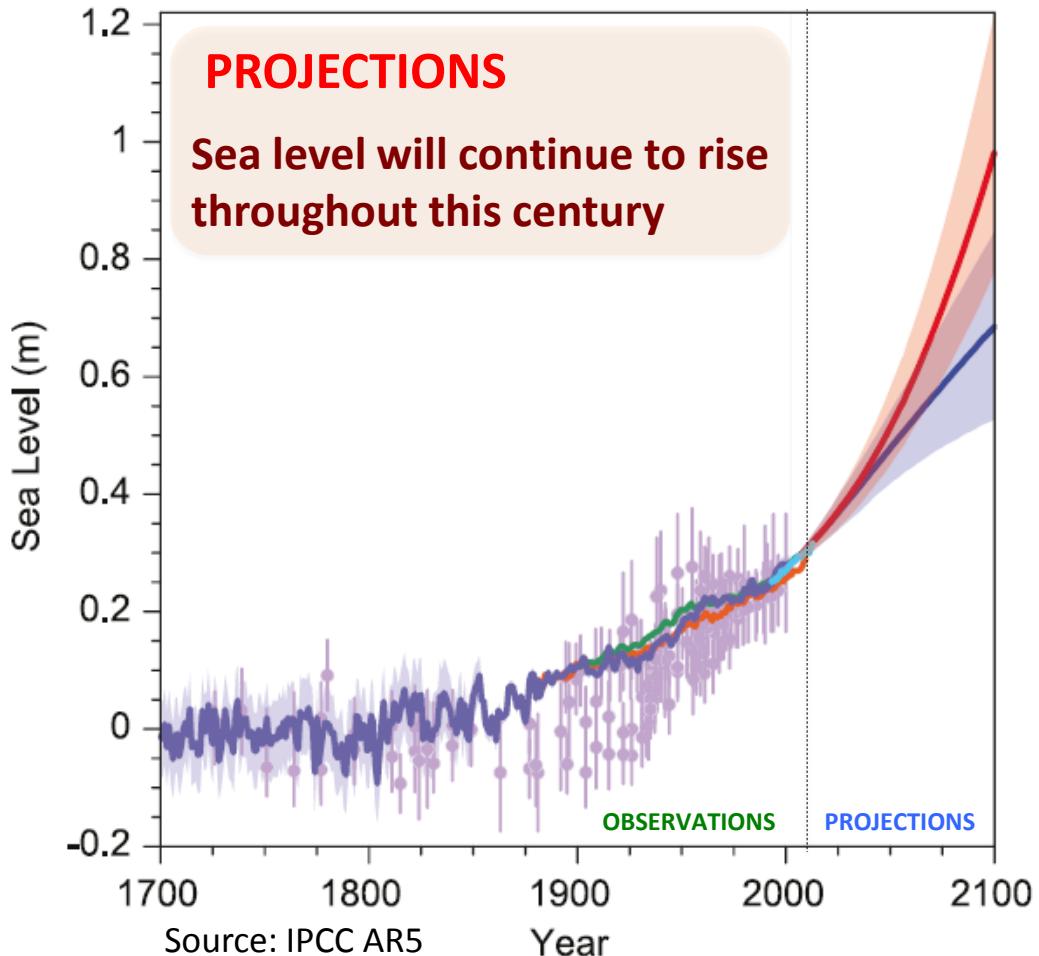


Seemingly small increases in sea level can have large impacts along the coast due to storm surges and exceptionally high tides.

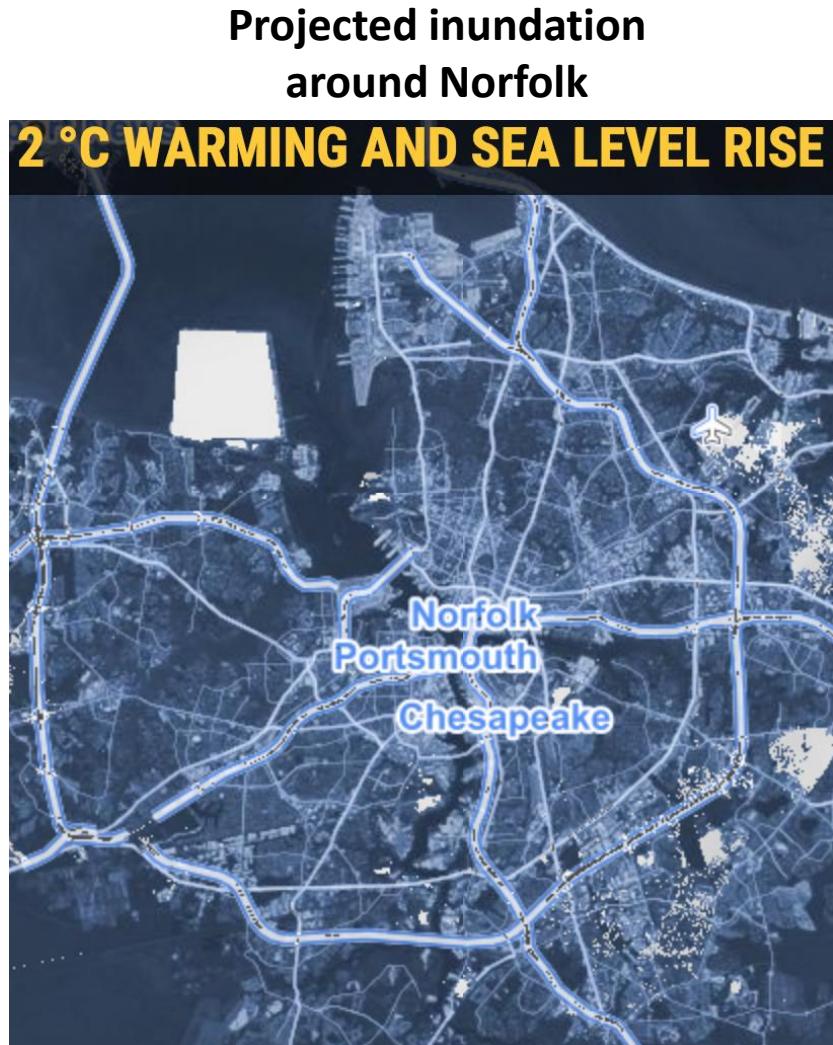
Communities in Norfolk are now seeing more days with tidal flooding.



Sea Level Rise



Recent studies indicate that we are likely to experience more than 1m (3.3ft) of sea level rise by 2100

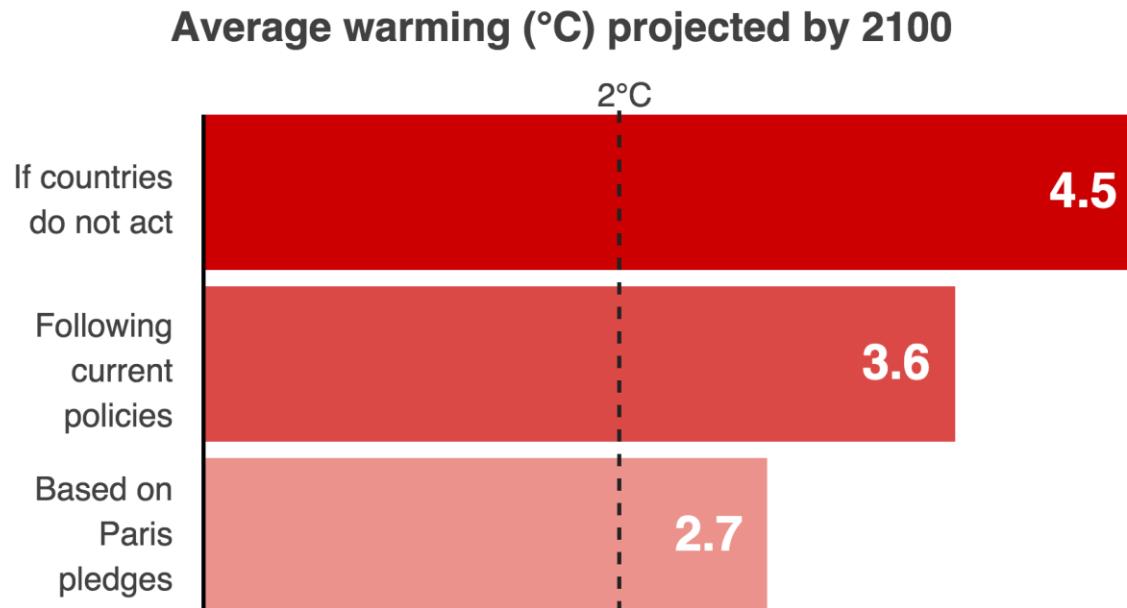


Source: [Climate Central](#)

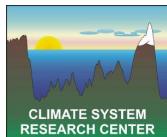


Climate Summit in Paris [COP21]

An immediate action on local and global scales is required to limit the global mean temperature increase to 2°C (3.6°F).



Source: Climate Action Tracker, data compiled by Climate Analytics, ECOFYS, New Climate Institute and Potsdam Institute for Climate Impact Research.



CLIMATE SYSTEM
RESEARCH CENTER



Strategies and Actions

National Climate Assessment:

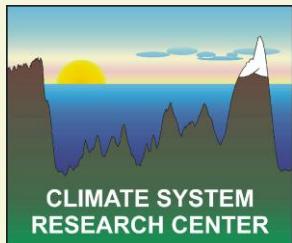
The National Climate Assessment summarizes the impacts of climate change in the US, now and in the future.

Integrating Climate Change into State Wildlife Action Plan (SWAP):

The goals of SWAP are to generate proactive, comprehensive wildlife conservation strategies that assess the health, challenges, and potential actions each State would like to accomplish during the coming decade and beyond.

Climate and Health Assessment:

This scientific assessment examines how climate change is already affecting human health in the US and the changes that may occur in the future.



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