



NOAA's State Summaries for the National Climate Assessment

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State Climate Summaries

- 50 climate summaries focusing on aspects of NOAA's mission
- Derivative of the Third National Climate Assessment
- Collaborative in nature:
 - Written by NCA Technical Support Unit
 - Input from RCCs and State Climatologists
 - Various reviewers (both internal and external)
- Presented in both PDF and web format



U.S. National
Climate
Assessment

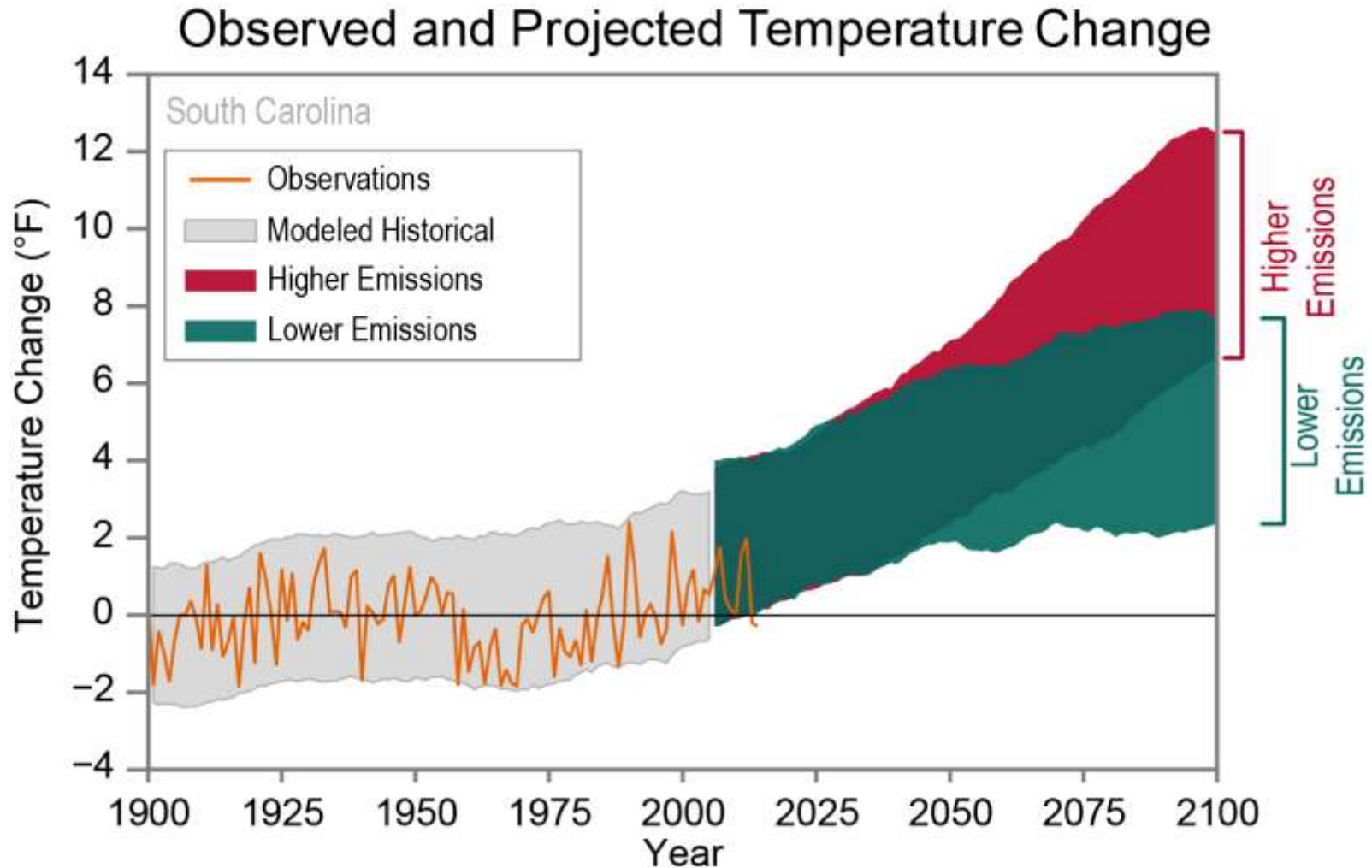
A Tool for Decision Makers

- Targeted for decision makers and informed non-scientists
- Temperature and precipitation projections are presented in order to provide a context for the assessment of future impacts
- Web component will allow users to explore data, methods, analyses, and climate change information specific to their state
- Potential exists for continued updates

Content

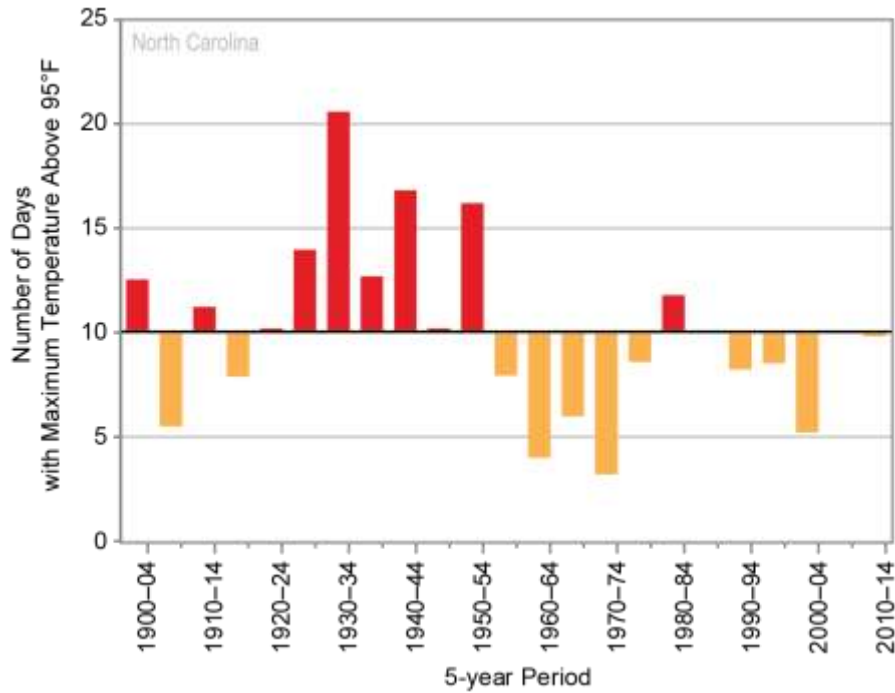
- Each state summary includes:
 - Geographical and climatological overview
 - Description of historical physical climate and coastal issues, noteworthy past events
 - Temperature and precipitation projections
 - Anticipated impacts
- Data are from NOAA's Climate Divisional Dataset (nClimDiv) and CMIP5

Example Figures: Temperature Trends

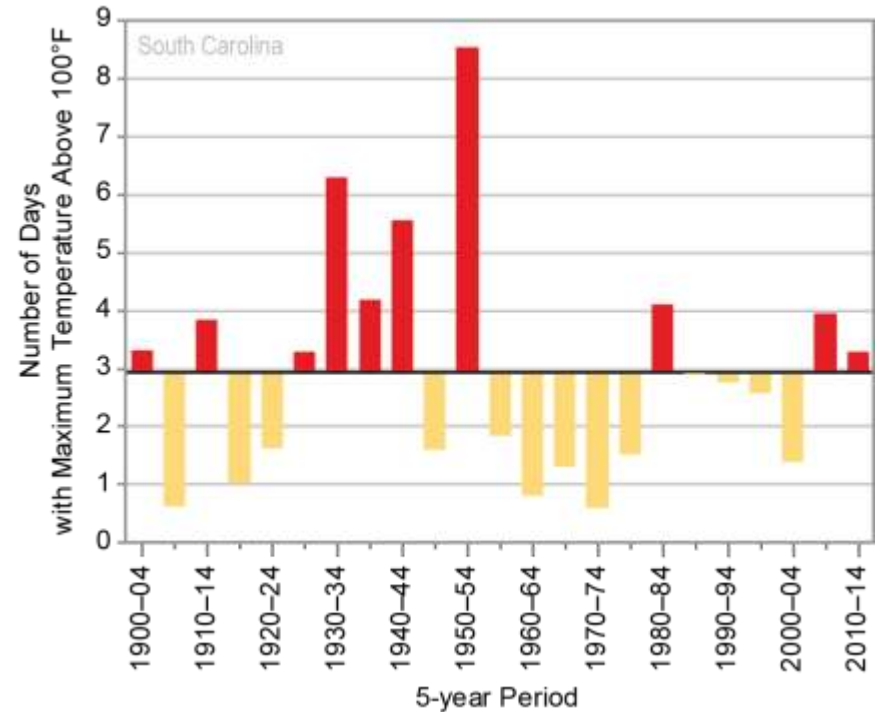


Example Figures: Hot Days

Observed Number of Very Hot Days

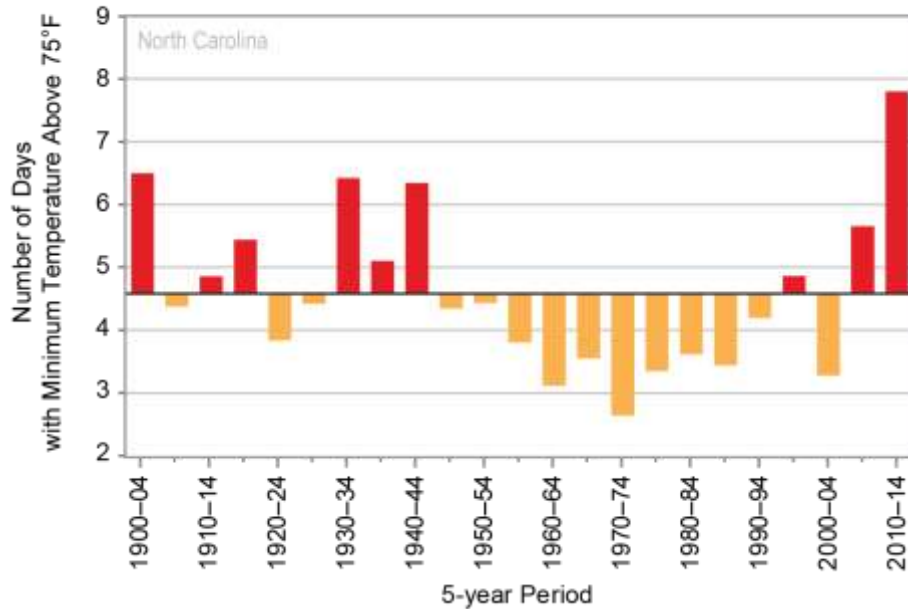


Observed Number of Extremely Hot Days

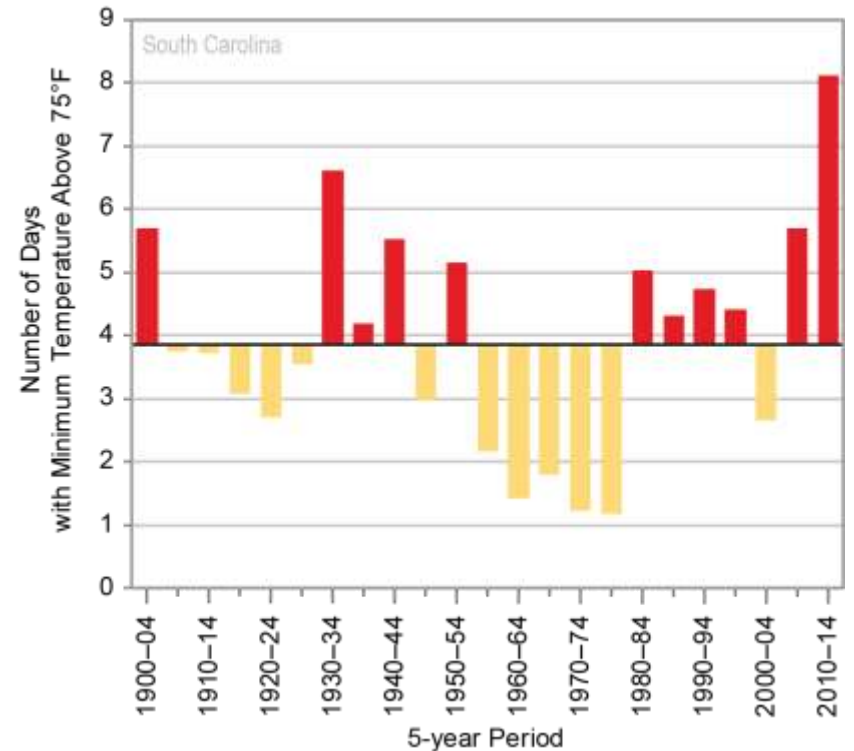


Example Figures: Warm Nights

Observed Number of Very Warm Nights

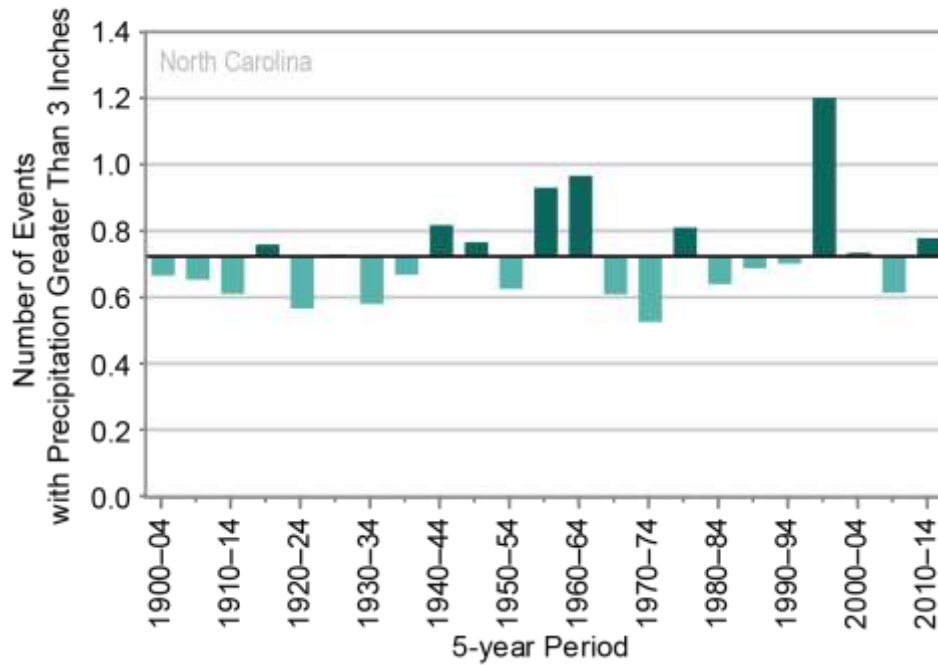


Observed Number of Very Warm Nights

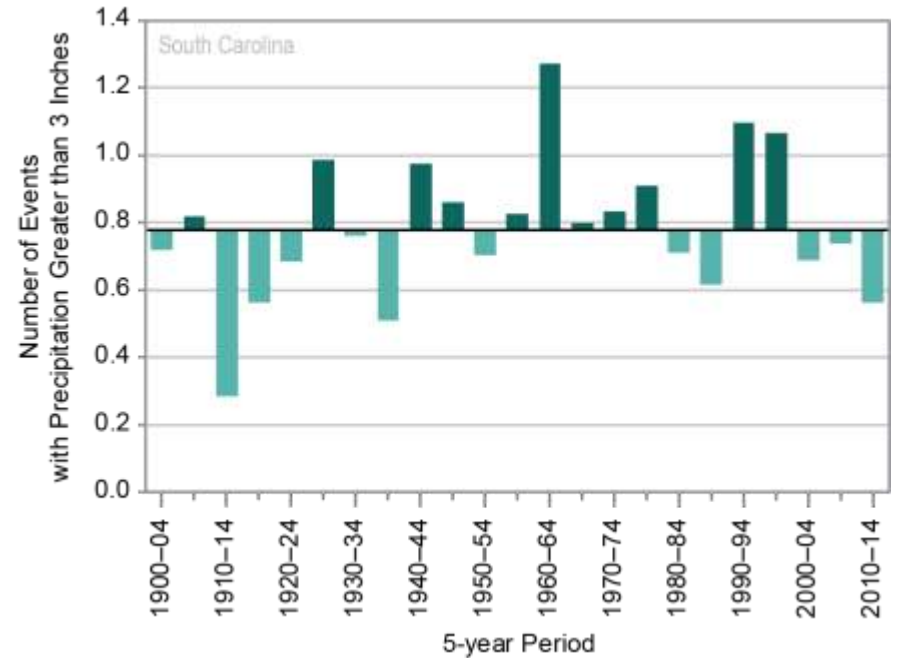


Example Figures: Extreme Precipitation

Observed Number of Extreme Precipitation Events

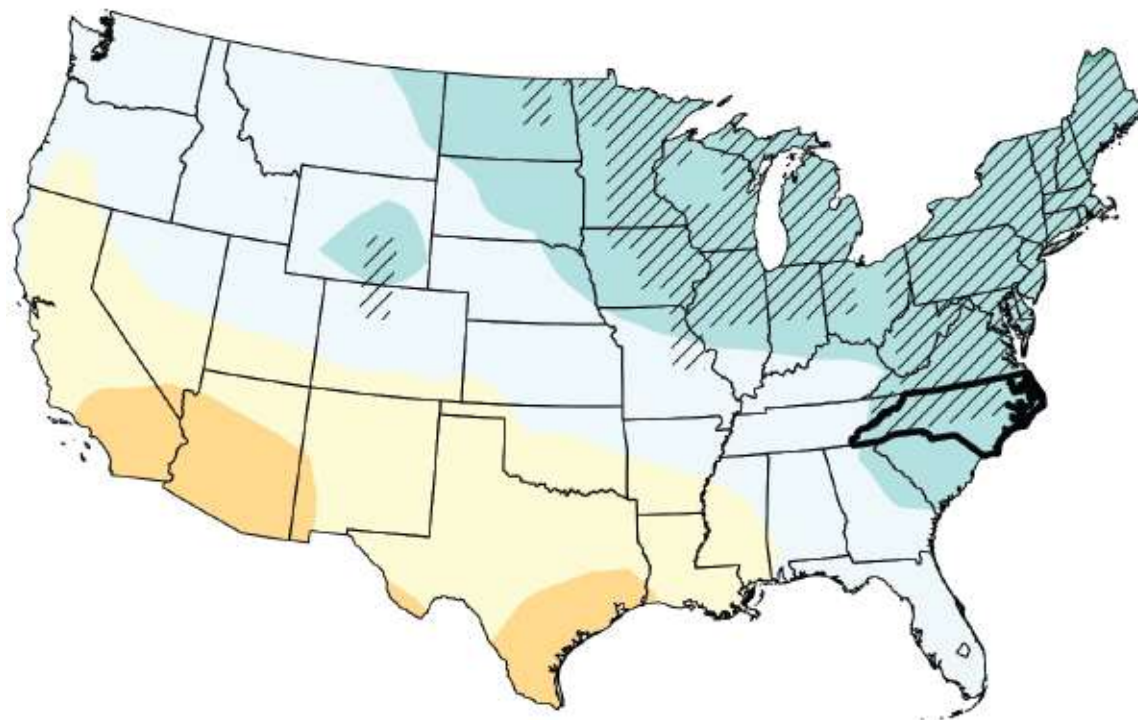


Observed Number of Extreme Precipitation Events

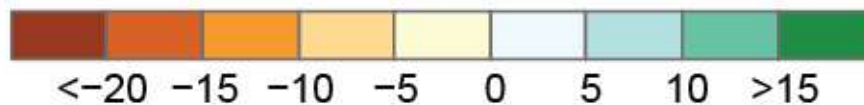


Example Figures: Precipitation Projections

Projected Change in Annual Precipitation

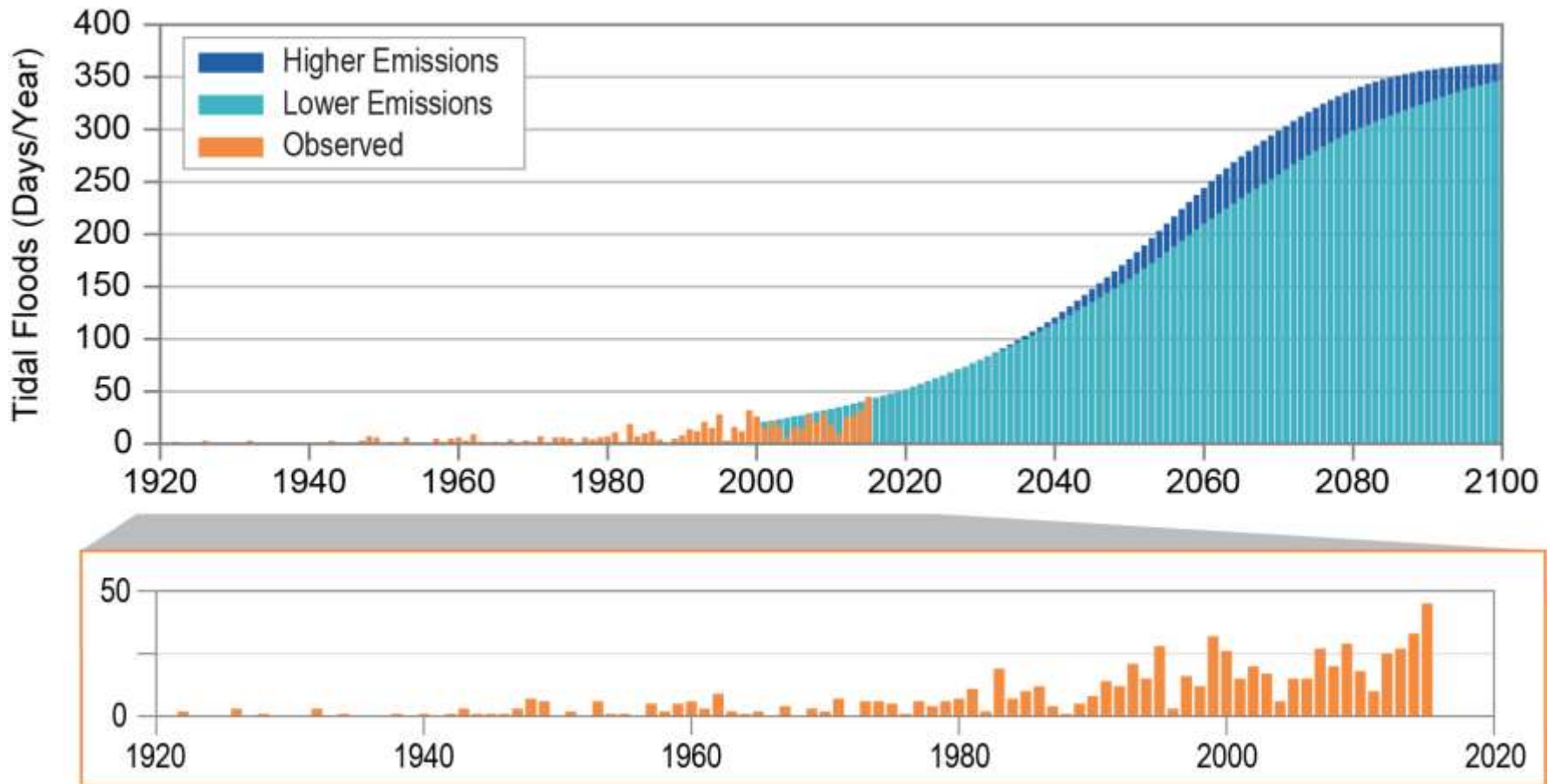


Change in Annual Precipitation (%)



Example Figures: Tidal Floods

Observed and Projected Annual Number of Tidal Floods for Charleston, SC



Products: PDF Documents

NOAA's State Summary for the National Climate Assessment

NEW MEXICO

KEY MESSAGES

Droughts are a serious threat in this water-scarce state. The potential for more frequent and extreme droughts in the future will pose a major challenge to New Mexico's environmental, agricultural, and human systems.

In recent decades, both the number of hot days and warm nights has increased, and the upward trend in temperature is projected to continue in the future.

The summer monsoon rainfall, which provides important water for the agricultural industry, varies greatly from year to year and future trends in such precipitation are highly uncertain.

Observed and Projected Temperature Change

Figure 1. Observed and projected change in mean annual temperature in New Mexico. Observed data are from 1980 to 2014. Projected changes for 2015 to 2050 are from global climate models. There is a low chance that the temperature will remain about the same at the beginning of the 21st century. Observed changes are sometimes opposite of those in other areas. Future warming is expected through the middle of the 21st century with smaller changes thereafter. The temperature future and greater warming is expected after a high emissions future. Under a low emissions scenario, some models for Century-based projections are not too much warmer than observations. Source: IPCC Working Group II.

New Mexico encompasses a large area of desert environments, including the highlands, and deserts. Average monthly temperatures for the state are among the highest in the nation, and average annual precipitation is among the lowest. Farms in the highlands and lowlands frequently require extra days of irrigation. Much of the state is characterized as arid to semi-arid (large areas) and the west receiving less than 15 inches of precipitation annually.

The last decade has been a warmest on record for the state (Figure 1), with increasing trends in both hot days and warm nights. Over the past two decades, the state has seen large increases in the number of extremely hot days (number of days with maximum temperatures above 100°F) (Figure 2). A similar trend is apparent in the number of warm nights (days with minimum temperature above 70°F) which have increased since the mid-1970s, and in winter temperatures, as the number of very cold nights (days with minimum temperatures below 0°F) was below average during the period of 2000-2004 (Figures 3 and 4).

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Number of Warm Nights

Figure 2. The number of extremely hot days has increased since the mid-1970s. The higher number occurred during the most recent five-year period (2010-2014) with an average of one extreme hot day occurring 17 each year annually. Source: NOAA-NMCA NCEP.

Precipitation is highly variable from year to year. Statewide annual precipitation has ranged from a high of 36.57 inches in 1941 to a low of 6.18 inches in 1936. The wettest 5-yr period was 1940-1944 and the driest 5-yr period was 1999-2004 (Figure 5). The most recent period (2010-2014) was the second driest. Multi-year periods of high and low precipitation have resulted in very large swings in reservoir supplies for agriculture. Levels in the Elephant Butte Reservoir were high from the 1920s-1940s before declining to low levels until the 1980s. High flows remained throughout the 1980s and 1990s, falling again in the first part of the 21st century (Figure 6). The latest multi-year drought has resulted in record low levels of water in the reservoir.

In many areas of the United States, New Mexico has not experienced an upward trend in the frequency of extreme precipitation events in the last decade (Figure 7). The number of heavy rain events (more than 1 inch of precipitation) has been variable over the past three decades. Heavy rain events began in the 2000s, the occurrence of these events has been near to below average.

An important feature of New Mexico's summer climate is the North American Monsoon, which carries large amounts of rain to the state during the months of July and August (Figure 8). In some regions of the state, monsoon rainfall accounts for a large portion of annual precipitation.

Number of Very Cold Nights

Figure 3. Since 1960, the number of extremely hot days has increased significantly in New Mexico. The higher number occurred during the most recent five-year period (2010-2014) with an average of one extreme hot day occurring 17 each year annually. Source: NOAA-NMCA NCEP.

Observed Annual Precipitation

Figure 4. The number of very cold nights has decreased since the mid-1970s. The lower number occurred during the most recent five-year period (2010-2014) with an average of one very cold night occurring 17 each year annually. Source: NOAA-NMCA NCEP.

Observed Monsoon Season Precipitation

Figure 5. The number of heavy rain events (more than 1 inch of precipitation) has been variable over the past three decades. Heavy rain events began in the 2000s, the occurrence of these events has been near to below average.

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Storage Levels in the Elephant Butte Reservoir

Figure 6. The monthly low levels of the average water levels in the Elephant Butte Reservoir. River levels in the Elephant Butte Reservoir have varied widely over the past 30 years. The lowest levels were seen during the 1990-1994 drought. Following the drought during the 1990s and 1980s, a moderate recovery in the early 21st century is apparent. Drought conditions in recent years have resulted in a decline in the reservoir. Source: NOAA-NMCA NCEP.

Storage and play an important role in the agricultural economy. In 2006, extremely low levels of water in the reservoir resulted in a record low level of water in the central and western parts of the state. In the summer of 2007, the reservoir was nearly empty. The central and western parts of the state are at a high risk of drought. The reservoir is projected to be empty by the end of the year. The reservoir is projected to be empty by the end of the year. The reservoir is projected to be empty by the end of the year.

Changes in Spring Precipitation

Figure 7. The number of extreme precipitation events (more than 1 inch of precipitation) has been variable over the past three decades. Heavy rain events began in the 2000s, the occurrence of these events has been near to below average.

New Mexico Palmer Drought Severity Index

Figure 8. The number of extreme precipitation events (more than 1 inch of precipitation) has been variable over the past three decades. Heavy rain events began in the 2000s, the occurrence of these events has been near to below average.

Products: Web Component

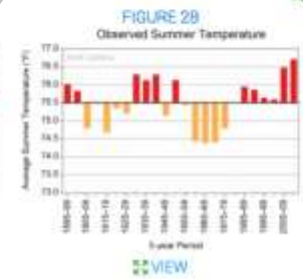
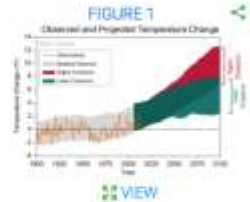
- Document content
- Supplemental online material
- Metadata
- Data and image files

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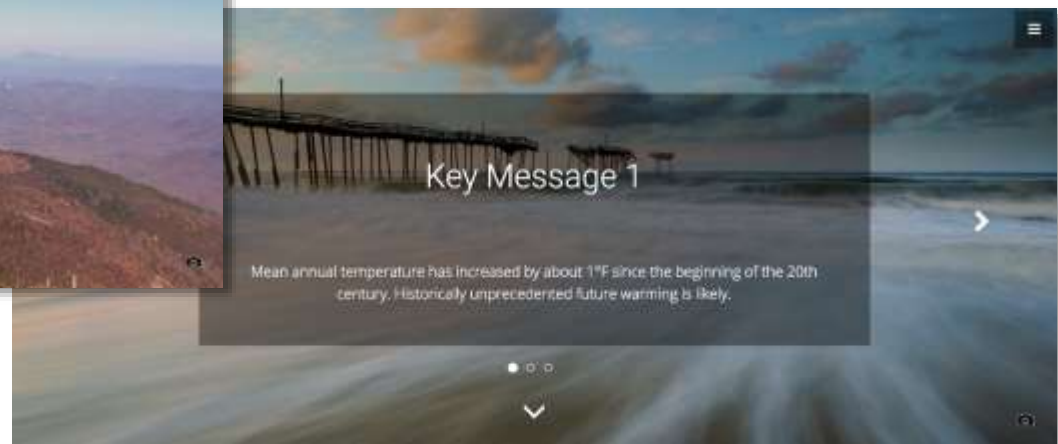
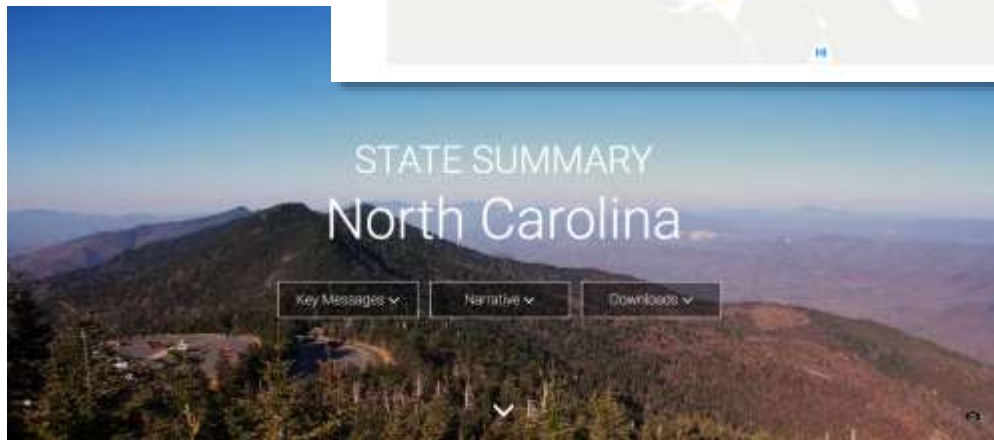
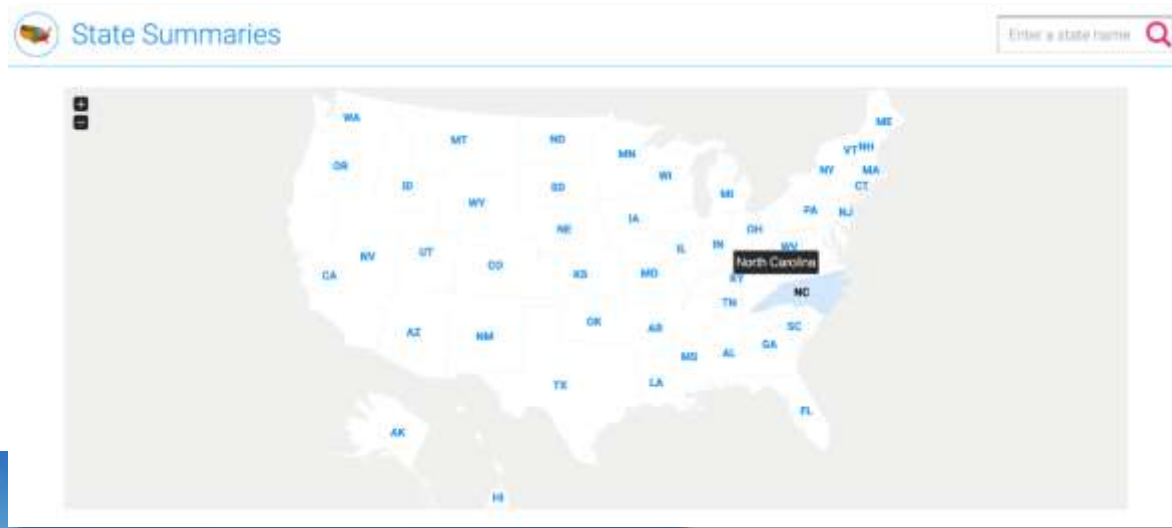
North Carolina

North Carolina has a humid climate with very warm summers and moderately cold winters. The climate exhibits substantial regional variation due to the state's diverse geographic elements, which include the Appalachian Mountains in the west, the Piedmont Plateau in the central region, and the Coastal Plain to the east. Elevations in the state range from sea level along the Atlantic Coast to over 6000 feet in the western mountains (the largest elevation range of any state east of the Mississippi River). Average annual temperatures in the state vary more than 20°F from the highest elevations to the lowest points on the coast. Winter temperatures are moderated somewhat by the Appalachian Mountains which partially block cold air coming from the Midwest.

Overall warming has been less in North Carolina than in northern and western portions of the United States. This is part of a larger region of the southeastern U.S., which has not exhibited an overall warming trend in surface temperatures over the 20th century. During the first half of the 20th century, many years were greater than the long-term average, followed by a cool period in the 1960s and 1970s (Figures 1 and 2). Since that time, temperatures have steadily increased, with the most recent decade (2005-2014) being one of the warmest on record. Although North Carolina has not experienced an increase in the frequency of very hot days (days with maximum temperature greater than 95°F), the most recent 5-year period (2010-2014) has the largest number of very warm nights (days with minimum temperature greater than 75°F) in the historical record (Figures 3a and 3b).



Products: Web Component



Ask the Audience

- Do you already feel like you have sufficient climate knowledge and information? If not, what are you missing?
- Do you utilize data at the state/local level?
- Is it useful for you to be able to download specific content: images, data, metadata, code?
- What data formats do you prefer (ASCII, CSV, netCDF etc.)?