



Summary of Weather and Climate Monitoring in Southeast Coast Network Parks, 2010

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The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado publishes a range of reports that address natural resource topics of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

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All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

This report received informal peer review by subject-matter experts who were not directly involved in the collection, analysis, or reporting of the data.

Data in this report were collected and analyzed using methods based on established, peer-reviewed protocols and were analyzed and interpreted within the guidelines of the protocols.

Views, statements, findings, conclusions, recommendations, and data in this report do not necessarily reflect views and policies of the National Park Service, U.S. Department of the Interior. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Government.

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List of Terms

CAHA – Cape Hatteras National Seashore
CALO – Cape Lookout National Seashore
CANA – Canaveral National Seashore
CASA – Castillo de San Marcos National Monument
CHAT – Chattahoochee River National Recreation Area
CHPI – Charles Pinckney National Historic Site
CONG – Congaree National Park
COOP – Cooperative Observer Program
CRN – Climate Reference Network
CUIS – Cumberland Island National Seashore
FOCA – Fort Caroline National Memorial
FOFR – Fort Frederica National Monument
FOMA – Fort Matanzas National Monument
FOPU – Fort Pulaski National Monument
FORA – Fort Raleigh National Historic Site
FOSU – Fort Sumter National Monument
HOBE – Horseshoe Bend National Military Park
KEMO – Kennesaw Mountain National Battlefield Park
MOCR – Moores Creek National Battlefield
NCDC – National Climatic Data Center
NOAA – National Oceanic and Atmospheric Administration
NPS – National Park Service
OCMU – Ocmulgee National Monument
RAWS – Remote Automated Weather Station Network
SECN – Southeast Coast Network
TIMU – Timucuan Ecological and Historic Preserve
WRBR – Wright Brothers National Memorial

Summary and Key Findings

Weather and climate are key drivers for ecosystem patterns and processes, affecting both biotic and abiotic components alike. Access to continuous weather monitoring data is a key factor in separating the effects of climate from the effects of human-induced disturbance on other vital signs (e.g., plant and animal communities and population dynamics). As an aide to the use and dissemination of these data, the Southeast Coast Network (SECN) has compiled and analyzed data from existing sources to:

- Determine status, trends, and variability of precipitation, temperature and relative humidity over time for SECN park units.
- Determine the status, trends, and variability of derived weather data (such as frost days and number of days temperature more than 90°F) for SECN park units.

Summary data are presented in annual data reports published by the SECN and are available online in the National Park Service's NRInfo portal (<http://nrinfo.nps.gov>) and from the SECN website (<http://science.nature.nps.gov/im/units/secn/reports>). The summary information presented below all pertains to 2010 data.

- At the stations relevant to SECN Parks, mean annual temperature ranged from 59.3 – 71°F (15.2 – 21.7°C), with the coolest temperatures occurring at northern Georgia stations and the warmest temperatures occurring in Florida.
- Winter temperatures are typically colder at stations relevant to inland parks versus coastal parks. For example, January minimum temperatures were colder for stations relevant to CHAT, CONG, HOBE, KEMO, MOCR and OCMU, ranging from 25.7 to 31.4°F (-3.5 – -0.33°C), while January minimum temperatures at stations relevant to coastal parks ranged from 32.8 to 44.6°F (0.44 – 7°C).
- The growing season (defined as the number of freeze-free days) was fairly uniform throughout the Network at coastal weather stations and more variable at inland stations.
- The general temperature pattern (average monthly maximum and minimum temperature) at weather stations relevant to SECN parks shows that winter months were typically colder and the rest of the year was typically warmer during 2010 when compared to the long term (1981 – 2010) average. However, these departures from normal were not outside the range of variation for the long-term average.
- Precipitation in the SECN was fairly uniform throughout the Network but tended to be higher at stations in the northern portions (NC and northern SC) of the Network.
- Fourteen out of 26 weather stations received the highest rainfall in the months of August and/or September during 2010.
- Eleven out of 26 weather stations recorded the lowest rainfall during October.

- All weather stations, except for Cape Hatteras Airport and Charleston International Airport, experienced lower than normal (long-term average from 1981–2010) total annual precipitation.
- Total annual precipitation across the southeastern United States was rated below normal (long-term average from 1981–2010), in contrast to much of the rest of the contiguous United States which received above normal precipitation for the year.
- Hurricane Earl affected the Outer Banks of North Carolina on September 2–3, 2010 with strong winds and heavy rain. This was the only hurricane or tropical storm to significantly affect the counties relevant to SECN parks during 2010.

Introduction

Weather and climate are key drivers for ecosystem patterns and processes – affecting both biotic and abiotic components alike. Understanding the role of climate as a forcing agent for other vital signs (e.g., plant and animal communities) is a critical component of Southeast Coast Network (SECN) monitoring. Observed changes in vital signs may be in response to multiple factors, such as anthropogenic stressors or variation in climatic conditions. Continuous weather monitoring is a key factor in separating the effects of climate from the effects of human-induced disturbance on plant and animal community and population dynamics. Therefore, it is essential that park units within the SECN have an effective climate-monitoring system to track potential changes in climate over time and to aid in management decisions relating to these changes (Davey et al. 2007).

The purpose of this report is to compile and analyze 2010 weather data relevant to SECN parks in order to:

- Determine status, trends, and variability of precipitation, temperature and relative humidity over time
- Determine the status, trends, and variability of derived weather data (such as frost days and number of days temperature more than 90°F) for SECN park units.

In addition, data in this report may be used to help put other monitoring data into context. For example, droughts influence water quality and late hard freezes could affect amphibian community data, etc. Finally, this report summarizes 2010 weather data within a regional context and also puts that data into perspective against the long-term climatic record.

Climate of the Southeastern United States

The majority of parks in the SECN are located within the Coastal Plain and Piedmont regions of the southeastern United States. Weather and climate at many park units in the SECN are influenced by the proximity of the Atlantic Ocean and the Gulf of Mexico, as well as the southern end of the Appalachian Mountains. The climate of the southeastern United States ranges from humid and warm-temperate to subtropical, exhibiting variation due to changes in latitude and elevation (White et al. 1998). Other drivers of the climate of the southeastern United States include maritime influences in the south and east as well as continental influences in the north and west (White et al. 1998). Additionally, the El Niño Southern Oscillation typically brings lower temperatures in the spring and winter as well as increased winter precipitation and fewer tropical storms versus La Niña years which typically bring droughts (Davey et al. 2007).

Temperature variation shows greater variability along a latitudinal gradient during the winter months than during the summer months (Davey et al. 2007). The growing season (the period of freeze-free days each year), ranges from 365 days in the Florida Keys to 150 days in northern Virginia (White et al. 1998) and in areas of higher elevations. Precipitation occurs throughout the year, but is generally lower in the fall and higher in the summer due to thunderstorm activity (White et al. 1998). Total annual precipitation averages 43–55 inches (110–140 cm) and can be higher in areas of high elevation (>5500 feet or 1700 meters) or in areas along the Gulf of Mexico and in south Florida (White et al. 1998).

An additional factor bringing heavy rain to the region is the occurrence of hurricanes. The number of direct hurricane hits affecting the states of the Southeast Coast Network during the period of 1900-1996 was: North Carolina (25), South Carolina (14), Georgia (5), Alabama (10) and Florida (57) (<http://www.nhc.noaa.gov/paststate.html> accessed on 3 May, 2011). Data analysis of the incidence of hurricanes making landfall along the east coast of the United States (1900 – 1998), indicates that the frequency of hurricanes is beginning to increase from the low experienced in the 1970s (Smith 1999). Other studies indicate a multidecadal pattern to hurricane activity, where the recent low in hurricane activity occurred in 1980 and the estimated peak will occur around 2010 (Chylek and Lesins 2008).

2010 Climate – Global, National and Regional Trends

2010 global land and ocean surface temperatures tied with 2005 as the warmest period on record measuring 1.12°F (0.62°C) above the 20th century average of 57.0°F (13.9°C) and 2010 global land and ocean surface temperatures in the Northern Hemisphere were the warmest on record, at 1.31°F (0.73°C) above the 20th century average (NOAA 2010b). In addition, 2010 global precipitation was above the 1961-1990 average, ranking as the wettest on record since 1900 (NOAA 2010b). Similar to the 2010 global average conditions, the contiguous United States (CONUS) 2010 average annual temperature of 53.8°F (12.1°C) was 1.0°F (0.6°C) above normal and was the 23rd warmest year on record (NOAA 2010c). In addition, precipitation across CONUS in 2010 was 1.02 inches (25.9 mm) above the long-term average (NOAA 2010c). In contrast to these patterns, states within the SECN (North Carolina, South Carolina, Alabama, Georgia and Florida) experienced below normal annual temperatures during 2010, with the exception of North Carolina and South Carolina which experienced near normal temperatures (NOAA 2010c). In addition, total annual precipitation for all SECN states was below normal during 2010 (NOAA 2010c).

Seasonal highlights for CONUS during 2010 include a winter with abnormally cold temperatures but abundant moisture, a warmer than average summer and fall, and a wetter than average summer (NOAA 2010c). Some of these patterns were present within the SECN during 2010. For example, states within the SECN (North Carolina, South Carolina, Alabama, Georgia and Florida) were colder and wetter than normal during the winter months of December through February (NOAA 2010c). In addition, summer 2010 was warmer than normal for all states within the SECN; however, precipitation was either near normal (AL and SC) or below normal (NC, GA and FL) for states within the SECN (NOAA 2010c). Also, fall temperatures were above normal for all SECN states except GA and FL which were near normal (NOAA 2010c). It is important to note that weather and climate patterns may vary or even be in direct conflict with one another, depending upon the spatial scale at which the patterns are being described.

Methods

Site Selection

Most ecological processes (and some species) respond strongly to climatic variability; therefore, a climate inventory was conducted for each of the National Park Service's Inventory and Monitoring Networks (NPS 2010). One of the primary purposes of the climate inventory was to identify key sources of weather and climate data and information relevant to each of the Southeast Coast Network parks. To identify weather stations relevant to NPS units, this analysis adopted the following criteria used by the SECN Climate Inventory (Davey et al. 2007): stations are a part of a recognized weather, tide or climate network; stations (with a few exceptions noted in Table 1) are located within the park unit or within 20 miles (30 km) of the park; the station collects the desired parameters; and the data record is largely complete (e.g., the station has few significant data gaps throughout its history which allow long-term averages to be calculated and the current year's data record is missing few observations, such that monthly averages can be calculated following the criteria presented below). In this report, stations from five national climate data networks (Cooperative Observer Program, Climate Reference Network, Remote Automated Weather Station, National Ocean Service, and National Buoy Data Center) have been included.

Although there are multiple weather stations that collect data relevant to SECN parks (Davey et al. 2007), for this analysis typically two stations were included for each unit of the Southeast Coast Network. The first station selected was the closest, reliable station (a station where the 2010 data set is complete or nearly complete) collecting daily temperature, precipitation and relative humidity data. Often a second station was required because the closest station did not have a long enough period of record to put the data in context with the long-term climate normal (1981–2010), or the closest station did not collect relative humidity data.

Certain stations may be relevant to more than one park due to the proximity of some SECN park units to one another, providing a third weather station's data for analysis. In addition, parks located on the coast may also have a tide station or buoy station that collects meteorological data included in this report. Table 1 provides a list of the weather stations used in this data summary report. The distance to park boundary provided in Table 1 is the shortest distance from the weather station to the park boundary. Figure 1 provides a map of the locations of these weather stations.

Finally, the weather stations used to provide data in this report were identified in the SECN weather and climate inventory as providing data relevant to SECN parks. However, it is important to keep in mind that there are multiple factors affecting localized weather conditions (e.g., slope, exposure, vegetation cover, proximity to large water bodies, etc.) such that the data presented in this report are not intended to be an exact description of the weather at a park unit. Rather, the data presented in this report are considered to provide a general description of the weather conditions in an area proximate to the weather station (in this case within 20 miles or 30 kilometers) which includes the NPS units identified in this report.

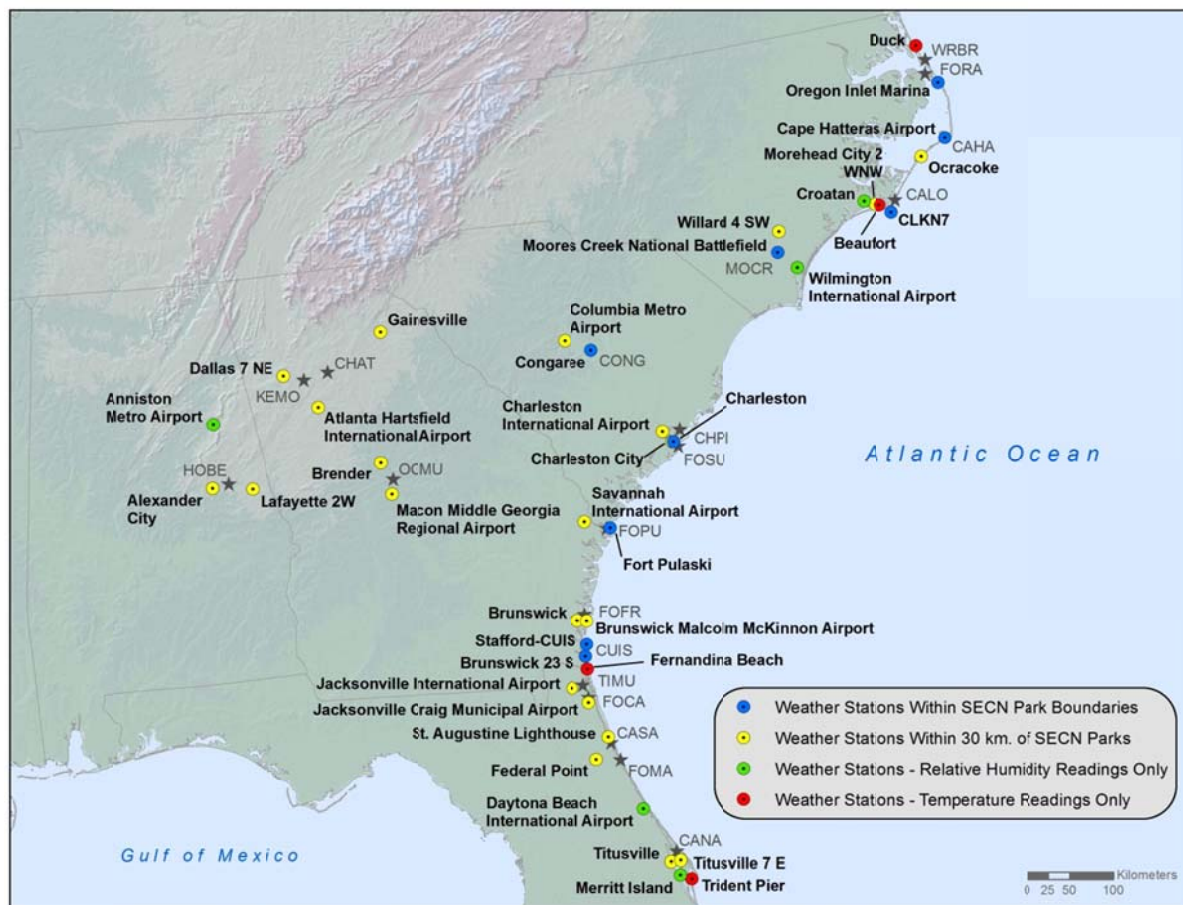


Figure 1. Map of weather stations relevant to parks within the Southeast Coast Network (SECN). Station categories are not mutually exclusive and stations used to provide only relative humidity or temperature data are still within 20 miles (30 km) of the park boundary except where indicated in Table 1.

Table 1. Location of relevant weather stations near SECN parks, station network affiliation and additional metadata for weather stations used in this report. NL indicates information was not listed in the station metadata documentation.

Relevant Park(s)	In Park?	Distance to Park (miles)	Station Name	National Network	Station ID	Lat (dd)	Long (dd)	County	Elev. (feet)	Start Date
CAHA	Y	NA	Cape Hatteras Airport	COOP	311458	35.2333	-75.6166	Dare	11.2	3/1/1957
CAHA	N	20.7	Duck (Temp Only)	NOS	8651370	36.1833	-75.7333	Dare	NL	7/27/1988
CAHA	Y	NA	Oregon Inlet Marina (Temp Only)	NOS	8652587	35.7833	-75.55	Dare	NL	3/28/1994
CAHA/CALO	N	0.25/4	Ocracoke	COOP	316349	35.1	-75.9833	Hyde	3.9	5/1/1957
CALO	N	4.8	Morehead City 2 WNW	COOP	315830	34.7333	-76.7333	Carteret	9.8	9/1/1948
CALO	N	1.8	Beaufort (Temp only)	NOS	8656483	34.7167	-76.6667	Carteret	NL	6/10/1990
CALO	Y	NA	CLKN7 (Temp only)	NBDC	CLKN7	34.622	-76.525	Carteret	15.1	11/07/1984
CALO	N	13.1	Croatan (RH only)	RAWS	319602	34.7833	-76.8667	Carteret	20	02/2003
MOCR	Y	NA	Moore's Creek National Battlefield	COOP	315820	34.45	-78.1166	Pender	22	5/4/2005
MOCR	N	13.5	Willard 4 SW	COOP	319423	34.65	-78.05	Pender	55.1	3/1/1971
MOCR	N	17.6	Wilmington Intl. Airport (RH only)	COOP	319457	34.2667	-77.9	New Hanover	33.1	12/1/1947
CHPI/FOSU	N	12.7/13.1	Charleston International Airport	COOP	381544	32.9	-80.0333	Charleston	40	8/1/1931
CHPI/FOSU	N	7.5/3.3	Charleston City	COOP	381549	32.7833	-79.9333	Charleston	9.8	3/1/1872
FOSU	Y	NA	Charleston	NOS	8665530	32.7833	-79.9167	Charleston	NL	4/25/1990
CONG	N	16.5	Columbia Metro Airport	COOP	381939	33.95	-81.1167	Lexington	225.1	11/1/1941
CONG	Y	NA	Congaree	RAWS	GDNS1	33.8147	-80.7811	Richland	403.5	5/3/2005
CHAT/KEMO	N	16.2/20.8	Atlanta Hartsfield International Airport	COOP	090451	33.6333	-84.45	Fulton	1009.8	9/1/1928
CHAT/KEMO	N	23/14.3	Dallas 7 NE	COOP	092485	33.9833	-84.85	Paulding	1100.1	2/18/1947
CHAT	N	33	Gainesville	COOP	093621	34.3	-83.52	Hall	1169.9	7/1/1948
OCMU	N	13.6	Brender	RAWS	BOLG1	33.0097	-83.7397	Jones	300	2/20/2003
OCMU	N	10.5	Macon Middle Georgia Regional Airport	COOP	095443	32.6833	-83.65	Bibb	342.8	12/1/1948
HOBE	N	11.8	Alexander City	COOP	010160	32.95	-85.95	Tallapoosa	640.1	10/1/1969
HOBE	N	17.8	Lafayette 2W	COOP	014502	32.9	-85.4333	Chambers	740.2	6/01/1948
HOBE	N	41.4	Anniston Metro Airport (RH only)	COOP	010272	33.5833	-85.85	Calhoun	594.2	11/1/1928
FOPU	N	13.2	Savannah International Airport	COOP	097847	32.1333	-81.2166	Chatham	45.9	10/1/1950
FOPU	Y	0.01	Fort Pulaski (Temp only)	NOS	8670870	32.0333	-80.9	Chatham	NL	5/14/1990
FOFR/CUIS	N	6.9/13.8	Brunswick	COOP	091340	31.1667	-81.5	Glynn	13.1	7/1/1948

Table 1. Continued.

Relevant Park(s)	In Park?	Distance to Park (miles)	Station Name	National Network	Station ID	Lat (dd)	Long (dd)	County	Elev. (feet)	Start Date
FOFR/CUIS	N	4.7/11.7	Brunswick Malcolm McKinnon Airport	COOP	091345	31.15	-81.3833	Glynn	16.1	4/1/1931
CUIS	Y	NA	Brunswick 23 S	CRN	091356	30.8	-81.4666	Camden	24.9	12/16/2004
CUIS/FOFR	Y	NA/20.7	Stafford-CUIS	RAWS	NCIG1	30.9172	-81.4294	Camden	25	2/20/2003
CUIS	N	3.2	Fernandina Beach (Temp only)	NOS	8720030	30.6667	-81.4667	Nassau	NL	2/5/1997
FOCA/TIMU	N	3.6/8	Jacksonville Craig Municipal Airport	COOP	084370	30.3333	-81.5166	Duval	41	10/1/1970
FOCA/TIMU	N	14.4/4	Jacksonville International Airport	COOP	084358	30.5	-81.7	Duval	25.9	1/19/1971
CASA/FOMA	N	16.7/17.5	Federal Point	COOP	082915	29.75	-81.5333	Putnam	4.9	7/1/1948
CASA/FOMA	N	4.5/17.6	St. Augustine Lighthouse	COOP	087826	29.9592	-81.3397	St. Johns	12.1	8/19/1952
CASA/FOMA	N	51.7/37.3	Daytona Beach Intl. Airport (RH only)	COOP	082158	29.1833	-81.05	Volusia	30.8	1/1/1938
CANA	N	8	Titusville	COOP	088942	28.6167	-80.8167	Brevard	4.9	1/1/1888
CANA	N	1.9	Titusville 7 E	CRN	088947	28.6166	-80.7	Brevard	3.0	5/7/2005
CANA	N	16.3	Trident Pier (Temp only)	NOS	8721604	28.4167	-80.6	Brevard	NL	10/18/1994
CANA	N	11.8	Merritt Island (RH only)	RAWS	084402	28.4742	-80.7308	Brevard	20	6/2002

Data Acquisition and Analysis

The 2010 weather data were acquired from the following internet archives:

- Cooperative Observer Program (COOP): <http://www.ncdc.noaa.gov/oa/ncdc.html>
- Climate Reference Network (CRN): <http://www.ncdc.noaa.gov/crn/>
- Remote Automated Weather Station (RAWS): <http://www.raws.dri.edu/>
- National Ocean Service (NOS):
http://co-ops.nos.noaa.gov/station_retrieve.shtml?type=Historic+Tide+Data
- National Buoy Data Center (NBDC): http://www.ndbc.noaa.gov/to_station.shtml

Quality assurance and control (QA/QC) procedures applied to COOP, CRN, RAWS, NOS and NBDC data are provided by the agencies collecting the data and were reviewed and applied during analyses conducted by the SECN. All data analyses were conducted on data obtained from individual stations and are presented by weather station. 2010 weather data were acquired as daily data from all networks except for NOS and NBDC, from which hourly data were acquired. Hourly data were first converted to daily data as follows:

- Daily mean, maximum and minimum temperature values were determined.
- Total daily precipitation was determined.

If more than 10% of the hourly observations were missing or otherwise flagged as suspect, the daily measurement was not calculated and was treated as missing.

After all data were available as daily data, 2010 average monthly values were calculated for temperature and relative humidity (average maximum, minimum, and average temperature [$T_{\max}$, $T_{\min}$, T_{avg}], and average maximum and minimum relative humidity [$RH_{\max}$, $RH_{\min}$]) and total monthly precipitation values were also calculated (Tercek 2011). When calculating monthly temperature or relative humidity averages, the entire month of data was eliminated if there were more than five missing daily values within the month. Monthly temperature and/or relative humidity averages with fewer than five missing daily measurements are still presented, but are flagged to indicate the data set was not complete. Standard deviations for average monthly $T_{\max}$ and $T_{\min}$ were calculated for use in comparison with the long-term average (described below). When calculating monthly precipitation totals, the entire month of data was eliminated if there were more than three missing daily precipitation values. If fewer than three daily values were missing, monthly precipitation data were still presented, but were flagged to indicate the data set was not complete.

Key dates during 2010 were also calculated for each weather station, including the earliest date in the fall where temperatures dropped below 32°F, the last date in the spring when temperatures dropped below 32°F, the total number of days temperatures were above 90°F and the total number of days the temperature was below 32°F.

Following the presentation of 2010 temperature and precipitation data is a comparison of the 2010 data to the 30-year climate normal (1981–2010) for each station where the 30-year climate normal was calculated (Arguez et al. 2011, NOAA 2011a). Average maximum and minimum monthly temperatures, as well as total monthly precipitation are compared against the 30-year climate normal data (+/- standard deviation for temperature and 75th and 25th percentile for precipitation) obtained from the National Climatic Data Center (NOAA 2011a, NOAA 2011b).

The procedures used to determine the 75th and 25th percentiles of the monthly long-term climate data are described in Durre et al. (2011).

Relative humidity data are compared to the average of the five previous years of data (2005 – 2009), except where noted within the report. The five-year average maximum and minimum relative humidity data were calculated by the SECN using daily maximum and minimum relative humidity data values and summarized by month.

Additional climate summary information was acquired from the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC). Data and information obtained and used directly from NCDC are cited on a case by case basis within this report.

Results

2010 Temperature – General Summary

Temperature data for 2010 are presented below and summarized monthly by weather station (Table 2). Average maximum temperature, average temperature, and average minimum temperature data are presented for each monitoring station relevant to SECN parks.

Temperatures in the SECN vary widely as a function of latitude and proximity to the coast (Davey et al. 2007). At the stations relevant to SECN parks, mean annual temperature ranged from 59.3–71°F (15.2 – 21.7 °C; Table 2). Some of the coolest summer (June – August) temperatures were measured at weather stations along the Outer Banks of North Carolina, where mean July maximum temperatures ranged from 82.4 – 87.5°F (28 – 30.8°C) while some of the warmest summer temperatures can be found at inland weather stations (stations relevant to MOCR, CHAT, KEMO, OCMU, HOBE and CONG) where mean July maximum temperatures ranged from 87.9 – 95.4°F (31 – 35.2°C; Table 2).

The 2010 growing season, defined as the number of freeze-free days, ranged from 228 to 364 days across all stations relevant to SECN parks (Table 3). 2010 maximum temperatures (the highest $T_{\max}$ for the year) ranged from 87–103°F (30.6 – 39.4 °C; Table 3). The number of days where $T_{\max}$ was equal to or exceeded 90°F (32.2 °C) ranged widely throughout the Network, from 1–174 days (Table 3). The number of days where $T_{\min}$ was less than or equal to 32°F (0 °C) also ranged widely throughout the Network, from 1–91 days (Table 3).

During 2010, the average annual temperature for the contiguous United States (53.8°F, 12.1°C) was 1.0°F above normal and was the 23rd warmest year on record (NOAA 2010c). This is apparent at the majority of weather stations throughout the SECN during the period of April through November when both $T_{\max}$ and $T_{\min}$ values were several degrees above the 30-year average (Figures 3–16) – although these values are typically not outside the range of variation for the 30-year average. In contrast, the 2010 winter (January, February and December) season was marked by unusually cold temperatures at weather stations throughout the SECN (Figures 3–16). This abnormally cold air in winter 2010 was brought about by a historically strong negative phase of the arctic oscillation that pushed cold, arctic air south (NOAA 2010c).

Table 2. 2010 mean monthly temperature data for weather stations applicable to SECN parks (applicable parks indicated in parentheses under the station name). Average monthly temperature (T_{avg}), average monthly maximum temperature (T_{max}), average minimum monthly temperature (T_{min}), and average annual temperature (Annual) in SECN parks. Units = °F. *** indicates not enough data to calculate a valid average.

Station Name	Value	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Cape Hatteras Airport (CAHA)	T_{max}	46.3	46.4	57.2	67.3	74.8	83.6	83.6	85.9	82.4	74.2	64.0	46.5	67.7
	T_{avg}	39.6	39.6	50.3	59.7	68.8	77.7	78.1	79.2	75.9	67.7	57.1	40.5	61.2
	T_{min}	32.8	32.8	43.3	52.0	62.7	71.8	72.5	72.5	69.3	61.2	50.2	34.5	54.6
Duck (CAHA)	T_{max}	44.3	44.7	54.6	66.2	72.9	83.0	83.4	82.9	79.3	71.2	59.5	42.0	65.3
	T_{avg}	38.5	38.7	49.1	60.0	67.8	78.2	79.0	78.8	75.2	65.6	55.1	37.5	60.3
	T_{min}	34.0	34.4	44.6	55.0	64.1	74.2	74.9	75.3	72.1	61.3	51.3	32.8	56.1
Oregon Inlet Marina (CAHA)	T_{max}	43.9	45.3	55.2	65.0	72.4	82.5	83.6	82.5	78.8	70.5	59.9	42.8	65.2
	T_{avg}	39.2	39.6	50.3	60.5	68.5	78.7	79.8	79.2	75.7	66.0	55.8	38.3	61.0
	T_{min}	35.3	34.9	45.8	55.9	65.1	75.1	75.6	75.5	72.3	62.1	51.6	33.5	56.9
Ocracoke (CALO, CAHA)	T_{max}	46.9	47.0	58.6	69.0	76.3	85.9	86.1	86.0	82.5	72.8	61.8	43.0	68.0
	T_{avg}	40.6	40.9	52.1	61.8	70.3	79.6	80.3	80.0	76.3	67.0	55.5	38.0	61.9
	T_{min}	34.2	34.8	45.6	54.6	64.3	73.3	74.5	74.0	70.0	61.2	49.2	33.0	55.7
Morehead City 2 WNW (CALO)	T_{max}	51.4	54.1	63.5	70.9	78.2	87.5	87.2	87.5	84.9	76.4	65.7	48.5	71.3
	T_{avg}	42.6	43.9	53.5	62.1	72.2	81.4	80.6	81.0	77.9	68.5	56.4	39.5	63.3
	T_{min}	33.7	33.6	43.5	53.2	66.1	75.3	73.9	74.4	70.8	60.5	47.1	30.4	55.2
Beaufort (CALO)	T_{max}	48.0	49.1	58.3	67.2	74.4	83.2	83.9	84.4	81.7	72.6	62.6	45.1	67.5
	T_{avg}	41.4	42.2	52.6	62.7	70.6	79.9	80.3	80.6	77.5	67.5	56.4	38.8	62.6
	T_{min}	35.3	36.0	47.1	58.0	67.1	76.8	76.3	76.1	72.6	62.1	50.1	32.6	53.3
CLKN7 (CALO)	T_{max}	48.8	49.6	57.8	66.5	72.9	82.4	82.9	83.0	80.5	72.7	62.3	46.0	67.1
	T_{avg}	43.1	43.4	53.1	63.1	69.8	79.4	80.0	80.6	78.1	68.6	57.6	40.1	63.1
	T_{min}	38.3	38.4	49.3	60.1	67.5	77.3	77.0	78.0	75.0	64.8	53.2	35.7	59.5
Moore's Creek National Battlefield (MOCR)	T_{max}	52.1	51.6	***	80.5	84.9	93.0	93.3	91.5	89.8	78.4	67.4	***	***
	T_{avg}	40.2	40.3	***	64.2	73.6	82.7	82.3	81.5	76.8	64.3	52.9	***	***
	T_{min}	28.2	28.9	39.8	47.9	62.3	72.3	71.3	71.4	63.8	50.2	38.3	***	***
Willard 4 SW (MOCR)	T_{max}	51.2	52.1	65.9	78.2	83.0	91.1	90.3	89.7	87.1	76.6	66.4	46.2	73.2
	T_{avg}	40.2	40.9	53.3	62.4	71.5	80.8	80.1	79.7	74.9	63.1	52.5	35.6	61.3
	T_{min}	29.1	29.7	40.7	46.5	60.0	70.4	69.9	69.6	62.6	49.5	38.6	24.9	49.3
Charleston International Airport (CHPI, FOSU)	T_{max}	54.9	56.4	67.2	79.0	84.7	92.3	91.6	91.1	88.2	79.7	70.3	54.0	75.8
	T_{avg}	44.5	45.9	55.9	66.9	75.5	83.4	82.7	83.3	78.8	68.4	58.2	42.7	65.5
	T_{min}	34.1	35.4	44.5	54.8	66.3	74.4	73.7	75.5	69.3	57.0	46.0	31.3	55.2

Table 2. Continued.

Station Name	Value	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Charleston (FOSU)	T _{max}	***	53.3	62.3	72.2	78.8	87.7	87.1	86.5	83.9	77.0	66.7	51.3	***
	T _{avg}	***	46.0	55.4	66.3	74.4	82.6	82.4	82.9	79.5	70.2	59.8	43.6	***
	T _{min}	***	38.6	49.4	61.0	70.7	78.3	78.1	78.9	74.8	64.0	53.5	36.5	***
Charleston City (CHPI, FOSU)	T _{max}	53.4	54.8	63.3	72.9	79.7	88.7	88.0	87.5	85.9	77.8	67.6	52.8	72.7
	T _{avg}	46.1	46.9	56.1	66.8	75.1	83.3	82.8	83.0	80.4	70.7	60.4	44.7	66.4
	T _{min}	38.8	39.0	48.9	60.6	70.4	77.8	77.6	78.5	74.8	63.6	53.2	36.5	60.0
Columbia Metro Airport (CONG)	T _{max}	52.4	51.8	65.7	80.3	86.6	94.6	95.1	92.3	91.3	79.8	68.3	51.1	75.8
	T _{avg}	41.0	41.5	53.4	65.8	76.0	83.7	84.4	83.5	79.0	65.5	55.1	39.7	64.1
	T _{min}	29.6	31.3	41.1	51.3	65.3	72.8	73.7	74.6	66.6	51.2	41.9	28.2	52.3
Congaree (CONG)	T _{max}	55.4	55.0	68.5	82.6	87.5	94.8	95.0	92.7	90.5	80.1	69.3	52.8	77.0
	T _{avg}	42.9	43.1	54.1	66.0	75.0	82.7	83.1	82.6	77.2	64.5	54.7	40.1	63.8
	T _{min}	30.5	31.1	39.6	49.5	62.5	70.6	71.2	72.5	64.0	48.8	40.1	27.3	50.6
Atlanta Hartsfield Intl. Airport (CHAT, KEMO)	T _{max}	47.3	48.5	60.3	76.4	82.5	90.5	91.3	91.4	88.9	77.4	64.6	47.6	72.2
	T _{avg}	38.5	39.7	50.7	65.2	73.4	81.4	82.3	82.8	78.0	65.3	54.6	38.3	62.5
	T _{min}	29.7	30.8	41.0	54.0	64.3	72.3	73.3	74.2	67.0	53.1	44.6	29.0	52.8
Dallas 7 NE (CHAT, KEMO)	T _{max}	47.2	47.1	59.2	77.7	82.6	90.6	91.9	92.9	***	77.7	65.3	46.4	***
	T _{avg}	36.5	37.2	48.2	62.5	70.5	79.1	80.4	81.8	75.3	62.3	52.2	35.4	60.1
	T _{min}	25.7	27.2	37.1	47.3	58.4	67.5	68.9	70.7	60.1	46.9	39.1	24.4	47.8
Gainesville (CHAT)	T _{max}	45.9	45.9	57.8	74.8	79.6	88.5	90.4	87.9	85.4	74.6	62.5	44.8	69.8
	T _{avg}	36.3	36.5	47.4	61.3	69.5	78.3	80.3	79.6	73.7	61.8	51.3	35.5	59.3
	T _{min}	26.6	27.0	37.0	47.8	59.3	68.1	70.2	71.3	61.9	48.9	40.1	26.2	48.7
Brender (OCMU)	T _{max}	52.6	53.3	65.6	80.6	86.1	93.4	94.6	***	89.8	80.0	68.3	52.5	***
	T _{avg}	40.7	41.2	51.7	64.4	73.8	81.4	82.7	***	75.9	63.6	54.0	40.1	***
	T _{min}	28.8	29.8	37.8	48.2	61.5	69.4	70.9	***	61.9	47.3	39.6	27.7	***
Macon Middle GA Regional Airport (OCMU)	T _{max}	53.1	53.3	64.8	79.8	85.9	93.2	94.2	93.6	91.3	80.2	68.7	53.3	76.0
	T _{avg}	42.3	42.6	52.6	65.0	74.4	82.0	83.4	83.8	77.5	64.7	55.1	40.9	63.7
	T _{min}	31.4	31.8	40.4	50.1	62.9	70.8	72.5	73.9	63.6	49.1	41.4	28.5	51.4
Alexander City (HOBE)	T _{max}	50.5	50.1	61.3	78.5	84.0	92.1	95.4	94.2	90.9	80.6	67.2	50.7	74.6
	T _{avg}	38.8	38.9	49.3	63.0	72.5	80.8	83.6	83.4	76.6	64.2	54.0	38.9	62.0
	T _{min}	27.1	27.7	37.2	47.5	61.0	69.4	71.7	72.6	62.3	47.7	40.7	27.0	49.3

Table 2. Continued.

Station Name	Value	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Lafayette 2W (HOBE)	T _{max}	49.8	49.7	60.9	77.8	83.0	91.3	93.1	93.0	90.1	79.0	66.7	50.4	73.7
	T _{avg}	37.5	38.1	48.3	60.9	70.9	79.3	80.9	81.9	74.8	61.8	52.5	37.3	60.4
	T _{min}	25.2	26.5	35.7	43.9	58.8	67.2	68.7	70.7	59.4	44.5	38.3	24.2	46.9
Savannah International Airport (FOPU)	T _{max}	56.2	57.0	67.2	79.7	85.7	93.8	93.7	93.0	89.5	82.0	72.1	56.0	77.2
	T _{avg}	45.5	46.3	55.6	67.1	76.0	83.6	83.9	84.2	79.2	69.1	58.4	43.7	66.1
	T _{min}	34.8	35.5	44.0	54.4	66.2	73.3	74.1	75.3	68.9	56.2	44.7	31.4	54.9
Fort Pulaski (FOPU)	T _{max}	52.3	53.5	61.9	71.8	79.3	88.4	87.6	87.0	84.1	76.6	66.9	51.5	71.7
	T _{avg}	45.3	40.3	55.0	66.1	74.7	82.4	82.8	82.9	79.6	70.3	60.0	44.3	65.8
	T _{min}	39.1	46.4	48.8	61.2	69.4	77.3	78.3	78.8	75.3	64.0	53.1	37.3	62.3
Brunswick (FOFR, CUIS)	T _{max}	58.0	57.5	66.6	78.8	85.7	94.1	93.5	92.2	88.8	82.1	72.7	56.8	77.2
	T _{avg}	47.2	47.8	56.3	67.6	75.6	82.9	84.3	83.5	80.6	71.2	61.7	45.8	67.0
	T _{min}	36.3	38.1	46.0	56.3	65.5	71.6	75.0	74.7	72.4	60.2	50.6	34.8	56.8
Brunswick Malcolm McKinnon Airport (FOFR, CUIS)	T _{max}	56.1	56.1	64.9	75.1	82.8	90.6	90.6	90.4	87.6	80.0	71.6	57.5	75.3
	T _{avg}	47.0	47.5	55.9	66.8	76.7	82.9	84.0	84.1	80.8	70.6	61.9	47.1	67.1
	T _{min}	37.8	38.8	46.8	58.4	70.5	75.2	77.4	77.8	73.9	61.2	52.1	36.7	58.9
Brunswick 23 S (CUIS)	T _{max}	56.4	57.2	65.2	75.4	82.6	89.6	80.1	89.6	86.8	80.5	71.4	56.9	75.1
	T _{avg}	46.5	47.6	55.3	65.8	75.8	81.1	82.8	83.0	79.3	69.3	60.5	45.3	66.0
	T _{min}	36.8	38.0	45.4	56.4	68.9	72.6	75.4	76.3	71.9	58.3	49.6	33.8	56.9
Stafford - CUIS (CUIS)	T _{max}	57.3	57.9	66.3	77.2	84.4	91.3	91.7	90.9	88.2	81.6	71.5	56.6	76.2
	T _{avg}	46.2	47.4	55.1	65.7	75.8	81.3	82.8	83.3	79.1	69.0	59.0	43.9	65.7
	T _{min}	35.2	37.0	43.9	54.3	67.2	71.2	74.0	75.7	70.0	56.3	46.4	31.1	55.2
Fernandina Beach (CUIS, TIMU)	T _{max}	55.9	56.0	64.3	74.4	81.5	***	***	88.3	85.7	78.9	70.1	56.0	***
	T _{avg}	48.3	49.4	57.2	68.0	76.7	***	***	82.8	80.8	72.0	63.6	47.4	***
	T _{min}	41.4	42.8	50.4	62.4	72.3	***	***	78.5	76.7	61.3	57.2	39.9	***
Jacksonville Craig Municipal Airport (FOCA, TIMU)	T _{max}	59.3	59.6	68.0	78.7	86.4	92.8	93.5	91.9	88.4	82.7	73.8	59.0	77.8
	T _{avg}	48.8	49.6	57.6	67.5	76.8	82.3	83.9	83.8	79.3	69.6	61.7	46.6	67.3
	T _{min}	38.2	39.5	47.2	56.3	67.1	71.7	74.2	75.7	70.2	56.5	49.6	34.1	56.7
Jacksonville International Airport (FOCA, TIMU)	T _{max}	59.8	60.0	68.9	80.5	87.8	94.1	93.6	92.6	88.8	82.8	74.7	60.3	78.7
	T _{avg}	48.2	48.7	56.7	67.1	77.3	82.8	83.7	84.1	79.2	69.2	60.8	46.2	67.0
	T _{min}	36.5	37.3	44.5	53.7	66.7	71.4	73.8	75.5	69.5	55.6	46.8	32.0	55.3

Table 2. Continued.

Station Name	Value	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Federal Point (CASA, FOMA)	T _{max}	60.5	61.5	68.9	80.7	88.2	92.7	91.4	90.8	88.1	82.7	75.0	60.8	78.4
	T _{avg}	51.1	52.1	59.0	69.8	78.2	82.7	83.0	83.0	80.1	71.7	64.5	50.0	68.8
	T _{min}	41.7	42.6	49.0	58.8	68.1	72.7	74.5	75.1	72.0	60.7	54.0	39.1	59.0
St. Augustine Lighthouse (CASA, FOMA)	T _{max}	60.5	61.9	69.9	80.0	86.2	90.7	92.0	91.7	90.0	82.9	75.3	61.9	78.6
	T _{avg}	51.1	51.4	59.2	70.0	78.8	81.9	83.6	83.9	82.4	73.0	66.4	51.0	69.4
	T _{min}	41.7	40.8	48.4	59.9	71.3	73.1	75.2	76.1	74.8	63.0	57.4	40.1	60.2
Titusville (CANA)	T _{max}	64.6	63.2	70.4	79.4	86.5	92.5	92.6	92.5	89.3	84.7	77.5	62.5	79.6
	T _{avg}	54.6	54.1	60.9	71.0	79.7	84.5	85.2	85.0	82.5	75.0	68.0	51.5	71.0
	T _{min}	44.6	44.9	51.4	62.6	72.9	76.4	77.8	77.5	75.6	65.2	58.4	40.5	62.3
Titusville 7 E (CANA)	T _{max}	64.4	63.4	70.0	78.1	83.8	89.0	89.3	89.7	86.9	82.2	75.9	63.7	78.0
	T _{avg}	53.8	53.7	60.4	69.1	76.3	80.7	81.7	82.4	79.3	71.9	66.1	51.5	68.9
	T _{min}	43.2	44.0	51.0	60.1	68.8	72.4	74.1	75.0	71.6	61.6	56.3	39.3	59.8
Trident Pier (CANA)	T _{max}	63.9	62.9	68.4	76.9	82.5	88.0	88.6	88.5	87.0	81.9	75.8	62.9	77.3
	T _{avg}	55.5	55.5	61.4	71.1	77.1	82.1	83.2	82.8	82.0	75.9	69.5	53.8	70.8
	T _{min}	48.8	49.1	55.3	64.8	72.3	76.9	78.9	78.6	77.4	70.1	63.6	46.2	65.2

Table 3. 2010 derivative climate measures for weather stations relevant to SECN parks. NA indicates not available.

Station Name	Applicable Park(s)	Growing Season Length (days)*	Maximum Temp. °F	# Days T _{max} ≥ 90°F	# Days T _{min} ≤ 32 °F	Last Spring Date T _{min} ≤ 32°F	Earliest Fall Date T _{min} ≤ 32°F
Cape Hatteras Airport	CAHA	273	94	1	52	9-Mar	7-Dec
Duck	CAHA	293	94	8	36	17-Feb	7-Dec
Oregon Inlet Marina	CAHA	293	92	3	33	17-Feb	7-Dec
Ocracoke	CALO, CAHA	275	93	12	44	7-Mar	7-Dec
Morehead City 2 WNW	CALO	269	97	20	53	8-Mar	2-Dec
Beaufort	CALO	292	94	2	33	17-Feb	6-Dec
CLKN7	CALO	297	87	0	21	13-Feb	7-Dec
Moore's Creek National Battlefield	MOCR	244	100	100	78	8-Mar	7-Nov
Willard 4 SW	MOCR	245	97	77	85	7-Mar	7-Nov
Charleston International Airport	CHPI, FOSU	270	99	91	51	7-Mar	2-Dec
Charleston	FOSU	293	98	22	15	17-Feb	7-Dec
Charleston City	CHPI, FOSU	284	98	35	25	26-Feb	7-Dec
Columbia Metro Airport	CONG	244	103	114	68	8-Mar	7-Nov
Congaree	CONG	244	101	118	71	8-Mar	7-Nov
Atlanta International Airport	CHAT, KEMO	245	97	85	66	7-Mar	7-Nov
Dallas 7 NE	CHAT, KEMO	228	100	86	87	23-Mar	6-Nov
Gainesville	CHAT	244	97	49	81	8-Mar	7-Nov
Brender	OCMU	243	101	95	80	8-Mar	6-Nov
Macon Middle Georgia Regional AP	OCMU	244	100	104	70	8-Mar	7-Nov
Alexander City	HOBE	243	101	101	83	8-Mar	6-Nov
Lafayette 2W	HOBE	230	99	97	91	20-Mar	5-Nov
Savannah International Airport	FOPU	245	102	102	60	7-Mar	7-Nov
Fort Pulaski	FOPU	293	97	20	16	17-Feb	7-Dec
Brunswick	FOFR, CUIS	275	102	62	28	6-Mar	6-Dec
Brunswick Malcolm McKinnon AP	FOFR, CUIS	275	101	62	28	6-Mar	6-Dec
Brunswick 23 S	CUIS	274	99	44	35	7-Mar	6-Dec
Stafford – CUIS	CUIS	245	102	80	48	8-Mar	8-Nov
Fernandina Beach	CUIS, TIMU	336	92	12	17	12-Jan	14-Dec
Jacksonville Craig Municipal Airport	FOCA, TIMU	275	101	94	31	6-Mar	6-Dec
Jacksonville International Airport	FOCA, TIMU	270	102	174	63	7-Mar	2-Dec
Federal Point	CASA, FOMA	244	99	103	79	8-Mar	7-Nov
St. Augustine Lighthouse	CASA, FOMA	289	101	94	24	21-Feb	7-Dec
Titusville	CANA	335	99	97	12	13-Jan	14-Dec
Titusville 7 E	CANA	335	97	39	13	13-Jan	14-Dec
Trident Pier	CANA	364	94	24	1	NA	14-Dec

*Growing Season Length = the number of days between the last spring 32°F and the first fall 32°F

Temperature Data Presented by Park

Cape Hatteras National Seashore

Average monthly temperatures at Cape Hatteras Airport weather station ranged from 39.6 – 79.2°F (4.2 – 26.2°C; Table 2). Average annual temperature was 61.2 °F (16.2°C; Table 2). The highest average monthly maximum temperature was 85.9°F (29.9°C) in August 2010 and the lowest average monthly minimum temperature was 32.8°F (0.4°C) in both January and February 2010 (Table 2). Growing season length was calculated to be 273 days at this station, with the last spring freeze occurring on March 9th and the earliest fall freeze occurring on December 7th (Table 3).

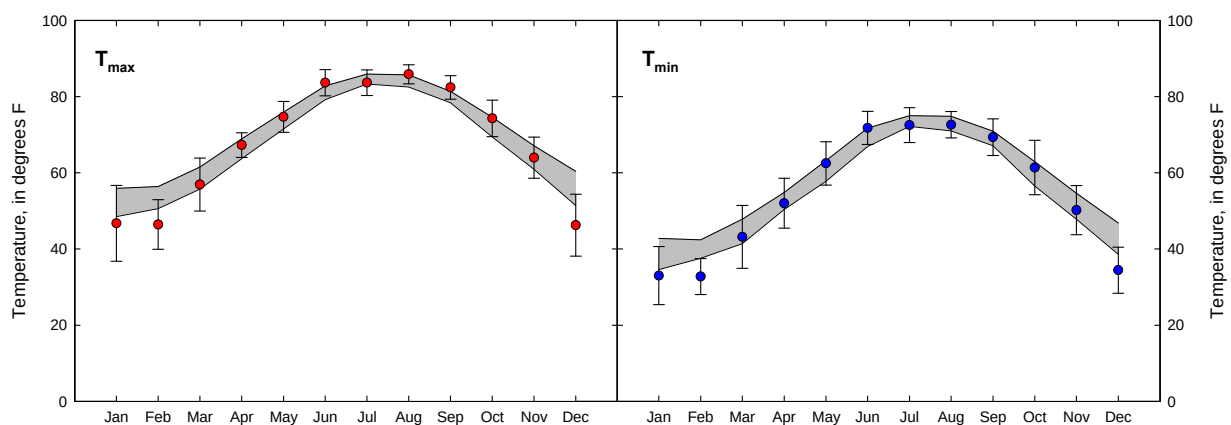
Average monthly temperatures at Duck tide station ranged from 37.5 – 79.0°F (3.1 – 26.1°C; Table 2). Average annual temperature was 60.3°F (15.7°C; Table 2). The highest average monthly maximum temperature was 83.4°F (28.6°C) in July 2010 and the lowest average monthly minimum temperature was 32.8°F (0.4°C) in December 2010 (Table 2). Growing season length was calculated to be 293 days at this station, with the last spring freeze occurring on February 17th and the earliest fall freeze occurring on December 7th (Table 3).

Average monthly temperatures at Oregon Inlet Marina tide station ranged from 38.3 – 79.8°F (3.5 – 26.6°C; Table 2). Average annual temperature was 61.0°F (16.1°C; Table 2). The highest average monthly maximum temperature was 83.6°F (28.7°C) in July 2010 and the lowest average monthly minimum temperature was 33.5°F (0.8°C) in December 2010 (Table 2). Growing season length was calculated to be 293 days at this station, with the last spring freeze occurring on February 17th and the earliest fall freeze occurring on December 7th (Table 3).

Average monthly temperatures at Ocracoke weather station ranged from 38.0 – 80.3°F (3.3 – 26.8°C; Table 2). Average annual temperature was 61.9°F (16.6°C; Table 2). The highest average monthly maximum temperature was 86.1°F (30.1°C) in July 2010 and the lowest average monthly minimum temperature was 33.0°F (0.6°C) in December 2010 (Table 2). Growing season length was calculated to be 275 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on December 7th (Table 3).

Comparisons of 2010 temperature data to the 30-year temperature average at Cape Hatteras Airport station, show that January, February, March, April, July, November and December were colder than average (Figure 2), though not outside the range of variation for the long-term average. At Ocracoke station, January, February, November and December were colder than average (Figure 2), though not outside the range of variation for the long-term average. In contrast, temperatures for the rest of the year were warmer than average, though not outside the range of variation for the long-term average. This pattern was fairly consistent across all weather stations relevant to SECN parks where a long-term average was calculated.

A.



B.

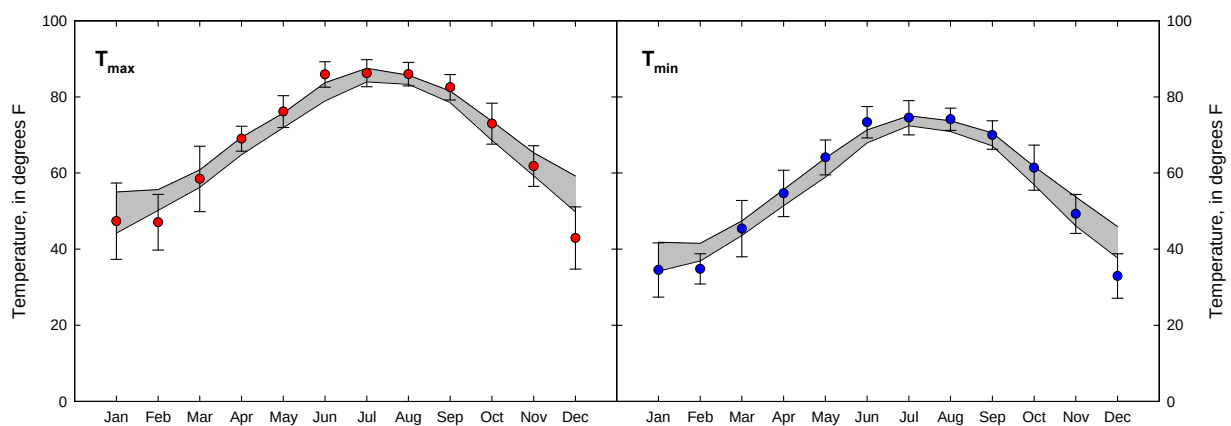


Figure 2. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Cape Hatteras Airport and **B.** Ocracoke stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Cape Lookout National Seashore

Average monthly temperatures at Ocracoke weather station ranged from 38.0 – 80.3°F (3.3 – 26.8°C; Table 2). Average annual temperature was 61.9°F (16.6°C; Table 2). The highest average monthly maximum temperature was 86.1°F (30.1°C) in July 2010 and the lowest average monthly minimum temperature was 33.0°F (0.6 °C) in December 2010 (Table 2). Growing season length was calculated to be 275 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on December 7th (Table 3).

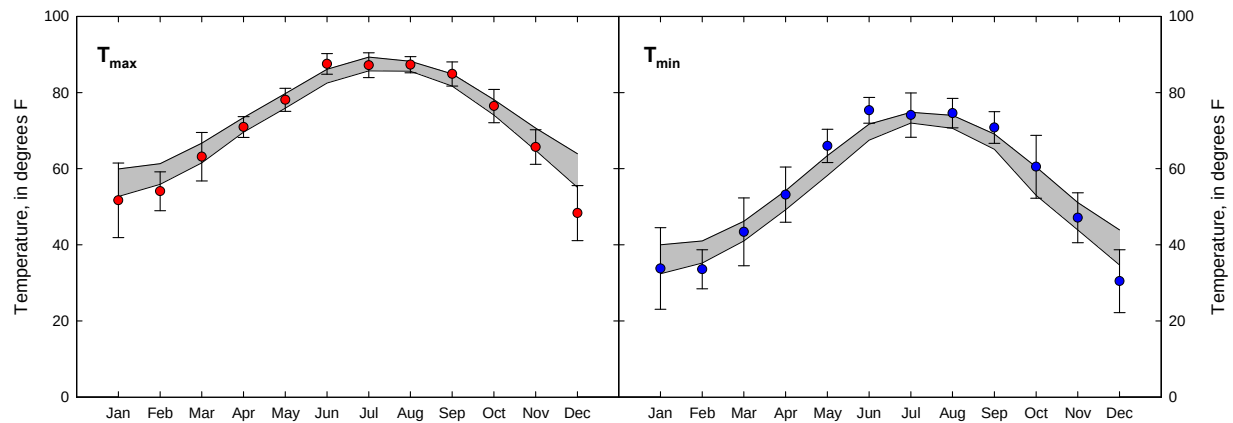
Average monthly temperatures at Morehead City 2WNW weather station ranged from 39.5 – 81.4°F (4.2 – 27.4 °C; Table 2). Average annual temperature was 63.3°F (17.4 °C; Table 2). The highest average monthly maximum temperature was 87.5°F (30.8°C) in June and August 2010 and the lowest average monthly minimum temperature was 30.4°F (-0.9°C) in December 2010 (Table 2). Growing season length was calculated to be 269 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on December 2nd (Table 3).

Average monthly temperatures at Beaufort tide station ranged from 38.8 – 80.6°F (3.8 – 27 °C; Table 2). Average annual temperature was 62.6°F (17 °C; Table 2). The highest average monthly maximum temperature was 84.4°F (29.1 °C) in August 2010 and the lowest average monthly minimum temperature was 32.6°F (0.3 °C) in December 2010 (Table 2). Growing season length was calculated to be 292 days at this station, with the last spring freeze occurring on February 17th and the earliest fall freeze occurring on December 6th (Table 3).

Average monthly temperatures at CLKN7 tide station ranged from 40.1 – 80.6°F (4.5 – 27 °C; Table 2). Average annual temperature was 63.1°F (17.3 °C; Table 2). The highest average monthly maximum temperature was 83.0°F (28.3 °C) in August 2010 and the lowest average monthly minimum temperature was 35.7°F (2.1 °C) in December 2010 (Table 2). Growing season length (was calculated to be 297 days at this station, with the last spring freeze occurring on February 13th and the earliest fall freeze occurring on December 7th (Table 3).

Comparisons of 2010 temperature data to the 30-year temperature average at Morehead City 2WNW and Ocracoke stations show that monthly temperatures were colder than the 30-year average during January, February, November and December (Figure 3), though not outside the range of variation for the long-term average. In contrast, temperatures for the rest of the year were warmer than average at Ocracoke station (Figure 3), though not outside the range of variation for the long-term average. At Morehead City Station, minimum monthly temperatures were warmer than average from March through October – though not outside the range of variation for the long-term average, except for June (Figure 3).

A.



B.

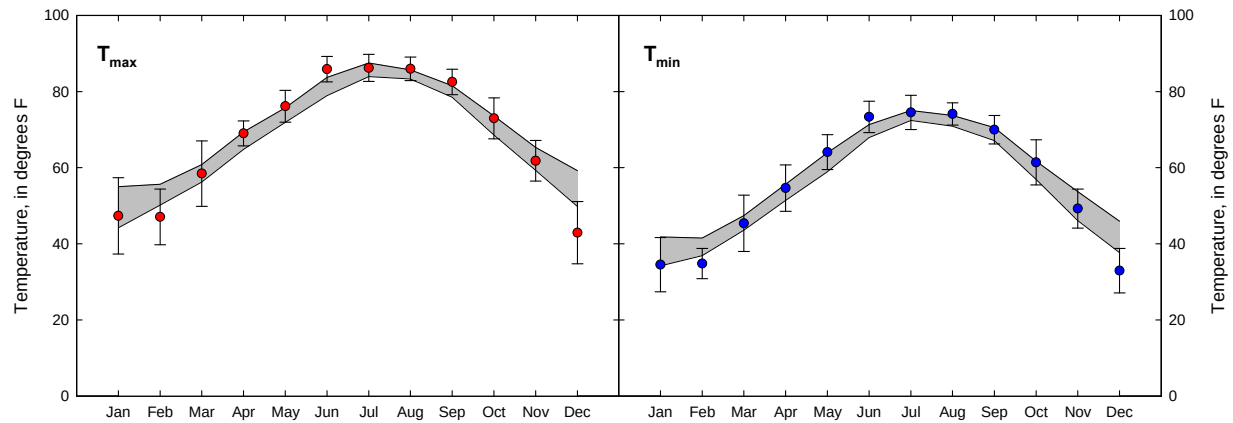


Figure 3. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Morehead City 2 WNW and **B.** Ocracoke stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Moore's Creek National Battlefield

Average monthly temperatures at Moore's Creek National Battlefield weather station ranged from 40.1 – 82.3°F (4.5 – 27.9°C), although there were missing data for the months of March and December (Table 2). Average annual temperature was not calculated due to the missing temperature values. The highest average monthly maximum temperature was 93.3°F (34.1°C) in July 2010 and the lowest average monthly minimum temperature was 28.2°F (-2.1°C) in January 2010 – although note that the month of December has no calculated temperature values (Table 2). Growing season length was calculated to be 244 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 7th (Table 3).

Average monthly temperatures at Willard 4 SW weather station ranged from 35.6 – 80.8°F (2 – 27.1°C; Table 2). Average annual temperature was 61.3°F (16.3°C; Table 2). The highest average monthly maximum temperature was 91.1°F (32.8°C) in June 2010 and the lowest average monthly minimum temperature was 24.9°F (-3.9°C) in December 2010 (Table 2).

Growing season length was calculated to be 245 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on November 7th (Table 3).

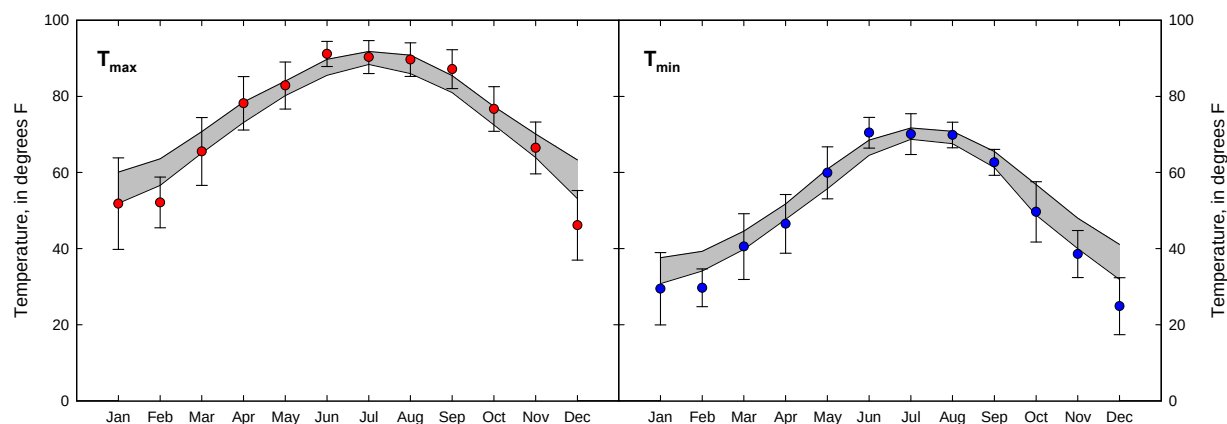


Figure 4. 2010 average monthly temperature and the 30-year (1981 – 2010) average for Willard 4 SW station. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Willard 4SW, show that January, February, March, November and December were colder than average (Figure 4) though not outside the range of variation for the long-term average. In contrast, temperatures for the rest of the year were generally warmer than average, although not outside the range of variation for the long-term average.

Charles Pinckney National Historic Site and Fort Sumter National Monument

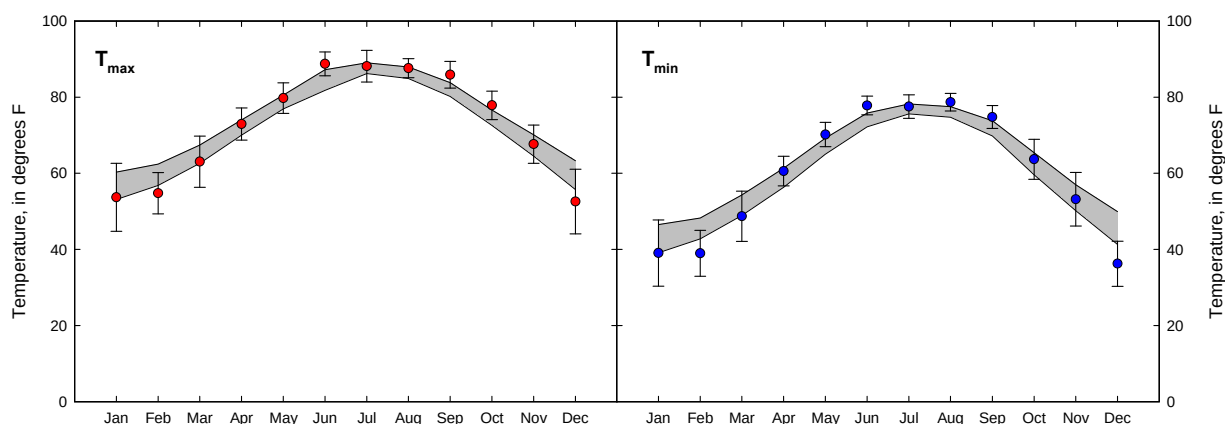
Average monthly temperatures at Charleston City weather station ranged from 44.6 – 83.3°F (7 – 28.5°C; Table 2). Average annual temperature was 66.4°F (19.1°C; Table 2). The highest average monthly maximum temperature was 88.7°F (31.5°C) in June 2010 and the lowest average monthly minimum temperature was 36.5°F (2.5°C) in December 2010 (Table 2). Growing season length was calculated to be 284 days at this station, with the last spring freeze occurring on February 26th and the earliest fall freeze occurring on December 7th (Table 3).

Average monthly temperatures at Charleston International Airport weather station ranged from 42.7 – 83.3°F (5.9 – 28.5°C; Table 2). Average annual temperature was 65.5°F (18.6°C; Table 2). The highest average monthly maximum temperature was 92.3°F (33.5°C) in June 2010 and the lowest average monthly minimum temperature was 31.3°F (-0.4°C) in December 2010 (Table 2). Growing season length was calculated to be 270 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on December 2nd (Table 3).

Average monthly temperatures at Charleston tide station ranged from 43.6 – 82.9°F (6.4 – 28.3 °C), although values from January are missing (Table 2). Average annual temperature was not calculated due to missing data. The highest average monthly maximum temperature was 87.7°F (30.9°C) in June 2010 and the lowest average monthly minimum temperature was 36.5°F (2.5°C) in December 2010 – although data from January 2010 are missing (Table 2). Growing season

length was calculated to be 293 days at this station, with the last spring freeze occurring on February 17th and the earliest fall freeze occurring on December 7th (Table 3).

A.



B.

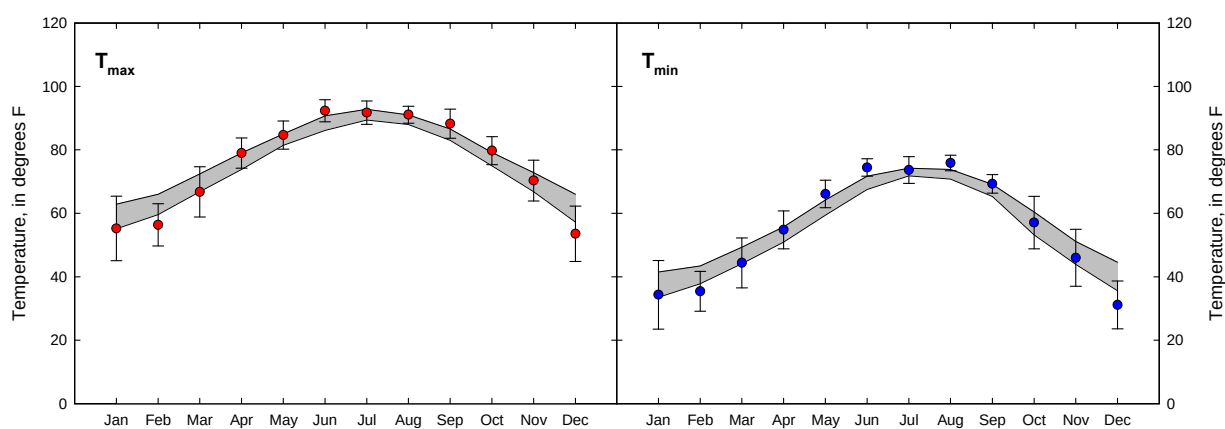


Figure 5. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Charleston City and **B.** Charleston International Airport stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Charleston City and Charleston International Airport, show that January, February, March, and December were colder than average (Figure 5), though not outside the range of variation for the long-term average. In contrast (with the exception of T_{min} in November), temperatures for the rest of the year were warmer than average at both stations (Figure 5), though not outside the range of variation for the long-term average.

Congaree National Park

Average monthly temperatures at Congaree weather station ranged from 40.1 – 83.1°F (4.5 – 28.4°C; Table 2). Average annual temperature was 63.8°F (17.7°C; Table 2). The highest average monthly maximum temperature was 95.0°F (35°C) in July 2010 and the lowest average monthly minimum temperature was 27.3°F (-2.6°C) in December 2010 (Table 2). Growing

season length was calculated to be 244 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 7th (Table 3).

Average monthly temperatures at Columbia Metro Airport weather station ranged from 39.6 – 84.4°F (4.2 – 29.1°C; Table 2). Average annual temperature was 64.1°F (17.8°C; Table 2). The highest average monthly maximum temperature was 95.1°F (35.1°C) in July 2010 and the lowest average monthly minimum temperature was 28.2°F (-2.1°C) in December 2010 (Table 2). Growing season length was calculated to be 244 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 7th (Table 3).

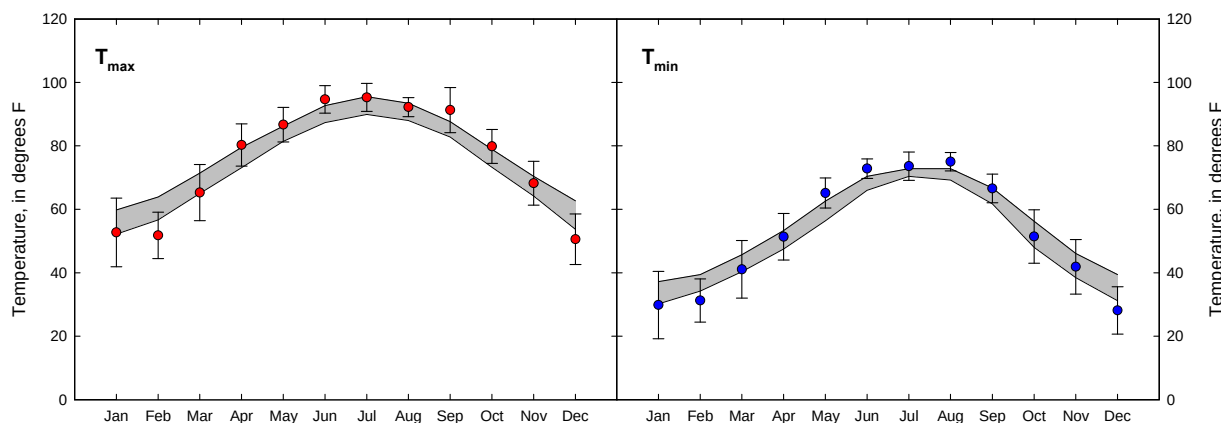


Figure 6. 2010 average monthly temperature and the 30-year (1981 – 2010) average for Columbia Metro Airport station. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Columbia Metro Airport, show that January, February, March, and December were colder than average (Figure 6) though not outside the range of variation for the long-term average. With a few exceptions, temperatures for the rest of the year were warmer than average (Figure 6), though not outside the range of variation for the long-term average.

Chattahoochee River National Recreation Area

Average monthly temperatures at Atlanta Hartsfield International Airport weather station ranged from 38.3 – 82.8°F (3.5 – 28.2°C; Table 2). Average annual temperature was 62.5°F (16.9°C; Table 2). The highest average monthly maximum temperature was 91.4°F (33°C) in August 2010 and the lowest average monthly minimum temperature was 29.0°F (-1.7°C) in December 2010 (Table 2). Growing season length was calculated to be 245 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on November 7th (Table 3).

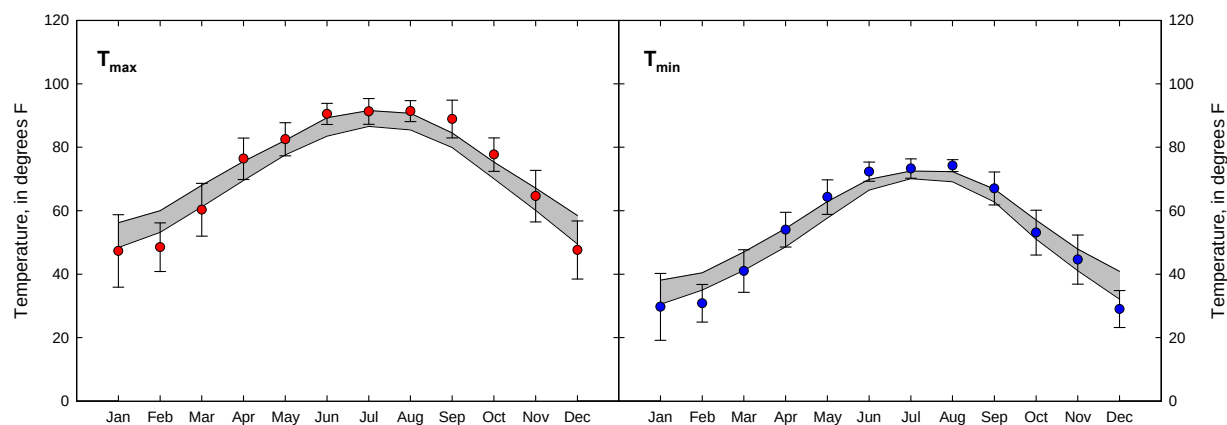
Average monthly temperatures at Dallas 7 NE weather station ranged from 35.4 – 81.8°F (1.9 – 27.7°C; Table 2). Average annual temperature was 60.1°F (15.6°C; Table 2). The highest average monthly maximum temperature was 92.9°F (33.8°C) in August 2010 and the lowest average monthly minimum temperature was 24.4°F (-4.2°C) in December 2010 (Table 2). Growing season length was calculated to be 228 days at this station, with the last spring freeze

occurring on March 23rd and the earliest fall freeze occurring on November 6th (Table 3). This station documented the shortest growing season across all SECN relevant weather stations during 2010.

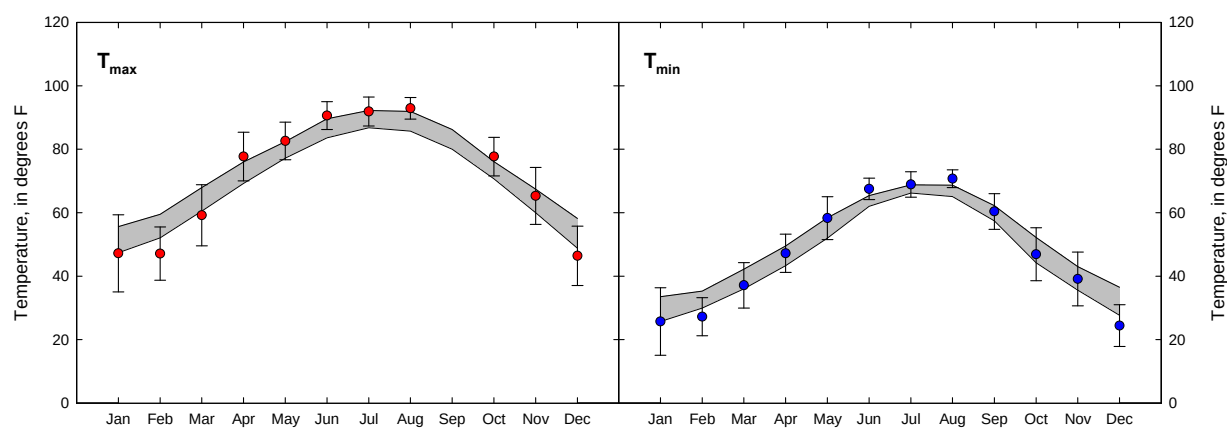
Average monthly temperatures at Gainesville weather station ranged from 35.5 – 80.3°F (1.9 – 26.8°C; Table 2). Average annual temperature was 59.3°F (15.2°C; Table 2). The highest average monthly maximum temperature was 90.4°F (32.4°C) in July 2010 and the lowest average monthly minimum temperature was 26.2°F (-3.2°C) in December 2010 (Table 2). Growing season length was calculated to be 244 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 7th (Table 3).

Comparisons of 2010 temperature data to the 30-year temperature average at Atlanta Hartsfield International Airport, Dallas 7 NE and Gainesville stations show that January, February, March, and December were colder than average (Figure 7), though not outside the range of variation for the long-term average. Temperatures for the rest of the year were warmer than average at all three stations (Figure 7), though not outside the range of variation for the long-term average.

A.



B.



C.

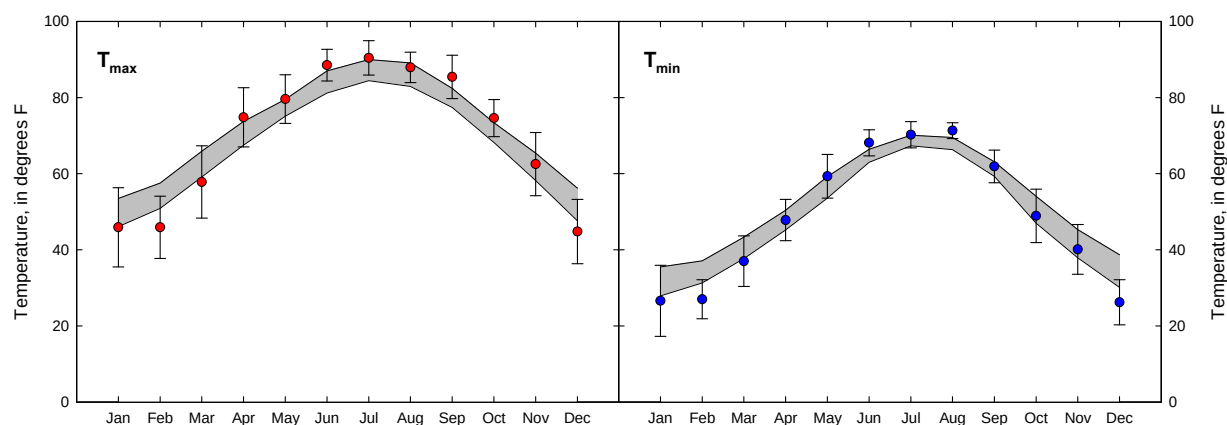


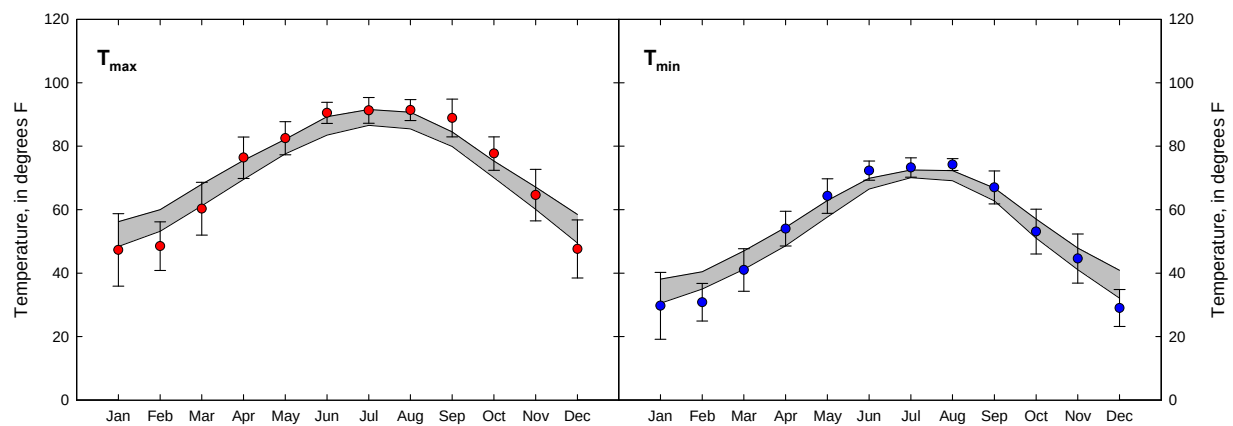
Figure 7. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Atlanta Hartsfield International Airport and **B.** Dallas 7 NE and **C.** Gainesville stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Kennesaw Mountain National Battlefield Park

Average monthly temperatures at Atlanta Hartsfield International Airport weather station ranged from 38.3 – 82.8°F (3.5 – 28.2°C; Table 2). Average annual temperature was 62.5°F (16.9°C; Table 2). The highest average monthly maximum temperature was 91.4°F (33°C) in August 2010 and the lowest average monthly minimum temperature was 29.0°F (-1.7°C) in December 2010 (Table 2). Growing season length was calculated to be 245 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on November 7th (Table 3).

Average monthly temperatures at Dallas 7 NE weather station ranged from 35.4 – 81.8°F (1.9 – 27.7°C; Table 2). Average annual temperature was 60.1°F (15.6°C; Table 2). The highest average monthly maximum temperature was 92.9°F (33.8°C) in August 2010 and the lowest average monthly minimum temperature was 24.4°F (-4.2°C) in December 2010 (Table 2). Growing season length was calculated to be 228 days at this station, with the last spring freeze occurring on March 23rd and the earliest fall freeze occurring on November 6th (Table 3). This station had the shortest growing season within relevant Network stations during 2010.

A.



B.

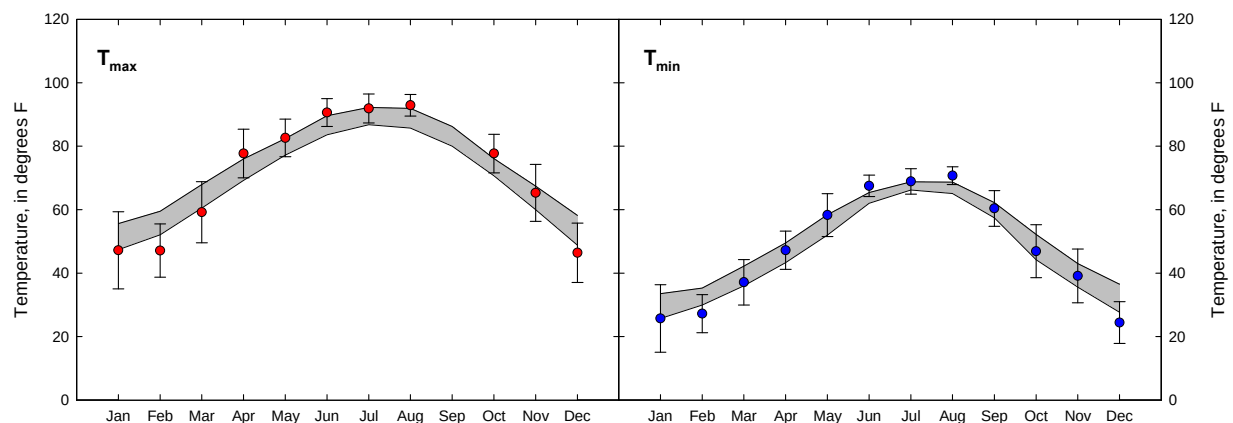


Figure 8. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Atlanta Hartsfield International Airport and **B.** Dallas 7 NE stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Atlanta Hartsfield International Airport and Dallas 7 NE stations show that January, February, March, and December were colder than average (Figure 8), though not outside the range of variation for the long-term average. Temperatures for the rest of 2010 were warmer than average at both stations (Figure 8), though not outside the range of variation for the long-term average.

Ocmulgee National Monument

Average monthly temperatures at Macon Middle Georgia Airport weather station ranged from 40.9 – 83.8°F (4.9 – 28.8°C; Table 2). Average annual temperature was 63.7°F (17.6°C; Table 2). The highest average monthly maximum temperature was 94.2°F (34.6°C) in July 2010 and the lowest average monthly minimum temperature was 28.5°F (-1.9°C) in December 2010 (Table 2). Growing season length was calculated to be 244 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 7th (Table 3).

Average monthly temperatures at Brender weather station ranged from 40.1 – 82.7°F (4.5 – 28.2°C), although temperatures were not recorded for August 2010 (Table 2). Average annual temperature was not calculated due to missing data. The highest average monthly maximum temperature was 94.6°F (34.8°C) in July 2010 (although August data are missing) and the lowest average monthly minimum temperature was 27.7°F (-2.4°C) in December 2010 (Table 2). Growing season length was calculated to be 243 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 6th (Table 3).

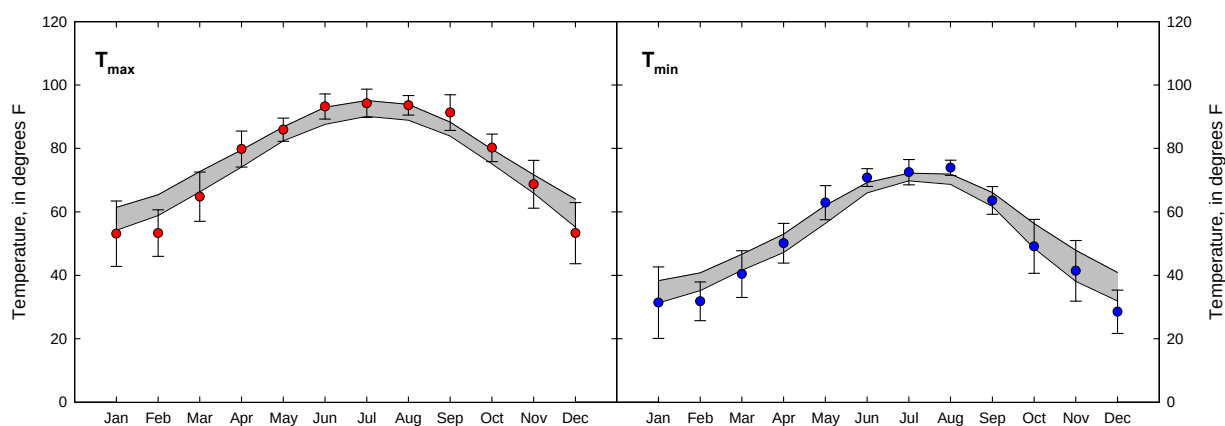


Figure 9. 2010 average monthly temperature and the 30-year (1981 – 2010) average for Macon Middle Georgia Regional Airport station. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Macon Middle Georgia Regional Airport station show that January, February, March, November and December were colder than average (Figure 9), though not outside the range of variation for the long-term average. Temperatures for the rest of the year were warmer than average, with the exception of T_{min} during September and October (Figure 9), though not outside the range of variation for the long-term average.

Fort Pulaski National Monument

Average monthly temperatures at Savannah International Airport weather station ranged from 43.7 – 84.2°F (6.5 – 29°C; Table 2). Average annual temperature was 66.1°F (18.9°C; Table 2). The highest average monthly maximum temperature was 93.8°F (34.3°C) in June 2010 and the lowest average monthly minimum temperature was 31.4°F (-0.3°C) in December 2010 (Table 2). Growing season length was calculated to be 245 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on November 7th (Table 3).

Average monthly temperatures at the Fort Pulaski tide station ranged from 44.3 – 82.9°F (6.8 – 28.3°C; Table 2). Average annual temperature was 65.8°F (18.8°C; Table 2). The highest average monthly maximum temperature was 88.4°F (31.3°C) in June 2010 and the lowest average monthly minimum temperature was 37.3°F (2.9°C) in December 2010 (Table 2). Growing season length was calculated to be 293 days at this station, with the last spring freeze occurring on February 17th and the earliest fall freeze occurring on December 7th (Table 3).

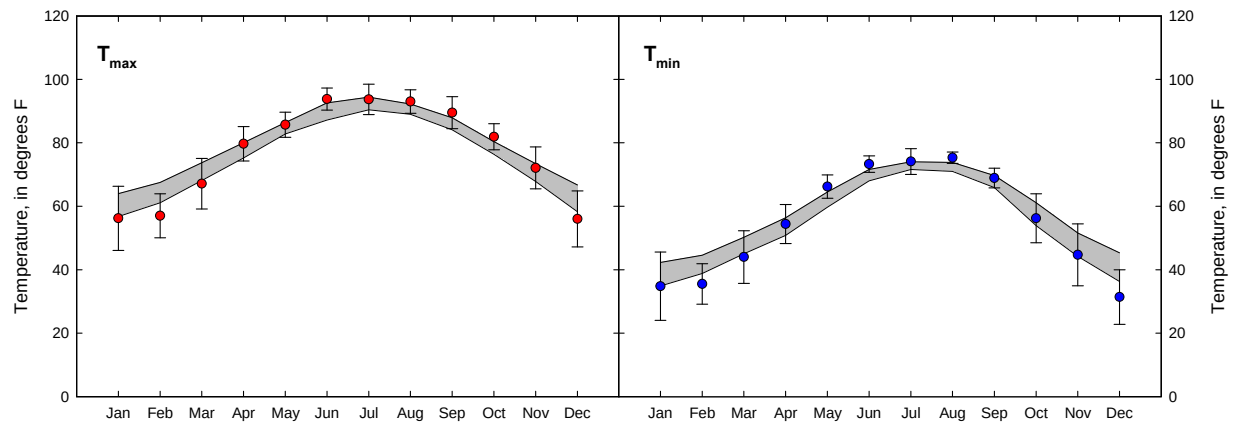


Figure 10. 2010 average monthly temperature and the 30-year (1981 – 2010) average for Savannah International Airport station. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Savannah International Airport station show that January, February, March and December were colder than average (Figure 10), though not outside the range of variation for the long-term average. Temperatures for the rest of the year were warmer than average, with the exception of T_{min} in October and November (Figure 10), though not outside the range of variation for the long-term average.

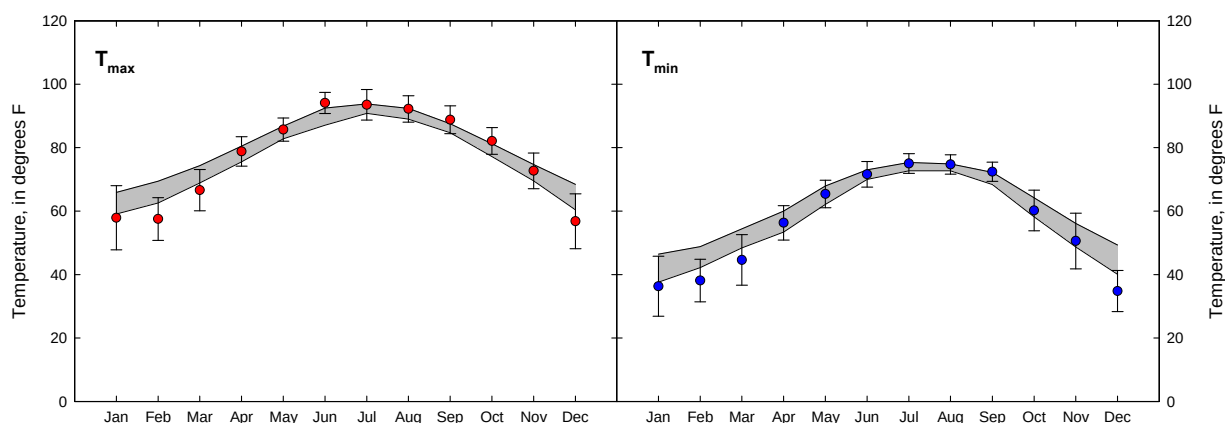
Fort Frederica National Monument

Average monthly temperatures at Brunswick weather station ranged from 45.8 – 84.3°F (7.7 – 29.1°C; Table 2). Average annual temperature was 67.0°F (19.4°C; Table 2). The highest average monthly maximum temperature was 94.1°F (34.5°C) in June 2010 and the lowest average monthly minimum temperature was 34.8°F (1.6°C) in December 2010 (Table 2). Growing season length was calculated to be 275 days at this station, with the last spring freeze occurring on March 6th and the earliest fall freeze occurring on December 6th (Table 3).

Average monthly temperatures at Brunswick Malcolm McKinnon Airport weather station ranged from 47.0 – 84.1°F (8.3 – 28.9°C; Table 2). Average annual temperature was 67.1°F (19.5°C). The highest average monthly maximum temperature was 90.6°F (32.6°C) in June and July 2010 and the lowest average monthly minimum temperature was 36.7°F (2.6°C) in December 2010 (Table 2). Growing season length was calculated to be 275 days at this station, with the last spring freeze occurring on March 6th and the earliest fall freeze occurring on December 6th (Table 3).

Comparisons of 2010 temperature data to the 30-year temperature average at Brunswick and Brunswick Malcolm McKinnon Airport stations show that January, February, March and December were colder than average (Figure 11), though not outside the range of variation for the long-term average. Temperatures for the rest of the year were warmer than average (with the exception of T_{min} during the months of October and November; Figure 11), though not outside the range of variation for the long-term average.

A.



B.

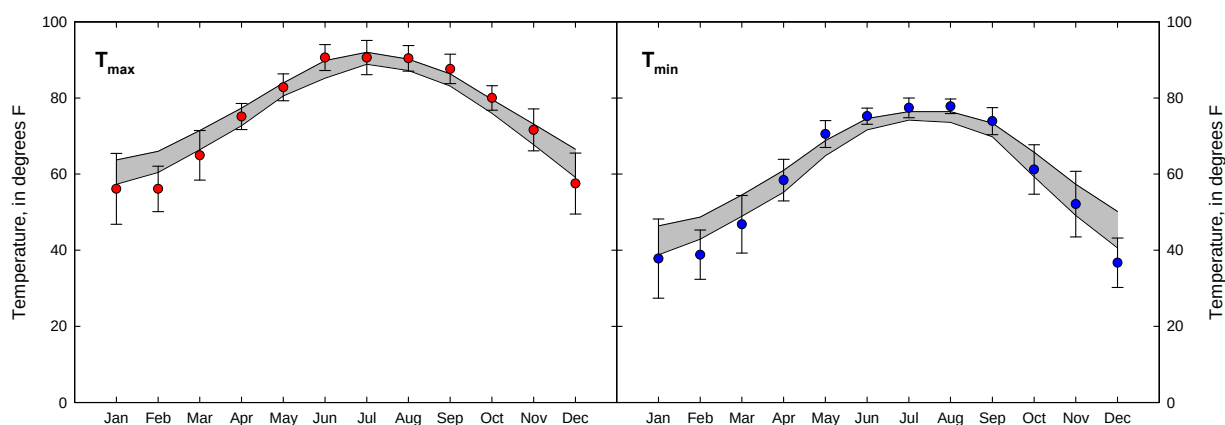


Figure 11. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Brunswick and **B.** Brunswick Malcolm McKinnon Airport stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Cumberland Island National Seashore

Average monthly temperatures at Brunswick 23 S weather station ranged from 45.3 – 83.0°F (7.4 – 28.3°C; Table 2). Average annual temperature was 66.0°F (18.9 °C; Table 2). The highest average monthly maximum temperature was 89.6°F (32°C) in June and August 2010 and the lowest average monthly minimum temperature was 33.8°F (1°C) in December 2010 (Table 2). Growing season length was calculated to be 274 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on December 6th (Table 3).

Average monthly temperatures at Stafford - CUIS weather station ranged from 43.9 – 83.3°F (6.6 – 28.5°C; Table 2). Average annual temperature was 65.7°F (18.7°C). The highest average monthly maximum temperature was 91.7°F (33.2°C) in July 2010 and the lowest average monthly minimum temperature was 31.1°F (2.6°C) in December 2010 (Table 2). Growing season length was calculated to be 245 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 8th (Table 3).

Average monthly temperatures at Brunswick weather station ranged from 45.8 – 84.3°F (Table 2). Average annual temperature was 67.0°F (Table 2). The highest average monthly maximum temperature was 94.1°F in June 2010 and the lowest average monthly minimum temperature was 34.8°F in December 2010 (Table 2). Growing season length was calculated to be 275 days at this station, with the last spring freeze occurring on March 6th and the earliest fall freeze occurring on December 6th (Table 3).

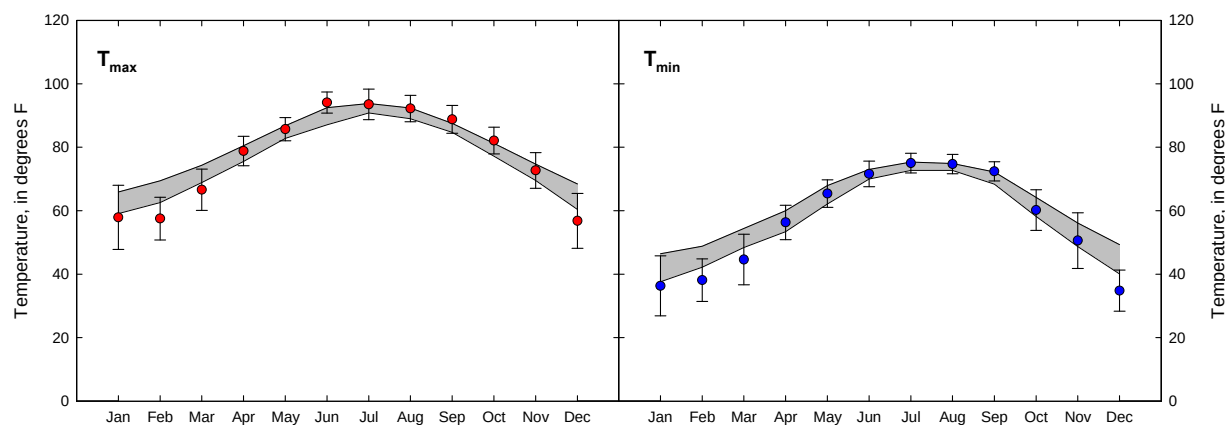
Average monthly temperatures at Brunswick Malcolm McKinnon Airport weather station ranged from 47.0 – 84.1°F (8.3 – 28.9 °C; Table 2). Average annual temperature was 67.1°F (19.5°C). The highest average monthly maximum temperature was 90.6°F (32.6°C) in June and July 2010 and the lowest average monthly minimum temperature was 36.7°F (2.6°C) in December 2010 (Table 2). Growing season length was calculated to be 275 days at this station, with the last spring freeze occurring on March 6th and the earliest fall freeze occurring on December 6th (Table 3).

Average monthly temperatures at Fernandina Beach tide station ranged from 47.4 – 82.8°F (8.6 – 28.2°C; Table 2) – although data are missing from June and July 2010. Average annual temperature and the 2010 maximum monthly temperature were not calculated due to missing data. The lowest average monthly minimum temperature was 39.9°F (18.7°C) in December 2010 (Table 2). Growing season length was calculated to be 336 days at this station, with the last spring freeze occurring on January 12th and the earliest fall freeze occurring on December 14th (Table 3).

Comparisons of 2010 temperature data to the 30-year temperature average at Brunswick and Brunswick Malcolm McKinnon Airport stations show that January, February, March and December were colder than average (Figure 12), though not outside the range of variation for the long-term average. Temperatures for the rest of the year were warmer than average (with the exception of T_{min} during the months of October and November; Figure 12), though not outside the range of variation for the long-term average.

Brunswick 23 S and Stafford-CUIS stations have not been collecting data long enough to calculate a 30-year average for temperature.

A.



B.

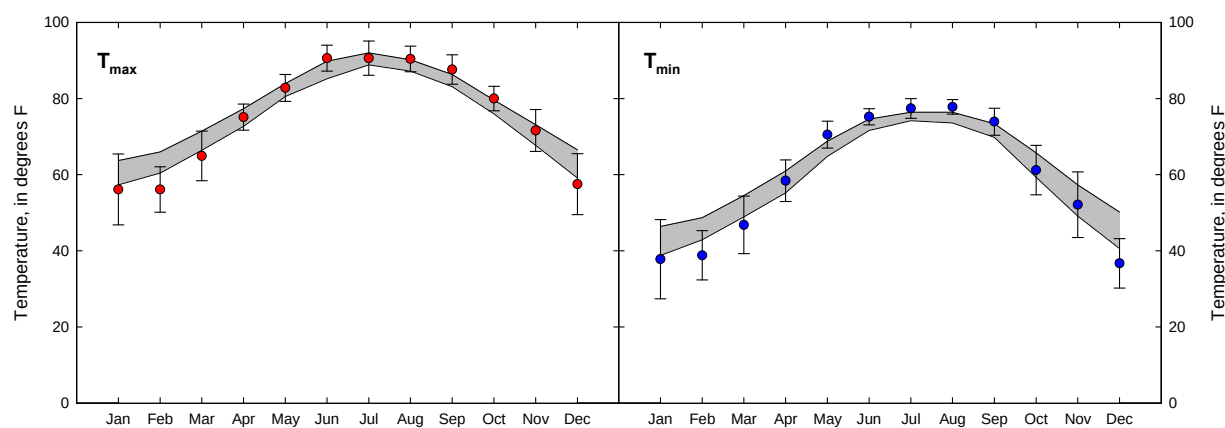


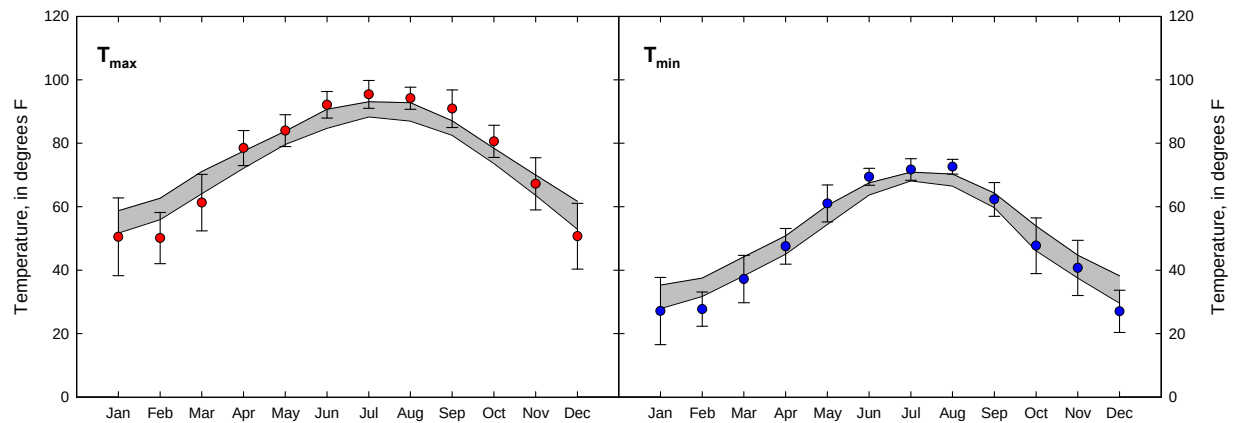
Figure 12. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Brunswick and **B.** Brunswick Malcolm McKinnon Airport stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Horseshoe Bend National Military Park

Average monthly temperatures at Alexander City weather station ranged from 38.8 – 83.6°F (3.8 – 28.7°C; Table 2). Average annual temperature was 62.2°F (16.8°C; Table 2). The highest average monthly maximum temperature was 95.4°F (35.2°C) in July 2010 and the lowest average monthly minimum temperature was 27.0°F (-2.8°C) in December 2010 (Table 2). Growing season length was calculated to be 243 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 6th (Table 3).

Average monthly temperatures at Lafayette 2W weather station ranged from 37.3 – 81.8°F (2.9 – 27.7°C; Table 2). Average annual temperature was 60.3°F (15.7°C). The highest average monthly maximum temperature was 93.1°F (33.9°C) in July 2010 and the lowest average monthly minimum temperature was 24.2°F (-4.3°C) in December 2010 (Table 2). Growing season length was calculated to be 230 days at this station, with the last spring freeze occurring on March 20th and the earliest fall freeze occurring on November 5th (Table 3).

A.



B.

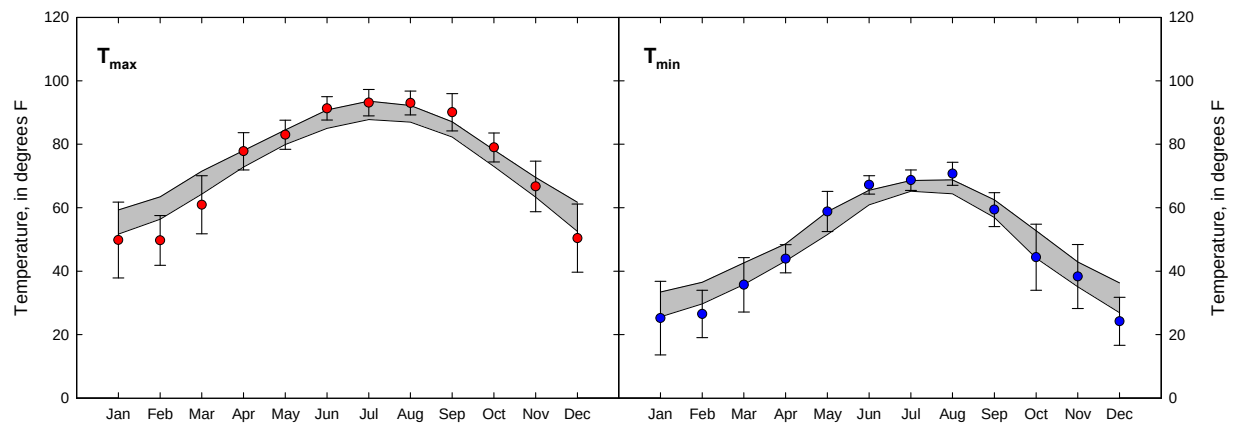


Figure 13. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Alexander City and **B.** Lafayette 2W stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Alexander City and Lafayette 2W station show that January, February, March, September and December were colder than average (Figure 13), though not outside the range of variation for the long-term average. Temperatures for the rest of the year were generally warmer than average, though not outside the range of variation for the long-term average.

Fort Caroline National Memorial and Timucuan Ecological and Historic Preserve

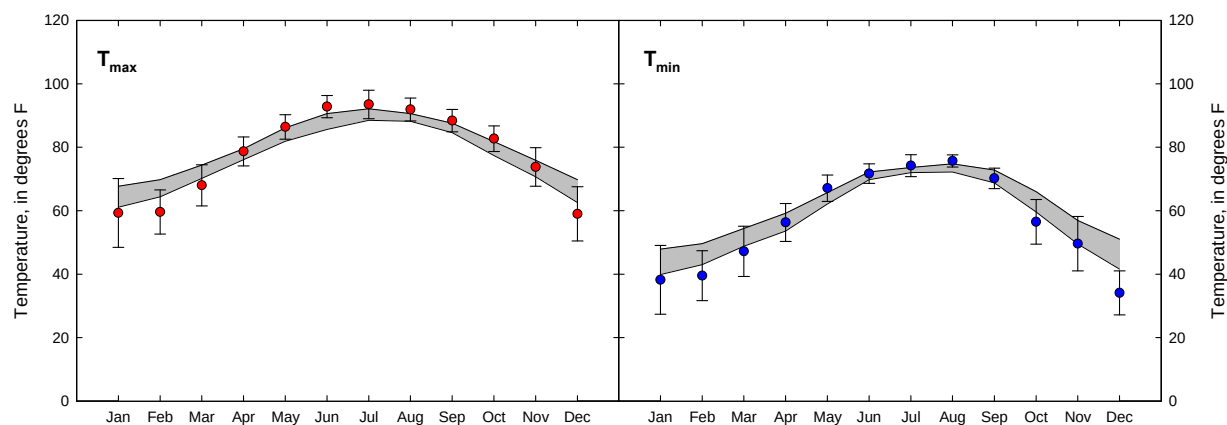
Average monthly temperatures at Jacksonville Craig Municipal Airport weather station ranged from 46.6 – 83.8°F (8.1 – 28.8°C; Table 2). Average annual temperature was 67.3°F (19.6°C; Table 2). The highest average monthly maximum temperature was 93.5°F (34.2°C) in July 2010 and the lowest average monthly minimum temperature was 34.1°F (1.2°C) in December 2010 (Table 2). Growing season length was calculated to be 275 days at this station, with the last spring freeze occurring on March 6th and the earliest fall freeze occurring on December 6th (Table 3).

Average monthly temperatures at Jacksonville International Airport weather station ranged from 46.1 – 84.0°F (7.8 – 28.9°C; Table 2). Average annual temperature was 67.0°F (19.4°C). The highest average monthly maximum temperature was 94.1°F (34.5°C) in June 2010 and the lowest average monthly minimum temperature was 32.0°F (0°C) in December 2010 (Table 2). Growing season length was calculated to be 270 days at this station, with the last spring freeze occurring on March 7th and the earliest fall freeze occurring on December 2nd (Table 3).

Average monthly temperatures at Fernandina Beach tide station ranged from 47.4 – 82.8°F (8.6 – 28.2°C; Table 2) – although data are missing from June and July 2010. Average annual temperature and the 2010 maximum monthly temperature were not calculated due to missing data. The lowest average monthly minimum temperature was 39.9°F (4.4°C) in December 2010 (Table 2). Growing season length was calculated to be 336 days at this station, with the last spring freeze occurring on January 12th and the earliest fall freeze occurring on December 14th (Table 3).

Comparisons of 2010 temperature data to the 30-year temperature average at Jacksonville International Airport station show that January, February, March and December were colder than average (Figure 14), though not outside the range of variation for the long-term average, except for $T_{\min}$ in December. Temperatures for the rest of the year were generally warmer than average (with the exception of $T_{\min}$ during April, October and November; Figure 14), though not outside the range of variation for the long-term average.

A.



B.

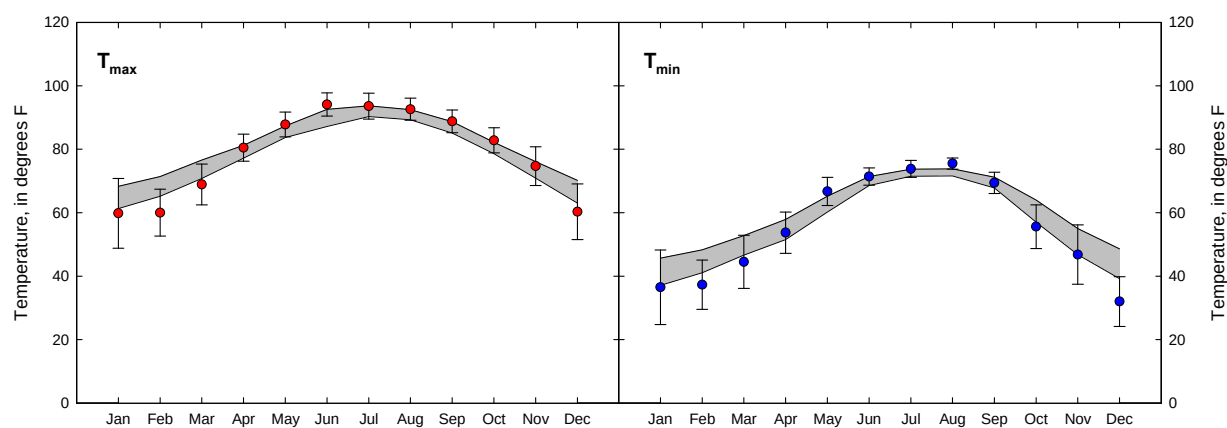


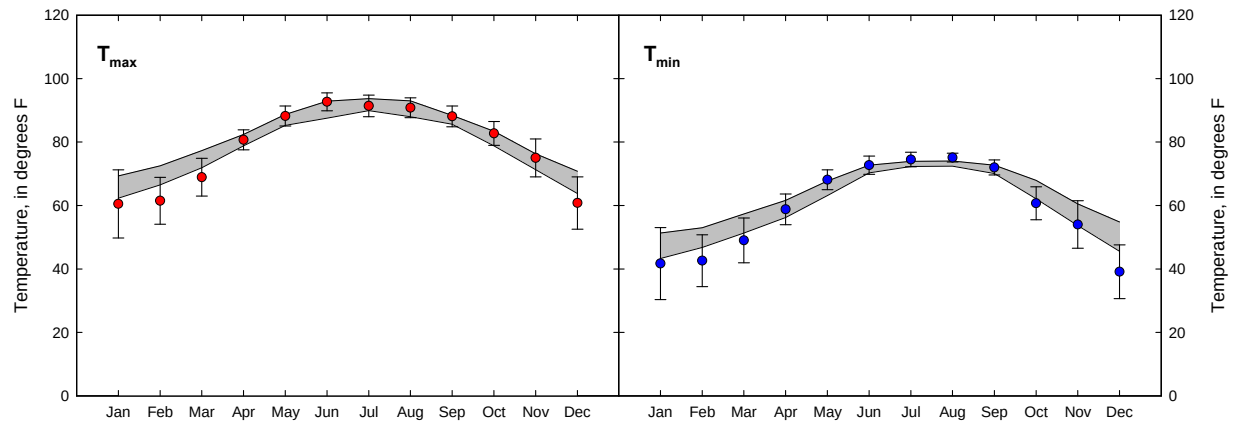
Figure 14. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Jacksonville Craig Municipal Airport and **B.** Jacksonville International Airport stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Castillo de San Marcos National Monument and Fort Matanzas National Monument

Average monthly temperatures at Federal Point weather station ranged from 50.0 – 83.0°F (10 – 28.3°C; Table 2). Average annual temperature was 68.8°F (20.4°C; Table 2). The highest average monthly maximum temperature was 92.7°F (33.7°C) in June 2010 and the lowest average monthly minimum temperature was 39.1°F (3.94°C) in December 2010 (Table 2). Growing season length was calculated to be 244 days at this station, with the last spring freeze occurring on March 8th and the earliest fall freeze occurring on November 7th (Table 3).

Average monthly temperatures at St Augustine Lighthouse weather station ranged from 51.0 – 83.9°F (10.6 – 28.8°C; Table 2). Average annual temperature was 69.4°F (20.8°C; Table 2). The highest average monthly maximum temperature was 92.0°F (33.3°C) in July 2010 and the lowest average monthly minimum temperature was 40.1°F (4.5°C) in December 2010 (Table 2). Growing season length was calculated to be 289 days at this station, with the last spring freeze occurring on February 21st and the earliest fall freeze occurring on December 7th (Table 3).

A.



B.

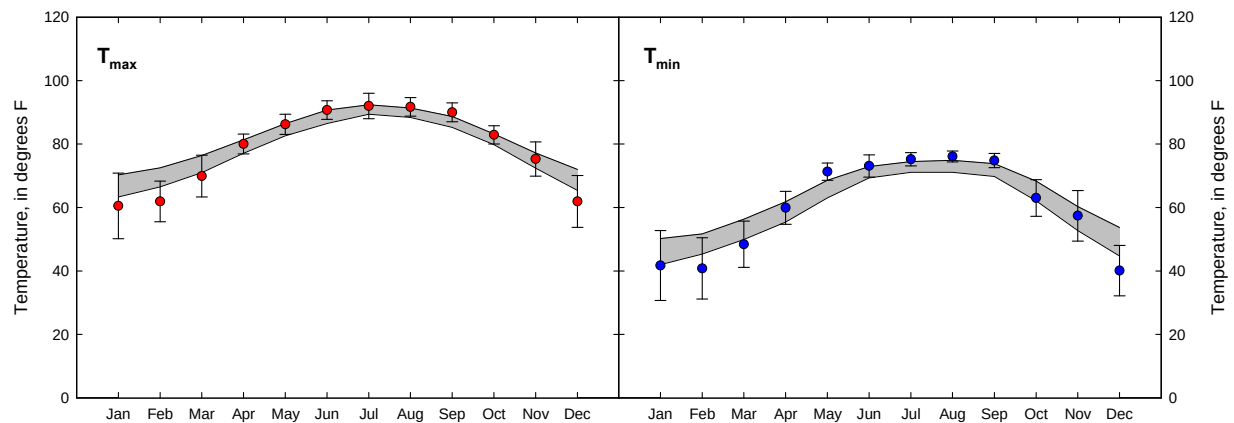


Figure 15. 2010 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Federal Point and **B.** St Augustine Lighthouse stations. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Federal Point and St Augustine Lighthouse station show that January, February, March and December were colder than average (Figure 15), though not outside the range of variation for the long-term average. Temperatures for the rest of the year were warmer than average at both stations (Figure 15), though not outside the range of variation for the long-term average except for August T_{min} at Federal Point station.

Canaveral National Seashore

Average monthly temperatures at Titusville weather station ranged from 51.5 – 85.2°F (10.8 – 29.6°C; Table 2). Average annual temperature was 71.0°F (21.7°C; Table 2). The highest average monthly maximum temperature was 92.6°F (33.7°C) in July 2010 and the lowest average monthly minimum temperature was 40.5°F (4.7°C) in December 2010 (Table 2). Growing season length was calculated to be 335 days at this station, with the last spring freeze occurring on January 13th and the earliest fall freeze occurring on December 14th (Table 3).

Average monthly temperatures at Titusville 7E weather station ranged from 51.5 – 82.4°F (10.8 – 28°C; Table 2). Average annual temperature was 68.9°F (20.5°C; Table 2). The highest average monthly maximum temperature was 89.7°F (32.1°C) in August 2010 and the lowest average monthly minimum temperature was 39.3°F (4.1°C) in December 2010 (Table 2). Growing season length was calculated to be 335 days at this station, with the last spring freeze occurring on January 13th and the earliest fall freeze occurring on December 14th (Table 3).

Average monthly temperatures at Trident Pier tide station ranged from 53.8 – 83.2°F (12.1 – 28.4°C; Table 2). Average annual temperature was 70.8°F (21.6°C). The highest average monthly maximum temperature was 88.6°F (31.4°C) in July 2010 and the lowest average monthly minimum temperature was 46.2°F (7.9°C) in December 2010 (Table 2). Growing season length was calculated to be 364 days at this station, with the only freeze occurring on December 14th (Table 3). Trident Pier documented the longest growing season of all SECN relevant weather stations during 2010.

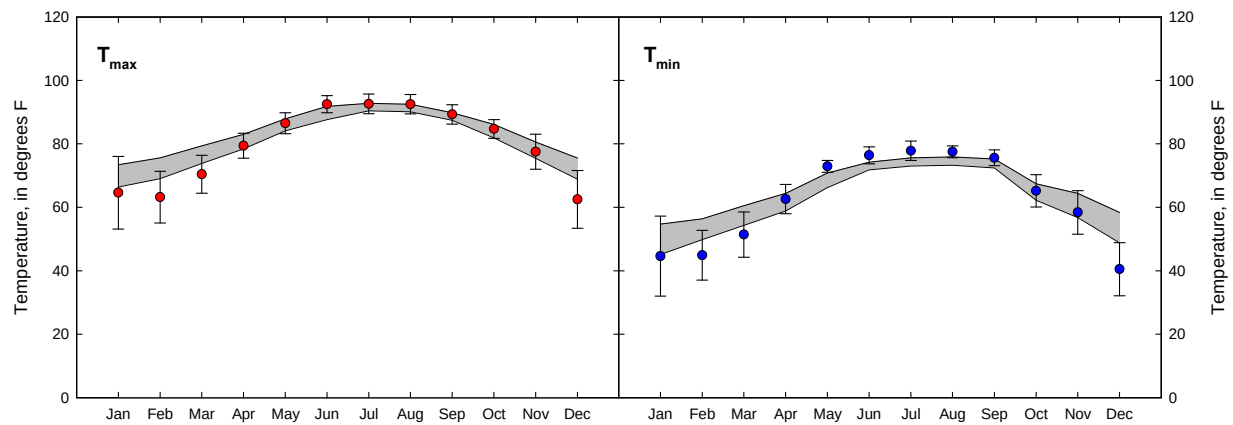


Figure 16. 2010 average monthly temperature and the 30-year (1981 – 2010) average for Titusville station. Units = °F. Points indicate the 2010 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

Comparisons of 2010 temperature data to the 30-year temperature average at Titusville station show that January, February, March, November and December were colder than average (Figure 16) though not outside the range of variation for the long-term average. Temperatures for the rest of the year were warmer than average (with the exception of T_{min} during October and November; Figure 16), though not outside the range of variation for the long-term average.

2010 Precipitation – General Summary

2010 precipitation in the SECN (Annual column in Table 4) was fairly uniform throughout the Network. Some of the wettest conditions in the SECN during 2010 included weather stations relevant to CAHA, CALO, MOCR and FOSU/CHPI where annual precipitation totals ranged from 51.64 – 61.39 inches (1311.7 – 1559.1 mm; Table 4). In contrast, the driest conditions in the SECN during 2010 included weather stations relevant to CUIS, FOCA, FOFR and TIMU where annual precipitation totals ranged from 24.27 – 33.40 inches (616.5 – 848.4 mm; Table 4). Fourteen out of twenty six weather stations relevant to SECN parks received the highest rainfall

in August and/or September during 2010 (Table 4). Eleven out of twenty six weather stations recorded the lowest rainfall during October 2010 (Table 4).

All weather stations relevant to SECN parks, except for Cape Hatteras Airport and Charleston International Airport, experienced lower than normal (long-term average from 1981–2010) total annual precipitation (Table 4). The months of April – June and October – December were periods of below normal precipitation during 2010 at the many (8 out of 20) of weather stations relevant to SECN parks. Total annual precipitation across the southeastern United States for 2010 was rated below normal in contrast to much of the rest of the contiguous United States which received above normal precipitation for the year (NOAA 2010c).

Maps from the U.S. Drought Monitor are used to indicate broad-scale (state and/or regional) drought conditions throughout the United States. These maps and the 2010 Annual Report were examined to determine drought conditions throughout the SECN during 2010 (NOAA 2010a). Conditions during winter (January – March) 2010 were relatively normal for the areas comprising the SECN. Drought conditions developed in the southeast during the spring and summer months of 2010 in areas comprising the SECN (NOAA 2010a). These drought conditions persisted through the end of the year throughout much of the Southeast, and by the end of December 2010, half of the Southeast was classified in moderate to extreme drought (NOAA 2010a).

Hurricane Earl affected the Outer Banks of North Carolina on September 2–3, 2010 with strong winds and heavy rain. This was the only hurricane or tropical storm to affect the counties relevant to SECN parks during 2010 (NOAA 2011c). Any additional storm events that may have affected Network parks during 2010 were of lesser severity and are outside the scope of this report. However, additional details may be found from the following website: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms> – where storm events may be searched by state, county, range of dates and (if desired) type of storm event.

Table 4. Monthly and annual precipitation and departures from the long-term average at weather stations relevant to SECN parks. Values in parentheses indicate the departure from the 30-year (1981-2010) average precipitation. Rows without values in parentheses did not have a 30-year calculated average precipitation. Units = inches. X indicates <3 precipitation measurements were missing which is not enough to eliminate the monthly total, but the total value may be an underestimate of the true total.

Station Name	Applicable Park(s)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Cape Hatteras AP	CAHA	6.55 (1.31)	5.22 (1.20)	7.11 (2.34)	2.02 (-1.62)	3.10 (-0.47)	2.24 (-1.79)	6.28 (1.29)	9.66 (2.73)	11.83 (5.58)	1.56 (-3.82)	2.35 (-2.60)	3.47 (-0.80)	61.39 (3.35)
Ocracoke	CALO, CAHA	6.44 (2.40)	4.72 (0.95)	6.23 (1.34)	2.31 (-1.65)	2.00 (2.13)	0.34 (-3.73)	5.07 (-0.08)	6.87 (-0.93)	10.95 (4.07)	1.48 (-3.49)	1.85 (-2.78)	3.38 (-0.52)	51.64 (-6.55)
Morehead City 2 WNW	CALO	6.33 (1.68)	3.60 (-0.24)	6.48 (2.12)	0.60 (-2.53)	1.65 (-2.91)	2.04 (-2.27)	6.29 (0.23)	6.42 (-1.07)	13.59 (6.25)	2.36 (-2.11)	1.18 (-3.39)	4.01 (-0.23)	54.55 (-4.47)
Moore's Creek National Battlefield	MOCR	4.24	3.04x	2.70x	0.86	2.41	6.19	5.37	3.34	13.17	2.06	1.50x	***	***
Willard 4 SW	MOCR	3.86 (-0.03)	3.93 (0.43)	3.12 (-0.94)	0.47 (-2.78)	1.86 (-2.09)	11.51 (6.31)	4.67x (-1.93x)	5.95 (-0.66)	12.37 (6.29)	1.67 (-1.95)	2.22 (-0.72)	1.30x (-2.07x)	52.93x (-0.14x)
Charleston International AP	CHPI, FOSU	6.46 (2.75)	2.61 (-0.35)	4.53 (0.82)	0.70 (-2.21)	3.67 (0.65)	7.94 (2.29)	9.86 (3.33)	10.07 (2.92)	8.12 (2.02)	0.83 (-2.92)	0.30 (-2.13)	2.48 (-0.63)	57.57 (6.54)
Charleston City	CHPI, FOSU	4.34 (1.40)	3.13 (0.62)	3.87 (0.57)	0.95 (-1.58)	1.04 (-1.12)	3.24 (-1.41)	6.73 (1.33)	8.28 (1.57)	5.68 (-0.08)	0.60 (-3.07)	0.41 (-1.78)	2.02 (-0.58)	40.29 (-4.13)
Columbia Metro AP	CONG	3.18 (-0.40)	2.88 (-0.73)	2.34 (-1.39)	0.91 (-1.71)	2.10 (-0.87)	4.20 (-0.49)	7.70 (2.24)	5.56 (0.30)	1.94 (-1.60)	1.83 (-1.34)	1.46 (-1.28)	1.40 (-1.82)	35.50 (-9.09)
Congaree	CONG	4.49	2.35	3.44	1.06	7.52	6.01	6.26	5.92	2.76	3.64	1.21	1.71	46.37
Alexander City	HOBE	6.36 (1.15)	4.17 (-1.18)	5.28 (-0.21)	2.45 (-1.66)	4.64 (0.31)	3.23 (-1.22)	0.73 (-4.58)	5.89 (1.39)	1.07 (-3.03)	2.71 (-0.37)	5.20 (0.41)	3.04 (-1.86)	44.77 (-10.85)
Lafayette 2W	HOBE	5.88 (0.86)	6.54 (1.47)	6.65 (0.93)	3.65 (-0.90)	3.73 (-0.54)	2.17 (-2.01)	3.95 (-1.17)	3.1 (-1.10)	2.48 (-1.23)	2.61 (-0.67)	2.92 (-1.66)	3.25 (-1.60)	46.93 (-7.62)
Atlanta Hartsfield Intl. Airport	CHAT, KEMO	5.38 (1.18)	4.17 (-0.50)	4.24 (-0.57)	2.56 (-0.80)	6.87 (3.20)	5.21 (1.26)	4.37 (-0.90)	3.32 (-0.58)	1.60 (-2.87)	3.33 (-0.08)	5.48 (1.38)	1.62 (-2.28)	48.15 (-1.56)
Gainesville	CHAT, KEMO	6.10 (0.93)	4.34 (-0.76)	4.73 (-0.50)	3.74 (-0.05)	4.51 (0.71)	4.45 (0.32)	1.81 (-2.41)	5.77 (1.38)	5.11 (0.56)	2.63 (-1.25)	2.43 (-1.91)	3.26 (-1.40)	48.88 (-4.28)
Dallas 7 NE	CHAT, KEMO	4.72 (-0.14)	4.30 (-0.87)	6.05 (0.98)	2.90 (-1.03)	5.98 (1.86)	2.83 (-1.24)	4.17 (-0.93)	2.48 (-1.87)	1.81 (-2.29)	1.08 (-2.34)	2.20 (-2.10)	2.79 (-1.70)	41.31 (-11.67)
Brunswick	FOFR, CUIS	5.26 (1.73)	2.65 (-1.10)	2.33 (-1.78)	1.23 (-1.44)	1.57 (-0.80)	2.68 (-2.88)	4.03 (-1.04)	8.35 (1.44)	1.71 (-4.59)	0.53 (-3.96)	0.60 (-1.55)	1.29 (-1.42)	32.23 (-17.39)
Brunswick Malcolm McKinnon AP	FOFR, CUIS	4.33 (1.11)	1.96 (-1.51)	2.45 (-1.43)	0.89 (-1.60)	1.41 (-0.45)	1.42 (-3.42)	3.62 (-0.46)	4.94 (-1.33)	1.47 (-4.29)	0.41 (-4.05)	0.72 (-1.31)	0.65 (-1.99)	24.27 (-20.73)
Brunswick 23 S	CUIS	5.24	2.71	1.84	0.25	1.70	3.34	1.87	6.59	3.56	0.02	0.87	0.46	28.46
Stafford - CUIS	CUIS, FOFR	4.48	2.22	2.79	0.29	1.45	5.77	1.49	5.47	4.56	0.01	0.96	0.40	29.89
Savannah International AP	FOPU	6.28 (2.59)	3.25 (0.46)	2.72 (-1.01)	1.40 (-1.67)	3.88 (0.90)	5.79 (-0.16)	2.18 (-3.42)	5.30 (-1.26)	3.01 (-1.57)	0.60 (-3.09)	0.31 (-2.06)	1.63 (-1.32)	36.35 (-11.61)
Macon Middle Georgia Reg. AP	OCMU	5.50 (1.26)	3.07 (-1.29)	3.49 (-1.06)	1.36 (-1.60)	4.31 (1.59)	5.73 (1.67)	6.97 (2.02)	3.51 (-0.59)	5.41 (1.82)	0.95 (-1.84)	2.61 (-0.71)	1.08 (-2.96)	43.99 (-1.69)

Table 4. Continued.

Brender	OCMU	5.76	1.66	5.88	3.50	7.38	5.03	4.27	***	5.42	1.58	1.09	0.0	***
Jacksonville Craig Municipal AP	FOCA, TIMU	2.96	2.36	2.14	0.64	1.97	2.67	2.57	6.09	3.40	0.00	4.59	0.34	29.73
Jacksonville International AP	FOCA, TIMU	3.96 (0.66)	2.71 (-0.48)	1.87 (-2.08)	1.01 (-1.63)	1.65 (-0.83)	3.73 (-2.72)	3.98 (-2.57)	7.74 (0.94)	5.11 (-3.08)	0.00 (-3.93)	1.30 (-0.81)	0.34 (-2.46)	33.40 (-18.99)
Federal Point	CASA, FOMA	6.34 (3.52)	3.99 (0.93)	4.09 (0.29)	0.20 (-1.86)	3.98 (1.24)	6.83 (0.41)	7.74 (1.44)	7.15 (0.43)	1.62 (-6.04)	0.26 (-3.24)	1.35 (-0.98)	0.61 (-1.40)	44.16 (-5.26)
St Augustine Lighthouse	CASA, FOMA	3.96 (1.14)	4.72 (1.61)	3.41 (-0.69)	0.97 (-1.60)	6.85 (3.76)	2.08 (-3.71)	4.79 (-0.05)	4.11 (-2.38)	1.11 (-6.20)	1.45 (-2.79)	2.19 (-0.11)	0.43 (-1.92)	36.07 (-12.94)
Titusville	CANA	3.00 (0.25)	5.98 (3.15)	8.48 (4.06)	2.87 (3.25)	1.96 (3.95)	1.71 (-4.89)	1.87 (-5.03)	6.19 (-1.69)	3.28 (-3.79)	0.17 (-4.55)	1.71 (-1.23)	0.32 (-2.24)	37.54 (-16.45)
Titusville 7 E	CANA	3.81	4.79	7.56	1.96	2.56	3.84	2.31	5.82	8.50	0.01	3.07	0.38	44.61

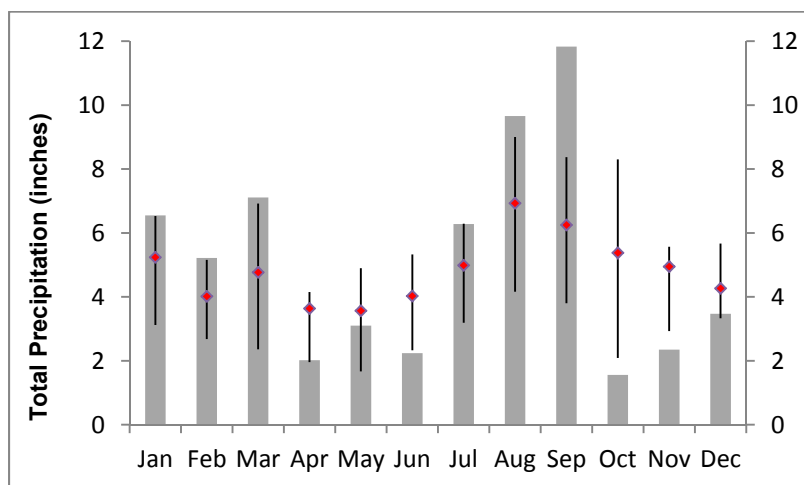
Precipitation Data Presented by Park

Cape Hatteras National Seashore

2010 monthly precipitation for Cape Hatteras Airport station ranged from 1.56 – 11.83 inches (39.6 – 300.5 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in September (Table 4). 2010 total precipitation was 61.39 inches (1559.3 mm; Table 4).

2010 monthly precipitation for Ocracoke station ranged from 0.34 – 10.95 inches (8.6 – 278.1 mm), with the lowest precipitation occurring in June and the highest precipitation occurring in September (Table 4). 2010 total precipitation was 51.64 inches (1311.7 mm; Table 4).

A.



B.

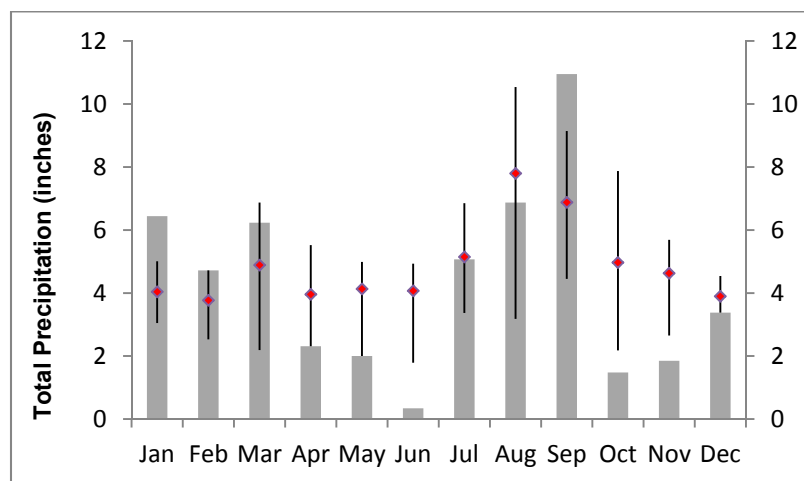


Figure 17. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Cape Hatteras Airport and **B.** Ocracoke stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Cape Hatteras Airport station show that January, February, March, July, August and September experienced higher than average precipitation, with March, August and September having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with June, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation at Cape Hatteras Airport station was 61.39 inches (1559.3 mm) during 2010, which is 3.35 inches (85.1 mm) above normal (Table 4). Cape Hatteras Airport is only one of two stations relevant to SECN Parks with above average total annual precipitation during 2010.

Comparisons of 2010 precipitation data to the 30-year average at Ocracoke station show that January, February, March and September experienced higher than average precipitation (Figure 17), with January and September having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with June, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation at Ocracoke station was 51.64 inches (1311.7 mm) during 2010, which is 6.55 inches (166.4 mm) below normal (Table 4).

Cape Lookout National Seashore

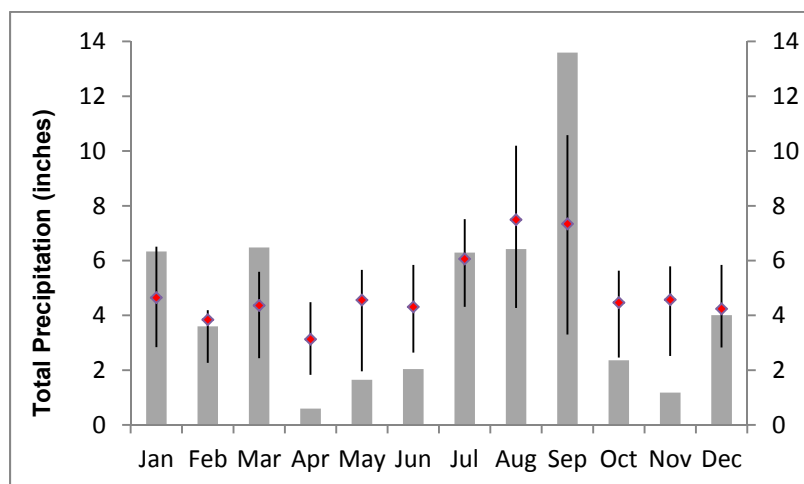
2010 monthly precipitation for Ocracoke station ranged from 0.34 – 10.95 inches (8.6 – 278.1 mm), with the lowest precipitation occurring in June and the highest precipitation occurring in September (Table 4). 2010 total precipitation was 51.64 inches (1311.7 mm; Table 4).

2010 monthly precipitation for Morehead City 2WNW station ranged from 0.60 – 13.59 inches (15.2 – 345.2 mm), with the lowest precipitation occurring in April and the highest precipitation occurring in September (Table 4). 2010 total precipitation was 54.55 inches (1385.6 mm; Table 4).

Comparisons of 2010 precipitation data to the 30-year average at Morehead City 2WNW station show that January, March, July and September experienced higher than average precipitation (Figure 18), with March and September having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, May, June, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 54.55 inches (1385.6 mm) at Morehead City 2WNW station during 2010, which is 4.47 inches (113.5 mm) below normal (Table 4).

Comparisons of 2010 precipitation data to the 30-year average at Ocracoke station show that January, February, March and September experienced higher than average precipitation (Figure 18), with January and September having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with June, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation at Ocracoke station was 51.64 inches (1311.7 mm) during 2010, which is 6.55 inches (166.4 mm) below normal (Table 4).

A.



B.

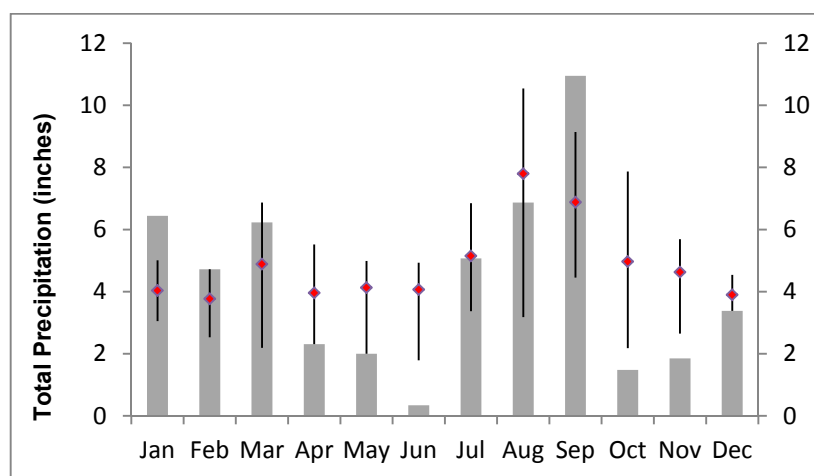


Figure 18. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Morehead City and **B.** Ocracoke stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Moore's Creek National Battlefield

2010 monthly precipitation for Moore's Creek National Battlefield station ranged from 0.86 – 13.17 inches (21.8 – 334.5 mm), with the lowest precipitation occurring in April and the highest precipitation occurring in September (Table 4). 2010 total precipitation was 52.93 inches (1344.4 mm), although a few precipitation measurements were missing from the 2010 dataset (Table 4) which may have caused an underestimation of the true value.

2010 monthly precipitation for Willard 4 SW ranged from 0.47 – 12.37 inches (11.9 – 314.2 mm), with the lowest precipitation occurring in April and the highest precipitation occurring in September (Table 4). 2010 total precipitation was 52.93 inches (1344.4 mm) which is 1.27 inches (32.2 mm) below normal, although a few precipitation measurements were missing from the 2010 dataset (Table 4) which may have caused an underestimation of the true value.

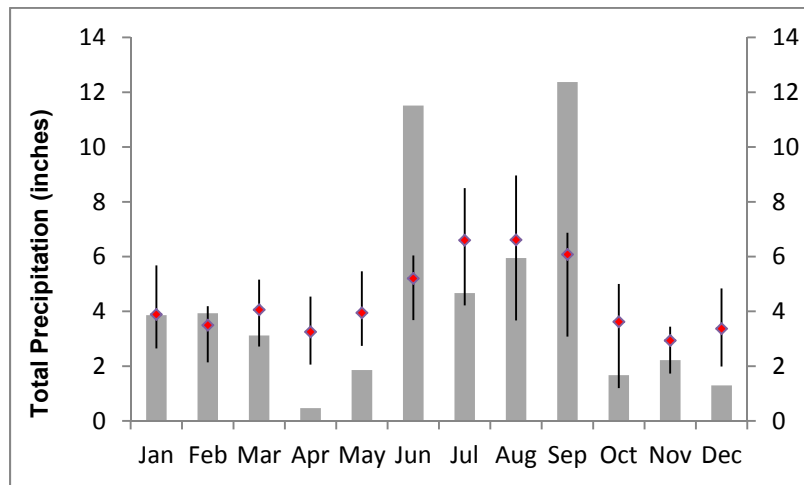


Figure 19. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for Willard 4 SW station. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Willard 4 SW station show that January, February, June and September experienced higher than average precipitation (Figure 19), with June and September having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, May and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 52.93 inches (1344.4 mm) during 2010, which is 0.14 inches (3.6 mm) below normal, although a few precipitation measurements were missing from the 2010 dataset (Table 4) which may have caused this value to underestimate the true value. Moores Creek National Battlefield station has not been collecting data long enough to calculate a long-term average.

Charles Pinckney National Historic Site and Fort Sumter National Monument

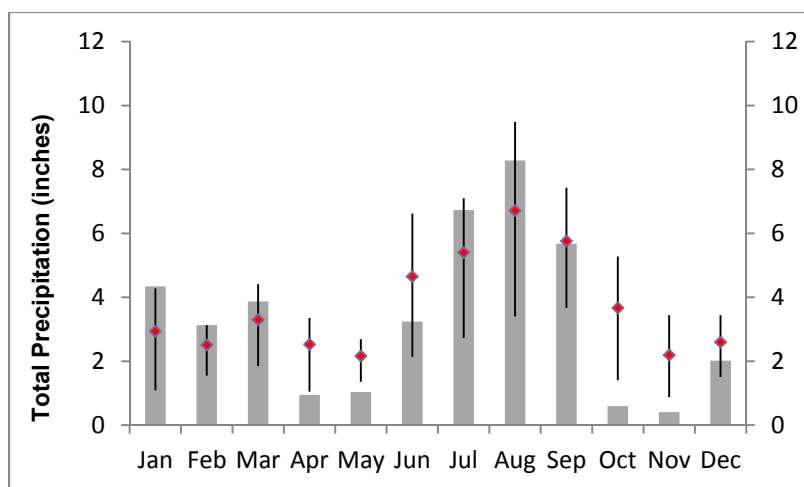
2010 monthly precipitation for Charleston City station ranged from 0.41 – 8.28 inches (10.4 – 210.3 mm), with the lowest precipitation occurring in November and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 40.29 inches (1023.4 mm; Table 4).

2010 monthly precipitation for Charleston International Airport station ranged from 0.30 – 10.07 inches (7.6 – 255.8 mm), with the lowest precipitation occurring in November and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 57.57 inches (1462.3 mm; Table 4).

Comparisons of 2010 precipitation data to the 30-year average at Charleston City station show that January, February, March, July and August experienced higher than average precipitation (Figure 20) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, May, October, and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 40.29 inches during 2010, which is 4.13 inches below normal.

Comparisons of 2010 precipitation data to the 30-year average at Charleston International Airport Station show that January, March, May, June, July, August and September experienced higher than average precipitation (Figure 20) with January, June, July, and August having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, October, and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 57.57 inches (1462.3 mm) during 2010, which is 6.54 inches (166.1 mm) above normal. Charleston International Airport station is only one of two stations relevant to SECN Parks with an above average total annual precipitation during 2010.

A.



B.

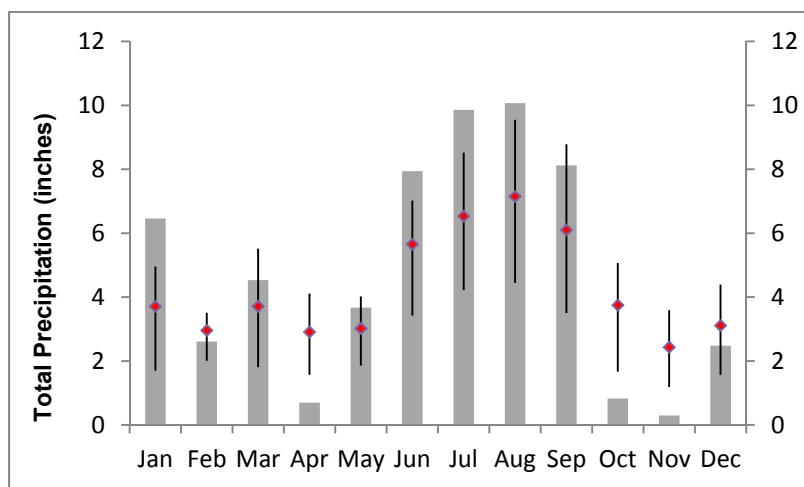


Figure 20. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Charleston City and **B.** Charleston International Airport stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Congaree National Park

2010 monthly precipitation for Congaree station ranged from 1.21 – 7.52 inches (30.7 – 191 mm), with the lowest precipitation occurring in November and the highest precipitation occurring in May (Table 4). 2010 total precipitation was 46.37 inches (1155.8 mm; Table 4).

2010 monthly precipitation for Columbia Metro Airport station ranged from 0.91 – 7.70 inches (23.1 – 195.6 mm), with the lowest precipitation occurring in April and the highest precipitation occurring in July (Table 4). 2010 total precipitation was 35.50 inches (901.7 mm; Table 4).

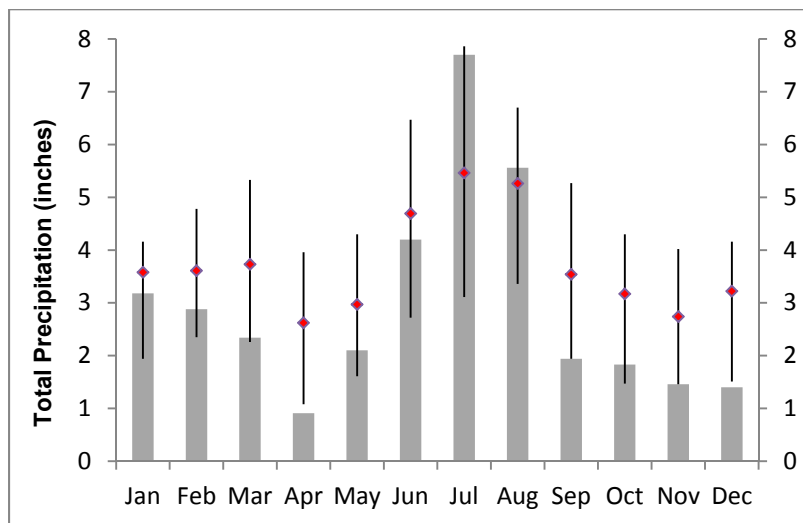


Figure 21. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for Columbia Metro Airport station. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Columbia Metro Airport station show that July and August experienced higher than average precipitation (Figure 21) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, October and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 35.50 inches (901.7 mm) during 2010, which is 9.09 inches (230.9 mm) below normal. The Congaree station hasn't been operational long enough to calculate a 30-year average for precipitation.

Chattahoochee River National Recreation Area

2010 monthly precipitation for Atlanta Hartsfield International Airport station ranged from 1.60 – 6.87 inches (40.6 – 174.5 mm), with the lowest precipitation occurring in September and the highest precipitation occurring in May (Table 4). 2010 total precipitation was 48.15 inches (1223.1 mm; Table 4).

2010 monthly precipitation for Dallas 7 NE station ranged from 1.08 – 5.98 inches (27.4 – 151.9 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in May (Table 4). 2010 total precipitation was 41.31 inches (1049.3 mm; Table 4).

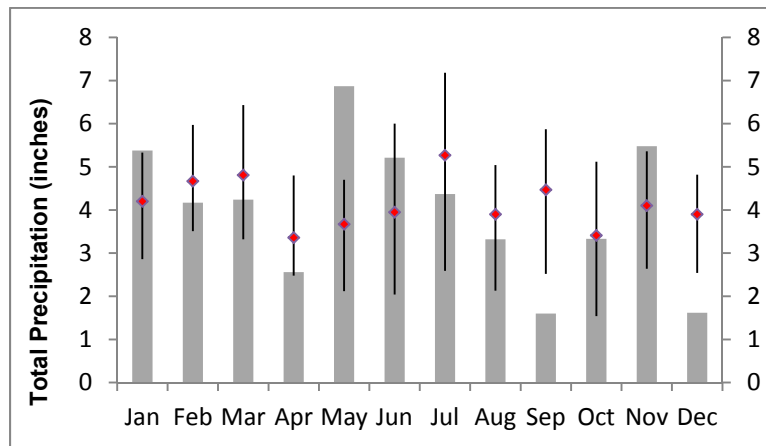
2010 monthly precipitation for Gainesville station ranged from 1.81 – 6.10 inches (46 – 154.9 mm), with the lowest precipitation occurring in July and the highest precipitation occurring in January (Table 4). 2010 total precipitation was 48.88 inches (1241.6 mm; Table 4).

Comparisons of 2010 precipitation data to the 30-year average at Atlanta Hartsfield International Airport station show that January, May, June and November experienced higher than average precipitation (Figure 22) with May and November having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with September and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 48.15 inches (1223 mm) during 2010, which is 1.56 inches (39.6 mm) below normal.

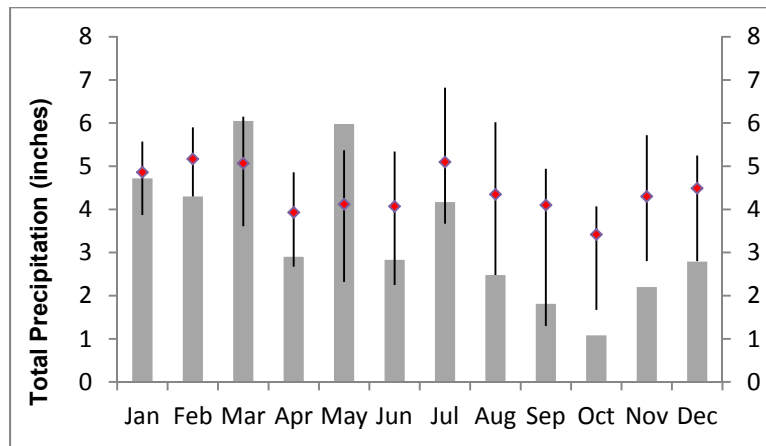
Comparisons of 2010 precipitation data to the 30-year average at Dallas 7 NE station show that March and May experienced higher than average precipitation (Figure 22) with May having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with February, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 41.31 inches (1049.3 mm) during 2010, which is 11.67 inches (296.4 mm) below normal.

Comparisons of 2010 precipitation data to the 30-year average at Gainesville station show that January, May, June, August and September experienced higher than average precipitation (Figure 22) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with July and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 48.88 inches (1241.6 mm) during 2010, which is 4.28 inches (108.7 mm) below normal.

A.



B.



C.

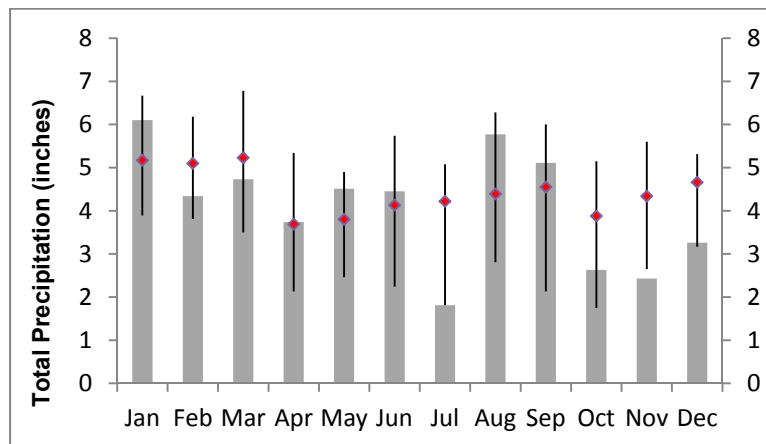


Figure 22. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Atlanta Hartsfield International Airport, **B.** Dallas 7 NE and **C.** Gainesville stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Kennesaw Mountain National Battlefield Park

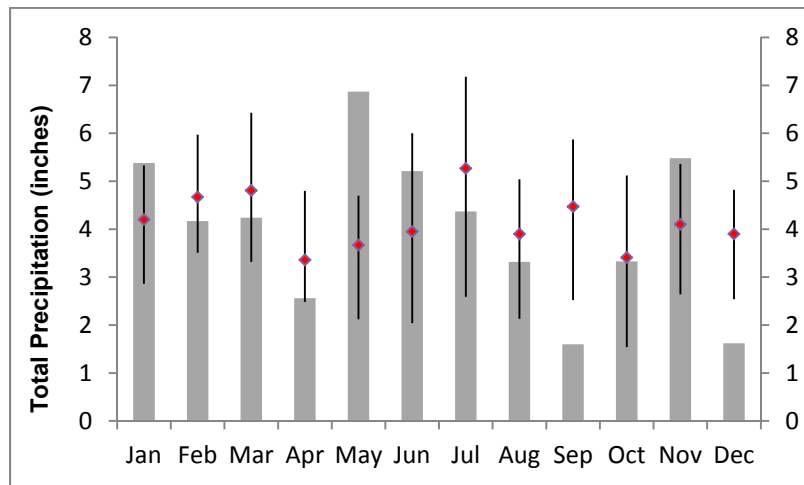
2010 monthly precipitation for Atlanta Hartsfield International Airport station ranged from 1.60 – 6.87 inches (40.6 – 174.5 mm), with the lowest precipitation occurring in September and the highest precipitation occurring in May (Table 4). 2010 total precipitation was 48.15 inches (1223.1 mm; Table 4).

2010 monthly precipitation for Dallas 7 NE station ranged from 1.08 – 5.98 inches (27.4 – 151.9 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in May (Table 4). 2010 total precipitation was 41.31 inches (1049.3 mm; Table 4).

Comparisons of 2010 precipitation data to the 30-year average at Atlanta Hartsfield International Airport station show that January, May, June and November experienced higher than average precipitation (Figure 23) with May and November having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with September and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 48.15 inches (1223 mm) during 2010, which is 1.56 inches (39.6 mm) below normal.

Comparisons of 2010 precipitation data to the 30-year average at Dallas 7 NE station show that March and May experienced higher than average precipitation (Figure 23) with May having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with February, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 41.31 inches (1049.3 mm) during 2010, which is 11.67 inches (296.4 mm) below normal.

A.



B.

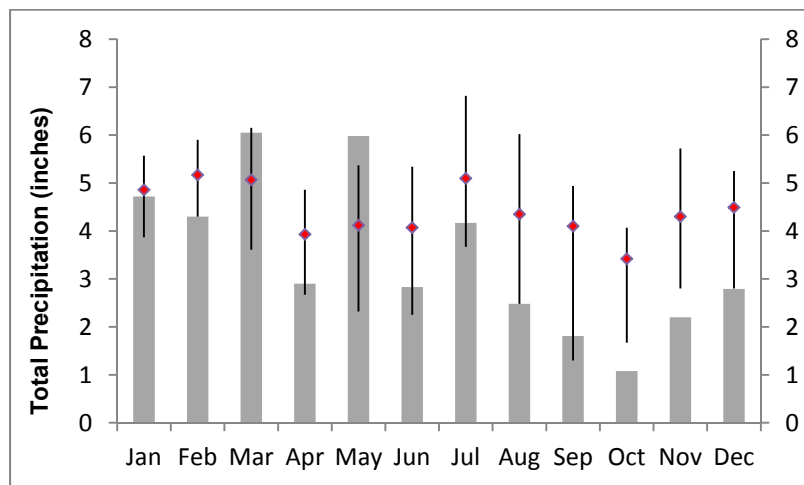


Figure 23. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Atlanta Hartsfield International Airport and **B.** Dallas 7 NE stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Ocmulgee National Monument

2010 monthly precipitation for Brender station ranged from 0 – 7.38 inches (0 – 187.4 mm), with the lowest precipitation occurring in December and the highest precipitation occurring in May (Table 4). 2010 total precipitation was not calculated due to missing data for one month (Table 4).

2010 monthly precipitation for Macon Middle Georgia Regional Airport station ranged from 0.95 – 6.97 inches (24.1 – 177 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in July (Table 4). 2010 total precipitation was 43.99 inches (1117.3 mm; Table 4).

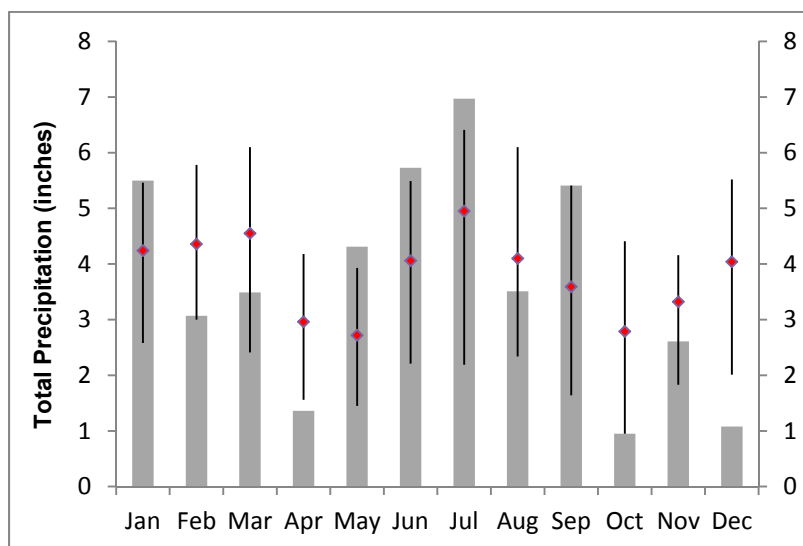


Figure 24. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for Macon Middle Georgia Regional Airport station. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Macon Middle Georgia Regional Airport station show that January, May, June, July and September experienced higher than average precipitation (Figure 24) with May, June and July having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, October and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 43.99 inches (1117.3 mm) during 2010, which is 1.69 inches (43 mm) below normal.

Fort Pulaski National Monument

2010 monthly precipitation for Savannah International Airport station ranged from 0.31 – 6.28 inches (7.9 – 159.5 mm), with the lowest precipitation occurring in December and the highest precipitation occurring in January (Table 4). 2010 total precipitation was 36.35 inches (923.3 mm; Table 4).

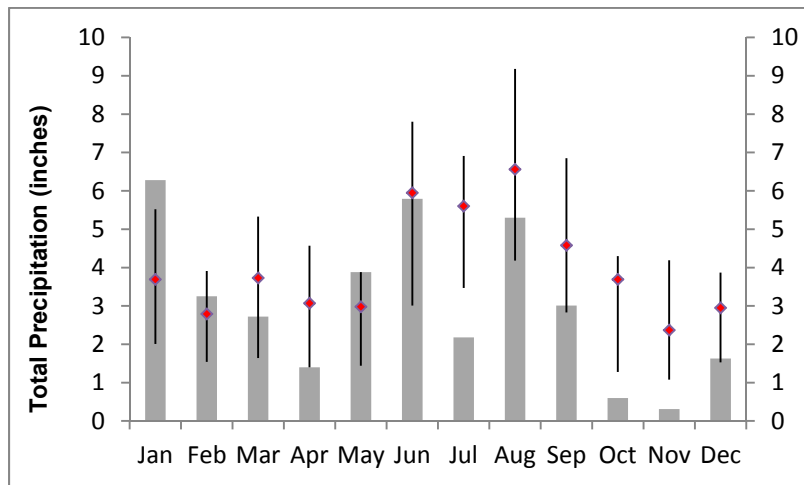


Figure 25. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for Savannah International Airport station. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

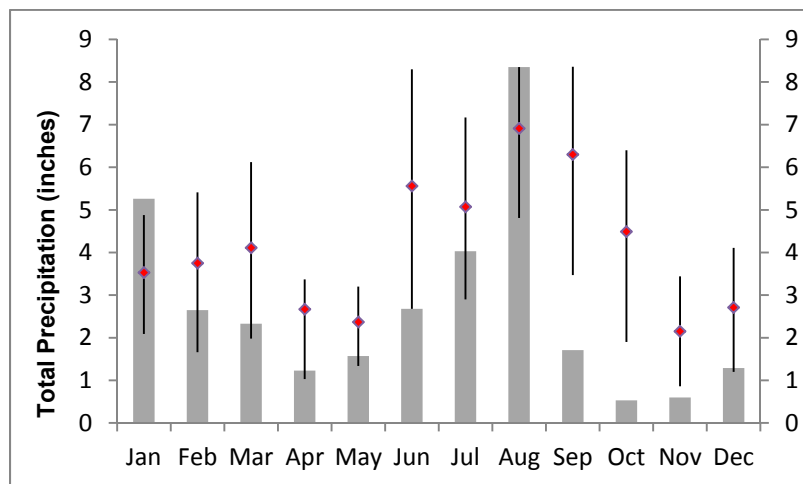
Comparisons of 2010 precipitation data to the 30-year average at Savannah International Airport station show that January, February and May experienced higher than average precipitation (Figure 25) with January having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, July, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 36.35 inches (923.3 mm) during 2010, which is 11.61 inches (294.9 mm) below normal.

Fort Frederica National Monument

2010 monthly precipitation for Brunswick station ranged from 0.53 – 8.35 inches (13.5 – 212.1 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 32.23 inches (818.6 mm; Table 4).

2010 monthly precipitation for Brunswick Malcolm McKinnon Airport station ranged from 0.41 – 4.94 inches (10.4 – 125.5 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 24.27 inches (616.5 mm; Table 4).

A.



B.

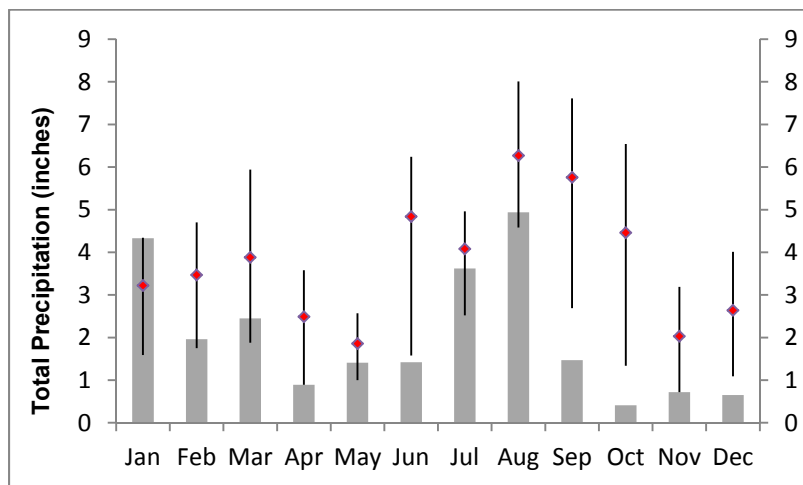


Figure 26. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Brunswick and **B.** Brunswick Malcolm McKinnon Airport stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Brunswick station show that January, and August experienced higher than average precipitation (Figure 26) with January having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with September, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. 2010 total precipitation was 32.23 inches (818.6 mm), which is 17.39 inches (441.7 mm) below normal.

Comparisons of 2010 precipitation data to the 30-year average at Brunswick Malcolm McKinnon station show that January experienced higher than average precipitation (Figure 26) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, June, September, October and December experiencing lower precipitation than the 25th percentile of the 30-year

average. 2010 total precipitation was 24.27 inches (616.5 mm), which is 20.73 inches (526.5 mm) below normal.

Cumberland Island National Seashore

2010 monthly precipitation for Brunswick 23 S station ranged from 0.02 – 6.59 inches (5.1 – 167.4 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 28.46 inches (722.9 mm; Table 4).

2010 monthly precipitation for Stafford - CUIS station ranged from 0.01 – 5.77 inches (.3 – 146.6 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in June (Table 4). 2010 total precipitation was 29.89 inches (759.2 mm; Table 4).

2010 monthly precipitation for Brunswick station ranged from 0.53 – 8.35 inches (13.5 – 212.1 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 32.23 inches (818.6 mm; Table 4).

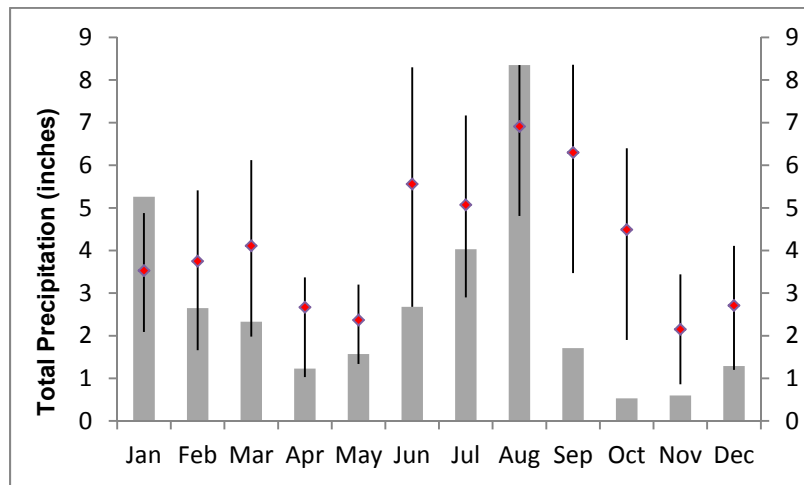
2010 monthly precipitation for Brunswick Malcolm McKinnon Airport station ranged from 0.41 – 4.94 inches (10.4 – 125.5 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 24.27 inches (616.5 mm; Table 4).

Comparisons of 2010 precipitation data to the 30-year average at Brunswick station show that January, and August experienced higher than average precipitation (Figure 27) with January having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with September, October and November experiencing lower precipitation than the 25th percentile of the 30-year average. 2010 total precipitation was 32.23 inches (818.6 mm), which is 17.39 inches (441.7 mm) below normal.

Comparisons of 2010 precipitation data to the 30-year average at Brunswick Malcolm McKinnon station show that January experienced higher than average precipitation (Figure 27) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, June, September, October and December experiencing lower precipitation than the 25th percentile of the 30-year average. 2010 total precipitation was 24.27 inches (616.5 mm), which is 20.73 inches (526.5 mm) below normal.

Brunswick 23 S and Stafford – CUIS have not been operational long enough to calculate a 30-year average for precipitation data.

A.



B.

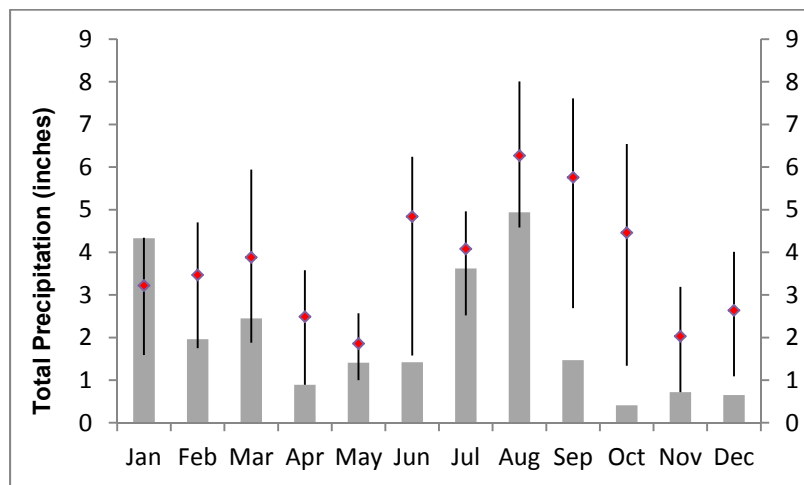


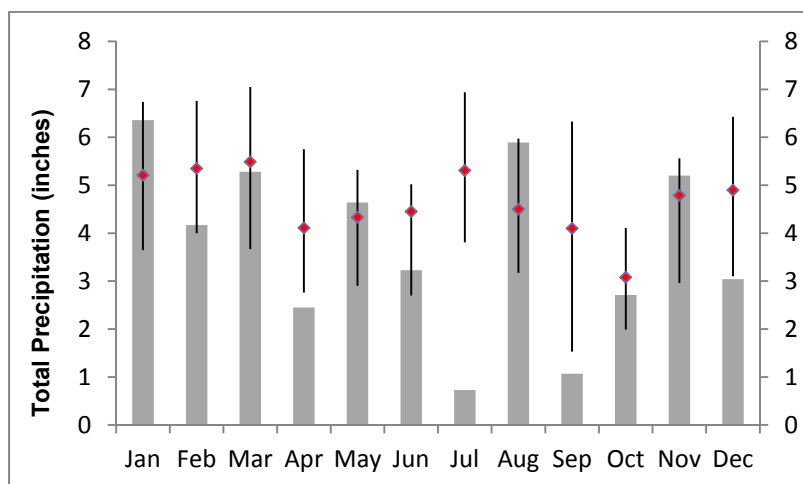
Figure 27. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Brunswick and **B.** Brunswick Malcolm McKinnon Airport stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Horseshoe Bend National Military Park

2010 monthly precipitation for Alexander City station ranged from 0.73 – 6.36 inches (18.5 – 161.5 mm), with the lowest precipitation occurring in July and the highest precipitation occurring in January (Table 4). 2010 total precipitation was 44.77 inches (1137.2 mm; Table 4).

2010 monthly precipitation at Lafayette 2W station ranged from 2.17 – 6.65 inches (55.1 – 168.9 mm), with the lowest precipitation occurring in June and the highest precipitation occurring in March (Table 4). 2010 total precipitation was 46.93 inches (1192 mm; Table 4).

A.



B.

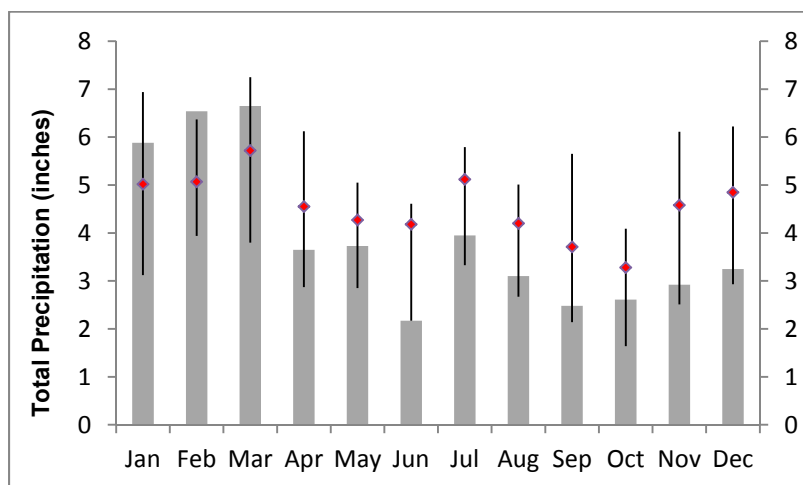


Figure 28. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Alexander City and **B.** Lafayette 2W stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Alexander City station show that January, May, August and November experienced higher than average precipitation (Figure 28) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, July, September and December experiencing lower precipitation than the 25th percentile of the 30-year average. 2010 total precipitation was 44.77 inches (1137.2 mm), which is 10.85 inches (275.6 mm) below normal.

Comparisons of 2010 precipitation data to the 30-year average at Lafayette 2W station show that January, February and March experienced higher than average precipitation (Figure 28) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with June experiencing lower

precipitation than the 25th percentile of the 30-year average. 2010 total precipitation was 46.93 inches (1192 mm), which is 7.62 inches (193.5 mm) below normal.

Fort Caroline National Monument and Timucuan Ecological and Historic Preserve

2010 monthly precipitation for Jacksonville Craig Municipal Airport station ranged from 0 – 6.09 inches (0 – 154.7 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 29.73 inches (755.1 mm; Table 4).

2010 monthly precipitation for Jacksonville International Airport station ranged from 0 – 7.74 inches (0 – 196.6 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in August (Table 4). 2010 total precipitation was 33.40 inches (848.4 mm; Table 4).

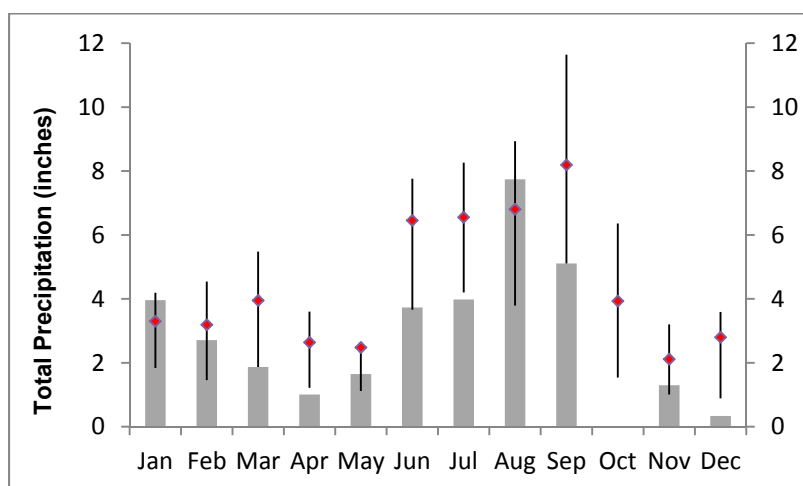


Figure 29. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for Jacksonville International Airport weather station. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

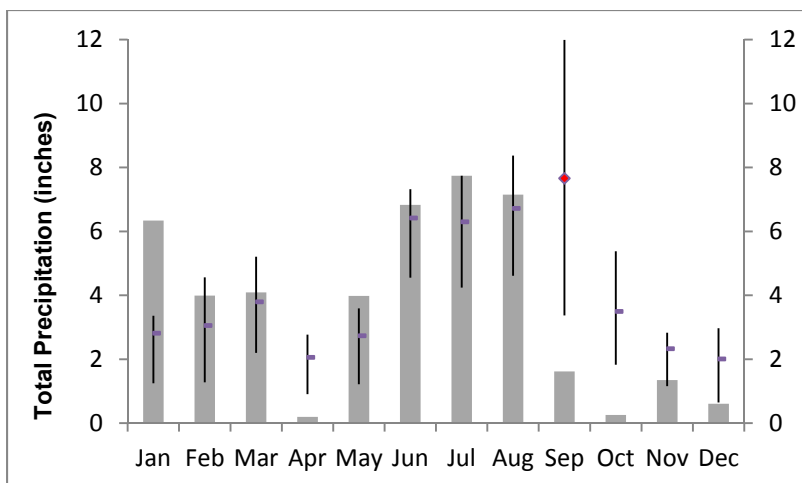
Comparisons of 2010 precipitation data to the 30-year average at Jacksonville International Airport station show that January, and August experienced higher than average precipitation (Figure 29) although 2010 monthly total precipitation was never higher than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with March, April, July, October and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 33.40 inches (848.4 mm) during 2010, which is 18.99 inches (482.3 mm) below normal.

Castillo de San Marcos National Monument and Fort Matanzas National Monument

2010 monthly precipitation for Federal Point station ranged from 0.20 – 7.74 inches (5.1 – 196.6 mm), with the lowest precipitation occurring in April and the highest precipitation occurring in July (Table 4). 2010 total precipitation was 44.16 inches (1121.7 mm; Table 4).

2010 monthly precipitation for St Augustine Lighthouse station ranged from 0.43 – 6.85 inches (10.9 – 174 mm), with the lowest precipitation occurring in December and the highest precipitation occurring in May (Table 4). 2010 total precipitation was 36.07 inches (916.2 mm; Table 4).

A.



B.

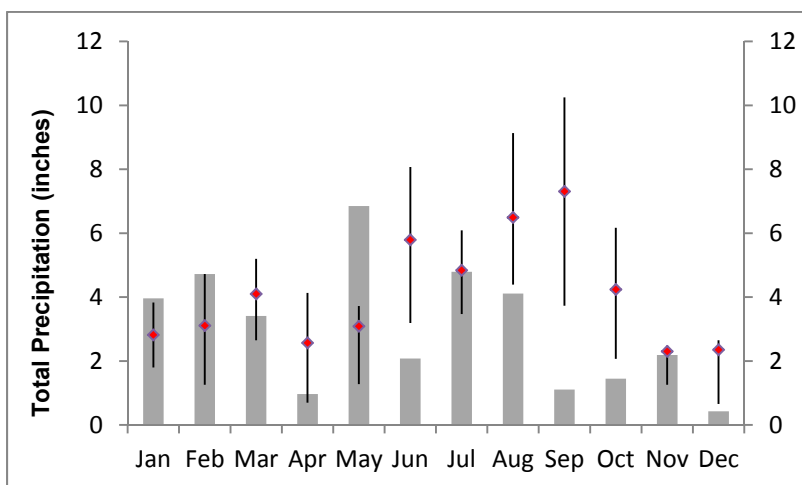


Figure 30. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for **A.** Federal Point and **B.** St Augustine Lighthouse stations. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Federal Point station show that January, February, March, May, June, July and August experienced higher than average precipitation (Figure 30) with January and May having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with April, September, October and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 44.16 inches (1121.7 mm) during 2010, which is 5.26 inches (133.6 mm) below normal.

Comparisons of 2010 precipitation data to the 30-year average at St Augustine Lighthouse station show that January, February and May experienced higher than average precipitation (Figure 30) with January and May having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with June, August, September, October and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 36.07 inches (916.2 mm) during 2010, which is 12.94 inches (193.5 mm) below normal.

Canaveral National Seashore

2010 monthly precipitation for Titusville station ranged from 0.17 – 8.48 inches (4.3 – 215.4 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in March (Table 4). 2010 total precipitation was 37.54 inches (953.5 mm; Table 4).

2010 monthly precipitation for Titusville 7 E station ranged from 0.01 – 7.56 inches (.3 – 192 mm), with the lowest precipitation occurring in October and the highest precipitation occurring in March (Table 4). 2010 total precipitation was 44.61 inches (1133.1 mm; Table 4).

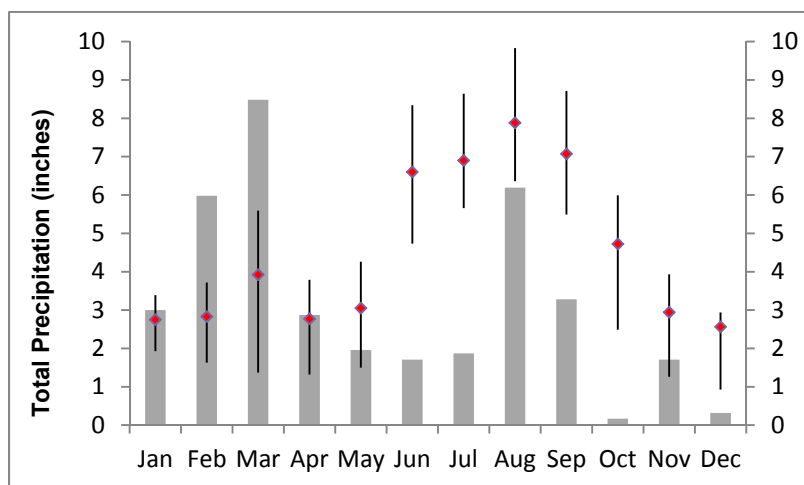


Figure 31. Total monthly precipitation during 2010 and the 30-year (1981 - 2010) monthly averages for Titusville station. The gray columns represent 2010 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

Comparisons of 2010 precipitation data to the 30-year average at Titusville station show that January, February, March and April experienced higher than average precipitation (Figure 31) with February and March having higher total precipitation than the 75th percentile of the 30-year average. Precipitation during the rest of 2010 was lower than average with June, July, August, September, October and December experiencing lower precipitation than the 25th percentile of the 30-year average. Total annual precipitation was 37.54 inches (953.5 mm) during 2010, which is 16.45 inches (417.8 mm) below normal.

2010 Relative Humidity – General Summary

Average monthly maximum and minimum relative humidity data are presented in Table 5 for both 2010 and a five-year average (2005 – 2009, with occasional data from 2004 when insufficient relative humidity data were collected during 2005 – 2009). During 2010, relative humidity was typically lowest ($RH_{\min}$) during the month of April followed by December and was highest ($RH_{\max}$) during the summer months – particularly May, June and August (Table 5). This pattern was repeated for the five-year average with maximum relative humidity being lowest during April and highest during the summer, particularly August (Table 5). During 2010, minimum relative humidity ranged from 29 – 100% and maximum relative humidity ranged from 78 – 100% (Table 5). There are no obvious patterns in relative humidity in terms of the location of the weather stations relevant to SECN parks. However, very few of the stations collecting relative humidity are directly on the coast or on a barrier island.

Relative Humidity Data Presented by Park

Cape Hatteras National Seashore

Average monthly maximum relative humidity for Cape Hatteras Airport station ranged from 79 – 99%, with the lowest maximum relative humidity occurring in December and the highest occurring in April, October and November – although some of these data are missing (Table 5). Average monthly minimum relative humidity ranged from 52 – 73%, with the lowest minimum relative humidity occurring in December and the highest occurring in summer months – although some of these data are missing (Table 5).

Cape Lookout National Seashore

Average monthly maximum relative humidity for Croatan station ranged from 90 – 100%, with the lowest maximum relative humidity occurring in January and the highest occurring during the summer months – although some of these data are missing (Table 5). Average monthly minimum relative humidity ranged from 46 – 62%, with the lowest minimum relative humidity occurring in February and the highest occurring during the summer months (Table 5).

Moore's Creek National Battlefield

Average monthly maximum relative humidity for Wilmington International Airport station ranged from 84 – 91%, with the lowest maximum relative humidity occurring in January and the highest values occurring in May and August (Table 5). Average monthly minimum relative humidity ranged from 37 – 54%, with the lowest minimum relative humidity occurring in April and the highest occurring during the summer months (Table 5).

Charles Pinckney National Historic Site and Fort Sumter National Monument

Average monthly maximum relative humidity for Charleston International Airport station ranged from 84 – 97%, with the lowest maximum relative humidity occurring in December and the highest values occurring from May through October, with the exception of June (Table 5). Average monthly minimum relative humidity ranged from 38 – 60%, with the lowest minimum relative humidity occurring in April and the highest occurring in July and August (Table 5).

Congaree National Park

Average monthly maximum relative humidity for Congaree station ranged from 95 – 100%, with the lowest maximum relative humidity occurring in January (Table 5). Average monthly minimum relative humidity ranged from 32 – 64%, with the lowest minimum relative humidity

occurring in April (Table 5). Too much data were missing to calculate a five-year average for relative humidity at Congaree Station.

Chattahoochee River National Recreation Area and Kennesaw Mountain National Battlefield Park

Average monthly maximum relative humidity for Atlanta Hartsfield International Airport station ranged from 78 – 91%, with the lowest maximum relative humidity occurring in April and December (Table 5). Average monthly minimum relative ranged from 33 – 51 %, with the lowest minimum relative humidity occurring in April and October and the highest occurring in August (Table 5).

Ocmulgee National Monument

Average monthly maximum relative humidity for Brender station ranged from 90 – 100%, with the lowest maximum relative humidity occurring in December and the highest values occurring from March through November (Table 5). Average monthly minimum relative humidity ranged from 34 – 51%, with the lowest minimum relative humidity occurring in April (Table 5).

Average monthly maximum relative humidity for Macon Middle Georgia Regional Airport station ranged from 81 – 97%, with the lowest maximum relative humidity occurring in January (Table 5). Average monthly minimum relative humidity ranged from 33 – 51%, with the lowest minimum relative humidity occurring in April (Table 5).

Fort Pulaski National Monument

Average monthly maximum relative humidity for Savannah International Airport station ranged from 81 – 94%, with the lowest maximum relative humidity occurring in December and the highest values occurring from April through October (Table 5). Average monthly minimum relative humidity ranged from 36 – 53%, with the lowest minimum relative humidity occurring in April and December (Table 5).

Fort Frederica National Monument and Cumberland Island National Seashore

Average monthly maximum relative humidity for Brunswick Malcolm McKinnon Airport station ranged from 78 – 91%, with the lowest maximum relative humidity occurring in December (Table 5). Average monthly minimum relative humidity ranged from 41 – 61%, with the lowest minimum relative humidity occurring in December (Table 5).

Average monthly maximum relative humidity for Stafford – CUIS station ranged from 94 – 100%, with the lowest maximum relative humidity occurring in December (Table 5). Average monthly minimum relative humidity ranged from 52 – 100%, with the lowest minimum relative humidity occurring in October (Table 5).

Horseshoe Bend National Military Park

Average monthly maximum relative humidity for Anniston Metro Airport station ranged from 88 – 94%, with the lowest maximum relative humidity occurring in February (Table 5). Average monthly minimum relative humidity ranged from 28 – 49%, with the lowest minimum relative humidity occurring in October (Table 5).

Fort Caroline National Monument and Timucuan Ecological and Historic Preserve

Average monthly maximum relative humidity for Jacksonville Craig Municipal Airport station ranged from 86 – 96%, with the lowest maximum relative humidity occurring in January and December (Table 5). Average monthly minimum relative humidity ranged from 38 – 55%, with the lowest minimum relative humidity occurring in December (Table 5).

Average monthly maximum relative humidity for Jacksonville International Airport station ranged from 89 – 95%, with the lowest maximum relative humidity occurring in December (Table 5). Average monthly minimum relative humidity ranged from 38 – 55%, with the lowest minimum relative humidity occurring in December (Table 5).

Castillo de San Marcos National Monument and Fort Matanzas National Monument

Average monthly maximum relative humidity for Daytona Beach International Airport station ranged from 86 – 95%, with the lowest maximum relative humidity occurring in January and December (Table 5). Average monthly minimum relative humidity ranged from 39 – 61%, with the lowest minimum relative humidity occurring in December (Table 5).

Canaveral National Seashore

Average monthly maximum relative humidity for Daytona Beach International Airport station ranged from 86 – 95%, with the lowest maximum relative humidity occurring in January and December (Table 5). Average monthly minimum relative humidity ranged from 39 – 61%, with the lowest minimum relative humidity occurring in December (Table 5).

Average monthly maximum relative humidity for Merritt Island station ranged from 92 – 100%, with the lowest maximum relative humidity occurring in December (Table 5). Average monthly minimum relative humidity ranged from 44 – 63%, with the lowest minimum relative humidity occurring in December (Table 5). Please note that 2010 data from July – September are missing.

Table 5. Average monthly relative humidity at weather stations near SECN parks during 2010 (upper row) and the 5-year average (2005-2009) in the lower row. Data includes $RH_{\max}/RH_{\min}$ where $RH_{\max}$ is maximum relative humidity and $RH_{\min}$ is minimum relative humidity. Units = %. *** indicates too much data are missing to calculate a 5-year average.

Station Name	Applicable Park(s)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cape Hatteras AP	CAHA	89/61 (88/61)	91/57 (86/54)	93/61 (86/55)	94/58 (90/58)	97/67 (90/61)	99/72 (91/64)	98/73 (90/65)	99/69 (88/62)	94/62 (88/63)	89/57 (88/60)	*** (89/61)	79/52 (90/61)
Croatan	CALO	90/49 (92/53)	94/46 (96/46)	98/49 (96/48)	100/51 (97/50)	99/62 (99/56)	*** (99/61)	*** (97/63)	99/62 (96/62)	99/56 (95/61)	100/55 (95/57)	100/53 (96/55)	94/48 (96/57)
Wilmington Intl. Airport	MOCR	84/42 (89/49)	87/43 (87/39)	88/41 (87/40)	90/37 (87/38)	91/54 (91/46)	89/53 (91/51)	89/53 (92/52)	91/54 (93/56)	89/46 (92/55)	88/43 (91/52)	*** (91/49)	85/43 (92/49)
Charleston Intl. Airport	CHPI, FOSU	85/42 (89/46)	88/43 (88/39)	88/40 (90/39)	93/38 (89/38)	95/51 (93/46)	92/51 (93/52)	96/56 (93/52)	97/60 (94/56)	96/52 (92/53)	94/43 (93/53)	*** (91/47)	84/39 (91/48)
Congaree	CONG	95/40 ***	97/42 ***	99/36 ***	99/32 ***	99/50 ***	100/53 ***	100/54 ***	100/64 ***	100/46 ***	100/40 ***	100/42 ***	98/41 ***
Columbia Metro Airport	CONG	87/38 (87/42)	87/42 (84/35)	88/37 (84/35)	86/29 (85/34)	89/43 (89/38)	90/42 (90/42)	89/43 (91/44)	92/53 (92/46)	89/36 (90/45)	89/34 (92/47)	*** (90/41)	84/34 (91/44)
Atlanta Hartsfield Intl. Airport	CHAT KEMO	82/46 (83/46)	82/46 (80/41)	86/47 (80/39)	78/34 (83/41)	89/49 (83/44)	88/49 (84/42)	88/48 (86/48)	91/51 (88/49)	79/36 (86/49)	79/33 (86/49)	*** (83/42)	78/42 (85/49)
Brender	OCMU	94/45 (96/47)	93/43 (96/40)	98/40 (97/39)	100/34 (97/40)	99/51 (97/44)	100/51 (98/45)	100/49 (98/48)	*** (97/51)	100/45 (98/52)	100/41 (99/56)	100/47 (99/45)	90/37 (98/50)
Macon Middle GA Regl. Airport	OCMU	81/48 (86/43)	87/43 (85/37)	93/42 (86/37)	95/33 (89/38)	97/48 (89/39)	96/47 (90/41)	95/46 (91/44)	97/51 (92/49)	96/37 (92/48)	96/35 (92/47)	*** (90/41)	87/37 (90/47)
Savannah International Airport	FOPU	86/41 (90/46)	86/42 (90/39)	87/40 (90/39)	91/36 (90/38)	93/49 (91/44)	91/47 (94/48)	91/48 (94/49)	94/53 (95/55)	92/46 (93/52)	91/37 (94/52)	*** (92/47)	81/36 (93/51)
Brunswick Malcolm McKinnon AP	FOFR, CUIS	87/46 (90/55)	88/48 (89/47)	90/46 (90/49)	91/50 (88/47)	89/59 (87/52)	89/54 (89/56)	89/57 (90/58)	91/61 (92/62)	88/54 (90/61)	86/46 (91/58)	*** (92/53)	78/41 (93/59)
Stafford – CUIS	CUIS, FOFR	100/100 (96/61)	100/94 (98/49)	100/73 (98/51)	99/55 (95/47)	99/65 (98/54)	100/60 (99/59)	99/62 (100/59)	100/70 (100/64)	99/75 (98/63)	99/52 (99/64)	99/68 (99/64)	94/58 (99/72)
Anniston Metro Airport	HOBE	89/43 (89/41)	88/45 (89/38)	91/45 (90/36)	93/32 (93/40)	94/48 (93/46)	93/49 (95/44)	93/45 (96/49)	93/48 (95/49)	90/33 (94/49)	92/28 (95/48)	*** (93/43)	89/41 (92/46)
Jacksonville Craig Muni. Airport	FOCA, TIMU	86/44 (89/50)	88/45 (89/42)	89/42 (89/44)	95/43 (87/40)	96/50 (89/47)	96/48 (91/53)	93/48 (91/53)	96/55 (91/55)	96/52 (90/56)	92/40 (89/54)	*** (90/51)	86/38 (92/54)
Jacksonville Intl. Airport	FOCA, TIMU	90/43 (93/51)	92/45 (93/41)	93/42 (94/42)	94/40 (93/40)	94/48 (95/46)	94/48 (96/53)	93/49 (95/53)	94/55 (96/55)	95/52 (95/56)	93/40 (94/55)	*** (94/49)	89/38 (95/54)
Daytona Beach Intl. Airport	CANA, CASA, FOMA	86/44 (89/49)	89/46 (88/45)	93/45 (88/42)	94/50 (87/41)	95/54 (87/47)	95/56 (90/54)	95/56 (91/57)	95/61 (91/56)	93/57 (89/57)	92/41 (88/54)	*** (89/51)	86/39 (90/55)
Merritt Island*	CANA	95/48 (88/52)	97/51 (92/48)	97/47 (93/46)	98/56 (97/48)	100/63 (94/51)	100/63 (95/56)	*** (98/60)	*** (100/63)	*** (92/63)	98/47 (91/57)	95/53 (91/56)	92/44 (89/57)

*includes data from 2004 due to missing data during 2005

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