

# Southeast Coast Network

National Park Service  
Inventory & Monitoring Program



## Standard Operating Procedure (SOP) #2.5.1

### Weather and Climate Monitoring Data Acquisition, Analysis and Reporting Manual

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### Summary

This Standard Operating Procedure (SOP) includes instructions for acquiring and analyzing data for the creation of the annual data summary report for the weather and climate monitoring as a part of the Southeast Coast Network (SECN) Inventory and Monitoring Program. The instructions herein are presented using the SECN 2012 weather and climate data report as an example.

### Revision Log

| Previous Version # | Revision Date | Author | Changes Made | Reason for Change | New Version # |
|--------------------|---------------|--------|--------------|-------------------|---------------|
|                    |               |        |              |                   |               |
|                    |               |        |              |                   |               |
|                    |               |        |              |                   |               |
|                    |               |        |              |                   |               |
|                    |               |        |              |                   |               |

## Overview

This SOP includes step by step instructions for acquiring data, analyzing data and creating a data summary report for the weather and climate monitoring efforts being undertaken by the SECN.

Weather and climate monitoring in the SECN is a data acquisition protocol. In other words, data are collected by other agencies outside the National Park Service (NPS), acquired from online archives, and analyzed and summarized for stations deemed relevant to SECN parks. In this case, the requisite Quality assurance and control (QA/QC) procedures regarding data quality of individual measurements are performed by the agency collecting the data. The SECN reviews the QA/QC designations in the course of data analysis and additional QA/QC procedures, such as the removal of suspect data, may be performed prior to analysis as described below.

To complete a report, the following software is required:

- MS Excel running on a computer connected to the NPS intranet.
- SigmaPlot V. 11 or later
- ArcMap, as it is expected that the SECN GIS specialist will produce the maps using existing templates.

In addition, access to the SECN SharePoint and data management system is required.

## Data Acquisition

Data for the weather and climate annual data summary report are acquired from online repositories managed by national weather and climate data networks.

1. Cooperative Observer Program (COOP): <http://www.ncdc.noaa.gov/oa/ncdc.html>
2. Climate Reference Network (CRN): <http://www.ncdc.noaa.gov/crn/>
3. Remote Automated Weather Station (RAWS): <http://www.raws.dri.edu/>
4. National Ocean Service (NOS):  
[http://co-ops.nos.noaa.gov/station\\_retrieve.shtml?type=Historic+Tide+Data](http://co-ops.nos.noaa.gov/station_retrieve.shtml?type=Historic+Tide+Data)
5. National Buoy Data Center (NBDC): [http://www.ndbc.noaa.gov/to\\_station.shtml](http://www.ndbc.noaa.gov/to_station.shtml)
6. Hydrometeorological Automated Data System (HADS): <http://www.nws.noaa.gov/oh/hads/>

Weather data may exhibit great variability within a particular year and station. Long-term climatic trends are therefore important in putting the current year within context. Therefore, in addition to the data sources above, long-term climate normal data are acquired from several COOP stations with long-term data records. The 30-year climate normal data were acquired, when available, from the online archives at: <http://www1.ncdc.noaa.gov/pub/data/normals/1981-2010/products/station>. The current 30-year climate normal includes analyses of the temperature and precipitation data from 1981-2010. For detailed information regarding the calculation of the long-term climate normal, please refer to Arguez et al. 2011 and Durre et al. 2011. The SECN uses the climate normal data as published by NOAA, making no changes.

QA/QC procedures applied to COOP, CRN, RAWS, NOS, NBDC, and HADS data are provided by the agencies collecting the data and are 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 (and a listing of the relevant park(s)).

The following parameters are acquired from the online archives above, as available:

- **Temperature:** Maximum temperature ( $T_{\max}$ ), minimum temperature ( $T_{\min}$ ) and mean temperature ( $T_{\text{avg}}$ ).
- **Precipitation:** Total precipitation
- **Relative Humidity:** Maximum relative humidity ( $RH_{\max}$ ) and minimum relative humidity ( $RH_{\min}$ ).

Weather data are acquired as daily data from all networks except for NOS, NBDC, HADS and COOP (Relative Humidity data only), from which hourly data are acquired. All hourly data are converted to daily data prior to being added to the SECN data management system, using the data import application, shown below. The rules for converting hourly data to daily data are given below.

1. **Converting Hourly Temperature Data to Daily (RAWS, NOS, NBDC, HADS data):**
  - Daily values for  $T_{\max}$ ,  $T_{\min}$ , and  $T_{\text{avg}}$  are calculated from the hourly data.

- If more than three of the hourly values are missing, then the daily value for that parameter is treated as missing.
2. **Converting Hourly Precipitation Data to Daily (RAWS, NOS, NBDC, HADS data)**
    - Daily total precipitation is calculated from the hourly data.
    - If more than three of the hourly precipitation values are missing, then the daily value is treated as missing.
  3. **Converting Hourly Relative Humidity Data to Daily (RAWS, NOS, NBDC data):**
    - Daily values for RH<sub>max</sub> and RH<sub>min</sub> are calculated from the hourly data.
    - If more than three of the hourly values are missing, then the daily value for relative humidity is treated as missing.

**Data Import Tool**  
National Park Service  
U.S. Department of the Interior

**Southeast Coast Network Inventory and Monitoring Program**

Import Setup | Import Review | Import Status

**Import List**

|   | Source File                                           | Source File Delimiter | Header Rows to Skip | Column Names In First Data Row      | Destination Table  |
|---|-------------------------------------------------------|-----------------------|---------------------|-------------------------------------|--------------------|
| ▶ | C:\Users\CWright\Desktop\Weather\2012_2013Combined... | Comma ( , )           | 0                   | <input checked="" type="checkbox"/> | tbl_WeatherClimate |
| * |                                                       |                       | 0                   | <input type="checkbox"/>            |                    |

**Field Mappings**

|  | Source File Field | Destination Table Field | Source Date/Time Format |
|--|-------------------|-------------------------|-------------------------|
|  | StationID         | Station_ID              |                         |
|  | STATION           | <Ignore>                |                         |
|  | STATION_NAME      | <Ignore>                |                         |
|  | DATE              | Collection_Date         | yyyyMMdd                |
|  | PRCP (mm)         | Total_Precip            |                         |
|  | PRCP Flag         | Total_Precip_Code       |                         |
|  | Tmax (degC)       | Max_Temp                |                         |
|  | Tmax Flag         | Max_Temp_Code           |                         |
|  | Tmin (deg C)      | Min_Temp                |                         |

**Weather Source Data Conversion Properties**

Data was Collected:  
☐ Hourly ☒ Daily

Precipitation Units  
☐ Inches ☒ Millimeters

Temperature Units  
☐ ° F ☒ ° C

Wind Speed Units  
☐ Miles/Hour ☐ Feet/Second ☒ Meters/Second

Solar Radiation Units  
☐ Watts/Square Meter ☒ Joules/Square Meter

Close

Data marked as suspect and which are obviously outside the range of expected values for the time of year at a particular station, are removed from the data set, prior to analysis. Instances of data removal are minimal in an annual data set.

# Data Analysis

## Temperature Data

### 1. Calculation of Monthly Values:

- Average monthly values are calculated from the daily values of  $T_{\max}$ ,  $T_{\min}$ , and  $T_{\text{avg}}$  for each station.
- If more than five daily values are missing (or flagged as suspect) for a parameter, then the monthly average is not calculated and is treated as missing.
- If less than five daily values are missing, the monthly averages are still calculated but are flagged to indicate that the calculated average may not be the true value.
- Standard deviations are also calculated from the daily values of  $T_{\max}$  and  $T_{\min}$  for an indication of variability and for use in comparison to the long-term climate normal data.

### 2. Calculation of Annual Value:

- Average annual temperature is calculated from the daily  $T_{\text{avg}}$  values.
- If any monthly values for  $T_{\text{avg}}$  were not calculated due to missing or flagged data, then the annual average  $T_{\text{avg}}$  is not calculated.

### 3. Calculation of Derivative Climate Measures:

- Growing Season Length equals the number of days between the last spring freeze (temperatures less than or equal to 32 °F) and the first fall freeze using the daily values for  $T_{\min}$ .
- The highest value for  $T_{\max}$  for the year – calculated from the daily values for  $T_{\max}$ .
- The number of days that the daily value for  $T_{\max}$  is greater than or equal to 90 °F.
- The number of days that the daily value for  $T_{\min}$  is less than or equal to 32 °F.
- The last date in the spring where the daily  $T_{\min}$  value was less than or equal to 32 °F.
- The first date in the fall/winter where the daily  $T_{\min}$  value was less than or equal to 32 °F.

## Precipitation Data

### 1. Monthly Total Precipitation Values:

- Monthly total precipitation values are calculated for each station from the daily total precipitation data.
- If more than three daily precipitation values are missing (or flagged as suspect), the monthly total is not calculated and is treated as missing.
- If fewer than three daily precipitation values are missing, then the total monthly precipitation value is calculated but is also flagged to indicate the total value may be less than the actual total.

## **2. Total Annual Precipitation:**

- Total annual precipitation is calculated by summing the daily precipitation values.
- If any monthly values of total precipitation were not calculated due to missing or flagged data, then the annual total is not calculated.
- If there is missing or flagged data (but not enough to dismiss the entire month), then the annual value is calculated but is flagged to indicate the total may be less than the true value.

## **Relative Humidity Data**

### **1. Calculation of Monthly Values:**

- Average monthly values are calculated from the daily values of  $RH_{\max}$ , and  $RH_{\min}$  for each station.
- If more than five daily values are missing (or flagged as suspect), then the monthly average is not calculated and is treated as missing.
- If less than five daily values are missing, the monthly averages are still calculated but are flagged to indicate that the calculated average may not be the true value.

### **2. Calculation of a Rolling, Five-year Average for $RH_{\max}$ and $RH_{\min}$**

- Relative humidity is not a parameter included in the calculation of the 30-year climate normal for a particular weather station. In addition, the period of record for relative humidity data is often much shorter than that of temperature and precipitation. Therefore, in order to estimate longer term relative humidity conditions, a rolling, five-year average is calculated for stations with adequate data.
- Daily relative humidity ( $RH_{\max}$  and  $RH_{\min}$ ) data for the five years previous to the year being analyzed in the report are acquired. For those stations providing relative humidity data as hourly data, the hourly data are converted to daily data (as described above) prior to use in this analysis. Monthly average  $RH_{\max}$  and  $RH_{\min}$  are calculated across all five years of data for the rolling average.

# Annual Data Summary Report Generation

To complete a data summary report you will need access to the following software:

- Microsoft Word (required for generating the report).
- The SECN SharePoint site (required for querying the database to generate the tables and export files for generating the figures in SigmaPlot).
- SigmaPlot (version 11 or newer)
- ArcMap may be necessary if there were changes in sampling locations since the last published report.

## Notes on Report Authorship

The following should be considered for report authorship, but report authors will vary on a report-by report basis at the discretion of the primary author and Data Manager/protocol lead:

1. Whoever pulls the majority report together is the primary author.
2. Whoever contributes significantly to the report (writing, analysis, technical editing) should also be an author on the report.

## List of Figures, Charts, and Maps

| Number / Section                   | Short Title / Description                                                                    | Source                                        | Instructions                               |
|------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------|
| <b>Main Report Figures</b>         |                                                                                              |                                               |                                            |
| Figure 1                           | Locations of monitoring stations                                                             | Original Data Report                          | <a href="#">Copy map from prior report</a> |
| Figures 2 - 16                     | Annual average monthly temperature and the 30-year (1981 – 2010) average                     | <a href="#">SECN SharePoint</a> and SigmaPlot | <a href="#">Instructions Below</a>         |
| Figures 17 - 31                    | Total monthly precipitation during year X and the 30-year (1981 - 2010) monthly averages     | <a href="#">SECN SharePoint</a> and SigmaPlot | <a href="#">Instructions Below</a>         |
| <b>Main Report Tables</b>          |                                                                                              |                                               |                                            |
| Table 1                            | Station location and period of record info                                                   | Prior report                                  | <a href="#">Instructions Below</a>         |
| Table 2                            | Monthly Temperature Data (T <sub>max</sub> , T <sub>avg</sub> and T <sub>min</sub> )         | <a href="#">SECN SharePoint</a>               | <a href="#">Instructions Below</a>         |
| Table 3                            | Derivative Climate Data                                                                      | <a href="#">SECN SharePoint</a>               | <a href="#">Instructions below</a>         |
| Table 4                            | Monthly precipitation data and departures from the 30 year normal                            | <a href="#">SECN SharePoint</a>               | <a href="#">Instructions Below</a>         |
| Table 5                            | Relative humidity (RH <sub>max</sub> and RH <sub>min</sub> ) and the previous 5 year normal. | <a href="#">SECN SharePoint</a>               | <a href="#">Instructions Below</a>         |
| <b>Other Requisite Information</b> |                                                                                              |                                               |                                            |
| Climate Overview                   | Hurricane history for sample year                                                            | <a href="#">NOAA</a>                          | <a href="#">Instructions Below</a>         |
|                                    | State of the Climate – Drought Report                                                        | <a href="#">NOAA</a>                          | <a href="#">Instructions Below</a>         |
|                                    | State of the Climate – Global Summary                                                        | <a href="#">NOAA</a>                          | <a href="#">Instructions Below</a>         |
|                                    | State of the Climate – National Overview                                                     | <a href="#">NOAA</a>                          | <a href="#">Instructions Below</a>         |

## Main Report Figures

### Figure 1. Weather Station Locations Relevant to SECN Parks

This map can likely be copied from the previous year's report. However, if new stations are added or weather stations are discontinued, the SECN GIS specialist will need to update the map prior to publication.

- Latitude and longitude coordinates are available for all weather stations included in the national climate data networks used for this report
- Stations are mapped as points in one of the following categories:
  - Weather stations within Park boundaries
  - Weather stations within 30 km of Parks – all measurements
  - Weather stations within 30 km of Parks – relative humidity measurements only
  - Weather stations within 30 km of Parks – temperature measurements only
- Park centroids are indicated with a star (★) symbol.

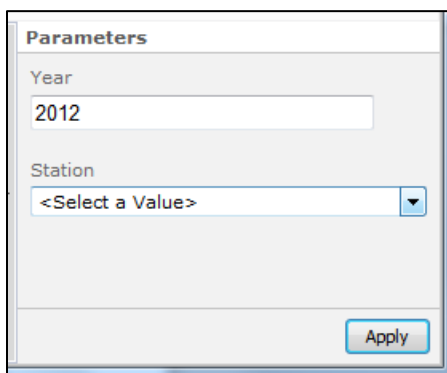


Figure 1. Locations of weather stations relevant to SECN Parks.

## Figures 2 - 16. Monthly Temperatures and the 30-year (1981 – 2010) Average

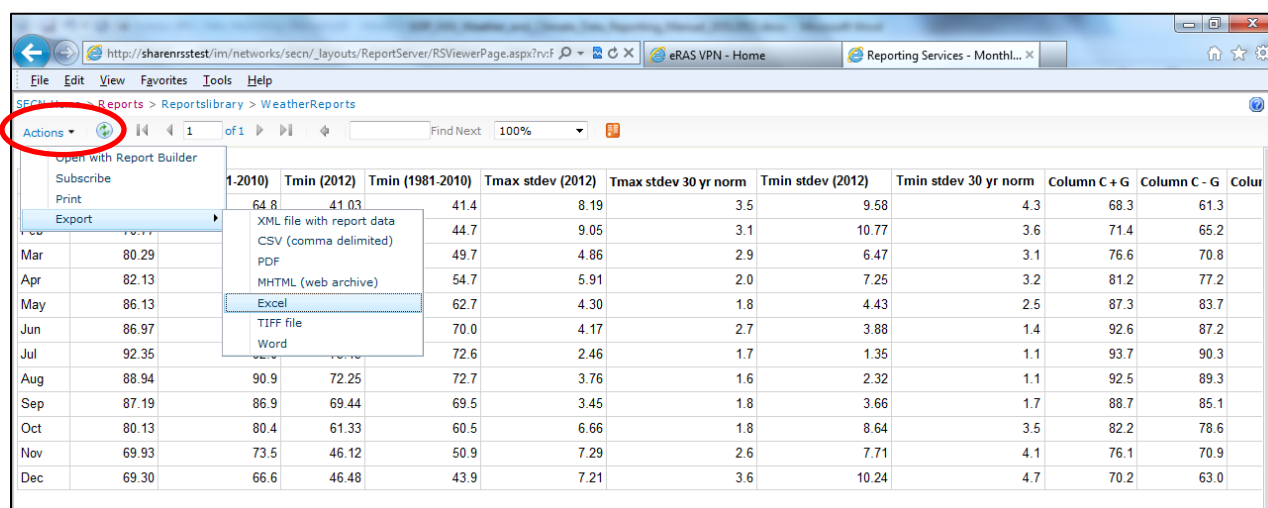
Figures 2 – 16 compare the current year's average monthly  $T_{\max}$  and  $T_{\min}$  data to the 30-year climate normal (average). The number of figures in this analysis may change over time if new stations are added or current stations are discontinued. Fifteen figures and 21 weather stations were included in this analysis for the 2012 SECN weather and climate data summary report.

1. To generate the export file for Figures 2 - 16, go to the main SECN SharePoint > Explore Data > Weather and Climate Monitoring > Monthly Temperatures and the 30 year average. The direct link is:  
[http://sharenrsstest/im/networks/secn/\\_layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/MonthlyTempGraph.rdl&Source=http%3A%2F%2Fsharenrsstest%2Fim%2Fnetworks%2Fsecn%2FReports%2FForms%2FAI](http://sharenrsstest/im/networks/secn/_layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/MonthlyTempGraph.rdl&Source=http%3A%2F%2Fsharenrsstest%2Fim%2Fnetworks%2Fsecn%2FReports%2FForms%2FAI)
2. Enter the station and year of interest, as shown below. Click Apply to generate the report, which is an export file for use in SigmaPlot.



The Parameters dialog box contains two input fields: 'Year' with the value '2012' and 'Station' with a dropdown menu showing '<Select a Value>'. An 'Apply' button is located at the bottom right.

3. The export file may be exported as a comma delimited file or a MS Excel file for use in SigmaPlot.



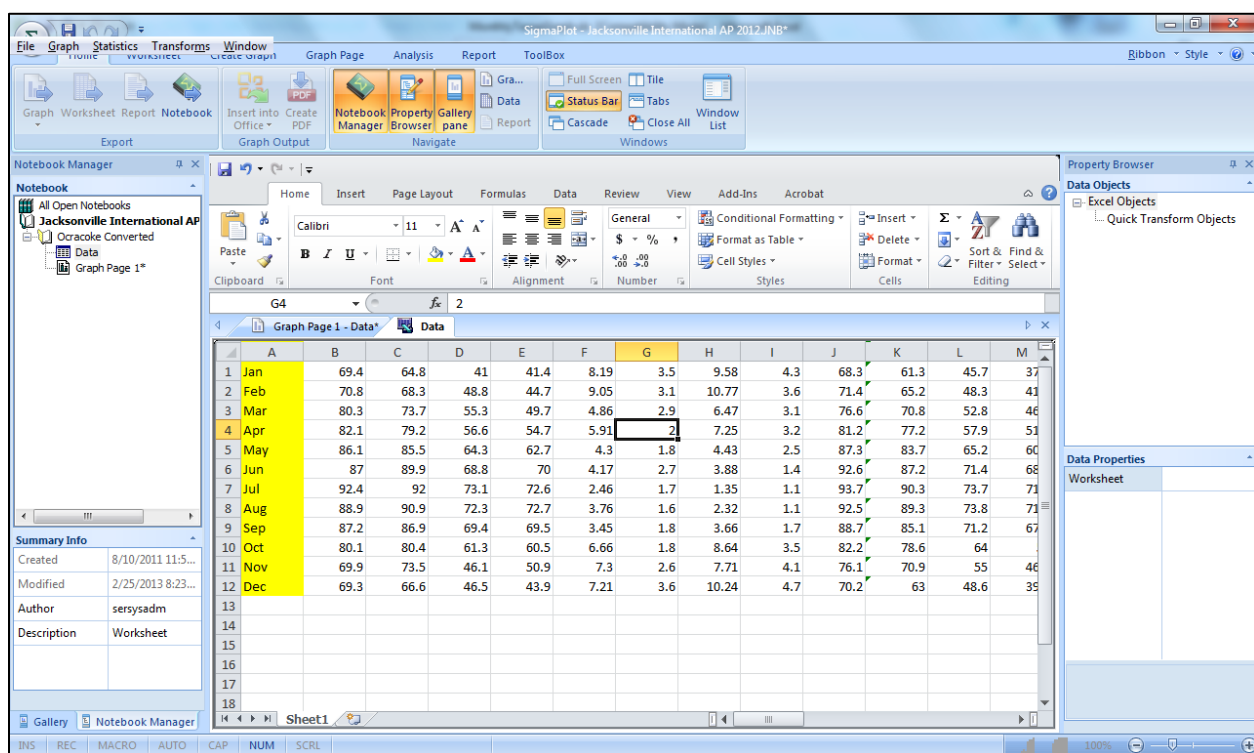
The screenshot shows a web browser window displaying a report from SECN. The 'Actions' menu is open, showing options like 'Open with Report Builder', 'Subscribe', 'Print', and 'Export'. The 'Export' option is selected, and a submenu is visible with options: 'XML file with report data', 'CSV (comma delimited)', 'PDF', 'MHTML (web archive)', 'Excel', 'TIFF file', and 'Word'. The 'Excel' option is highlighted. Below the menu, a table of monthly temperature data is visible.

|     | 1-2010 | Tmin (2012) | Tmin (1981-2010) | Tmax stdev (2012) | Tmax stdev 30 yr norm | Tmin stdev (2012) | Tmin stdev 30 yr norm | Column C + G | Column C - G | Column C |
|-----|--------|-------------|------------------|-------------------|-----------------------|-------------------|-----------------------|--------------|--------------|----------|
| Jan | 64.8   | 41.03       | 41.4             | 8.19              | 3.5                   | 9.58              | 4.3                   | 68.3         | 61.3         | 64.8     |
| Feb | 44.7   | 44.7        | 44.7             | 9.05              | 3.1                   | 10.77             | 3.6                   | 71.4         | 65.2         | 68.3     |
| Mar | 80.29  | 49.7        | 49.7             | 4.86              | 2.9                   | 6.47              | 3.1                   | 76.6         | 70.8         | 73.5     |
| Apr | 82.13  | 54.7        | 54.7             | 5.91              | 2.0                   | 7.25              | 3.2                   | 81.2         | 77.2         | 79.2     |
| May | 86.13  | 62.7        | 62.7             | 4.30              | 1.8                   | 4.43              | 2.5                   | 87.3         | 83.7         | 85.0     |
| Jun | 86.97  | 70.0        | 70.0             | 4.17              | 2.7                   | 3.88              | 1.4                   | 92.6         | 87.2         | 89.9     |
| Jul | 92.35  | 72.6        | 72.6             | 2.46              | 1.7                   | 1.35              | 1.1                   | 93.7         | 90.3         | 92.0     |
| Aug | 88.94  | 90.9        | 72.25            | 3.76              | 1.6                   | 2.32              | 1.1                   | 92.5         | 89.3         | 90.9     |
| Sep | 87.19  | 86.9        | 69.44            | 3.45              | 1.8                   | 3.66              | 1.7                   | 88.7         | 85.1         | 86.9     |
| Oct | 80.13  | 80.4        | 61.33            | 6.66              | 1.8                   | 8.64              | 3.5                   | 82.2         | 78.6         | 80.4     |
| Nov | 69.93  | 73.5        | 46.12            | 50.9              | 7.29                  | 7.71              | 4.1                   | 76.1         | 70.9         | 73.5     |
| Dec | 69.30  | 66.6        | 46.48            | 43.9              | 7.21                  | 10.24             | 4.7                   | 70.2         | 63.0         | 66.6     |

4. Open the file you just generated in MS Excel.

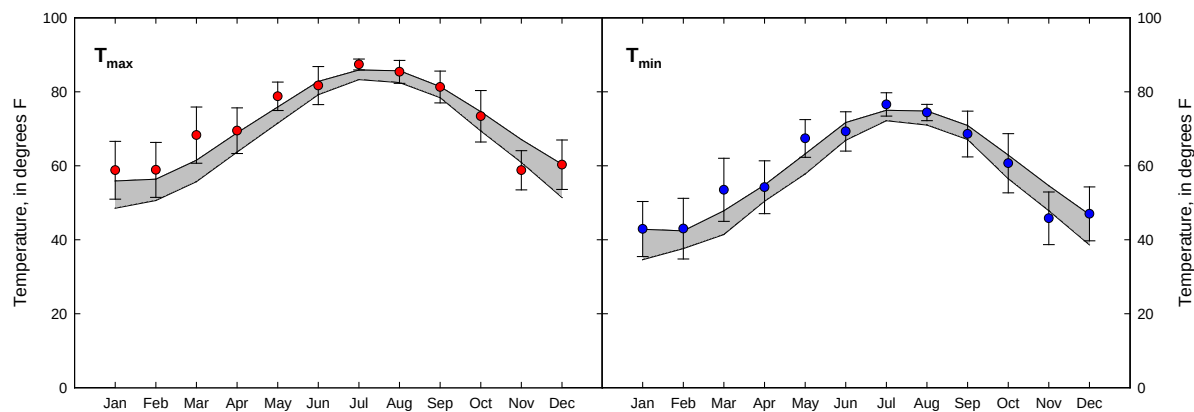
|    | B     | C           | D                | E           | F                | G                 | H                     | I                 | J                     | K            | L            | M            | N            |
|----|-------|-------------|------------------|-------------|------------------|-------------------|-----------------------|-------------------|-----------------------|--------------|--------------|--------------|--------------|
| 1  | Month | Tmax (2012) | Tmax (1981-2010) | Tmin (2012) | Tmin (1981-2010) | Tmax stdev (2012) | Tmax stdev 30 yr norm | Tmin stdev (2012) | Tmin stdev 30 yr norm | Column C + G | Column C - G | Column E + I | Column E - I |
| 2  | Jan   | 69.44       | 64.8             | 41.03       | 41.4             | 8.19              | 3.5                   | 9.58              | 4.3                   | 68.3         | 61.3         | 45.7         | 37.1         |
| 3  | Feb   | 70.77       | 68.3             | 48.75       | 44.7             | 9.05              | 3.1                   | 10.77             | 3.6                   | 71.4         | 65.2         | 48.3         | 41.1         |
| 4  | Mar   | 80.29       | 73.7             | 55.3        | 49.7             | 4.86              | 2.9                   | 6.47              | 3.1                   | 76.6         | 70.8         | 52.8         | 46.6         |
| 5  | Apr   | 82.13       | 79.2             | 56.67       | 54.7             | 5.91              | 2.0                   | 7.25              | 3.2                   | 81.2         | 77.2         | 57.9         | 51.5         |
| 6  | May   | 86.13       | 85.5             | 64.29       | 62.7             | 4.3               | 1.8                   | 4.43              | 2.5                   | 87.3         | 83.7         | 65.2         | 60.2         |
| 7  | Jun   | 86.97       | 89.9             | 68.82       | 70.0             | 4.17              | 2.7                   | 3.88              | 1.4                   | 92.6         | 87.2         | 71.4         | 68.6         |
| 8  | Jul   | 92.35       | 92.0             | 73.13       | 72.6             | 2.46              | 1.7                   | 1.35              | 1.1                   | 93.7         | 90.3         | 73.7         | 71.5         |
| 9  | Aug   | 88.94       | 90.9             | 72.25       | 72.7             | 3.76              | 1.6                   | 2.32              | 1.1                   | 92.5         | 89.3         | 73.8         | 71.6         |
| 10 | Sep   | 87.19       | 86.9             | 69.44       | 69.5             | 3.45              | 1.8                   | 3.66              | 1.7                   | 88.7         | 85.1         | 71.2         | 67.8         |
| 11 | Oct   | 80.13       | 80.4             | 61.33       | 60.5             | 6.66              | 1.8                   | 8.64              | 3.5                   | 82.2         | 78.6         | 64.0         | 57.0         |
| 12 | Nov   | 69.93       | 73.5             | 46.12       | 50.9             | 7.29              | 2.6                   | 7.71              | 4.1                   | 76.1         | 70.9         | 55.0         | 46.8         |
| 13 | Dec   | 69.3        | 66.6             | 46.48       | 43.9             | 7.21              | 3.6                   | 10.24             | 4.7                   | 70.2         | 63.0         | 48.6         | 39.2         |

5. Open SigmaPlot and open the file for the station (the one you just exported) but from the previous year. Switch the view to Data tab if necessary. Copy the data from MS Excel and paste it over the data in SigmaPlot. Choose Save As to save the file for the current year. Save the file. The graphs on the Graph tab will be updated to reflect the current data. Double check the data to ensure it is graphed properly.



- Graphs include the average monthly temperature ( $T_{\max}$  and  $T_{\min}$ ), standard deviation and the 30-year (1981 – 2010) average for each station with a long-term average. Units = °F.
- Points indicate the 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.
- For parks with more than one relevant station with a long-term average, two or more graphs may be presented in the figure, as below (Figure 2).

**A.**



**B.**

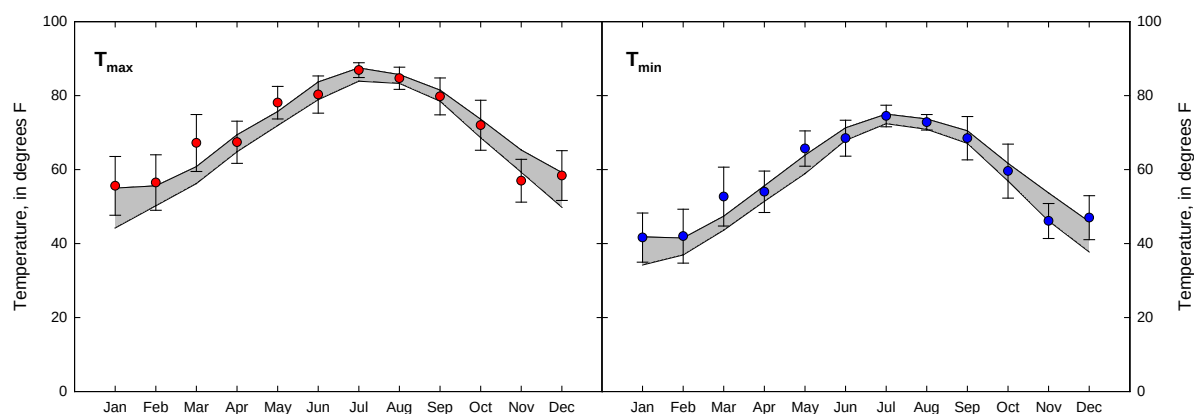


**Figure 2.** Figure 2 from the 2012 SECN weather and climate data summary report. 2012 average monthly temperature and the 30-year (1981 – 2010) average for **A.** Cape Hatteras Airport and **B.** Ocracoke stations. Units = °F. Points indicate the 2012 average monthly maximum and minimum temperatures. Error bars indicate +/- standard deviation. The dual solid lines bound the standard deviation around the 30-year (1981-2010) mean monthly temperature.

### **Figures 17 - 31. Monthly Precipitation and the 30-year (1981 – 2010) Average**

Figures 17 – 31 compare the current year's total monthly precipitation data to the 30-year climate normal (average). The number of figures in this analysis may change over time if new stations are added or current stations are discontinued. Fifteen figures and 21 weather stations were included in this analysis for the 2012 SECN weather and climate data summary report.

1. To generate the export file for Figures 17 – 31, go to the main SECN SharePoint > Explore Data > Weather and Climate Monitoring > Monthly Precipitation and the 30-year average. The direct link is:  
<http://sharenrsstest/im/networks/secn/ layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/MonthlyPrecipitationGraph.rdl&Source=http%3A%2F%2Fsharenrsstest%2Fim%2Fnetworks%2Fsecn%2FReport s%2FF>
2. Enter the station and year of interest, as shown below. Click Apply to generate the report, which is an export file for use in SigmaPlot.

**Parameters**

Station  
 <Select a Value>

Year

Apply

- The export file may be exported as a comma delimited file or a MS Excel file for use in generating the graph.

Normal Departure from Normal

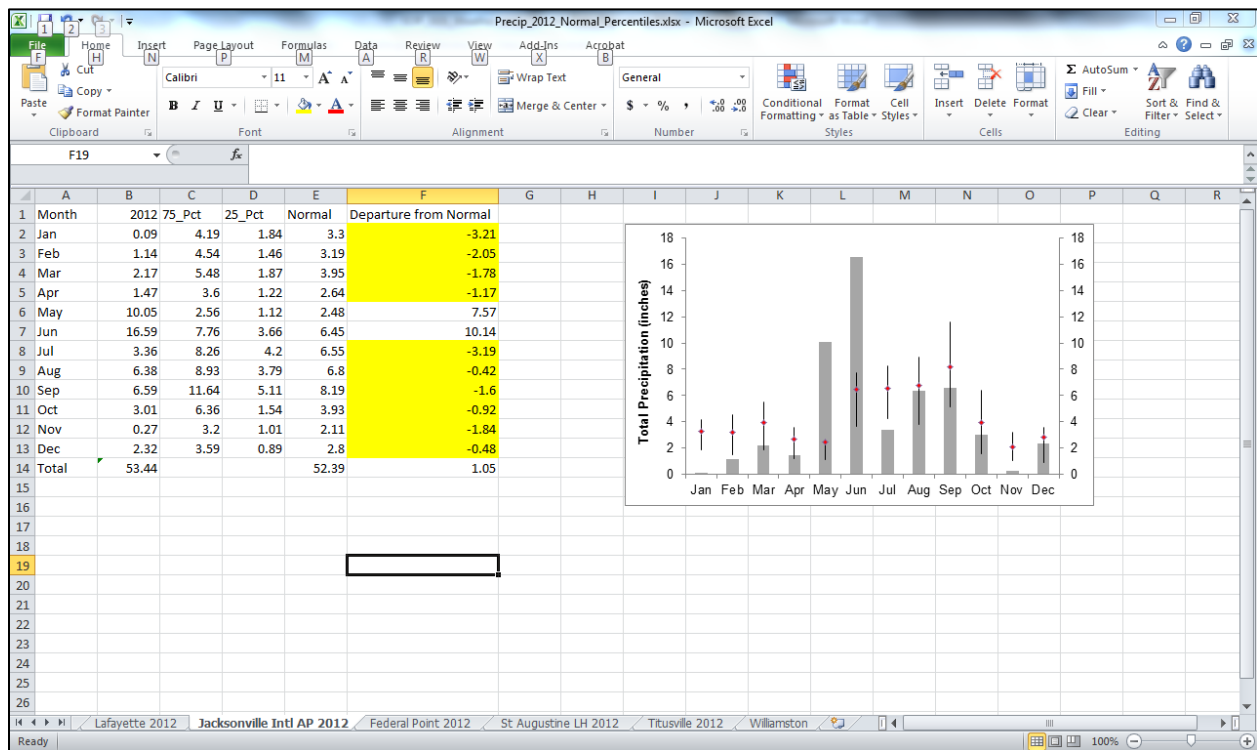
|     | Normal | Departure from Normal |
|-----|--------|-----------------------|
| Jan | 3.30   | -3.21                 |
| Feb | 2.05   | -2.05                 |
| Mar | 1.78   | -1.78                 |
| Apr | 1.17   | -1.17                 |
| May | 7.57   | 7.57                  |
| Jun | 0.14   | 0.14                  |
| Jul | 3.19   | -3.19                 |
| Aug | -0.42  | -0.42                 |
| Sep | -1.60  | -1.60                 |
| Oct | -0.92  | -0.92                 |
| Nov | -1.84  | -1.84                 |
| Dec | -0.48  | -0.48                 |

- Open the file you just generated in MS Excel.

|     |       |                                                                                     |        |                                                                                     |        |                       |  |
|-----|-------|-------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------|--------|-----------------------|--|
| G13 |       |  |        |  |        | -0.48                 |  |
|     | B     | C                                                                                   | D      | E                                                                                   | F      | G                     |  |
| 1   | Month | 2012                                                                                | 75_Pct | 25_Pct                                                                              | Normal | Departure from Normal |  |
| 2   | Jan   | 0.09                                                                                | 4.19   | 1.84                                                                                | 3.3    | -3.21                 |  |
| 3   | Feb   | 1.14                                                                                | 4.54   | 1.46                                                                                | 3.19   | -2.05                 |  |
| 4   | Mar   | 2.17                                                                                | 5.48   | 1.87                                                                                | 3.95   | -1.78                 |  |
| 5   | Apr   | 1.47                                                                                | 3.6    | 1.22                                                                                | 2.64   | -1.17                 |  |
| 6   | May   | 10.05                                                                               | 2.56   | 1.12                                                                                | 2.48   | 7.57                  |  |
| 7   | Jun   | 16.59                                                                               | 7.76   | 3.66                                                                                | 6.45   | 10.14                 |  |
| 8   | Jul   | 3.36                                                                                | 8.26   | 4.2                                                                                 | 6.55   | -3.19                 |  |
| 9   | Aug   | 6.38                                                                                | 8.93   | 3.79                                                                                | 6.8    | -0.42                 |  |
| 10  | Sep   | 6.59                                                                                | 11.64  | 5.11                                                                                | 8.19   | -1.6                  |  |
| 11  | Oct   | 3.01                                                                                | 6.36   | 1.54                                                                                | 3.93   | -0.92                 |  |
| 12  | Nov   | 0.27                                                                                | 3.2    | 1.01                                                                                | 2.11   | -1.84                 |  |
| 13  | Dec   | 2.32                                                                                | 3.59   | 0.89                                                                                | 2.8    | -0.48                 |  |

- Open the previous year's precipitation graph MS Excel file for that station. Copy the data from MS Excel you just generated and paste it over the data in previous year's Excel file. Choose Save As to save the file for the current year. Save the file. The graphs should have

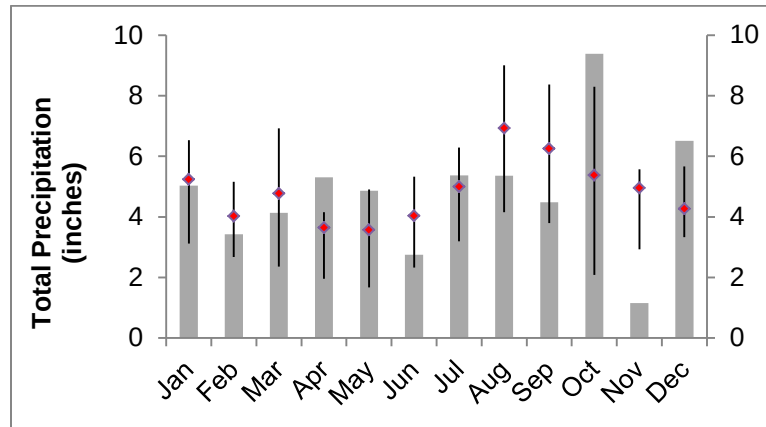
been updated to reflect the current data. However, if large changes in the y-axis values occurred between years, you may have to redo the axis values. Please double check the graph before assuming it is correct.



- In all of the graphs and tables in the annual data summary report, precipitation (monthly and annual totals) is presented in inches.
- For all stations included in the determination of the 30-year climate normal, total monthly precipitation during the current year and the 30-year (1981 - 2010) monthly averages are graphed for each station.
- In the graphs, the gray columns represent the current year's 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.

For parks with more than one relevant station with a long-term average, two or more graphs may be presented as below (Figure 3).

A.



B.

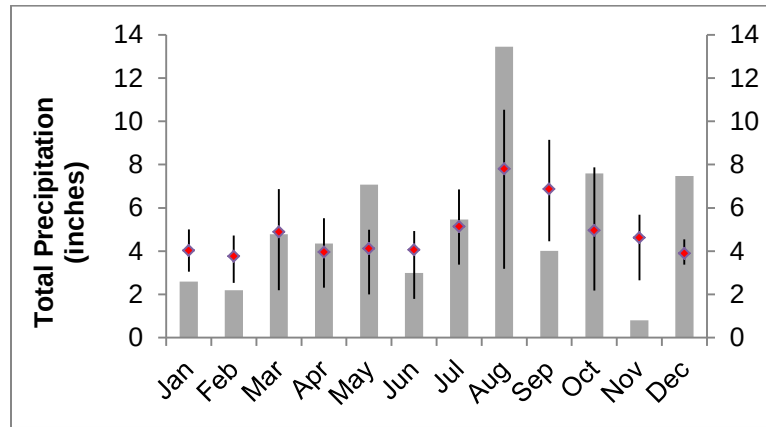


**Figure 3.** Figure 17 from the 2012 SECN weather and climate data summary report. Total monthly precipitation during 2012 and the 30-year (1981 - 2010) monthly averages for **A.** Cape Hatteras Airport and **B.** Ocracoke stations. The gray columns represent 2012 total monthly precipitation. The red circles represent the 30-year average; the lines indicate the 25th and 75th percentile of the 30-year normal data for each month.

**Table 1. Station Location and Periods of Record**

Typically, this table should be the same as the prior year's report. Do note any changes, however, such as:

- Addition of new stations
  - Decommissioning of previously operating stations.
1. If this table cannot simply be copied from the previous year's report, go to the SECN SharePoint > Explore Data Tab > Weather and Climate Monitoring > Station Location and Periods of Record. The direct link is:

<http://sharenrsstest/im/networks/secn/layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/Stations.rdl&Source=http%3A%2F%2Fsharenrsstest%2Fim%2Fnetworks%2Fsecn%2FReports%2FForms%2FAllItems%2Easpx%3FRootFolder%3D%252Fim%252Fnetworks%252Fsecn%252FReports%25>

[2FReportslibrary%252FWWeatherReports%26FolderCTID%3D0x012000ACAEA3768DD8B840A739A3ED2CDF0C7E&DefaultItemOpen=1](#)

- The Station Metadata data table will be generated by the data management system. Export the data in Word format as shown below to be able to copy and paste the data table into your report document. Add a table header as shown in the screen capture from the 2012 report (shown below).

The screenshot shows the SECN Reports library interface. The 'Actions' menu is open, showing options like 'Open with Report Builder', 'Subscribe', 'Print', 'Export', 'XML file with report data', 'CSV (comma delimited)', 'PDF', 'MHTML (web archive)', 'Excel', 'TIFF file', and 'Word'. The 'Export' option is selected, and the 'Word' option is highlighted in the sub-menu. Below the menu is a table of weather station metadata.

| 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             | N        | 20.7                     | 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 | -75.5483  | 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        | 17.6                     | Wilmington Intl. Airport (RH only) | COOP             | 319457     | 34.2667 | -77.9     | New Hanover | 33.1         | 12/1/1947  |

The following is an example of a portion of Table 1 from the 2012 SECN weather and climate data summary report:

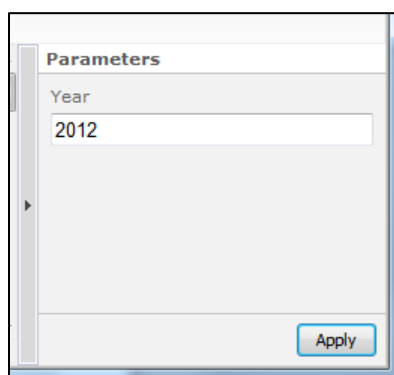
**Table 1. Location of relevant weather stations near SECN parks, station network affiliation and additional metadata for weather stations used in this report. NL indicates information was not listed in the station metadata documentation.**

| 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        | 17.6                     | Wilmington Intl. Airport (RH only) | COOP             | 319457     | 34.2667  | -77.9     | New Hanover | 33.1         | 12/1/1947  |

### **Table 2. Monthly Temperature Data**

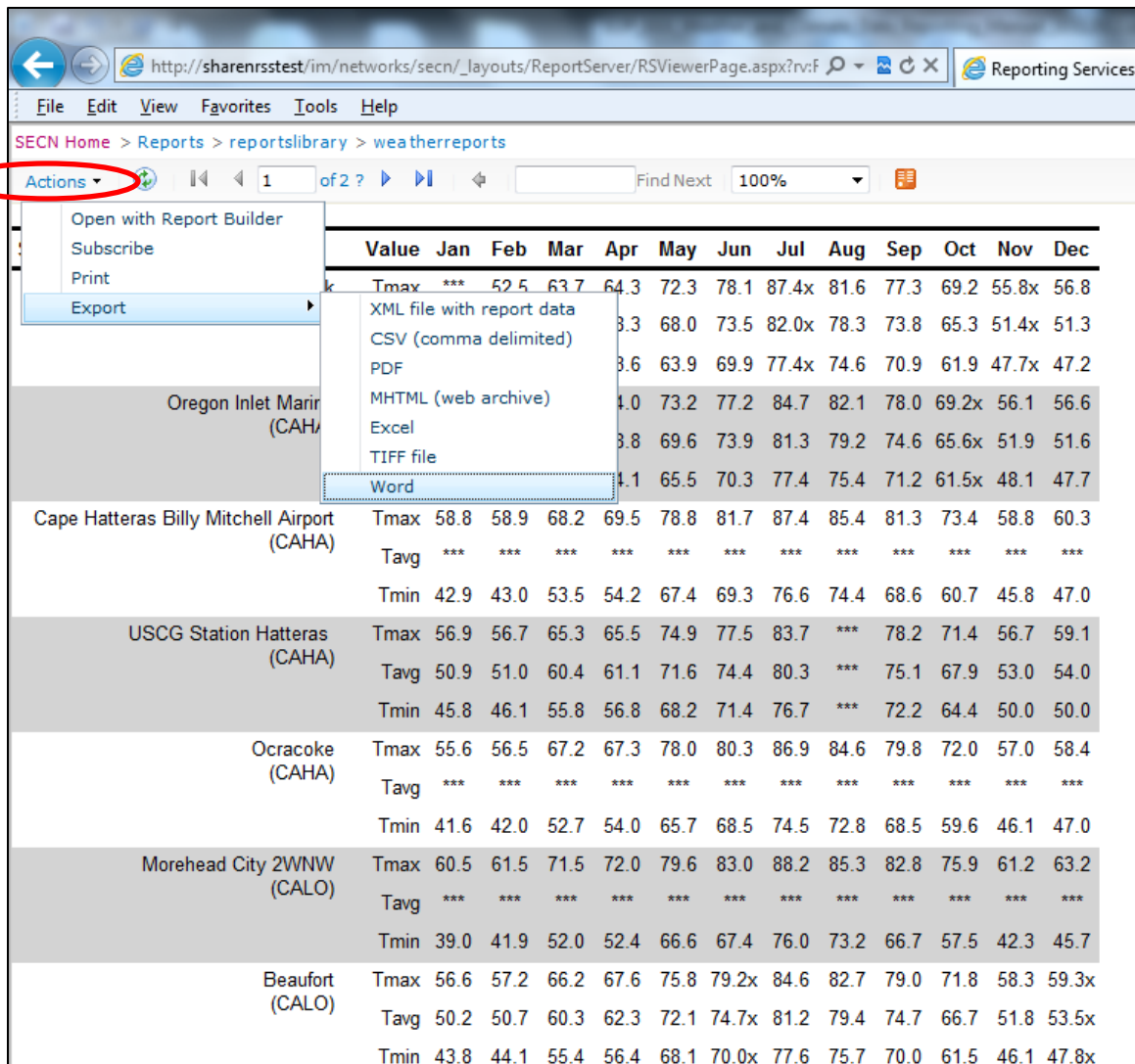
The current year's mean monthly temperature data for weather stations applicable to SECN parks (applicable parks indicated in parentheses under the station name). In the data summary report, monthly data ( $T_{\max}$ ,  $T_{\text{avg}}$  and  $T_{\min}$ ) are presented in °F in the data tables.

1. To generate the monthly temperature data table, navigate to the SECN SharePoint > Explore Data > Weather and Climate Monitoring > Monthly Temperature Data. Or use the direct link: <http://sharenrsstest/im/networks/secn/layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/reports/reportslibrary/weatherreports/monthlytemp.rdl>
2. Enter the year you are interested in analyzing and click Apply.



The image shows a 'Parameters' dialog box from a report viewer. It has a title bar 'Parameters' and a 'Year' field containing the text '2012'. At the bottom right, there is an 'Apply' button. The dialog box is styled with a light gray background and a blue border.

3. The monthly temperature data table will be generated by the data management system. Export the data in Word format as shown below to be able to copy and paste the data table into your report document. Add a table header as shown in the screen capture from the 2012 report (shown below).



|                                | Value | Jan  | Feb  | Mar  | Apr  | May  | Jun   | Jul   | Aug  | Sep  | Oct  | Nov   | Dec   |
|--------------------------------|-------|------|------|------|------|------|-------|-------|------|------|------|-------|-------|
| Oregon Inlet Marine Lab (CAHA) | Tmax  | ***  | 52.5 | 63.7 | 64.3 | 72.3 | 78.1  | 87.4x | 81.6 | 77.3 | 69.2 | 55.8x | 56.8  |
|                                | Tavg  | ***  | 52.5 | 63.7 | 64.3 | 72.3 | 78.1  | 87.4x | 81.6 | 77.3 | 69.2 | 55.8x | 56.8  |
|                                | Tmin  | 42.9 | 43.0 | 53.5 | 54.2 | 67.4 | 69.3  | 76.6  | 74.4 | 68.6 | 60.7 | 45.8  | 47.0  |
| USCG Station Hatteras (CAHA)   | Tmax  | 56.9 | 56.7 | 65.3 | 65.5 | 74.9 | 77.5  | 83.7  | ***  | 78.2 | 71.4 | 56.7  | 59.1  |
|                                | Tavg  | 50.9 | 51.0 | 60.4 | 61.1 | 71.6 | 74.4  | 80.3  | ***  | 75.1 | 67.9 | 53.0  | 54.0  |
|                                | Tmin  | 45.8 | 46.1 | 55.8 | 56.8 | 68.2 | 71.4  | 76.7  | ***  | 72.2 | 64.4 | 50.0  | 50.0  |
| Ocracoke (CAHA)                | Tmax  | 55.6 | 56.5 | 67.2 | 67.3 | 78.0 | 80.3  | 86.9  | 84.6 | 79.8 | 72.0 | 57.0  | 58.4  |
|                                | Tavg  | ***  | ***  | ***  | ***  | ***  | ***   | ***   | ***  | ***  | ***  | ***   | ***   |
|                                | Tmin  | 41.6 | 42.0 | 52.7 | 54.0 | 65.7 | 68.5  | 74.5  | 72.8 | 68.5 | 59.6 | 46.1  | 47.0  |
| Morehead City 2WNW (CALO)      | Tmax  | 60.5 | 61.5 | 71.5 | 72.0 | 79.6 | 83.0  | 88.2  | 85.3 | 82.8 | 75.9 | 61.2  | 63.2  |
|                                | Tavg  | ***  | ***  | ***  | ***  | ***  | ***   | ***   | ***  | ***  | ***  | ***   | ***   |
|                                | Tmin  | 39.0 | 41.9 | 52.0 | 52.4 | 66.6 | 67.4  | 76.0  | 73.2 | 66.7 | 57.5 | 42.3  | 45.7  |
| Beaufort (CALO)                | Tmax  | 56.6 | 57.2 | 66.2 | 67.6 | 75.8 | 79.2x | 84.6  | 82.7 | 79.0 | 71.8 | 58.3  | 59.3x |
|                                | Tavg  | 50.2 | 50.7 | 60.3 | 62.3 | 72.1 | 74.7x | 81.2  | 79.4 | 74.7 | 66.7 | 51.8  | 53.5x |
|                                | Tmin  | 43.8 | 44.1 | 55.4 | 56.4 | 68.1 | 70.0x | 77.6  | 75.7 | 70.0 | 61.5 | 46.1  | 47.8x |

- Included in the table are:  $T_{avg}$ ,  $T_{max}$ ,  $T_{min}$ , and average annual temperature (Annual) in SECN parks. Units = °F. \*\*\* indicates not enough data to calculate a valid average.
- See above for the methods for calculating monthly and annual  $T_{max}$ ,  $T_{avg}$  and  $T_{min}$  parameters for each weather station.

The following is a portion of Table 2 from the 2012 SECN weather and climate data summary report:

10

**Table 2.** 2012 mean monthly temperature data for weather stations applicable to SECN parks (applicable parks indicated in parentheses under the station name). Average monthly temperature (Tavg), average monthly maximum temperature (Tmax), average minimum monthly temperature (Tmin), 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 <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 58.8<br>58.9<br>42.9    | 58.9<br>68.3<br>43.0    | 68.3<br>69.5<br>53.5   | 69.5<br>78.8<br>54.2   | 78.8<br>81.7<br>67.4   | 81.7<br>87.4<br>69.3    | 87.4<br>85.4<br>76.6    | 85.4<br>81.3<br>74.4    | 81.3<br>73.4<br>68.6    | 73.4<br>58.8<br>60.7    | 58.8<br>60.3<br>45.8    | 60.3<br>71.9<br>47.0    | 71.9<br>58.7            |
| Duck (CAHA)                                   | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | ***<br>***<br>***       | 52.5<br>47.7<br>43.1    | 63.7<br>57.2<br>51.7   | 64.3<br>58.3<br>53.6   | 72.3<br>68.0<br>63.9   | 78.1<br>73.5<br>69.9    | 87.4x<br>82.0x<br>77.4x | 81.6<br>78.3<br>74.6    | 77.3<br>73.8<br>70.9    | 69.2<br>65.3<br>61.9    | 55.8x<br>51.4x<br>47.7x | 56.8<br>51.3<br>47.2    | ***<br>***<br>***       |
| Oregon Inlet Marina (CAHA)                    | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 52.8<br>48.0<br>43.3    | ***<br>***<br>***       | 62.6<br>57.5<br>52.4   | 64.0<br>58.8<br>54.1   | 73.2<br>69.6<br>65.5   | 77.2<br>73.9<br>70.3    | 84.7<br>81.3<br>77.4    | 82.1<br>79.2<br>75.4    | 78.0<br>74.6<br>71.2    | 69.2x<br>65.6x<br>61.5x | 56.1<br>51.9<br>48.1    | 56.6<br>51.6<br>47.7    | ***<br>***<br>***       |
| Ocracoke (CALO, CAHA)                         | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 55.6<br>41.6            | 56.5<br>42.0            | 67.2<br>52.7           | 67.4<br>54.0           | 78.1<br>65.7           | 80.3<br>68.5            | 86.9<br>74.5            | 84.7<br>72.8            | 79.8<br>68.5            | 72.0<br>59.6            | 57.0<br>46.1            | 58.4<br>47.0            | 70.4<br>57.8            |
| Morehead City 2 WNW (CALO)                    | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 60.5<br>39.0            | 61.5<br>41.9            | 71.5<br>52.0           | 72.0<br>52.4           | 79.6<br>66.6           | 83.0<br>67.4            | 88.2<br>76.0            | 85.3<br>73.2            | 82.8<br>66.7            | 75.9<br>57.5            | 61.2<br>42.3            | 63.2<br>45.7            | 73.8<br>56.8            |
| Beaufort (CALO)                               | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 56.6<br>50.2<br>43.8    | 57.2<br>50.7<br>44.1    | 66.3<br>60.3<br>55.4   | 67.6<br>62.3<br>56.4   | 75.8<br>72.1<br>68.1   | 79.2x<br>74.7x<br>70.0x | 84.6<br>81.2<br>77.6    | 82.7<br>79.4<br>75.7    | 79.0<br>74.8<br>70.0    | 71.8<br>66.7<br>61.5    | 58.3<br>51.7<br>46.1    | 59.3x<br>53.5x<br>47.9x | 69.9x<br>64.9x<br>59.8x |
| CLKN7 (CALO)                                  | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 58.0<br>51.8<br>46.7    | 58.5<br>52.5<br>47.4    | 65.8<br>61.0<br>57.3   | 66.8<br>62.6<br>58.7   | 74.5<br>71.8<br>69.1   | 77.6<br>74.6<br>71.9    | 83.8<br>81.0<br>78.1    | 82.0<br>79.6<br>76.5    | 78.5<br>75.5<br>72.3    | 72.2<br>68.2<br>64.2    | 57.8<br>53.2<br>49.1    | 59.7<br>54.9<br>50.7    | 69.6<br>65.6<br>61.9    |
| Moore's Creek National Battlefield (MOCR)     | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 59.8x<br>34.1x<br>36.9x | 60.9x<br>48.4x<br>36.9x | 74.9x<br>48.5<br>48.4x | 75.6x<br>60.8x<br>48.5 | 81.7x<br>62.5<br>60.8x | 86.2<br>73.7x<br>70.1   | 94.1x<br>87.0x<br>84.4x | 87.0x<br>84.4x<br>84.4x | 74.9x<br>62.0x<br>62.0x | 62.0x<br>***<br>***     | ***<br>***<br>***       | ***<br>***<br>***       | ***<br>***<br>***       |
| Wilmington International Airport (MOCR)       | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 61.8<br>38.4            | 61.9<br>39.9            | 73.5<br>51.2           | 74.4<br>52.6           | 82.2<br>63.8           | 85.0<br>65.3            | 93.8<br>75.6            | 86.2<br>72.1            | 83.4<br>65.3            | 74.3<br>55.5            | 61.5<br>39.6            | 63.4<br>43.0            | 75.2<br>55.3            |
| Charleston International Airport (CHPI, FOSU) | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 65.6<br>39.9            | 66.7<br>44.0            | 76.9<br>53.6           | 78.6<br>55.5           | 84.6<br>66.8           | 85.4<br>66.8            | 93.2<br>74.1            | 88.2<br>72.3            | 86.0<br>66.7            | 77.1<br>57.2            | 65.1<br>41.7            | 66.1<br>44.6            | 77.8<br>56.9            |
| Charleston (FOSU)                             | T <sub>avg</sub><br>T <sub>max</sub><br>T <sub>min</sub> | 62.1<br>54.2<br>47.2    | 62.3<br>55.9<br>49.4    | 71.4<br>64.7<br>59.5   | 73.3<br>67.4<br>61.7   | 78.2<br>74.3<br>70.0   | 80.6<br>76.6<br>72.0    | 87.6<br>83.0<br>78.4    | 84.6<br>80.0<br>75.8    | 81.6<br>77.3<br>72.9    | 74.1<br>69.0<br>63.7    | 61.8<br>55.2<br>48.9    | 63.1<br>56.1<br>49.8    | 73.4<br>67.9<br>62.5    |

**Table 3. Derivative Climate Measures**

Key dates etc. are calculated for each weather station (described in the data analysis section above) and are presented in Table 3 – derivative climate measures.

1. To generate the derivative climate measures data table, navigate to the SECN SharePoint > Explore Data > Weather and Climate Monitoring > Derivative Climate Measures. Or use the direct link:  
<http://sharenrsstest/im/networks/secn/layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/DerivativeMeasures.rdl&Source=http%3A%2F%2Fsharenrsstest%2Fim%2Fnetworks%2Fsecn%2FReports%2FForms%2F>
2. Enter the year you are interested in analyzing and click Apply.

Parameters

Year

2012

Apply

- The derivative climate measures data table will be generated by the data management system. Export the data in Word format as shown below to be able to copy and paste the data table into your report document. Add a table header as shown in the screen capture from the 2012 report (shown below).

The screenshot shows the SECN Home > Reports > Reportslibrary > WeatherReports path. The 'Actions' menu is open, showing options: Open with Report Builder, Subscribe, Print, Export, XML file with report data, CSV (comma delimited), PDF, MHTML (web archive), Excel, TIFF file, and Word. The 'Export' option is highlighted. Below the menu, a table displays weather data for various stations.

| Station Name                             | Applicable Park(s) | Growing Season Length (days)* | Maximum Temp. °F | # Days T <sub>max</sub> ≥ 90°F | # Days T <sub>min</sub> ≤ 32°F | Last Spring Date T <sub>max</sub> ≥ 32°F | Earliest Fall Date T <sub>min</sub> ≤ 32°F |
|------------------------------------------|--------------------|-------------------------------|------------------|--------------------------------|--------------------------------|------------------------------------------|--------------------------------------------|
| Alexander City                           | HOBE               |                               |                  | 45*                            | 33*                            | None*                                    | 9-Nov*                                     |
| Anniston Metro Airport                   | HOBE               |                               |                  | 46                             | 38                             | None                                     | 1-Nov                                      |
| Atlanta Hartsfield International Airport | CHAT               |                               |                  | 80                             | 36                             | None                                     | 25-Nov                                     |

- Within the table columns, NA indicates not available and \* indicates the station has missing data and the values in the table may be over- or under-estimates of the true value.

The following is Table 3 from the 2012 SECN weather and climate data summary report:

**Table 3. 2012 derivative climate measures for weather stations relevant to SECN parks. NA indicates not available. \* indicates the station has missing data and the values in this table may be over- or under-estimates of the true value.**

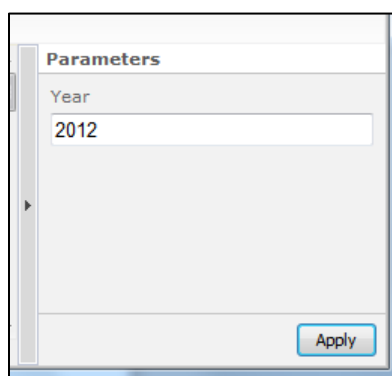
| Station Name                         | Applicable Park(s) | Growing Season Length (days)* | Maximum Temp. °F | # Days T <sub>max</sub> ≥ 90°F | # Days T <sub>min</sub> ≤ 32°F | Last Spring Date T <sub>max</sub> ≥ 32°F | Earliest Fall Date T <sub>min</sub> ≤ 32°F |
|--------------------------------------|--------------------|-------------------------------|------------------|--------------------------------|--------------------------------|------------------------------------------|--------------------------------------------|
| Cape Hatteras Airport                | CAHA               | 290                           | 91               | 3                              | 7                              | 12-Feb                                   | 29-Nov                                     |
| Duck                                 | CAHA               | 324                           | 95               | 11                             | 4                              | 12-Feb                                   | None                                       |
| Oregon Inlet Marina                  | CAHA               | 363                           | 90               | 1                              | 2                              | 4-Jan                                    | None                                       |
| Ocracoke                             | CALO, CAHA         | 324                           | 91               | 3                              | 6                              | 12-Feb                                   | None                                       |
| Morehead City 2 WNW                  | CALO               | 285                           | 93               | 5                              | 17                             | 13-Feb                                   | 25-Nov                                     |
| Beaufort                             | CALO               | 323                           | 90               | 1                              | 4                              | 13-Feb                                   | None                                       |
| CLKN7                                | CALO               | 324                           | 87               | 0                              | 3                              | 12-Feb                                   | None                                       |
| Moores Creek National Battlefield    | MOCR               | 187*                          | 102*             | 57*                            | 38*                            | 27-Apr*                                  | 1-Nov*                                     |
| Wilmington International Airport     | MOCR               | 263                           | 103              | 47                             | 22                             | 6-Mar                                    | 25-Nov                                     |
| Charleston International Airport     | CHPI, FOSU         | 283                           | 98               | 60                             | 16                             | 13-Feb                                   | 23-Nov                                     |
| Charleston                           | FOSU               | 324                           | 93               | 11                             | 3                              | 12-Feb                                   | None                                       |
| Charleston City                      | CHPI, FOSU         | 324                           | 94               | 21                             | 3                              | 12-Feb                                   | None                                       |
| Columbia Metro Airport               | CONG               | 253                           | 109              | 71                             | 34                             | 21-Feb                                   | 1-Nov                                      |
| Congaree                             | CONG               | 202                           | 107              | 89                             | 45                             | 12-Apr                                   | 1-Nov                                      |
| Atlanta International Airport        | CHAT, KEMO         | 285                           | 106              | 52                             | 18                             | 13-Feb                                   | 25-Nov                                     |
| Dallas 7 NE                          | CHAT, KEMO         | 202                           | 104              | 49                             | 46                             | 12-Apr                                   | 1-Nov                                      |
| Gainesville                          | CHAT               | 262                           | 103              | 30                             | 39                             | 7-Mar                                    | 25-Nov                                     |
| Brender                              | OCMU               | 246                           | 112              | 68                             | 39                             | 6-Mar                                    | 8-Nov                                      |
| Macon Middle Georgia Regional AP     | OCMU               | 247                           | 108              | 85                             | 30                             | 6-Mar                                    | 9-Nov                                      |
| Alexander City                       | HOBE               | 247                           | 103              | 54                             | 36                             | 6-Mar                                    | 9-Nov                                      |
| Lafayette 2W                         | HOBE               | 200                           | 102              | 47                             | 63                             | 14-Apr                                   | 1-Nov                                      |
| Savannah International Airport       | FOPU               | 286                           | 100              | 67                             | 17                             | 12-Feb                                   | 25-Nov                                     |
| Fort Pulaski                         | FOPU               | 324                           | 94               | 11                             | 3                              | 12-Feb                                   | None                                       |
| Brunswick                            | FOFR, CUIS         | 323                           | 99               | 73                             | 4                              | 13-Feb                                   | None                                       |
| Brunswick Malcolm McKinnon AP        | FOFR, CUIS         | 313                           | 96               | 43                             | 5                              | 13-Feb                                   | 23-Dec                                     |
| Brunswick 23 S                       | CUIS               | 286                           | 97               | 36                             | 9                              | 13-Feb                                   | 26-Nov                                     |
| Stafford - CUIS                      | CUIS               | 268                           | 99               | 50                             | 19                             | 14-Feb                                   | 9-Nov                                      |
| Fernandina Beach                     | CUIS, TIMU         | 324                           | 94               | 17                             | 1                              | 12-Feb                                   | None                                       |
| Jacksonville Craig Municipal Airport | FOCA, TIMU         | 313                           | 97               | 76                             | 6                              | 13-Feb                                   | 23-Dec                                     |
| Jacksonville International Airport   | FOCA, TIMU         | 285                           | 96               | 70                             | 16                             | 13-Feb                                   | 25-Nov                                     |
| Federal Point                        | CASA, FOMA         | 323                           | 94               | 65                             | 4                              | 13-Feb                                   | None                                       |
| NERRS Matanzas                       | CASA, FOMA         | 313                           | 95               | 31                             | 4                              | 13-Feb                                   | 23-Dec                                     |
| St. Augustine Lighthouse             | CASA, FOMA         | 324                           | 96               | 54                             | 2                              | 12-Feb                                   | None                                       |
| Titusville                           | CANA               | 323*                          | 97*              | 65*                            | 2*                             | 13-Feb*                                  | None                                       |
| Titusville 7 E                       | CANA               | 361                           | 93               | 34                             | 1                              | 5-Jan                                    | None                                       |
| Trident Pier                         | CANA               | 366                           | 91               | 6                              | 0                              | None                                     | None                                       |

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

**Table 4. Monthly and Annual Precipitation and Departures from Normal**

Monthly and annual precipitation and departures from the long-term average at weather stations relevant to SECN parks are presented in Table 4. Please see above for the calculation of monthly and annual precipitation parameters.

1. To generate the derivative climate measures data table, navigate to the SECN SharePoint > Explore Data > Weather and Climate Monitoring > Monthly and Annual Precipitation and Departures from Normal. Or use the direct link:  
[http://sharensstest/im/networks/secn/\\_layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/MonthlyPrecipitation.rdl&Source=http%3A%2F%2Fsharensstest%2Fim%2Fnetworks%2Fsecn%2FReports%2FForms%2F](http://sharensstest/im/networks/secn/_layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/MonthlyPrecipitation.rdl&Source=http%3A%2F%2Fsharensstest%2Fim%2Fnetworks%2Fsecn%2FReports%2FForms%2F)
2. Enter the year you are interested in analyzing and click Apply.



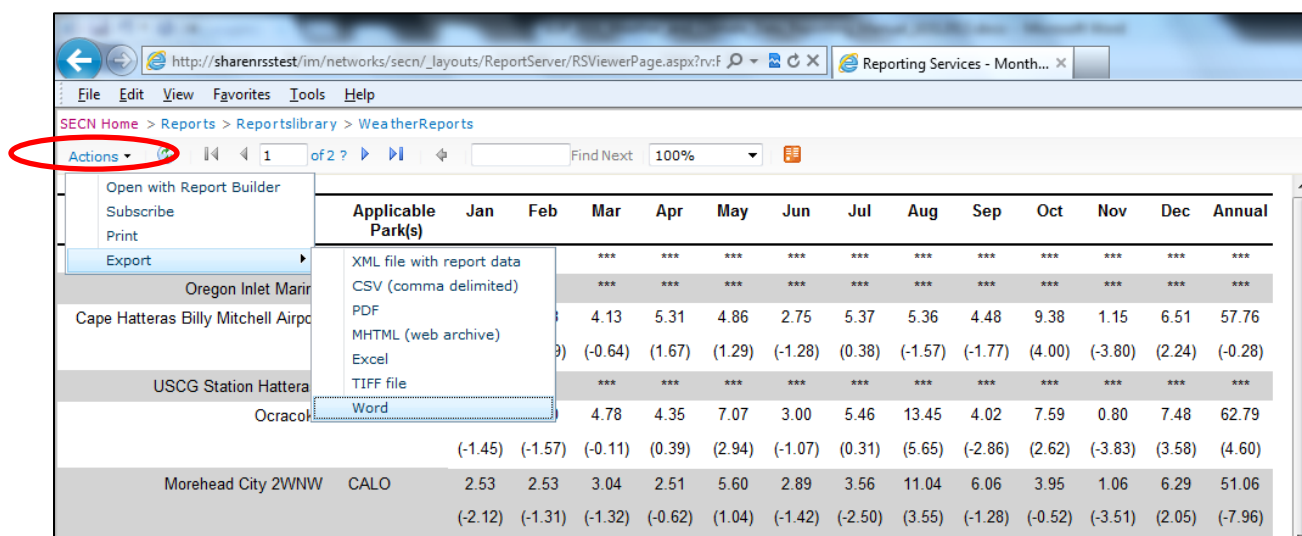
Parameters

Year

2012

Apply

3. The monthly and annual precipitation and departures from normal data table will be generated by the data management system. Export the data in Word format as shown below to be able to copy and paste the data table into your report document. Remove the rows showing only (\*\*\*) ; these stations do not have precipitation data in the data management system. Add a table header as shown in the screen capture from the 2012 report (shown below).



SECN Home > Reports > Reportslibrary > WeatherReports

Actions > Export

| Applicable Park(s)                | Jan     | Feb     | Mar     | Apr     | May    | Jun     | Jul     | Aug    | Sep     | Oct     | Nov     | Dec    | Annual  |
|-----------------------------------|---------|---------|---------|---------|--------|---------|---------|--------|---------|---------|---------|--------|---------|
| Oregon Inlet Marine               | ***     | ***     | ***     | ***     | ***    | ***     | ***     | ***    | ***     | ***     | ***     | ***    | ***     |
| Cape Hatteras Billy Mitchell Airp | ***     | ***     | ***     | ***     | ***    | ***     | ***     | ***    | ***     | ***     | ***     | ***    | ***     |
| USCG Station Hattera              | ***     | ***     | ***     | ***     | ***    | ***     | ***     | ***    | ***     | ***     | ***     | ***    | ***     |
| Ocracoke                          | 4.78    | 4.35    | 7.07    | 3.00    | 5.46   | 13.45   | 4.02    | 7.59   | 0.80    | 7.48    | 62.79   |        |         |
|                                   | (-1.45) | (-1.57) | (-0.11) | (0.39)  | (2.94) | (-1.07) | (0.31)  | (5.65) | (-2.86) | (2.62)  | (-3.83) | (3.58) | (4.60)  |
| Morehead City 2WNW CALO           | 2.53    | 2.53    | 3.04    | 2.51    | 5.60   | 2.89    | 3.56    | 11.04  | 6.06    | 3.95    | 1.06    | 6.29   | 51.06   |
|                                   | (-2.12) | (-1.31) | (-1.32) | (-0.62) | (1.04) | (-1.42) | (-2.50) | (3.55) | (-1.28) | (-0.52) | (-3.51) | (2.05) | (-7.96) |

- Values in parentheses indicate the departure (amount that the monthly total precipitation was greater than or less than) 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.

The following is a portion of Table 4 from the 2012 SECN weather and climate data summary report.

**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               | 5.03<br>(-0.21) | 3.43<br>(-0.59) | 4.13<br>(-0.64) | 5.31<br>(1.67)  | 4.86<br>(1.29)   | 2.75<br>(-1.28) | 5.37<br>(0.38)  | 5.36<br>(-1.57) | 4.48<br>(-1.77) | 9.38<br>(4.0)   | 1.15<br>(-3.8)  | 6.51<br>(2.24)  | 57.76<br>(-0.28)  |
| Ocracoke                           | CALO               | 2.59<br>(-1.45) | 2.2<br>(-1.57)  | 4.78<br>(-0.11) | 4.35<br>(0.39)  | 7.07<br>(2.94)   | 3.0<br>(-1.07)  | 5.46<br>(0.31)  | 13.45<br>(5.65) | 4.02<br>(-2.86) | 7.59<br>(2.52)  | 0.8<br>(-3.83)  | 7.48<br>(3.58)  | 62.79<br>(4.6)    |
| Morehead City 2 WNW                | CALO               | 2.53<br>(-2.12) | 2.53<br>(-1.31) | 3.04<br>(-1.32) | 2.51<br>(-0.62) | 5.6<br>(1.04)    | 2.89<br>(-1.42) | 3.56<br>(-2.5)  | 11.04<br>(3.55) | 6.06<br>(-1.28) | 3.95<br>(-0.52) | 1.06<br>(-3.51) | 6.29<br>(2.05)  | 51.06<br>(-7.96)  |
| Moore's Creek National Battlefield | MOCR               | 1.97x           | 2.77x           | 4.73x           | 1.73            | 10.86x           | 3.45x           | 3.22            | 10.62           | 5.07x           | 1.43x           | 3.55x           | ***             | ***               |
| Wilmington International AP        | MOCR               | 1.78<br>(-1.98) | 2.16<br>(-1.46) | 3.58<br>(-0.63) | 1.46<br>(-1.36) | 7.28<br>(2.79)   | 1.89<br>(-3.29) | 2.31<br>(-5.17) | 11.6<br>(4.19)  | 5.01<br>(-2.83) | 4.39<br>(0.5)   | 4.43<br>(1.14)  | 4.61<br>(0.99)  | 50.5<br>(-7.11)   |
| Charleston International AP        | CHPI               | 0.64<br>(-3.07) | 2.27<br>(-0.69) | 5.51<br>(1.8)   | 1.33<br>(-1.58) | 3.06<br>(0.04)   | 9.79<br>(4.14)  | 4.78<br>(-1.75) | 7.76<br>(0.61)  | 2.02<br>(-4.08) | 1.96<br>(-2.69) | 2.2<br>(-0.23)  | 3.56<br>(0.45)  | 49.98<br>(-7.05)  |
| Charleston City                    | CHPI               | 0.51<br>(-2.43) | 2.33<br>(-0.18) | 4.2<br>(0.9)    | 1.36<br>(-1.17) | 3.45<br>(1.29)   | 6.3<br>(1.65)   | 4.74<br>(-0.66) | 9.31<br>(2.6)   | 0.57<br>(-5.19) | 0.89<br>(-2.78) | 1.73<br>(-0.46) | 3.3<br>(0.7)    | 38.69<br>(-5.73)  |
| Columbia Metro AP                  | CONG               | 1.76<br>(-1.82) | 2.46<br>(-1.15) | 2.21<br>(-1.52) | 2.28<br>(-0.34) | 4.7<br>(1.73)    | 4.18<br>(-0.51) | 6.97<br>(1.51)  | 9.8<br>(4.54)   | 1.84<br>(-1.7)  | 1.42<br>(-1.75) | 1.62<br>(-1.12) | 3.51<br>(0.29)  | 42.75<br>(-1.84)  |
| Congaree                           | CONG               | 0.0             | 2.44            | 2.67            | 3.19            | 4.75             | 3.83            | 4.51            | 10.63           | 1.17            | 0.61            | 1.5             | ***             | ***               |
| Alexander City                     | HOBE               | 5.52<br>(0.31)  | 4.39<br>(-0.96) | 4.69<br>(-0.8)  | 1.7<br>(-2.41)  | 5.81<br>(1.48)   | 3.04<br>(-1.41) | 4.54<br>(-0.77) | 4.69<br>(0.19)  | 2.32<br>(-1.78) | 2.58<br>(-0.5)  | 0.97<br>(-3.82) | 7.95<br>(3.05)  | 48.2<br>(-7.42)   |
| Lafayette 2W                       | HOBE               | 6.25<br>(1.23)  | 5.41<br>(0.34)  | 5.65<br>(-0.07) | 2.12<br>(-2.43) | 5.84<br>(1.57)   | 1.92<br>(-2.26) | 2.0<br>(-3.12)  | 3.69<br>(-0.51) | 1.75<br>(-1.96) | 1.88<br>(-1.4)  | 1.13<br>(-3.45) | 6.59<br>(1.74)  | 44.23<br>(-10.32) |
| Atlanta Hartsfield Intl. Airport   | CHAT               | 5.14<br>(0.94)  | 2.23<br>(-2.44) | 3.52<br>(-1.29) | 2.23<br>(-1.13) | 3.41<br>(-0.26)  | 2.28<br>(-1.67) | 3.53<br>(-1.74) | 3.89<br>(-0.01) | 1.37<br>(-3.1)  | 1.83<br>(-1.58) | 1.67<br>(-2.43) | 5.94<br>(2.04)  | 37.04<br>(-12.67) |
| Gainesville                        | KEMO               | 5.14<br>(-0.03) | 2.43<br>(-2.67) | 4.86<br>(-0.37) | 3.28<br>(-0.41) | 3.68<br>(-0.12)  | 2.29<br>(-1.84) | 4.12<br>(-0.1)  | 7.04<br>(2.65)  | 1.82<br>(-2.73) | 8.08<br>(4.2)   | 1.26<br>(-3.18) | 5.96<br>(1.3)   | 49.86<br>(-3.3)   |
| Dallas 7 NE                        | CHAT               | 4.29<br>(-0.57) | 1.37<br>(-3.8)  | 4.53<br>(-0.54) | 2.64<br>(-1.29) | 5.18<br>(1.06)   | 3.69<br>(-0.38) | 5.15<br>(0.05)  | 2.24<br>(-2.11) | 0.95<br>(-3.15) | 2.53<br>(-0.89) | 1.76<br>(-2.54) | 6.29<br>(1.8)   | 40.62<br>(-12.36) |
| Brunswick                          | KEMO               | 0.56<br>(-2.97) | 2.94<br>(-0.81) | 5.2<br>(1.09)   | 0.47<br>(-2.2)  | 12.94<br>(10.57) | 9.55<br>(3.99)  | 0.74<br>(-4.33) | 9.62<br>(2.71)  | 3.8<br>(-2.5)   | 1.69<br>(-2.8)  | 0.4<br>(-1.75)  | 1.4<br>(-1.31)  | 49.31<br>(-0.31)  |
| Brunswick Malcolm McKinnon AF      | FOFR               | 0.45<br>(-2.77) | 2.21<br>(-1.26) | 4.01<br>(0.13)  | 0.53<br>(-1.96) | 7.07<br>(5.21)   | 11.41<br>(6.51) | 1.22<br>(-2.86) | 6.41<br>(0.14)  | 2.86<br>(-2.9)  | 2.98<br>(-1.48) | 0.23<br>(-1.8)  | 1.8<br>(-0.84)  | 41.18<br>(-3.82)  |
| Brunswick 23 S                     | CUIS               | 0.16            | 1.02            | 1.95            | 1.53            | 6.22             | 16.84           | 1.96            | 11.87           | 2.36            | 1.73            | 0.2             | 2.04            | 47.89             |
| Stafford - CUIS                    | CUIS               | 0.25            | 1.94            | 2.19x           | 0.8             | 7.08             | 12.76           | 1.52            | 9.44            | 1.78            | 1.76            | 0.2             | 1.85            | 41.57             |
| Savannah International AP          | FOFU               | 1.45<br>(-2.24) | 2.65<br>(-0.14) | 4.55<br>(0.82)  | 0.48<br>(-2.59) | 7.49<br>(-4.51)  | 3.49<br>(-2.46) | 5.96<br>(0.36)  | 7.75<br>(1.19)  | 2.86<br>(-1.72) | 1.15<br>(-2.54) | 0.48<br>(-1.89) | 1.91<br>(-1.04) | 40.22<br>(-7.74)  |
| Macon Middle Georgia Reg. AP       | OCMU               | 3.2<br>(-1.04)  | 2.52<br>(-1.84) | 1.84<br>(-2.71) | 1.04<br>(-1.92) | 2.11<br>(-0.61)  | 3.04<br>(-1.02) | 5.69<br>(0.74)  | 3.78<br>(-0.32) | 2.71<br>(-0.88) | 0.25<br>(-2.54) | 1.38<br>(-1.94) | 4.86<br>(0.82)  | 32.42<br>(-13.26) |

### Table 5. Relative Humidity Data

Presented in Table 5 are the monthly average maximum and minimum relative humidity values for the current year and for the rolling five-year average (data analysis methods are presented above).

1. To generate the derivative climate measures data table, navigate to the SECN SharePoint > Explore Data > Weather and Climate Monitoring > Relative Humidity Data. Or use the direct link:  
<http://sharenrsstest/im/networks/secn/layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/im/networks/secn/Reports/Reportslibrary/WeatherReports/RelativeHumidity.rdl&Source=http%3A%2F%2Fsharenrsstest%2Fim%2Fnetworks%2Fsecn%2FReports%2FForms%2FAI>
2. Enter the year you are interested in analyzing and click Apply.



3. The relative humidity data and departures from normal data table will be generated by the data management system. Export the data in Word format as shown below to be able to copy and paste the data table into your report document. Remove the rows showing only (\*\*); these stations do not have relative humidity data in the data management system. Add a table header as shown in the screen capture from the 2012 report (shown below).

[illegible]

- Average monthly relative humidity at weather stations near SECN parks during current year (upper row) and the previous five-year average (year1/year5) 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 five-year average.

The following is Table 5 from the 2012 SECN weather and climate data summary report:

**Table 5. Average monthly relative humidity at weather stations near SECN parks during 2012 (upper row) and the 5-year average (2005-2009) in the lower row. Data includes RHmax/RHmin where RHmax is maximum relative humidity and RHmin 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 Airport            | CAHA                   | 86/56<br>(88/61) | 87/56<br>(86/54)   | 89/61<br>(86/55)    | 85/50<br>(90/58) | 88/63<br>(90/61)  | 84/56<br>(91/64)  | 89/68<br>(90/65)   | 92/68<br>(88/62)   | 89/61<br>(88/63)   | 89/62<br>(88/60)   | 91/60<br>(89/61)   | 92/64<br>(90/61) |
| Croatan                          | CALO                   | 87/45<br>(92/53) | 90/48<br>(96/46)   | 93/54<br>(96/48)    | 89/44<br>(97/50) | 96/58<br>(99/56)  | 96/53<br>(99/61)  | 95/65<br>(97/63)   | 96/68<br>(96/62)   | 95/59<br>(95/61)   | 95x/58x<br>(95/57) | 92x/54x<br>(96/55) | 92/57<br>(96/57) |
| Wilmington Intl. Airport         | MOCR                   | 89/43<br>(89/49) | 91/47<br>(87/39)   | 95/49<br>(87/40)    | 92/43<br>(87/38) | 95/52<br>(91/46)  | 92/49<br>(91/51)  | 93/50<br>(92/52)   | 97/62<br>(93/56)   | 94/55<br>(92/55)   | 93/55<br>(91/52)   | 92/48<br>(91/49)   | 93/55<br>(92/49) |
| Charleston Intl. Airport         | CHPI<br>FOSU           | 89/40<br>(89/46) | 88/44<br>(88/39)   | 94/46<br>(90/39)    | 91/42<br>(89/38) | 94/48<br>(93/46)  | 94/50<br>(93/52)  | 93/52<br>(93/52)   | 96/58<br>(94/56)   | 95/52<br>(92/53)   | 91/49<br>(93/53)   | 92/46<br>(91/47)   | 93/51<br>(91/48) |
| Congaree                         | CONG                   | 95/43<br>***     | 94/36<br>***       | 97/36<br>***        | 97/39<br>***     | 99/45<br>***      | 98/44<br>***      | 97/45<br>***       | 98/54<br>***       | 99/49<br>***       | 94/45<br>***       | 96/37<br>***       | ***              |
| Columbia Metro Airport           | CONG                   | 76/34<br>(87/42) | 87x/39x<br>(84/35) | 88/36<br>(84/35)    | 86/37<br>(85/34) | 91/42<br>(89/38)  | 88/41<br>(90/42)  | 90/42<br>(91/44)   | 95/49<br>(92/46)   | 92/46<br>(90/45)   | 87/42<br>(92/47)   | 86/35<br>(90/41)   | 89/47<br>(91/44) |
| Atlanta Hartsfield Intl. Airport | CHAI<br>KEMO           | 80/42<br>(83/46) | 82/41<br>(80/41)   | 80/38<br>(80/39)    | 82/39<br>(83/41) | 86/43<br>(83/44)  | 81/41<br>(84/42)  | 86/40<br>(86/48)   | 91/48<br>(88/49)   | 87/46<br>(86/49)   | 83/44<br>(86/49)   | 81/40<br>(83/42)   | 86/52<br>(85/49) |
| Breander                         | OCMU                   | 96/43<br>(96/47) | 97/45<br>(96/40)   | 98/41<br>(97/39)    | 98/39<br>(97/40) | 100/42<br>(97/44) | 100/41<br>(98/45) | 100/43<br>(98/48)  | 100/56<br>(97/51)  | 100/51<br>(98/52)  | 96/45<br>(99/56)   | 96/41<br>(99/45)   | 96/52<br>(98/50) |
| Macon Middle GA Regl. Airport    | OCMU                   | 92/43<br>(86/43) | 95/49<br>(85/37)   | 95/44<br>(86/37)    | 95/37<br>(89/38) | 95/38<br>(89/39)  | 94/40<br>(90/41)  | 95/44<br>(91/44)   | 98/53<br>(92/49)   | 97x/44x<br>(92/48) | 95/40<br>(92/47)   | 96/40<br>(90/41)   | 96/50<br>(90/47) |
| Savannah International Airport   | FOPU                   | 86/37<br>(90/46) | 90/45<br>(90/39)   | 93/44<br>(90/39)    | 90/37<br>(90/38) | 94/46<br>(91/44)  | 93/48<br>(94/48)  | 93/49<br>(94/49)   | 95/58<br>(95/55)   | 94/51<br>(93/52)   | 91/48<br>(94/52)   | 93/46<br>(92/47)   | 94/50<br>(93/51) |
| Brunswick Malcolm McKinnon AP    | FOFR,<br>CUI5          | 90/47<br>(90/55) | 90/56<br>(89/47)   | 92/55<br>(90/49)    | 84/45<br>(88/47) | 89/58<br>(87/52)  | 89/57<br>(89/56)  | 92/64<br>(90/58)   | 90/59<br>(92/62)   | 89/54<br>(90/61)   | 90/51<br>(91/58)   | 94/58<br>(92/53)   | 94/58<br>(93/59) |
| Stafford – CUI5                  | CUI5,<br>FOFR          | 97/55<br>(96/61) | 99/68<br>(98/49)   | 100x/63x<br>(98/51) | 96/51<br>(95/47) | 99/67<br>(98/54)  | 99/66<br>(99/59)  | 100/60<br>(100/59) | 100/75<br>(100/64) | 98/67<br>(98/63)   | 97/66<br>(99/64)   | 100/61<br>(99/64)  | 98/73<br>(99/72) |
| Anniston Metro Airport           | HOBE                   | 91/44<br>(89/41) | 92/45<br>(89/38)   | 91/40<br>(90/36)    | 93/43<br>(93/40) | 95/45<br>(93/46)  | 94/43<br>(95/44)  | 95/48<br>(96/49)   | 97/50<br>(95/49)   | 96/49<br>(94/49)   | 95/44<br>(95/48)   | 94/40<br>(93/43)   | 92/53<br>(92/46) |
| Jacksonville Intl. Airport       | FOCA,<br>TIMU          | 92/40<br>(93/51) | 95/50<br>(93/41)   | 95/42<br>(94/42)    | 94/39<br>(93/40) | 97/50<br>(95/46)  | 96/56<br>(96/53)  | 96/52<br>(95/53)   | 97/60<br>(96/55)   | 96/56<br>(95/56)   | 94/53<br>(94/55)   | 95/48<br>(94/49)   | 96/56<br>(95/54) |
| Daytona Beach Intl. Airport      | CANA,<br>CASA,<br>FOMA | 93/43<br>(89/49) | 95/52<br>(88/45)   | 93/49<br>(88/42)    | 90/42<br>(87/41) | 95/53<br>(87/47)  | 96/59<br>(90/54)  | 96/54<br>(91/57)   | 97/62<br>(91/56)   | 96/59<br>(89/57)   | 91/56<br>(88/54)   | 96/55<br>(89/51)   | 97/57<br>(90/55) |
| Merritt Island*                  | CANA                   | 96/48<br>(88/52) | 96/54<br>(92/48)   | 95/47<br>(93/46)    | 92/41<br>(97/48) | 95/53<br>(94/51)  | 94/57<br>(95/56)  | 95/52<br>(98/60)   | 94/57<br>(100/63)  | 93/57<br>(92/63)   | 88/53<br>(91/57)   | 93/54<br>(91/56)   | 98/57<br>(89/57) |

\*includes data from 2004 due to missing data during 2005

## Other Requisite Information

### Hurricane History for the Sample Year

It is important to note at a general level any significant (named) storm events that occurred during the sampling year as they will typically coincide with data extremes. For an annual summary of storms and intensities, visit the NOAA website at:

<http://www.ncdc.noaa.gov/stormevents/>

### State of the Climate – Drought Report

NOAA provides a consolidated look at drought conditions, nationally and regionally around the United States in the State of the Climate Drought Report:

<http://www.ncdc.noaa.gov/sotc/drought>

The information contained in this analysis helps put the weather data analyzed in this report into both a regional and national context. This is important because 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 weather at a park. 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) of the park units identified in the report.

## State of the Climate – Global Summary

NOAA provides a consolidated look at weather conditions across the globe in the State of the Climate Global Summary: <http://www.ncdc.noaa.gov/sotc/global>

The information contained in this analysis helps put the weather data analyzed in this report into a global context. This is important because 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 weather at a park. 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) of the park units identified in the report.

## State of the Climate – National Overview

NOAA provides a consolidated look at weather conditions across the United States as a whole, as well as within the defined regions (in this case, the Southeast) of the United States in the State of the Climate National Overview: <http://www.ncdc.noaa.gov/sotc/national>

The information contained in this analysis helps put the weather data analyzed in this report into a national and regional context. This is important because 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 weather at a park. 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) of the park units identified in the report.

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