Climate of Georgia

Introduction

This publication consists of a narrative that describes some of the principal climatic features and a number of climatological summaries for stations in various geographic regions of the State. The detailed information presented should be sufficient for general use; however, some users may require additional information.

The National Climatic Data Center (NCDC) located in Asheville, North Carolina is authorized to perform special services for other government agencies and for private clients at the expense of the requester. The amount charged in all cases is intended to solely defray the expenses incurred by the government in satisfying such specific requests to the best of its ability. It is essential that requesters furnish the NCDC with a precise statement describing the problem so that a mutual understanding of the specifications is reached.

Unpublished climatological summaries have been prepared for a wide variety of users to fit specific applications. These include wind and temperature studies at airports, heating and cooling degree day information for energy studies, and many others. Tabulations produced as by-products of major products often contain information useful for unrelated special problems.

The Means and Extremes of meteorological variables in the Climatography of the U.S. No.20 series are recorded by observers in the cooperative network. The Normals, Means and Extremes in the Local Climatological Data, annuals are computed from observations taken primarily at airports.

The editor of this publication expresses his thanks to those State Climatologists, who, over the years, have made significant and lasting contributions toward the development of this very useful series.

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Climate of Georgia

Topographic Features- Georgia is located roughly between latitudes 30 and 35° North and longitudes 81 and 86° West. From north to south its length is 320 miles, and its maximum width is about 250 miles. With an area of over 58,000 square miles, it is the largest state east of the Mississippi River. Its elevation ranges from sea level along the coast in the State's southeast corner to over 4,700 feet at its highest point in the northeast.

Georgia's land area is made up of four principal physiographic provinces: the Blue Ridge or Mountain Province, the Valley and Ridge Province, the Piedmont Province, and the Coastal Plain Province.

The Blue Ridge or Mountain Province is located in the northeastern part of the State. The terrain in this area is characterized by forest-covered mountains and narrow valleys with rapidly flowing streams. The average elevation of the area is less than 2,000 feet, but the higher mountains reach altitudes between 4,000 and 4,784 feet above sea level.

There are no large cities in this region, but the many waterpower and reservoir sites make the area one of the most popular for recreation and water sports.

The Valley and Ridge Province, located in northwest Georgia, is composed of wide, flat, cultivated valleys separated by narrow, steep, wooded ridges that run more or less northeast to southwest. The elevation of the valleys ranges mostly between 500 and 800 feet above sea level, with the ridges rising to heights of 600 to 2,000 feet.

The Piedmont Plateau Province is a wide area extending from the foothills of the Appalachian Mountains to the Coastal Plain and comprising nearly one-third of the area of the State. The terrain is mostly hilly in the north to rolling in the south, where it merges with the Coastal Plain. Elevations range from near 1,200 feet in the north to less than 500 feet in the south. The soils of the Piedmont are predominantly sandy loams to clay loams and are well suited for the production of cotton, corn, small grains and many other crops. Peaches are grown commercially in many sections of the Piedmont.

The boundary between the Piedmont Province and the Coastal Plain is called the Fall Line, because of the steep fall of rivers as they cross this boundary. The Fall Line extends across the State from west-southwest to east-northeast, following a line from Columbus to Macon to Augusta. The Fall Line marks the head of navigation on the large rivers and is the site of waterpower dams at several places across the State.

The Coastal Plain Province includes all of Georgia south of the Fall Line and comprises about three-fifths of the total area of the State. The terrain is slightly rolling to level and ranges in altitude from sea level along the coast to a maximum of 600 feet. The low-lying coastal sections

are rather marshy, and the large, slow-moving streams are bordered by swampy, densely-wooded areas. Most of the soils of the Coastal Plain are sandy and are well adapted to a wide variety of agricultural products. Most of the State's tobacco, peanuts and truck crops are grown in this area, as well as much cotton, corn and small grains. The State's biggest pecan production and a sizable volume of peaches also come from the upper and middle Coastal Plain.

Temperature- Due to its latitude and proximity to the warm waters of the Gulf of Mexico and Atlantic Ocean, most of Georgia has warm, humid summers and short, mild winters. However, in the northern part of the State, altitude becomes the more predominant influence with resulting cooler summers and colder, but not severe, winters. All four seasons are apparent, but spring is usually short and blustery with rather frequent periods of storminess of varying intensity. In autumn, long periods of mild, sunny weather are the rule for all of Georgia.

Average summer temperatures range from about 72 degrees Fahrenheit (° F) in the northeast mountains to nearly 82 in parts of southern Georgia. There is little difference in summer averages over the southern two-thirds of the State, where they range between 80 and 82° F. Summer days are characteristically warm and humid in this area, with high temperatures exceeding 90° F on most days and reaching 100 during most years. Temperatures usually drop to the middle or low 70s or even below 70° F by early morning, giving some relief from the daytime warmth. The flow of moist air from the Gulf of Mexico over the warm land surface results in frequent afternoon thunderstorms in all of Georgia during summer. These not only provide most of the summer rainfall, but also may bring welcome relief from the afternoon heat. The highest temperatures occasionally exceed 110° F. The State’s all-time high temperature is 112° F. All parts of the State have experienced 100° F weather at one time or another during the period of official records, but such occurrences are highly unusual in the mountain section of the north.

Winter temperatures show more variation from north to south than do those of summer. There is also a much greater variation in winter from day to day in all sections of the State. The average temperature for the three winter months ranges from 39 in the north to about 55° F on the lower coast, with the increase being almost uniform from north to south.

All of Georgia experiences freezing temperatures almost every year, but the frequency of such occurrences varies greatly from the mountains to the coast. The average annual number of days with a temperature of 32° F or less ranges from 110 in the north to about 10 in the lower coastal region.

Subzero temperatures have occurred as far south as Blakely in the southwest, Fitzgerald in south-central and Alma in the southeast. All sections of the State have experienced temperatures as low as 10° F. Georgia winters are characterized by frequent and sometimes large fluctuations in temperature. The cold snaps, which usually occur with regularity from mid-November to mid-March, alternate with longer periods of mild weather. Daytime temperatures almost always rise to above freezing in the southern three-fourths of the State, even during the coldest weather. There is approximately four months difference in the average length of the freeze-free growing season from north to south, ranging from about 170 days in the northernmost areas to near 300 days on the lower coast.

Precipitation- Average annual rainfall in Georgia ranges from more than 75 inches in the extreme northeast corner to about 45 inches in the Central and East Central Divisions. From here, the driest part of the State, rainfall increases toward the south and southwest to an average of about 53 inches along the lower coast and to about 54 inches in extreme southwest Georgia. Isolated peaks in the northeastern mountains may receive over 80 inches of precipitation in an average year. Total rainfall varies greatly from year to year in all parts of the State, and most stations with extended periods of record show more than twice as much rain in their wettest year as in their driest. It is not at all unusual for these extreme variations to occur in successive years. The largest total rainfall recorded at a station in Georgia in one calendar year was 122.16 inches at Flat Top, in Fannin County, in 1959. On the other extreme, Swainsboro, in east-central Georgia measured only 17.14 inches in all of 1954. This is less than the State 24-hour record of 21.10 inches that fell in Americus on July 5-6, 1994 during Tropical Storm Alberto, or the 18.00 inches that fell in 17 hours at St. George on August 28, 1911. It is also considerably less than the record monthly total of 31.61 inches that fell in Americus in July 1994 or the 30.23 inches that was measured at Blakely during July 1916. The distribution of rainfall throughout the year is also highly variable in all parts of the State, but the extremes occur at different seasons in different areas. Most of the State shows two maxima and two minima in the annual rainfall curve.

One maximum occurs in winter and early spring and the other in midsummer. The driest season for all of the State is autumn, with most areas showing a secondary minimum in April or May. In the northern third of the State, the cool season rainfall maximum predominates, with either January or March normally the wettest month. This is due to the greater influence in that area of the mid-latitude storms that move across the country with regularity during winter and early spring. The mountains of north Georgia add enough lift to the moist air that is drawn into the forward side of these storms from the Gulf of Mexico to add materially to the total annual rainfall of the area. Most sections of central and South Georgia have their greatest rainfall in midsummer, with a secondary maximum around March. The lower coastal area has its highest normal rainfall in September, due to the occasional extremely heavy rains that occur with late summer and autumn tropical systems. October is normally the driest month in most of the State, except in the southeast where November is usually drier. The mild, sunny weather of autumn is usually ideal for harvesting the many agricultural crops that are grown in the State.

In spite of the apparent abundance of rainfall in Georgia, irregular distribution results in the occurrence of damaging dry spells in some parts of the State almost every year. The use of irrigation to supplement natural rainfall for agricultural purposes has increased rapidly since the late 1970s. Water supplies for this purpose come from streams and farm ponds throughout the State and from artesian wells in the Coastal Plain area.

Snowfall is light in Georgia and of no significance at all in most of the State. Only in the extreme northern mountains is the average annual fall as much as five inches.

Georgia streams are divided into two main groups, those which flow southeastward into the Atlantic and those flowing southward directly into the Gulf of Mexico, or indirectly into the Gulf through the Alabama-Mobile and Tennessee River systems. The Chattahoochee Ridge marks the dividing line between the parts of the State that are drained into the Atlantic and into the Gulf of

Mexico. The eastern continental divide enters the State in the north at the boundary between Rabun and Towns Counties and runs southwestward through Atlanta, the drainage of which is partly into the Gulf and partly into the Atlantic. From Atlanta, the divide runs south-southeastward through Fort Valley and then southeastward through the Okefenokee Swamp between the Suwannee and St. Mary river basins into Florida. The main streams in the Atlantic drainage system are the Savannah and Altamaha Rivers. The Savannah and its headwater stream form the boundary between Georgia and South Carolina throughout its entire length. The Altamaha drains a large area of central Georgia. The Chattahoochee and Flint River systems constitute the major streams of west Georgia, which drain directly into the Gulf of Mexico.

Because of rapid population growth since 1960, water resources are beginning to be somewhat limited. Among the larger users of water are the numerous steam and hydroelectric power plants, paper mills and agricultural irrigation. The State's many streams and reservoirs are widely used for boating and fishing.

The greatest number and most damaging floods occur during winter and spring. The flood-producing rains are usually associated with slow-moving low pressure centers that pass through or near the State during these seasons. About half of the major river rises have occurred in March and April. Flooding has been relatively infrequent during the warm season, but occasionally major floods occur during this period as a result of prolonged heavy thunderstorm activity or tropical systems, for example with Tropical Storm Alberto in southwest Georgia in 1994.

Relative humidity averages are moderately high in most of Georgia, as would be expected from its location in relation to the Gulf of Mexico and the Atlantic Ocean and from the high frequency of wind flow from the direction of these warm waters. Year-round averages at 7:00 a.m. are approximately 85 percent. By 1:00 p.m. the average drops to about 55 percent, again being a little higher in some areas and a little lower in others. Monthly averages for both morning and afternoon are higher in summer than in other seasons in all sections of the State. The range from highest monthly average to the lowest monthly average is usually about 10 percent for both morning and afternoon readings.

Georgia has an average of 18 reported tornadoes per year, with resulting property damage in the millions of dollars. No part of the State is immune from tornadoes. These storms have occurred during every month of the year, but have their highest frequency in spring. Approximately 50 percent of Georgia's tornadoes have occurred in March and April. The 5th (1936) and 16th (1903) deadliest tornadoes nationally occurred in Hall County. Local windstorms, other than tornadoes, occur frequently in spring and early summer. These storms usually occur in connection with thunderstorms, may also produce hail.

The Georgia coast has been battered by hurricane winds on a few occasions; while the 20th century was relatively quiet; three major hurricanes hit the coast in the 1890s. Since most tropical storms do not reach the State or move into the State after having traveled over land areas from the Gulf of Mexico, they usually produce only moderate winds and heavy to copious rains. However, extensive wind damage from Gulf of Mexico storms can reach all the way to the northern mountains. Hurricane Opal (1995) produced widespread wind damage in Atlanta as

well as the mountains to the northeast. Most of the record rainfalls of southern Georgia occurred in connection with tropical systems. Tropical system rainfall contributes materially to the precipitation needs of the late summer and fall months in southeast Georgia and to a lesser extent in other areas of the State.

Climate and the Economy- Georgia has a great variety of recreational facilities. Its geographical changes from mountains to seacoast enable it to have both winter and summer resorts. Good hunting and fishing abound throughout the State. Mountain trout, river perch, lake bass and deep-sea tarpon are all native to Georgia. Quail, wild turkey, deer, bear and fox provide great hunting sport. Along the northern boundary is a 3,000 square mile region of forested mountains, deep lakes and clear mountain streams. Accommodations are available here for hunting, fishing, or a cool summer vacation. Miles of beaches and island resorts are present along the Georgia seacoast, where mild winter weather prevails. Year-round use of these seaside attractions has produced extensive accommodations to supply recreation and entertainment.