

North Carolina

Full Year Climatology

CONVENTIONS: The spelling of place names and geographical features are those used by the National Imagery and Mapping Agency (NIMA). All distances are in nautical miles (NM) and kilometers (km), except for visibility, which is in statute miles and meters. Elevations are in feet above mean sea level (MSL), with a metric conversion following. Temperatures are in degrees Fahrenheit (F) and Celsius (C). Wind speeds are in knots. Cloud bases are above ground level (AGL) unless otherwise stated; tops are above mean sea level (MSL).

Precipitation amounts are in inches, with a millimeter (mm) or centimeter (cm) conversion following. Precipitation values given are liquid equivalent unless stated otherwise. Standard pressure levels are expressed in millibars (mb). Time is reported either in Coordinated Universal Time (UTC) (also known as Zulu or Z), or Local (L).

TERRAIN. The terrain of North Carolina is easily divided into three zones. The Blue Ridge Mountains extend from north-northeast to south-southwest in roughly the westernmost quarter of North Carolina from west to east. The highest elevation is over 6,600 feet (2,000 meters) but most mountains average 3,000-5,000 feet (900-1,500 meters). East of the mountains, the rolling hills of the piedmont region encompass a swath of rolling hills down the length of the easternmost range of the Blue Ridge. These hills are progressively lower from west to east. Elevations slope downward from 800-1,200 feet (250-370 meters) at the eastern foot of the Blue Ridge to 300-500 feet (90-150 meters) at the eastern edge of the piedmont. The piedmont takes up about a quarter of the state across the width.

From the eastern edge of the piedmont to the coast, North Carolina has a

coastal plain that smoothly slopes to the sea. Average elevations lower from 250-450 feet (75-140 meters) in the western plain to 10-30 feet (3-9 meters) above sea level on the coast. The coastal plain encompasses roughly the whole eastern half of the state. Coastal North Carolina has extensive swamps that open to wide, deep bays. Rivers flow to Currituck, Albemarle and Pamlico Sounds in the north and Onslow and Long Bays in the south.

Winter (December-February)

General Weather. The Icelandic low is strongest at this time of year and at its mean position in the North Atlantic Ocean near 60°N, 37°W. The Bermuda high is weakest and farthest south during winter, centered near the Canary Islands. It extends across the southern North Atlantic and the southeastern United States. The overall circulation between these two semi-permanent pressure systems is north northwesterly over the entire southeastern United States and often gusty.

The mean position of the polar front is across north central Florida and east-west across the Gulf of Mexico. Waves develop along the polar front in the gulf and move eastward to reach the North Carolina coast in 36-48 hours. They often intensify off the Atlantic coast in the Cape Hatteras area and push considerable wrap-around cloud cover and precipitation onshore behind them. Cold fronts that pass through the area in winter often stagnate offshore and intensity.

Lows that develop along the polar front in northern Texas and move eastward offshore just south of North Carolina cause the most snowfall as they advect in very cold air behind them and the wraparound precipitation from offshore overlays it. Fog and ground fog are both common in the winter during early mornings under light, northeasterly flow. Fog that forms in onshore flow ahead of warm fronts can last 2-3 days.

Sky Cover. Mountains strip off much of the low-level moisture associated with weather systems that move through from the west. As a result, aside from high, windward mountain slopes in westernmost areas, cloud cover in North Carolina is remarkably consistent. Windward high mountain slopes can be cloaked in clouds while the rest of the state is nearly clear. At other times, rates there can be 20-30 percent higher than normal for the rest of the state.

Ceilings below 10,000 feet occur 35-45 percent of the time all winter. A few places scattered through the state have a peak rate of 45-55 percent of the time during the day. Ceilings below 3,000 feet occur 20-25 percent of the time all season. A few places have peak rates of 35 percent of the time during the day. Ceilings below 1,000 feet occur 10-15 percent of the time and a few places have them 20-25 percent of the time during the day. The highest rates tend to occur around sunrise. Ceilings below 200 feet occur 5 percent of the time or less with the peak rates around sunrise. There are many places all over the state that rarely experience cloud cover this low.

Visibility. Winter visibility is generally quite good. Haze, fog and precipitation, mainly in rain, are the main causes of reduced visibility with haze the greatest problem. Thanks to the higher winds of winter, pollutants, the most common cause of haze, are advected out of the region more readily than during the rest of the year. Fog causes visibility restrictions most around sunrise and tends to lift out by mid-morning. Haze persists around the clock but is least restrictive at night. Fog reduces visibility below 7 miles (11,000 meters) on an average of 10-15 days per month with the most days typically in January.

Visibility below 11,000 meters occurs 15-25 percent of the time overnight and 35-45 percent of the time during the day. The highest rates occur around sunrise. Some piedmont locations have average rates of only 20-30 percent of

the time during the day and 10-20 percent of the time at night. Visibility below 3 miles (4,800 meters) occurs 10-20 percent of the time at all hours in most places. Coastal locations average it 5-10 percent of the time at night and 10-15 percent of the time during the day. Isolated coastal locations match inland rates. Visibility below 1 mile (1,600 meters) occurs 5 percent of the time or less most of the time all over North Carolina and a maximum of 10 percent of the time around sunrise. Visibility below 1/2 mile (800 meters) occurs 5 percent of the time or less around sunrise and is rare where it occurs the rest of the day. At most coastal locations, it is rare at sunrise and does not occur the rest of the day. At a few coastal sites, the inland rates are matched.

Winds. Local terrain plays a significant role in wind direction and speed, and this is especially true in the mountains. While diurnal up and down slope winds are weaker in winter than in other seasons, passes and valleys steer and, in some cases, intensify winds. Despite this, most places have overall northerly winds (northwest through northeast) with a mean speed of 5-10 knots in all three winter months. An area on the southeastern rim of the piedmont region has overall southwesterly winds at 5 knots that go light and variable in February. Even here, northerly winds occur nearly as often as the prevailing winds do. Peak gusts reached 40-50 knots all over the state but coastal locations have recorded 55-65 knots. Outer Banks (a chain of coastal sand islands) sites are most exposed when powerful storm systems move offshore, and a few places have recorded 70 knots.

Precipitation. Precipitation is mostly in rainfall all over the state but snow does occur on occasion even on the coast. Thunderstorm activity is low and steady precipitation is the norm. Precipitation occurs on an average of 8-12 days per month with most places in the 9-10 day range. Of those days, snowfall occurs on an average of 1 day or less per month in most of the state and 1-3 days per month in the mountains. As elevation increases in the mountains, the

ratio of snow to rain increases as well. Thunderstorms occur on an average of 1 day or less per month all season all over the state.

The mean monthly precipitation is 3.5-4.5 inches (89-114 mm) per month all season all over the state. Most places are in the 3.5-4.0 inches (89-102 mm) range. The highest mean amounts occur on the northern coast where a few places average 4.5-5.5 inches (114-140 mm) per month. The extreme monthly precipitation was 7-10 inches (178-254 mm) per month with most places in the 7-8 inches (178-203 mm) range.

The mean ratio of snow to water content is 10 inches (25.4 cm) of snow per 1 inch (25 mm) of water. The drier the snow, the higher the ratio will be. Please note that snow amounts are always converted to centimeters while water content and precipitation amounts are reported in millimeters.

The mean monthly snowfall is 2-4 inches (5.1-10.2 cm) per month in the mountain and piedmont regions (more at higher elevations) and 0.5-1.5 inch (1.3-3.8 cm) on the coastal plain. Many coastal locations average only a trace to 0.5 inch (1.3 cm) per month. The extreme monthly snowfall tended to occur in 2-3 snow events. The extreme monthly snowfall was 12-16 inches (30.5-40.6 cm) per month in most places. There are a few places that have recorded 20-30 inches (50.8-76.2 cm) of snow. In February, Asheville once got 26 inches (66 cm) of snow and the surrounding mountains got even more. In January, Hickory once reported 25 inches (63.5), and Greensboro once reported 23 inches (58.4 cm).

Temperature. The Atlantic Ocean moderates coastal temperatures and elevation cools those of the mountains. Temperatures cool roughly 3 Fahrenheit (1-2 Celsius) degrees per 1,000 feet (305 meters) of elevation increase; this cooling is most noticeable in the westernmost mountains. The mean highs are 50 to 60F (10 to 16C) in December and February and 45 to 55F (7 to 13C) in January. The extreme highs reached 76 to 86F (24 to 30C) in all 3 months with

most places in the middle of that range. The mean lows are 25 to 35F (-4 to 2C) inland and 35 to 45F (2 to 7C) on the coast. The extreme lows were -5 to -10F (-21 to -23C) in the mountain and piedmont regions except in January when the mountain region recorded extreme lows of -10 to -20F (-23 to -29C). Naturally, the higher the elevation, the colder the lows got. The extreme lows on the coast reached -5 to 5F (-21 to -15C) in January and 0 to 10F (-18 to -12C) in December and February. Cape Hatteras and other locations in the Outer Banks are often 10 Fahrenheit (6 Celsius) degrees warmer than inland or even mainland coastal locales because the warm Gulf Stream sweeps through the area.

Spring (March-May)

General Weather. The Bermuda high begins to move northward and expand westward. The Icelandic low, still strong in March, weakens through the rest of spring. As a result, fewer cold fronts move through North Carolina, but fast-moving fronts with waves that develop along them in the Gulf of Mexico can cause rain and strong northeasterly winds for 24-48 hours. Thunderstorms increase in frequency in the spring and often accompany cold fronts or frontal waves, but air mass thunderstorms become more common in May. Fog occurs in March and April as often as in winter, but occurs more often in May.

Sky Cover. Cloud cover decreases as spring progresses toward the relatively dry summer. Outside of windward mountain slope areas, very low cloud cover practically vanishes. Ceilings below 10,000 feet occur 35-45 percent of the time in March through early April and 25-35 percent of the time the rest of the season. Ceilings below 3,000 feet occur 20-25 percent of the time in March. In April-May, they occur 10-15 percent of the time overnight and 15-25 percent of the time during the day in some places. Ceilings below 1,000 feet occur 5-10 percent of the time most of the time in all three months. At a few places, a maximum rate of 15 percent of the time occurs during the day in March.

Ceilings below 200 feet occur 5 percent of the time overnight through sunrise

and are rare or do not occur the rest of the day all spring.

Visibility. Haze problems increase as spring advances toward summer. Fog continues to occur 10-15 mornings per month in most places but the visibility improves rapidly within a couple of hours of sunrise. Visibility below 7 miles (11,000 meters) occurs 15-25 percent of the time most of the day and a peak of 35-45 percent of the time around sunrise. On the northern coast, the rate reaches a maximum of 50-60 percent of the time around sunrise in May. May typically has the highest occurrence rates of the season everywhere.

Visibility below 3 miles (4,800 meters) occurs 5-10 percent of the time most of the day and up to 15 percent of the time around sunrise. Visibility below 1 mile (1,600 meters) occurs 5 percent of the time or less in March with the highest rates around sunrise. It is rare in April and May and occurs 5 percent of the time or less around sunrise. Visibility below 1/2 mile (800 meters) occurs 2-4 percent of the time around sunrise in March and is rare the rest of the day. It is rare at all hours in April and May.

Winds. As winter winds moderate in spring, terrain features play greater and greater roles in the direction and speed of prevailing winds. This is most true in the mountains where local winds are nearly exclusively terrain driven. Orientation relative to mountain and valley features decides direction more often than not and the mountains often blunt strong winds associated with storm systems. Elsewhere in North Carolina, overall winds come from the south through southwest at 5-10 knots. Peak gusts reached 45-55 knots all over the state. Once again, Outer Banks sites had higher gusts because of their exposed positions. There, peak gusts reached 65-75 knots.

Precipitation. Precipitation is mainly in rain throughout the state, but snow does occur through early April everywhere and through early May in the mountains. By late April, snow accumulations no longer occur except at high

elevations. At the same time, thunderstorm activity increases steadily as the steady precipitation of winter gives way to the convective types of late spring and summer. Precipitation occurs on an average of 8-12 days per month all season with most places in the 10-11 days per month range. Of those days, snow falls on an average of 1 day or less all over North Carolina in March and April and 1 day or less in the mountains in May. Thunderstorms occur on an average of 1-3 days in March, 3-4 days in April and 5-7 days in May.

The March mean monthly precipitation is 4.5-5.5 inches (114-140 mm) in the mountains and piedmont and 3.5-4.5 inches (89-114 mm) in the coastal plain. In April, it decreases to 2.5-3.5 inches (64-89 mm) per month with the coastal plain at the lower end of the range. By May, the mean monthly precipitation is 3.5-4.5 inches (89-114 mm) per month fairly uniformly all over the state. By the end of April, almost all rainfall occurs in rainshowers and/or thunderstorms.

The March mean monthly snowfall is 1-3 inches (2.5-7.7 cm) in the mountains and piedmont and 0.5 inch (1.3 cm) in the coastal plain region. In April, it is 1-2 inches (2.5-5.1 cm) in the mountains, a trace to 0.5 inch (1.3 cm) in the piedmont and a trace or less in the coastal plain. Many places right on the coast have no snowfall in April. By May, snow flurries are still possible in the mountains but no accumulations occur. The extreme monthly snowfall was 18-20 inches in March spread out sporadically over the whole state. In April, it was 10-14 inches (25.4-35.6 cm) in the mountains and only 2-3 inches (5.1-7.6 cm) at most elsewhere. Most piedmont and coastal plain state areas recorded only trace record amounts in April.

Temperature. Temperatures warm steadily through spring. The mountains remain the coolest region and the southern quarter of the state is the warmest. Mean highs are 55 to 65F (13 to 18C) all over the state in March, and warm to 70 to 80F (21 to 27C) in May. Extreme highs reached 82 to 92F (28 to 33C) in March

with the hottest extreme highs in the southeastern quarter of the state. May extreme highs reached 90 to 100F (32 to 38C) everywhere. Mean lows are 30 to 40F (-1 to 4C) in March in the mountains and 40 to 45F (4 to 7C) everywhere else. Mean lows warm by an average of 5 Fahrenheit (2 Celsius) degrees in April and by May, they are 55 to 62F (13 to 17C). Extreme lows reached 0 to 5F (-18 to -15C) in March except on the northern coast, where they only reached 15 to 20F (-9 to -7C). They were 20 to 30F (-7 to -1C) all over the state in April and 30 to 40F (-1 to 4C) in most places in May. Only the mountain region still experienced sub-freezing extreme lows in early May and then only by 2-4 Fahrenheit (1-2 Celsius) degrees.

Summer (June-August)

General Weather. Summer is hot and humid. At this time of year, the Icelandic low is weak and has little to no influence on the weather in North Carolina. The Bermuda high is strongest in summer, reaches its northernmost position near 31°N, and extends across the eastern United States as far west as the Mississippi Valley. It usually blocks the polar front from the region but occasional weak fronts do push through with rainshowers and thunderstorms. The flow around the Bermuda high brings maritime moisture into the region from the south-southwest and air mass thunderstorm activity peaks in summer. This moisture combined with the subsidence inversion of the Bermuda high causes frequent early morning fog and ground fog. June is the start of the hurricane season, but hurricanes rarely affect North Carolina in early summer. They are more likely later in summer, especially in August. After mid-August, hurricanes develop just north of the Lesser Antilles, move westward just north of Puerto Rico, and intensify as they move northwestward. Landfall near or in North Carolina causes high winds and torrential rain and severe flooding on and near the coast. High winds and torrential rain have been known to reach far inland with some storms.

Sky Cover. Cloud cover at all levels bottoms out in summer through much of fall. In summer, the peak rate shifts to late morning through late afternoon. Ceilings below 10,000 feet occur 25-35 percent of the time all season. Ceilings below 3,000 feet occur 5-10 percent of the time overnight and 15-25 percent of the time during the day. In most places, the daytime maximum rate is only 15-20 percent of the time. Ceilings below 1,000 feet occur 5 percent of the time or less. Isolated sites get a peak rate of 10-15 percent of the time at 04-09L. Ceilings below 200 feet occur 5 percent of the time or less overnight through sunrise and are rare or do not occur the rest of the day all summer. Very low ceilings develop most often from dissipating fog and tend to be short-lived.

Visibility. Haze restrictions are at the worst level of the year in summer and early fall as the Bermuda high caps the lower atmosphere with a powerful subsidence inversion. Pollutants from Tennessee power plants and textile mills contribute significantly to the problem. By mid-summer, visibility in the mountains is restricted to some extent all the time and is often below 7 miles (11,000 meters). Early morning fog restricts visibility below 11,000 meters on an average of 15-20 days per month but quickly dissipates soon after sunrise. Coastal areas with steady winds have fog restrictions only 5-8 days per month but any protected or swampy areas get fog more often. Some places both in mountain valleys and in swampy coastal areas get 25-28 foggy mornings per month.

Visibility below 11,000 meters occurs 30-40 percent of the time at night and 50-70 percent of the time during the day with the peak rates at sunrise. The best conditions occur in late afternoon during maximum heating. In the mountains, the maximum rate reaches 80 percent of the time at sunrise. Visibility below 3 miles (4,800 meters) occurs 5-15 percent of the time from sunrise to noon and less than 5 percent of the time the rest of the day. A few places scattered throughout the state have rates of 15-20 percent of the time

at sunrise. Most of these places are right on the coast in swampy areas and in enclosed mountain valleys. Visibility below 1 mile (1,600 meters) or below 1/2 mile (800 meters) is rare at sunrise in most places and does not occur the rest of the day. A few mountain valley locations get it 5-10 percent of the time at 01-12L and not at all the rest of the day.

Winds. Under the strong subsidence inversion of the Bermuda high, local winds are driven by terrain and temperature more than anything else. In the mountains, up and downslope winds and up and down valley winds are very important. In the piedmont and interior coastal plains, rivers, lakes and hills, and country-city breezes are influential. On the coast itself, land-sea breezes either augment or muffle large-scale flow. Large-scale surface winds are generally from the southeast through southwest at 5-10 knots. Sea breeze winds often augment the prevailing winds making for a breezy day at the beach. Sea breezes can reach as far as 30 NM (56 km) inland on a hot day. This is the season of hurricanes and convective activity. Thunderstorm down rush gusts can reach 40-50 knots and hurricane winds are well known to exceed 100 knots when a storm makes landfall in the region. The potential always exists for a powerful hurricane to make landfall on the North Carolina coast with winds above 120 knots. Peak gusts in the coastal plain all the way into the southern piedmont region have reached 75-85 knots but the rest of the state recorded no more than 60 knots.

Precipitation. Rainfall is nearly exclusively in rainshowers and/or thunderstorms all over the state. The most activity occurs during the afternoon through early evening hours but nocturnal convection is not unknown. In the mountains, convection often develops on the mountain slopes and slides down into the valleys late in the afternoon or early in the evening. Rainfall at higher elevation, therefore, typically occurs in late morning or early afternoon. Rainfall occurs on an average of 9-12 days per month all summer with most places in the 10-11 days per month range. Thunderstorms occur on an

average of 6-9 days per month. The southeastern quarter of the state gets 11-13 thunderstorm days in July and meets the state norm in June and August.

The mean monthly rainfall is 3.5-5 inches (89-127 mm) in June with the most in the southeastern quarter of the state. In July and August, it is 4.5-5.5 inches (114-140 mm) per month everywhere except in the southeastern quarter, which averages 6-7.5 inches (152-191 mm). The extreme monthly rainfall is 10-12 inches (254-305 mm) per month except on the coast, which has extremes of 20-28 inches (508-711 mm) in the south and 13-18 inches (330-457 mm) per month in the north. The difference between the coastal extreme rainfall and inland extremes is hurricane rainfall; the coast bears the brunt of the storms that pass nearby or make landfall in North Carolina.

Temperature. Heat and humidity are hallmarks of summer in the coastal plain but the mountain region is spared from the worst of both. The piedmont typically gets just hot but is not as humid as the coastal plain. Right on the coast, afternoon sea breeze winds provide relief from the heat of the day but night land breezes are often warm to hot. Mean highs are 80 to 90F (27 to 32C) all over the state with the warmest highs in the southeastern quarter and the coolest in the mountains. Extreme highs reached 95 to 102F (35 to 39C) in the mountains and 100 to 107F (38 to 42C) in the rest of the state. Mean lows are 60 to 70F (16 to 21C) in the western half of the state and 70 to 75F (21 to 24C) in the eastern half. Extreme lows were 35 to 45F (2 to 7C) in the mountains and 45 to 55F (7 to 13C) in the rest of the state. The mountain areas typically have the widest diurnal range between high and low temperatures because of the lower humidity.

Fall (September-November)

General Weather. The Bermuda high weakens and moves southward in September but still controls the weather for days at a time. Polar fronts occasionally slip

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through the high and pass through North Carolina. As the polar air mass behind these fronts pushes offshore over the Gulf Stream, heavy thunderstorms develop in the cool air over the warm water. In this situation, the coast remains clear, but the thunderstorms persist offshore. Frontal passages become more frequent through fall and northerly winds, sometimes gusty, are common. The Icelandic low strengthens and once again influences the weather, especially in late fall. Fog is still common in the fall, more so in September than in October-November. September is the month of peak hurricane activity, but the season generally extends through November. Atlantic and Gulf of Mexico hurricanes can bring North Carolina high winds, torrential rain, and flooding. The first snowfall is possible in late October or November, but usually only an insignificant amount that melts rapidly.

Sky Cover. Cloud cover is similar to that of summer in September and most of October. November is when the winter cloud regimes begin to occur more. Ceilings below 10,000 feet occur 25-35 percent of the time in September and October and 30-40 percent of the time in November. Ceilings below 3,000 feet occur 5-10 percent of the time overnight and 15-25 percent of the time during the day. Ceilings below 1,000 feet occur 5 percent of the time or less most of the time and 10-15 percent of the time at 04-09L at a few places. Ceilings below 200 feet occur 5 percent of the time or less overnight through sunrise and are rare or do not occur the rest of the day all season. Very low cloud cover tends to be short-lived.

Visibility. Visibility conditions improve steadily as fall progresses into winter. Haze problems begin to lessen in fall as the stronger winds of winter return and the subsidence inversion of the Bermuda high weakens. Morning fog begins to occur less often after September but gradually dissipates a little later in the morning. Morning fog restricts visibility below 7 miles (11,000 meters) on an average of 15-20 days per month in most places. In September, it occurs as often as 25 mornings in swampy coastal areas and in some enclosed

mountain valleys.

Visibility below 11,000 meters occurs 25-35 percent of the time most of the day and 45-55 percent of the time around sunrise. At some mountain locations, the maximum rate reaches 60-70 percent of the time at sunrise in September, 45-55 percent of the time in October and 40 percent of the time in November.

Visibility below 3 miles (4,800 meters) occurs 5-10 percent of the time most of the day as 15-20 percent of the time around sunrise. In some mountain locations, it occurs 45 percent of the time at sunrise in September, 25 percent of the time at sunrise in October and 15 percent of the time at sunrise in November. Visibility below 1 mile (1,600 meters) occurs 5 percent of the time or less at all hours and is typically rare in late afternoon. Some mountain locations get it 15-25 percent of the time around sunrise but rarely have it the rest of the day. Visibility below 1/2 mile (800 meters) occurs 5 percent of the time or less around sunrise and is rare or does not occur the rest of the day. Some mountain sites get it 10-15 percent of the time around sunrise in September only. These sites meet the normal occurrence rate the rest of the day and season.

Winds. As the Bermuda high begins to shift south and east and weaken, overall flow turns to come from the north (northwest through northeast) at 5-10 knots all over the state. Diurnal terrain winds are still strong influences from the mountains to the interior coastal plain as are land-sea breezes right on the coast. Hurricane season does not end until November and late season storms tend to be greater threats to North Carolina than those of the early season.

In the mountains, high gusts tend to come from thunderstorms down rush gusts and reached 45-55 knots for the most part but there are some cases when gusts reached 60-70 knots. Peak gusts in the piedmont and inland coastal plain reached 60-70 knots but approached 100 knots right on the coast. Speeds of 85 to 95 knots are recorded in several locations all along the coast and higher, unreported speeds are likely in association with hurricanes. The potential

always exists for a powerful hurricane to make landfall on the North Carolina coast with winds above 120 knots.

Precipitation. Precipitation changes over from mostly rainshowers and thunderstorms to mostly steady forms. Although precipitation is mostly rain, the first snow flurries in the mountain and piedmont regions occur in October. In the high mountains, snow flurries can occur as early as late September. Precipitation occurs on an average of 5-9 days per month with most places in the 6-8 days per month range. Of those days, snow occurs on an average of 1 day or less per month in October and November. Many places in the coastal plain do not get snow in the fall at all. Thunderstorms occur on an average of 3-5 days in September, the most days on the southern coast, and 1 day or less per month in October and November.

The mean monthly precipitation is 3.5-4.0 inches (89-102 mm) in September except on the coast, which gets 4.5-5.5 inches (114-140 mm). In October and November, the mean is 2.5-3.5 inches (64-89 mm) everywhere except on the Outer Banks, which gets 4.5-5.5 inches (114-140 mm). The lowest amounts occur in the northern piedmont and interior coastal plain. The September extreme monthly rainfall was 8-10 inches (203-254 mm) in the mountains, 12-16 inches (305-406 mm) in the piedmont and interior coastal plain and 18-22 inches (457-559 mm) on the coast. The high extremes on the coast still reflect hurricane rainfall. In October and November, the extreme monthly precipitation was 9-14 inches (229-356 mm) per month in most places with only the Outer Banks still recording 15-18 inches (381-457 mm) per month (late season storms). Most inland locations recorded extreme rainfall in the 9-11 inches (229-279 mm) per month range.

Although snowfall does occur in late fall, only the mountains and western piedmont region normally have any significant accumulations. The mountains average 1-2 inches (2.5-5.1 cm) in November and the piedmont averages 0.1-0.5

inch (0.3-1.3 cm) in November. The October extreme snowfall was only a trace in the mountains with 1-2 inches (2.5-5.2 cm) at high elevations. The November extreme monthly snowfall reached 10-12 inches (25.4-30.5 cm) in the western mountains, 2-4 inches (5.1-10.2 cm) in the piedmont and western coastal plain and no more than a trace in the eastern coastal plain.

Temperature. Although still quite warm in September, the worst of the summer heat is gone by mid-month. Temperatures cool steadily all season toward the cool of winter and the first cold blasts from the north generally occur before the end of October and have arrived as early as the end of September. The September mean highs are 75 to 85F (24 to 29C). Most places outside the mountains are in the 78 to 82F (26 to 28C) range, and in mountains, most are in the 75 to 78F (24 to 26C) range. By October, mean highs cool to 65 to 75F (18 to 24C) with the coolest temperatures in the mountains and the warmest on the southern coast. In November, mean highs cool to 55 to 65F (13 to 18C). Extreme highs reached 95 to 105F (35 to 41C) in September, 85 to 95F (29 to 35C) in October and 80 to 88F (27 to 31C) in November.

September mean lows are 55 to 65F (13 to 18C) in most of the state and 65 to 70F (18 to 21C) on the coast. In October, they are 40 to 50F (4 to 10C) in most of the state and 50 to 60F (10 to 16C) on the coast. By November, mean lows are down to 35 to 45F (2 to 7C) inland and 45 to 55F (7 to 13C) on the coast. Extreme lows reached 25 to 35F (-4 to 2C) in the mountains in September and 35 to 45F (2 to 7C) in the rest of the state. The first really cold blasts occur in October and extreme lows of 15 to 25F (-9 to -4C) have been recorded in the mountains and 25 to 30F (-4 to -1C) have occurred everywhere else. By November, extreme lows reached 0 to 10F (-18 to -12C) in the mountains and 10 to 20F (-12 to -7C) everywhere else. As expected, the Gulf Stream modifies the cold air on the coast and the warmest extreme lows occur there.

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March 2002

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