

DECEMBER 2010

A DECEMBER TO REMEMBER

by Joe D'Aleo and Art Horn



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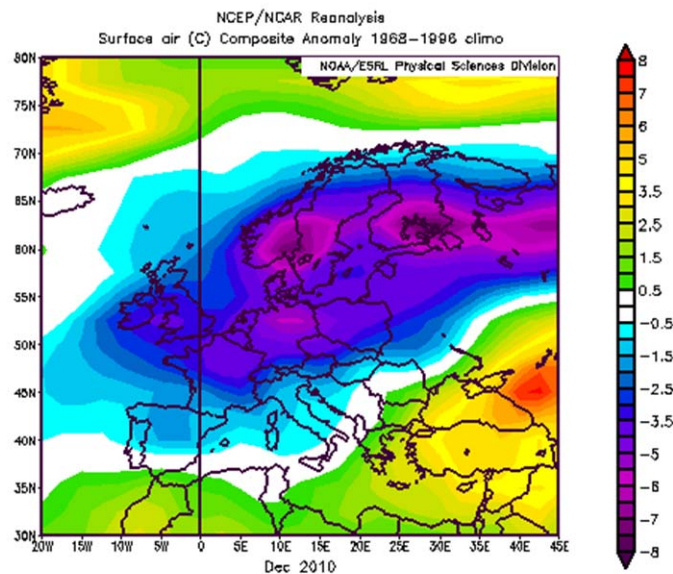
INTRODUCTION

December was indeed a December to Remember (or for many, forget) with widespread cold and snows. The Central England Temperature record is one of the longest continuous temperature record in the world extending back to the Little Ice age in 1659. December 2010 was the **Second Coldest December Temperature** in the entire record (352 years) with an average of -0.7C just short of the record of -0.8C recorded in December 1890.

Ireland's Armagh Observatory also has a very long period of record extending back to 1795. Armagh mean monthly temperature was -0.3 degrees Celsius making **December 2010 the second coldest December** in Armagh behind only 1878. Ireland experienced a new all time record low of -18.7C recorded on the 23rd at Castlederg, County Tyrone.

Similar extremes were recorded across northern Europe and in the southeastern United states, where it was for many locations the coldest and/or snowiest December ever. Heavy snows paralyzed New York City and collapsed the Minneapolis Metrodome and stalled road travel near the Great Lakes. Tornadoes hit the middle south and flooding rains and record snows were felt in California.

EUROPE



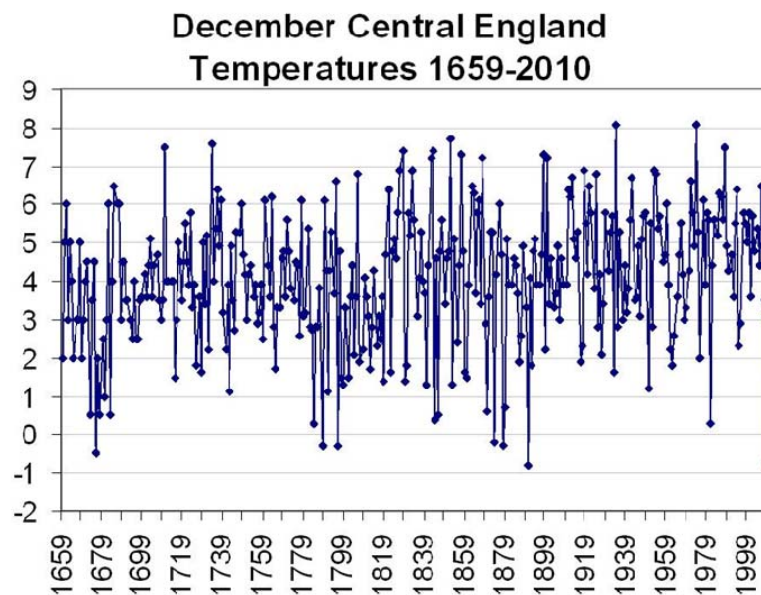
December 2010 temperature anomalies in degrees C

Northern Europe felt the brunt of the arctic cold in December.

THE UNITED KINGDOM

The Central England Temperature record is one of the longest continuous temperature record in the world extending back to the Little Ice age in 1659.

December 2010 was the coldest December in 120 years with an average of -0.7°C just short of the record of -0.8°C recorded in December 1890 and the **Second Coldest December Temperature** in the entire record (352 years).



In addition to the cold, heavy snow hampered holiday travel by air, rail and road.



According to [Met Eireann](#), Ireland's meteorological service, December has officially been the coldest month ever since records began 130 years ago.

Ireland's Armagh Observatory has a long period of record extending back to 1795. The Armagh mean monthly temperature was -0.3 degrees Celsius (31.4 degrees Fahrenheit), about 5.4 Celsius below average, making **December 2010 the second coldest December** in Armagh. The three coldest Decembers in Armagh are now those of 1878, 2010 and [1796](#), with average temperatures of -0.5 C, -0.3 C and 0.6 C respectively.

The maximum air temperature was 10.8 C on the 28th, whilst the lowest air temperature was -11.9 C on 21st, making the morning of the winter solstice the fourth coldest December night in Armagh since records of daily temperature maxima and minima began in August 1843. Previous cold December nights were -14.6 C on [Christmas Day 1878](#), -13.7 C on [Christmas Eve 1878](#), and -12.2 C on [December 20th 1886](#). In 2010 there were twenty-four nights with grass frost and twenty-four with air frost, with snow falling on six days.

The winter solstice, December 21st, was also the coldest day since 1843, with a maximum temperature of -8.0 C and an average temperature of -10.0 C. This was probably the coldest day in Armagh since the very cold [13th January 1814](#), which with morning and evening temperatures of -12.2 C and -13.3 C reportedly had 'the hardest frost recorded here for the space of 20 years'.

Probably the most notable record was the new all time record low for Northern Ireland, of -18.7C recorded on the 23rd of December at Castlederg, County Tyrone. In addition, all of the following weather stations recorded their all time record lows since recording began, this winter:

- RAF Leeming at -17.9C on the 3rd of December
- RAF Topcliffe at -19.0C on the 3rd of December
- Linton-on-Ouse at -17.3C on the 3rd of December
- Church Fenton at -17.5C on the 3rd of December
- RAF Scampton at -13.6C on the 3rd of December.

NORTHEAST EUROPE

Germany has experienced the coldest December in more than 40 years, the German Weather Service (DWD) said. See report [here](#).

The average temperature in December was 4.3 degrees C below the past records on average, the DWD said. People have never seen such a freezing December since 1969.

The bitter cold was mainly stuck in the north and east of the country, where night temperatures in many places were below minus 20 degrees C, the weather agency added. A DWD monitoring station near northeastern city of Potsdam recorded only four days when the temperatures were above zero degrees this month.



Trees covered in snow and hoar frost on December 30, 2010 near Oberhof, eastern Germany.

Snowfall was very heavy. Munich, Germany, recorded a snowfall total for December of 52 inches and the temperature averaged 6.3C below normal. 42 inches of snow was reported in Berlin. For the first time since 1981, all people in every place of the country celebrated "a white Christmas" together in this December.

In western Poland, the city of Poznan had a snowfall total of 58 inches. Poland temperatures were over 5C below normal.



SCANDINAVIA

According to the Swedish meteorological agency SMHI, several parts of Sweden, including the Gotaland and eastern Svealand, experienced the coldest December in at least 110 years.”



As Norway entered its fifth week of bitterly cold weather over most of the country, Norwegians were being warned that their electricity bills in January may be three times as high as they were this past January, when cold weather also had sent rates soaring.



Cold weather has sent power demand up and supplies down, resulting in record high electricity rates. PHOTO: Views and News.

The ongoing cold snap has left mountain reservoirs with the lowest water levels in 28 years. That's bad news for a country that relies on hydroelectric power. Spot prices for power have risen from 40 øre per kilowatt hour in the Oslo area earlier this fall to 72 øre this week, with more increases looming. The situation is worse for residents of central Norway, where rates are even higher.

CHINA

Days of continuous snowfall hit northwestern and eastern China, causing roadblocks and delays. Heavy snow fell in China's northwest Xinjiang province after December 20 and accumulated to over one meter in some parts. The eastern province of Shandong has also been affected.

Temperatures dropped to -25C in some areas, causing concern that China might see a repeat of the extreme weather of early 2008 that killed 129 people, left millions stranded and brought the country to a standstill during the Lunar New Year celebrations. Read more [here](#).

INDIA SHIVERS

Dr. Madhav Khandekar, a meteorologist from Canada vacationing in India writes: "Here in Vadodara, a western India city, early morning temp is at 7-8C and afternoon at 20C or so. It feels cold inside houses of most residents, especially poorly built houses of many and that is what makes a colder climate more dangerous now. It is time to write about 'dangerous cold climate ahead!'

In this cold wave in northern and western India, death toll has been put at 30 ([here](#) and [here](#)).” Delhi had a maximum of 15C on Sunday. And inside our apartment, the temperature dipped to 12C. Most Indian homes, do not have any heating facility as a result, we spend our time at home completely wrapped up in winter clothes.”

UNITED STATES

The seemingly endless variety of daily weather showed itself off in spectacular fashion in December 2010. No, the weather was not shy about pulling out all the stops to impress the nation with nearly every kind of weather imaginable. About the only thing missing was a hurricane!

The action got started on December the 2nd in the famous western New York state snow belts. A storm north of the great lakes was blowing cold air into western New York State on Thursday the 2nd. The cold air literally sucks the warmth from the water and turns that warmth and moisture into streamers of clouds that produce the lake effect snows.

The snow became heavy and by the time it was over two days later some areas south of Buffalo had 2 to 3 feet of new snow. What made this event notable was the traffic jam on Interstate 90. A truck jackknifed on the road Wednesday evening the 1st and cars and trucks began to back up behind it. The heavy snow set in and stranded some people in their cars for up to 24 hours. New York Thruway employees used all-terrain vehicles to bring stranded motorists food, water and gas during the ordeal. Some people were brought to a local senior center where they could warm up and wait out the mess.

As if that wasn't enough another lake effect storm struck from Monday the 13th to Friday the 17th. This was a very long event with bursts of snow and then extended periods of lighter snow. When it finally came to an end on Friday Lacona, New York had 35 inches of the white stuff. Fulton NY reported 30 inches and Walworth NY was buried under 28 inches of fresh snow.



Traffic nightmare on the New York Thruway 12/2/10

The eastern Great Lakes states weren't the only region to get a big load of snow. The upper plains states of Minnesota, Wisconsin and Iowa had several cities break their monthly snowfall records for December. In southeastern Minnesota, Rochester International Airport recorded 41.3 inches of snow. This made it not only the snowiest December ever but the snowiest month ever! Waukon, Iowa picked up an impressive 36.0 inches making it the snowiest December and month in the books as well. In general the area had 2 to 4 times the usual snowfall for December and most of the winter is ahead!

A significant winter storm moved over the region on Saturday, December 11th. This storm produced 15 to 18 inches of snow across the greater Minneapolis/St. Paul area. The enormous weight of the snow caused the inflated roof of the Minneapolis Metrodome to partially collapse on Sunday the 12th at 5:00 am. A massive avalanche of snow crashed down onto a portion of the playing field. Had this collapse taken place with a game in progress, lives could have been lost. The unprecedented indoor avalanche did cause the cancellation and relocation of the Vikings/Giants football game that was to be played Sunday afternoon.



An avalanche of snow crashes onto the Metrodome Field at 5:00 am on 12/12/10

In a month of many firsts both weather-wise and otherwise, another NFL game was postponed by a snowstorm at the end of the month and remarkably the Vikings were involved once again! The game between the Minnesota Vikings and the Philadelphia Eagles to be played Sunday night December 26th in Philadelphia was postponed by the NFL for safety reasons to Tuesday night the 28th. A massive east coast snowstorm was forecast to be in progress during the time the game was to be played and the league was concerned about the travel conditions before and after the game. This became the first NFL game to be played on a Tuesday since 1946, all due to December's wild weather.

No sooner had the action calmed down in the middle of the country when the weather went wild out west. Starting on December 17th and continuing through the 22nd a series of slow moving, moisture laden storm systems sloshed and blew their way across California depositing some remarkable amounts of rain at lower elevations and snow in the mountains. From Friday the 17th to Wednesday the 22nd downtown Los Angeles was drenched by 8.17 inches of rain,

about half a year's worth in 6 days! To the east in the deserts heavy rains produced life threatening flash floods and massive erosion. Palm Springs was deluged with 3.6 inches of rain between the 19th and the 22nd. Most of it fell on one day, Wednesday the 22nd when 2.24 inches flooded the area breaking the old record of 1.90 inches that fell on that date in 1945. Mount Palomar is in the high country about 40 miles north northeast of San Diego. The mountain is the home of a 200 inch telescope and sits at almost 5600 feet. During this series of storms the observatory was drenched with 14.13 inches of rain and endured hurricane force wind gusts! A massive mudslide at Colfax closed interstate 80. That road is the main highway to the Lake Tahoe ski resorts.

Milo is a small town at the foothills of the Sierra Nevada Mountains in southern California. They got dumped with 8.96 inches of rain from this series of storms. Nordhoff Ridge in the mountains east of Santa Barbara was drowned with 12.55 inches of rain. The resulting runoff from these gigantic rainfall totals in the mountains caused mudslides and flooding in the low lying coastal communities causing millions of dollars of damage and making shambles of people's lives just before Christmas.



A mudslide severely damages a home and garage in southern California

In the high Sierra Nevada Mountains the snow totals were of record proportions! Mammoth Mountain Ski area was in snow heaven as an eye popping 15.5 feet fell from the storms in 4 days! This pushed December 2010 into the record books as the snowiest December since they started keeping track of snowfall in 1968. It's also the deepest snowpack in the California mountains for the month of December in 17 years.



Mammoth Mountain with mammoth amounts of snow

Cars were buried in parking lots and doorways were completely blocked by 10 to 12 feet of snow at the lodge. Northstar at Tahoe, another ski area was under 8 feet of new snow by storm's end. Hurricane force winds drifted the snow making travel impossible. In Southern California the ski areas were warmer and were soaked with 8 to 12 inches of rain and battered by high winds. Despite all the damage from rain, wind and flooding there is a silver lining to the storms. All that snow in the mountains will be water for the lowland populations and farms next summer. The snowpack in the mountains is twice the average for this time of year. The storms of December 17th to the 22nd will be long remembered for their record rain, snowfall and the hardship they caused just before Christmas.

As the Christmas holiday approached another storm was developing and setting its sights on the busy east coast shoppers and travelers. Actually this storm was the last in the series that had battered the west coast on the 22nd. By Christmas day the developing low pressure area was in the northern Gulf of Mexico just south of New Orleans. As the storm moved to the east it spread snow across the south. Atlanta Georgia had its first white Christmas since 1882 as 1.2 inches blanketed the city!

To the north of downtown 2 to 3 inches fell and in the mountains of northern Georgia as much as 7 inches of snow blanketed the peaks. By Sunday morning the storm moved to near Cape Hatteras North Carolina. As the Nor' Easter moved up the coast it was getting much stronger and was spreading snow from eastern North Carolina to Washington D.C. all the way up to New York and Boston. Heavy snow fell overnight Sunday and into Monday morning across New Jersey, New York City and much of New England. Very strong winds were sweeping cyclonically down into the deep center of the storm. On Cape Cod Massachusetts,

Wellfleet reported a wind gust of 80 miles per hour near 11:00 pm Sunday night. Nearby Orleans reported a gust to 79 miles per hour with rain falling. Nantucket Island reported a 70 mile per hour wind gust.. Even away from the coast very strong winds were creating blizzard conditions. Just after midnight Hartford Connecticut's Brainard Field reported a gust to 48 miles per hour, severely blowing the falling snow and bringing visibility to zero. Down on the Connecticut shore New London reported a wind gust of 68 miles per hour at 1:15 am Monday morning.

Wind gust of 50 to 70 miles per hour were widespread across all of south coastal New England from this impressive storm. By the time the Nor' Easter moved east into the Gulf of Maine late in the day Monday some impressive snowfall totals were piling up. The deepest snow covered northeastern New Jersey, Southeastern New York State and the greater New York City area including western Long Island. These areas had anywhere from 14 to 32 inches of snow.



The post-Christmas blizzard brings travel to a halt in the northeast

Some larger totals were:

New Jersey

Elizabeth	- 32 inches
Lyndhurst	- 29 inches
Union	- 27 inches
Jersey City	- 26 inches
Newark	- 24 inches

New York State

Harriman	- 26.0 inches
Brooklyn	- 24.5 inches
Scarsdale	- 22.0 inches
Central Park	- 20.0 inches

Connecticut

Wilton	- 18.0 inches
New Canaan	-17.5 inches
Greenwich	-17.0 inches
Milford	-14.0 inches
Burlington	-11.0 inches
Tolland	-10.0 inches

Rhode Island

Woonsocket	-13.0 inches
N Kingstown	-12.0 inches

Eastern Massachusetts

Canton	-19.0 inches
South Boston	-19.0 inches
Lynn	-18.5 inches
Taunton	-17.3 inches
Winchester	-17.3 inches

New Hampshire

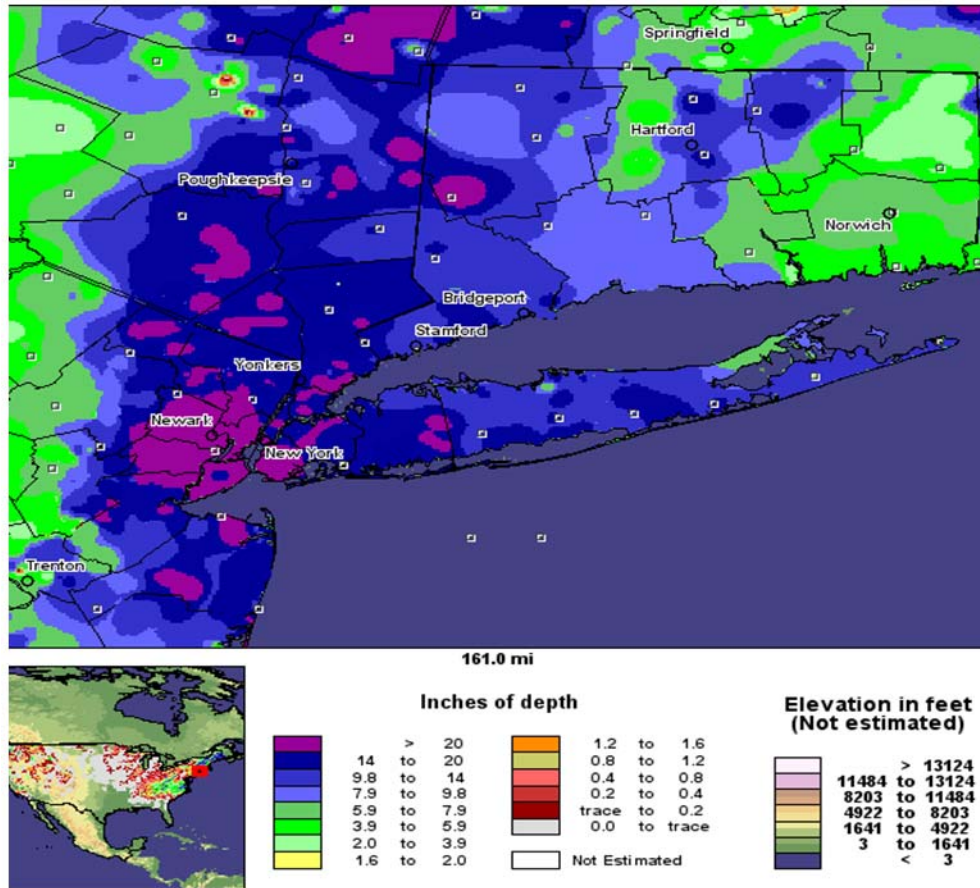
Randolph	- 25.0 inches
Grafton	- 24.0 inches
Swanzey	- 13.0 inches
Goffstown	- 11.3 inches

Maine

Augusta	-15.0 inches
Bethel	-14.0 inches
Lewiston	-12.0 inches

Gray

-10.0 inches



All in all this was a major storm, a blizzard in some locations and a major Nor' Easter for all of the northeast during a very busy travel and shopping time of year. In New York City this storm had an interesting parallel with another large storm from the past. From February 8th to the 10th 1969 a major Nor' Easter battered the northeast with up to 2 feet of snow. The Mayor of New York City at the time was John Lindsay. He was blamed by the press for not cleaning up the snow in a timely manner and this caused considerable harm to his political career. The current mayor of New York, Michael Bloomberg caught the anger of residence and the media when snow removal was delayed or ignored in several areas such as Queens and Brooklyn. Interestingly the massive storm struck just days before 100 sanitation workers were scheduled to be demoted as a budget cutting measure. There were rumors and even statements from sanitation workers that an intentional work slowdown was ordered as a protest to the demotions. The situation is continuing to be investigated.



Snow covered cars and street in Brooklyn

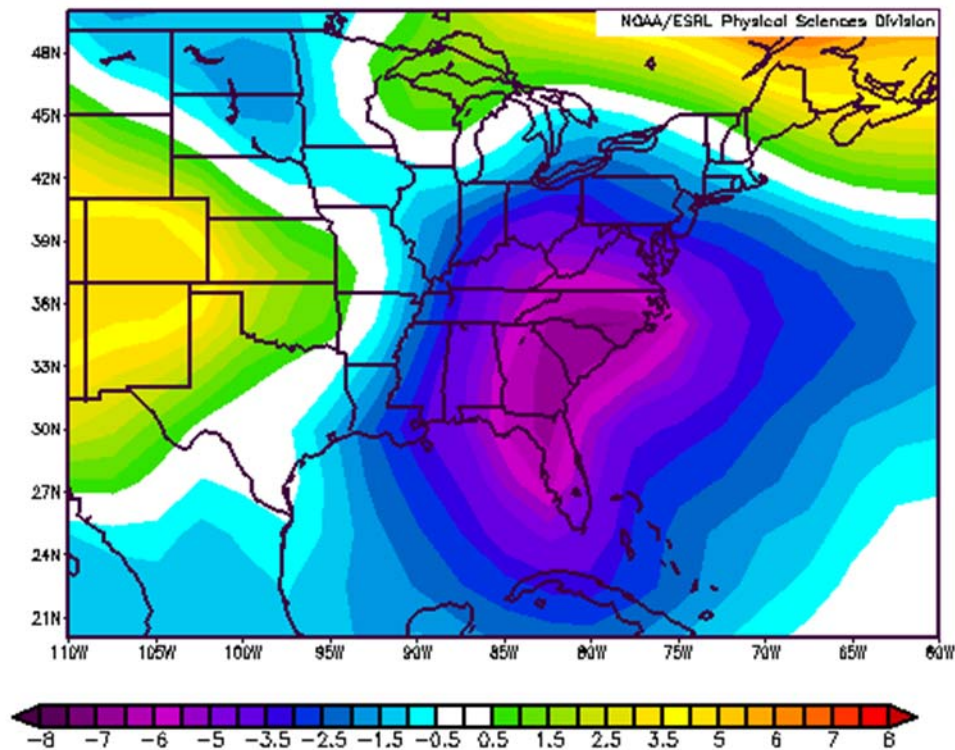
As I said at the beginning of this story December 2010 had an amazing variety of weather and that even included a significant tornado outbreak on the last day of the month. An estimated 38 tornadoes ripped through the states of Mississippi, Arkansas, Missouri and Illinois on December 31st. Eight people were killed and dozens were injured. This was the deadliest December tornado outbreak since 2000. Some of these tornadoes were quite strong. In Illinois the area around Petersburg was hit on the 31st by an EF3 tornado with winds of around 145 miles per hour. This was the strongest tornado of the year in Illinois! Cincinnati, Arkansas was hit by a tornado just before sunrise on the 31st. Four people were killed in the small town. A sign from the town's general store was found 20 miles away!

The line of thunderstorms that spawned the tornadoes produced damage just to the west of downtown St. Louis. The towns of Sunset Hill, Fenton and Ballwin reported damage from a tornado. Some news outlets reported that December tornadoes are rare, they are not. Tornadoes hit the United States every month of the year, they're just not as common during December which ranks 10th out of the 12 months for tornado frequency. In December of 1982 there were 96 tornadoes, the most for any December in the record books. Some stories even tried to relate this tornado outbreak to climate change. Those media outlets obviously don't know much about the history of December tornadoes.



Tornado rips through Fort Leonard Wood Air Force base, Missouri 12/31/10

Last but not least was the bone chilling (at least to them) cold that dominated the month of December in Florida. From top to bottom it was the coldest December on record. In some locations the cold didn't just break the old records, it shattered them. The daily average temperature was below normal at most locations every day of the month except for the 30th and the 31st. Tallahassee had its coldest December on record with an average temperature of 44.6 degrees, 9.1 degrees below the long term average. In fact it was the third coldest month since the weather records started in 1885! Only January of 1981 (44.3) and January of 1977 (43.9) were colder. There were even some reports of snow flurries on the 26th. Jacksonville had 18 days when the temperature fell to 32 degrees or colder. That number smashed the old record of 12 days set in 2000.



December anomalies (Degrees C)

At Tampa it was the coldest December since the weather records began in 1890. The average temperature was 53.2 degrees beating out December of 1935's average of 54.8 by 1.6 degrees. In the middle of the state Orlando froze along with the many visitors hoping for some relief from winter in the north. The average temperature was 52.0 degrees, 3.5 degrees colder than the previous coldest December in 1989. On the east coast Daytona Beach was not much fun for vacationers either. The city had its coldest December ever with an average temperature of 50.1 degrees beating the old mark of 52.7 set in 1935. To the south Melbourne had an average temperature of 52.0 smashing the old record of 55.5 for December by 3.5 degrees.

Record-Low December Average Temperature (°F)

<u>Location</u>	<u>Avg</u>	<u>Dep</u>	<u>Previous Record</u>
Wilmington, NC	38.0	-11.0	38.0 in 1917
Florence, SC	38.3	- 9.2	39.4 in 1980
Alma, GA	43.8	- 9.8	44.0 in 1963
Tallahassee, FL	44.6	- 9.1	45.2 in 1963
Jacksonville, FL	46.1	- 8.9	47.7 in 1989
Inverness, FL	47.7	-11.2	49.2 in 1989
Gainesville, FL	47.8	- 8.5	47.8 in 1989
Daytona Beach, FL	50.1	-10.7	52.7 in 1935
Avon Park, FL	51.0	-11.6	55.2 in 1935
Brooksville, FL	52.0	- 9.4	54.1 in 1935
Orlando, FL	52.0	-11.0	55.5 in 1989
Sarasota-Bradenton, FL	53.0	-10.5	55.0 in 1935
Tampa, FL	53.2	-10.1	54.5 in 1935
Lakeland, FL	53.2	-10.7	54.8 in 1935
Vero Beach, FL	53.9	-10.8	58.1 in 1989
Melbourne, FL	54.0	- 9.3	56.2 in 1989
Punta Gorda, FL	54.4	-10.6	60.1 in 1989
St. Petersburg, FL	56.3	- 7.4	56.9 in 1935
Fort Myers, FL	56.7	- 9.7	58.4 in 1935
Naples, FL	57.6	- 8.7	60.9 in 1963
W. Palm Beach, FL	58.9	- 9.4	61.1 in 1935
Ft. Lauderdale, FL	60.4	- 9.0	62.2 in 1935
Miami, FL	61.4	- 8.5	62.1 in 1935
Key West, FL	63.1	- 8.9	65.1 in 1885

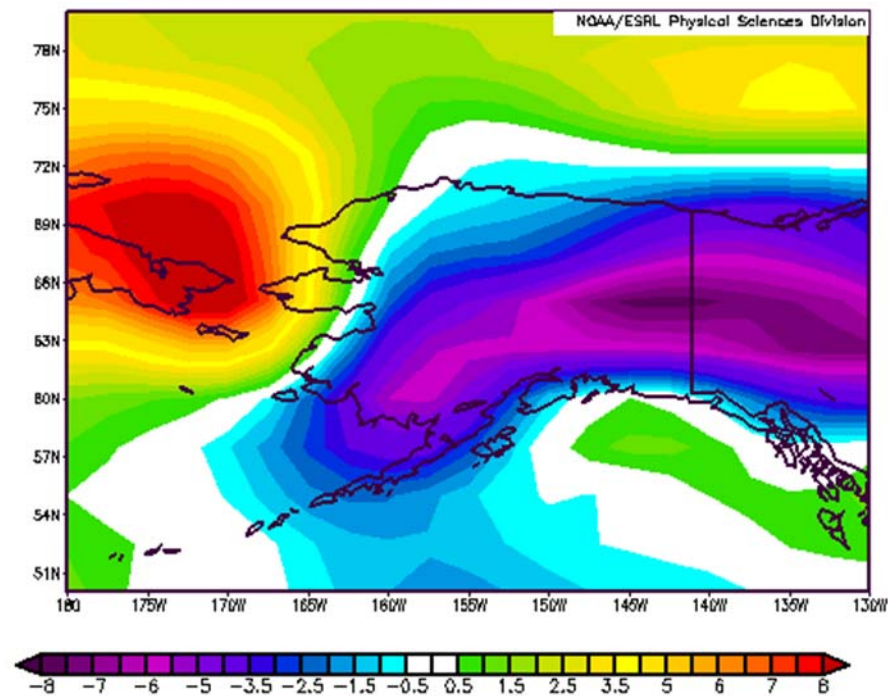
A little farther down the east coast Vero Beach had an average December temperature of 53.9 degrees shattering the old record of 58.1 degrees set in 1989 by 4.2 degrees. On the southwest coast even normally warm Naples set a new December record with an average of 57.6 degrees besting the 60.9 degrees set in 1963 by a whopping 3.3 degrees. The outdoor heaters were working overtime at the many open air restaurants in Naples. Despite all the wealth in the Palm Beach area there was no amount of money that could spare the region from record cold. West Palm Beach had its coldest December ever with an average of 58.9 degrees, colder by 2.2 degrees than December of 1935. It was the same story for Fort Lauderdale. The previous coldest December was in 1935 with an average of 62.2 but 2010 was 1.8 degrees colder at 60.4 degrees.

It wasn't much better down at Miami. It was the coldest December ever with an average temperature of 61.4 degrees. Maybe vacationer could escape the cold down in the normally tropical Florida Keys. No luck here either. Key West had its coldest December ever and second coldest month ever with an average temperature of 63.1 degrees. That is an impressive 8.9 degrees below the long term average. Even Jimmy Buffet had to drink his margaritas inside with the space heater on.

With monthly averages of 38.3°F in Atlanta, 37.2°F in Athens, 42.8°F in Columbus, and 40.9°F in Macon, these ranked as the 6th, 3rd, 5th, and 4th coldest Decembers in each city, respectively. In each case, it was the coldest December since 2000.

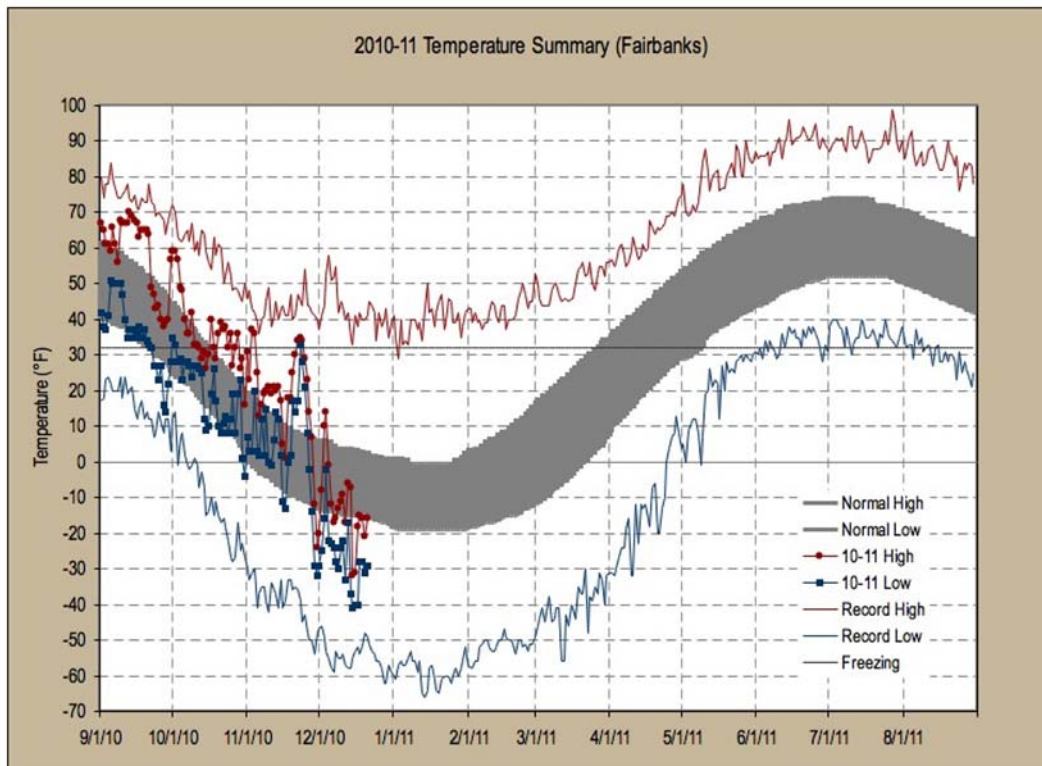
ALASKA FRIGID

It was bitterly cold across much of Alaska in December. The average temperature was 12F below normal in Fairbanks, that is a very large departure. The low temperature at Fairbanks was 40 degrees below zero 4 times including three days in a row with -41 on the 15th, -40 on the 16th and -40 on the 17th. Amazingly the high temperature was at or below zero every day of the month except for the last 2. On the 15th the “high” was -32 degrees! The city had 4 inches of light, dusty snow for the month. That’s typical for such a cold place. There’s very little moisture to make much snow there.



Temperature (Degrees C) Departure from Normal December 2010 Alaska

The cold in December was in sharp contrast with November which was over 9F above normal thanks to an unusually mild third week.



Across the nation December 2010 was a month of extreme weather, most of it extreme on the cold and snowy side. The strong La Nina along the equatorial Pacific Ocean combined with massive areas of high pressure in the high latitudes teamed up to generate a historic stormy and cold month. I guess 'mother nature' never got the "it should be getting warmer" global warming memo.

*Cover photo of a snowy mountain
landscape in China from wallcoo.net*





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