

Cloudburst Chronicle

National Weather Service
Juneau, Alaska



Volume 7, Issue 1
May 2007



A November to Remember in Southeast Alaska

By Nathan Foster

November 2006 in Southeast Alaska will go into the history books as one of the coldest and snowiest since weather observers began collecting climate data. But which areas were the coldest and snowiest? Moreover, what caused this early start to winter? With the help of Geographic Information Systems (GIS), it's easy to visualize the answer.

First, let's look at the data provided to us by our dedicated and hearty Cooperative Weather Observers who trudged through the snow and bitter cold to collect our daily climate readings. The winner (or loser, depending on your point of view) for coldest location goes to Haines, with an average November temperature of 15.4°F. This was 16.1°F below average. This is by far the coldest November ever for Haines since records began in 1949. The old record was an average temperature of 18.6°F set in 1985. Skagway broke their previous lowest average November temperature of 19.1°F from 1909 with 18.7°F, which is 13.2°F lower than the average November temperature, and their records go back to 1898! Also joining the club for coldest all-time November was Gustavus, Glacier Bay Lodge, Elfin Cove, Hoonah, all Juneau locations, Annex Creek Power Station, Snettisham Power Station, Little Port Walter, Wrangell, Craig, and Hyder. All of our other stations either were in the top five or didn't have a long enough climate history to make a good comparison.

Snowfall was just as impressive in November. Nearly everyone in Southeast Alaska saw above average snowfall. Elfin Cove measured the most snow in Southeast during the month with a whopping 81.5 inches. As impressive as this was, it did not exceed the record of 82.5 inches set in 1994. Other locations setting all-time November snow records included Gustavus, Hoonah, Downtown Juneau, Auke Bay (Juneau), Hidden Falls, Little Port Walter, Petersburg, Wrangell, and Craig.

What caused this early, aggressive start to winter? A very cold trough of low pressure was situated from the Yukon to

In This Issue:

- ➡ *November to Remember*
- ➡ *Winter Weather Affects Equipment*
- ➡ *Forecaster Spotlight*
- ➡ *Researching Local Weather Records*
- ➡ *Summer Seasonal Outlook*
- ➡ *Cloudburst Classroom*



National Weather Service
8500 Mendenhall Loop Rd
Juneau, Alaska 99801-9218

Telephone: (907) 790-6800

<http://pajk.arh.noaa.gov>

editors: ursula.jones@noaa.gov
tom.ainsworth@noaa.gov

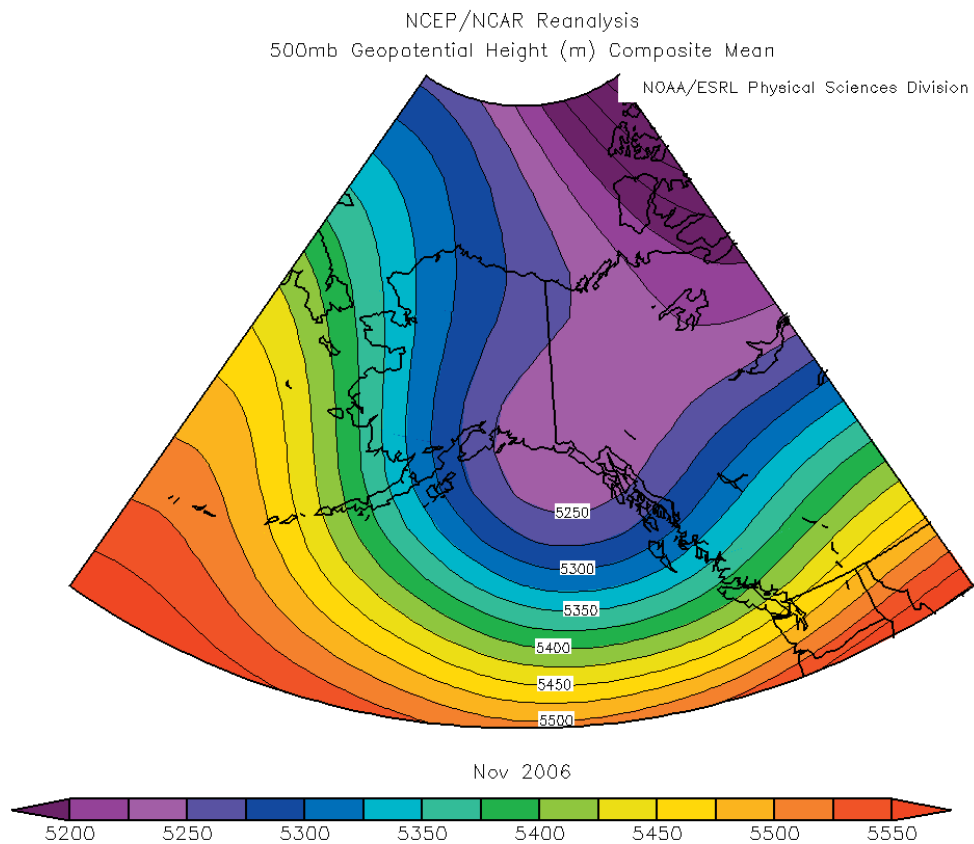


Figure 1

the Gulf of Alaska (Figure 1). This allowed extremely cold air from the Arctic to pool in our region. At the same time, storms in the Gulf were being directed northeast toward the Panhandle. The combination of the cold air from the north and warmer moist air from the Pacific resulted in frequent heavy snowfall in many areas.

We can represent November's anomalies geographically, making them easier to visualize using GIS. How do we do this? The process begins with transferring all the data to our GIS system. The data is broken up into equal squares called a raster grid. We can then use a technique called natural neighbor to interpolate between our data points. This complicated process is much easier with good GIS software and many data points. Unfortunately, Southeast Alaska has precious few climate stations, which makes interpolating difficult and prone to errors. However, it does give us a good estimation and makes visualization of anomalies easier.

When we look at the temperature anomaly map (Figure 2), it quickly becomes obvious the greatest temperature departures were over the northern inner channels. Farther south, temperatures remained below normal, but the cold air loosened its grip. This corresponds to Figure 1, showing the lowest pressures and coldest air over the northern half of the Panhandle. The southwest flow and long fetch over the Pacific into the southern Panhandle moderated temperatures in those areas.

November 2006 Temperature Anomaly

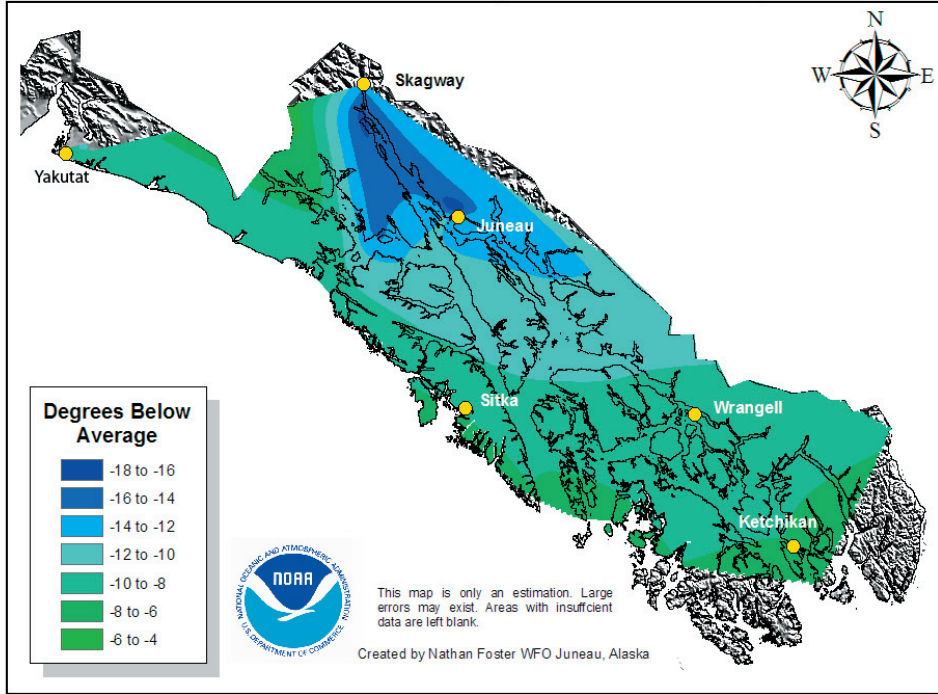


Figure 2

from the north was initially very dry as evidenced by the below normal snowfall around Skagway and the Canadian border area. As the cold air continued south, it met with moisture being transported from the west, out of the Gulf of Alaska. Where the two met, a large area of snowfall more than 50 inches above normal resulted. It's also easy to see the moderating

effect of the relatively warmer Pacific Ocean along the coast of Baranof Island where much less snow was recorded. Farther south, snowfall was above normal, but a few more rain events tempered the snowfall a bit.

The cold and wet pattern broke down in December, returning most areas in Southeast Alaska to more normal conditions. Many people will long remember Southeast Alaska's November 2006 cold and snowy weather. ❖❖

November 2006 Snowfall Anomaly

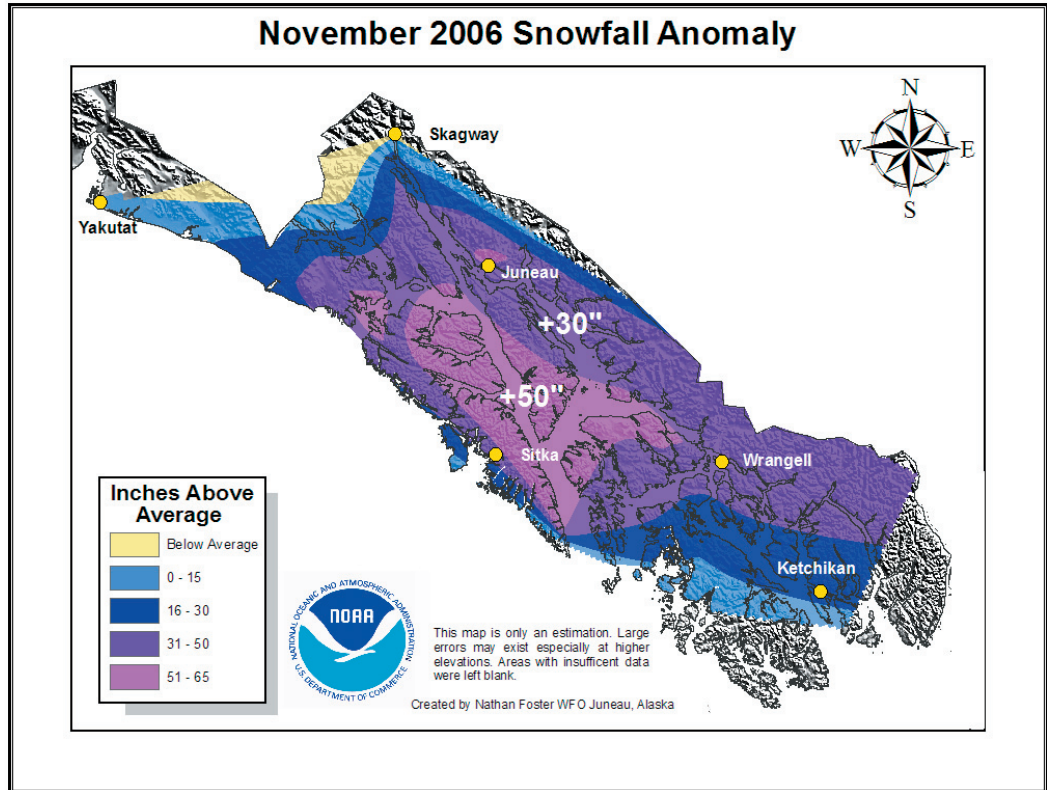


Figure 3

Harsh Winter Takes Out Some Weather Observing Equipment in Southeast Alaska

By Paul Shannon and Tom Ainsworth

The National Weather Service has a number of remote coastal weather observing stations in Southeast Alaska. These stations report temperature, wind speed and direction, and air pressure one or more times each hour via satellite. They are vital equipment for helping forecasters, mariners, and aviators understand what is happening in the data sparse and largely unpopulated areas of the Panhandle. Weather forecasters use the information to monitor conditions and make sure forecasts are on track. Mariners decide whether or not to go on their planned trip based on the observations. Seaplane pilots use marine weather forecasts to know if their “runway” will be smooth



Five Finger Lighthouse in Stephens Passage

enough to land on. Unfortunately, harsh winter weather affects the reliability of the equipment. Their remoteness and, in some cases, the age of the equipment also makes maintaining the stations difficult and costly.

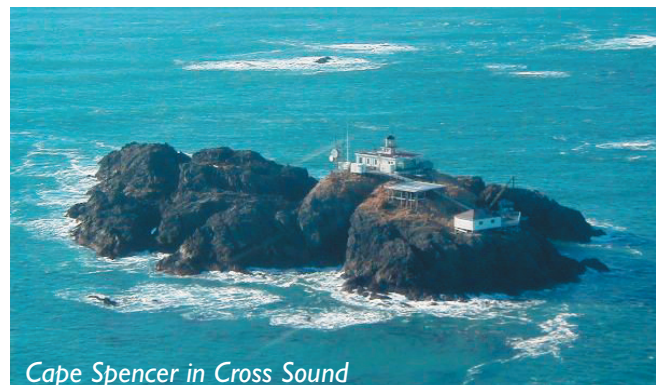
Winter weather causes two main types of problems with the remote sensors. First, because of their locations they are all battery powered. The batteries are recharged by solar cells. Southeast Alaska’s predominantly cloudy winter weather, short winter days, and very low sun angles can mean long periods with insufficient sunlight to recharge batteries. Extended cold, snowy days can also keep solar panels covered in snow or ice. Eventually, the station loses power and is unable to transmit its weather data to the orbiting satellite for collection. When the station stops reporting because of low power it is no longer available to be broadcast over NOAA Weather Radio or posted on the Internet. The equipment is



Cape Decision in Southern Chatham Strait

still in place and operating but simply does not have enough ‘juice’ to disseminate its coded weather observation. Frequently these types of problems are solved once the sun returns, or the weather warms enough to melt the snow and ice off the solar panels. Sometimes it takes more than one day of sunshine to recharge the batteries.

The other type of problem caused by cold weather is ice accretion on the sensors. This mainly affects wind vanes and anemometers, the sensors which measure wind direction and wind speed. There are two primary types of wind vanes and anemometers: those with moving parts and those using ultrasonic acoustic signals. The familiar wind vane and anemometer consist of an arrow or airplane shaped vane designed to point into the wind. The moving parts of an anemometer are rotating cups or propeller blades. The faster the wind blows, the faster the cups or blades move. Freezing rain, drizzle, or blowing spray from off the water (since many of these sensors are at lighthouses, islands, or coastal landmarks) can coat these moving parts with ice. The ice slows their movement or prevents them from moving at all. As a result, wind speeds are erroneously calculated too low and the observation gives the false impression that winds are lighter than reality.



Cape Spencer in Cross Sound



Sisters Island in Icy Strait

Acoustic sensors have three prongs and measure wind velocity based on the transit time of ultrasonic acoustic signals across these prongs. During episodes of freezing precipitation or freezing spray, the prongs become coated with ice. This greatly affects the speed of the ultrasonic signals and the ability of the instrument to calculate the wind speed. Ice covered ultrasonic sensors often report nonsensical wind speeds well over 100 mph! During the icing process, when good observations are mixed with erroneous ones, the instrument reports a wide range of wind speeds giving the impression there are gusty wind conditions. Finally,



Pt. Retreat in Southern Lynn Canal

observed values become unrealistic or completely missing. Unlike when the batteries lose power and stop transmitting, ice-affected ultrasonic sensors can continue to report bad data! When National Weather Service personnel become aware of the problem, we can remove the affected site from the radio broadcast cycle but the information is automatically passed onto the Internet. Be wary of incredibly high wind speeds reported from remote weather stations during icy weather. Once again, these types of problems usually end when warmer weather returns.

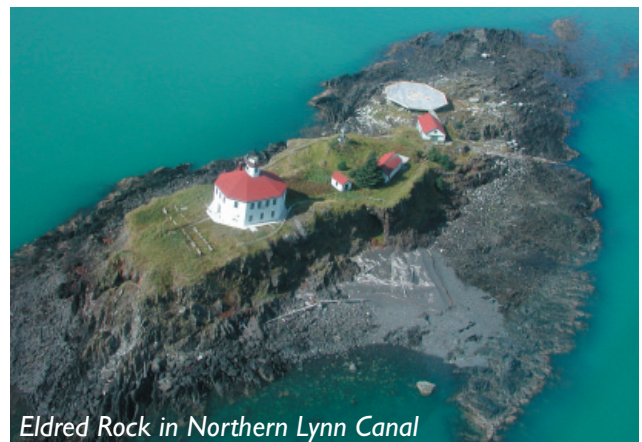
Even when the remote stations have enough power to transmit observations and ice does

not interfere with calculating wind speeds and directions, constant exposure to harsh weather can still damage the equipment. The moist, salty maritime air can corrode parts and wiring. Strong winds have damaged antennas and towers enough to require significant repair or replacement. For these types of problems, a trip to the remote site by our Electronic Technicians is necessary. They depend on helicopters for transportation to the sites. As everyone in Southeast Alaska knows, there are many times, especially in winter, when flights are impossible for days or even weeks due to strong winds, low ceilings and visibilities, or snow. There is nothing to do but wait out those delays until the weather improves and the technicians are afforded a safer environment to travel, climb, and service the stations in an effort to return it to working order.



Pt. Bishop in Taku Inlet

When a remote site goes out of service, you can be sure that we miss it as much as you do. We will do all that we can to get the sensors working again and provide the full station report on NOAA Weather Radio and the Internet as soon as possible. ❖❖



Eldred Rock in Northern Lynn Canal



FORECASTER SPOTLIGHT

Who Forecasted That?

By Brian Bezenek

The Forecaster Spotlight is an opportunity to find out who the forecasters are in Juneau. This time around, I managed to track down the newest member of the Juneau forecast office, Paul Suffern. Arriving in January, Paul was able to partake in our winter season. *Welcome to Juneau, Paul!*

Brian - Where are you from?

Paul - I am from Chapel Hill, North Carolina. A lot warmer than here! Ha ha...

Brian - Have you always been interested in weather?

Paul - I have always been interested in the outdoors. Once I was in elementary school I started taking daily weather observations for fun and I have been interested in weather ever since. My favorite thing to do in elementary school was to fill out the hurricane tracking maps during the summer and fall.



Paul in Yellowstone National Park

Brian - Where did you get your meteorological training?

Paul - I received my training from North Carolina State University in Raleigh, North Carolina. I received both my undergraduate and graduate degrees from there.

Brian - Where else have you worked?

Paul - Other than being a teaching assistant, a research assistant, and doing a little volunteering at the weather service office in Raleigh, I haven't worked anywhere else.

Brian - What do you like best about being a forecaster?

Paul - I really enjoy the challenge that forecasting provides. It changes everyday and while you can learn from past events, no two events are exactly alike. I also enjoy figuring out why and how things work. Forecasting provides a great avenue for figuring out why the weather works the way it does, before you make your forecast.

Brian - How long have you been forecasting the weather?

Paul - I have been forecasting the weather in various competitions for the past 6 years. Each of these competitions allows forecasting for different cities around the country and it is a great way to learn the weather all over the United States and the world.

Brian - Why did you choose to accept a job in Alaska?

Paul - Last summer I was able to visit Alaska and really enjoyed it. So once this opportunity became available, I applied. I am really enjoying it so far, especially all the snow!

Brian - Outside of the job, do you have any hobbies or activities to fill your time?

Paul - I enjoy doing pretty much anything outdoors: sports, hiking, climbing, bird watching, and just relaxing.

I'd like to thank Paul for taking time from his busy schedule to answer my questions. Tune in next time to see who ends up in the spotlight.



Photos by Dave Andresen

Annex Creek

Annex Creek received 471.6" of snow so far this winter - that's over 39 feet! Here are some other SE Alaska snow statistics, with the old record following in parentheses.

- Hyder 402.6" (225.7" 2001-02)
- Haines Customs 356.9" (355.2" 1991-92)
- Hoonah 293.2" (100.2" 1978-79)
- Elfin Cove 268.2" (180.8" 1994-95)
- Pelican 234.9" (161.6" 1971-72)
- WFO Juneau 222.7" (115.2" 2001-02)
- Juneau Airport - 197.8" (194.3" 1964-65)
- Gustavus 170.1" (112.3" 1985-86)

Note: Period of record differs for each station (i.e. Juneau Airport began in 1943 while WFO Juneau began in 1999).

Researching Local Weather Records

By Ursula Jones

For those of you who are hungry for records, statistics, latest wind data, and more, this is being written for you. WFO Juneau collects and maintains unofficial weather data for Southeast Alaska, going back as far as 1890 for downtown Juneau. Since past weather data is one of the most requested types of information we receive, I have put together some instructions for locating historical weather data on our Internet site.

Navigating web sites can be frustrating when you are unfamiliar with the layout of the site. These tips should help guide you through some of the more routine data searches and send you in the right direction for more in-depth research. Beginning at WFO Juneau's home page, <http://weather.gov/juneau>, you will need to select AK Interactive Database located on the left side navigation bar under the Climate section. Once at the page, you will see a map (Figure 1) of Southeast Alaska with several cities labeled and quite a few red boxes scattered throughout.

The screenshot shows the National Weather Service Alaska Region Headquarters website. The main content area is titled "Climate Database" and features a map of Southeast Alaska with several cities labeled: Yakutat, Skagway, Haines, Gustavus, Juneau, Sitka, Petersburg, Wrangell, Craig, and Ketchikan. A list of sites is displayed on the left side of the map, with "Petersburg" selected. Below the map, there are dropdown menus for "Site:" (set to Petersburg), "Select Month:" (set to February), and "Select Year:" (set to 2006). There are also buttons for "All Data For One Month", "Selective Search", "Plot Temperature", "Plot Precipitation", and "B91".

Figure 1

For our first example we will locate the total snowfall for Petersburg for February 2006. There are two ways you can select this location, either by clicking on the red-box associated with Petersburg or by using the Site drop-down box located directly below the map. If you are unable to view the Site drop-down box on your screen, you will need to scroll down. With the site selected, change the month to February, if it isn't already showing, and the year to 2006. Now you can click on All Data For One Month and it will take you to the February 2006 data for Petersburg. You may need to scroll down,

but you can see at the bottom of the table there was 3.8 inches of snow for February 2006. Just for fun, let's look at the data for February 2007. To do this from your current window, you need to change the year by using the drop-down box located slightly above the table to 2007 and then click on Go. You will notice that snow received this February exceeds the 2006 snow level by over 24 inches. That's pretty much how this winter has panned out. Snow, snow, and more snow.



Photo by Dave Andresen

Annex Creek

Further data may be found on this page by clicking on the Normals radio button located below the month and year boxes and then clicking on the Go box. This

will provide you with a table showing you the normals for each day and the normals for the entire month at the bottom. Normals are calculated from the "30-year period of record," currently 1971 - 2000. Note that if the stations data is considered incomplete for the current period of record, the table returned for Normals will contain data marked as "M" for missing. Another search can be run from the screen to find the historical extreme values measured on each day. Click on the radio button by Extremes and push the Go button. Data shown now is either the highest or lowest of each data type for that date. For example: If we continued with our Petersburg data you can see at the bottom right side that 1965 has the highest snow for February with 73.6 inches (February 2007 had 28.6 inches observed accumulation).

Let's say you want to look up another city's data to compare with Petersburg, but you don't want to go back to our home page to find the link. Just click on Go back to station selection page located just above the month and year. It will take you back to the map of Southeast Alaska.

Another way to search is Selective Search. After you select the site from the map or in the drop-down list, click on the Selective Search button located below the All Data For One Month button. Once at the Climate Search Form page, you can run a variety of different searches by selecting from the Search drop-down menu, then selecting a Variable, and, if given as an option, a Criteria. Here comes the tricky part. When searching for the highest observed temperature a location has achieved, select the Search of Extreme, the Variable of Max Temperature, and be sure to select Highest, otherwise the results you receive will not reflect the temperature you are seeking. This is also the same for Minimum Temperature. Select the Lowest, otherwise the data returned may not be what you want. There have been times when people have wanted to see "Low Maximum Temps" (coolest high temperature) or the "High Minimum Temps" (warmest low temperatures). Figure 2 shows the different searches that can be performed for each location.

As you can see, there are several search options to help you locate the data you are seeking. There are also several options for displaying your results. Let's return to the map of Southeast and see how you can graph your results.

Under the map are two buttons, one for running a temperature plot and the other for a precipitation plot. For each plot, you must select a site, month, and year for it to run. Let's use Sitka, February 2006 as the example. Select the site,

SEARCH	VARIABLE	CRITERIA (if any)
Extremes	Max Temperature	Highest/Lowest
	Min Temperature	
	Avg Temperature	
	Precipitation	
	Snowfall	
	Heating Degree Days	
	Cooling Degree Days	
	Growing Degree Days	
	Freezing Degree Days	
	Peak Winds	
	Average Winds	
Consecutive Days Monthly Frequencies Daily Frequencies First/Last Dates	Max Temperature	Greater Than/Less Than
	Min Temperature	
	Avg Temperature	
	Precipitation	
	Snowfall	
	Heating Degree Days	
	Cooling Degree Days	
	Growing Degree Days	
	Freezing Degree Days	
	Peak Winds	
	Average Winds	
Interval Frequency Monthly Totals Daily Averages Averages	Max Temperature	None
	Min Temperature	
	Avg Temperature	
	Precipitation	
	Snowfall	
	Heating Degree Days	
	Cooling Degree Days	
	Growing Degree Days	
	Freezing Degree Days	
	Peak Winds	
	Average Winds	

Figure 2

month, and year and click on Plot Temperature. Looking at Figure 3, you will see three different colors, with two different types of lines for each color. Blue solid lines are normal maximum temperatures and dotted blue lines are normal minimum temperatures. The extreme maximum, depicted as a solid, bright green line, are the highest temperatures recorded for those dates. Dotted, bright green lines are "Extreme" minimums or the lowest temperatures recorded for that date in February. You'll notice that the observed maximum temperature for February 10, 2006 is also the record high

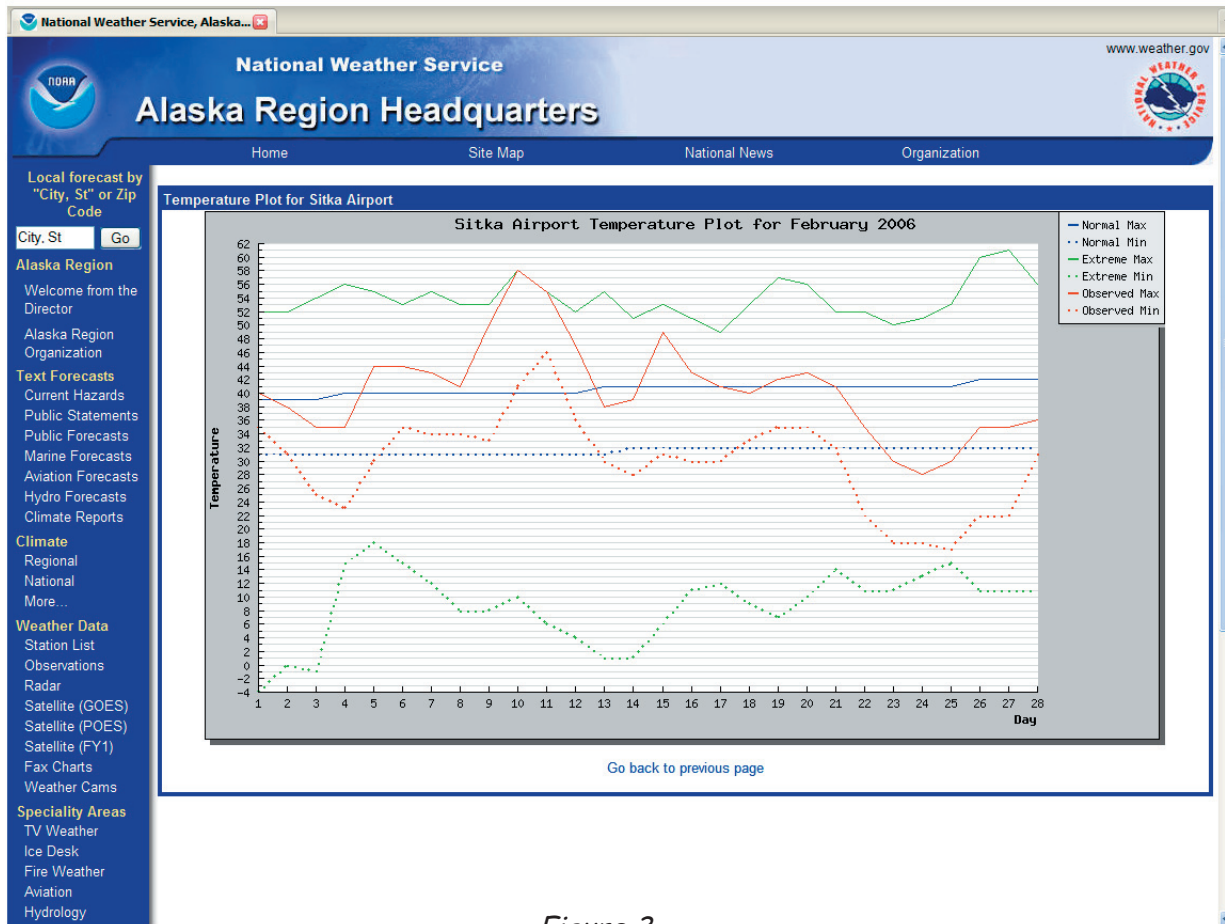


Figure 3

temperature (58°F) for that date, exceeding the old record of 49°F set in 1993. The 55°F on the 11th is a record high for that date, beating the old record of 52°F set in 1970. To look at the February 2006 observed data, you will want to look at the red lines and dots for that months observed daily maximum and minimum temperatures.

Similarly, you can plot precipitation data, too. Since there is just one total amount for each day, there are only three different colored lines on the chart - Normal, Extreme, and Observed. By creating this chart, you can see easily what the differences are between the three values shown. Precipitation in February 2006 at the Sitka Airport was, for the most part, below average, with only six days at or above normal. The last button I want to mention on the map page is the B-91 button.

The B-91 Form is the monthly summary form used by NWS Coop Observers to record their observations. Select the location, month, and year and click on B-91. The table shown provides you with a look at what was recorded by the Coop Observer for that station - either by mailing in the written form or entering it online. To learn more about the B-91, go to <http://www.nws.noaa.gov/om/coop/forms/b91-notes.htm>.

As a final research note, I would like to mention that all the data on the WFO Juneau's site is unofficial data. For official data you will want to go to the National Climatic Data Center (NCDC) site at <http://www.ncdc.noaa.gov>. The world's largest active archive of weather data, NCDC charges for most services, but they do have a number of products listed under "Free Data" on their home page. You should now have a good idea of how to navigate WFO Juneau's weather data. If you get stuck, don't hesitate to give us a call. ❖❖

Summer Seasonal Outlook (June - August) By Frederick Fritsch

It has been an exceptional winter here in Southeast Alaska with the excessive seasonal snowfall being probably the most notable and memorable aspect. So, now with winter officially behind us and spring having arrived, many people are asking “What next?”

The discussion of seasonal outlooks usually includes the topic of “El Niño”. A discussion or understanding of “El Niño” is incomplete without including its counterpart - “La Niña”. Together, these two phenomena comprise what is called the El Niño Southern Oscillation (ENSO). ENSO is part of the long-term, year-to-year variability in weather that affects our planet. Specifically, ENSO is a periodic change, or oscillation, in average surface air pressure over the equatorial Pacific Ocean that forces a change in trade winds and sea surface water temperatures in this same region. Both El Niño and La Niña cycles occur approximately every 3 to 5 years. El Niño events usually last for 9 to 12 months and La Niña usually lasts for 1 to 3 years. Their effect on weather patterns is stronger in the winter than in summer. During an El Niño event, the sea surface temperature in the eastern tropical Pacific is warmer than normal. La Niña episodes represent period of below average sea surface temperatures in eastern tropical Pacific. These deviations from normal are not great, plus (minus) 0.5 degrees Celsius is enough to be considered an El Niño (La Niña) condition, though 1 to 2.5 degrees C deviations are more typical. Oscillating air pressure patterns cause changes in trade winds, sea surface temperatures, and tropical rainfall patterns across most of the Pacific Ocean. These changes, in turn, affect weather patterns throughout the rest of the world.

The current analysis of ENSO suggests the most recent El Niño cycle came to an abrupt end this past February and we are entering a La Niña cycle. ENSO neutral conditions are forecast to prevail from May thru July before La Niña conditions strengthen to the point where they will have an impact on North American weather patterns. Moreover, since ENSO has a lesser impact on North America weather patterns during the summer than during the winter, it is reasonable to expect that it will be late autumn before we see the effects of La Niña.

Having discussed ENSO, let’s now look at the summer temperature and precipitation outlooks (June - August) for Southeast Alaska. One of the more widely used products produced by the Climate Prediction Center (CPC) is the “Three-Month Outlook” for both temperature and precipitation. Each outlook is a 3-category forecast predicting the likelihood (chance) of “Above Normal” (A), “Near Normal” (N), and “Below Normal” (B) temperature and precipitation, but not the magnitude of such variation. In addition, the 3 categories

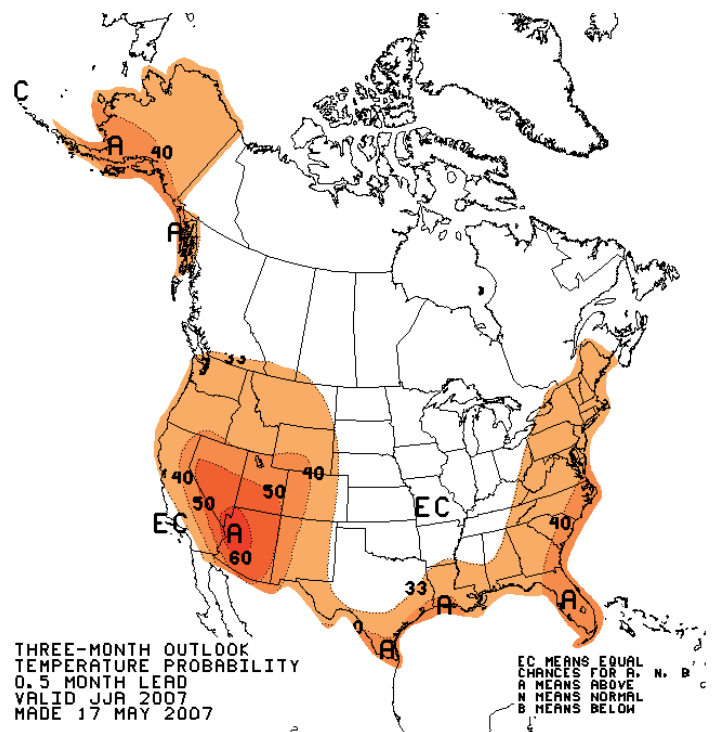


Figure 1

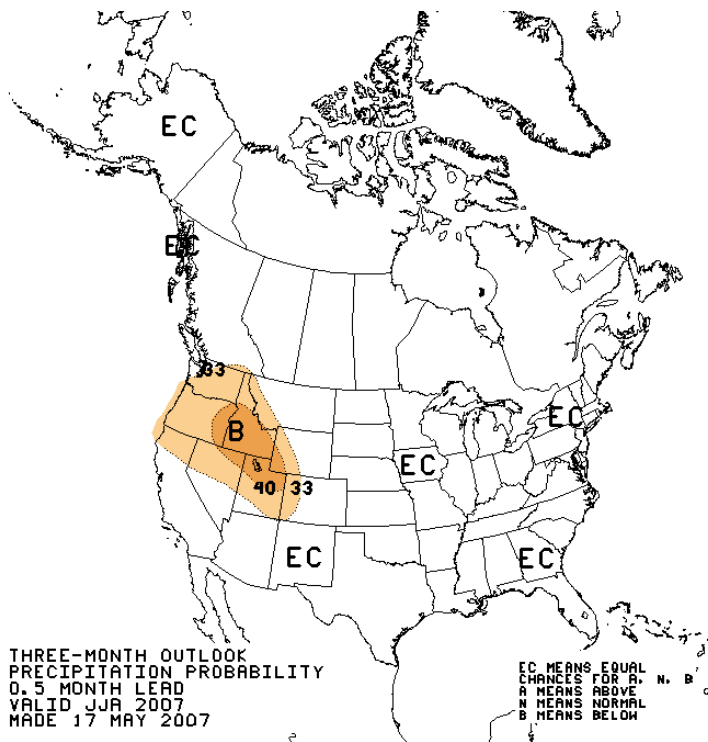


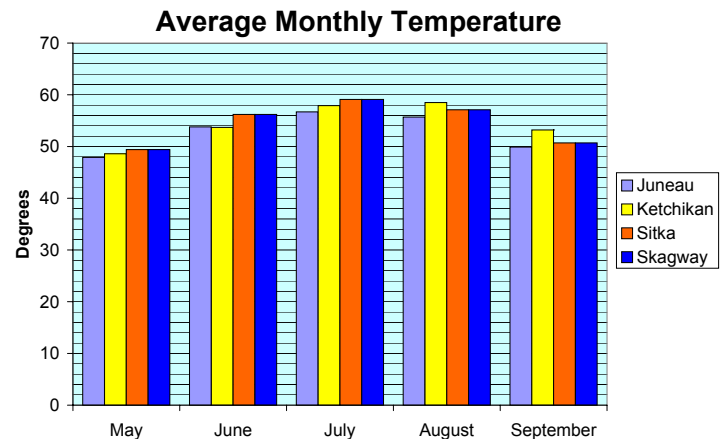
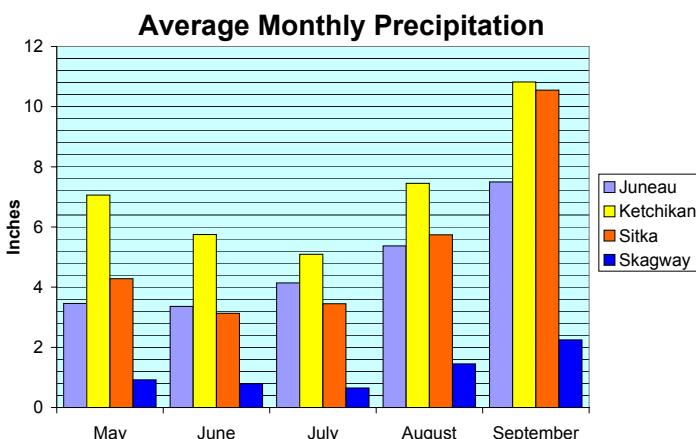
Figure 2

have a starting point, the 30-year (1971-2000) climatology period divided into 3 categories, each with a 33-1/3 percent chance of occurring (i.e. equal chances, EC) and which sum to 100% at any given location on the map. So, within the regions labeled “EC” between shaded areas, the odds for the three categories is 33-1/3 each. In the shaded regions, the odds indicated by the contours apply to the listed category. While the odds of the opposite category are assumed to be less than 33-1/3 by the amount by which the favored category exceeds 33-1/3, and the odds of the middle category remain at 33-1/3. Figure 1 (previous page) is really depicting is that there is a 40% probability that Southeast Alaska will experience a 3-month average temperature that is above normal. August-September-October shows the Panhandle as having an EC or a

lesser probability of being warmer than average over those three months. The 40% probability of above average temperature in the Southwestern Alaska for June-August also means the odds of near normal average temperature is 33-1/3%, and the odds of below average temperature is 26-2/3%.

The summer outlook for precipitation (Figure 2) in Southeast Alaska indicates EC throughout the summer months. However, a recent climate study by staff at the National Weather Service in Juneau indicates that warmer than average summers in Juneau are usually drier than average summers. If the CPC outlook for a warmer than average summer pans out, odds are our summer will be drier than average as well.

In the mean time, you can keep track of how the spring and summer are progressing by reading the Juneau Monthly Climate Summary, which is available online the first day of every month online at <http://weather.gov/juneau>. ♦♦



Cloudburst Classroom

by Kimberly Vaughan



Untying the Mystery on Bows

Most people have seen a rainbow and know how they form. Fewer know about moonbows or fogbows and even fewer have seen rainbows that form in the clouds, without any rain. These features form in a very simple way, yet most of the time they make us stop and awe at their beauty.

The ingredients for a rainbow, simply put, are rain and sun. Until the 1600s, no one really knew exactly how a rainbow was made. In 1637, René Descartes studied the formation of rainbows and further studied how light interacted with the raindrop. A few years later, Isaac Newton was able to show that when a beam of light passed through a prism of glass, it was refracted (changed direction), showing the spectrum of color. Newton was then able to conclude that white light was actually a mixture of all the colors of the visible light spectrum. The raindrops act like the prism with the sun producing the light. As the sun hits the raindrop, most of the light passes through it. The light at the edges is refracted and then reflected off the back of the raindrop, leaving the raindrop in the colors of the spectrum: violet, indigo, blue, green, yellow, orange, and red. If every raindrop is producing all the colors, then how do we see the separate arcs of colors? It's all in the angles. As the spectrum of color exits the raindrop, the different colors are visible at different angles and only one color may be seen at any given angle. How we see the rainbow depends on the angle between the viewer and the sun, along with the movement of the raindrops. This explains why you might see a vibrant colored rainbow, while someone else at a different location may only see a faint hint of one.

Rainbows can form in pairs, commonly called a double rainbow. The unique part about a double rainbow is that the upper bow is a reverse rainbow, meaning the colors on the bow appear backwards, ranging from red on the inside edge to violet on the outside edge. If you have ever seen a double rainbow, you may have noticed that the



Alexander's dark band

area between the bows was darker than that of the surrounding sky. It doesn't always occur that way, but when it does it is called Alexander's dark band.

A moonbow is formed by the same principles with the only difference being that the light source that forms the bow is the moon. These bows tend to be faint, if visible at all.

Even though fogbows tend to be white in color, they are indeed occurring for the same reason as the rainbow and moonbow. The difference is in the water droplet size. The water droplet size in fog is very small compared to raindrops which makes them not as good at dispersing the light for us to see.

Looking to the sky can give us beautiful things to see. In some cases, all you need is the combination of light and water. As light passes through the different densities of air and water it changes directions and reveals its true colors. To find these bows when conditions are right have your back to the source of light (sun or moon). And please use the spotter number (1-877-807-8943) to report when you find the pot of gold! You can get a spectacular sight, ranging from rainbow to circumhorizontal arcs. So, the next time you see an arc or bow in the sky, you can stop to enjoy its beauty and know how it was made. ◆◆

RADIOSONDE INSTRUMENT PACKAGE TRIVIA



MATCH THE LETTER TO THE TERM.

- | | |
|-------------------------|-------------------------|
| _____ Baroswitch | A. Measures pressure. |
| _____ Thermistor | B. Humidity sensor. |
| _____ Hygristor | C. FM transmitter. |
| _____ Aneroid barometer | D. Metal rod. |
| _____ Radio Transmitter | E. Switching mechanism. |

More information on radiosonde observations can be found in our December 2005 *Cloudburst Chronicle* issue at <http://pajk.arh.noaa.gov/Newsletter/news1205.pdf>.

WEATHER WATCHERS SOUTHEAST ALASKA SPOTTER NETWORK

Most Active Spotter

Record snowfall amounts and record low and high temperatures kept our spotters busy. Over 45 spotters called in 441 reports between October 1, 2006 and March 31, 2007. We received 12 spotter calls on November 29th alone, which correlates with the record-breaking snow, 19.1", Juneau received.

Our spotters make a tremendous contribution to the forecast process by providing meteorologists with critical "ground truth" information about severe weather. It was a very difficult decision to make, but **Trina Ives of Petersburg** is our Most Valuable Spotter! She conveyed numerous, timely reports. For her efforts, she will receive an Alaska Cloud & Weather field guide. Congratulations and thanks for the great reports! Other notable spotters were Paul Swift of Haines and Bob Pegues of Tenakee Springs.

ALTHOUGH WFO JUNEAU HASN'T ISSUED ANY FIRE WEATHER PRODUCTS, SEASONAL REPORTING HAS RESUMED. BE SURE TO CHECK OUT OUR WEB PAGE [HTTP://FIREWX.ARH.NOAA.GOV/](http://firewx.arh.noaa.gov/) FOR STATEWIDE WATCHES, WARNINGS, AND ADVISORIES.



Trivia Answers: Baroswitch is a switching mechanism used on older radiosondes to switch between the two sensor and the reference elements. This baroswitch involves a contact arm connected to the barometer passes over the commutator bar. The commutator bar is a selector switch with 180 contact points; the switch occurs at approximately 10 mb intervals. The contact arm, responding to the pressure changes, moves across the contact points on the commutator bar. Newer model radiosondes use a capacitive transducer with an aneroid capsule. Thermistor is a ceramic-covered metal rod that measures air temperature through electrical resistance. Hygristor is a humidity sensor, which uses moisture-sensitive lithium chloride and electrical current to measure atmospheric water content ranging from 15 to 100 percent. An aneroid barometer measures pressure via a partially evacuated metal canister. The radio transmitter is the small FM transmitter, sending data back to the receiving station.

This quarterly educational newsletter is designed for Southeast Alaska's volunteer weather spotters, schools, emergency manager, and the news media. All of our customers and partners in Southeast Alaska are welcome to subscribe to it.

NOAA's National Weather Service Forecast Office in Juneau, Alaska is responsible for weather forecasts and warnings from Cape Suckling to the Dixon Entrance.

This publication, as well as all of our forecasts and warnings, are available on our web site: <http://pajk.arh.noaa.gov>.

Comments and questions regarding this publication should be directed to Ursula Jones at (907) 790-6802 or e-mail: ursula.jones@noaa.gov.

Contributing authors in this issue include:

*Nathan Foster -
Hydro Meteorological Technician*

*Paul Shannon -
Information Technology Officer*

*Tom Ainsworth -
Meteorologist in Charge*

*Brian Bezenek -
Lead Forecaster*

*Ursula Jones -
Administrative Support Assistant*

*Frederick Fritsch -
Meteorological Intern*

*Kimberly Vaughan -
Observing Program Leader*

PRST STD
US POSTAGE PD
JUNEAU AK
PERMIT NO G-19

NOAA's National Weather Service
WFO Juneau
8500 Mendenhall Loop Road
Juneau, Alaska 99801-9218