



## Weather and Climate



### Wrangell – St. Elias Spring 2013 Weather Summary

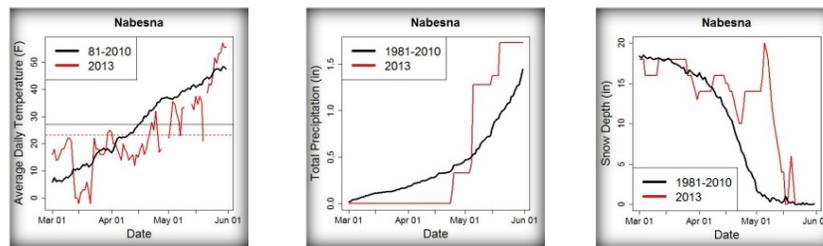
#### What is Normal?

“Normals” are used to place recent climate conditions into historical context. It takes 30 years of continuous weather data at one location to calculate what makes temperatures or precipitation amounts “normal”. The latest normal period is 1981-2010.

There are three weather stations in & around the park that have records dating back long enough to calculate normals - Nabesna, Gulkana, and Yakutat. These sites provide valuable long-term records for the park and are good index sites to use for climate comparisons

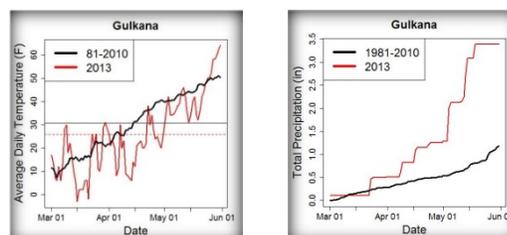
In Nabesna, spring 2013 started out “normal” with an average monthly temperature of 13.0°F, which was 0.2°F above the normal value. There was only one day in March where measurable precipitation was recorded -- on March 11<sup>th</sup> 2 inches of snow fell. April was cold around the entire state, and Nabesna was no exception – the average temperature was 9.4° F colder than normal. A total of 4 inches of snow was recorded for the month. May stayed cool with an average temperature of 38.7°F, almost 5°F colder than normal. During the last week of the month, temperatures climbed above normal for the first time since the beginning of April. The snowpack continued to increase through the first two weeks of May; normally it starts to deteriorate in April. The snow-off date, which is the last day of where there is measureable snow on the ground, was May 21.

Nabesna Temperature, Precipitation and Snow Depth (red) compared to Normal (black)



In Gulkana, every month during the spring of 2013 was cooler and wetter than normal. Average temperatures for March and May were ~ 2° F cooler than normal, while April was more than 11° F colder than normal. Precipitation totals were just above normal for March and April. May precipitation was an impressive 327% of normal; all of the precipitation for the month was recorded during the first three weeks of May when the temperatures were still cold. Nearby Kenny Lake snow course typically melts out by May 1<sup>st</sup>, but still had 15 inches of snow this year with 3.0 inches of water content, the highest May 1 reading since 1992.

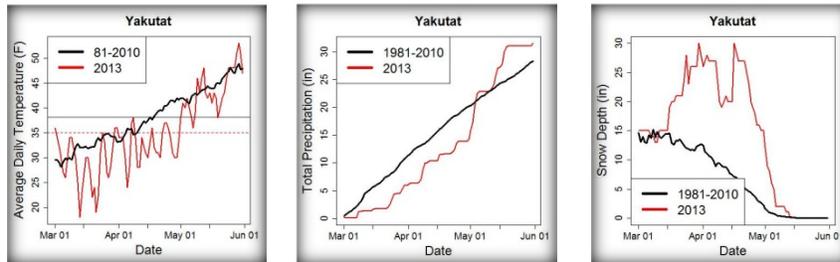
Gulkana Temperature and Precipitation (red) compared to Normal (black).



# Wrangell – St. Elias Spring 2013 Weather Summary

And along the southern coast.....in Yakutat, temperature patterns for the spring were comparable to most other sites around the state. March was 3.0° F colder than normal, April was 5.3° F colder than normal, and May was 1.1° F cooler than normal. Because of the cooler temperatures, more precipitation fell as snow in March and April, bringing snowfall totals above normal. The total for April was almost 18 inches more than normal. The water equivalent of the snow was less than what normally falls as rain during March and April, so while there was more snow, the precipitation totals for early spring were less than normal. This changed in May when temperatures warmed above freezing and 17.3 inches of total rainfall was recorded for the month, over 8 inches fell during the first 4 days of the month. The monthly total was 210% of normal, making it the third wettest May on record for Yakutat.

Yakutat Temperature, Precipitation, and Snow Depth (red) compared to Normal (black).



### Nabesna Weather Records:

Climate Normal Period 1981 – 2010  
Climate Record Period 1967 – 2013

#### Temperature

Nabesna Spring - 2013	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
March	13.0	12.8	<b>+0.2</b>	41 / Mar 30, 31	-18 / Mar 21
April	19.1	28.5	<b>-9.4</b>	41 / Apr 22	-5 / Apr 6
May	38.7	43.1	<b>-4.4</b>	75 / May 28, 31	7 / May 1

Spring Season Temperature Departure from Normal: -4.5°F

#### Precipitation

Spring 2013	Total Monthly Precip. in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 – hr. total in. / Date	Total Monthly Snow	Snow Depth at end of month in.
March	0.0*	0.22	<b>-0.22</b>	** / Mar 11	2	13
April	0.33**	0.34	<b>-0.01</b>	0.19 / Apr 25	4.1	14
May	1.4**	0.91	<b>+0.49</b>	0.86 / May 5	5.9	Snow off May 21

\*Two inches of snow recorded on Mar 11, but no precip. (water equivalent) recorded for that day.

\*\* There were missing values for precipitation in April and May, these values may be low.

Spring Season Departure from Normal: not calculated

# Wrangell – St. Elias Spring 2013 Weather Summary

## Gulkana Weather Records:

Climate Normal Period 1981 – 2010

Climate Record Period 1949 – 2013

### Temperature

Gulkana Spring	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
March	13.8	15.6	-1.8	42 / Mar 31	-23 / Mar 15
April	20.4	31.8	-11.4	47 / Apr 22	-16 / Apr 13
May	42.9	45.2	-2.3	80 / May 31	19 / May 1

Spring Season Temperature Departure from Normal: -5.2°F

### Precipitation

Gulkana Spring	Total Monthly Precip. in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 –hr. total in. / Date	# Days with >=0.01 in. water
March	0.51	0.30	+0.21	0.36 / Mar 23	4
April	0.74	0.24	+0.5	0.28 / Apr 16	6
May	2.13	0.65	+1.48	0.73 / May 4	11

Spring Season Departure from Normal: + 0.73 inches

## Yakutat Weather Records:

Climate Normal Period 1981 – 2010

Climate Record Period 1949 – 2013

### Temperature

Yakutat Spring	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
March	28.9	31.9	-3.0	42 / Mar 2	8 / Mar 21
April	32.5	37.8	-5.3	43 / Apr 23	12 / Apr 5
May	43.6	44.7	-1.1	63 / May 29	27 / May 7

Spring Season Temperature Departure from Normal: -3.1°F

### Precipitation

Yakutat Spring	Total Monthly Precip. in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 –hr. total in. / Date	# Days with >=0.01 in. rain or snow
March	5.93	11.04	-5.11	1.14 / Mar 8	18
April	8.36	9.19	-0.83	1.58 / Apr 8	19
May	17.25	8.21	9.04	3.14 / May 3	18

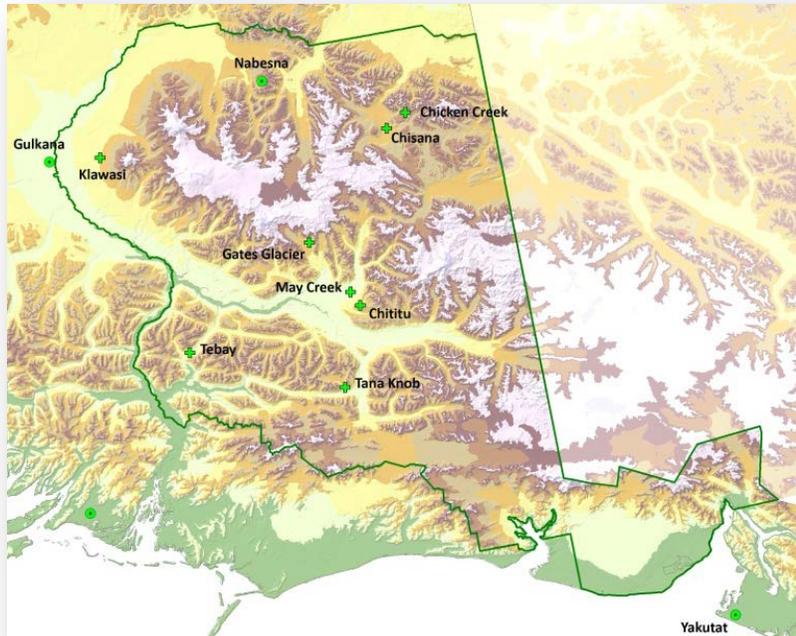
Spring Season Departure from Normal: +1.03 inches

### Snow

Yakutat Spring	Total Monthly Snow in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 –hr. snow total in. / Date	Snowfall since Jul 1 in.
March	35.3	28.4	+6.9	7.8 / Mar 23	151.2
April	28.0	10.2	+17.8	10.6 / Apr 16	179.2
May	0	0.4	-0.4	Trace / May 19	179.2

## Wrangell – St. Elias Spring 2013 Weather Summary

As part of the climate monitoring vital sign, additional NPS climate stations were installed in the park to complement the long-term records at Nabesna, Gulkana, and Yakutat. These additional sites provide critical data on a park-wide scale that help characterize the climate gradients and patterns affecting resources in Wrangell-St. Elias National Park and Preserve.



Wrangell – St. Elias Remote Automated Weather Station (RAWS) summary – Spring 2013:

Site	Elev. Ft.	Average Temp °F			Spring Avg. Temp °F	Extremes °F		Snow Off Date	Peak Wind mph	High T – Low T °F *
		Mar	Apr	May		High	Low			
Chicken Creek	5240	11.4	13.5	34.1	19.7	60	-15	May 16	32	75
Chisana	3318	6.3	16.4	40.1	20.9	76	-34	***	24	110
Gates Glacier	4060	16.2	18.5	36.7	23.8	64	-7	Jun 18	32	71
May Creek	1600	17.0	27.0	45.7	29.9	81	-26	May 13	35	107
Tana Knob	3450	17.4	20.5	38.7	25.5	65	-2	Jun 1	41	67
Tebay	2000	15.8	22.3	37.5	25.2	63	-14	Jun 3	21	77

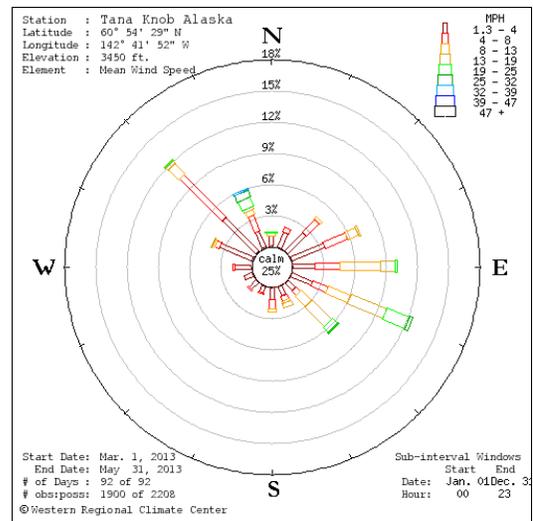
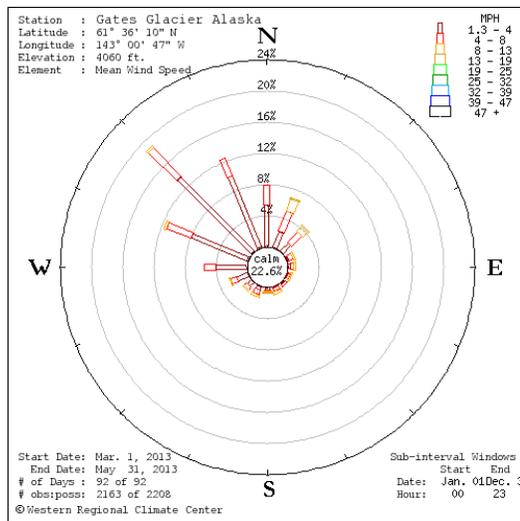
\* Difference between the high and low temperature for the season

Klawasi and Chititu sites are currently not transmitting real-time data and therefore are not summarized.

Interesting notes from RAWS stations:

- Although we have only 8 years of data for Chicken Creek...the average April temperature has been ~24.6°F; April 2013 was 11.1 degrees F colder than this short-term average.
- Spring was coldest at Chicken Creek, the high elevation site on the north side of the park and warmest at May Creek, the low elevation site in the valley between the Chugach and Wrangell mountain ranges.
- The average monthly temperature difference between April and May was ~ 19 °F.

# Wrangell – St. Elias Spring 2013 Weather Summary



Wind speed and wind direction at Gates Glacier (left) and Tana Knob (right).



Chicken Creek climate station; new camera at Gates Glacier that will store images on site; Chititu climate station

## Connecting Further

- ❖ [Central Alaska Network climate monitoring vital sign](#)
- ❖ Access near real-time data from [Western Regional Climate Center](#) and [MesoWest](#)
- ❖ Check out the Jul-Aug-Sep weather outlook from the [NOAA Climate Prediction Center](#)
- ❖ Statewide summary of weather highlights in the latest [Alaska Climate Dispatch](#) from the Alaska Center for Climate Assessment and Policy
- ❖ [Map](#) of projected temperature and precipitation changes Wrangell - St. Elias National Park and Preserve.

**For more information contact:**  
 Pam Sousanes or Ken Hill  
 Central Alaska Network Inventory and Monitoring  
[pam\\_sousanes@nps.gov](mailto:pam_sousanes@nps.gov); [kenneth\\_hill@nps.gov](mailto:kenneth_hill@nps.gov)  
 907.455.0677 907.455.0678

Please Note: The summarized data are preliminary and have not undergone final quality control. Therefore, these data are subject to revision.