2017 Fire Season Weather Summary

Summary

The summer of 2017 was memorable for being a very pleasant summer. Hot spells didn't last too long, and waves of moisture generally brought enough rain to dampen fuels, but not cause local flooding or issues. June through August was the fourth warmest summer on record in Fairbanks (incidentally, 2004 and 2013 were two that were warmer) and ample rainfall meant gardeners had little excess watering to do.

The early season started with a lingering snowpack and fairly cool and damp weather for May; this kept area burned at the end of May to less than 3300 acres.

June had a steady amount of fire activity around much of the state. RFWs in southwest AK on June 5th precipitated some fire starts and spread. By June 9th, hot weather in the Interior led to the South Fork Salcha Fire, which though in limited, put up enough visible smoke to have local residents nervous. The month had its ups and downs, in temperatures and in fire activity: freezing temperatures after a hot spell, 2" deep hail in Eagle, fire activity on the North Slope at the end of the month.

The hot weather of early July helped to increase fire movement, and significant amounts of acreage were gobbled up during a 90 degree heat wave in the Interior. Lightning activity also increased, causing a number of new starts. Persistently gusty winds in the northeast led to spurts of significant fire growth in the Upper Yukon Zone on many days during the month. July exited much as it had begun- with fairly warm and dry conditions throughout much of the Interior. Burned acreage had jumped to over 625,000 acres.

August went out without much of a bang, and the fire season dwindled away as fire activity in the Lower 48 went gangbusters and dominated all of the available resources nationwide.

With about 650,000 acres burned, 2017 falls well below the ten-year average, but very close to the median number of acres burned annually. This makes 2017 a fairly typical Alaska fire season, at least as far as total acres is concerned. Unfortunately, no one number describes the timing, busy periods, and intensity of the entire fire season.

Year	# Fires	# Acres
2007	509	649,411
2008	367	103,649
2009	527	2,951,593
2010	688	1,125,419
2011	515	293,018
2012	416	286,888
2013	612	1,316,288
2014	377	233,544
2015	772	5,146,541
2016	552	499,559
Mean	533	1,260,591
Median	521	574,485

Annual Alaska Wildfire Acreage for last 10 years, with Mean and Median

Season Forecast

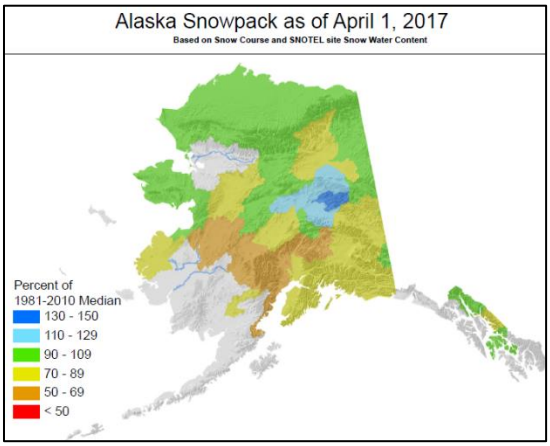
The fire potential outlook for the 2017 fire season was for normal conditions statewide. A cold spring caused a slow snowmelt and delayed the start of fire season north of the Alaska Range, while in the south and west, an earlier meltout prevailed. Long range forecasts indicated the likelihood of a warmer than normal summer, while in the shorter term, close to normal temperatures were expected (for the first time in several years). Though long range precipitation forecasts have proven generally unreliable, it was noted that wetter than normal conditions were expected for eastern Alaska most of the summer. No strong atmospheric teleconnections were expected to develop for the summer, so the forecast was for a normal fire season, from May through August.

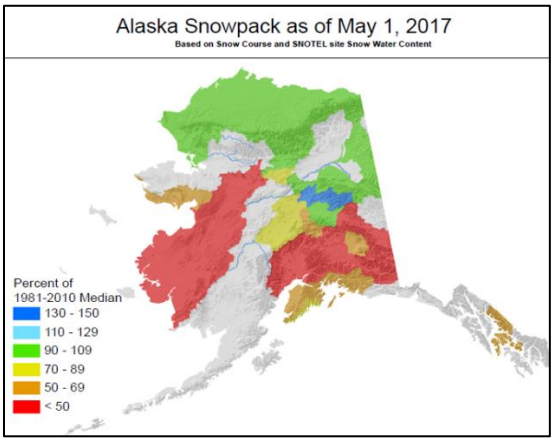
Spring 2017 Fire Season Outlook

Spring Snowpack

For the first year in the last three, snow covered most of the state for the winter. The area around Fairbanks and the middle Tanana Valley showed the highest percent of normal snowpack (>130%), due to one of its snowiest mid-winter periods on record. The North Slope and parts of the Brooks Range also had good snow coverage, showing near normal snowpack by late season. The snowpack's longevity was aided by a very cold March around much of Alaska.

The Anchorage area and other parts of South Central received substantial snow at the end of March, helping to keep snowpack amounts above 50% of normal through the beginning of April. However, a fairly warm April in the south and northwest brought about rapid melting, and much of the south and west had below normal snowpack as May began.

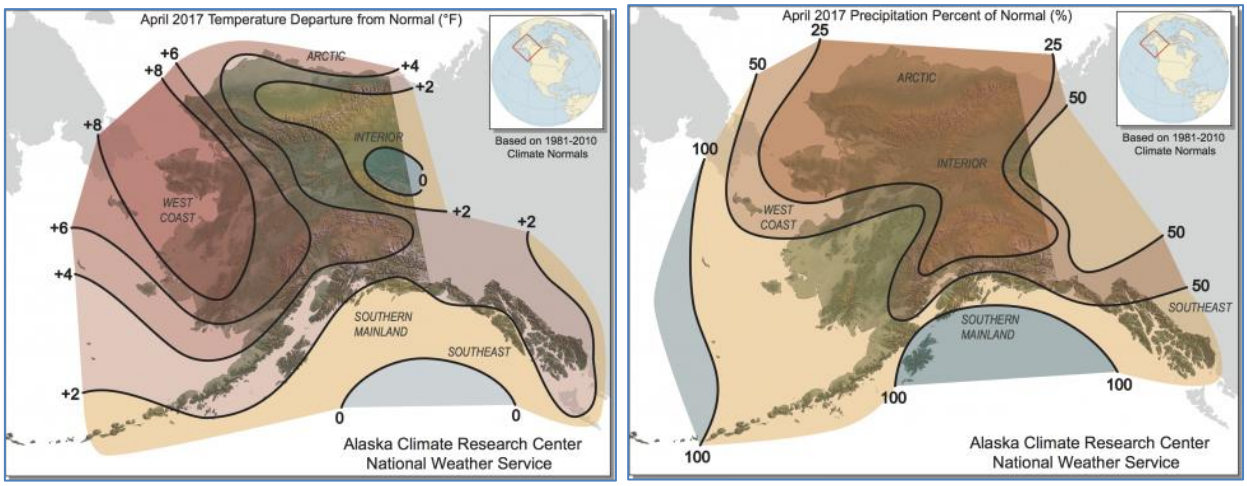




April

Another warm April was observed for much of the state, with record temperatures set along the northwest coast and in the Panhandle. The average temperature in Kotzebue was 11 degrees above normal for the month of April, while Yakutat smashed three consecutive daily record highs mid-month. The lightning season also had an early start, with several strikes observed on April 25th in the Interior Southwest.

Since April is generally the driest month for Alaska, normal precipitation amounts tend to be low. Observations showed it was a dry month in the north and the eastern Interior, where less than 25% of normal precipitation was observed. In the southwest and southeast, close to normal amounts were observed.

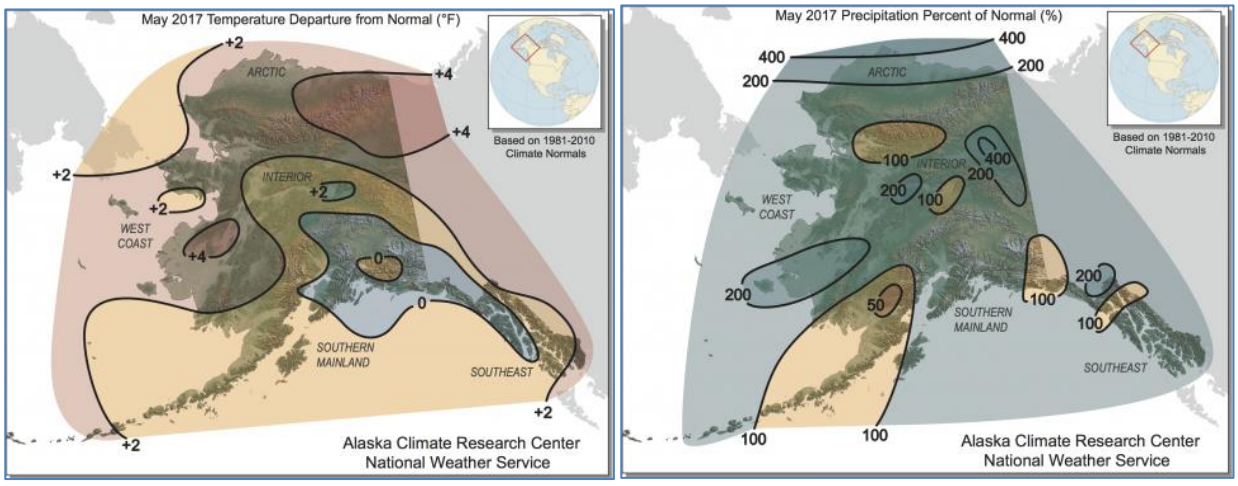


April 2017 Temperature Departure from normal (ºF) and Precipitation Percent of Normal

May

May showed temperatures above normal on the North Slope and across the Brooks Range. Around South Central, cold temperatures at the end of the month set record lows near freezing in Anchorage and Kodiak.

Meanwhile, fairly wet conditions statewide kept fire activity low. In parts of the eastern Interior, two to four times the normal amount of precipitation was observed. One of the only dry areas was in the southwest, along the Alaska Peninsula and Aleutian Range, and parts of Bristol Bay. Lightning activity was steady, with a few strikes observed most days of the month.



May 2017 Temperature Departure from normal (ºF) and Precipitation Percent of Normal

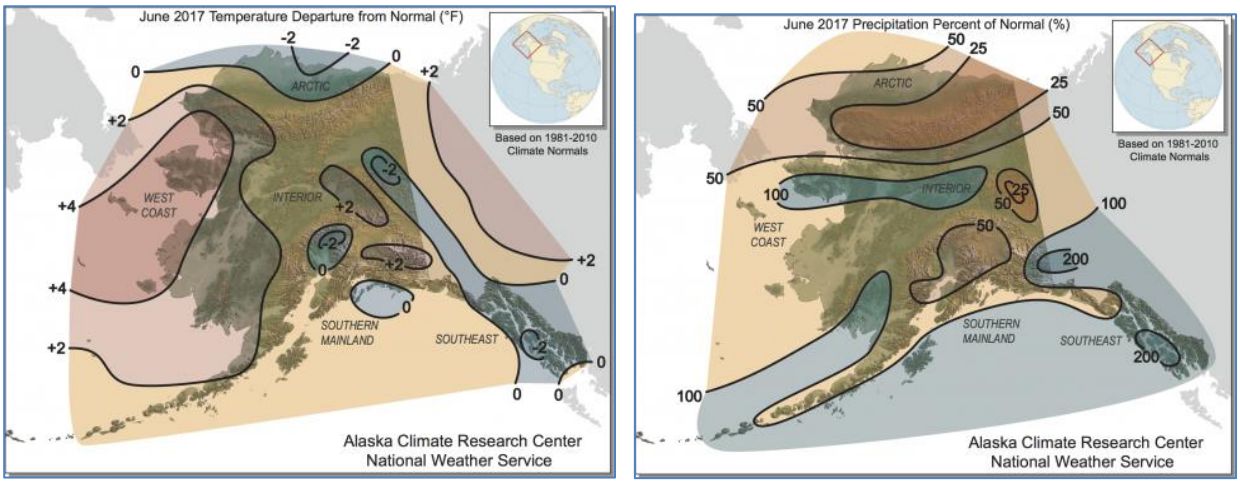
June

June started out quite warm through much of the state, with temperatures into the 70s in the first week. This warm weather became downright hot in the central and eastern Interior by the 8th of June. This hot spell lasted for four days, breaking records at a number of stations, including Fairbanks, where 90 degrees was observed. This was the second earliest occurrence of 90 degrees there in over a century of observations.

This weather pattern quickly changed. On June 11th, Fairbanks was doused with over an inch of rain and in the eastern Interior, the area from Eagle to Northway became frigid, with record lows at both those stations, and many local observations below freezing. Such a late summer freeze had not occurred in the last 35 years.

Overall, precipitation amounts were below normal for much of the state. The exception was the Panhandle, where June is generally one of the driest months, which instead saw rain on 75% of the days in June.

Lightning activity was steady but unremarkable for the most part, with a number of locations reporting significant hail over the course of the month.



June 2017 Temperature Departure from normal (ºF) and Precipitation Percent of Normal

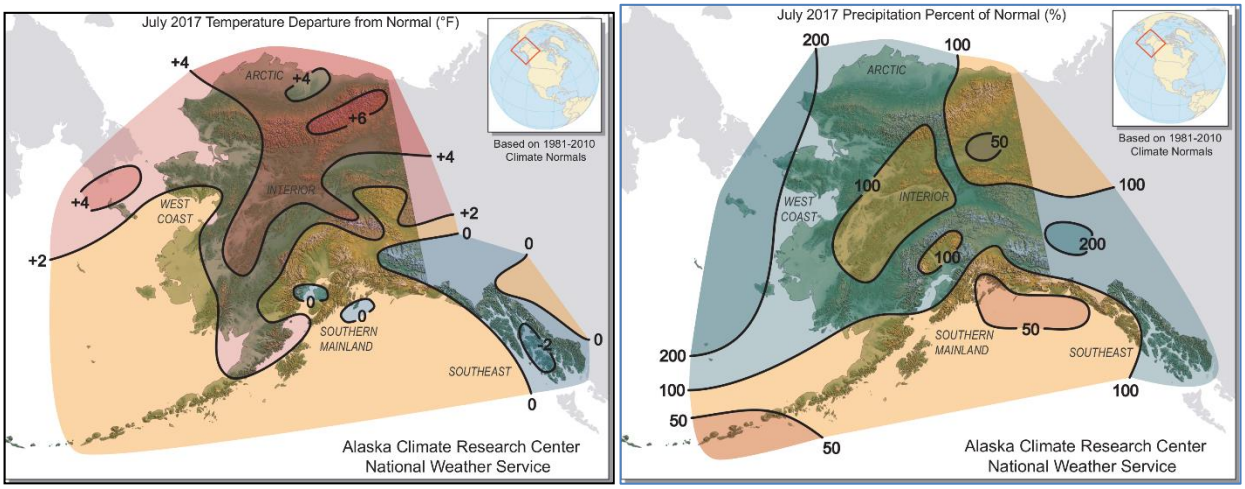
July

The weather got warmer for July across northern and much of Interior Alaska. Barrow, Bettles, McGrath, and Tanana all reported their warmest July on record. Barrow continued to see the recent trend of near record warm overnight lows, which is around 50 degrees in July. Across the Interior, several days of upper 80s and low 90s dominated the first part of the month. This came just prior to two big lightning days, where the number of strikes exceeded 10,000 daily. Fire activity picked up at this time.

Lightning activity continued to be fairly steady, with most days of the month having over 1000 strikes. There was a quieter window from the 22nd -27th with very little convective activity.

Despite an exceptional wind event in the central Interior on July 24th, little fire growth occurred. The big exception was the Nowitna Fire in Tanana Zone, which doubled in size to nearly 49,000 acres in two days. Meanwhile, non-fire related wind concerns included 8,000 Fairbanks area residents without power due to downed powerlines.

Precipitation amounts were near or above normal for most parts of the state. Summer precipitation is always difficult to categorize as thunderstorms can bring or deny heavy amounts of rain in a short period of time.

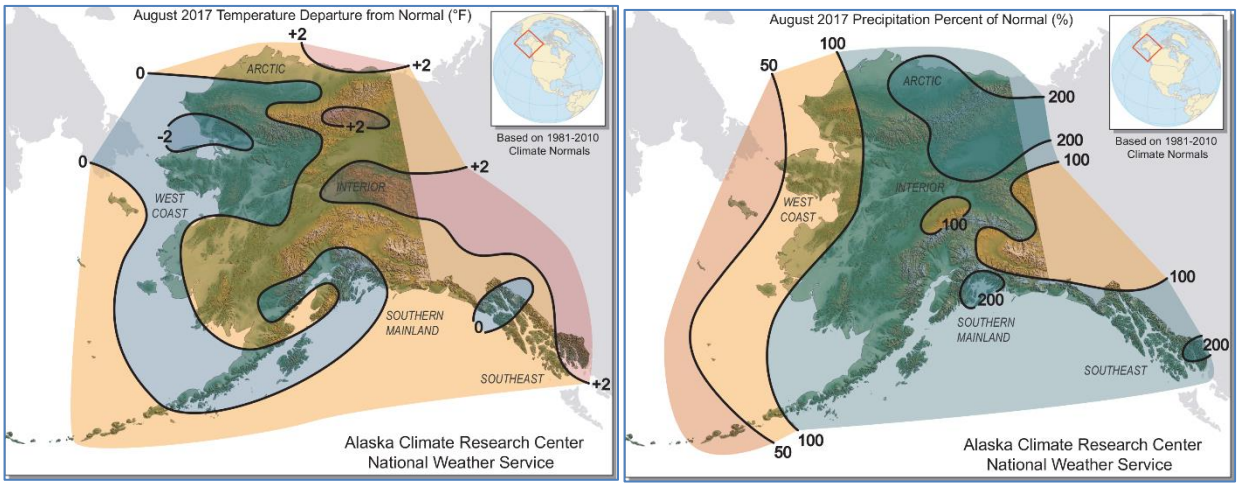


July 2017 Temperature Departure from normal (ºF) and Precipitation Percent of Normal

August

Though temperatures were cooler for most of the state for the first few days of August, by the 5th a return to mid and upper 80s occurred, with hottest temperatures in the Panhandle and southeastern Interior. This settled back to more normal temperatures by August 11th, and near freezing temperatures started to reappear on the North Slope and Brooks Range by mid-month. Warm days continued to hang on in the eastern Interior, but that faded by the last week of August.

Precipitation was fairly normal over most of the state, though the west coast was on the dry side. End of season rains began in parts of the central Interior around August 7th, gradually spreading to other areas and wetting most fuels in the next week. With little fire activity already in progress, the splotchy rains weren't critical to stopping fire activity, but did help to stop growth on a few fires burning in limited, particularly in the Upper Yukon Zone.



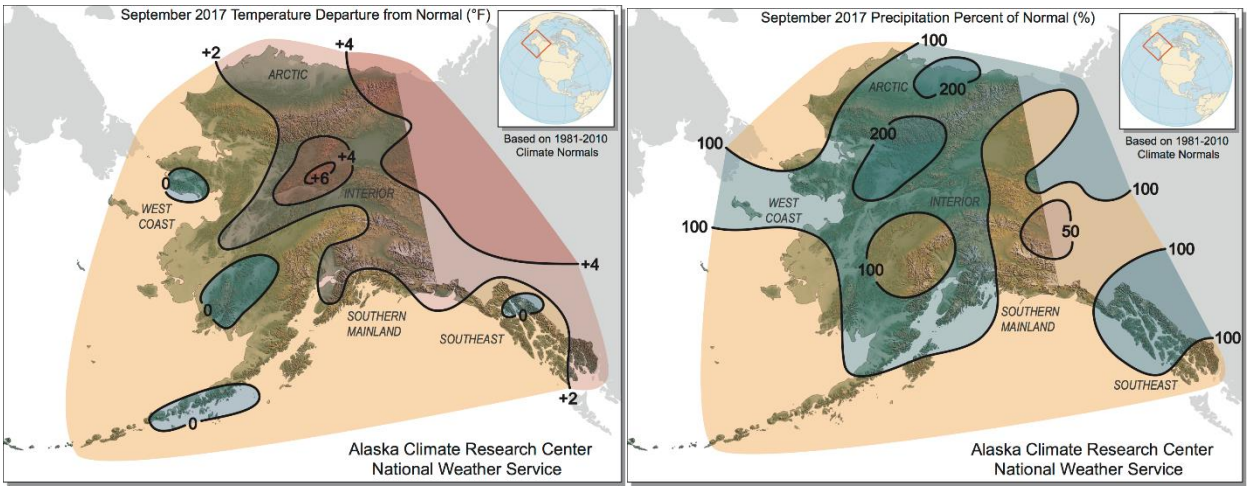
August 2017 Temperature Departure from normal (ºF) and Precipitation Percent of Normal

September

September had some very warm mid-month temperatures both in the Interior and South Central. The monthly average temperature in the area from Bettles to Tanana was 4-6 degrees warmer than normal. Much of northern

and eastern Alaska was a bit warmer than normal. Many gardens lasted well towards the end of the month before the first killing frosts occurred.

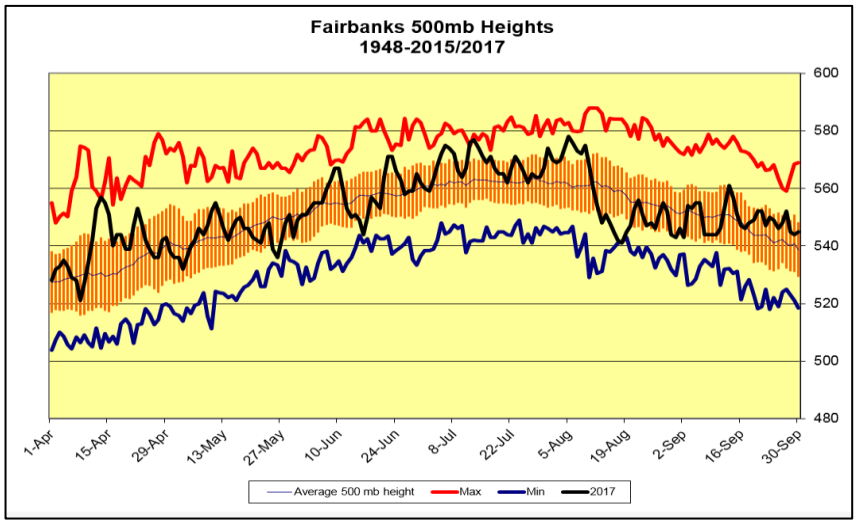
Precipitation was dry in the eastern part of the state, but through much of Alaska, September came across as a wet month. This is particularly noticeable in the fall, when the ground no longer loses moisture as fast as it gains it. This may make for interesting snow melt conditions in the spring. Due to the damp weather, little fire activity occurred during September.



September 2017 Temperature Departure from normal (ºF) and Precipitation Percent of Normal

500 mb Patterns:

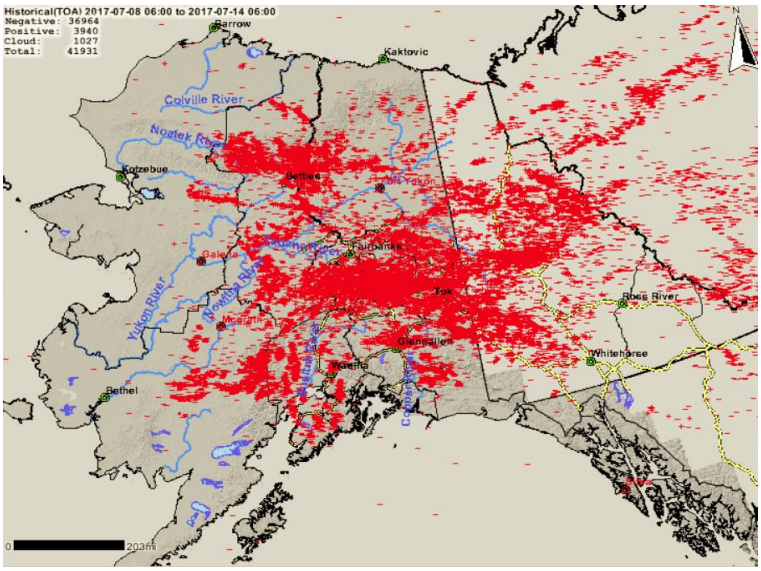
Though this graph only shows 500 mb heights at Fairbanks, it's still a fairly representative snapshot of the 2017 fire season across the Interior, which typically defines the bulk of Alaska's wildfire activity. The black line, representing 2017, shows the very warm weather in mid-April, followed by the cool May, where low heights indicate surface temperatures were quite cool. Then around June 9th, one of the first big spikes on the 2017 line coincides with the time of 90 degree temperatures in parts of the Interior. The rest of the summer had spikes and dips, but none were particularly remarkable or long lived, which is representative of how much of the summer felt; no long periods of heat or rain. By August 7th, the upper level atmosphere took a drastic turn, with 500 mb heights plunging to near minimum levels. This concurs with the beginning of the end of season rains and shows that the season was pretty quiet from that point forward.



2017 500 mb Heights for Fairbanks compared with 68-year database

Lightning

Though it seems there has been a lot of improvement since it was installed in 2012, the Alaska Lightning Detection System, ALDS, continues to pose some challenges. At times, the system reports strikes in places that are cloud-free, and other times it misses strikes associated with thunderstorm cells, where lightning is observed by the naked eye. Reported errors continue to decrease each year, but will continue to be documented and investigated. Sensors have all been upgraded since 2014, and outfitted with the latest software.



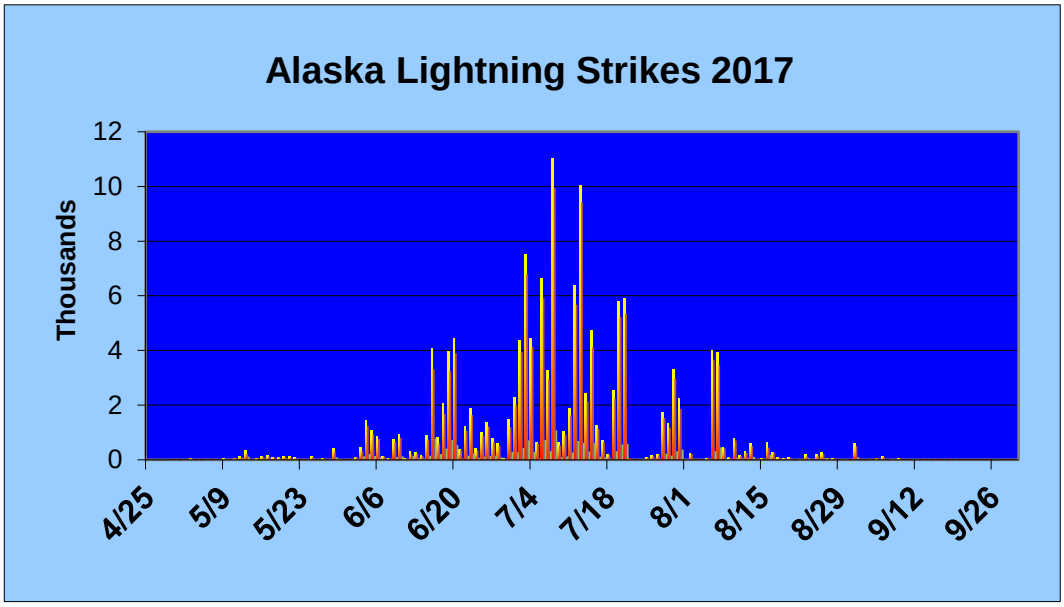
Lightning Strikes in Alaska from 7/8/2017 through 7/13/2017

The lightning season began on April 25th, with a few lightning strikes in the interior Southwest. As May began, lightning activity remained low, but at least a few strikes were observed almost every day of the month. About 25% of the days had more than 100 strikes. This is unusual for May, which typically has only a handful of days with any strikes at all.

Lightning amounts remained pretty constant throughout June, with only three days from June 16th through the 20th that had about 4,000 strikes. June 24th had strong enough convective activity to drop a significant amount of hail on the town of Eagle, near the ALCAN border.

Three large lightning days occurred at the beginning of the month, with the 8th and 13th reporting over 10,000 strikes each day. Lightning activity continued to be fairly steady, with most days of the month having over 1000 strikes. There was a quiet window from the 22nd -27th with very little convective activity. Strikes then increased again into the first week of August, before slowly winding down by the end of that month. Very few strikes were observed into September. The 2017 chart below shows a typical summertime lightning distribution in Alaska.

Direct comparisons to previous years are difficult due to periodic upgrades to the system. Regardless, 140,300 observed strikes is one of the highest summer lightning totals on record for Alaska. Despite this high number of strikes, the 2017 Alaska fire season did not turn out to be particularly voracious, demonstrating that the dryness of fuels plays a major role in ignition and spread potential.



Lightning Strikes in Alaska for 2017 Fire Season

Conclusion

2017 will be remembered as a very warm and pleasant summer for much of the state, with moderate rains preventing much fire activity from occurring. This was fortunate as the Lower 48 was experiencing one of their worst wildfire seasons on record, and resources were in high demand across much of the western part of the country. Thousands of Alaska's firefighters went south, including six jet loads of firefighting crews from Alaskan villages, and the Incident Management Team, which did three nearly back-to-back assignments spanning late August, September, and early October. It was fortunate that Alaska's busy fire season did not coincide with the busy season down south.

Contacts

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