



Office of the Washington State Climatologist

July 2, 2010

June Event Summary

The beginning of June started as a continuation of the wet weather patterns experienced in May. There was some minor flooding on the Olympic Peninsula on June 2 that resulted from heavy rainfall that day and the previous. Some daily precipitation records were broken on June 2: Quillayute received 1.63" and Olympia received 0.68". Heavy rain continued for much of the state through the first week of June and there was even a funnel cloud spotted in the Seattle area on

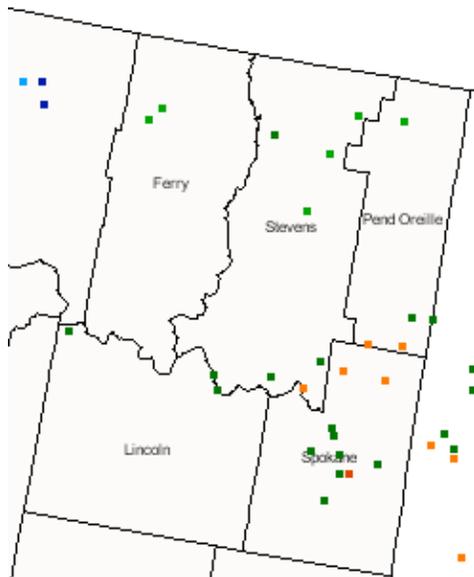
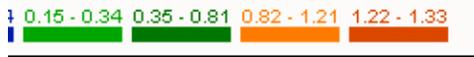


Figure 1: CoCoRaHS 24-hr precipitation totals ending at 7 am on June 21.

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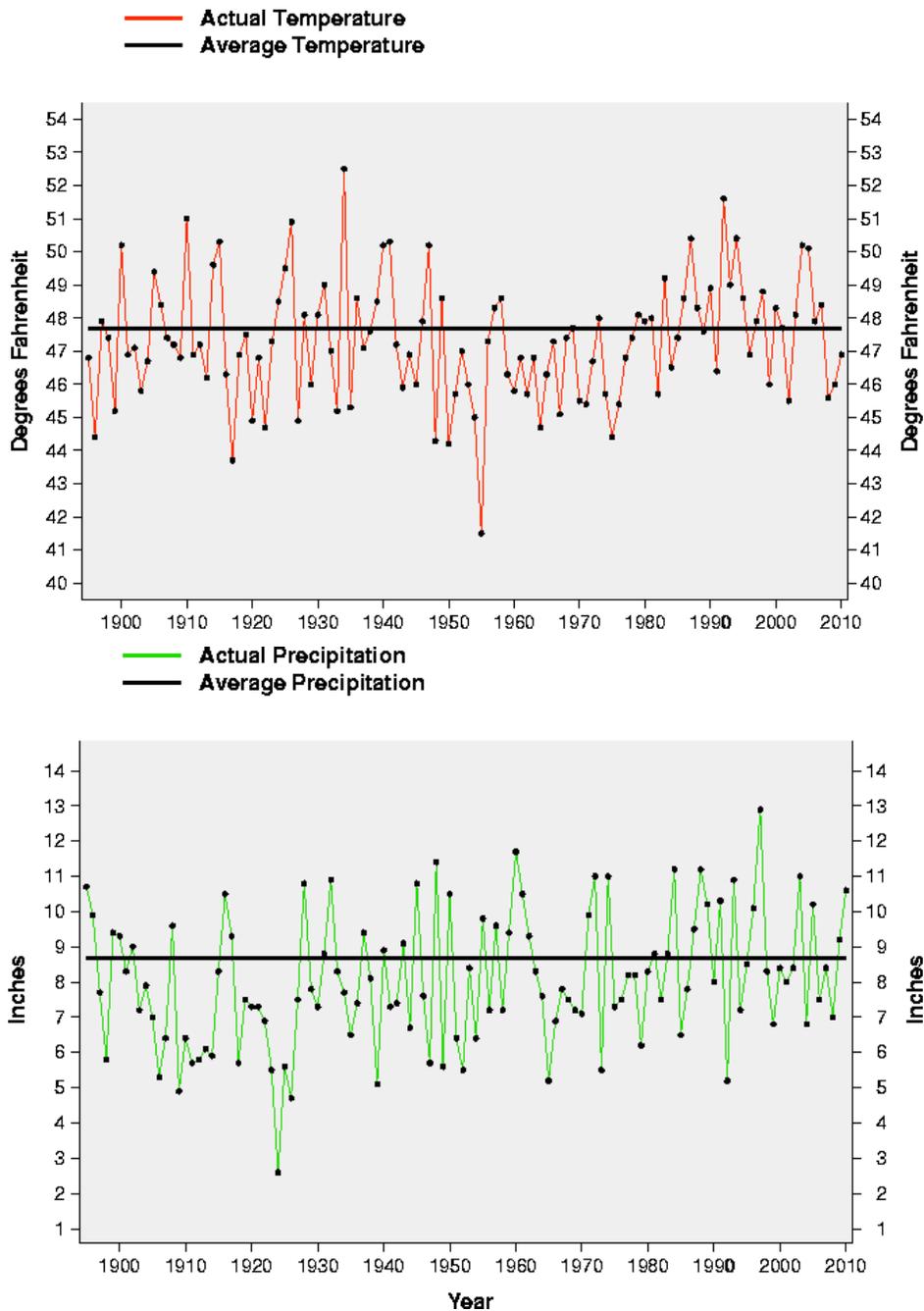
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June 4. Another notable event occurred on June 9, with an extremely heavy rain event occurring in Marysville. A CoCoRaHS observer reported an impressive 1.58" in one hour! There was finally a slight respite in the wet weather for the whole state on June 12 & 13. The cooler weather was persistent, however, with June 16 recording a new record low maximum temperature in Spokane (52°F) and Pullman (51°F) and June 19 recording a new record low maximum temperature in Olympia (57°F) and Seattle (57°F). Spokane through northeastern WA got drenched on June 20 (Figure 1), but the state finally dried out on June 22. The remainder of the month also saw much drier conditions and temperatures that were closer to normal or even above normal in some locations.

A brief note about May: we neglected to mention in the last newsletter that Anacortes had its all-time wettest May on record this year with 5.13 inches. Records began in 1894, and the previous wet May took place that year with 4.52".

Spring Statistics

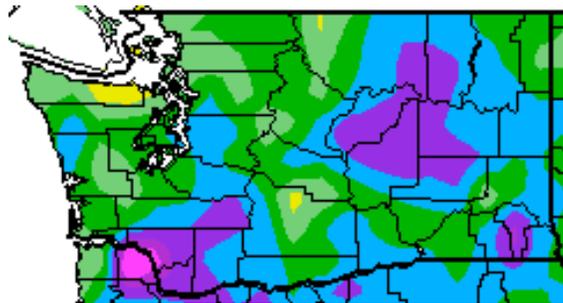
How did this spring shape up compared to others? The average March-April-May temperature averaged over the state of WA (49.6°F) was cooler than the 1971-2000 normal temperature (47.7°F) by 1.9°F. The top figure below shows the state-averaged spring average temperature from 1895 through the present from the National Climatic Data Center (NCDC). Spring precipitation averaged at 10.59 inches for the state, which is 1.89 inches above the 1971-2000 normal statewide averaged precipitation amount (8.70"). The bottom figure below shows the state-averaged spring precipitation since 1895 from NCDC. 2010 spring was both wetter and warmer than last year's spring.



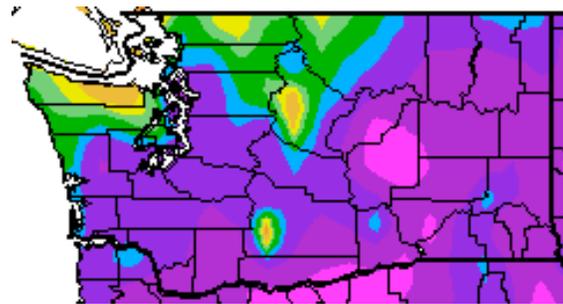
Climate Summary

June's cooler than normal temperatures are reminiscent of the pattern seen during the month of May. Most of the state had temperatures that were between 1 and 4°F below normal as illustrated by the High Plains Regional Climate Center (HPRCC) map below. Small parts of WA State were closer to normal such as Quillayute, Vancouver, and Yakima (see Table 1).

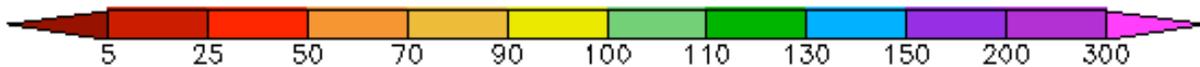
Also consistent with conditions seen in May, June was wetter than normal for the entire state. The HPRCC map below shows that the southern two thirds of the state was especially wet with precipitation at least 150% of normal for June. The Northern Cascades and the Olympic Peninsula has closer to normal precipitation but were still on the wet side.



Temperature (°F)



Precipitation (%)



*(June temperature (°F) departure from normal (top) and June precipitation % of normal (bottom).
Source: High Plains Regional Climate Center (<http://www.hprcc.unl.edu>).*

	Mean Temperature (°F)			Precipitation (inches)		
	Average	Normal	Departure from Normal	Total	Normal	% of Normal
Western WA						
Olympia	56.9	58.2	-1.3	3.34	1.78	188
Seattle	59.2	60.6	-1.4	2.34	1.68	139
Sea-Tac	58.3	60.7	-2.4	2.49	1.49	167
Quillayute	54.2	54.9	-0.7	4.30	3.50	123
Vancouver	60.4	60.7	-0.3	4.21	1.73	243
Eastern WA						
Spokane	59.1	61.6	-2.5	2.56	1.18	217
Wenatchee	63.7	66.4	-2.7	1.08	0.64	169
Omak	61.9	64.6	-2.7	1.87	1.22	153
Ephrata	64.2	67.7	-3.5	1.84	0.51	361
Pullman	56.9	59.2	-2.3	2.62	1.30	202
Pasco	65.8	68.5	-2.7	1.15	0.40	288
Yakima	62.7	62.9	-0.2	1.07	0.62	173

Table 1 - June Climate Summaries from around Washington from NWS (climate normal baseline is 1971-2000 except for Seattle WFO that has a baseline of 1986-2000).

The Cool and Damp Weather of May-June 2010: Winners and Losers

A message from your State Climatologist

Many sunlight-deprived residents of Washington State are complaining about the recent weather. Those that live on the west side of the Cascade Mountains are accustomed to cloudy and wet winters, and a slow warming as the days get longer during the spring. There is a basis to the adage that summer starts here after the 4th of July. That being said, the spring of 2010 has been highly unusual in its virtually uninterrupted series of cloudy, cool and often wet days. This short article points out some of the benefits, as well as the disadvantages, of our run of relatively foul weather.

Lets start with the downsides. An obvious one is lack of heat for gardeners and farmers. It's one thing for westsiders to wonder how much longer their spindly tomato plants will continue to sulk, but it is a serious matter for farms east of the Cascades. According to a recent issue of the Weekly Weather and Crop Bulletin, field crops are up to four weeks behind schedule, and cut hay has been damaged by the relatively frequent rains. These rains have also compromised the quality of sweet cherries harvested recently. Strawberries have been prone to mold and their harvest has been delayed.

Less appreciated are the impacts our weather has on the marine ecosystem along the coast of the Pacific Northwest. Generally, during the spring, the winds switch from blowing predominantly from the southwest to out of the northwest. This wind shift heralds the upwelling of cold, nutrient-rich water from depth along the coast, which fertilizes the plankton forming the base of the food web. The unusual weather of the last 2-3 months has included less frequent/weaker than normal northwesterly winds from northern California to Vancouver Island resulting in suppressed upwelling. Delays in the usual seasonal shift in the winds can have serious repercussions from plankton to fish to top predators such as seabirds and marine mammals as it reduces the amount of adequate food that each species can find. There is evidence that some upwelling has occurred recently, so hopefully, conditions here are in the process of turning around.

There is also some good news - and it is not restricted to owners of tanning salons. All that extra water falling out of the sky has led to some real benefits. The enhanced water supply has meant more hydropower generation, which may be particularly relevant in light of the low snowpack of last winter. According to the National Resource Conservation Service (NRCS), water storage for the state is now at or above average. The additional water eases concerns about meeting agricultural and other needs during the upcoming summer. Cooler stream temperatures and high streamflow in May and June is beneficial for juvenile salmon that leave the streams for the ocean, and has helped the adult salmon of species that are already returning to the streams. The wet weather has also benefited pastures and some other crops. State forests presently have fuel moisture levels that are considerably higher than the same time last year, which tends to delay the onset of the fire season. Finally, unless the summer is unusually hot and dry (which is possible, as hard as that might be to believe) the groundwater

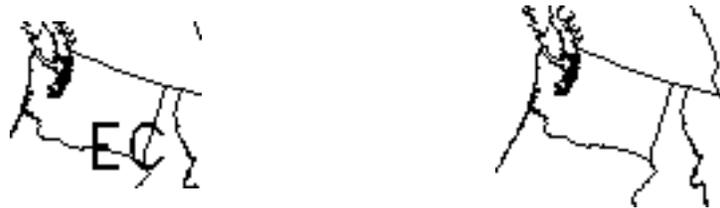
discharge to streams should be reasonably healthy, with positive implications for the freshwater habitat of salmon and other fish.

In closing, the residents of Washington State are encouraged to embrace their inner slug. Cool and cloudy seems a reasonable alternative to the sweltering heat being experienced in the desert southwest and other regions of the country. Summer is approaching and there should be plenty of fine weather. Enjoy it while you can! La Nina is developing (see below)...but that is a topic for a later newsletter.

Climate Outlook

The El Niño conditions have completely dissipated and neutral ENSO conditions now exist in the tropical Pacific, according to the Climate Prediction Center (CPC) (<http://www.cpc.noaa.gov/products/precip/CWlink/MJO/enso.shtml>). While it initially looked like the neutral conditions would persist through the boreal winter, models are now in consensus that a La Niña will develop by the winter (http://iri.columbia.edu/climate/ENSO/currentinfo/SST_table.html).

In the meantime, the CPC seasonal outlooks are not strongly indicating conditions to one extreme or the other. The predictive accuracy of the forecast is low for this time of year, and is perhaps why the odds are even for the seasonal predictions. The late summer outlooks (July-August-September [JAS] and August-September-October [ASO]) both have equal chances of above, equal to, or below normal temperatures and precipitation for the entire state. Remember that when the odds are even, or there is lack of guidance, there is still a 33% chance each for above average, normal, or below average conditions.



(July-August-September and August-September-October outlook for temperature (left) and precipitation (right) from the CPC).

CoCoRaHS

Thank you, CoCoRaHS observers, for continuing to measure precipitation every day during what would typically be our dry period. Your dedication has shown just how much precipitation has fallen during the past two wet months. Remember, however, that it's just as important to report when you don't receive any precipitation at all. We're always looking for new volunteers, so help spread the word if you can. You can sign up at www.cocorahs.org, and you may even qualify for a free rain gauge if you're in an under-served area. Contact wash.cocorahs@gmail.com to find out if you qualify.