



Wyoming Drought Information



**Rangeland Precipitation---Water Supply---Mountain Snowpack
3 Key Ingredients Defining Drought in Wyoming**

Updated October 30, 2009

...All of Wyoming continues to be hydrologic drought-free since late June...

...Normal to **above normal precipitation totals for rangelands/basins across almost all of Wyoming for water year 2009 (October 2008 - September 2009)...**

...Near normal to **above normal mountain snowpack averages across Wyoming for water year 2009...**

...Above normal streamflows during the Spring runoff--with higher than normal flows lasting well into summer 2009....

...Reservoirs across Wyoming continue to maintain and/or increase “carryover” storages during water year 2009....

.Synopsis...

3 key ingredients define the overall drought picture for Wyoming: **Rangeland Precipitation---Water Supply--Mountain Snowpack**

Rangeland/Watershed Precipitation---

Precipitation across Wyoming’s pasturelands/rangelands during the water year 2009 (October 2008 - September 2009) was normal to above normal for almost all of Wyoming. Precipitation across the major river basins across Wyoming was also near normal to above normal. Specifically, precipitation averages across Wyoming’s major watersheds varied from 94 to 118 percent of average during water year 2009.

Water Supply---

Reservoir storages at the end of water year 2009 at a majority of the major reservoirs continue to be above water year 2008 averages. Most importantly, storages at the big reservoirs along the North Platte River have continued to see sharp gains during water year 2009. Seminoe and Pathfinder reservoirs ended up at 60 to 70 percent of capacity by the end of the water year.

Streamflows across Wyoming during the runoff and even into the late summer months were above to well above normal. What is most impressive, was not just the amount of discharge in Wyoming’s streams and rivers, but how long the above average streamflows lasted. For instance, the Wind River had above normal flows that began in late May--and lasted into late July! This trend was seen in many streams and rivers across Wyoming in 2009.

Mountain Snowpack---

Snow water equivalents (SWEs) for water year 2009 were near normal to above normal across almost all major watersheds across the state.

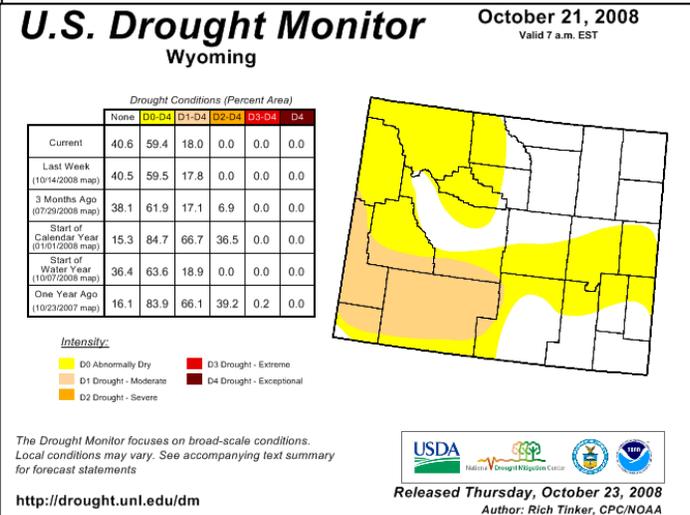
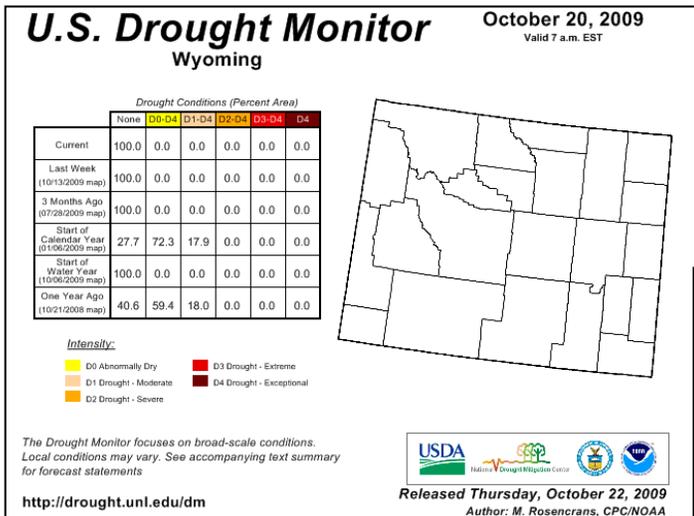
Overall Drought Picture// and What Does the Future Hold?

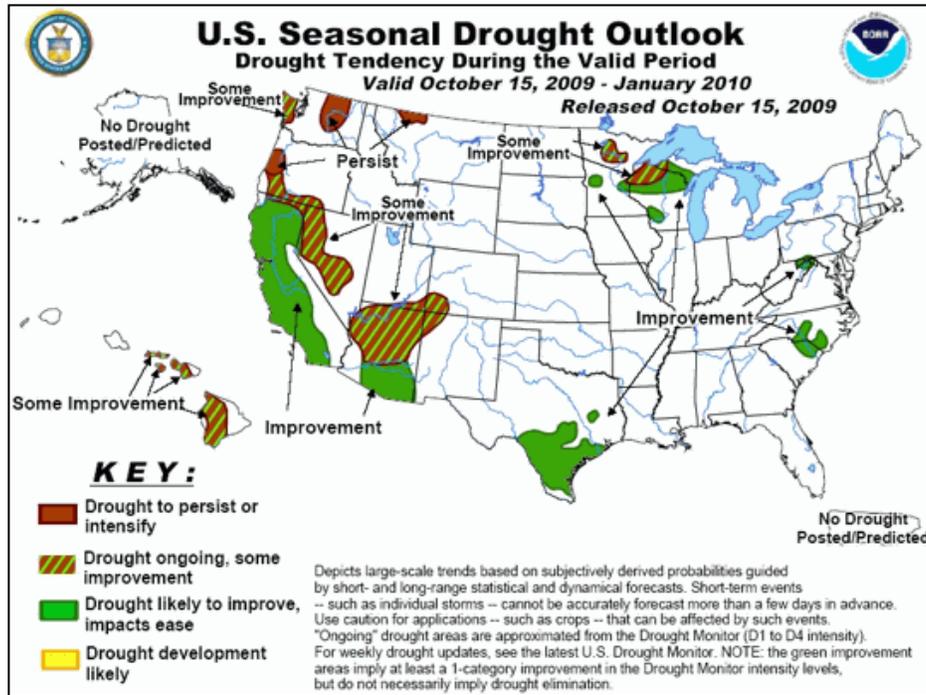
Wyoming is doing very well in keeping hydrologic drought conditions at bay. A cool and wet summer in 2009 at many rangeland locations across Wyoming enabled reservoirs to retain and/or to gain more “carryover” storage by the end of the water year--as there was less demand put upon surface water resources by irrigation and farming in 2009. A cool and wet summer also allowed further recharge in soil profiles and/or in ground water aquifers across Wyoming’s watersheds. This points to the reason why Wyoming’s streamflows were not only above average during the normal runoff period---but the higher than normal discharges continued well into the summer.

Wyoming’s mountain snowpack averages were near normal to above average for the second straight water year. However, late fall and early winter snowpack averages across Wyoming during the past 2 water years have continued to be below average. It hoped that with the soil moisture “recharge” that has continued into water year 2009 (and even into early water year 2010), any late fall/early winter snowpack will be retained and not lost to now “wet” antecedent soil conditions.

Bottom line is that current precipitation, water supply, and streamflow trends are definitely keeping the momentum going with keeping another long-term hydrologic drought away from Wyoming. Wyoming is the 5th driest state in the country--so drought is always ‘knocking-on’ on Wyoming’s backdoor.

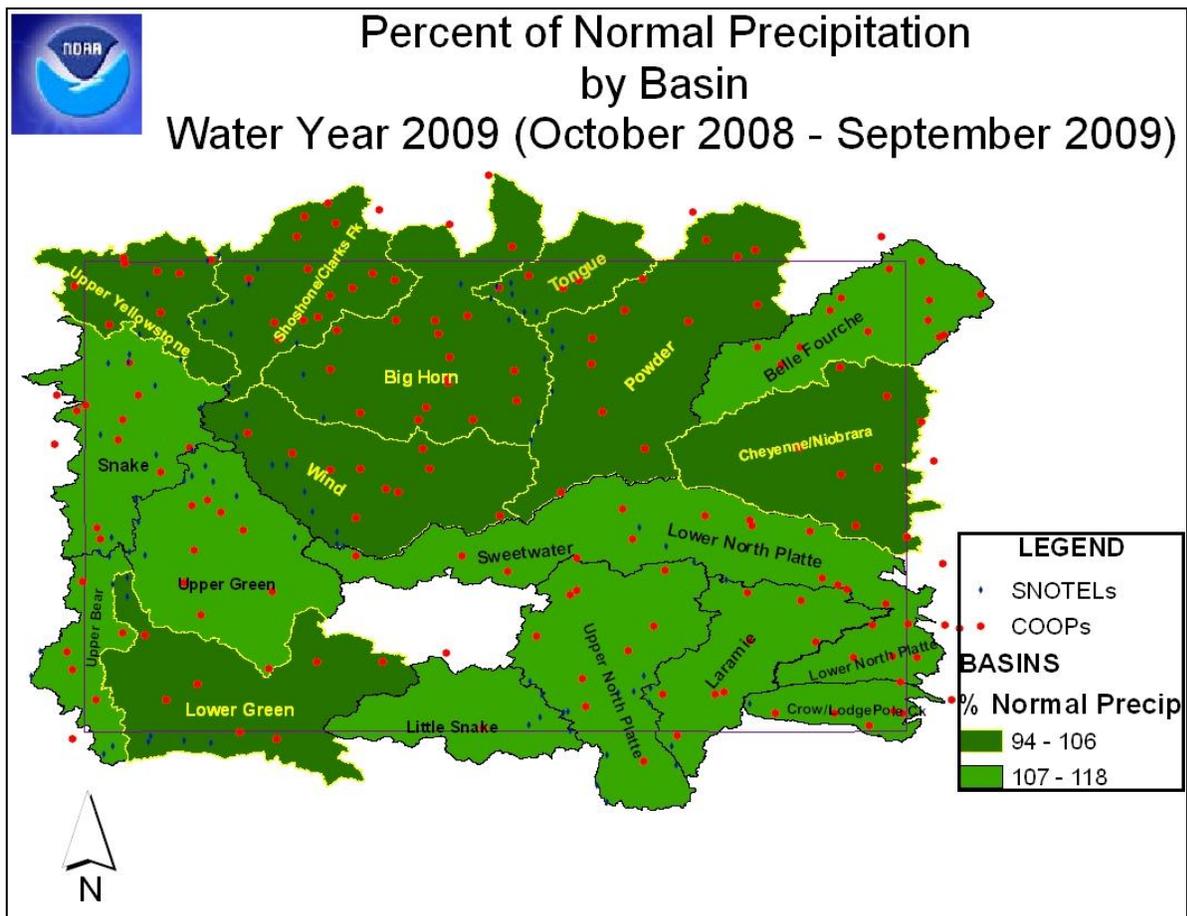
Wyoming Drought Monitor (Current and 1 year ago) Drought Outlook





.Rangeland/Basin Precipitation...

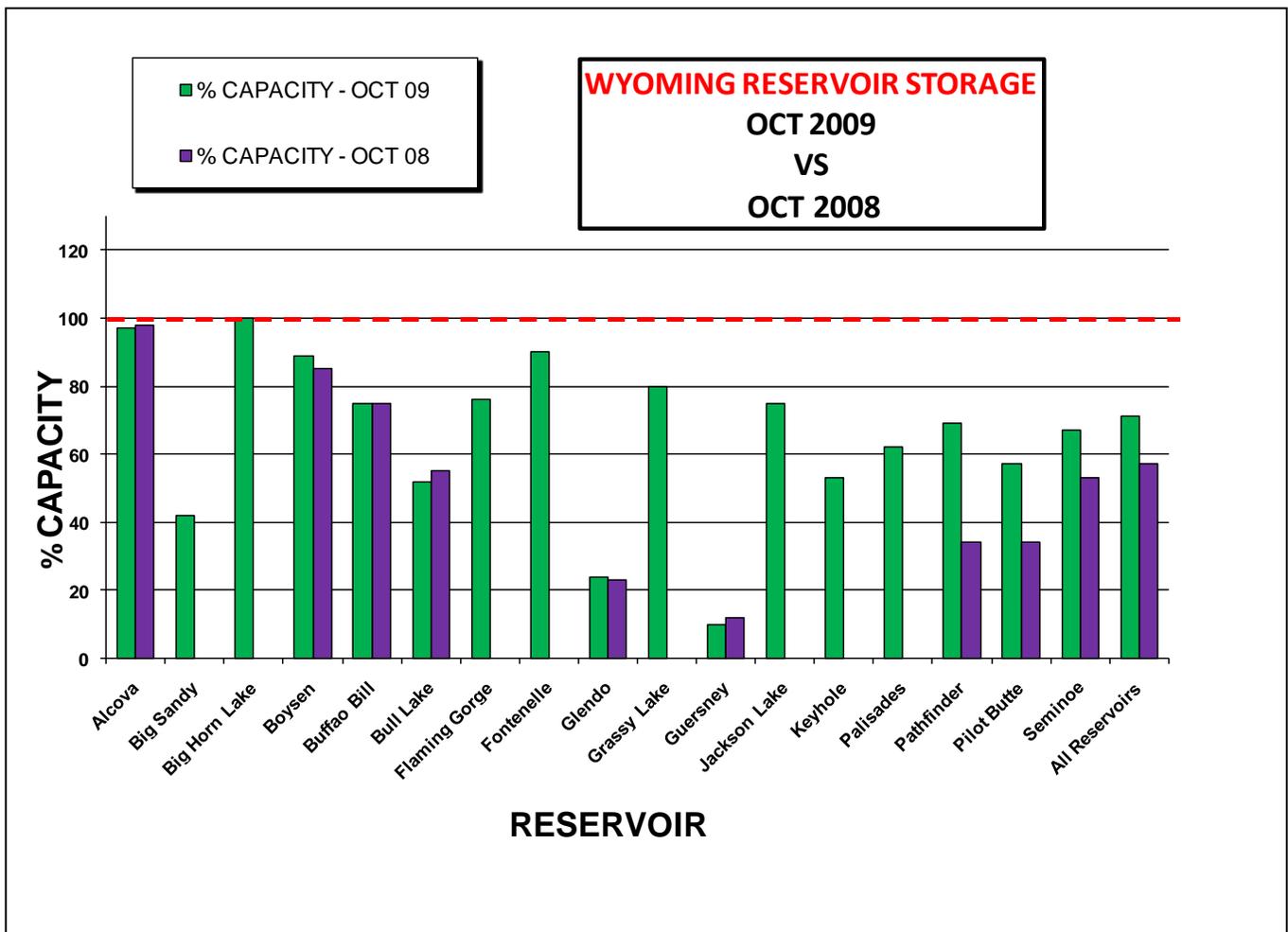
>> Basins--Current Water Year 2009 (October 2008 - September 2009)



>>Select Rangeland Locations for Water Year 2009

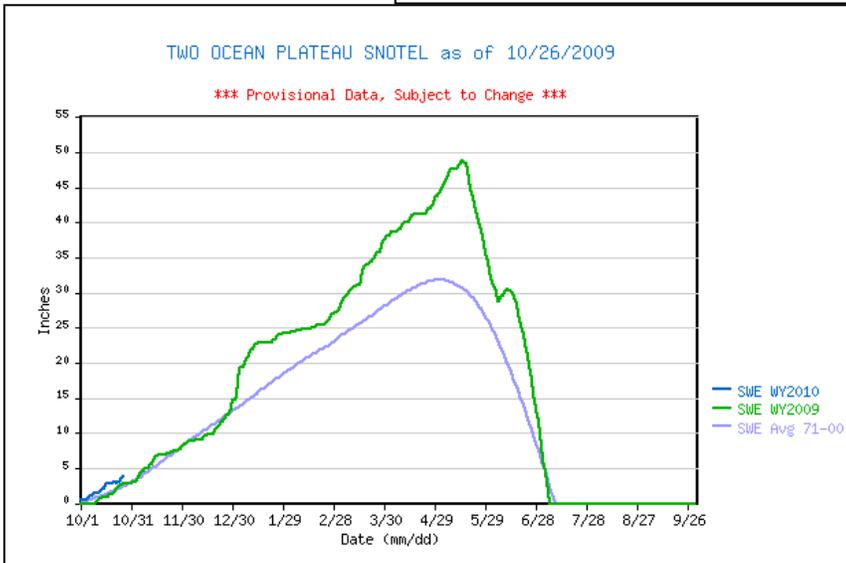
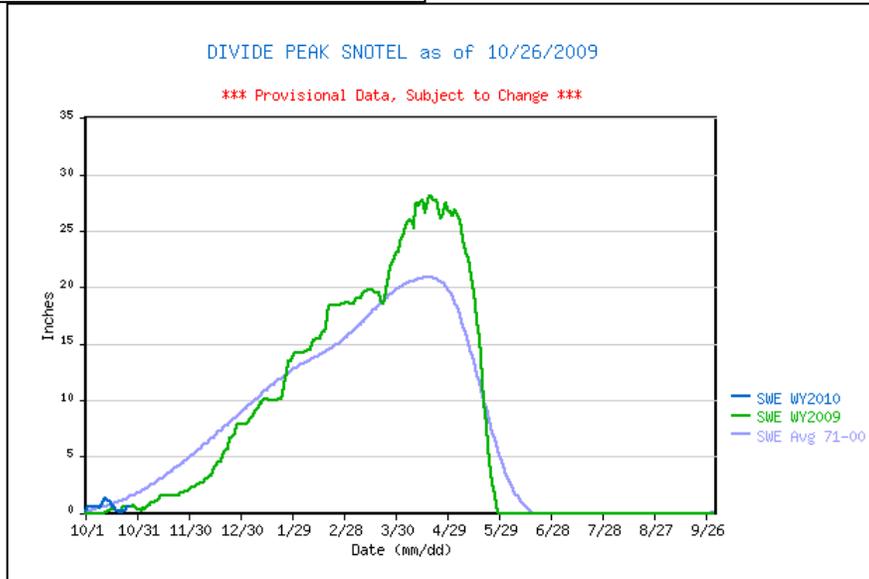
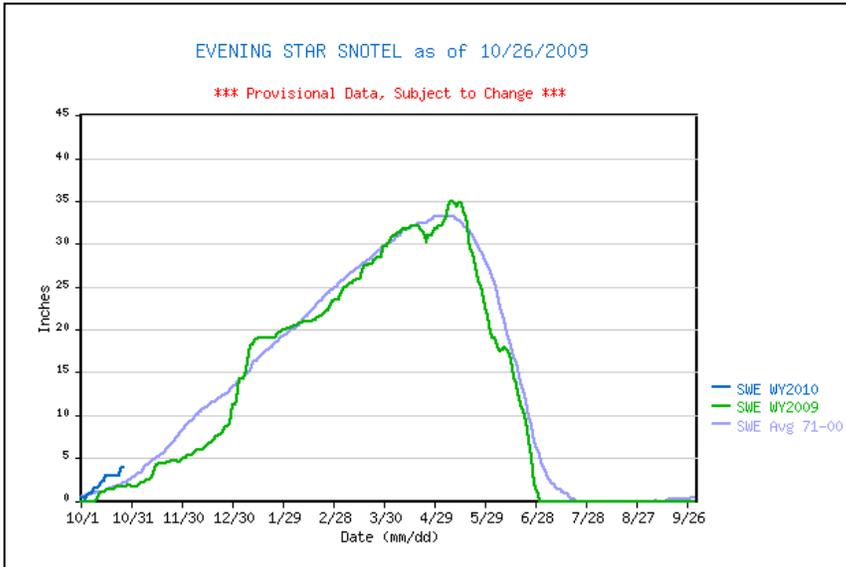
	OCT 08 - SEP 09 PRECIP	OCT 08 - SEP 09 AVERAGE	% AVERAGE
SHERIDAN	11.96	14.77	81
CHEYENNE	16.34	15.45	106
DOUGLAS	15.28	11.46	133
LARAMIE	11.06	11.37	97
RAWLINS	14.23	9.74	146
CASPER	15.80	13.03	116
LANDER	15.96	13.42	118
RIVERTON	10.58	8.68	122
ROCK SPRINGS	7.76	9.36	83
WORLAND	7.72	8.03	96
BUFFALO	13.05	13.44	97
PINEDALE	13.10	11.19	117
GILLETTE	16.67	17.14	97
EVANSTON	11.02	11.53	96

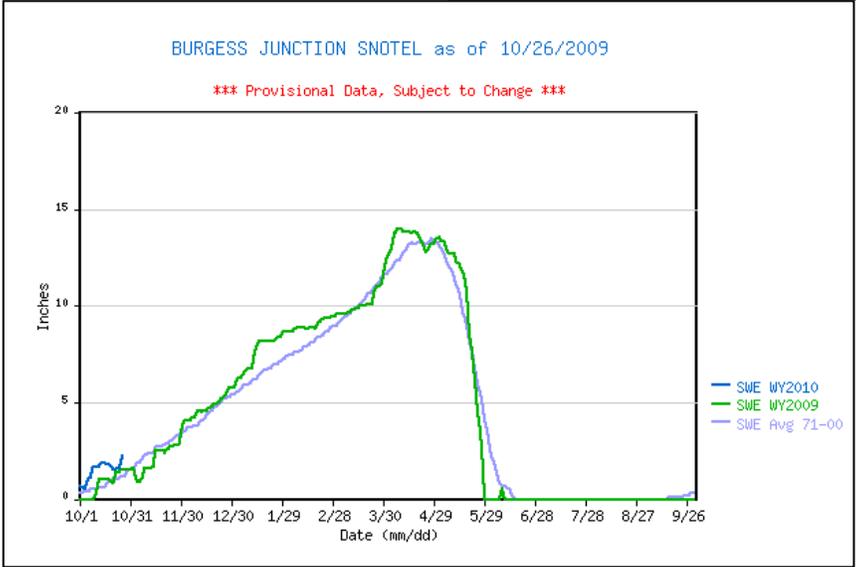
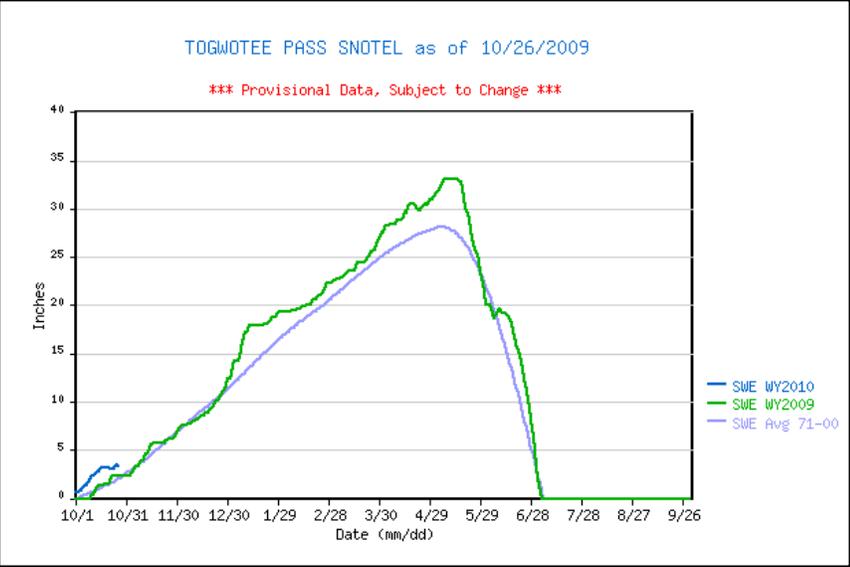
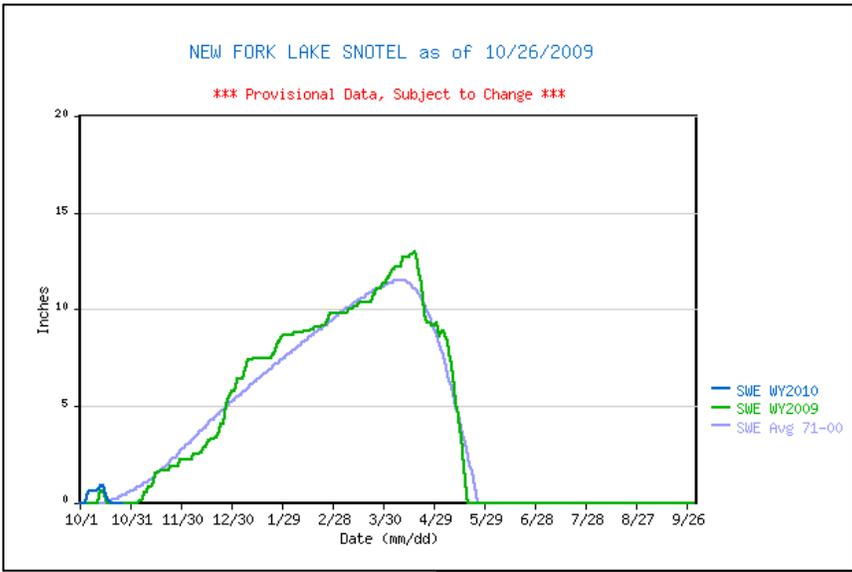
.Wyoming Water Supply...

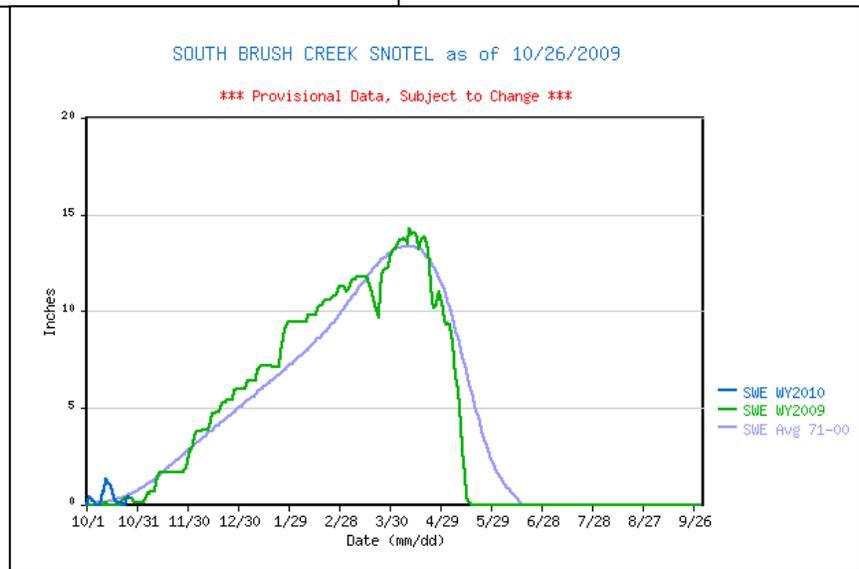
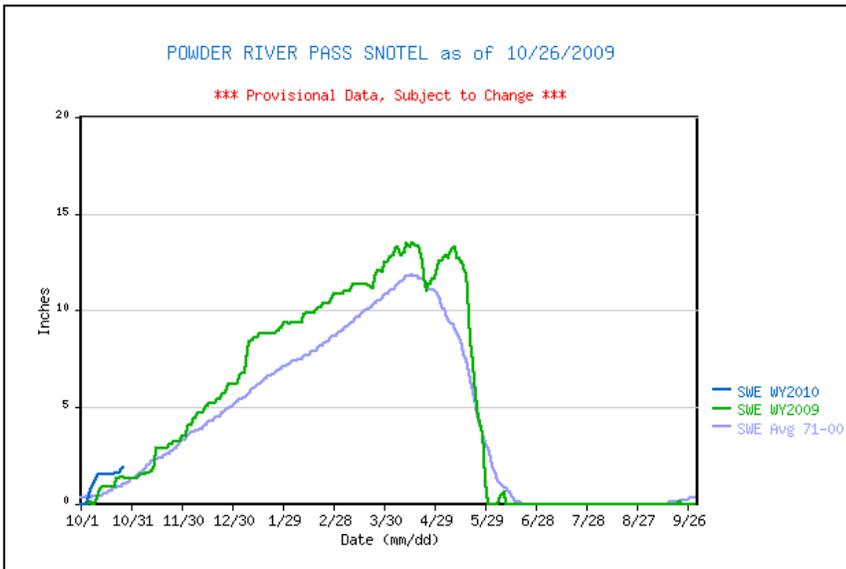


.Wyoming Mountain Snowpack...

>>Wyoming SWE Trends for Water Year 2009...





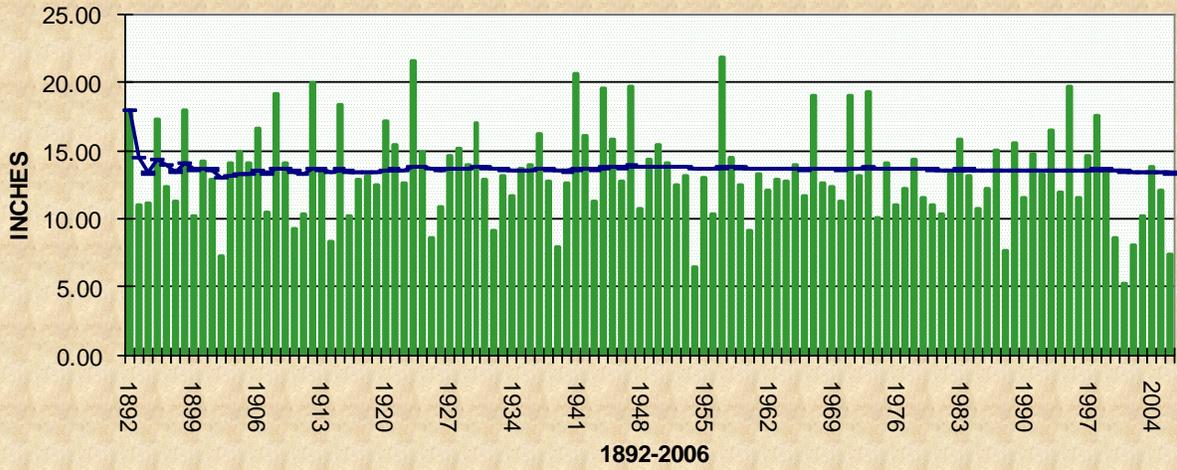


Miscellaneous Drought Graphics...

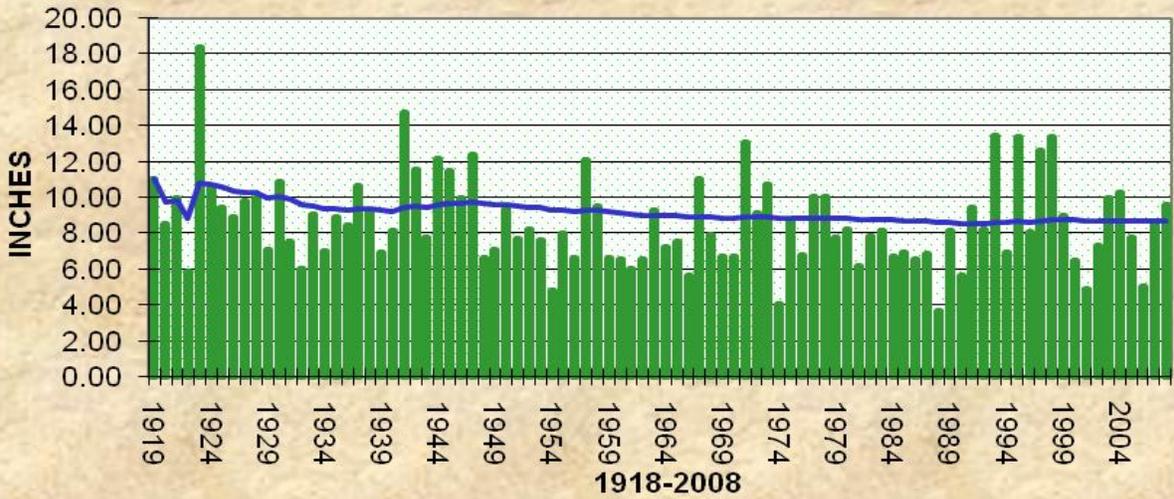
>>Long Range Precipitation Trends...

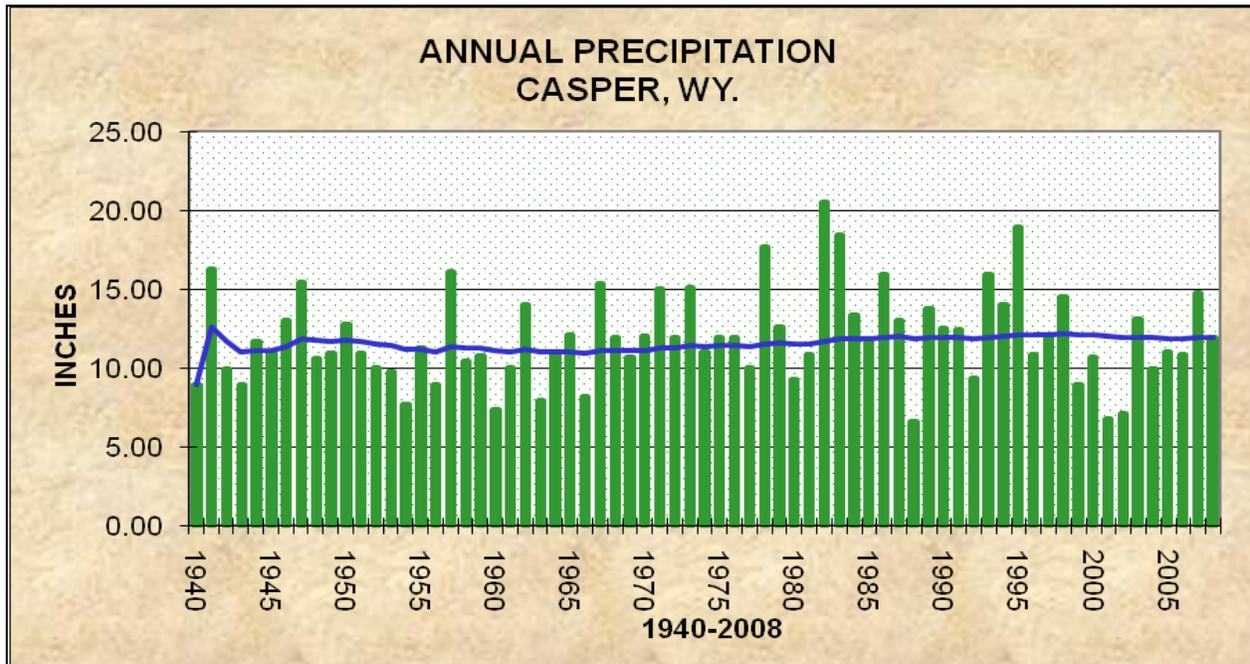
Lander's precipitation records go back to 1892—Riverton's precipitation records go back to 1919—and Casper's precipitation records go back to 1940.

ANNUAL PRECIPITATION AT HUNT FIELD LANDER, WY.



ANNUAL PRECIPITATION RIVERTON, WY.

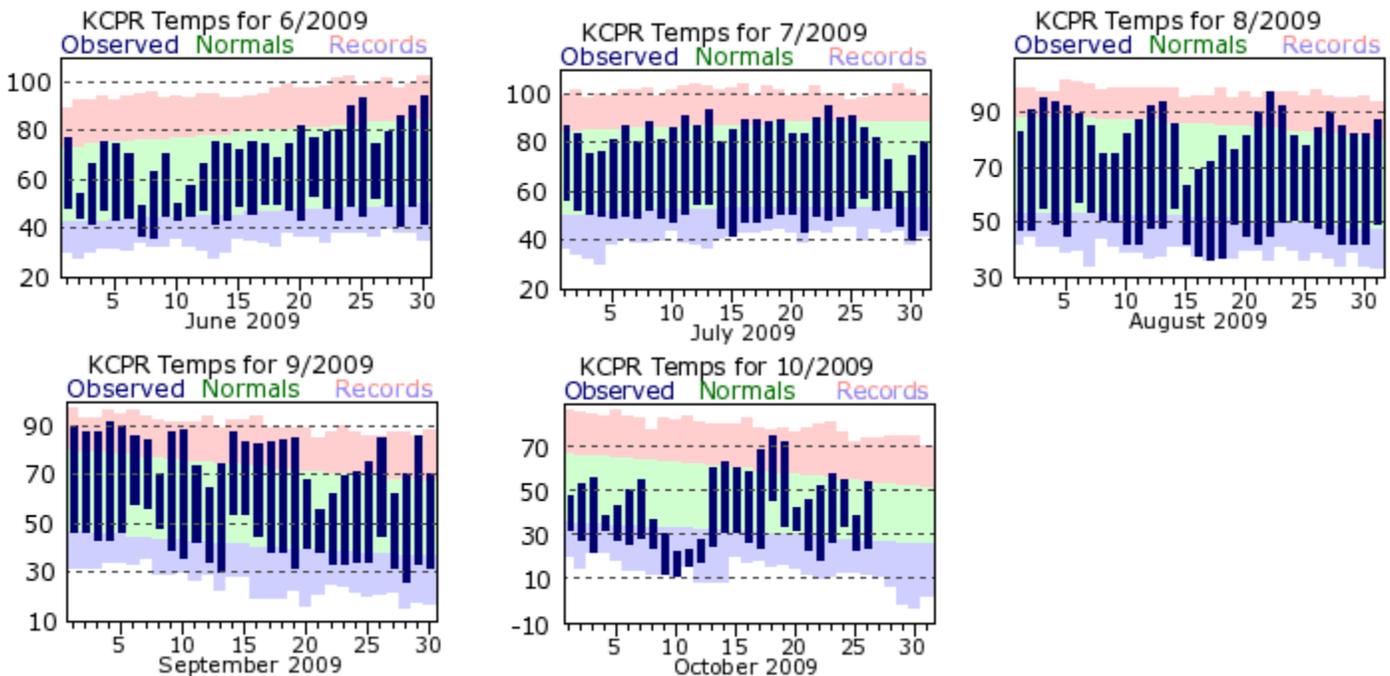




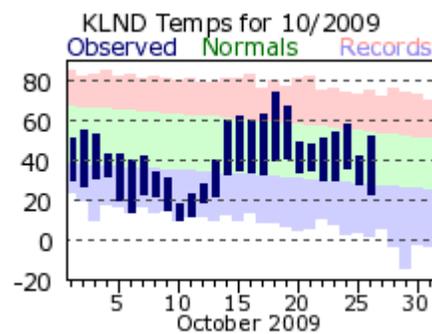
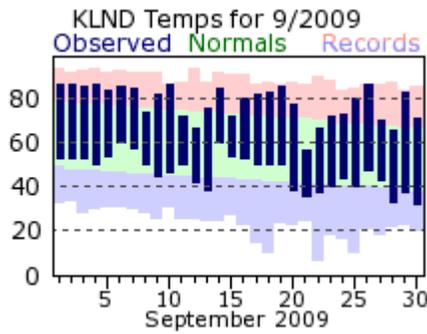
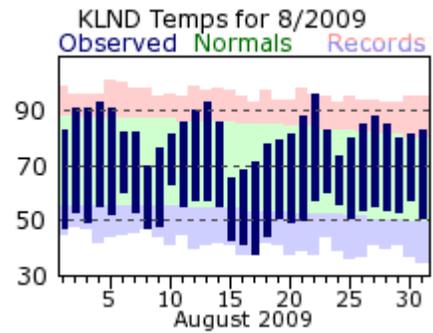
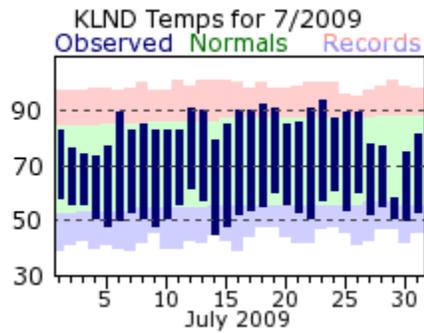
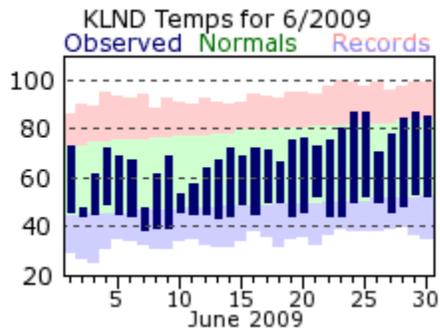
>> **Short-term Temperature Trends...**

Near normal to **below** normal temperatures for most the summer and into early fall; **above** normal temperatures during September.

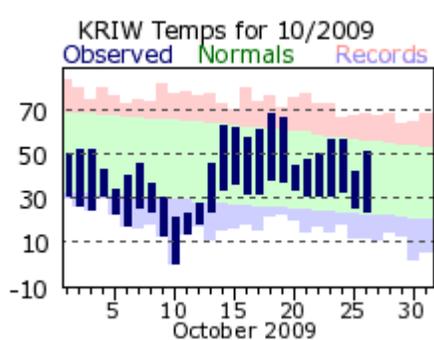
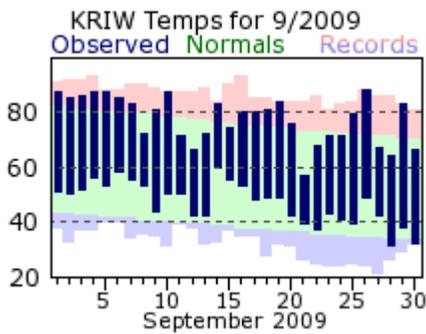
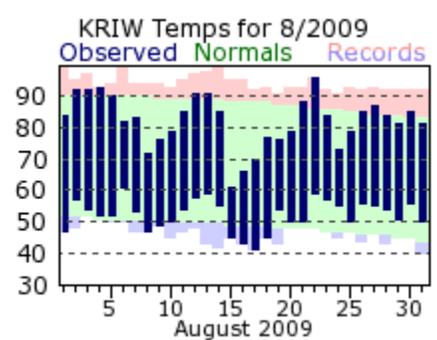
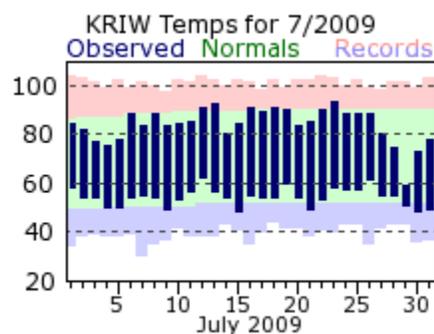
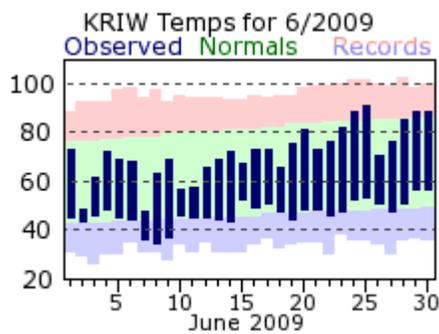
Casper



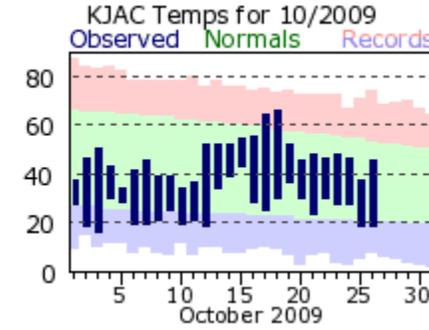
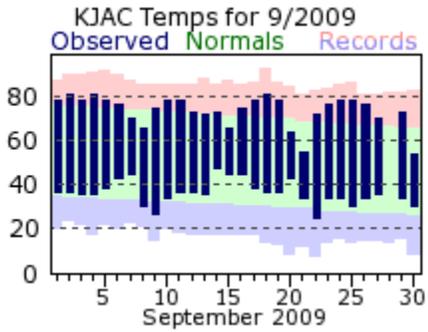
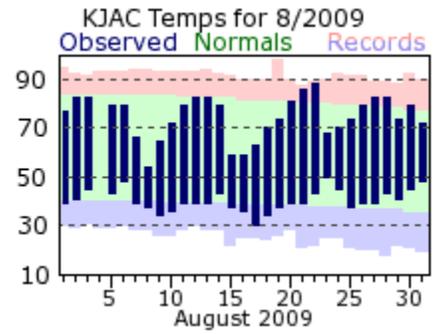
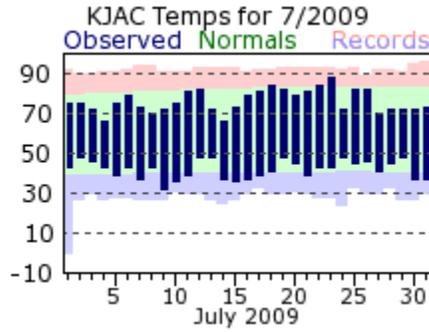
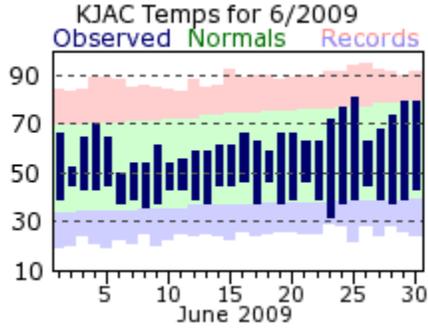
Lander



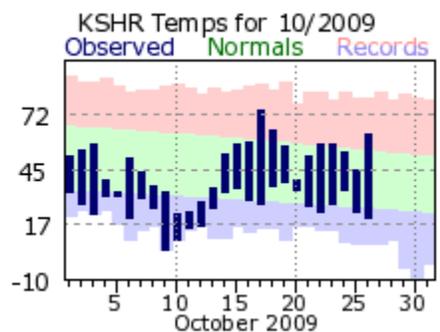
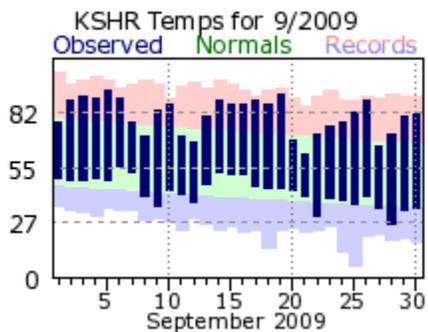
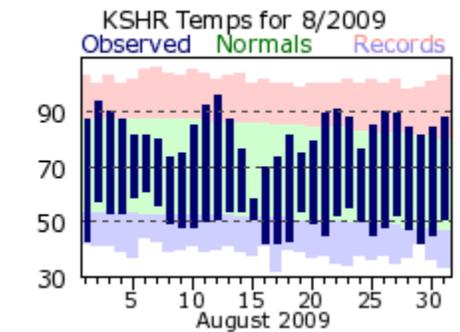
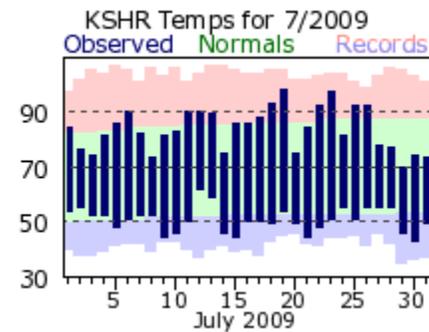
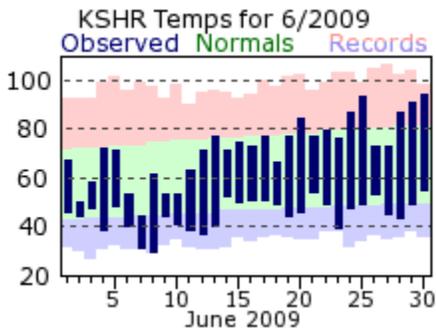
Riverton



Jackson

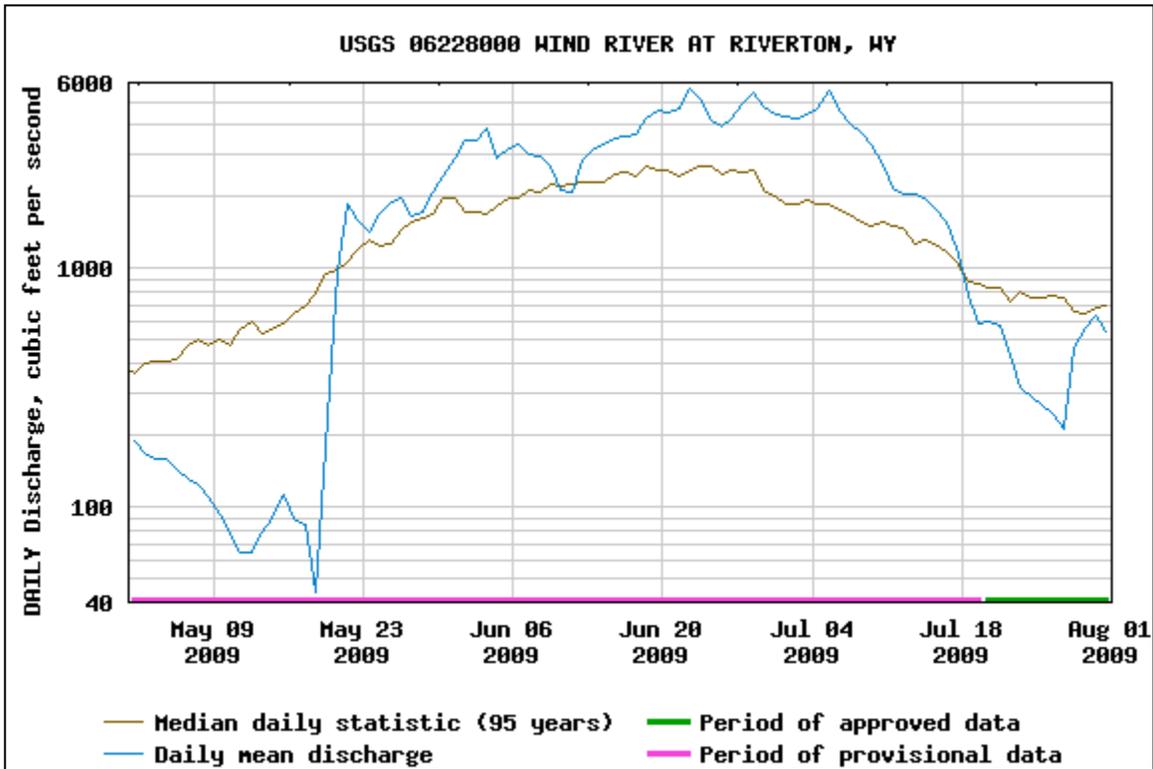


Sheridan

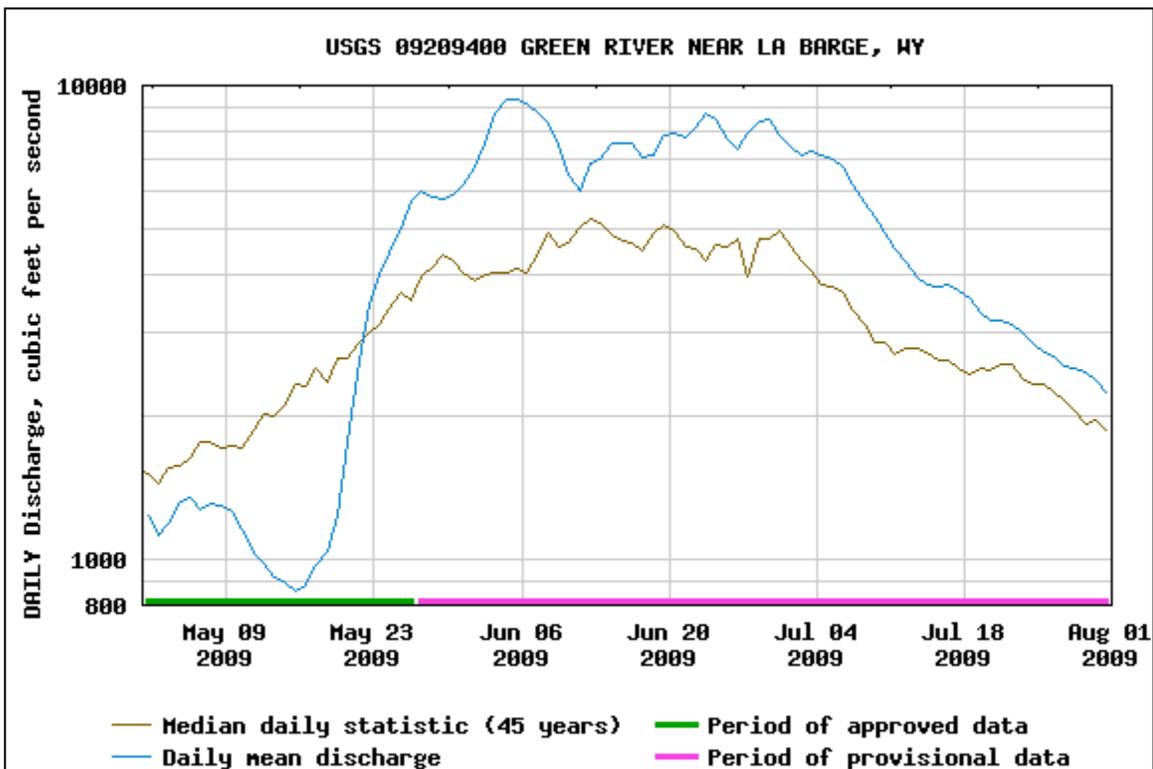


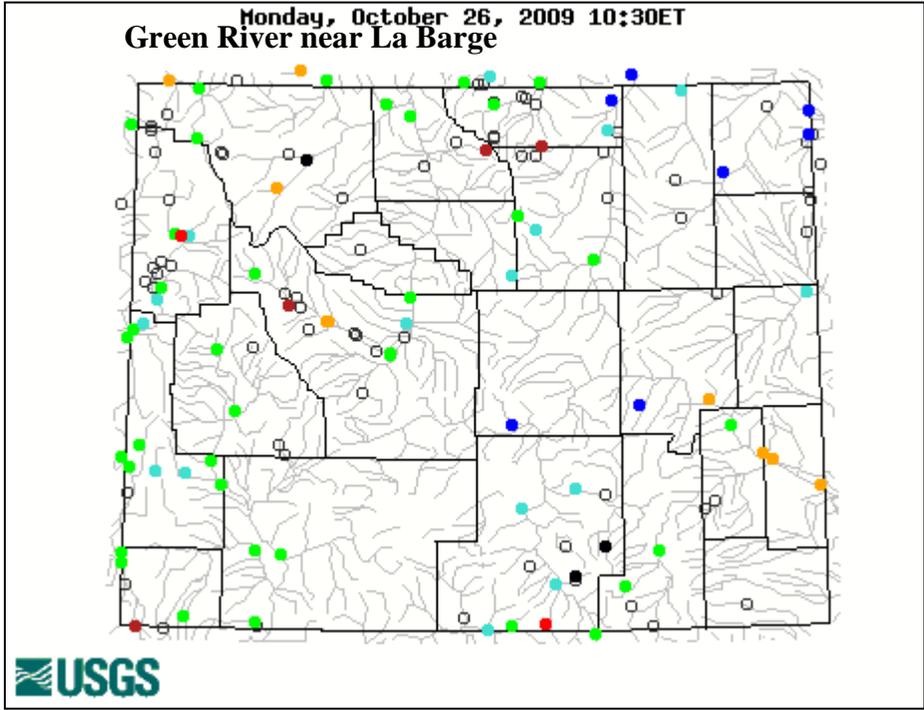
>>River and Streamflow Conditions...

Above normal streamflows in Wyoming--lasting well into summer for many streams Across Wyoming.

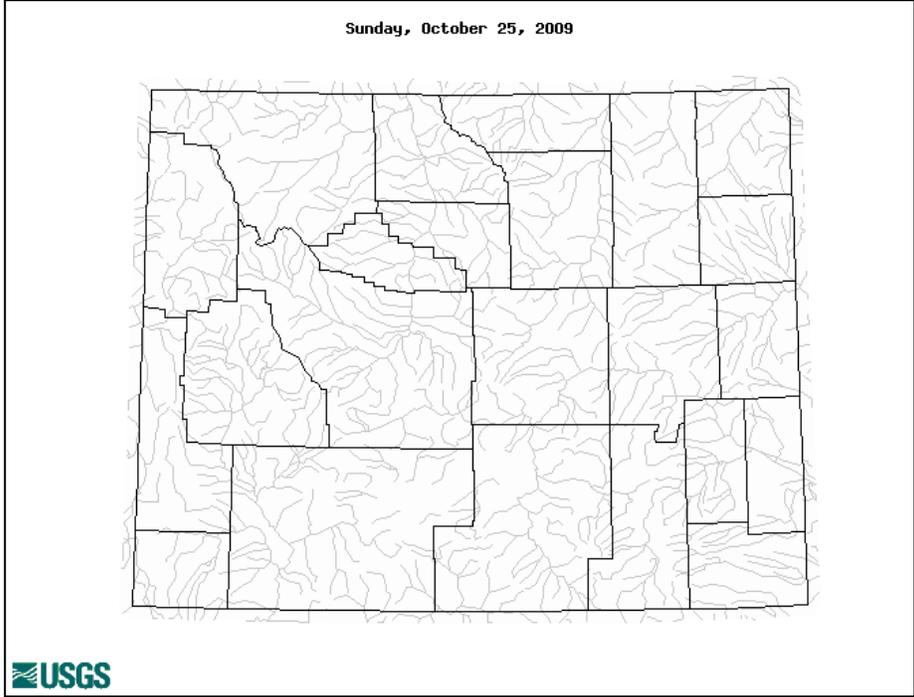


Wind River at Riverton





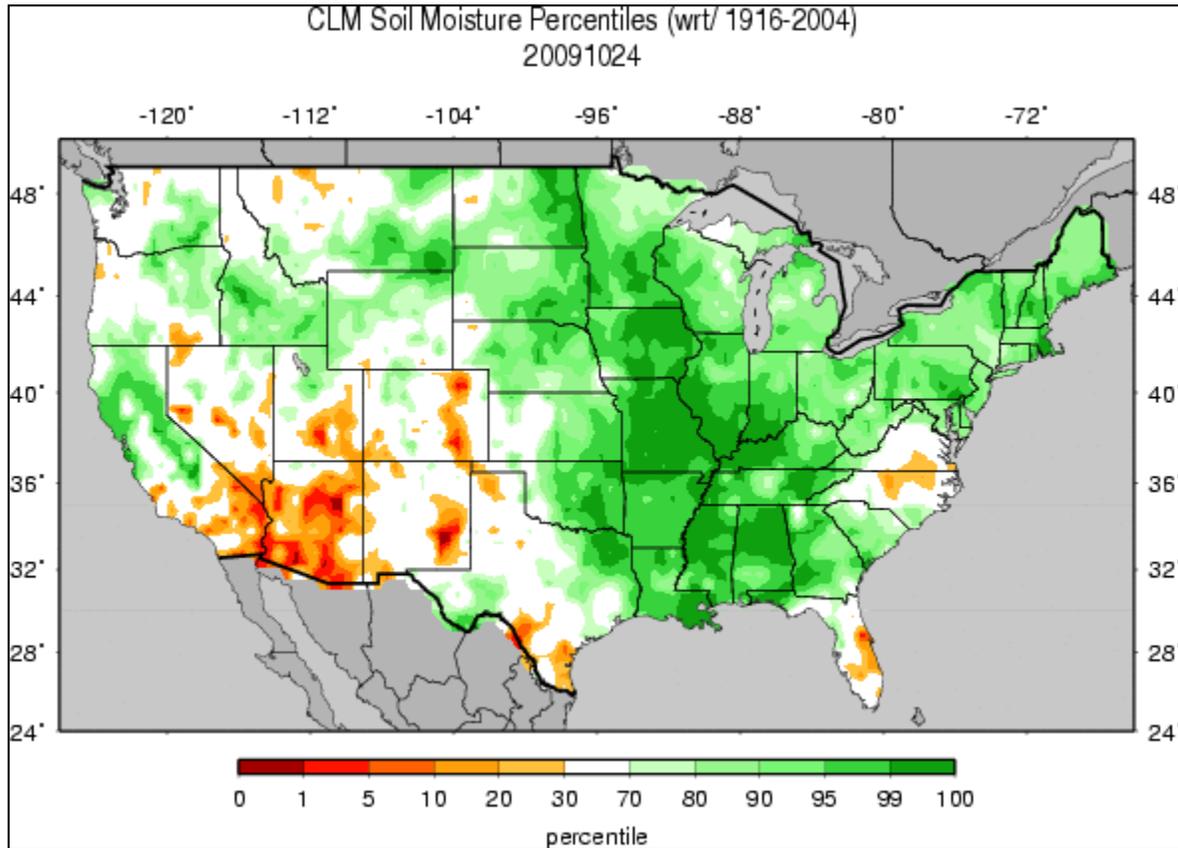
Map of below-normal streamflow conditions for Wyoming.



Explanation - Percentile classes

Low	<=5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

>>Soil Moisture Conditions...

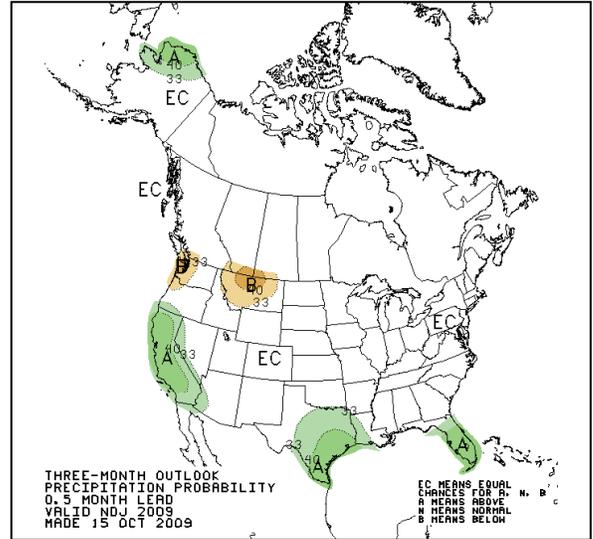
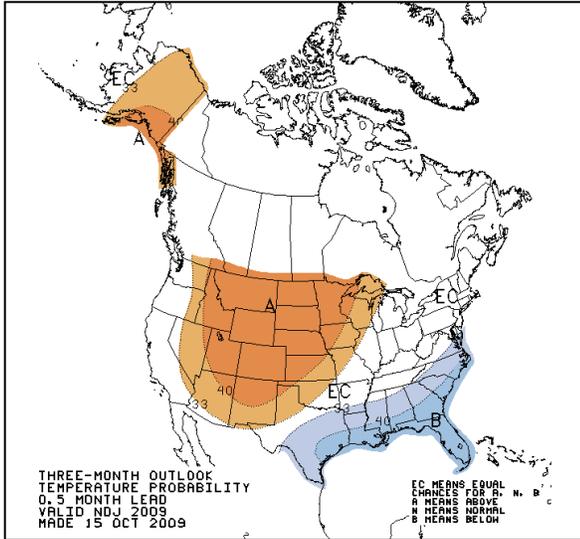


>>Precipitation/Temperature Outlooks...

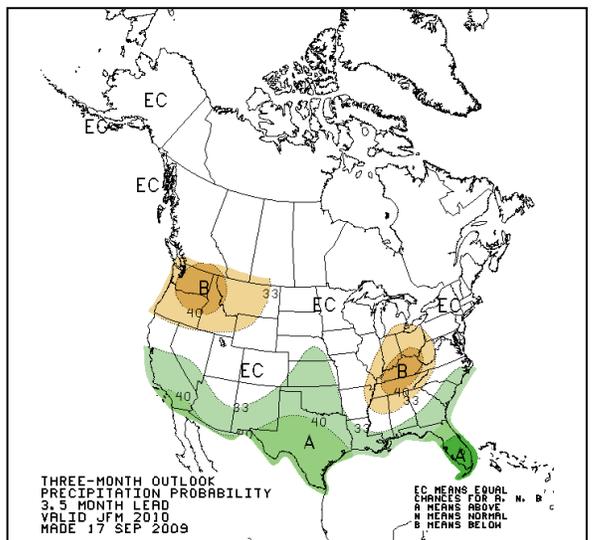
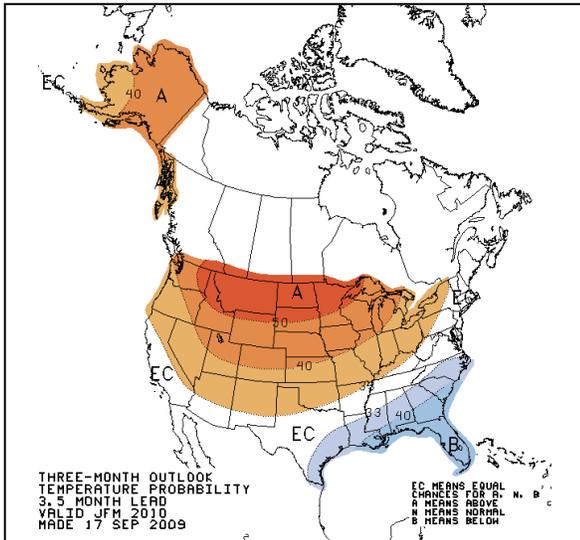
NOAA's climate prediction center (CPC) is predicting that Wyoming will have **above** to **well above** normal temperatures for the remainder of the fall and for the entire upcoming winter. CPC is also predicting near normal precipitation totals for the remainder of the fall across Wyoming. During the upcoming winter, CPC believes that almost all of Wyoming is expected to have near normal precipitation chances--except for northwestern Wyoming, where **below** normal precipitation totals are expected.

Interestingly, the Farmer's Almanac is predicting a "**Very Cold** and **Snowy**" winter across Wyoming.

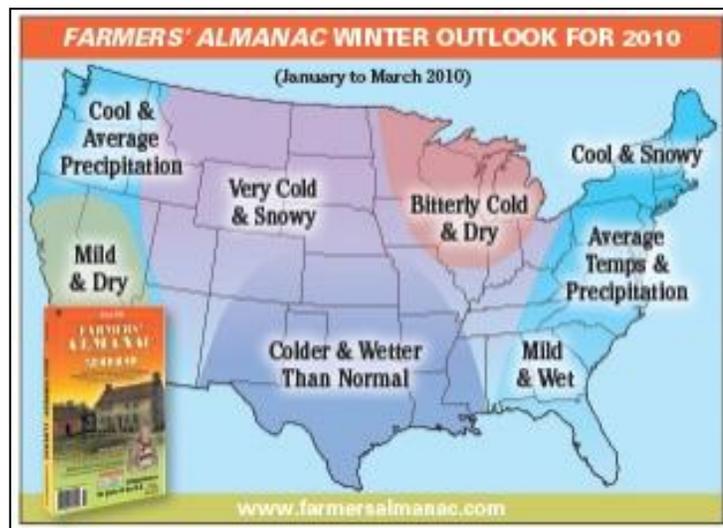
November - December



January - March 2010



Farmer's Almanac (January - March 2010)



.Questions or comments...

If you have any questions or comments about this drought information, please contact:

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Hydrologist
NOAA/National Weather Service
Riverton, WY
307-857-3898

James.Fahey@noaa.gov

.Related web sites...

Wyoming Drought Site...

www.wrds.uwyo.edu/wrds/wsc/df

USGS Wyoming Drought Watch...

www.wy.water.usgs.gov/projects/drought

U.S. Drought Monitor...

www.drought.unl.edu/dm/monitor.html

NOAA Drought Page...

www.drought.noaa.gov

Western Regional Climate Center...

www.wrcc.dri.edu

NOAA/NWS Climate Page...

www.weather.gov/climate/index/php?wfo=riw

Wyoming River Information...

NWS - www.crh.noaa.gov/ahps2/index.php?wfo=riw/(or cys/unr)
<http://ahps2.wrh.noaa.gov/ahps2/index.php?wfo=slc>/(or byz)

USGS - www.waterdata.usgs.gov/wy/nwis/rt

NRCS Snow Survey/Snowpack Information...

www.wrds.uwyo.edu/wrds/nrcs

Climate Prediction Center...

www.cpc.ncep.noaa.gov

.Acknowledgements...

This Wyoming Graphical Drought Informational Statement is a multi-agency effort involving NOAA's National Weather Service and the National Climatic Center, the NRCS, Wyoming State Climatologist's Office, regional center climatologists, and the National Drought Mitigation Center. Information for this statement has been gathered from the NWS and FAA observation sites...state cooperative services...the NRCS...and the USGS.

.Next issuance...

This product will be updated by the **middle of April 2010**--to correspond with the beginning of the irrigation season.