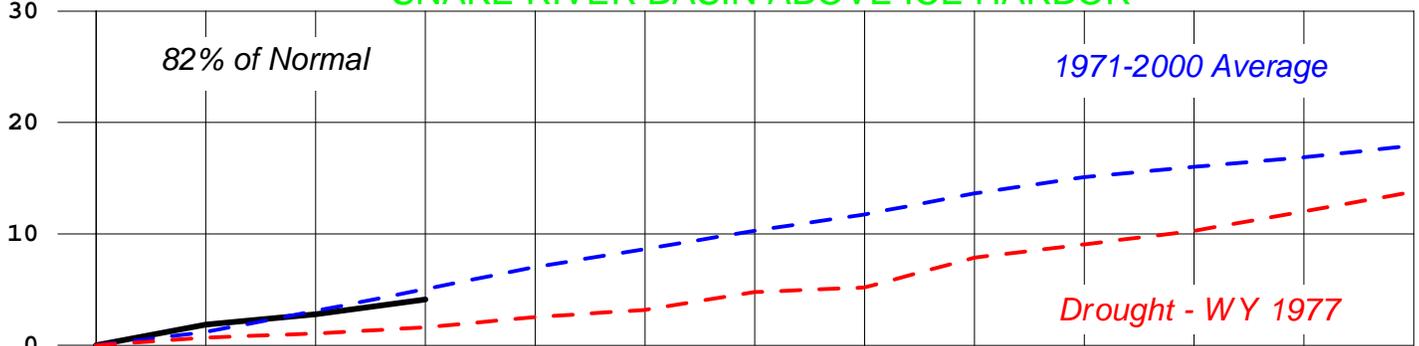


CUMULATIVE PRECIPITATION WATER YEAR 2010

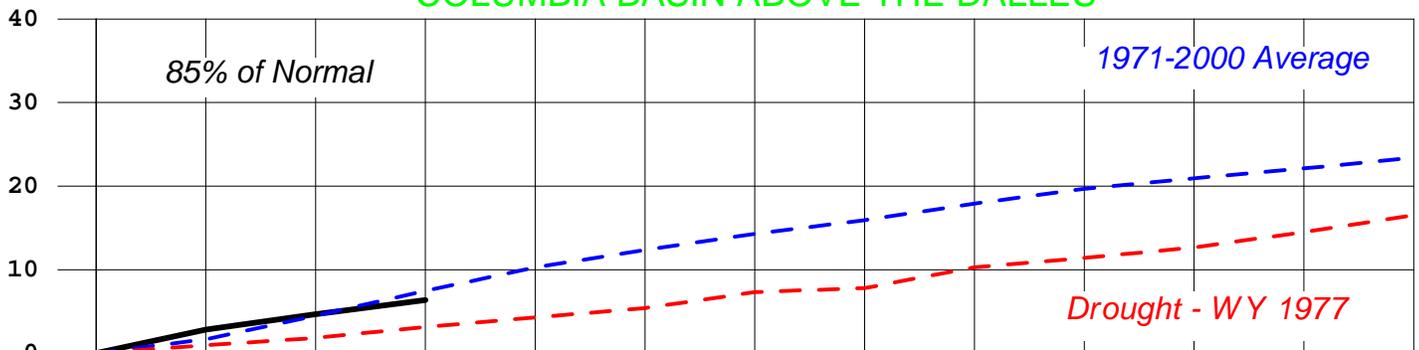
COLUMBIA BASIN ABOVE GRAND COULEE



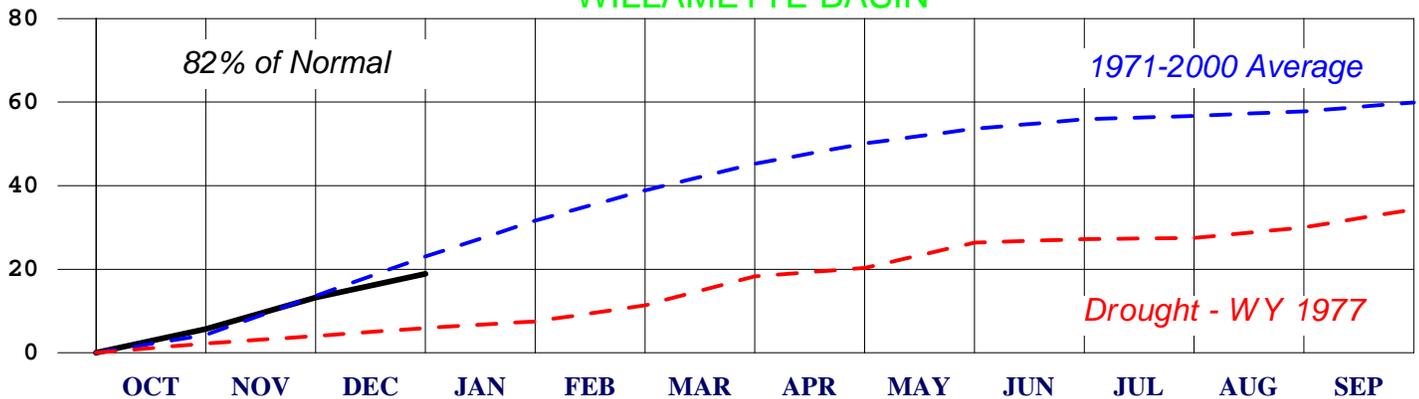
SNAKE RIVER BASIN ABOVE ICE HARBOR



COLUMBIA BASIN ABOVE THE DALLES



WILLAMETTE BASIN



ACCUMULATED PRECIPITATION IN INCHES

(Monthly Summary - dec 2010)

DIVISION	..DEC TO DAY 31..		OCT - DEC....		
	OBSD	DEP	PCT AV	OBSD	DEP	PCT AV
COLUMBIA ABOVE COULEE	1.73	-1.29	57.	6.51	-1.24	84.
SNAKE RV AB ICE HARBOR	1.33	-0.64	68.	4.12	-0.93	82.
COLUMBIA AB THE DALLES	1.70	-1.28	57.	6.35	-1.12	85.
COLUMBIA AB CASTLEGAR	1.84	-2.45	43.	9.17	-1.95	82.
KOOTENAI	1.87	-1.29	59.	6.84	-1.26	84.
CLARK FORK	1.16	-0.65	64.	3.68	-1.02	78.
FLATHEAD	2.29	-0.16	93.	6.06	-0.48	93.
PEND OREILLE/ SPOKANE	2.31	-1.90	55.	8.67	-1.83	83.
NORTHEAST WASHINGTON	1.66	-0.72	70.	5.59	-0.16	97.
OKANOGAN	1.00	-0.98	50.	4.08	-0.68	86.
EAST SLOPES WASH CASC.	2.93	-4.24	41.	13.03	-3.52	79.
CENTRAL WASHINGTON	0.82	-0.52	61.	2.50	-0.66	79.
UPPER SNAKE	1.35	-0.79	63.	4.23	-1.37	75.
SNAKE RIVER PLAIN	0.78	-0.24	77.	2.44	-0.52	82.
OWYHEE/ MALHEUR	1.03	-0.20	84.	2.86	-0.31	90.
SALMON/ BOISE/ PAYETTE	1.74	-0.89	66.	5.35	-0.93	85.
BURNT/ GRANDE RONDE	1.62	-0.32	83.	4.27	-0.70	86.
CLEARWATER	2.67	-0.87	75.	7.27	-2.06	78.
SOUTHEAST WASHINGTON	1.46	-0.93	61.	4.85	-1.53	76.
UPPER JOHN DAY	1.40	-0.34	80.	3.99	-0.48	89.
UMATILLA/ LWR JOHN DAY	1.89	-0.02	99.	5.25	0.01	100.
UPR DESCHUTES/ CROOKED	1.59	-0.45	78.	4.66	-0.30	94.
HOOD/ LOWER DESCHUTES	3.42	-1.21	74.	10.85	-0.23	98.
NW SLOPE WASH CASCADES	5.60	-7.63	42.	32.40	-1.96	94.
SW WA CASCADES/COWLITZ	5.31	-5.77	48.	23.22	-4.44	84.
WILLAMETTE VALLEY	5.65	-3.79	60.	18.86	-4.19	82.
ROGUE/ UMPQUA	3.26	-2.46	57.	10.42	-3.64	74.
KLAMATH BASIN	2.26	-0.60	79.	5.33	-1.32	80.
LAKE COUNTY-GOOSE LAKE	0.88	-0.53	62.	3.22	-0.50	87.
HARNEY/ MALHEUR BASIN	1.03	-0.24	81.	3.06	-0.22	93.

Columbia River Basin division values are computed by utilizing un-weighted precipitation amounts from key stations in each area.

Precipitation normals are based on 1971-2000 historical data.

Please contact NWRFC for further information: (503) 326-7291.

NORTHWEST RIVER FORECAST CENTER PORTLAND OR

PRECIPITATION, TEMPERATURE, SNOW, AND STREAMFLOW SUMMARIES

dec 2010

WEATHER SUMMARY

EASTERLY FLOW AT THE SURFACE ORIGINATING IN THE ARCTIC AND HIGH PRESSURE ALOFT HELPED KEEP THE NORTHWEST U.S. AND SOUTHEAST BRITISH COLUMBIA COLD AND DRY INTO THE SECOND WEEK OF DECEMBER. FOR THE MOST PART...THE SECOND TWO-THIRDS OF THE MONTH CONTINUED TO BE COOLER THAN NORMAL AS ARCTIC INTRUSIONS TRAINED IN ADDITIONAL COLD AIR INTO THE REGION. THE UPPER LEVEL FLOW BECAME MORE ZONAL...BRINGING A FEW LOW PRESSURE TROUGHS AND PRECIPITATION TO THE AREA.

PRECIPITATION SUMMARY

December precipitation was: 57 percent of normal (1971-2000) at Columbia above Coulee, 67 percent of normal at the Snake River above Ice Harbor, and 57 percent of normal at Columbia above the Dalles.

Seasonal (October through December) precipitation was: 84 percent of normal (1971-2000) at Columbia above Coulee, 81 percent of normal at the Snake River above Ice Harbor, and 85 percent of normal at Columbia above the Dalles.

TEMPERATURE SUMMARY

The 37 station temperature index for the Pacific Northwest departed -5.0 degrees from normal relative to the 1971-2000 normals. Mean temperature departures ranged from -10.6 to -2.6 degrees.

General Summary !

So far this Fall weather patterns have been mostly in a split flow mode. This means that as storms approach the Northwest coast they begin to split; part of the energy goes north into Canada and western montana, part goes into southeast Oregon and southern Idaho. The snow pattern at the end of December shows average to slightly above average snow water equivalents (SWE's) in Northwest Washington, Canada and parts of Western Montana. The rest of the Columbia-Snake basin is deficient in SWE, ranging from 50 to 80 percent. Consequently, the forecast streamflow for the January-July period is expected to be below average in all areas, from 80-90 percent in the north to 50 to 75 percent in the south.

Snow Summary !

The 2010 snow accumulation season is starting out rather slowly. Only Northwest Washington and the Columbia River in Canada have near average SWE's. In all other areas the snowpack is below average, reporting 50 to 70 percent of the January 1st average except in the Blue Mountains in Northeast Oregon where SWE values fall in the 80 to 100 percent range.

Streamflow Summary !

Streamflow in December is below average with the lowest streamflow in the Snake River area at

40 to 80 percent of the 30-yr average. Streamflow is somewhat higher in Northern portions of the Columbia River drainage and in the Salmon and Upper Snake basins at 70 to 85 percent. In December the streamflow for the Columbia River at The Dalles was near 65 percent of average.

Below average streamflow is expected for the Columbia-Snake basin in water year 2010. Only the Columbia river in Canada and Northwest Washington have near average seasonal forecasts. The forecast streamflows decrease as you move south in the basin. The lowest forecast streamflows are on the Snake river at 50 to 70 percent of average. The low water supply in the Snake River area is somewhat mitigated by above average reservoir carry over storage from last years flows. See http://www.nwrfc.noaa.gov/water_supply/ws_fcst.cgi for detailed water supply forecasts.

MONTHLY PRECIPITATION AND TEMPERATURE RECORDS

Partial list of record high and low temperatures in degrees (F) are listed below. Precipitation is reported in inches.

Please see the complete list of records at the National Weather Service Field Offices Climatology Web pages.

12/2 A RECORD LOW TEMPERATURE OF 1 DEGREE WAS SET AT POCATELLO ID.
A RECORD LOW TEMPERATURE OF 23 DEGREES WAS SET AT OLYMPIA WA.

12/3 A RECORD LOW TEMPERATURE OF -5 DEGREES WAS SET AT MCCALL ID.
A RECORD LOW TEMPERATURE OF 5 DEGREES WAS SET AT MULLAN PASS ID.
A RECORD LOW TEMPERATURE OF 15 DEGREES WAS SET AT PULLMAN WA.

12/6 A RECORD LOW TEMPERATURE OF 25 DEGREES WAS SET AT NORTH BEND OR.

12/7 A RECORD LOW TEMPERATURE OF 0 DEGREES WAS SET AT BOISE ID.
A RECORD LOW TEMPERATURE OF 8 DEGREES WAS SET AT PENDLETON OR.

12/8 A RECORD LOW TEMPERATURE OF 1 DEGREE WAS SET AT PENDLETON OR.
A RECORD LOW TEMPERATURE OF 19 DEGREES WAS SET AT SEATTLE WA.

12/9 A RECORD LOW TEMPERATURE OF 6 DEGREES WAS REPORTED AT OLYMPIA WA.
A RECORD LOW TEMPERATURE OF 18 DEGREES WAS REPORTED AT SET-TAC WA.

A RECORD LOW TEMPERATURE OF -3 DEGREES WAS SET AT YAKIMA WA AND OMAK WA.

A RECORD LOW TEMPERATURE OF 12 DEGREES WAS SET AT PORTLAND OR.

A RECORD LOW TEMPERATURE OF 15 DEGREES WAS SET AT ASTORIA OR.

12/10 A RECORD LOW TEMPERATURE OF 2 DEGREES WAS SET AT WENATCHEE WA AND MULLAN PASS ID.

A RECORD LOW TEMPERATURE OF -6 DEGREES WAS SET AT MADRAS OR.

A RECORD LOW TEMPERATURE OF 13 DEGREES WAS SET AT PORTLAND OR.

A RECORD LOW TEMPERATURE OF 16 DEGREES WAS REPORTED AT SEA-TAC WA.

12/11 A RECORD LOW TEMPERATURE OF -3 DEGREES WAS SET AT YAKIMA WA.

A RECORD LOW TEMPERATURE OF 14 DEGREES WAS SET AT PORTLAND OR.

A RECORD LOW TEMPERATURE OF 10 DEGREES WAS REPORTED AT OLYMPIA WA.

12/12 A RECORD LOW TEMPERATURE OF 2 DEGREES WAS SET AT MADRAS OR.

A RECORD SNOWFALL OF 3.4 INCHES WAS SET AT PENDLETON OR.

12/13 A RECORD LOW TEMPERATURE OF 2 DEGREES WAS SET AT MOSES LAKE WA.

A RECORD SNOWFALL OF 2.7 INCHES WAS SET AT PENDLETON OR.

12/15 A RECORD RAINFALL OF 0.82 INCHES WAS SET AT BOISE ID.

A RECORD RAINFALL OF 0.61 INCHES WAS SET AT SPOKANE WA.

A RECORD RAINFALL OF 0.50 INCHES WAS SET AT PENDLETON OR.

12/20 A RECORD RAINFALL OF 1.77 INCHES WAS SET AT QUILLAYUTE WA.

US Dept of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Northwest River Forecast Center (NWRFC)
5241 NE 122nd Avenue
Portland, Oregon 97230-1089
Telephone: 503-326-7401

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