

# Colorado Basin Outlook Report March 1, 2010



# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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## *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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# COLORADO

## WATER SUPPLY OUTLOOK REPORT

### MARCH 1, 2010

#### Summary

Only slight improvements occurred to snowpack percentages during February across Colorado. Southern basins continue to track at near to slightly above average, while the northern basins remain well below average. The time remaining for improvement continues to shrink with now only four to six weeks remaining in the typical snow accumulation season. Runoff forecasts remain below average across most of the state, with even the southwestern streamflow forecasts declining to below average at most locations. Many basins have dry soils under the snowpack so water users need to prepare for a low runoff season. About the only good news for water supplies is the near average reservoir storage across most of the state.

#### Snowpack

The first half of February was fairly dry across the state; however this was followed by a wet period which helped eliminate the earlier deficits in all basins except the most northern ones in the state. In the Arkansas, Rio Grande, Gunnison and combined San Juan, Animas, Dolores, and San Miguel basins the storms during late February increased the totals back to near or above average. As the month ended, only the combined southwestern basins and the Rio Grande basin were reporting an above average snowpack, at 106% and 109% of average, respectively. Although still above average, the percentages showed slight decreases from those measured a month ago in both basins. Meanwhile, further north and east, in the Colorado, Gunnison, Yampa and White, and South Platte and Arkansas basins, slight increases in snowpack percentages were measured from last month's readings. Only the North Platte basin has shown a consistent decrease in percentage each month since January. For the state overall, the March 1 snowpack inched up a couple of percentage points from last month and is now at 88% of average. By comparison this is only 82% of last year's readings for March 1. Basinwide comparisons to last year show well below last year's readings in all basins except for the Rio Grande and combined southwestern basins. Now, with only four to six weeks remaining in the normal snow accumulation season, recovery to near average snowpacks this year across northern Colorado is only a remote possibility.

#### Precipitation

Precipitation measured at SNOTEL sites across Colorado was generally below average across most of the state during February. Statewide totals were only 89% of average, marking the second consecutive month with below average statewide percentages. The Arkansas basin was the only basin to exceed the average for February, at 105% of average. Elsewhere across the state, February percents of average ranged from only 78% of average in the Yampa and White, to 95% of average in the Colorado basin. With another dry month across northern Colorado, the Yampa, White, North Platte, South Platte and Colorado basins have now recorded four consecutive months of below average precipitation. Without the wet month of October in these basins, water year totals would be quite dismal. Basinwide water year totals now range from only 82% of average in both the Colorado and the combined Yampa, White and North Platte basins, to 105% of average in the Rio Grande basin. The Rio Grande being the only basin with an above average water year total. Statewide, water year precipitation stands at the same as last month, at 88% of average.

## Reservoir Storage

Storage data from the state's major reservoirs indicates that volumes continued to increase again during February. Now, with statewide storage at 105% of average, there is a total of 150,000 acre feet more than the average for this date in the state's reservoirs. Only two basins, the Rio Grande and the combined San Juan, Animas and Dolores and San Miguel are reporting below average storage volumes. The lowest percentage in the state, at 88% of average, is reported in the combined southwestern basins. The highest storage, as a percent of average, is in the Yampa basin, at 115% of average. However, the Gunnison basin is storing the largest volumes above the average at 88,000 acre feet above the March 1 average. Current statewide storage is now at 102% of last year's on this date. This equals an additional 84,000 acre feet of storage above last year's levels. Once again, the good storage volumes across most of the state will most certainly aid those water users who face potential shortage this summer.

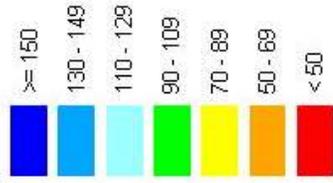
## Streamflow

Most of Colorado can expect below average water supplies this spring and summer. Only portions of the Arkansas, Rio Grande and San Juan basins can expect to see near average to slightly above average volumes this year. The prognosis for the remainder of the state worsens towards the north as storm intensity and frequency has diminished this year. Currently, the lowest forecasts in the state occur in the North Platte and the headwater tributaries to the Colorado and Yampa rivers. Most of these forecasts range from 50% to 60% of average. For most of the remainder of the state, forecasts generally range from 70% to 90% of average. Volumes in this range are expected to prevail throughout the Yampa, White, Colorado, and South Platte basins. The Gunnison basin is in slightly better shape with forecasts ranging from 80% to 90% at most locations. For much of northern Colorado, this year's forecasts are the lowest since 2003 and are much below those of the past two years. Without significant relief from a surge of El Nino storms, water users across northern Colorado will need to anticipate shortages during this year's summer demand season.

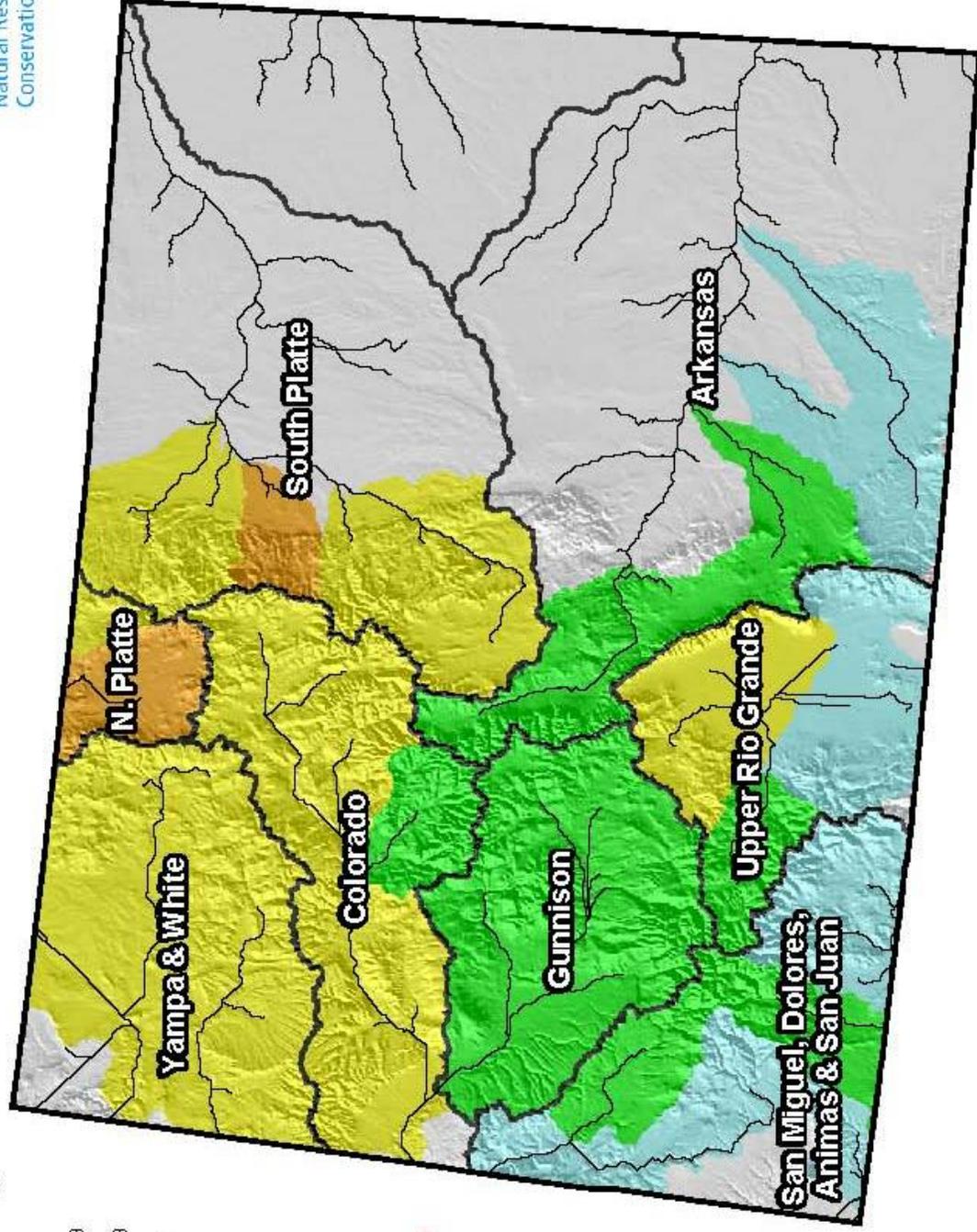
# Colorado Snowpack Map



## Percent of Average

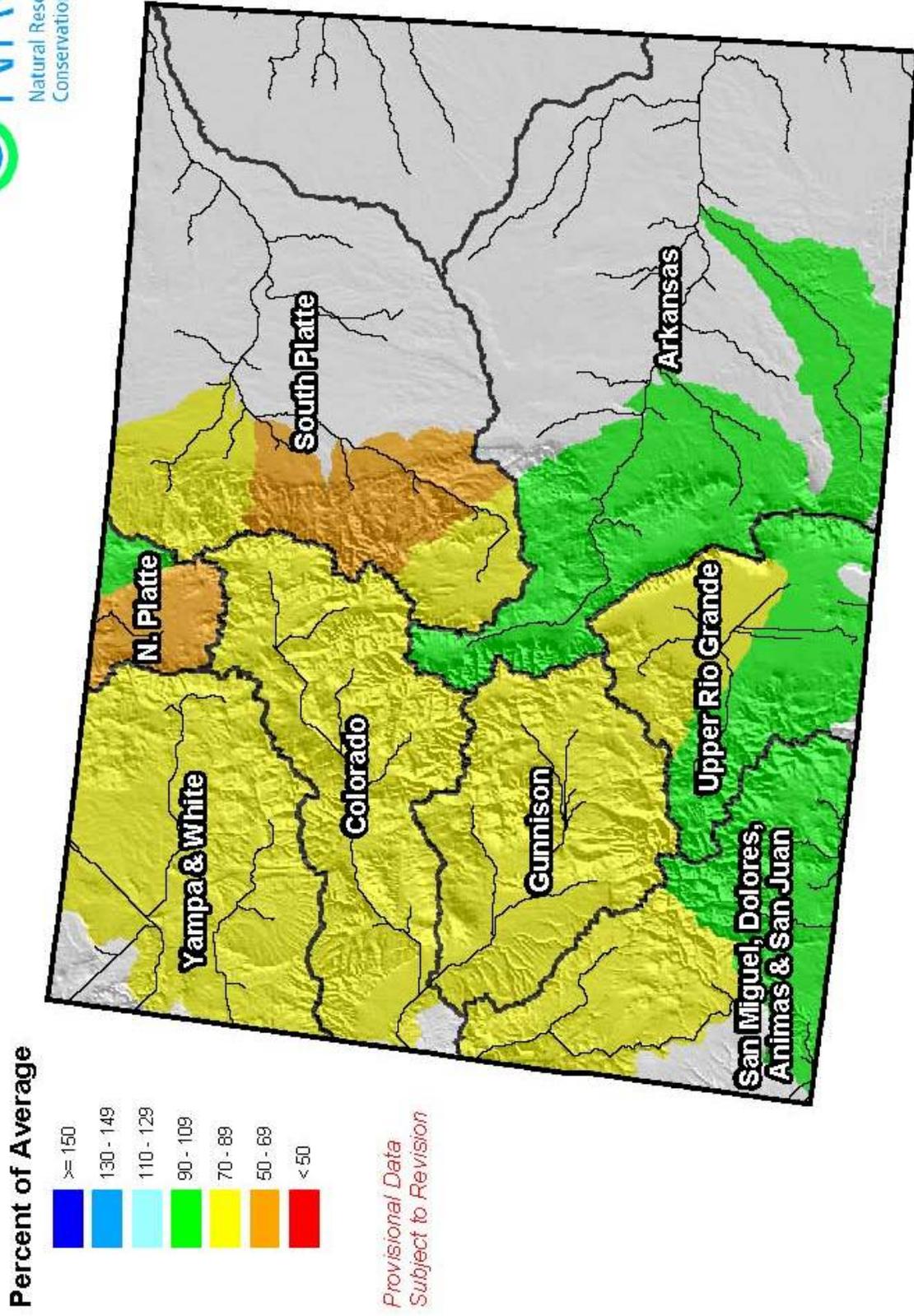


*Provisional Data  
Subject to Revision*



Current as of March 1, 2010

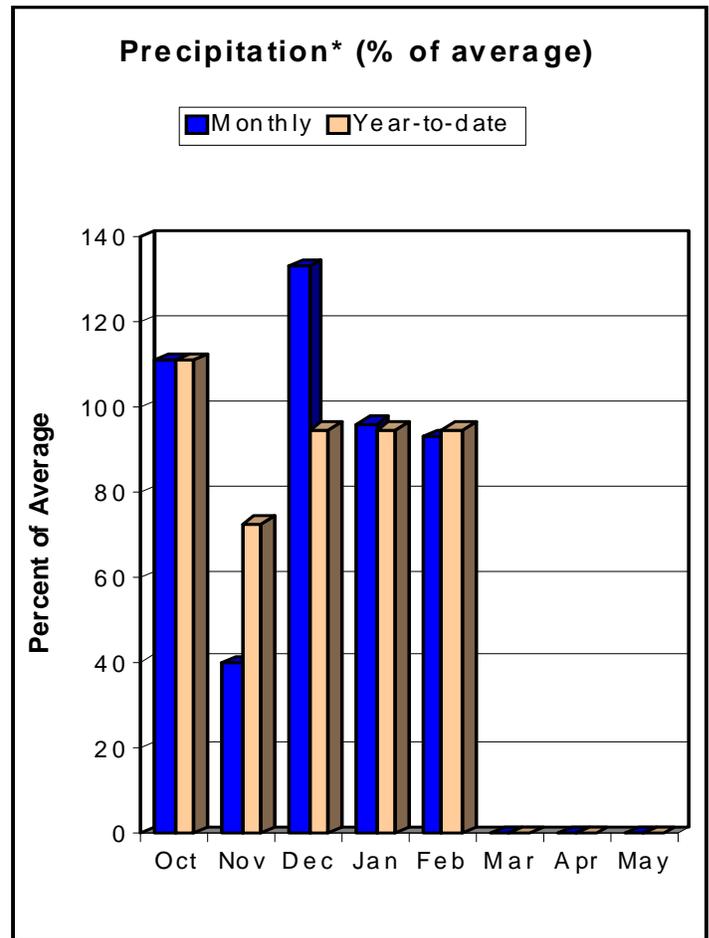
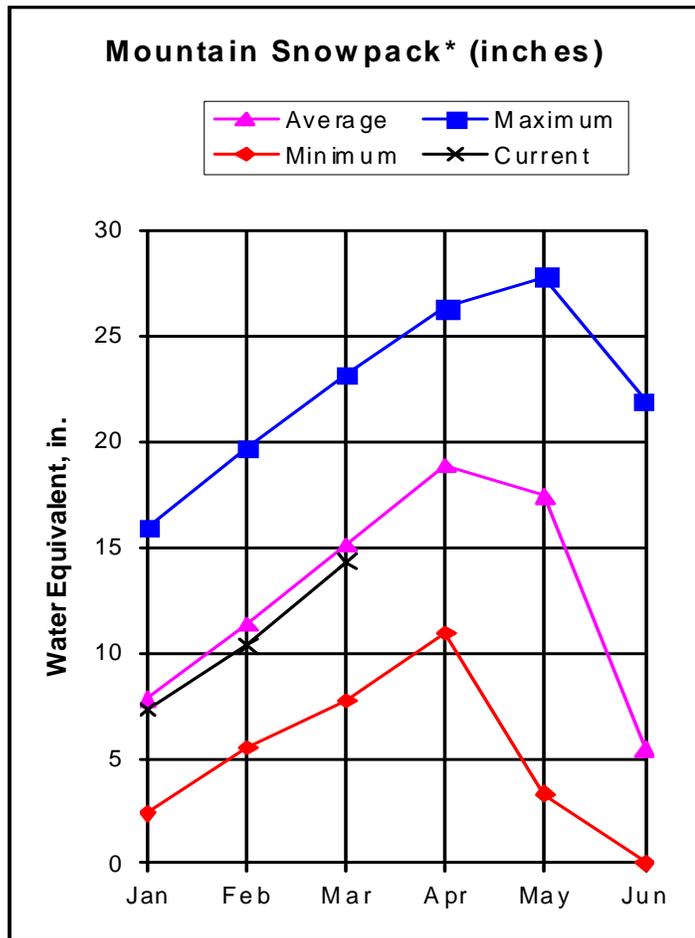
# Colorado Streamflow Forecast Map



Current as of March 1, 2010

# GUNNISON RIVER BASIN

## as of March 1, 2010



\*Based on selected stations

February snowpacks in the Gunnison River Basin were not looking good for nearly the first three weeks of the month. Fortunately, from February 19 through February 21, the basin received some decent snowfall bringing the basin snowpack up to near normal conditions. Although the percentages have fallen somewhat since then, March 1 snowpacks were measured at 95 percent of average, up slightly from the 91 percent of average snowpacks reported last month. By comparison, this year's snowpacks are only 87 percent of the snowpacks present a year ago. That said, this year's March 1 snowpack is the fifth highest percentage going back to 1998. Sub-basin snowpacks are all near normal, ranging from 93 percent of average in the Upper Gunnison to 100 percent of average in the Uncompahgre Watershed. Mountain precipitation during February was 93 percent of average, making it the second month in a row of slightly below average precipitation. As a result, total precipitation for the water year remains unchanged for the third consecutive month, in terms of percentages, at 95 percent of average. Reservoir storage is down slightly from last year but remains in good shape at 112 percent of average. April-July forecasts dropped slightly or did not change from those issued last month. Streamflows are expected to be mostly below average throughout the basin. Spring and summer runoff should range from 66 percent of average for Cochetopa Creek near Parlin to 88 percent of average for Surface Creek near Cedaredge.

GUNNISON RIVER BASIN  
Streamflow Forecasts - March 1, 2010

Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	(1000AF)
Taylor Park blw Taylor Park Res (2)	APR-JUL	65	75	85	83	96	115	103				
Slate River nr Crested Butte	APR-JUL	59	67	72	81	78	86	89				
East River at Almont	APR-JUL	120	137	155	81	174	205	192				
Gunnison River nr Gunnison (2)	APR-JUL	240	275	315	81	360	435	390				
Tomichi Creek at Sargents	APR-JUL	14.8	20	25	78	30	39	32				
Cochetopa Creek blw Rock Ck nr Parli	APR-JUL	5.7	8.8	11.5	67	14.7	20	17.3				
Tomichi Creek at Gunnison	APR-JUL	30	43	57	70	74	95	81				
Lake Fork at Gateview	APR-JUL	75	92	105	83	118	140	126				
Blue Mesa Reservoir Inflow (2)	APR-JUL	420	495	570	79	655	795	720				
Paonia Reservoir Inflow	MAR-JUN	55	70	85	85	103	120	100				
	APR-JUL	57	70	87	85	107	133	102				
North Fork Gunnison R nr Somerset (2)	APR-JUL	180	215	250	82	285	355	305				
Surface Creek at Cedaredge	APR-JUL	9.0	12.8	15.0	88	17.4	20	17.1				
Ridgway Reservoir Inflow	APR-JUL	63	76	88	86	101	123	102				
Uncompahgre River at Colona (2)	APR-JUL	77	99	120	86	143	180	139				
Gunnison River nr Grand Junction (2)	APR-JUL	780	1030	1250	80	1470	1770	1560				

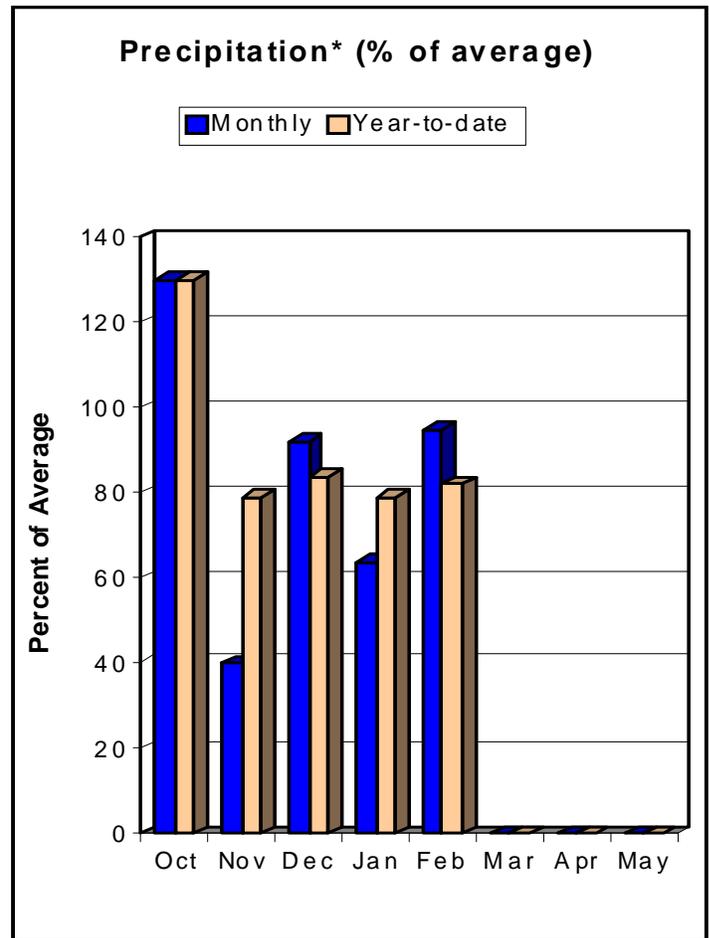
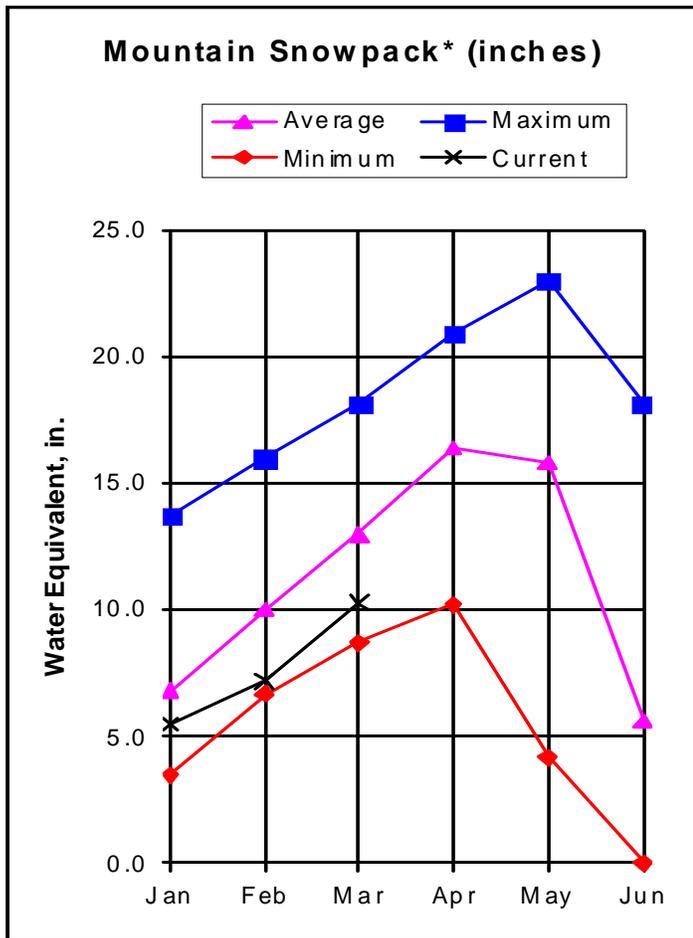
GUNNISON RIVER BASIN Reservoir Storage (1000 AF) - End of February					GUNNISON RIVER BASIN Watershed Snowpack Analysis - March 1, 2010			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BLUE MESA	830.0	545.2	551.9	446.5	UPPER GUNNISON BASIN	15	86	93
CRAWFORD	14.0	6.1	8.8	9.2	SURFACE CREEK BASIN	3	100	95
FRUITGROWERS	3.6	3.6	4.4	3.7	UNCOMPAHGRE BASIN	4	93	100
FRUITLAND	9.2	0.9	1.1	2.1	TOTAL GUNNISON RIVER BASIN	19	87	95
MORROW POINT	121.0	106.8	106.0	113.4				
PAONIA	15.4	0.9	2.4	4.9				
RIDGWAY	83.0	65.6	68.5	60.5				
TAYLOR PARK	106.0	64.5	71.4	65.5				

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# UPPER COLORADO RIVER BASIN as of March 1, 2010



\*Based on selected stations

As a result of some decent storm activity during the third weekend of the month, snowpacks in the Upper Colorado River Basin improved slightly from 72 percent of average last month to 79 percent of average on March 1. This is the second lowest March 1 snowpack percentage the basin has seen going all the way back to 1992. Only March 1, 2002, with 68 percent of average snowpacks, is lower. Using projections based on historical SNOTEL data, there is only 10 percent chance that the basin will reach the average peak. Most of the sub-basin snowpacks are below average to well below average. The lowest snowpack percentages can be found in the Willow Creek and Muddy Creek watersheds at 59 and 69 percent of average, respectively. The Roaring Fork and Plateau Creek drainages boasted the best snowpacks at 90 and 95 percent of average. February precipitation at the higher elevations was 95 percent of average. This is the fourth month in a row that monthly precipitation has been below average. Total precipitation for the water year remains below normal at 82 percent of average. Reservoir storage is 109 percent of average and 110 percent of last year's storage at this time. Streamflow forecasts either remain unchanged or dropped as much as 4 percentage points from those issued a month ago. The basin can expect below average runoff during the April-July forecast period at almost all the forecast points, ranging from 55 percent of average for the Inflow to Willow Creek Reservoir to 85 percent of average for the Roaring Fork at Glenwood Springs.

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UPPER COLORADO RIVER BASIN  
Streamflow Forecasts - March 1, 2010

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Forecast Point	Forecast Period	<===== Drier ===== Future Conditions ===== Wetter =====>						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding *		30% (1000AF)	10% (1000AF)	
				50% (1000AF)	(% AVG.)			
Lake Granby Inflow (2)	APR-JUL	126	151	170	76	190	220	225
Willow Creek Reservoir Inflow	APR-JUL	18.8	24	28	55	32	40	51
Williams Fork Reservoir Inflow (2)	APR-JUL	56	67	75	79	84	97	95
Dillon Reservoir Inflow (2)	APR-JUL	99	117	130	78	144	167	167
Green Mountain Reservoir Inflow (2)	APR-JUL	164	196	220	79	245	285	280
Muddy Creek blw Wolford Mtn Resv (2)	APR-JUL	24	30	35	58	40	49	60
Eagle River blw Gypsum (2)	APR-JUL	169	210	240	72	275	330	335
Colorado River nr Dotsero (2)	APR-JUL	585	850	1030	72	1210	1480	1440
Ruedi Reservoir Inflow (2)	APR-JUL	79	97	110	78	125	148	141
Roaring Fork at Glenwood Springs (2)	APR-JUL	445	535	600	85	670	785	710
Colorado River nr Cameo (2)	APR-JUL	1300	1520	1820	75	2120	2530	2420

UPPER COLORADO RIVER BASIN Reservoir Storage (1000 AF) - End of February					UPPER COLORADO RIVER BASIN Watershed Snowpack Analysis - March 1, 2010			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DILLON	254.0	240.8	224.9	216.8	BLUE RIVER BASIN	9	66	77
LAKE GRANBY	465.6	307.0	235.1	281.1	UPPER COLORADO RIVER BASI	37	64	74
GREEN MOUNTAIN	146.8	71.3	55.3	70.0	MUDDY CREEK BASIN	4	60	69
HOMESTAKE	43.0	21.8	42.0	26.6	PLATEAU CREEK BASIN	3	100	95
RUEDI	102.0	68.4	70.8	68.0	ROARING FORK BASIN	8	73	90
VEGA	32.9	12.6	14.5	12.2	WILLIAMS FORK BASIN	4	69	80
WILLIAMS FORK	97.0	75.3	78.3	57.3	WILLOW CREEK BASIN	4	50	59
WILLOW CREEK	9.1	5.5	6.6	6.7	TOTAL COLORADO RIVER BASI	48	68	79

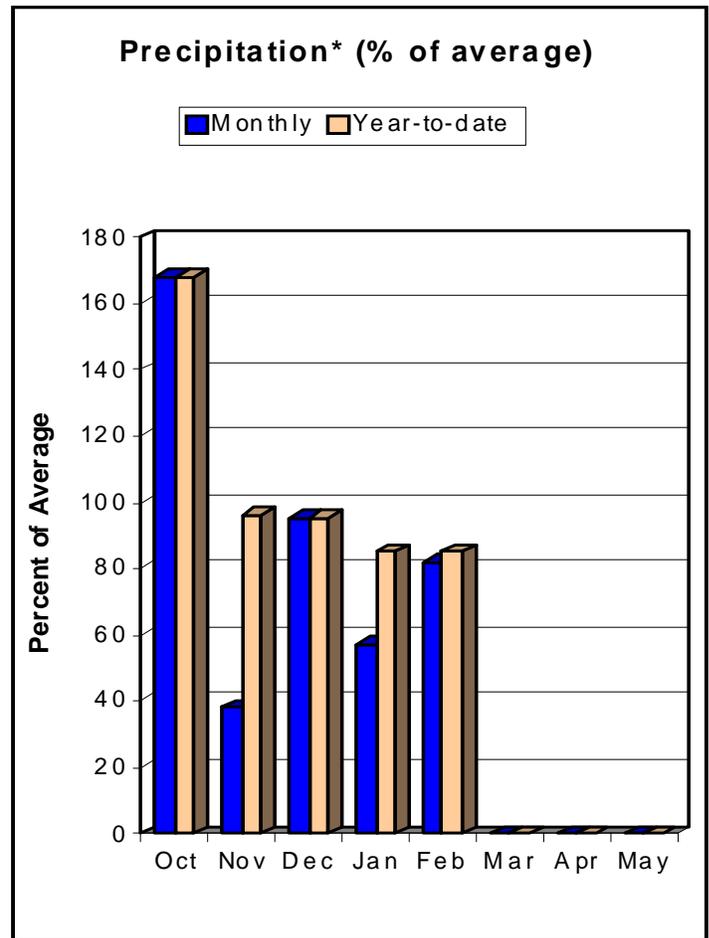
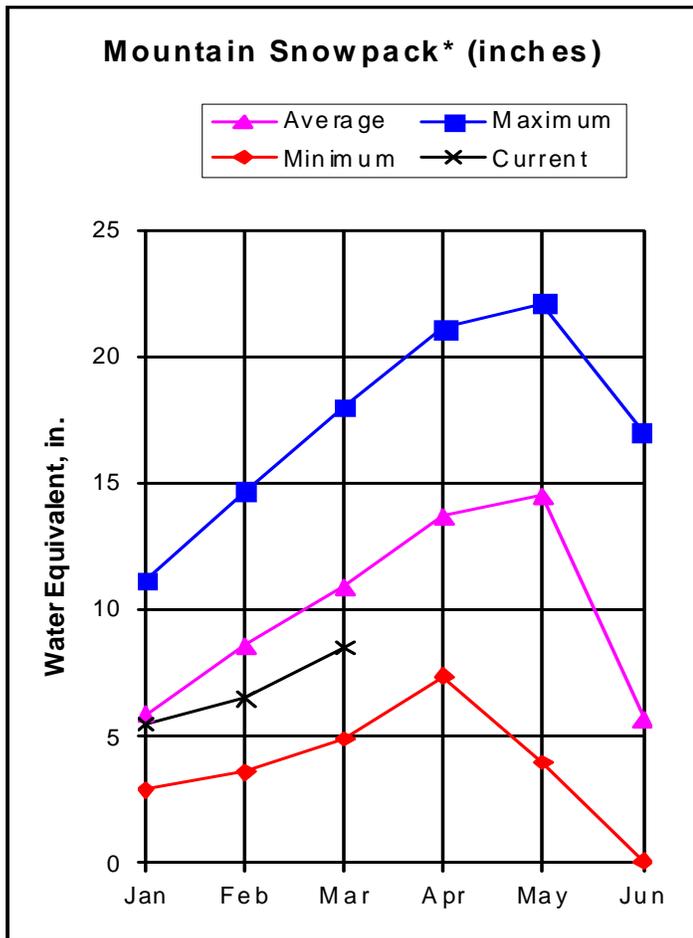
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# SOUTH PLATTE RIVER BASIN

## as of March 1, 2010



\*Based on selected stations

As can be seen in the line graph above, snowfall accumulations fared better this February over the South Platte River Basin as compared to January, in that no ground was lost. Unfortunately, snowpack conditions remain below average at 78 percent, up a little from 75 percent last month. The Saint Vrain River Basin received no relief from the dismal January snow totals, remaining as the sub-drainage with the worst snowpack in the South Platte, and now tied as the worst in the state. Currently there is a 10 percent chance that the South Platte River Basin will reach average snowpack by the middle of May, when the snowpack typically reaches its seasonal peak. This year's snowpack right now can best be compared to conditions seen in 1990, 1992, 2003, and 2005. Although unlikely, large spring storms have turned the tables on a poor snowpack before, an example being in 2003 when a storm brought significant storm totals to the mountains and plains of the South Platte Basin. Basin-wide precipitation totals remain slightly above the snow water equivalent totals at 85 percent of average. Reservoir storage over the entire South Platte drainage continues to offer the only positive outlook being in good standing near 104 percent and 82 percent of capacity. A tight 12 percent range characterizes all streamflow forecasts in the South Platte River Basin, albeit considerably below average. Forecasts this month in the upper and lower South Platte look the best near 70 percent of average and near Denver in the middle to lower 60 percent range.

SOUTH PLATTE RIVER BASIN  
Streamflow Forecasts - March 1, 2010

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)		
ANTERO RESERVOIR Inflow (2)	APR-JUL	8.6	11.4	11.9	71	16.0	19.8	16.8				
	APR-SEP	11.2	14.9	15.6	72	21	26	22				
SPINNEY MOUNTAIN RESV Inflow (2)	APR-JUL	25	37	39	70	53	71	56				
	APR-SEP	31	46	48	70	66	88	69				
ELEVENMILE CANYON RESV Inflow (2)	APR-JUL	26	37	41	71	55	76	58				
	APR-SEP	32	45	50	69	68	94	72				
CHEESMAN LAKE Inflow (2)	APR-JUL	56	71	81	71	104	155	114				
	APR-SEP	68	87	99	71	128	190	140				
SOUTH PLATTE R at South Platte (2)	APR-JUL	94	121	140	68	180	275	205				
	APR-SEP	117	150	173	68	225	340	255				
BEAR CREEK abv Evergreen	APR-JUL	7.3	9.6	11.6	60	17.4	32	19.3				
	APR-SEP	9.5	12.5	15.0	60	22	42	25				
BEAR CREEK at Morrison	APR-JUL	9.5	12.5	15.0	60	22	42	25				
	APR-SEP	11.9	15.6	18.7	60	28	52	31				
CLEAR CREEK at Golden	APR-JUL	63	68	76	69	88	123	110				
	APR-SEP	50	75	92	69	109	134	134				
ST. VRAIN CREEK at Lyons (2)	APR-JUL	47	52	61	65	70	90	94				
	APR-SEP	55	60	71	65	82	105	109				
BOULDER CREEK nr Orodell (2)	APR-JUL	30	33	36	69	39	54	52				
	APR-SEP	35	38	42	70	45	62	60				
SOUTH BOULDER CK nr Eldorado Spgs	APR-JUL	19.7	24	29	71	32	48	41				
	APR-SEP	22	27	32	70	36	53	46				
BIG THOMPSON R at Canyon Mouth (2)	APR-JUL	46	60	69	70	78	92	99				
	APR-SEP	55	72	83	70	94	111	119				
CACHE LAPOUDRE at Canyon Mouth (2)	APR-JUL	122	157	172	70	196	315	245				
	APR-SEP	138	176	192	70	220	350	275				

SOUTH PLATTE RIVER BASIN  
Reservoir Storage (1000 AF) - End of February

SOUTH PLATTE RIVER BASIN  
Watershed Snowpack Analysis - March 1, 2010

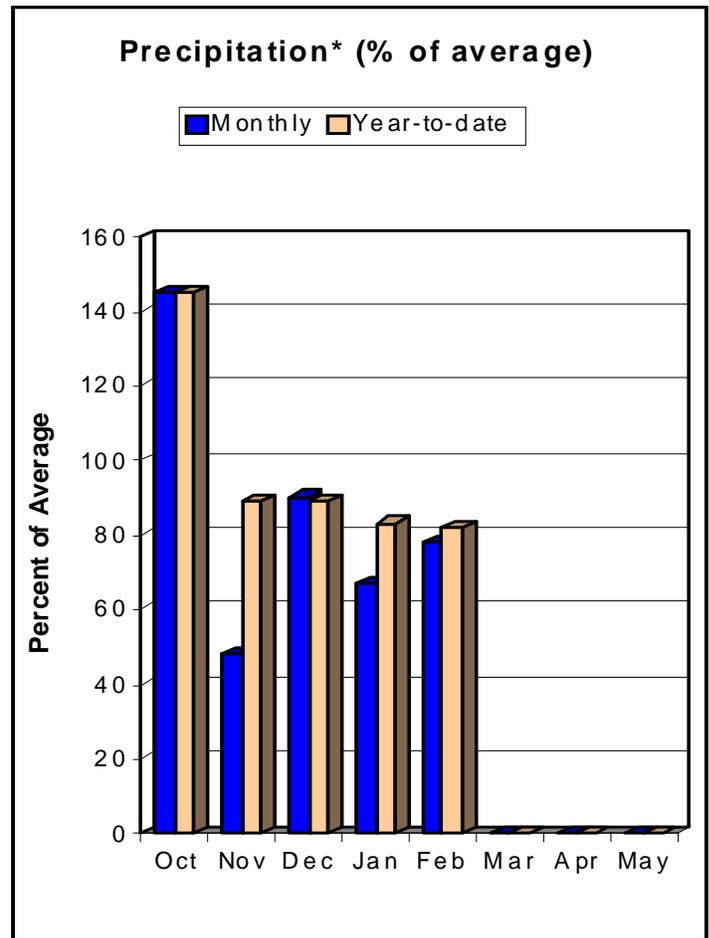
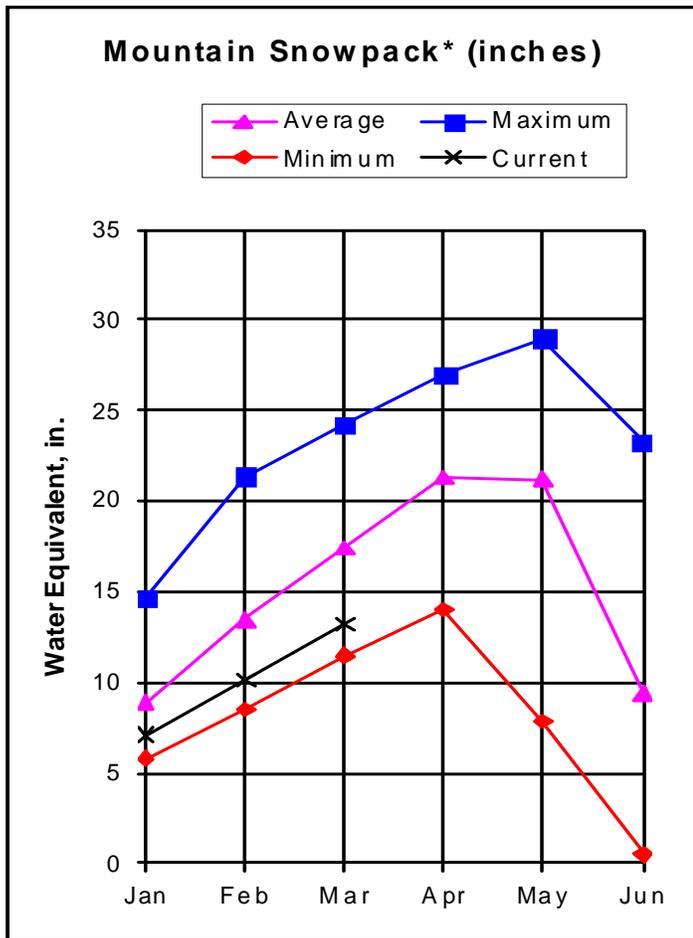
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ANTERO	19.9	20.1	20.0	16.3	BIG THOMPSON BASIN	7	77	75
BARR LAKE	30.1	28.2	22.9	26.0	BOULDER CREEK BASIN	5	82	76
BLACK HOLLOW	6.5	3.2	2.6	3.9	CACHE LA POUFRE BASIN	8	80	80
BOYD LAKE	48.4	40.5	27.5	32.4	CLEAR CREEK BASIN	4	74	88
BUTTON ROCK/RALPH PRICE	16.2	12.9	12.9	12.4	SAINT VRAIN BASIN	4	69	59
CACHE LA POUFRE	10.1	10.1	8.0	7.8	UPPER SOUTH PLATTE BASIN	16	105	85
CARTER	108.9	93.0	90.8	93.4	TOTAL SOUTH PLATTE BASIN	44	83	79
CHAMBERS LAKE	8.8	6.4	2.5	3.1				
CHEESMAN	79.0	58.6	69.9	59.0				
COBB LAKE	22.3	20.7	11.9	13.9				
ELEVEN MILE	98.0	99.5	100.0	95.8				
EMPIRE	36.5	36.1	36.4	25.6				
FOSSIL CREEK	11.1	10.5	10.0	7.4				
GROSS	41.8	23.0	28.1	25.3				
HALLIGAN	6.4	5.8	5.2	4.8				
HORSECREEK	14.7	13.6	9.8	12.5				
HORSETOOTH	149.7	92.6	84.4	109.2				
JACKSON	26.1	24.0	24.6	27.3				
JULESBURG	20.5	17.4	16.5	18.9				
LAKE LOVELAND	10.3	9.3	11.4	8.8				
LONE TREE	8.7	7.4	8.5	6.7				
MARIANO	5.4	4.4	1.2	4.3				
MARSHALL	10.0	7.1	4.5	5.4				
MARSTON	13.0	9.6	8.6	12.9				
MILTON	23.5	18.6	20.4	17.1				
POINT OF ROCKS	70.6	70.4	69.0	65.4				
PREWITT	28.2	22.5	21.2	21.0				
RIVERSIDE	55.8	50.0	50.7	48.9				
SPINNEY MOUNTAIN	49.0	33.7	40.9	32.2				
STANDLEY	42.0	34.3	35.4	33.6				
TERRY LAKE	8.0	5.9	5.2	5.3				
UNION	13.0	11.9	10.3	11.0				
WINDSOR	15.2	12.0	13.5	11.5				

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
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# YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS as of March 1, 2010



\*Based on selected stations

At 76 percent of average, snowpacks in the combined Yampa, White, North Platte and Laramie River basins are the lowest of the major basins in the state. This is just a 1 percentage point increase over the snowpacks measured last month. Snowpacks in the combined basins are the second lowest since 1987, behind the snowpacks measured in March 2002. Projections based on historical SNOTEL data indicate a less than 10 percent chance that the basin will reach the average peak this year. Sub-basin snowpack are below average to well below average, ranging from 68 percent of average in the North Platte Watershed to 89 percent of average in the Laramie River Drainage. Mountain precipitation during February was below normal at 78 percent of average, making it the fourth consecutive month of below normal precipitation in the basin. Total precipitation for the water year dropped to 82 percent of average. As with the snowpack figure, the monthly and annual precipitation totals were also the lowest of the state's major basins. The bright spot in the water supply outlook is reservoir storage which is 115 percent of average and 84 percent of capacity. This year's storage is about 5 percent higher than the stored water available this time last year. Most forecast points saw a moderate decline in the forecasts compared to last month. April-July streamflows are expected to be mostly below average. Runoff volumes are predicted to range from 54 percent of average for the North Platte River near Northgate to 94 percent of average for the Laramie River near Woods.

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Streamflow Forecasts - March 1, 2010

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	(1000AF)
NORTH PLATTE RIVER nr Northgate	APR-JUL	53	88	133	54	178	245	245				
	APR-SEP	59	98	148	55	198	275	270				
LARAMIE RIVER nr Woods	APR-JUL	81	102	116	94	130	151	123				
	APR-SEP	89	112	128	95	144	167	135				
Yampa R ab Stagecoach Reservoir (2)	APR-JUL	11.7	16.8	21	57	26	34	37				
Yampa River at Steamboat Springs (2)	APR-JUL	132	166	192	69	220	265	280				
Elk River nr Milner	APR-JUL	190	230	260	80	290	340	325				
Elkhead Creek nr Elkhead	APR-JUL	17.0	24	29	74	35	44	39				
Elkhead Creek blw Maynard Gulch (2)	APR-JUL	26	35	43	73	51	65	59				
Fortification Ck nr Fortification	MAR-JUN	2.7	4.1	5.3	71	6.7	9.2	7.5				
Yampa River nr Maybell (2)	APR-JUL	460	595	695	70	805	975	990				
Little Snake River nr Slater	APR-JUL	81	103	120	76	138	166	159				
Little Snake River nr Dixon	APR-JUL	142	197	240	73	285	365	330				
Little Snake River nr Lily	APR-JUL	150	215	265	73	320	410	365				
White River nr Meeker	APR-JUL	145	185	215	74	245	300	290				

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Reservoir Storage (1000 AF) - End of February

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Watershed Snowpack Analysis - March 1, 2010

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
STAGECOACH	33.3	28.1	25.9	24.0	LARAMIE RIVER BASIN	3	95	89
YAMCOLO	8.7	7.1	7.6	6.5	NORTH PLATTE RIVER BASIN	12	68	68
					TOTAL NORTH PLATTE BASIN	14	72	72
					ELK RIVER BASIN	2	66	80
					YAMPA RIVER BASIN	12	66	73
					WHITE RIVER BASIN	6	73	78
					TOTAL YAMPA AND WHITE RIV	17	68	75
					LITTLE SNAKE RIVER BASIN	8	74	85
TOTAL YAMPA, WHITE AND NO	36	71	76					

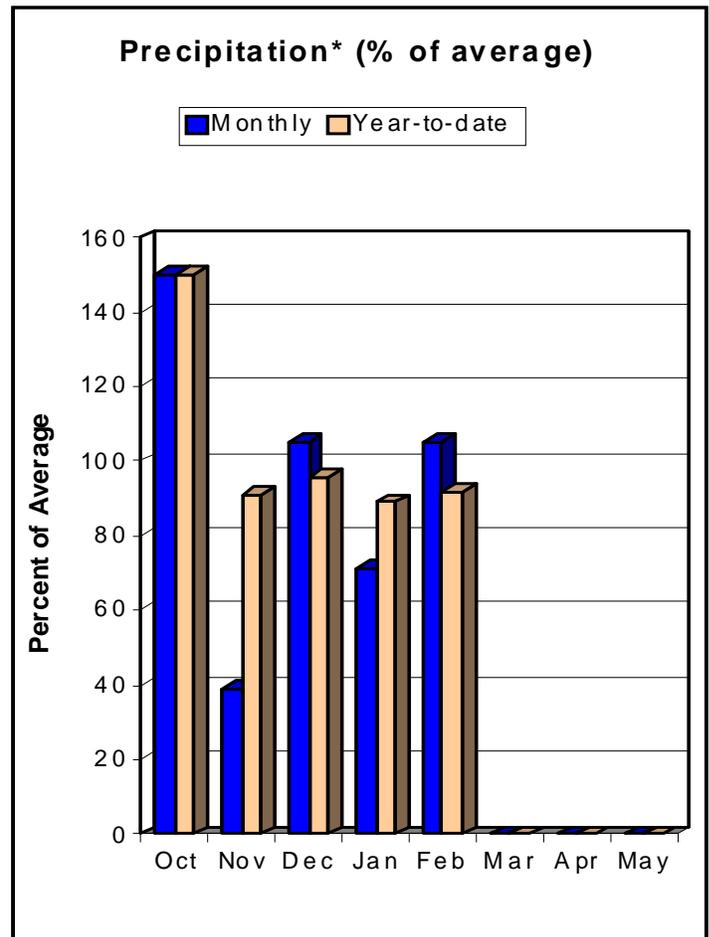
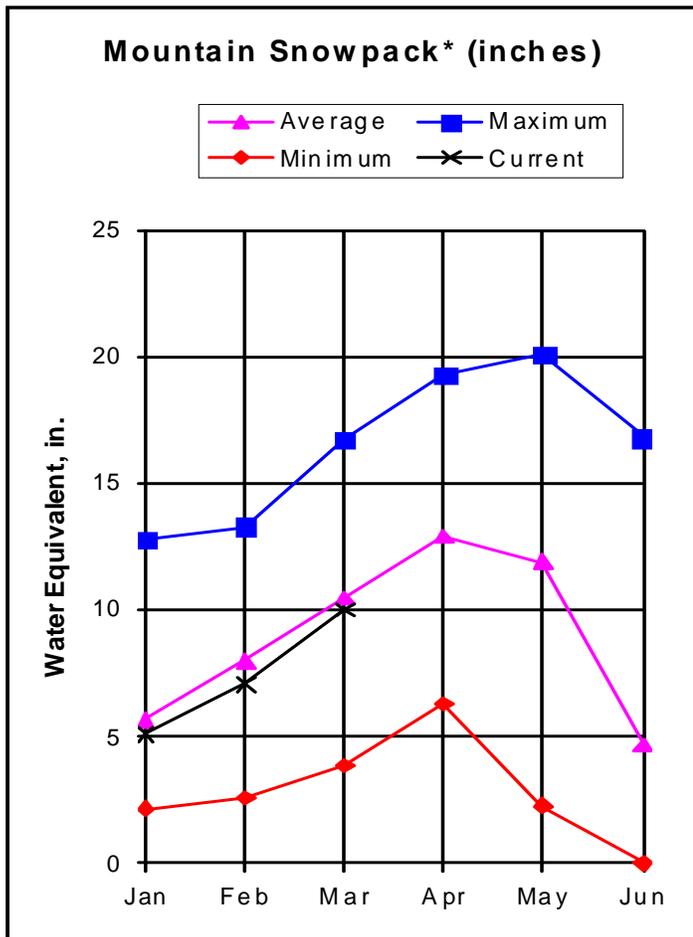
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# ARKANSAS RIVER BASIN

## as of March 1, 2010



\*Based on selected stations

Over the course of February, the snowpack gained ground in the Arkansas River Basin going from 89 percent of average at the end of January to 95 percent on March 1. The Upper Arkansas River sub-basin remains below average at 90 percent, while the Cucharas & Huerfano, as well as the Purgatoire are above average near 110 percent. Making the largest snowpack improvements in the state is the Purgatoire River Basin starting at 93 percent of average at the beginning of February, then climbing to 111 percent. This moves the Purgatoire River Basin to the highest snowpack levels in the Arkansas. Elevational differences in snowpack persist from last month with observations at the highest elevations just above 80 percent of average and the lowest elevations reporting around 125 percent. This month's precipitation is the standout figure at 163 percent of last year's February precipitation, leaving the Arkansas River Basin as the basin with the highest monthly percent of average precipitation in the state at 105 percent. Year-to-date precipitation has consequently improved slightly, but ended the month of February below average at 92 percent. Water levels in the reservoirs of the Arkansas as a whole are near average posting 103 percent, with Meredith and Lake Henry at or near capacity. Forecasted streamflows are continue to look promising, ranging from 87 percent of average on Chalk Creek near Nathrop to 111 percent on Huerfano River near Redwing.

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ARKANSAS RIVER BASIN  
Streamflow Forecasts - March 1, 2010

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Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
CHALK CK at Nathrop	APR-JUL	11.0	16.0	20	87	24	32	23
	APR-SEP	13.4	19.4	24	89	29	38	27
ARKANSAS RIVER at Salida (2)	APR-JUL	174	210	240	94	270	315	255
	APR-SEP	205	255	290	94	330	390	310
GRAPE CK nr Westcliffe	APR-JUL	4.1	10.4	16.4	102	24	37	16.1
	APR-SEP	6.7	13.8	20	102	27	40	19.6
PUEBLO RESERVOIR Inflow (2)	APR-JUL	205	285	345	90	410	520	385
	APR-SEP	270	365	435	90	515	640	485
HUERFANO RIVER nr Redwing	APR-JUL	7.8	11.1	13.7	111	16.5	21	12.3
	APR-SEP	10.2	14.2	17.2	111	21	26	15.5
CUCHARAS RIVER nr La Veta	APR-JUL	5.4	9.1	12.1	107	15.6	22	11.3
	APR-SEP	6.7	10.7	13.9	107	17.6	24	13.0
TRINIDAD LAKE Inflow (2)	MAR-JUL	11.8	23	33	97	45	65	34
	APR-SEP	14.7	28	40	91	54	78	44

ARKANSAS RIVER BASIN Reservoir Storage (1000 AF) - End of February					ARKANSAS RIVER BASIN Watershed Snowpack Analysis - March 1, 2010			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ADOBE	62.0	53.4	47.0	36.0	UPPER ARKANSAS BASIN	10	85	93
CLEAR CREEK	11.4	7.6	8.2	6.8	CUCHARAS & HUERFANO RIVER	4	107	109
CUCHARAS RESERVOIR	40.0	1.3	2.5	4.7	PURGATOIRE RIVER BASIN	2	99	111
GREAT PLAINS	150.0	17.0	0.0	38.9	TOTAL ARKANSAS RIVER BASIN	15	90	97
HOLBROOK	7.0	3.1	0.6	4.8				
HORSE CREEK	27.0	0.0	0.0	12.7				
JOHN MARTIN	616.0	67.9	72.0	132.2				
LAKE HENRY	8.0	7.8	8.0	5.6				
MEREDITH	42.0	42.0	38.7	18.1				
PUEBLO	354.0	257.5	235.0	168.7				
TRINIDAD	167.0	20.1	22.8	26.2				
TURQUOISE	127.0	63.3	59.9	77.3				
TWIN LAKES	86.0	53.8	41.5	44.0				

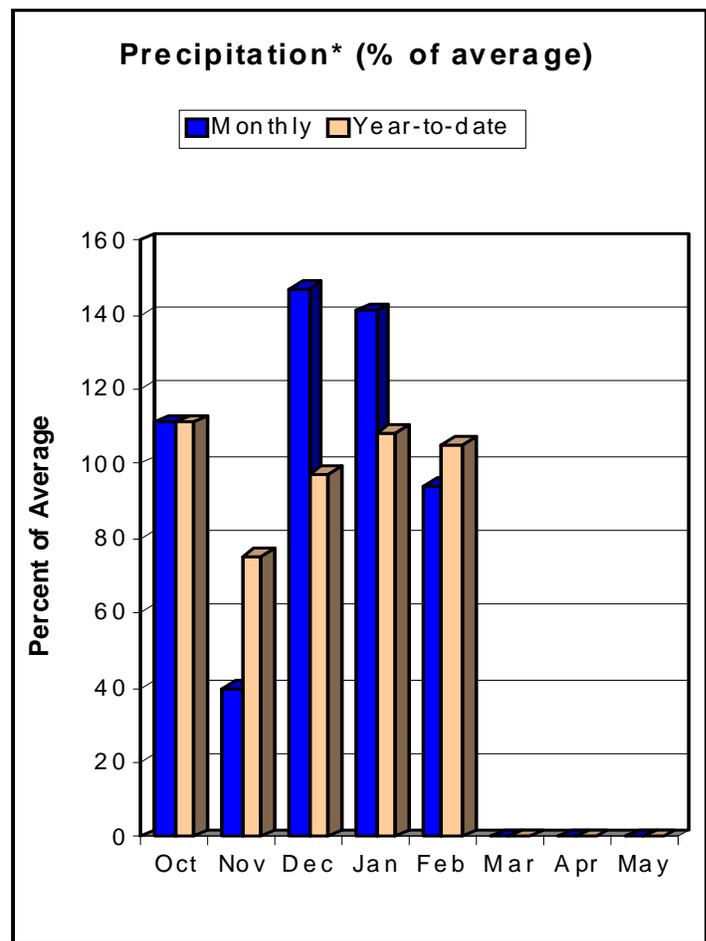
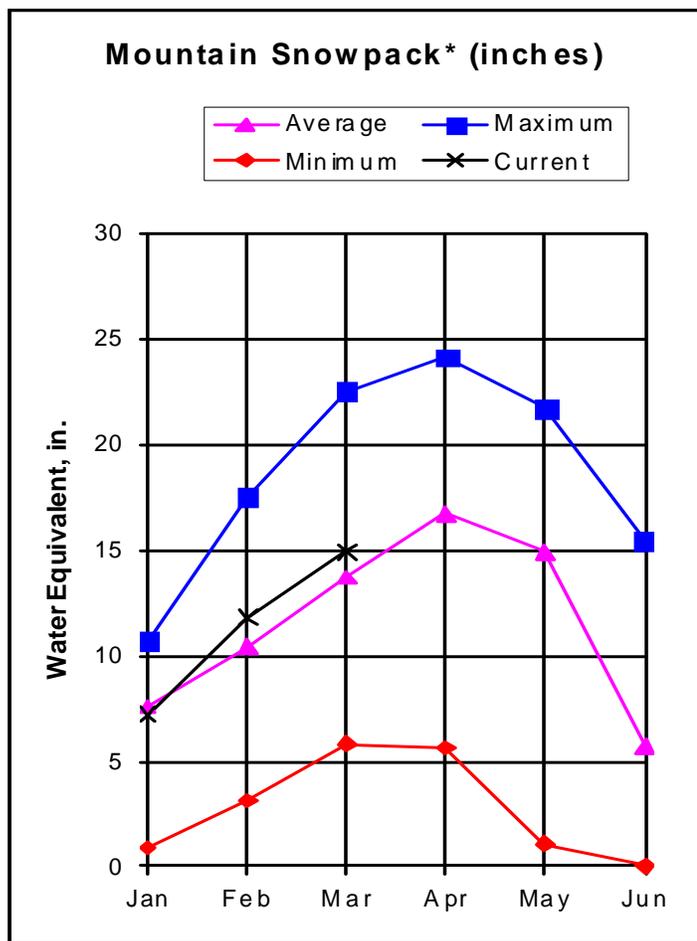
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The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
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# UPPER RIO GRANDE RIVER BASIN

## as of March 1, 2010



\*Based on selected stations

Above average conditions continue to bless the Rio Grande Basin in Colorado with the snowpack at 109 percent of average and year-to-date precipitation at 105 percent. Current conditions closely resemble those of last year at this time being 95 percent of last year's snowpack and 98 percent of last year's precipitation. Although monthly snow and precipitation totals were below average, the Rio Grande Basin remains number one in both year-to-date categories of all major basins in the state. Snowpack saw improvement in only the Culebra & Trinchera sub-drainage from 102 percent of average last month to 114 percent this month. At 124 percent of average snow water equivalent, Cumbres Trestle SNOTEL is second only to Big Meadows snow course at 127 percent. Overall, the Upper Rio Grande Basin is forecast to produce near average streamflows through spring and summer. Only one forecast point, Saguache Creek near Saguache, is slated to the yield less than 90 percent of average volumes during the April through September period. Costilla Creek near Costilla from March 1 through July 1 presents the best outlook at 115 percent of average streamflow volume. Reservoir storage is down slightly for the month of February, averaging 93 percent across the basin. Platoro reservoir is closest to full capacity at 50 percent and 123 percent of average.

UPPER RIO GRANDE BASIN  
Streamflow Forecasts - March 1, 2010

Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)		
Rio Grande at Thirty Mile Bridge (2)	APR-SEP	90	112	128	94	145	172	136				
	APR-JUL	83	101	114	97	128	151	118				
Rio Grande at Wagon Wheel Gap (2)	APR-SEP	225	285	330	96	380	455	345				
South Fork Rio Grande at South Fork	APR-SEP	98	120	137	104	155	186	132				
Rio Grande nr Del Norte (2)	APR-SEP	365	460	530	100	610	735	531				
Saguache Creek nr Saguache (2)	APR-SEP	15.9	23	28	85	34	44	33				
Alamosa Creek abv Terrace Reservoir	APR-SEP	50	63	73	104	84	102	70				
La Jara Creek nr Capulin	MAR-JUL	5.1	7.2	9.0	103	11.0	14.6	8.7				
Trinchera Creek abv Turners Ranch	APR-SEP	6.0	9.6	12.0	100	14.4	18.0	12.0				
Sangre de Cristo Creek (2)	APR-SEP	1.6	5.8	8.6	98	11.4	15.6	8.8				
Ute Ck nr Fort Garland	APR-SEP	6.9	10.2	13.0	107	16.2	22	12.2				
Platoro Reservoir Inflow	APR-JUL	46	55	62	97	69	81	64				
	APR-SEP	50	60	68	96	76	90	71				
Conejos River nr Mogote (2)	APR-SEP	152	188	215	108	245	295	200				
San Antonio River at Ortiz	APR-SEP	10.2	14.5	18.0	110	22	29	16.4				
Los Pinos River nr Ortiz	APR-SEP	53	69	81	110	94	117	74				
Culebra Creek at San Luis (2)	APR-SEP	10.2	16.5	22	96	29	41	23				
Costilla Reservoir Inflow	MAR-JUL	6.5	9.5	12.0	113	14.9	20	10.6				
Costilla Creek nr Costilla (2)	MAR-JUL	15.7	23	30	115	38	51	26				

UPPER RIO GRANDE BASIN  
Reservoir Storage (1000 AF) - End of February

UPPER RIO GRANDE BASIN  
Watershed Snowpack Analysis - March 1, 2010

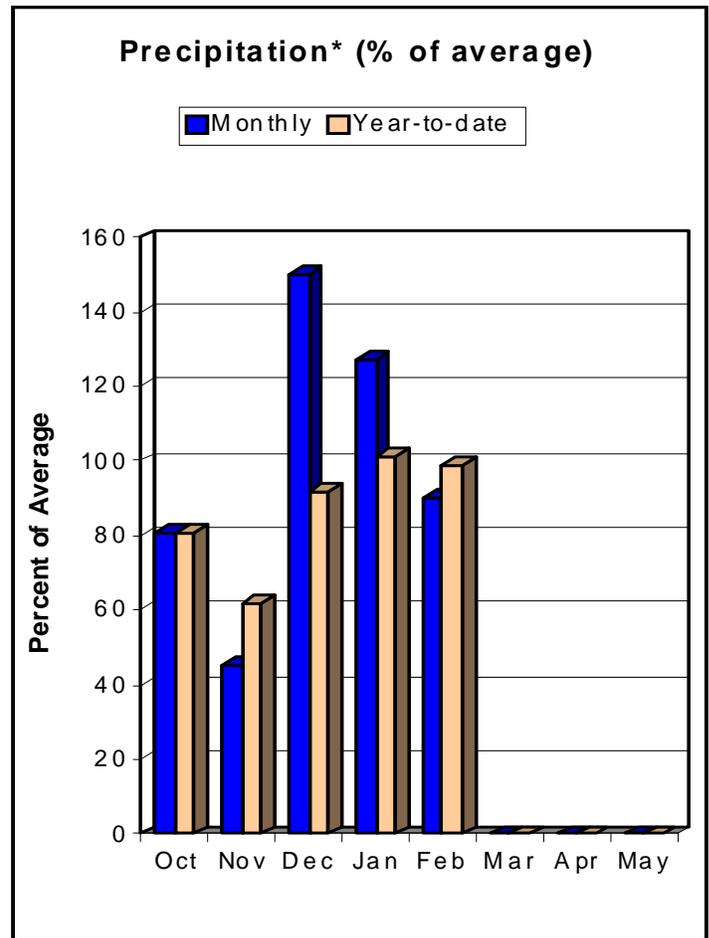
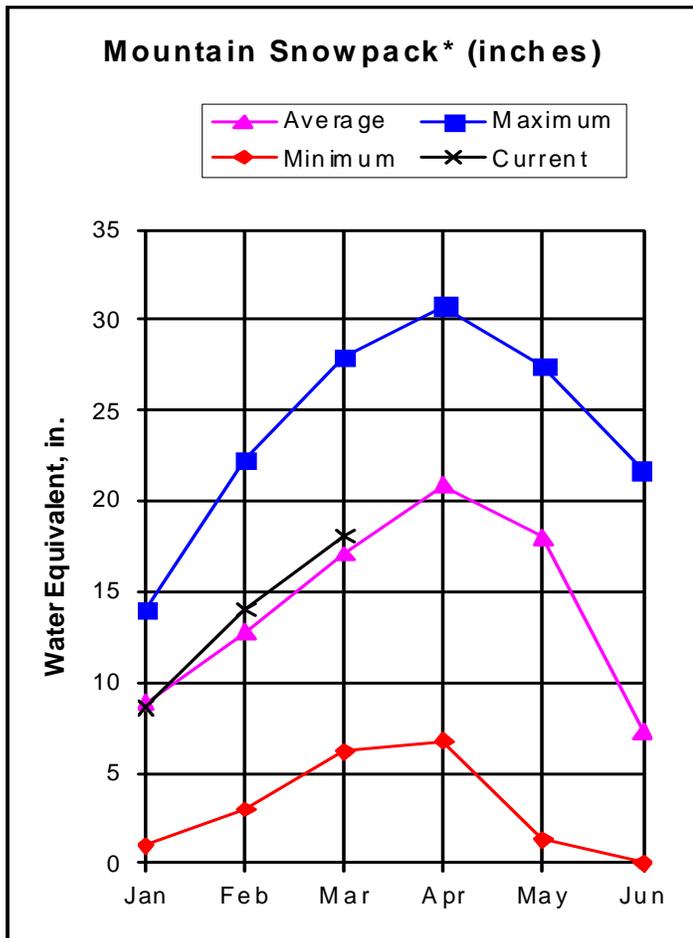
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CONTINENTAL	27.0	4.3	3.7	5.3	ALAMOSA CREEK BASIN	2	90	113
PLATORO	60.0	30.0	17.5	24.3	CONEJOS & RIO SAN ANTONIO	4	87	114
RIO GRANDE	51.0	18.9	17.9	17.6	CULEBRA & TRINCHERA CREEK	5	98	114
SANCHEZ	103.0	19.5	25.1	24.1	UPPER RIO GRANDE BASIN	12	103	106
SANTA MARIA	45.0	6.7	5.8	10.6	TOTAL UPPER RIO GRANDE BA	23	95	109
TERRACE	18.0	4.0	6.0	6.7				

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
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- (3) - Median value used in place of average.

# SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS as of March 1, 2010



\*Based on selected stations

Snowpacks in the combined San Miguel, Dolores, Animas and San Juan River basins dropped slightly from 109 percent of average last month to 106 percent of average on March 1. As with the previous month, the bulk of the snow came over one weekend, in this case February 19 through February 21. This single event provided 54 percent of the snow water content the basin received for the entire month. The snowpack is currently equal to the snowpack present a year ago and is tied for the third best March 1 conditions going back to 1997 (only 2005 and 2008 were higher at 145 and 155 percent of average, respectively). Snowpacks in all the sub-basins are above normal, ranging from 101 percent of average in the Animas Watershed to 114 percent of average in the Dolores Watershed. As you might guess from the lower snowpack percentage, February precipitation at the higher elevations was below normal at 90 percent of average. Total precipitation for the water year also took a small hit, falling from 101 percent of average last month to 99 percent of average. The six reservoirs in the basin show stored water at 88 percent of average and 57 percent of capacity. Although down somewhat from the forecasts issued last month, near normal streamflows are expected throughout most of the basin. April-July runoff should range from 85 percent of average for the Dolores River at Dolores to 106 percent of average for the Rio Blanco at the Blanco Diversion and the Navajo River at the Oso Diversion.

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Streamflow Forecasts - March 1, 2010

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
Dolores River at Dolores	APR-JUL	150	191	225	85	260	315	265
McPhee Reservoir Inflow	APR-JUL	175	230	275	86	325	400	320
San Miguel River nr Placerville	APR-JUL	80	99	115	87	133	155	132
Gurley Reservoir Inlet	APR-JUL	10.8	13.7	16.0	87	18.5	23	18.3
Cone Reservoir Inlet	APR-JUL	1.2	1.9	3.1	95	4.6	6.7	3.3
Lilylands Reservoir Inlet	APR-JUL	1.6	2.2	2.7	92	3.2	4.1	2.9
Rio Blanco at Blanco Diversion (2)	APR-JUL	40	49	56	106	64	70	53
Navajo River at Oso Diversion (2)	APR-JUL	55	63	73	106	84	95	69
San Juan River nr Carracas (2)	APR-JUL	290	340	400	99	470	550	405
Piedra River nr Arboles	APR-JUL	155	187	225	98	265	320	230
Vallecito Reservoir Inflow	APR-JUL	140	177	200	98	225	260	205
Navajo Reservoir Inflow (2)	APR-JUL	520	645	765	98	900	1060	785
Animas River at Durango	APR-JUL	300	360	420	96	485	560	440
Lemon Reservoir Inflow	APR-JUL	41	49	55	95	62	72	58
La Plata River at Hesperus	APR-JUL	16.4	21	25	100	29	32	25
Mancos River nr Mancos (2)	APR-JUL	20	25	34	103	43	45	33

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Reservoir Storage (1000 AF) - End of February

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Watershed Snowpack Analysis - March 1, 2010

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
GROUNDHOG	22.0	14.2	14.2	12.0	ANIMAS RIVER BASIN	9	99	101
JACKSON GULCH	10.0	3.5	3.5	4.6	DOLORES RIVER BASIN	7	100	114
LEMON	40.0	9.6	18.6	20.4	SAN MIGUEL RIVER BASIN	5	91	104
MCPHEE	381.0	252.5	276.2	276.3	SAN JUAN RIVER BASIN	4	106	110
NARRAGUINNEP	19.0	13.3	16.6	13.5	TOTAL SAN MIGUEL, DOLORES	24	100	106
VALLECITO	126.0	46.6	76.8	60.8	AN JUAN RIVER BASINS			

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In addition to the basin outlook reports, water supply forecast information for the Western United States is available from the Natural Resources Conservation Service and the National Weather Service monthly, January through May. The information may be obtained from the Natural Resources Conservation Service web page at <http://www.wcc.nrcs.usda.gov/wsf/westwide.html>

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