EVALUATION OF 9 YEARS OF CPC LONG RANGE PRECIPITATION FORECASTS IN THE NORTHERN SIERRA NEVADA

NOAA Climate Diagnostic Workshop, October 2009
Monterey, CA

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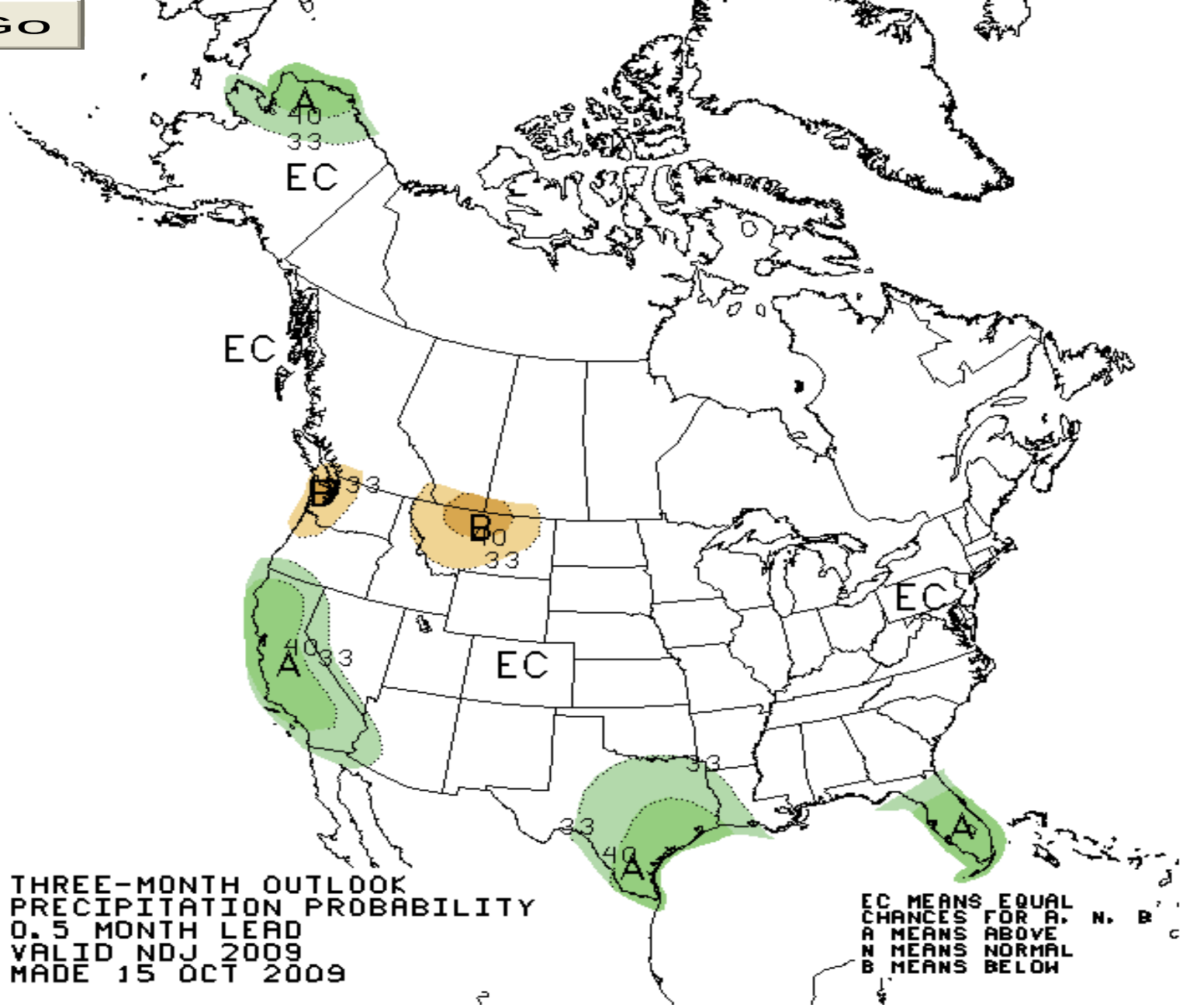
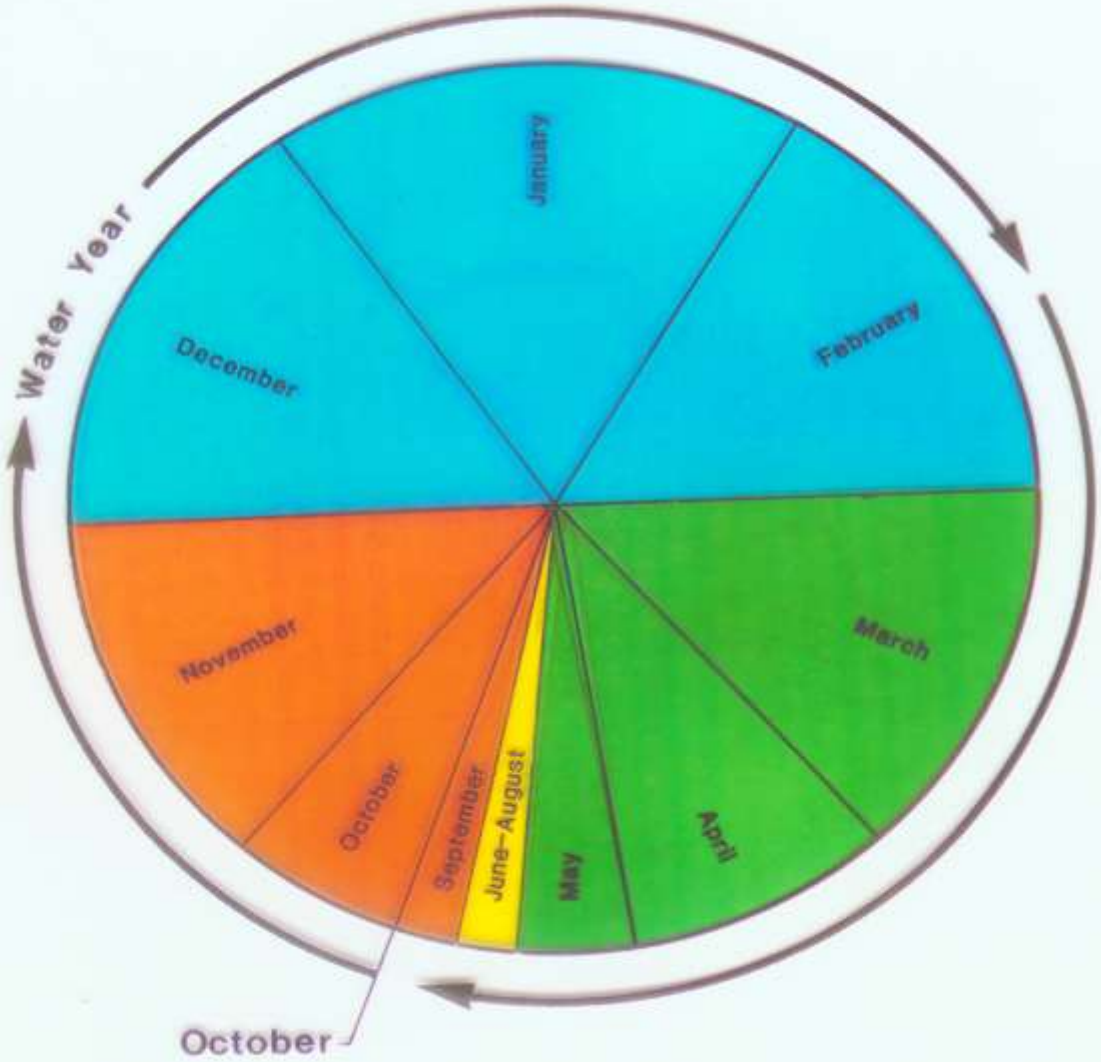
CA Dep't of Water Resources

Go

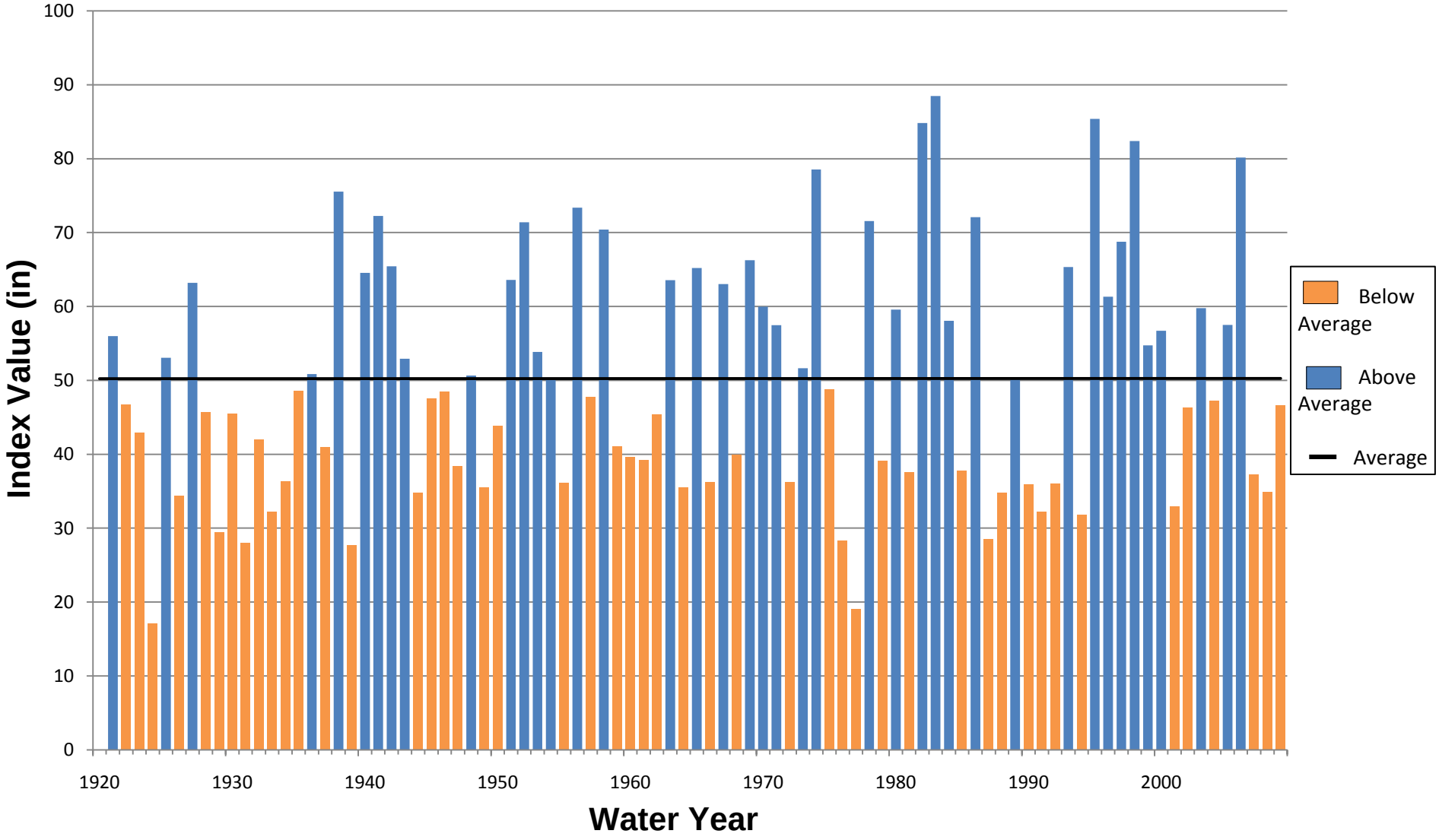

A
40
33
EC
EC
B
33
B
40
33
EC
A
40
33
EC
33
33
40
A
A
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID NDJ 2009
MADE 15 OCT 2009
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

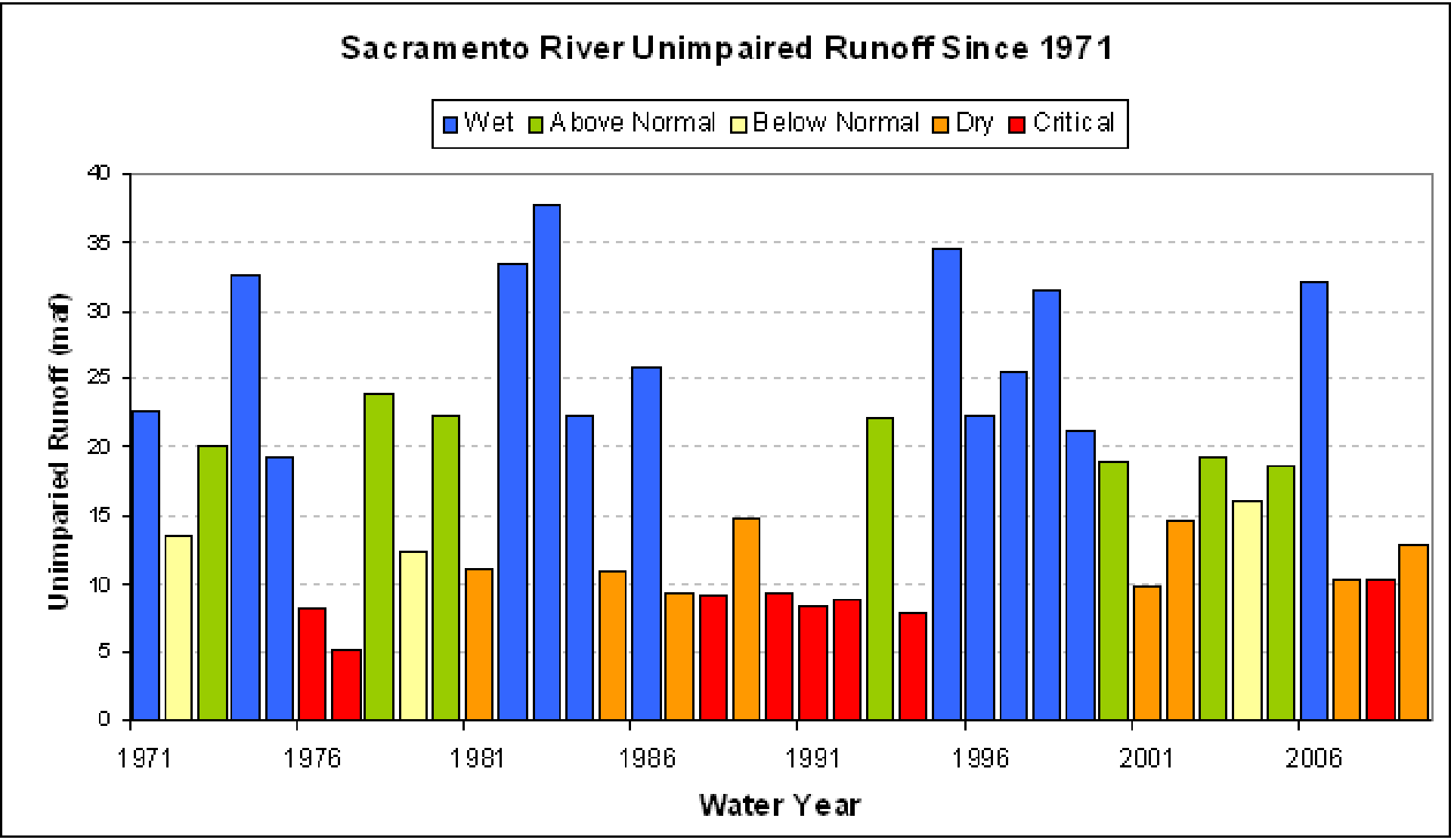
MSC - Mount Shasta City
SHA - Shasta Dam
MNR - Mineral
QRD - Quincy
BCM - Brush Creek
SRR - Sierraville RS
BYM - Blue Canyon
PCF - Pacific House
San Francisco
PACIFIC OCEAN
Los Angeles
San Diego

MONTHLY PRECIPITATION DISTRIBUTION



Northern Sierra 8 Station Precipitation Index




Sacramento River Unimpaired Runoff Since 1971
Wet
Above Normal
Below Normal
Dry
Critical
Unimpaired Runoff (maf)
0
5
10
15
20
25
30
35
40
1971
1976
1981
1986
1991
1996
2001
2006
Water Year

CPC FORECAST EVALUATION NORTHERN SIERRA 9 Years: 2000-2008

	Number with Signal	Right Direction	Wrong Direction	Approx Skill
1 Month	42	26	16	.24
1-3 Months	52	32	20	.23
4-6 Months	34	20	14	.18

CPC FORECAST EVALUATION NORTHERN SIERRA 9 Years: 2000-2008 Nov-Mar

	Number with Signal	Right Direction	Wrong Direction	Approx Skill
1 Month	17	7	10	- .18
1-3 Months	18	8	10	- .11
4-6 Months	5	4	1	.60

CPC FORECAST EVALUATION NORTHERN SIERRA 9 Years: 2000-2008 Strong Signal

	Number with Signal	Right Direction	Wrong Direction	Approx Skill
1 Month	8	4	4	0
1-3 Months	18	5	13	- .44
4-6 Months	18	4	14	- 1.1

Note: A strong signal is one with a 5 percent of more shift.

CPC FORECAST EVALUATION NORTHERN SIERRA 9 Years: 2000-2008 Correct Third

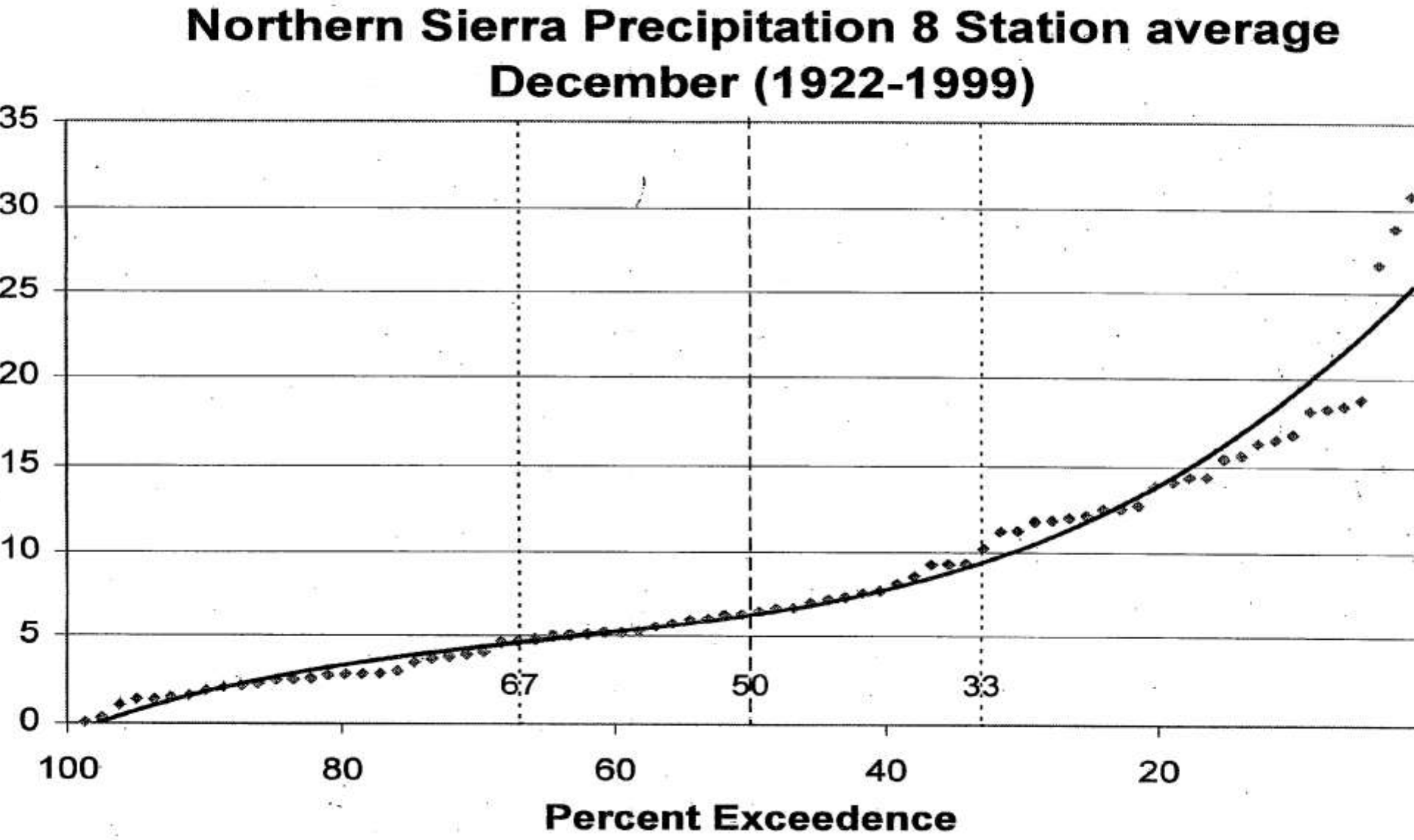
	Number with Signal	Correct Tercile	Approx Skill
1 Month	43	8	- .22
1-3 Months	56	16	- .07
4-6 Months	35	13	.06

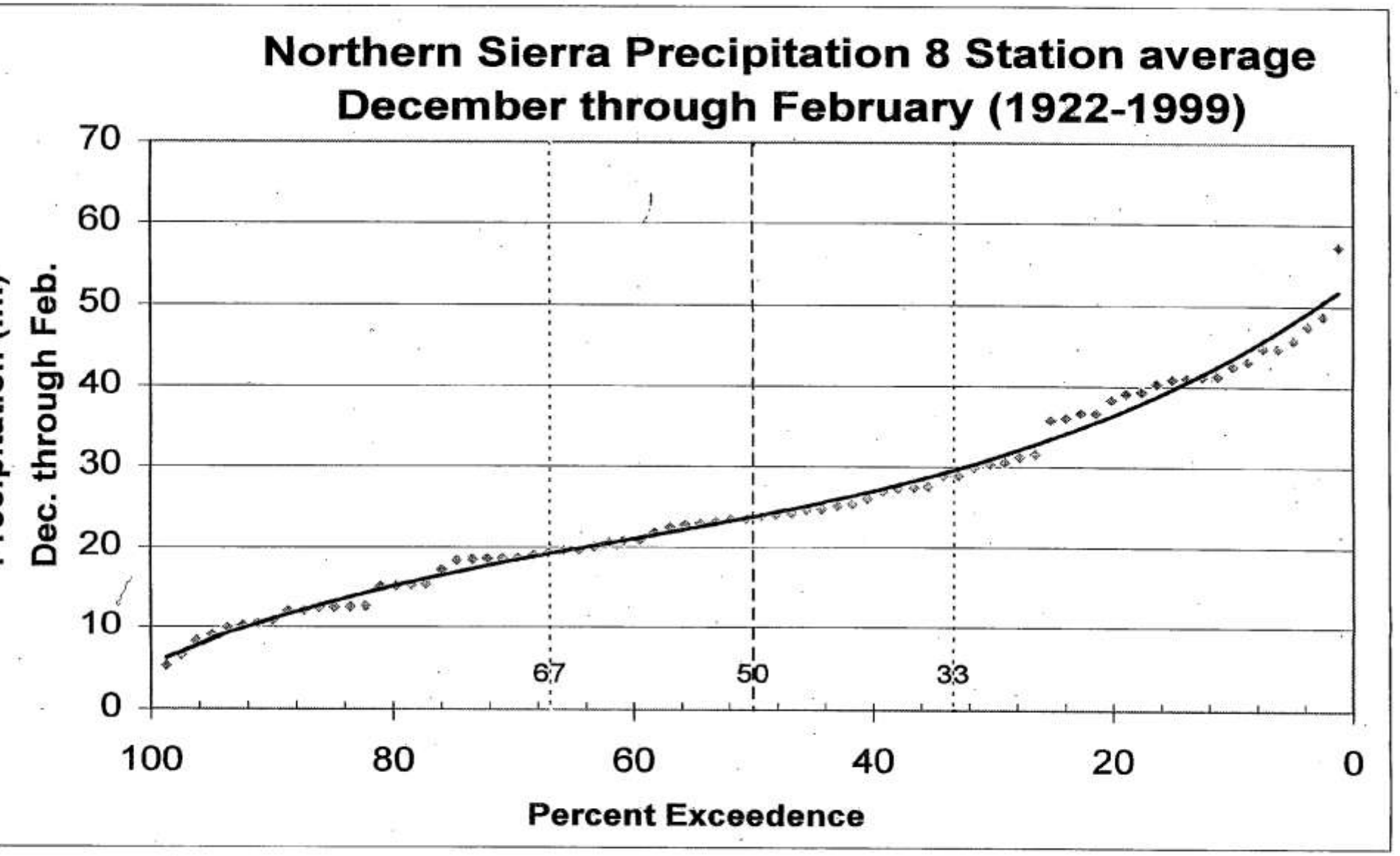
CPC FORECAST EVALUATION NORTHERN SIERRA Years 2004-2009 One Month Compare ½ Month to End of Month

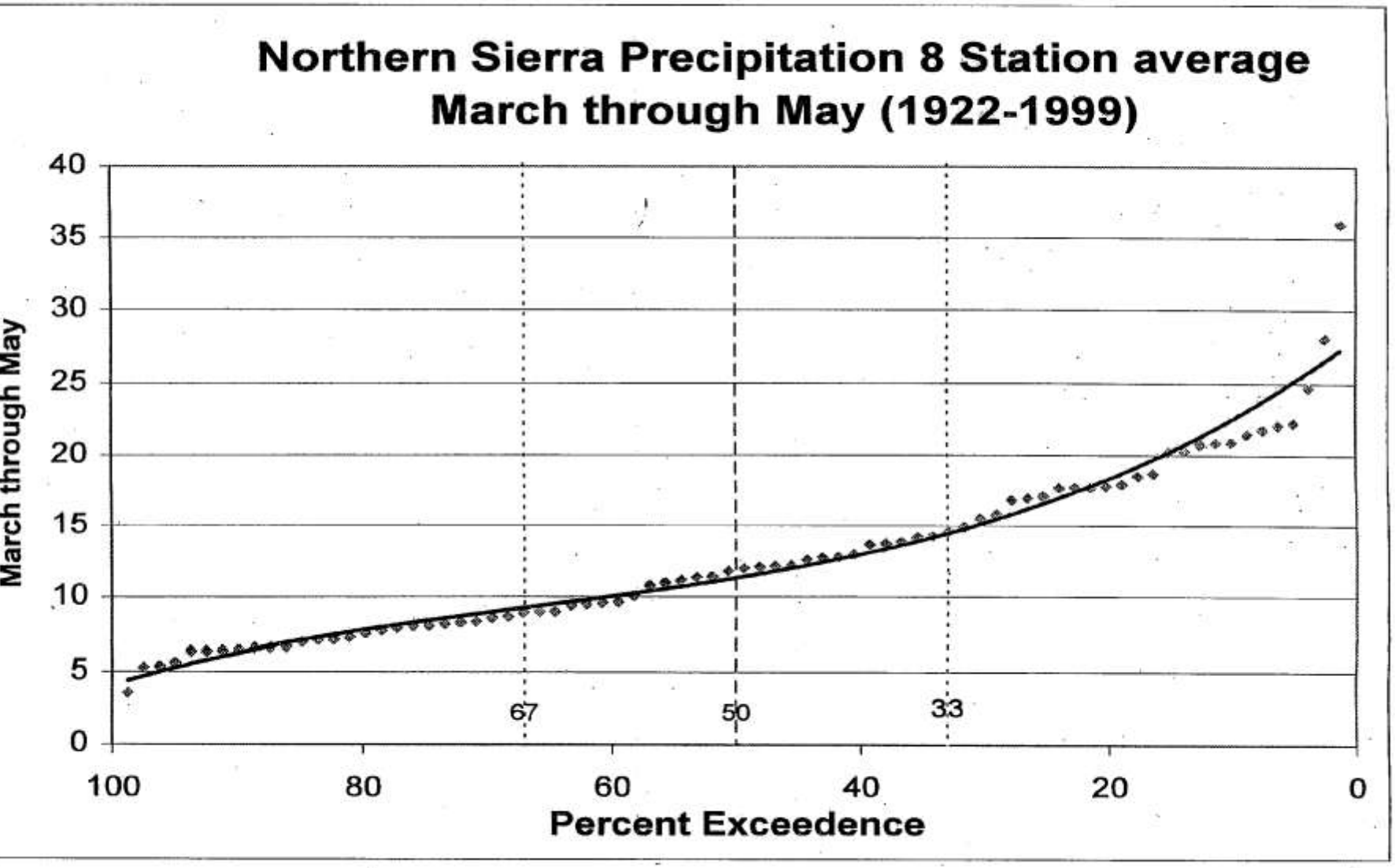
	Number with Signal	Right Direction	Wrong Direction	Approx Skill
Original Forecast	22	14	8	.27
Revised Forecast	36	29	7	.61

CPC FORECASTS
NORTHERN SIERRA PRECIPITATION
Directional Skill By Year

Year	One Month			1-3 Months			4-6 Months		
	EC	Right	Wrong	EC	Right	Wrong	EC	Right	Wrong
2000	4	4	4	7	2	3	6	4	2
2001	7	3	2	9	2	1	10	1	1
2002	7	3	2	4	5	3	8	2	2
2003	8	2	2	4	6	2	9	1	2
2004	7	4	1	6	4	1	(1M) 10	1	1
2005	9	1	2	6	3	3	9	2	1
2006	8	4	0	8	3	1	6	4	2
2007	9	1	2	4	3	5	7	2	3
2008	7	4	1	7	4	1	9	3	0
Total	66	26	16	55	32	20	74	20	14


Northern Sierra Precipitation 8 Station average
December (1922-1999)
35
30
25
20
15
10
5
0
67
50
33
100
80
60
40
20
Percent Exceedence


Northern Sierra Precipitation 8 Station average
December through February (1922-1999)
Dec. through Feb.
70
60
50
40
30
20
10
0
67
50
33
100
80
60
40
20
0
Percent Exceedence


Northern Sierra Precipitation 8 Station average
March through May (1922-1999)
March through May
40
35
30
25
20
15
10
5
0
67
50
33
100
80
60
40
20
0
Percent Exceedence

California's Water Projects

Sacramento-San Joaquin Delta

Federal Central Valley Project

20 Reservoirs

11 Hydro-electric power plants

500 miles of canals, siphons, & tunnels

11MAF total storage capacity

State Water Project

21 Reservoirs

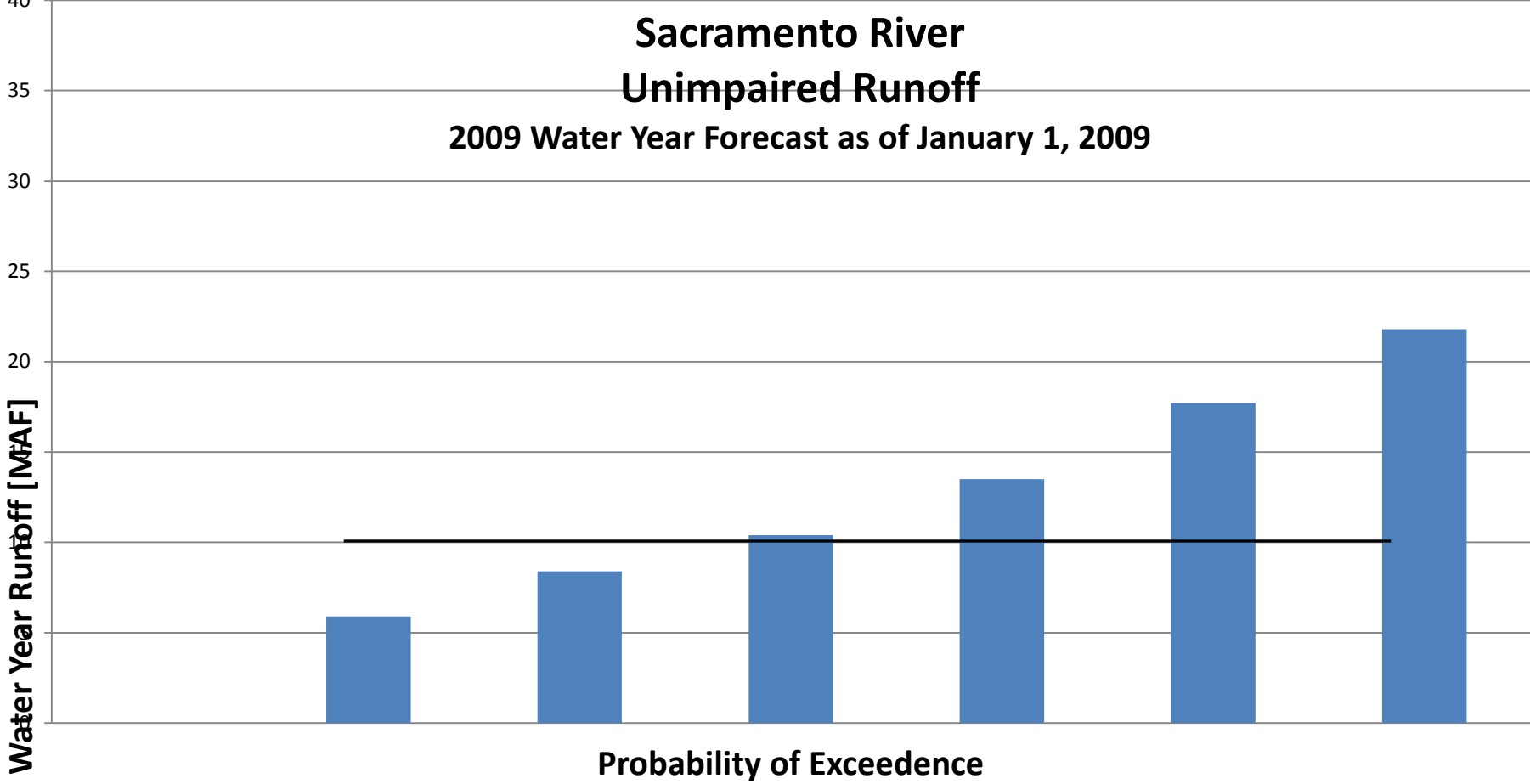
17 Pumping Plants

3 Pumping-generating plants

5 Hydro-electric power plants

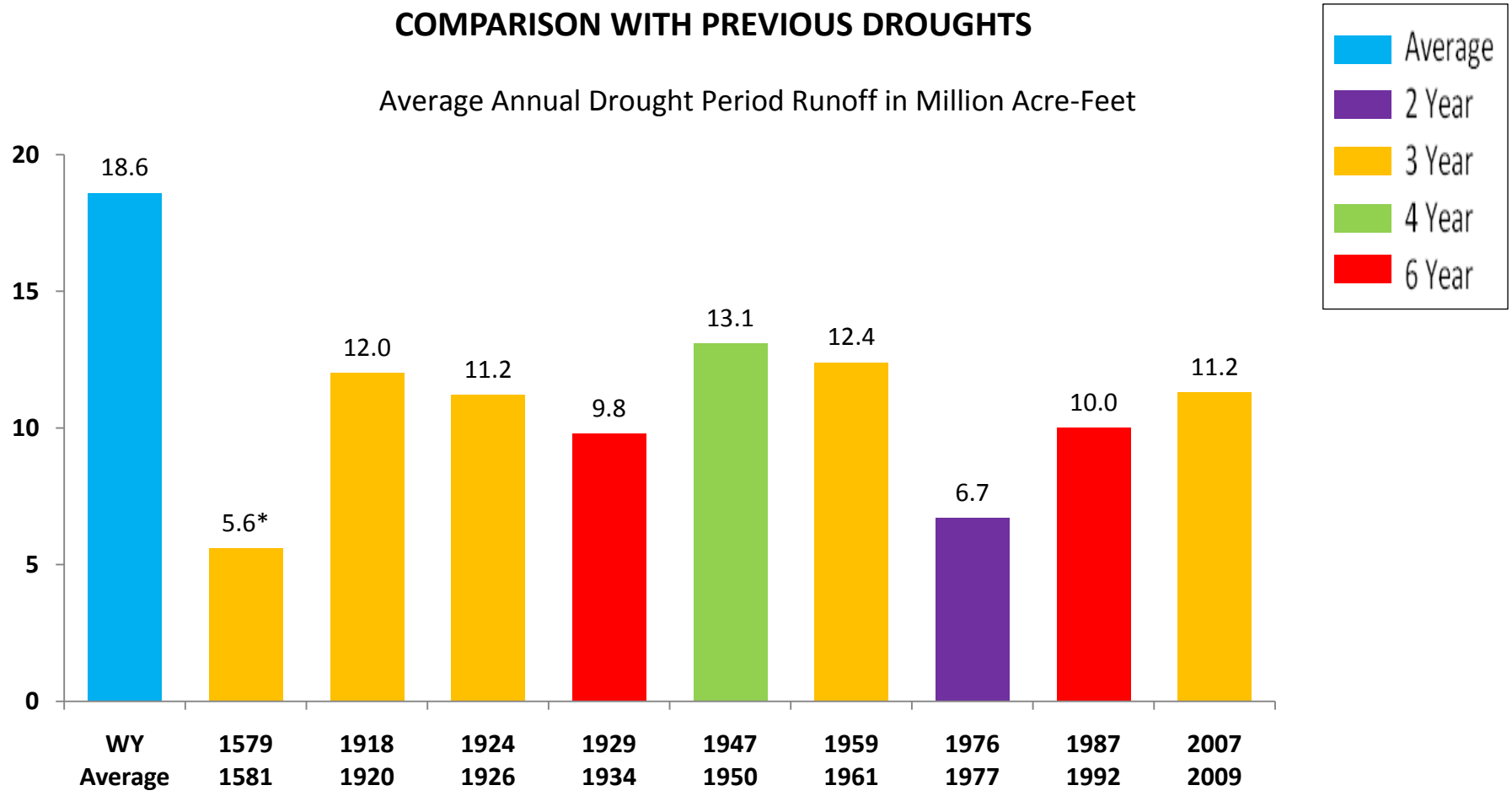
660 miles of canals, siphons, & tunnels

5.8 MAF total storage capacity



Date of Forecast	99%	90%	75%	50%	25%	10%
Dec 1, 2008	5.1 (27%)	8.2 (44%)	10.8 (58%)	14.8 (79%)	19.9 (107%)	24.8 (133%)
Jan 1, 2009	**5.9 (32%)**	**8.4 (45%)**	**10.4 (56%)**	**13.5 (73%)**	**17.7 (95%)**	**21.8 (117%)**

COMPARISON WITH PREVIOUS DROUGHTS



* from tree rings

SACRAMENTO FOUR RIVER RUNOFF