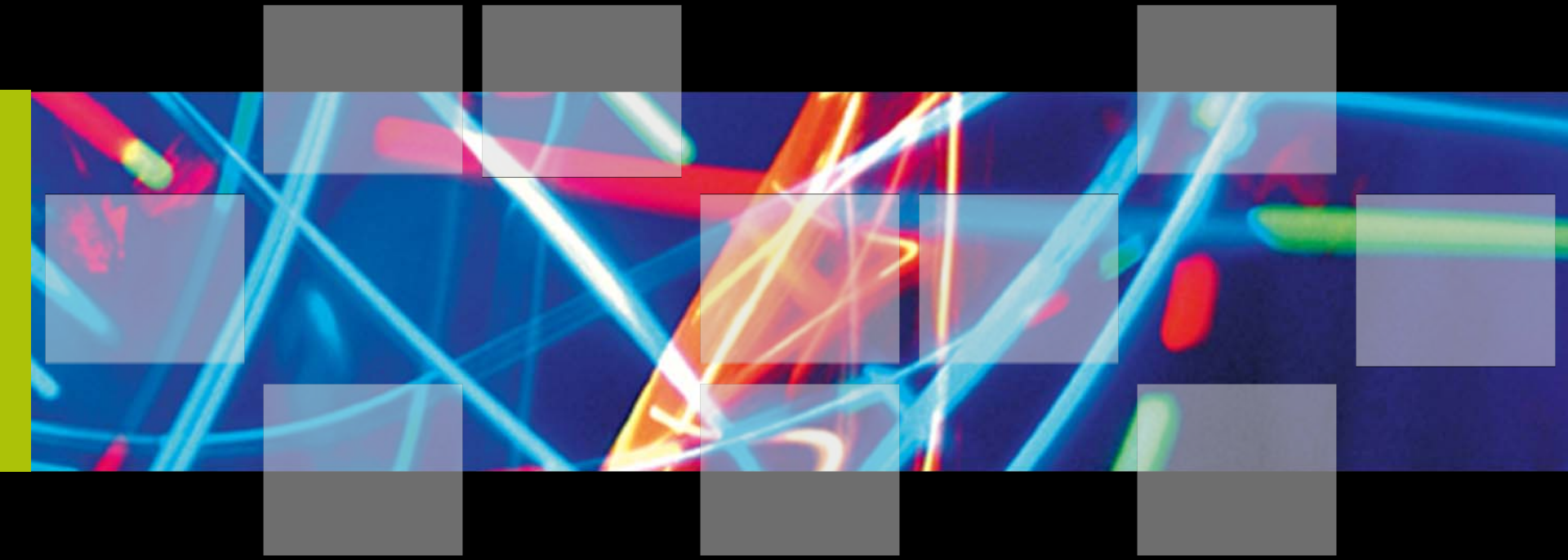
Governor's Conference on Managing Drought and Climate Risk

October 8, 2008



The Droughts of 1977 and 1981

A brief perspective

Presented by

Ben Harding, AMEC

Vol. 89

THE DENVER POST

Saturday morning

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It's Official for Colorado: Drought Is 'Inescapable'

By SHARON SHERMAN
Denver Post Staff Writer

Serious drought now is a fact in Colorado, Gov. Dick Lamm said Friday.

"It's inescapable. We do bring bad news. The drought is here. We cannot avoid saying that any longer," Lamm, flanked by a group of water experts, told reporters at an afternoon news conference.

severe water shortage sometime in the future is very high," the governor said.

Lamm and weather, soil and water experts said it seems nearly certain that some form of water use restrictions will be necessary in many areas of the state next summer, and they noted that severe erosion problems are possible on the state's eastern plains.

Three bright spots in the otherwise gloomy report, the governor said, are reservoirs are nearly full, skiing is generally good and the high pressure area, which has been blocking storms from Colorado, has moved.

"The route is now open for storms across Colorado," said Ellis Burton, meteorologist in charge at the National Weather Service office in Denver.

But officials said even if the snowfall improves, it is unlikely the eastern plains will achieve normal moisture.

Colorado normally gets 60 percent of its snowfall by Feb. 1, Lamm said.

If Colorado were to reach average conditions this winter, the state would have to receive twice the amount of snow it normally receives in the next several months, Boone said.

If precipitation is 'only' normal for the rest of the winter, he noted, "forecasts of next spring's runoff range from a low of 59 percent of average on

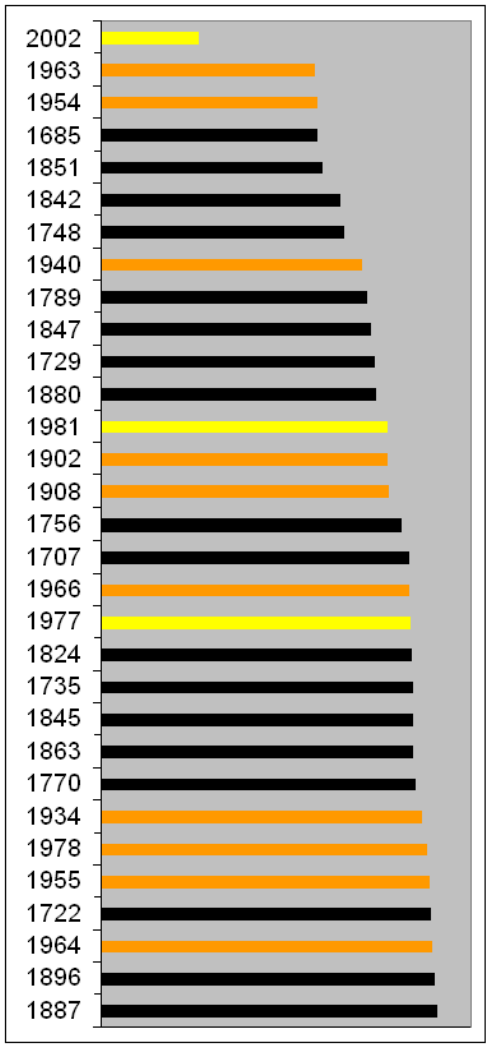
20th Century Context

Flow Rank, 1916 - 2002

	South Platte @ South Platte	Arkansas @ Canon City	Roaring Fork @ Glenwood Springs
1977	7	1	1
1981	5	4	7
2002	1	6	2

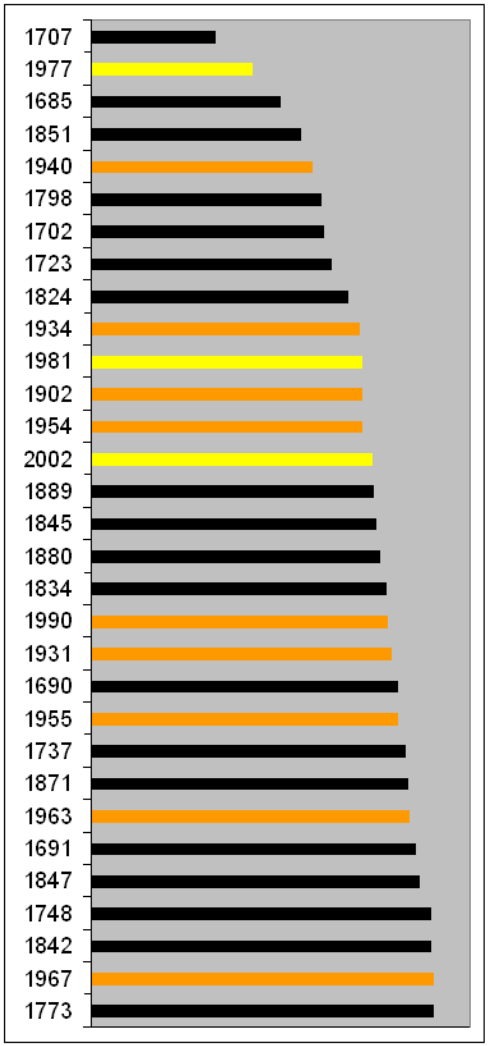
300-Year Context

South Platte @ South Platte



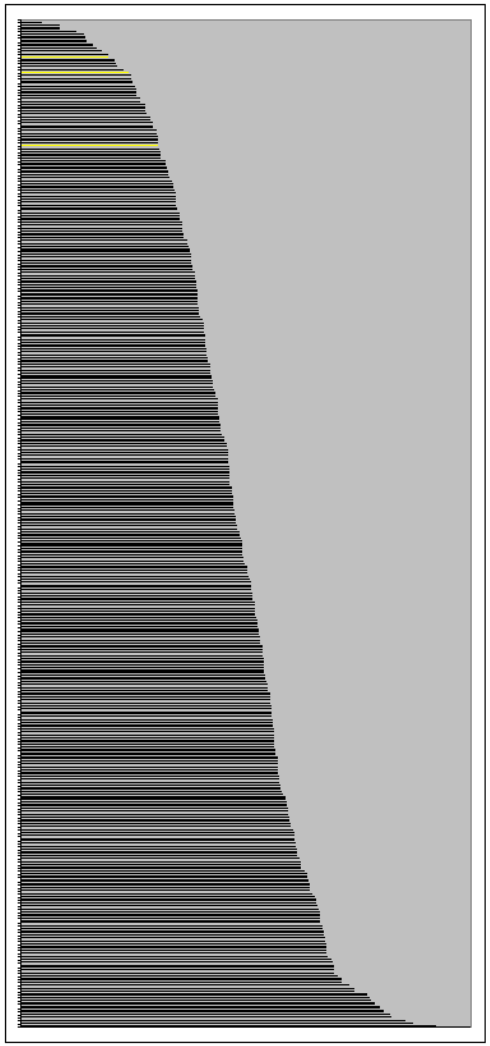
300-Year Context

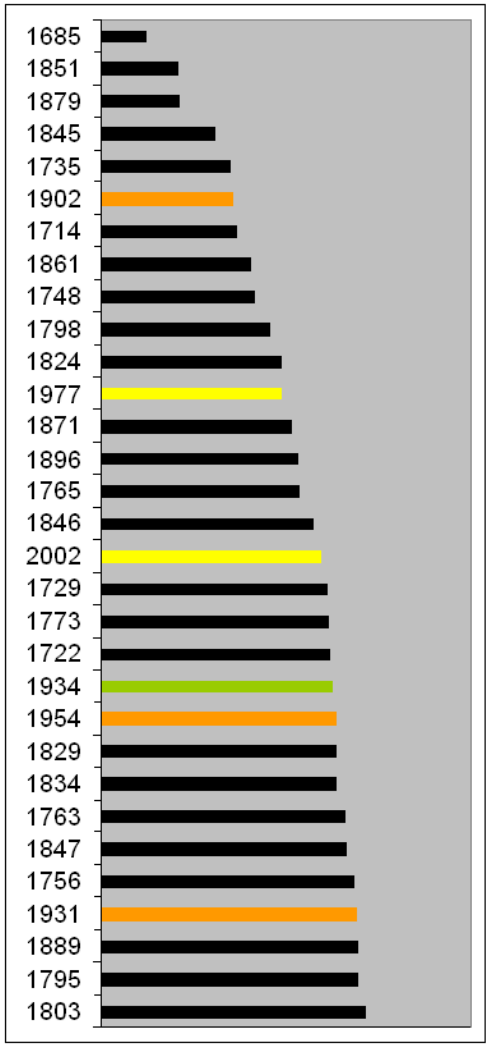
Arkansas @ Canon City



300-Year Context

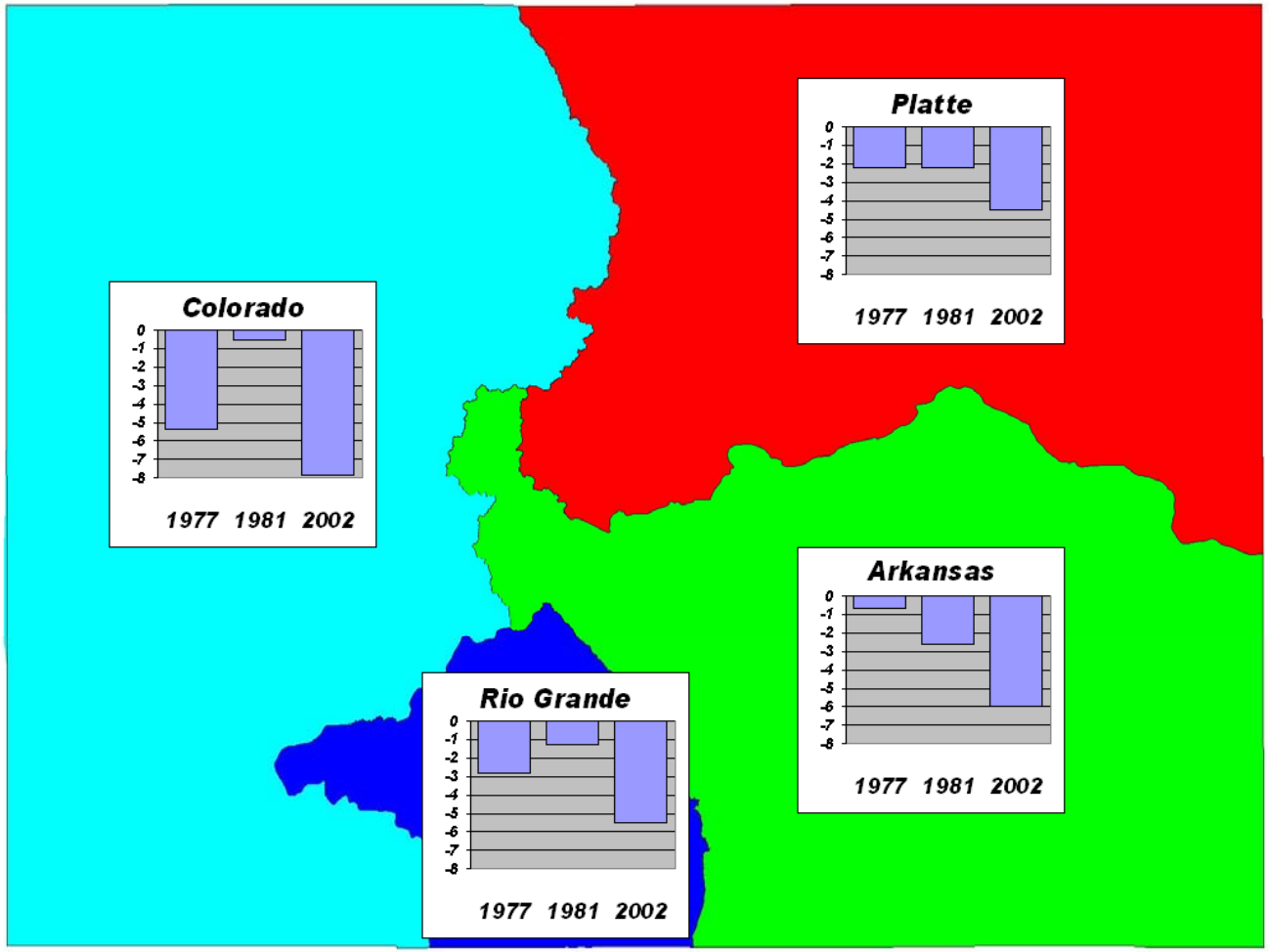
Roaring Fork @ Glenwood



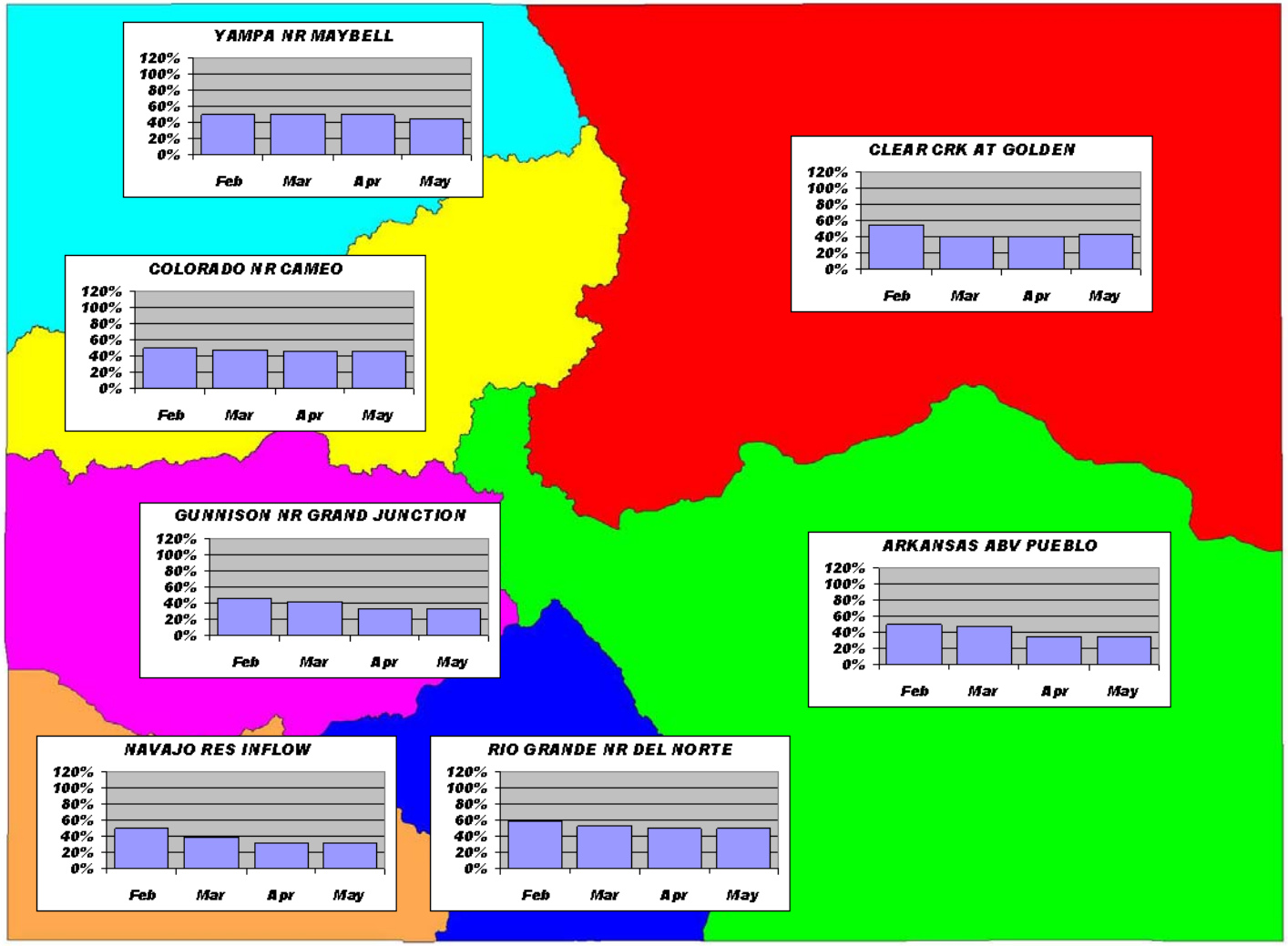


Antecedent Conditions

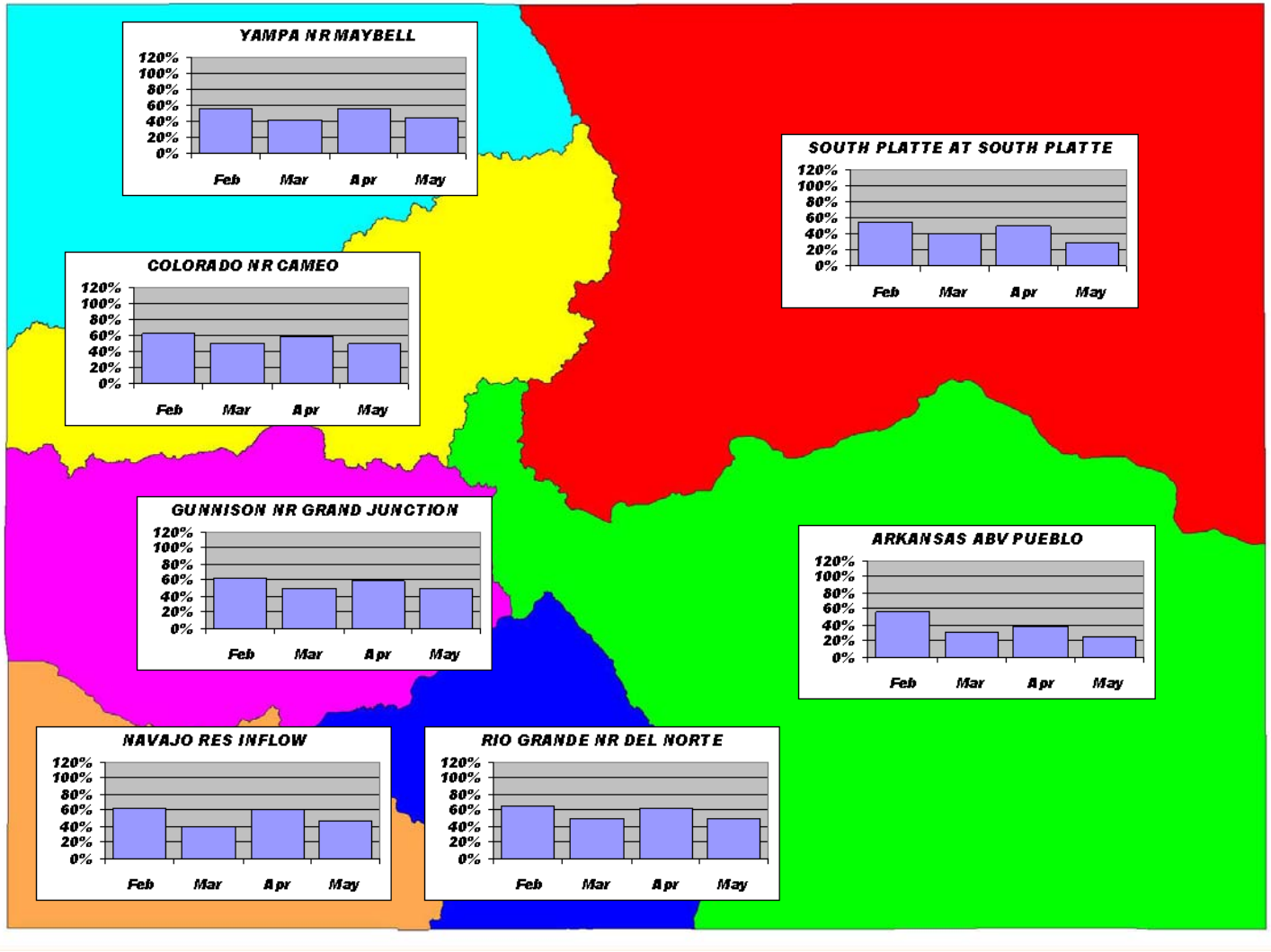
September 30 Basin PDSI



1977 Forecasts

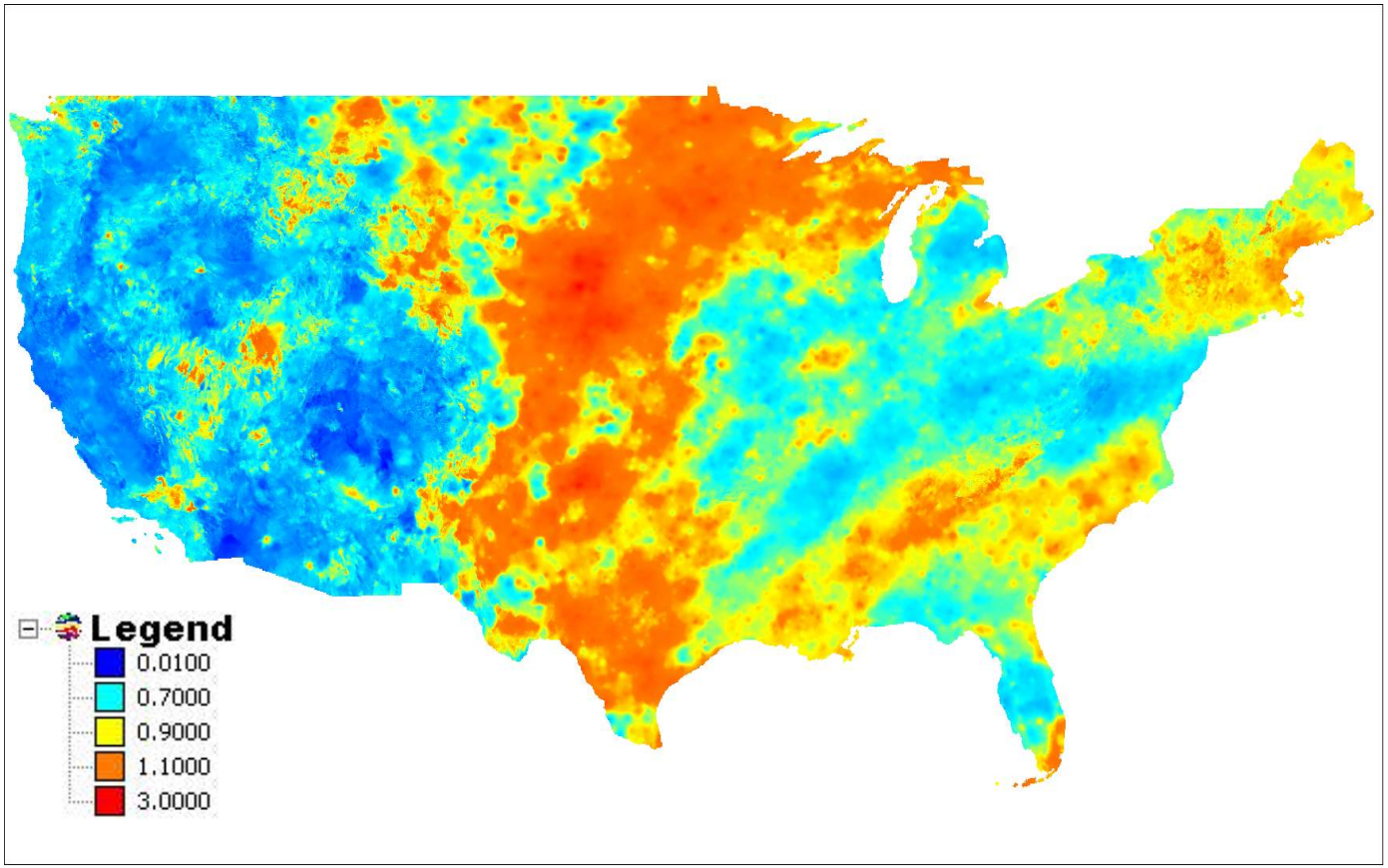


1981 Forecasts



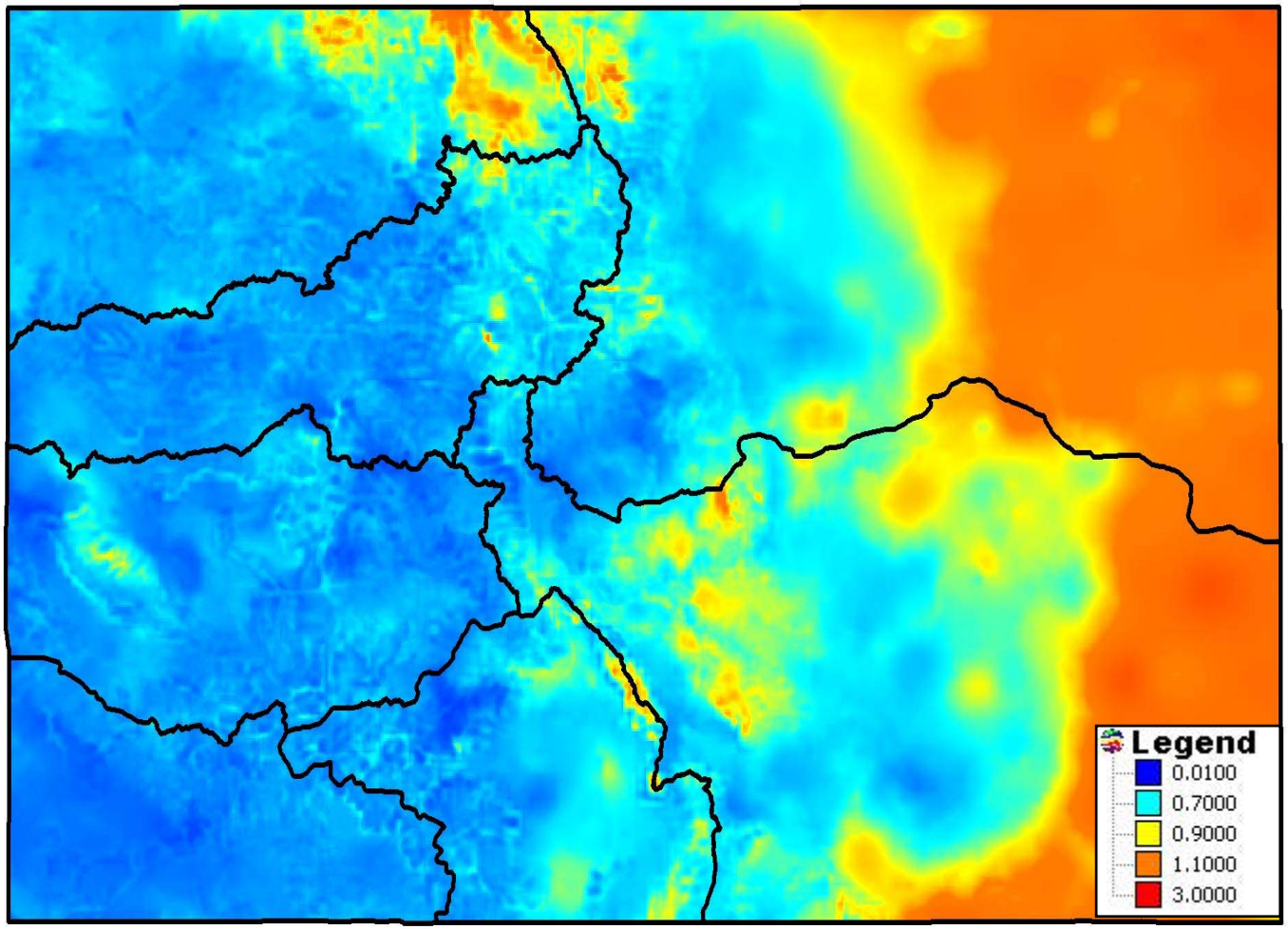
1977 Winter Precipitation

Percent of Normal



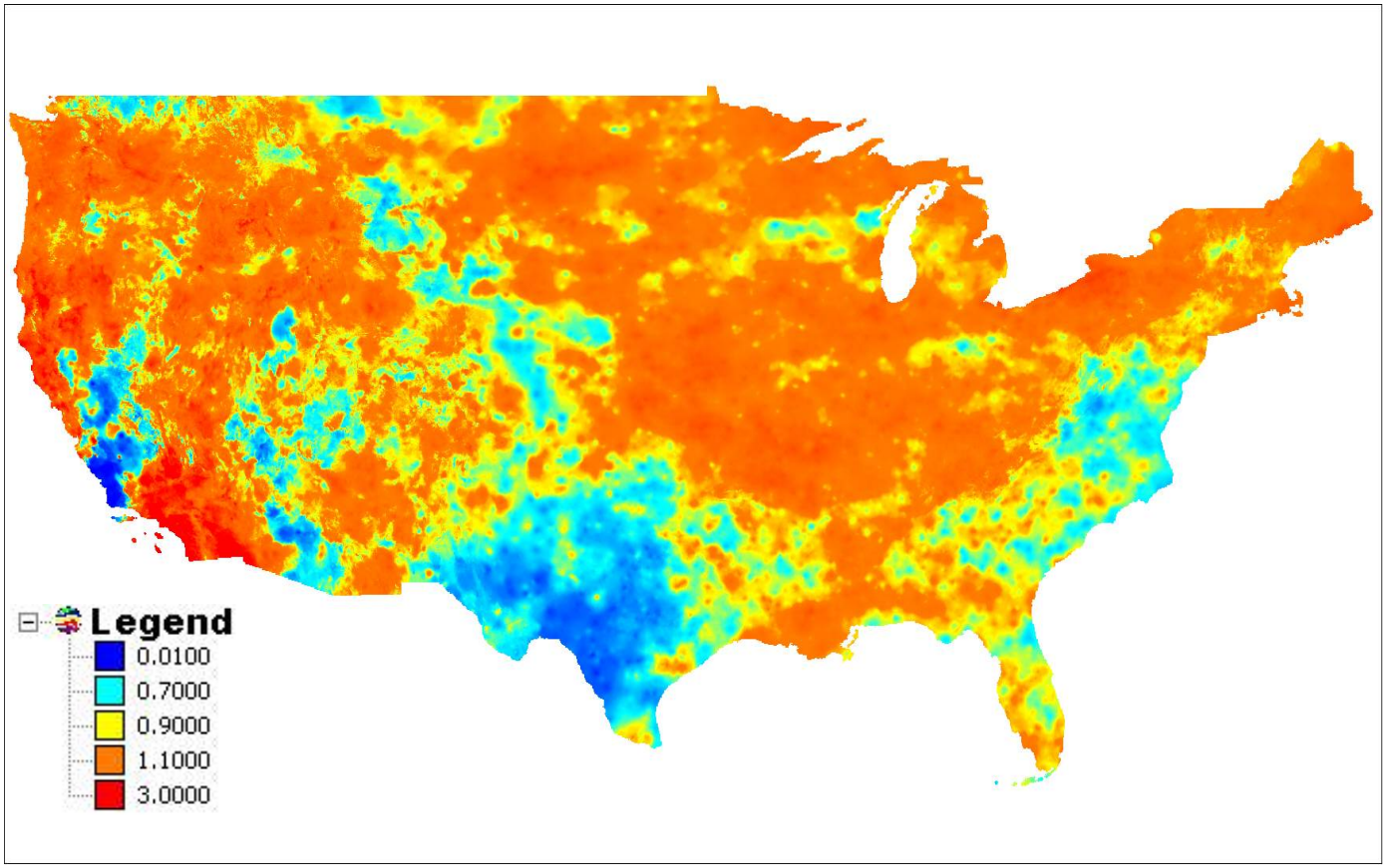
1977 Winter Precipitation

Percent of Normal



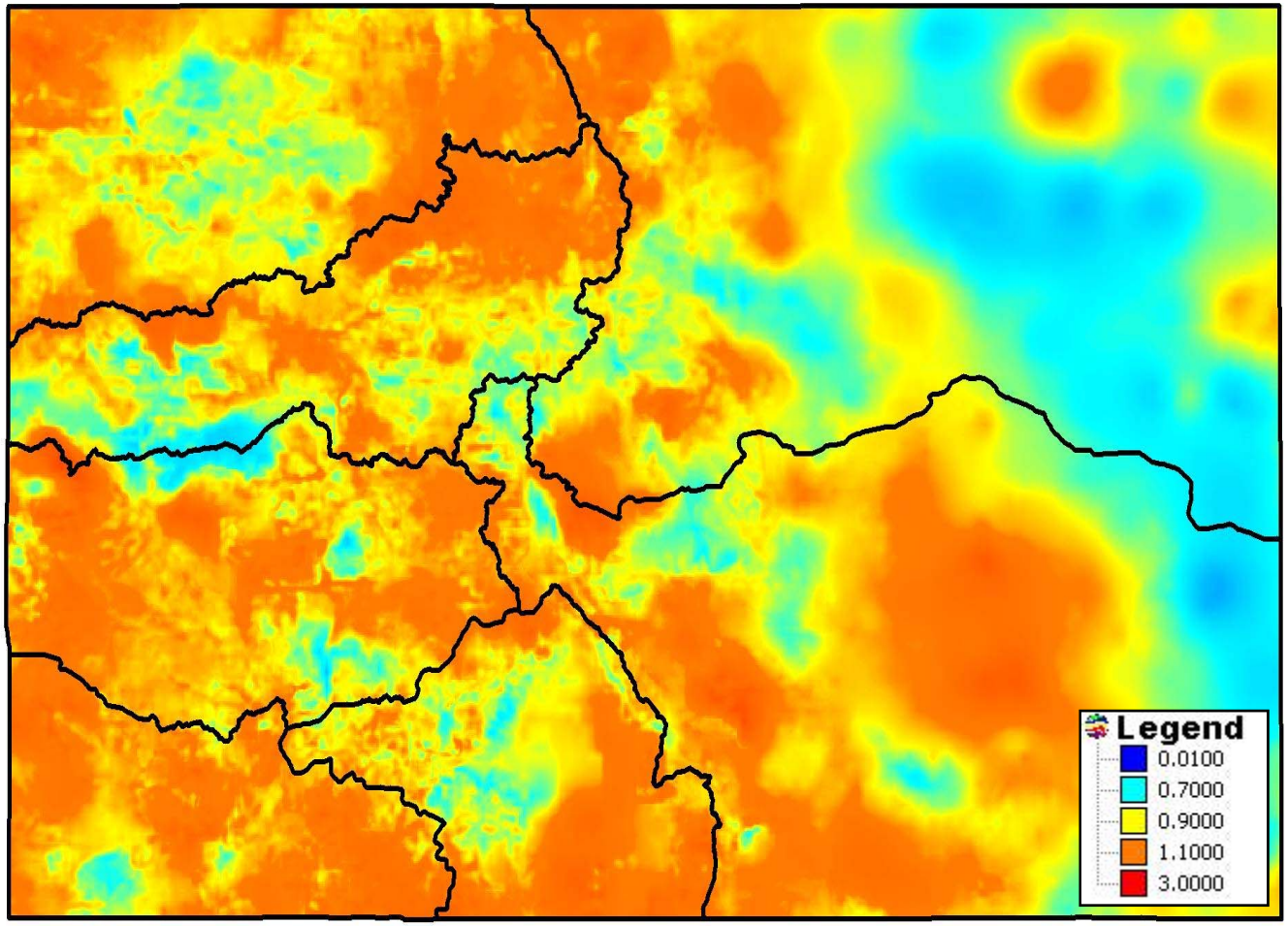
1977 Summer Precipitation

Percent of Normal



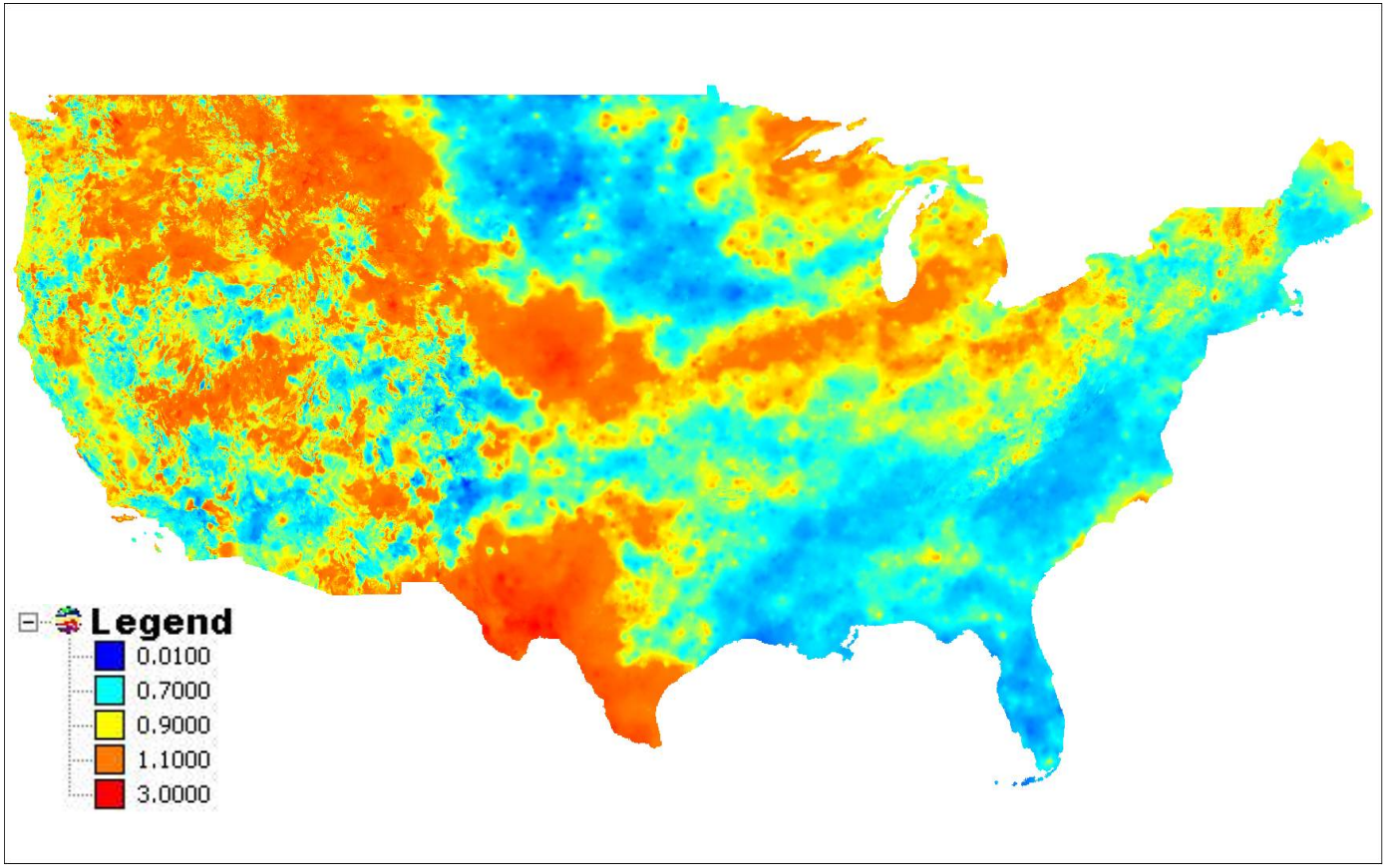
1977 Summer Precipitation

Percent of Normal



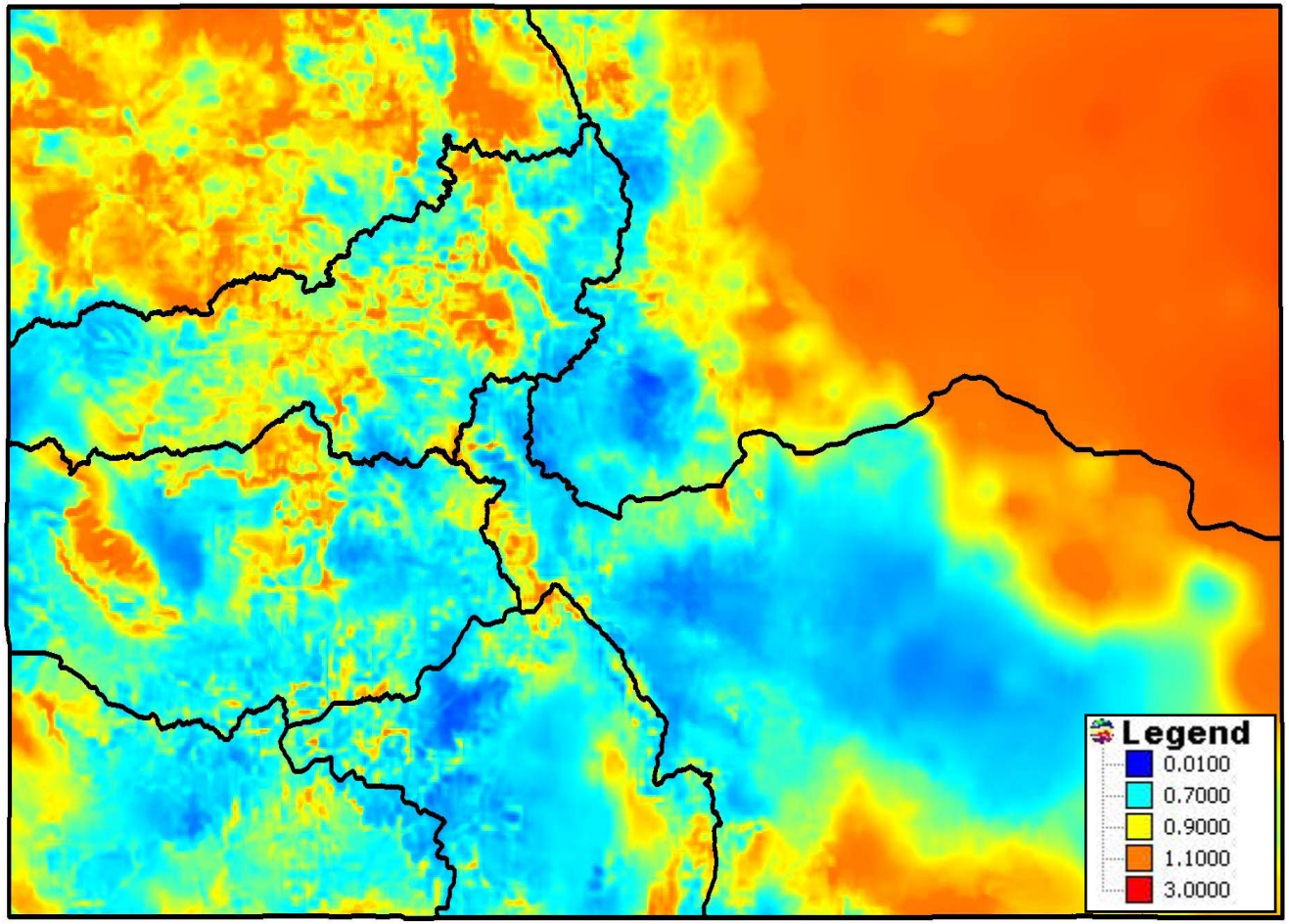
1981 Winter Precipitation

Percent of Normal



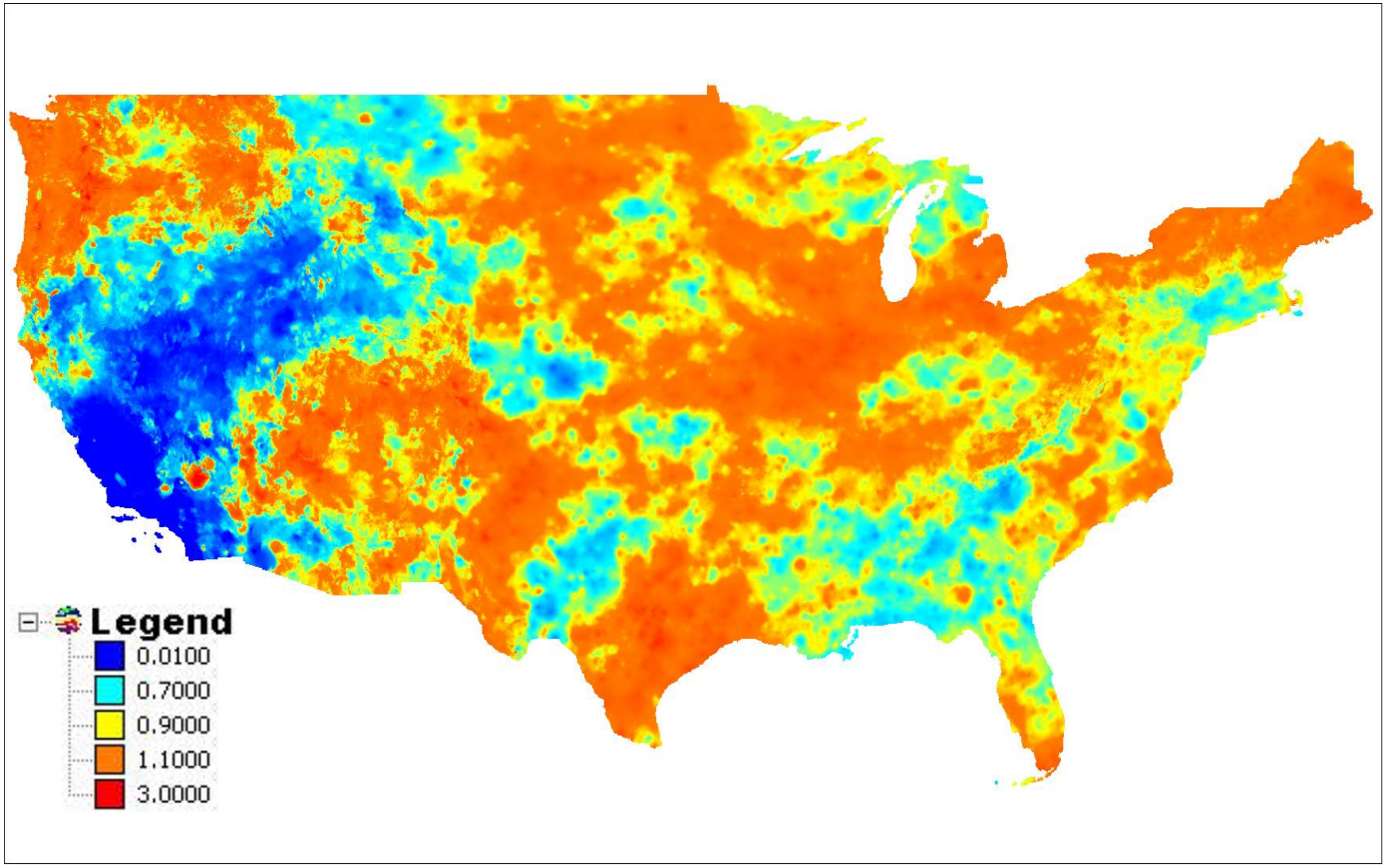
1981 Winter Precipitation

Percent of Normal



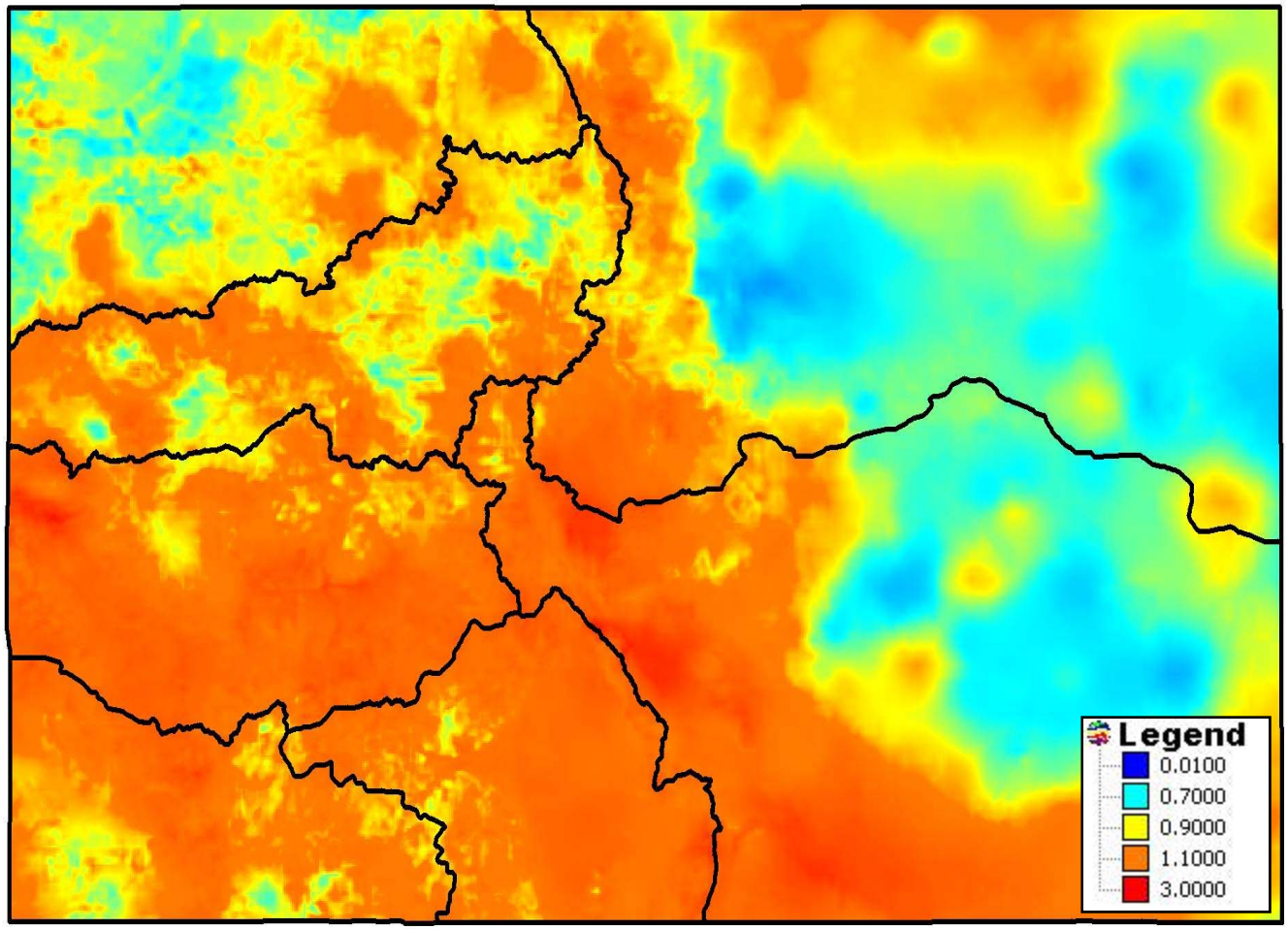
1981 Summer Precipitation

Percent of Normal



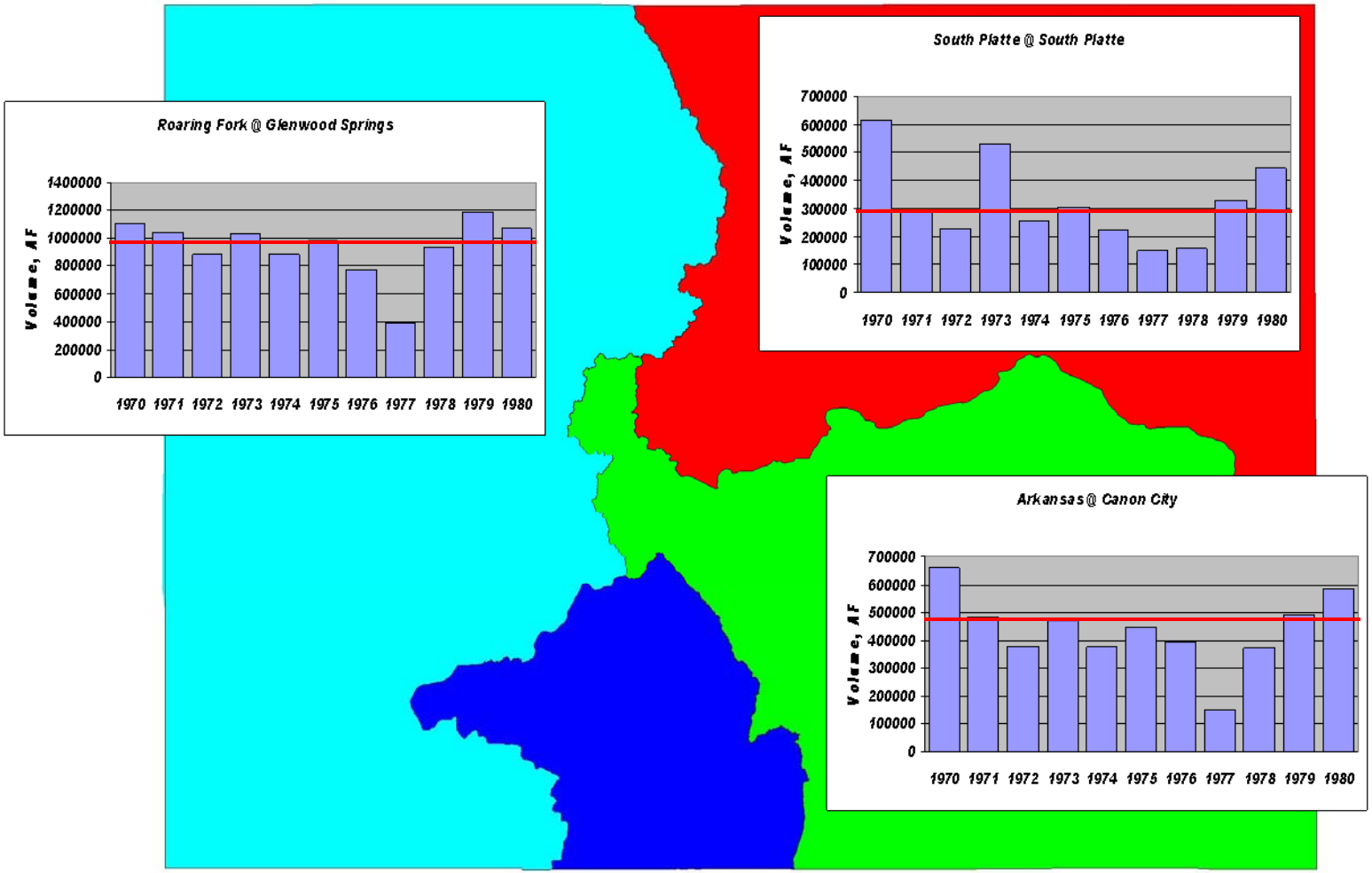
1981 Summer Precipitation

Percent of Normal



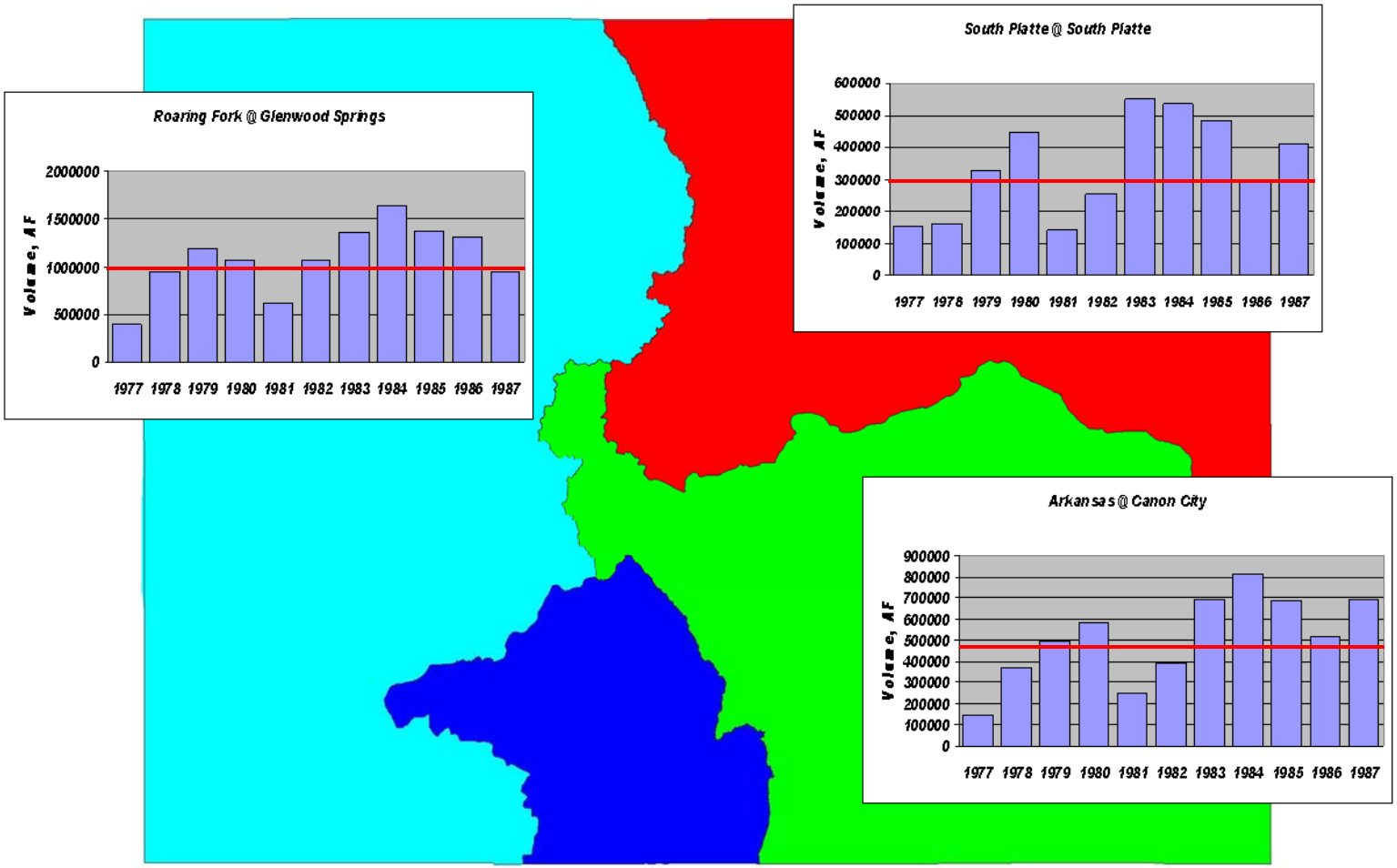
Hydrographs

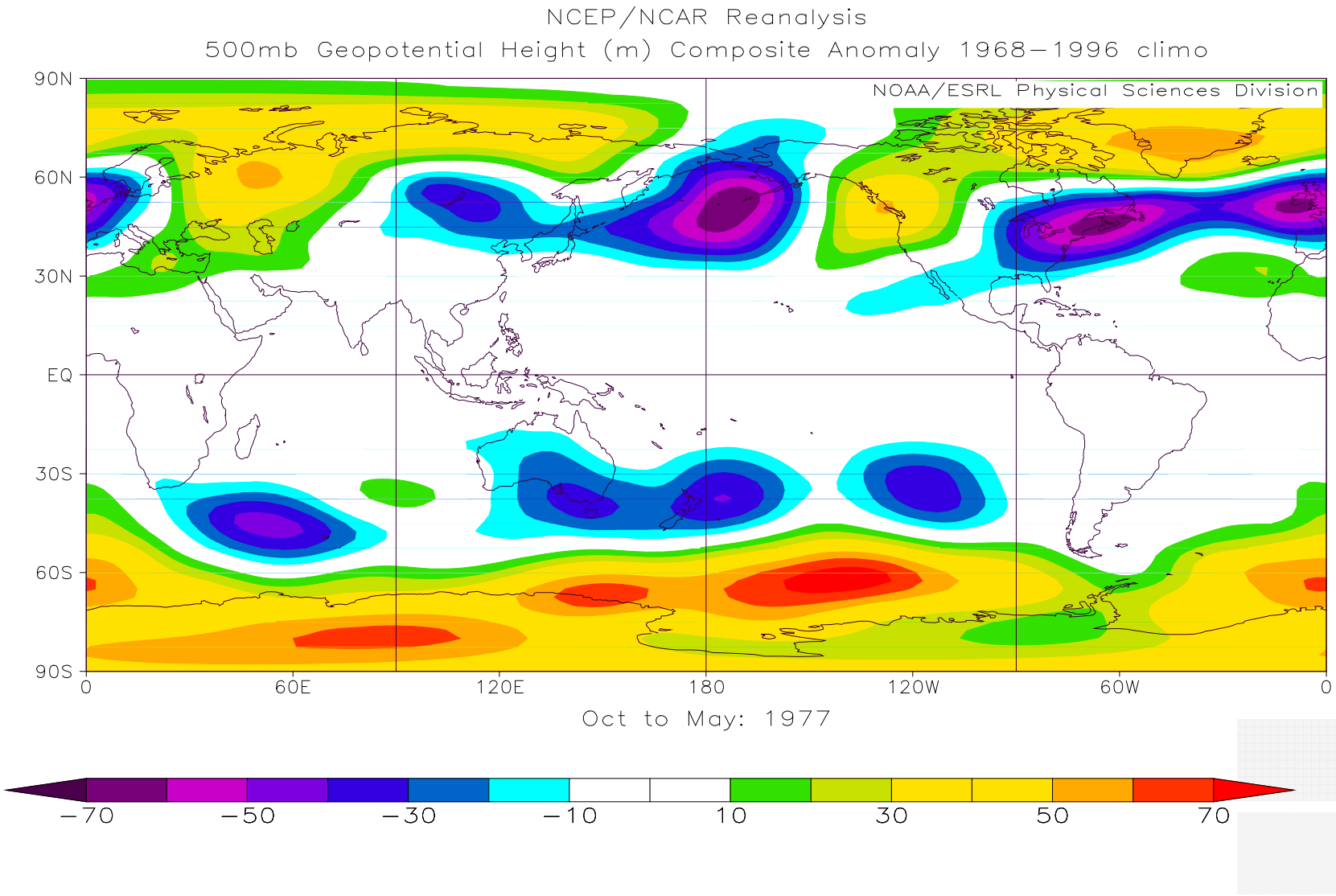
1977

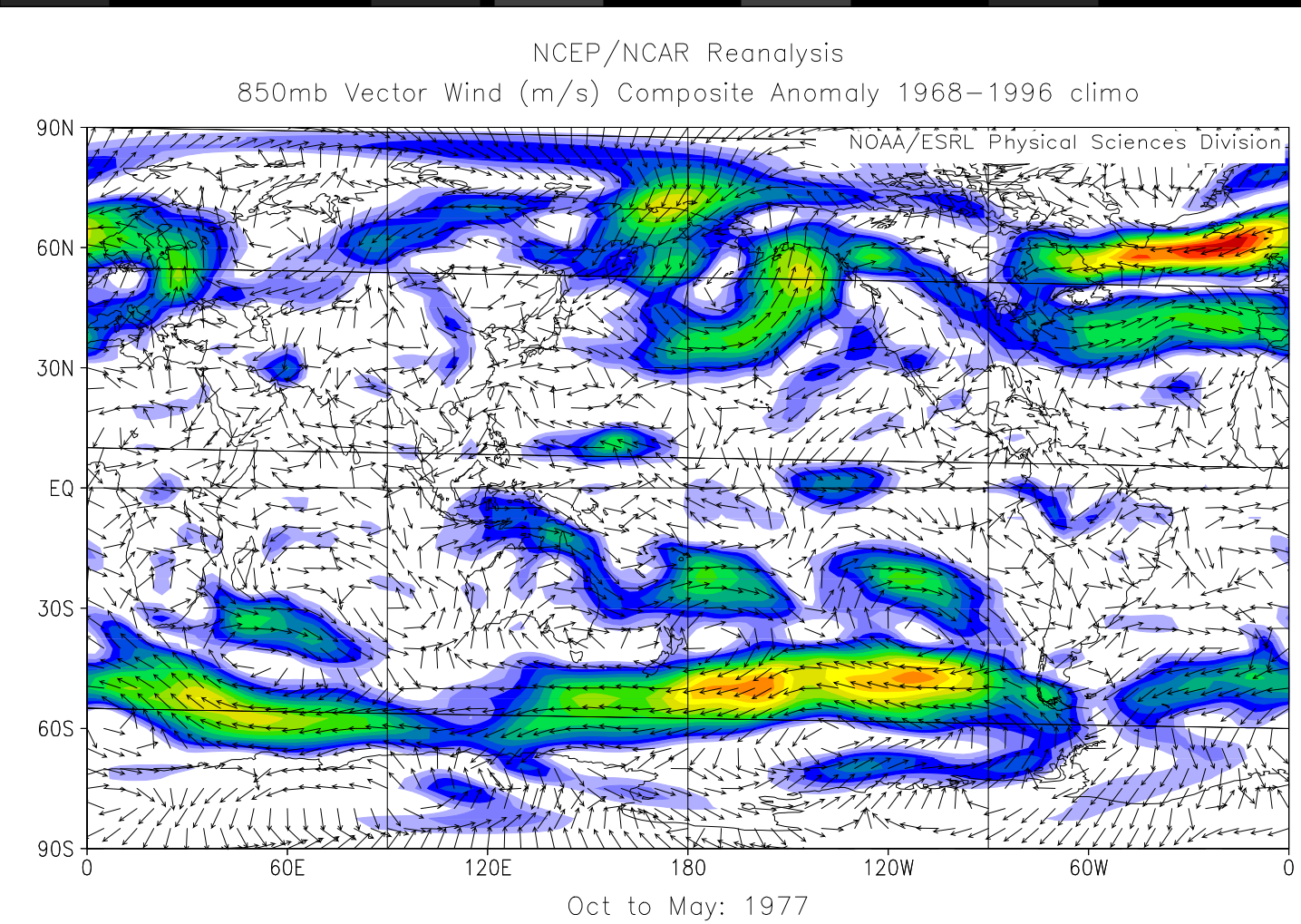


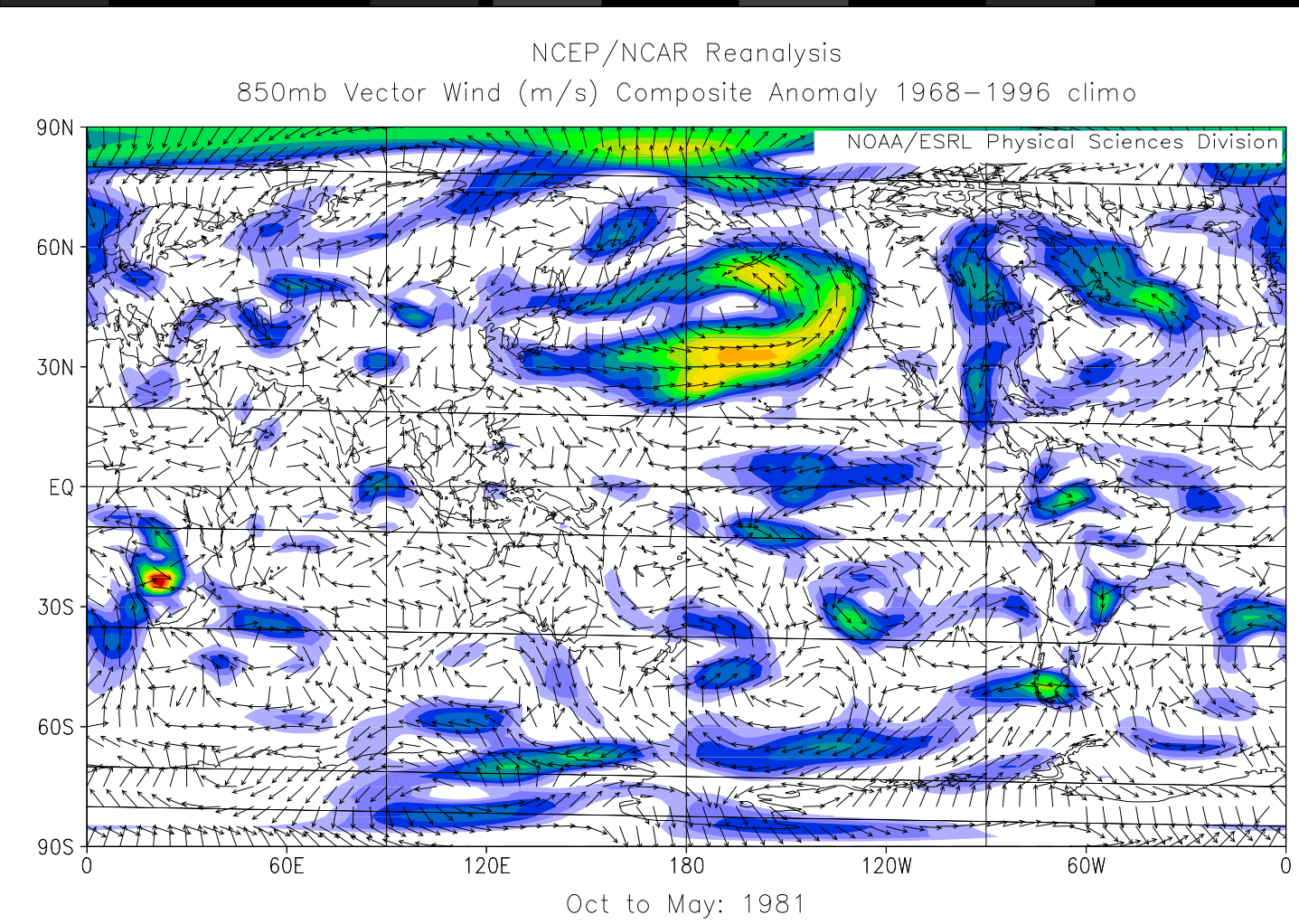
Hydrographs

1981




NCEP/NCAR Reanalysis
500mb Geopotential Height (m) Composite Anomaly 1968–1996 climo
NOAA/ESRL Physical Sciences Division
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
Oct to May: 1977
−70
−50
−30
−10
10
30
50
70


NCEP/NCAR Reanalysis
850mb Vector Wind (m/s) Composite Anomaly 1968–1996 climo
NOAA/ESRL Physical Sciences Division
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
Oct to May: 1977
1
1.5
2
2.5
3
3.5
4
4.5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90N
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60S
90S
0
60E
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180
120W
60W
0
Oct to May: 1981
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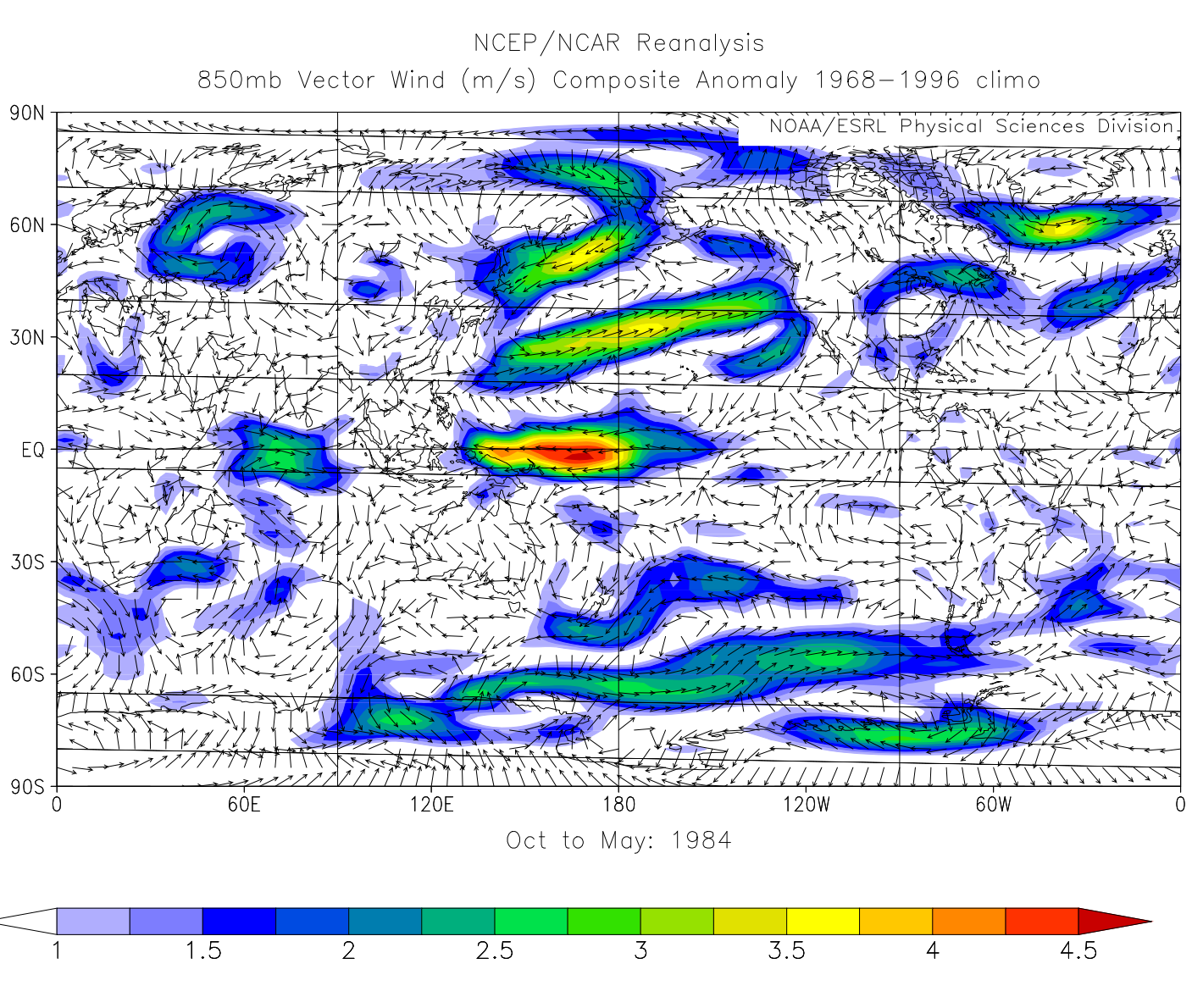
1.5
2
2.5
3
3.5
4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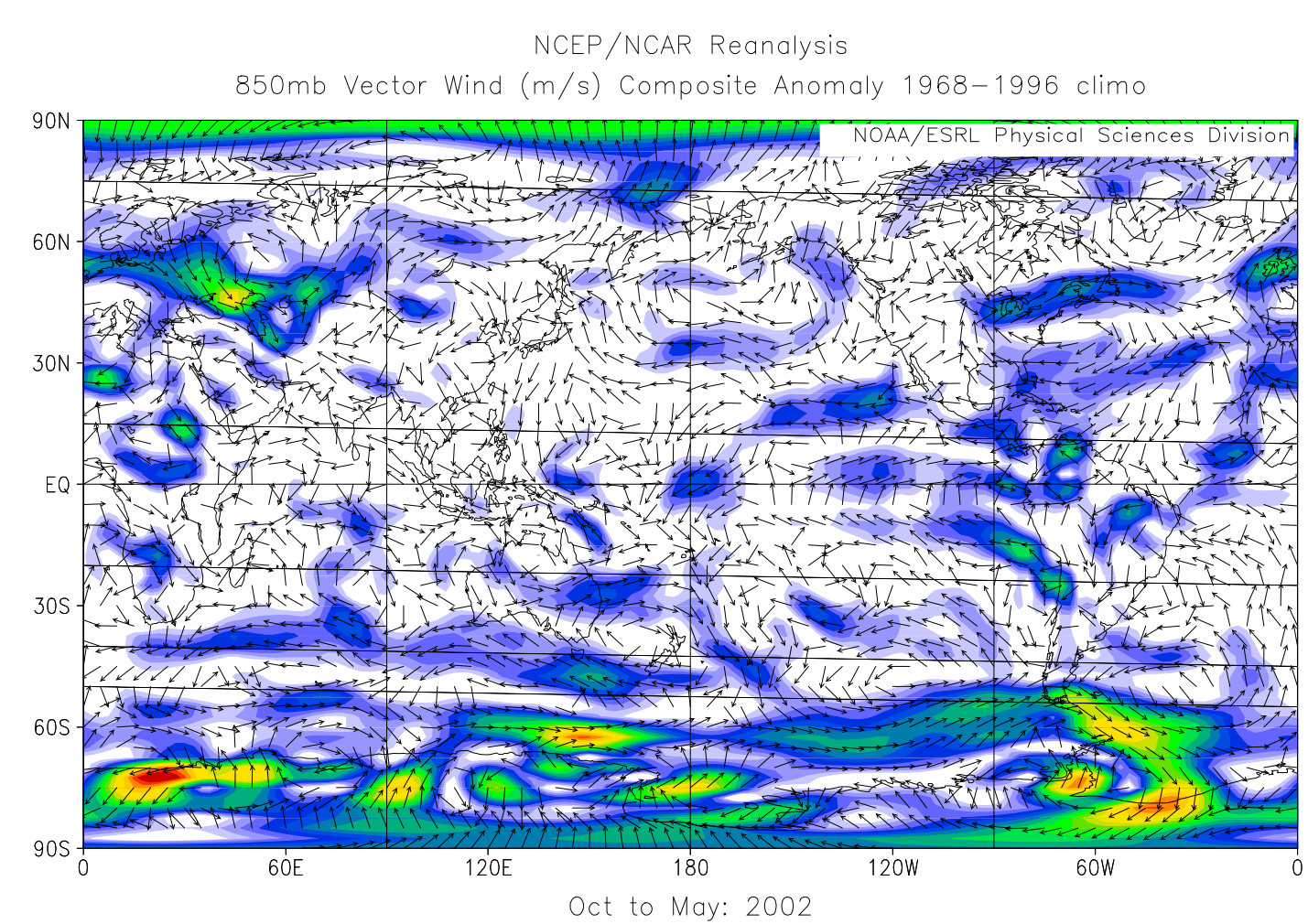
NOAA/ESRL Physical Sciences Division
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
Oct to May: 1984
1
1.5
2
2.5
3
3.5
4
4.5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NOAA/ESRL Physical Sciences Division
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
Oct to May: 2002
1
1.5
2
2.5
3
3.5
4
4.5
5

Prediction is very difficult, particularly if it is about the future.

Niels Bohr, as channeled by Yogi Berra.

Acknowledgements and Thanks

- NRCS
  - Jan Curtis
  - Mike Gillaspie
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  - Marc Waage
- NOAA
  - Jeff Lukas
  - Connie Woodhouse
  - Earth System Research Laboratory, Physical Sciences Division
- PRISM Group

Mr. Harding has more than 35 years of diverse experience in water resources engineering. He is employed by AMEC Earth & Environmental. He obtained his B.S. in Civil Engineering at the University of Colorado and is a registered Professional Engineer in Colorado, New Mexico and Oklahoma. He wonders how it could possibly be that things that happened in 1977 and 1981 are now considered historic.