Recent Precipitation Trends and Impacts to Water Supply Forecasting



# The recent trend in spring Precipitation (March-May 1980-2017)

Values in inches

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Values in inches

Upper Green River Basin (Wyoming)

Elkart Park Snotel Precipitaiton

March-May

Historical Average 1980-2017: 7.32 inches 1980-1999: 8.02 inches 2000-2017: 6.59 inches



The recent trend in spring precipitation (March-May)



Decrease in 2000-2017 average precipitation compared to 1980/81 – 1999 period average

| Upper Green         | -10          |
|---------------------|--------------|
| to -20 %            |              |
| Yampa Basin         | -5           |
| to -15 %            |              |
| Duchesne Basin      | -10 to -20 % |
| Upper Colorado Main | -5 to -10 %  |
| Gunnison Basin      | -10 to -30 % |
| Dolores Basin       | -20          |
| to -30 %            |              |
| San Juan Basin      | -25          |
| to -35 %            |              |

In addition lower July-September precipitation was observed (40% of average reduction compared to 1980-1999) in the eastern San Juan Basin headquarters

Analysis based on a subset of representative SNOTEL sites in the Colorado River Basin

So why do we bring this up and how do we handle it in our forecasting methodology?

## We are aware of such trends.

Challenges in addressing long term trends are large as we want to maintain objectivity in the forecast process

#### Is it possible to address such trends in water supply forecasts?

Keep in mind much of our forecast focus is on the upcoming season, above average years will occur Even in a dry season, it may turn wetter (recall 2015) - record dry early, record wet May-June/July Important to remember Information about a possible dry scenario is included in the forecast range provided Re-calibrate at a greater frequency to include recent dry periods and extremes - at least catch in forecast

range

#### What is our ability to realize we are in a dry pattern that might persist into the spring / summer ?

It may be possible by mid spring to realize certain weather patterns in the calibration period are unlikely Possibly adjust weightings to reduce or remove impacts of extreme years on the model guidance

### What tools might help us in evolving our forecast methodology in this regard?

CPC doing a re-analysis of climate forecast ability using higher elevation sites (recent collaboration) CPC assisting in determining a weighting scheme based on current and near term pattern recognition

Develop in house weather pattern recognition methods to assist in weighting schemes

#### In Summary: We remain active in trying to address such issues and evolve our forecast methodology.