NOAA's Colorado Basin River Forecast Center

Calibration Update

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2016 Stakeholder Open House

2016 Calibration Update

- Add 5 years to calibration record (2011-2015)
  - NOT updating official averages
  - Upper Colorado River Basin will be ready for WY2017 water supply season
- Identify any gage issues
  - Double mass analysis
  - Corrections applied if necessary
- Make note of poor model performance in the 2011-2015 period
  - to be addressed in 2017

2016 Calibration Update

- Analysis of 30 year vs. 35 year averages so far:
  - San Juan, Gunnison, Dolores
    - Drier Winters
    - Little change in Spring
    - Early season water supply forecasts will probably be about 5% lower
  - Upper Green, Yampa, Upper Colorado mainstem
    - Little difference between 30 and 35 year averages

2017 Re-Calibration Plans

- Use GIS to help determine SNOW-17 parameters more consistently:
  - PRISM precipitation averages
  - Precipitation adjustments (PXADJ): function of Evergreen forest (through interception and sublimation)
  - Melt Factor (MFMAX): function of vegetation type, leaf area index (LAI) and aspect
  - Mean SWE above which there is 100% cover (SI): determined by variation in aspect/elevation
  - Minor parameters: fix with typical values

2017 Re-Calibration Plans

- SAC-SMA (soil moisture model) Improvements:
  - Resolve evaporation issues above treeline (low LAI)
    - Too much moisture loss in consecutive dry years
    - Decrease tension water (LZTWC) to reduce evaporation
  - Investigate evaporation in areas of large LAI
    - Expectation of larger evaporation than we currently model
    - Seasonal coniferous forest demand
  - Climate modeling issues
  - Utilize GIS to improve soil moisture parameters
  - Generate more consistent unit hydrographs
  - Correct basin and area sizes

2017 Re-Calibration Plans

- Plan for a transition from lumped to gridded hydrology:
  - Calculate 30 years of 3 hourly temperature and precipitation on 800m grid → calculate MAT/ MAP directly from these grids (for Upper Basin)
    - Investigate using similar method for Lower Basin
  - This would ensure consistent forcings for lumped and gridded techniques