

# Future Improvements to Great Basin Forecasting



# Overview

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## Short Term Enhancements

- Lower Provo River - *completed*
- Lower Weber River - *near completion*
- Bear River
  - Porcupine Reservoir added - *completed*
  - Additional diversions along the Lower Bear
- Extend Calibration Record (2010 - 2015) - *near completion*
- Improve Peak Flow Information

## Long Term Enhancements

- Add additional SNOTEL sites to calibration (2015 - 2020 extension)
- JPL Snow Cover Data
- Improved snow model - Utah State/RTi Projects



# Data Collection Improvements

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More and more data is becoming available in real time.

As we become aware of it, we make efforts to include it in our operational model.



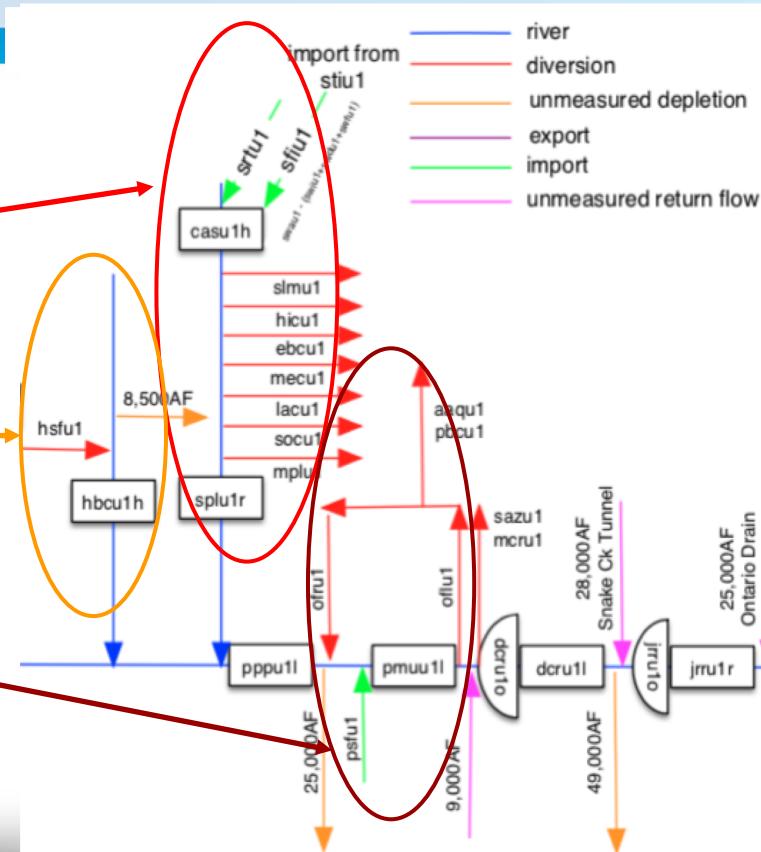
# Lower Provo Improvements

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Spanish Fork

Hobble Creek

Olmstead return





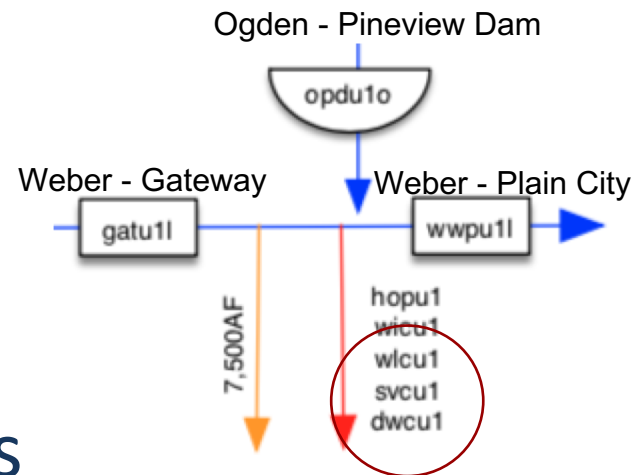
# Lower Weber Improvements

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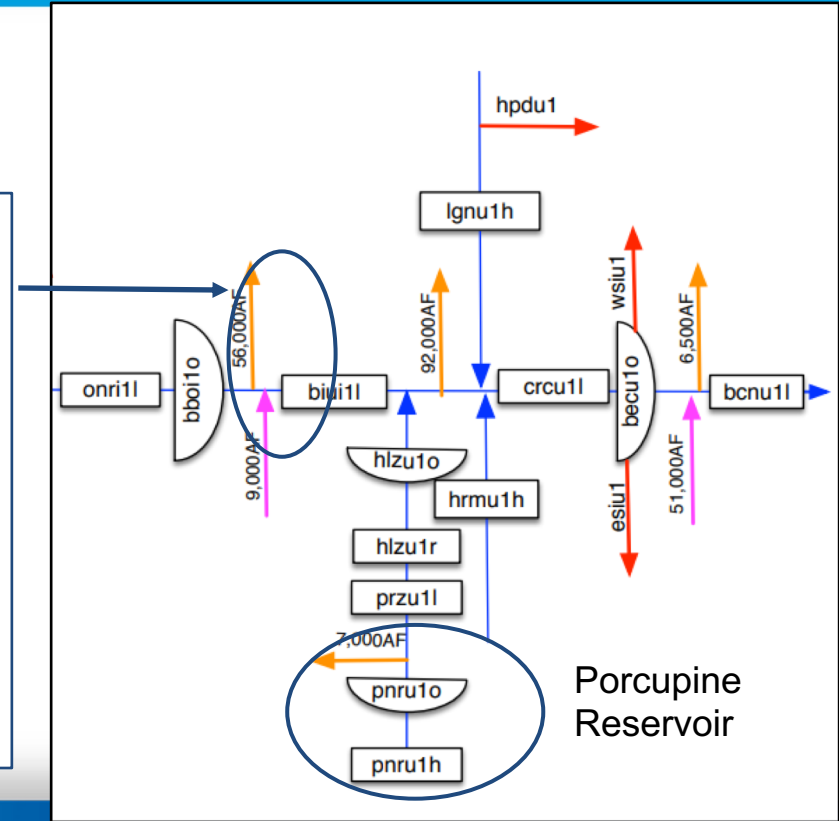
Davis-Weber Canal

Willard Canal

Incorporate new USGS gages  
as model forecast points

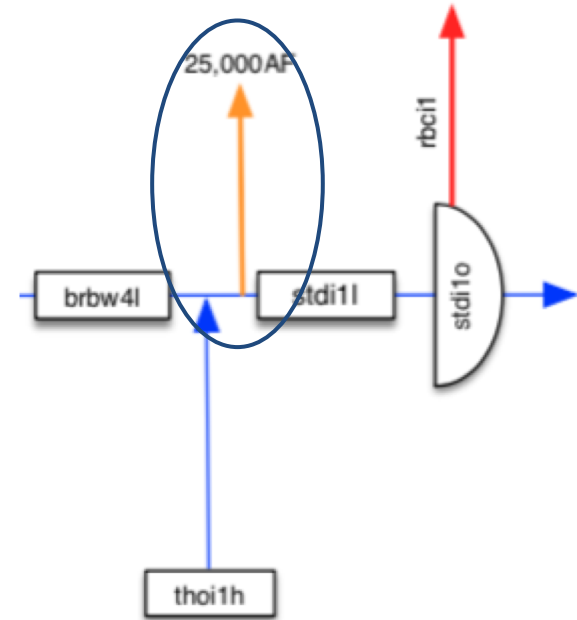
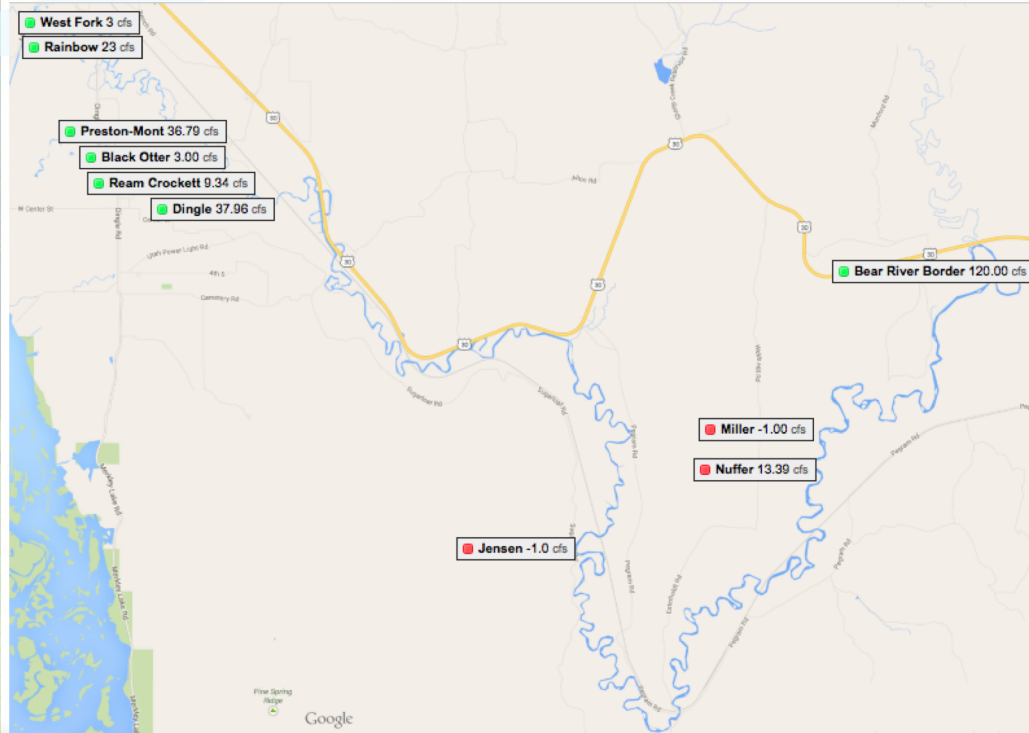


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# Bear River Improvements WY Border to Stewart Dam

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# Extended Calibrations

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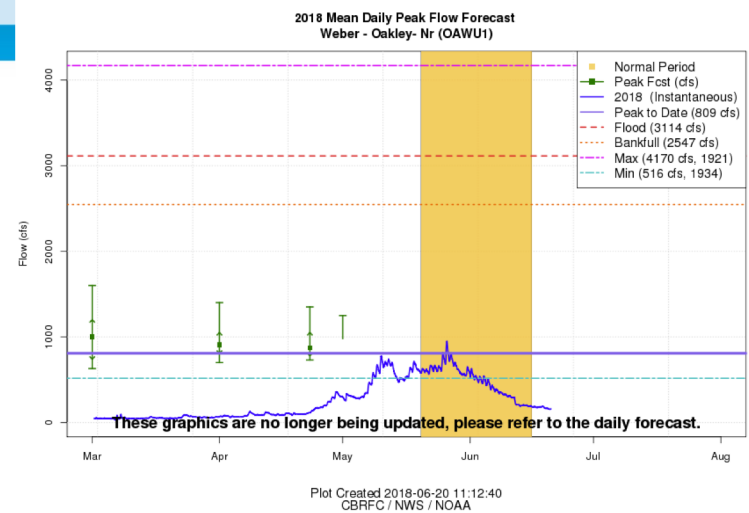
- Water supply forecasts in the Great Basin will utilize information from 2010 - 2015 in WY 2019
  - increases number of ESP traces from 30 to 35
  - extends ESP climate record to include most recent years



# Peak Flow Products

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- Peak flow products and services is an area we are actively looking to improve
  - Goal is to implement for Water Year 2019 (March)
- Would like stakeholder input



PORTNEUF--AT TOPAZ (TOP1) Forecasts for Water Year 2018 Ensemble Date: 2018-08-14 Forecast Period: August 14 to December 1			
Exceedence Probability	Stage feet	Discharge CFS	Probable Date of Peak
95 %	2.78	178	2018-08-26
90 %	2.87	200	2018-09-01
70 %	2.92	211	2018-09-14
50 %	3.00	233	2018-09-28
30 %	3.09	259	2018-10-15
10 %	3.22	298	2018-11-09
05 %	3.35	340	2018-11-22

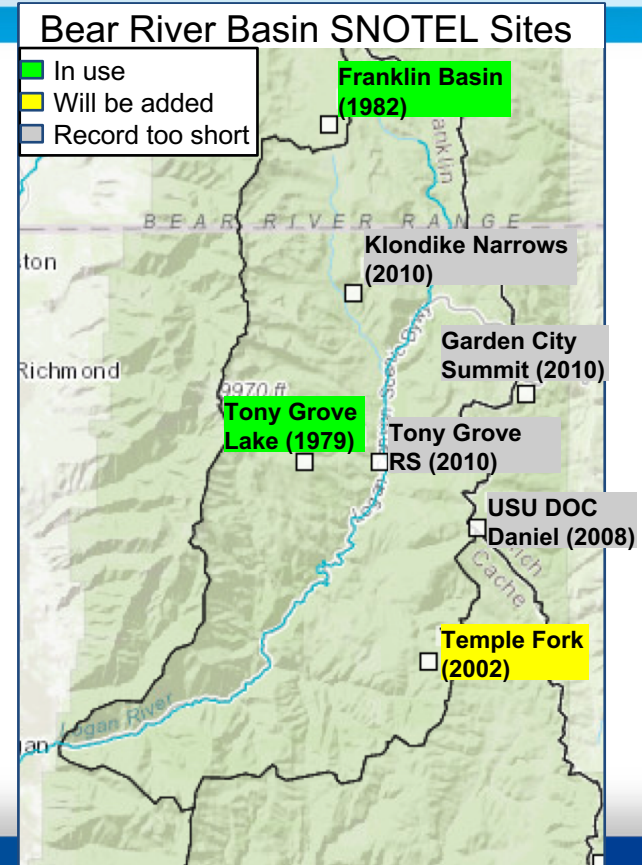




# Additional SNOTEL Data

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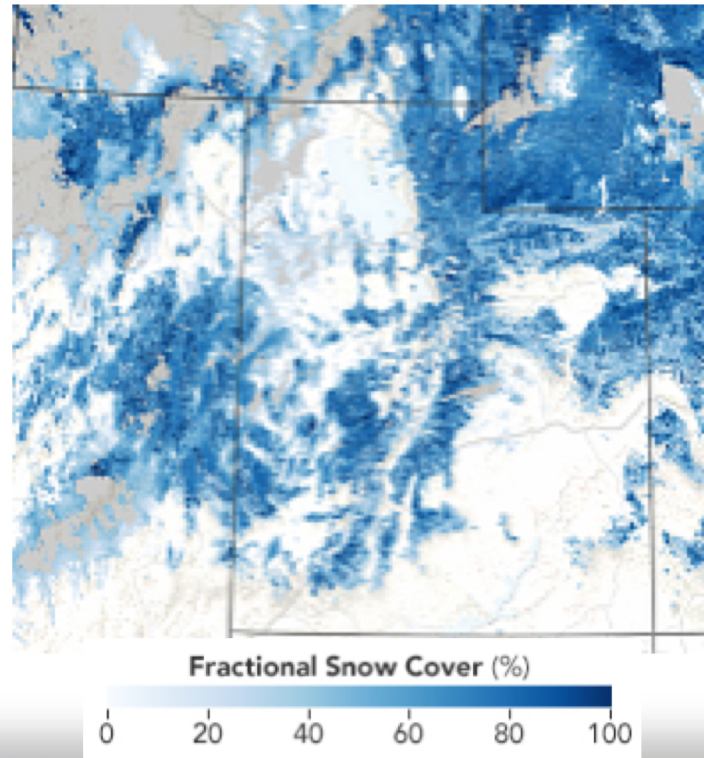
- Stations with 15+ years record in 2020
- 6 creeks
  - Louis Meadows (2000)
- Provo
  - Cascade Mountain (2003)
- Weber
  - Hardscrabble (1994)
  - Parrish Creek (2000)
  - Lower Farmington (2004)
  - Lightning Ridge (2005)
- Bear
  - Temple Fork (2002)



# JPL Remotely Sensed Snow Cover

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- Remotely Sensed Data - snow cover
  - Snow Cover Data from NASA Jet Propulsion Laboratory
  - Allows updating of SWE based on correlations between measured snow cover data and model snow cover estimates during melt
  - Waiting on JPL to provide updated data set
  - Currently semi-quantitative



# Snow Model

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- Utah Energy Balance (UEB) Model
  - Investigating possible improvements from a more sophisticated snow model than the current temperature index model (SNOW-17)
  - Developed by Utah State
- RTI investigating improvements from a fully distributed version of SNOW-17



**Questions? Or suggestions for  
future work?**

