

WRV 1.2 Development Update

Luke Telfer and Alex Moody
WRV MTAC 18 April 2023



IDAHO DEPARTMENT OF
WATER RESOURCES

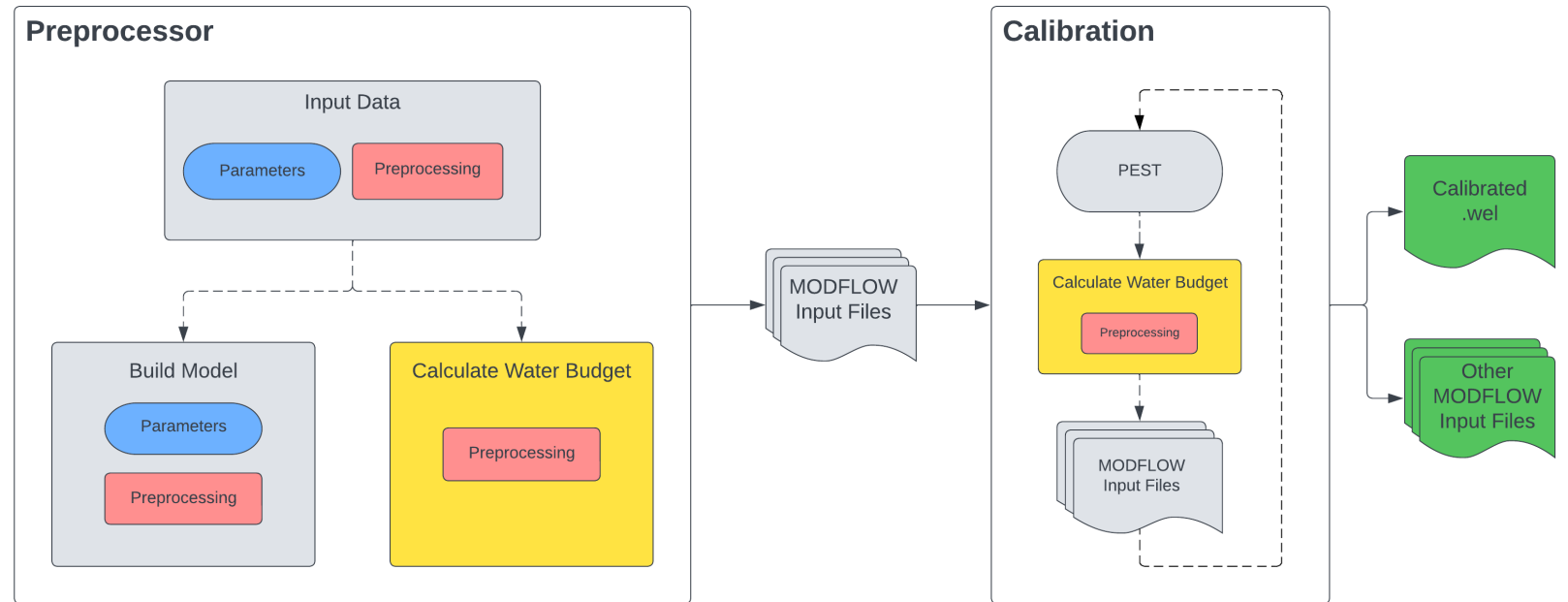
Model Preprocessor Update

Framework and Progress

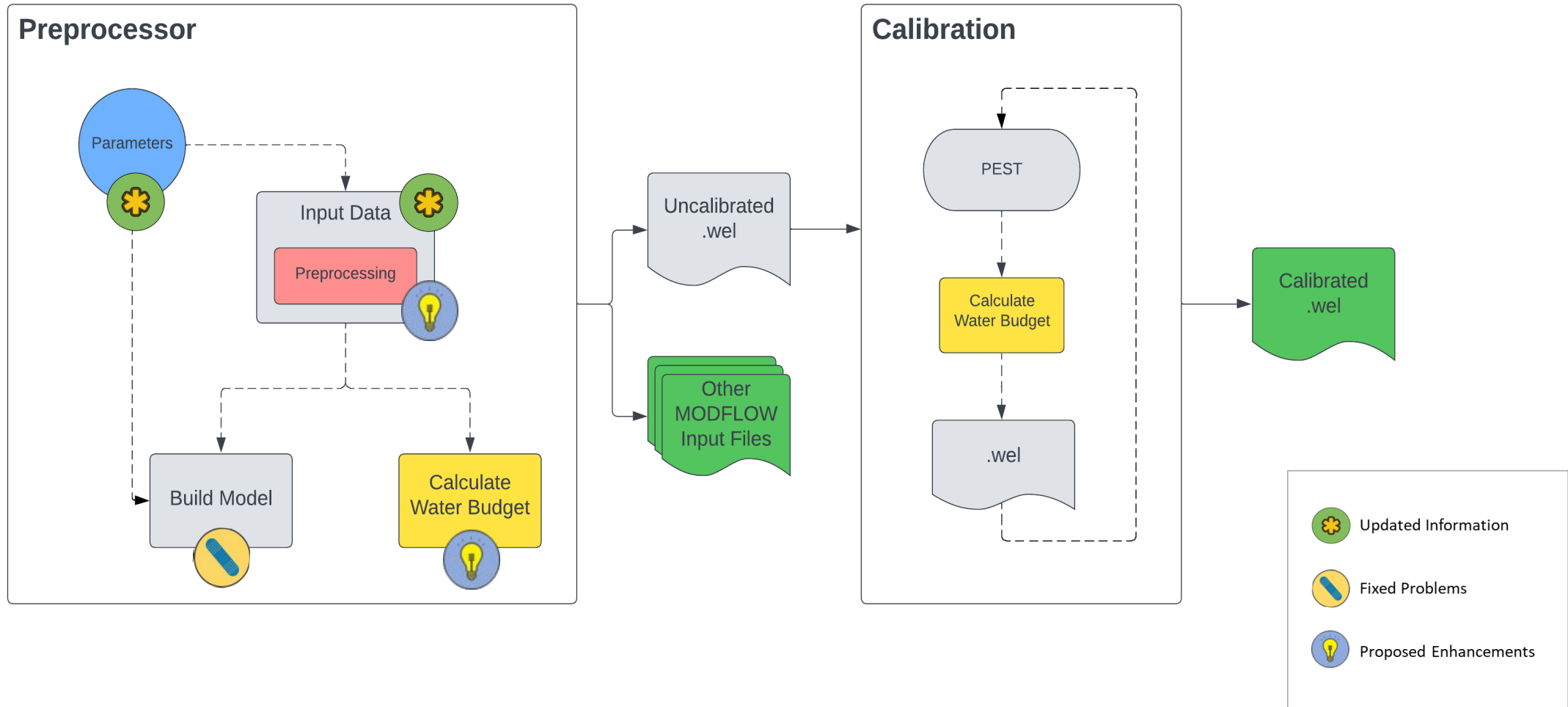


Current Preprocessor

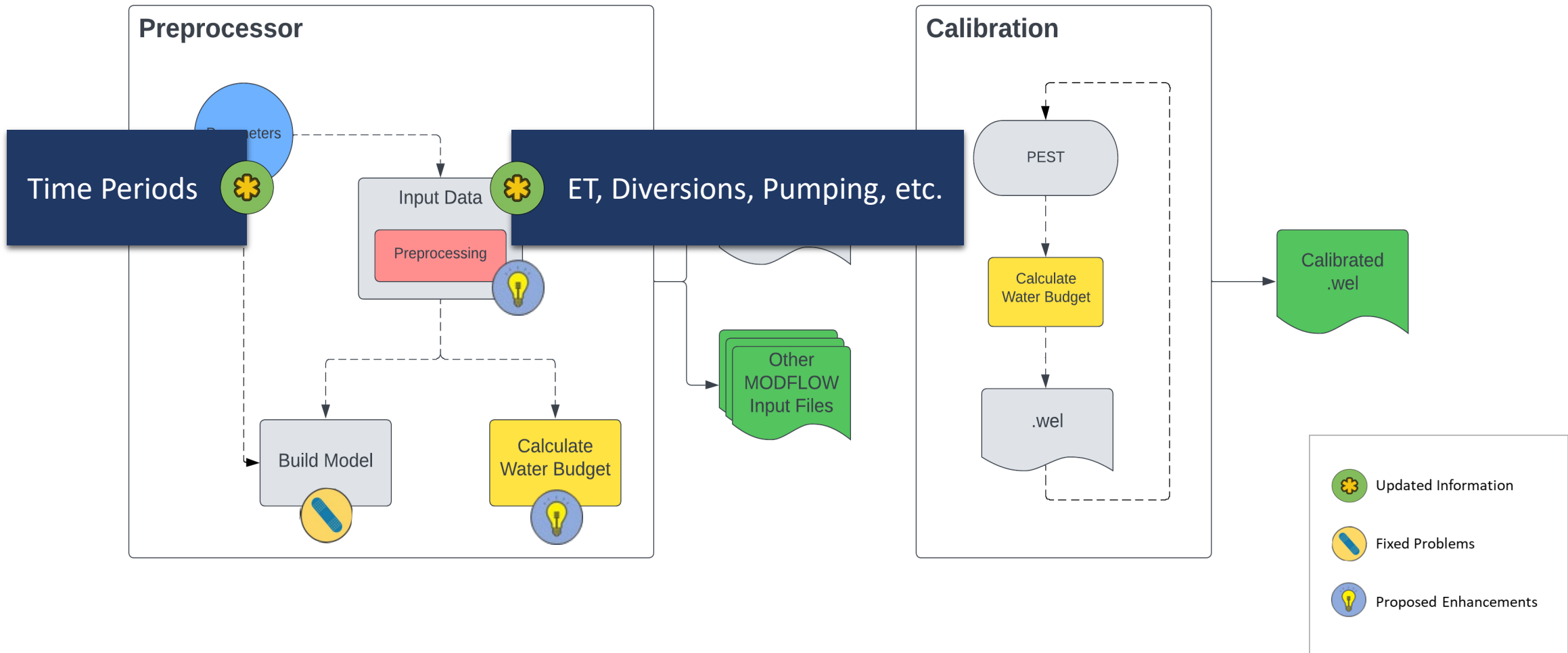
- Deprecated libraries
- Difficult to update
- Limited extensibility
- Slow runtime



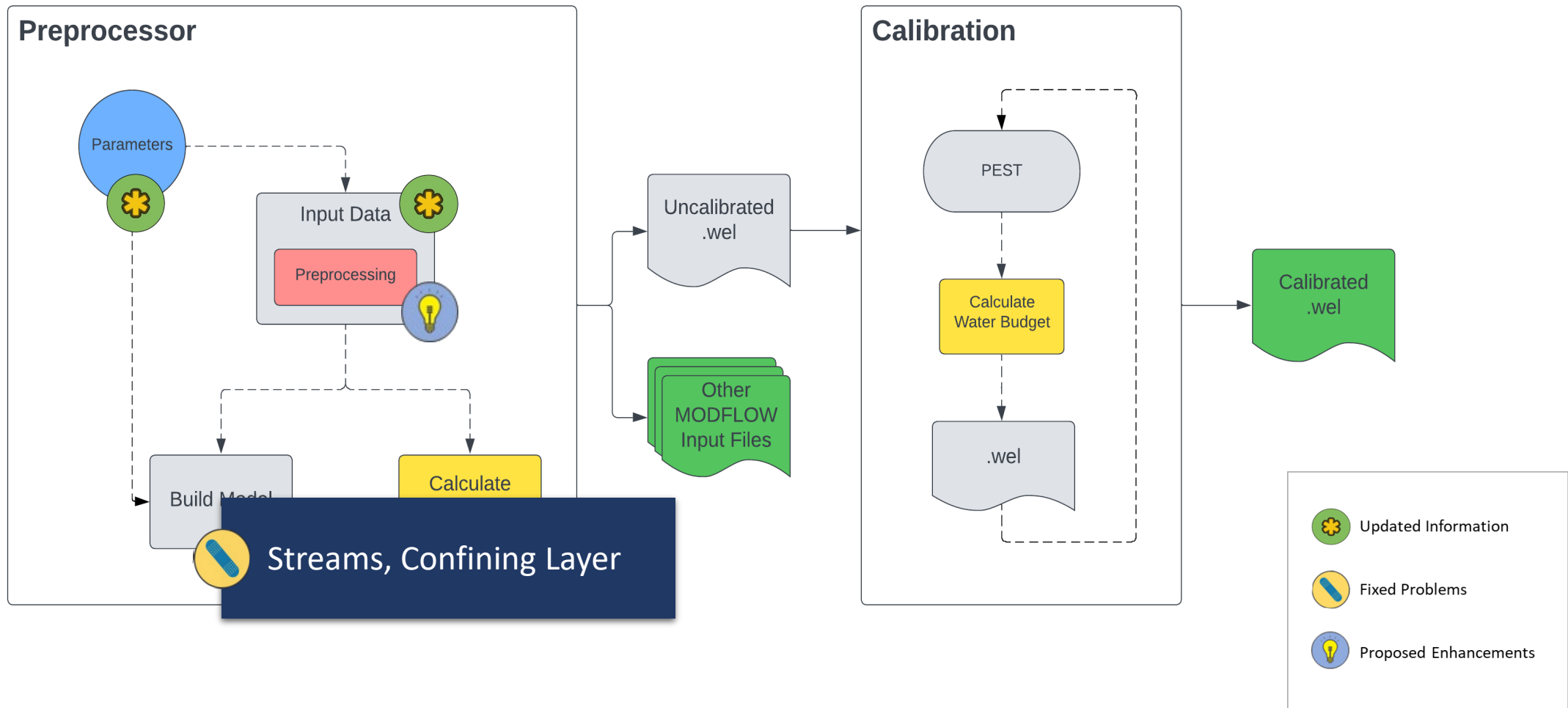
New Framework



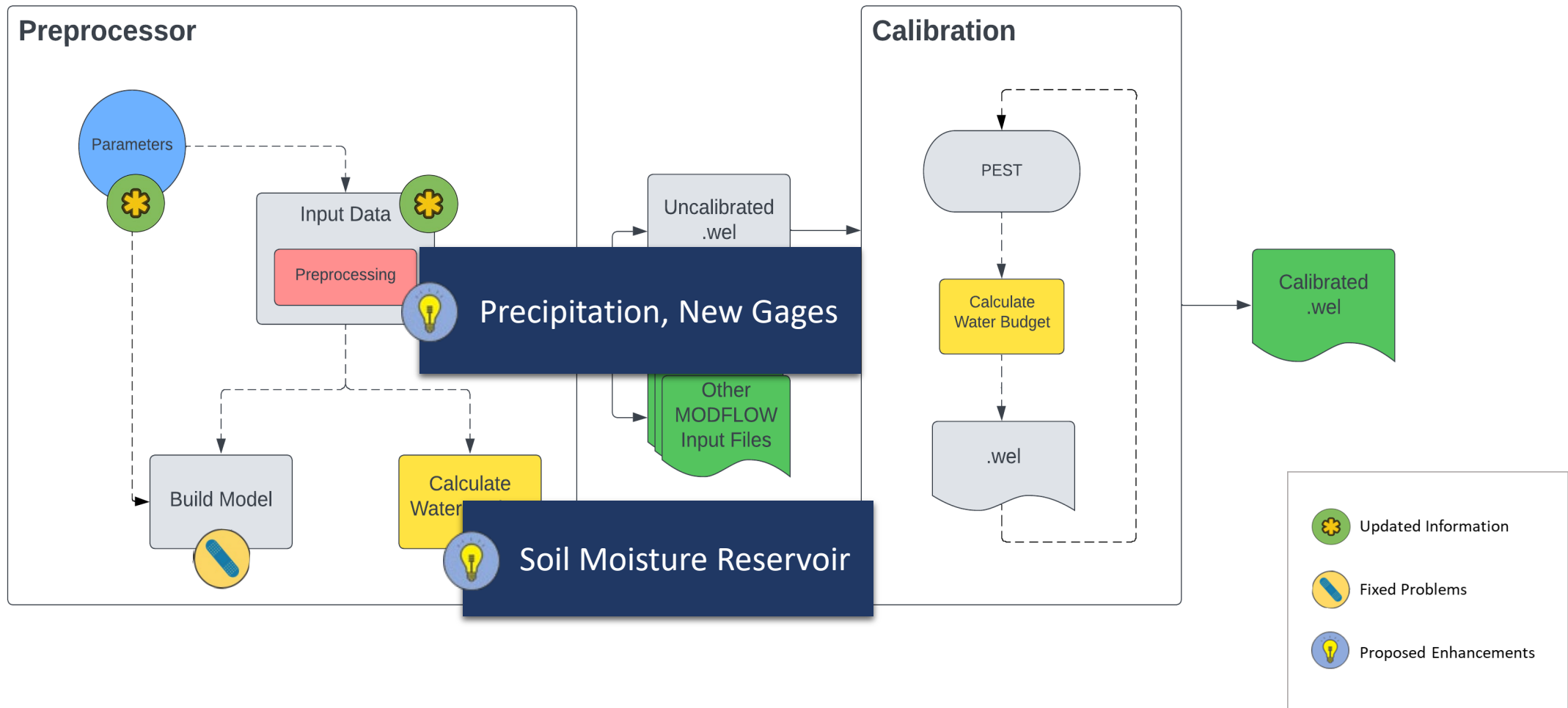
New Framework



New Framework



New Framework



Progress



~~Input file preprocessing~~

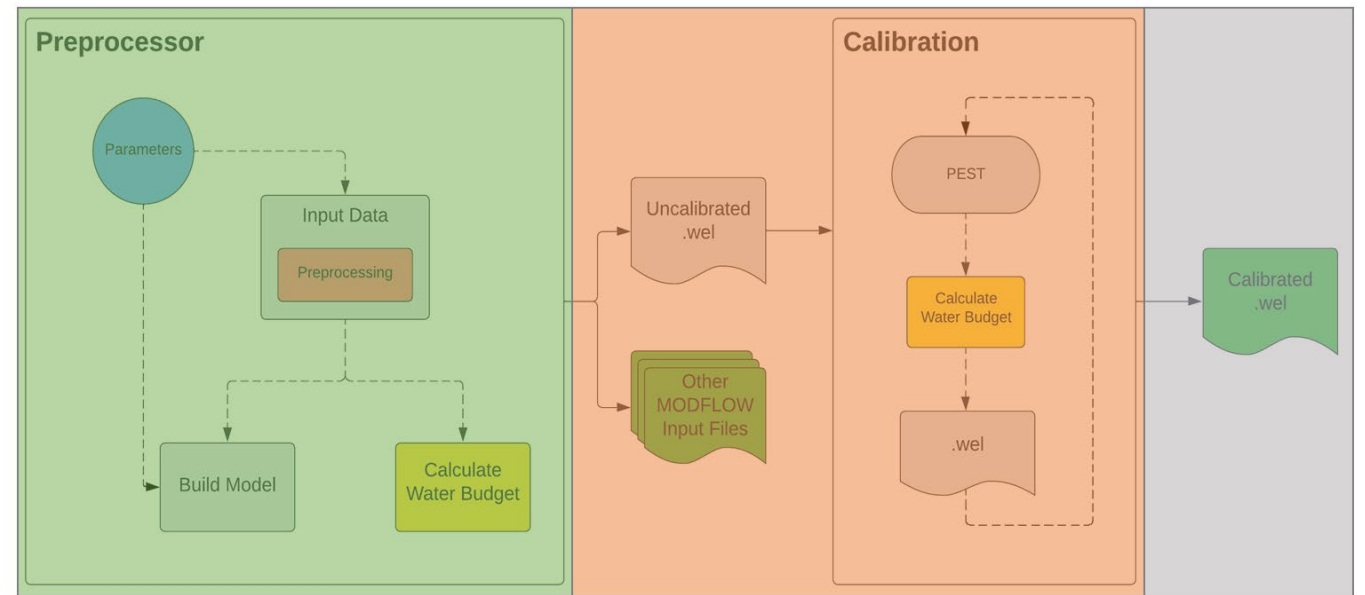
~~Model grid construction~~

~~Water budget calculations~~

Generating MODFLOW input files

PEST integration

Testing



✓ Completed

🏗 In Progress

🕒 Future

Model Calibration Update

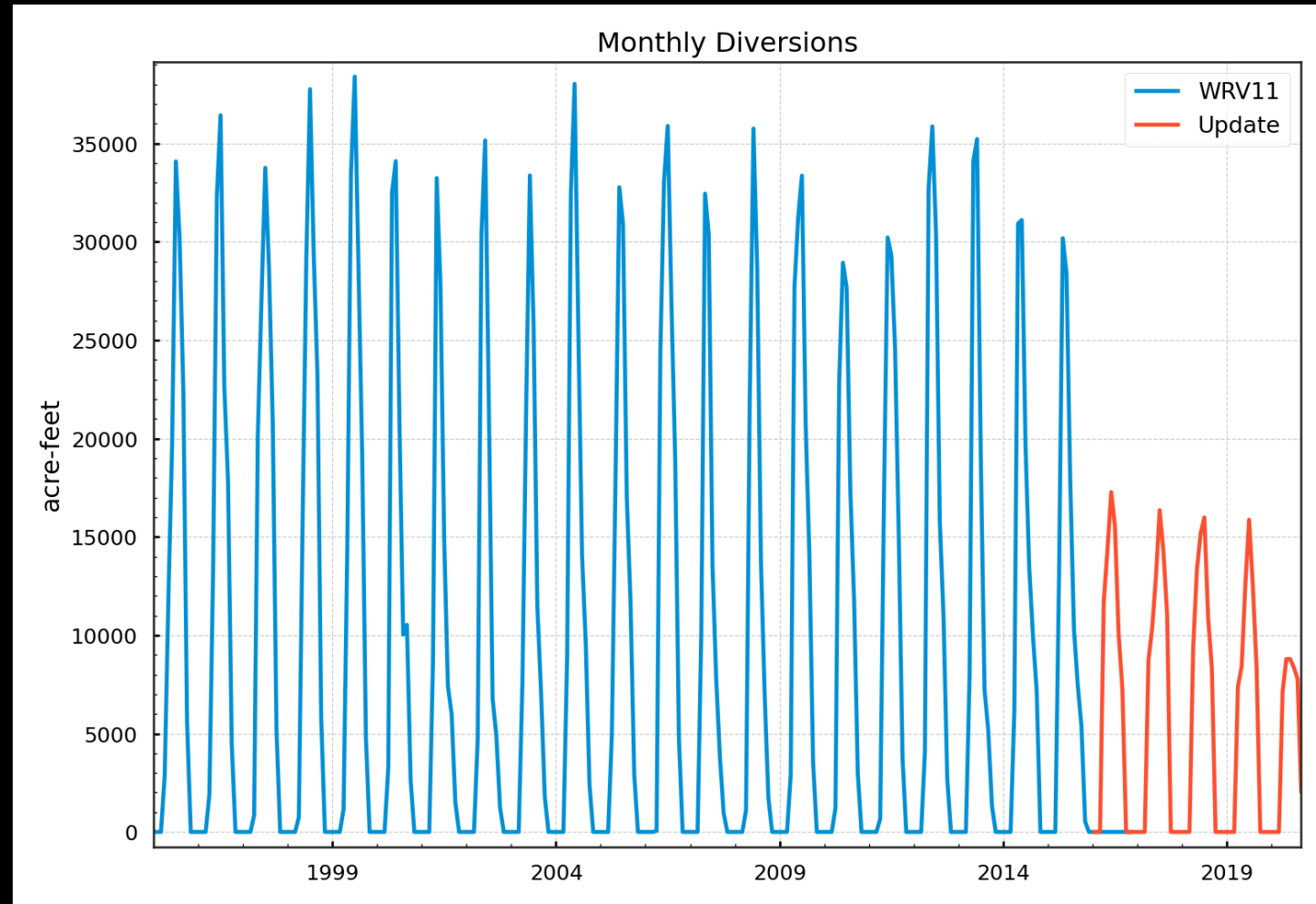
Extend datasets and targets

Extend Calibration period through 2021

- Water budget datasets
 - SW diversions, WWTP discharge, ET, Precip
 - Testing of spatially distributed precip dataset (daymet)
- Aquifer head calibration target data
- Reach gain calibration target data
- Add subreach calibration target for Hailey to South Broadford after August 2017
- Incorporate head and flow msmts by SVGWD and Silver Springs Ranch if available
- Extend stage data on Big Wood River

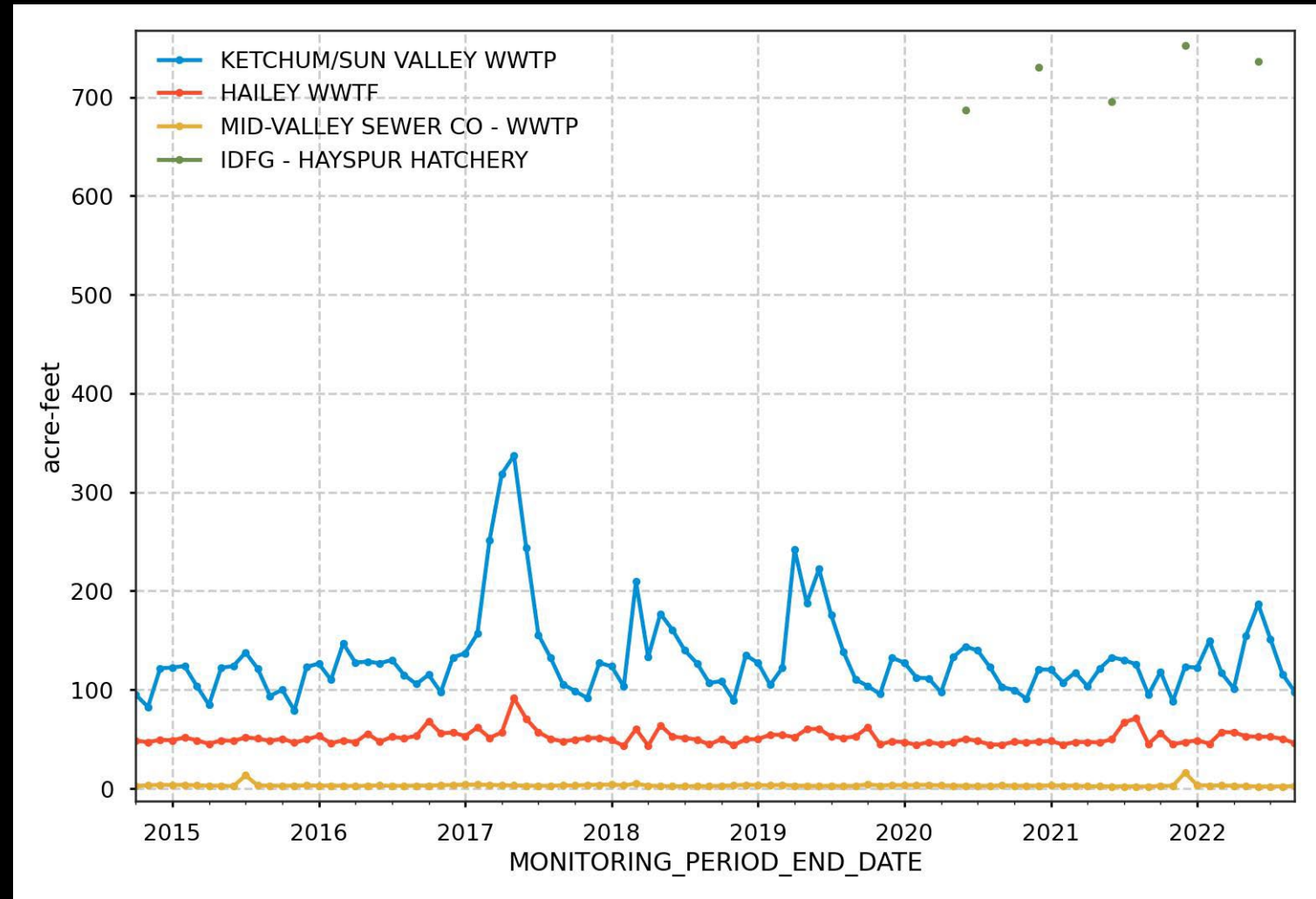
SW Diversions

- ❑ IDWR compiling watermaster excel workbooks for accounting model
- ❑ Mapping of diversions to consistent names and reaches within WRV ongoing
 - ❑ 2015: 100% completed
 - ❑ 2016-2020: ~50%
 - ❑ 2021: 0%



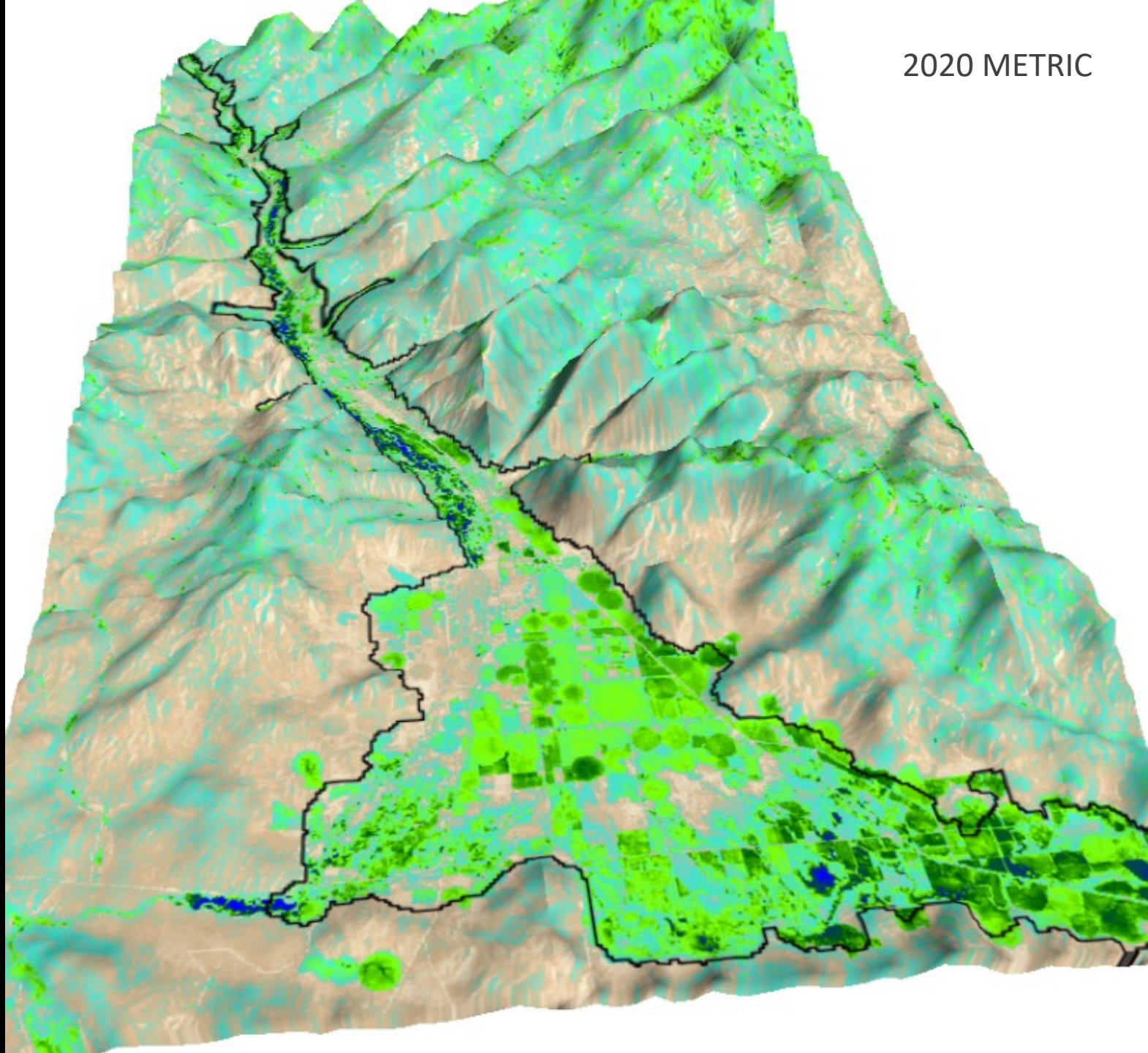
WWTP Discharge

- ❑ Monthly wastewater treatment plant data retrieved from EPA's ICIS database
 - ❑ Ketchum WWTP
 - ❑ Hailey WWTF
 - ❑ Mid Valley Sewer Co
 - ❑ IDFG Hayspur annual volumes? (not in previous dataset)
- ❑ Datasets still needed
 - ❑ Bellevue WWTP
 - ❑ Hiawatha Hailey (Might be same as Hailey WWTF)
 - ❑ Allocate Sun Valley between Elkhorn and Sun Valley entities



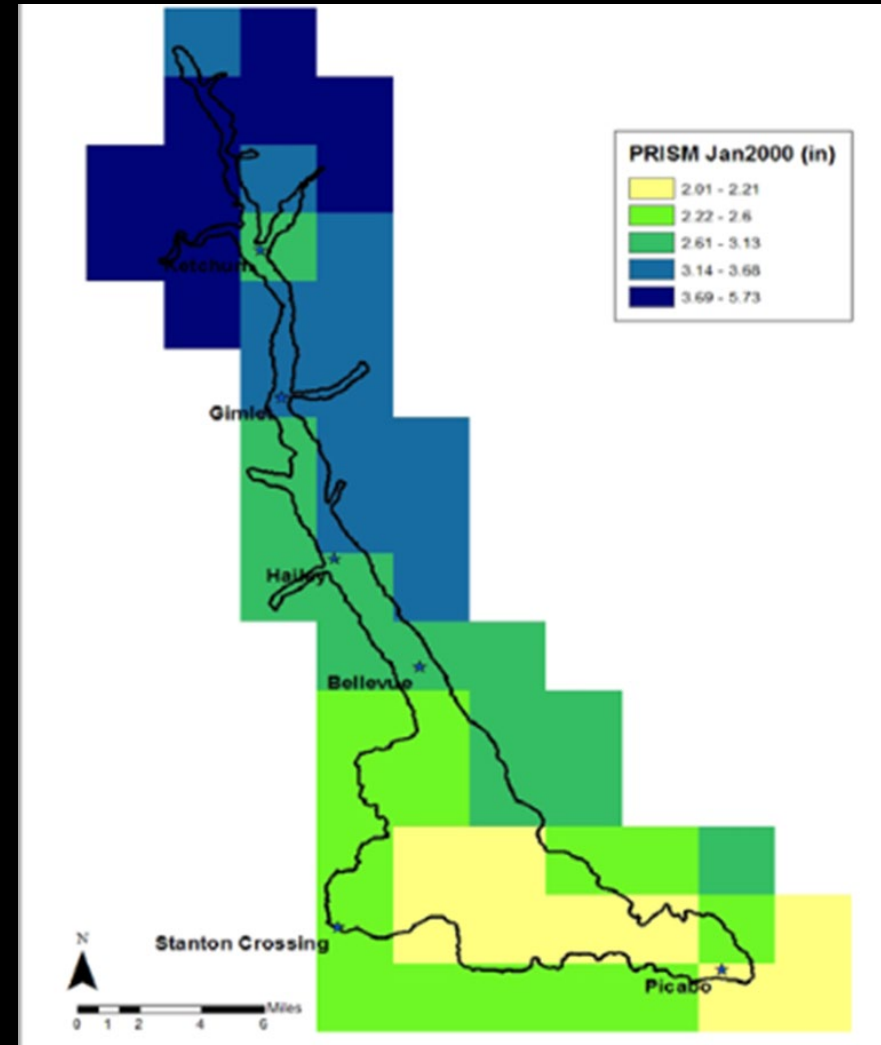
ET

- ❑ METRIC ET from 2015 through 2021 completed along with ESPA
- ❑ Winter ET
 - ETIdaho for Picabo Agrimet anticipated to be complete this summer
 - Next step: rasterize ETIdaho data



Precipitation

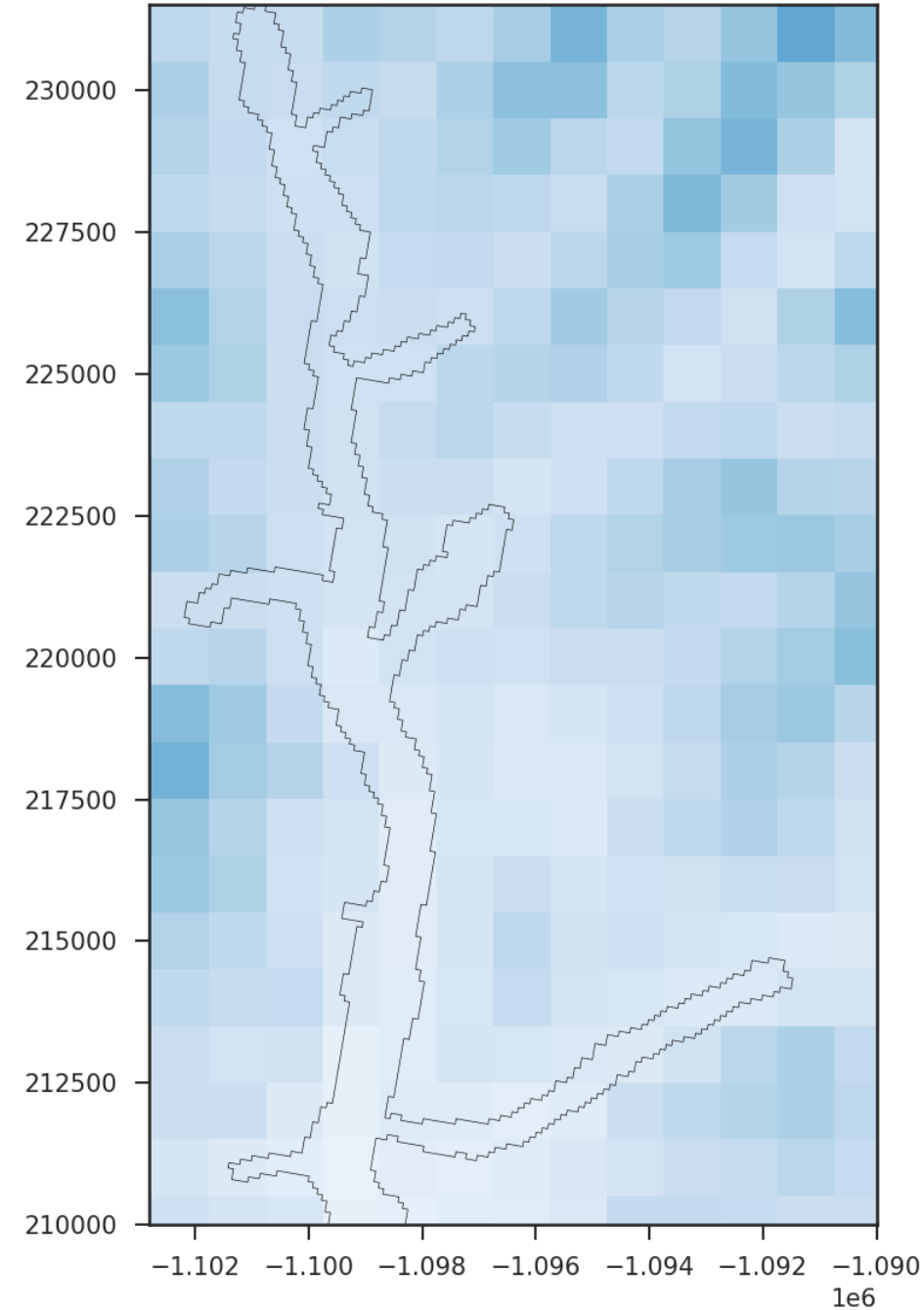
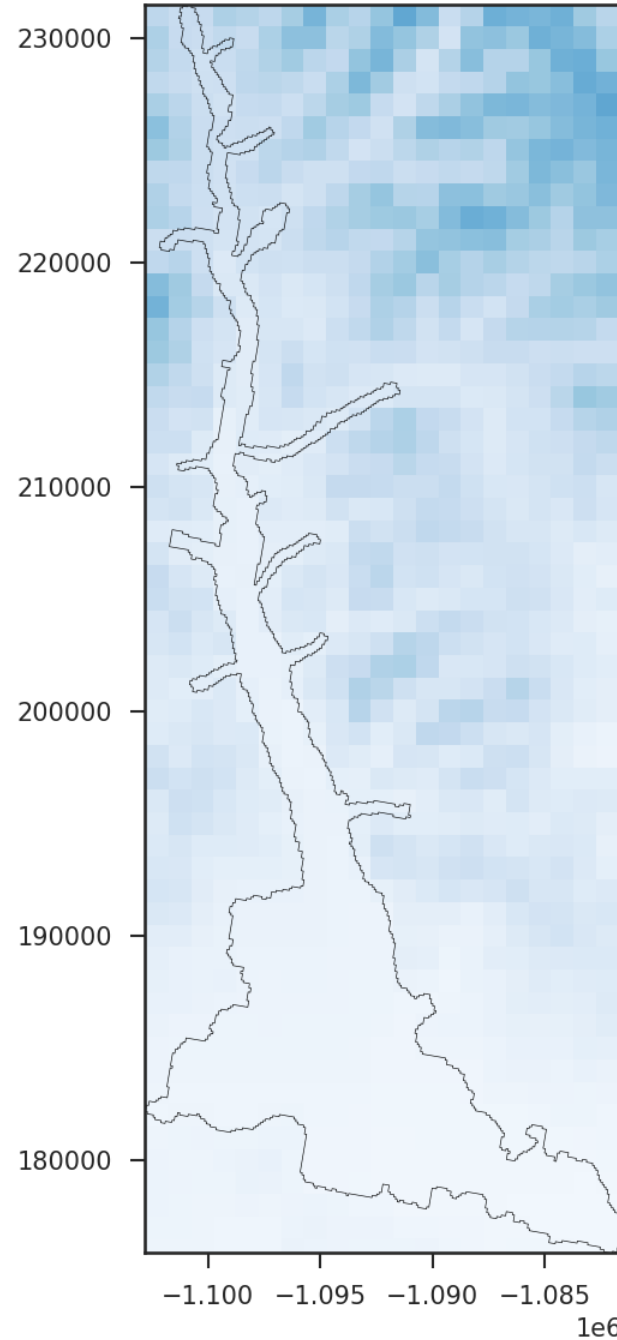
- ❑ Currently using precipitation zones for Picabo, Hailey, and Ketchum weather stations
- ❑ PRISM previously not considered due to poor resolution
- ❑ High elevation precip values outside of model domain would be assigned to narrow tributary canyons



Precipitation

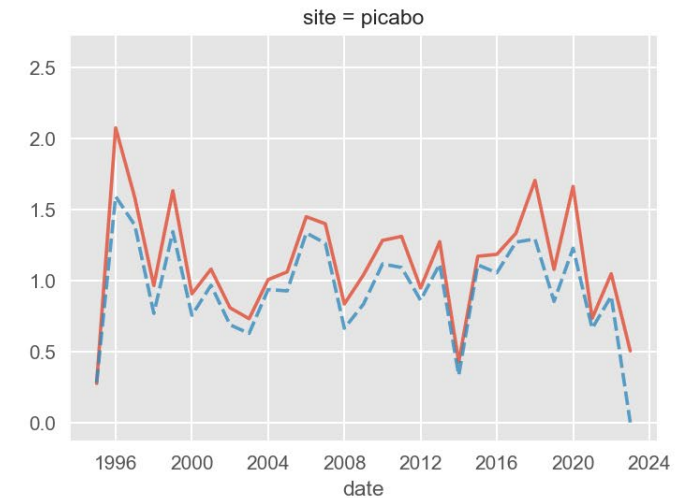
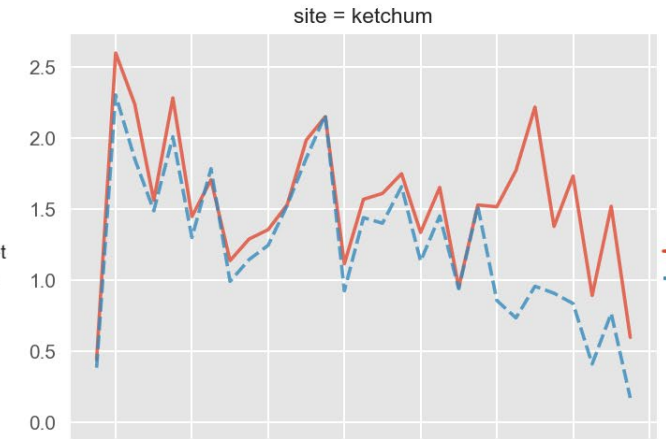
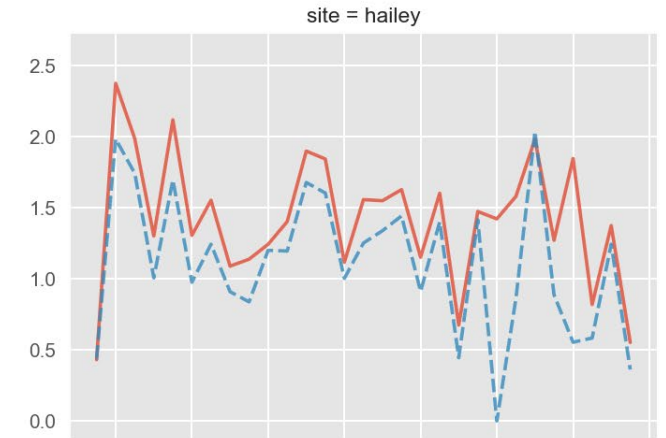
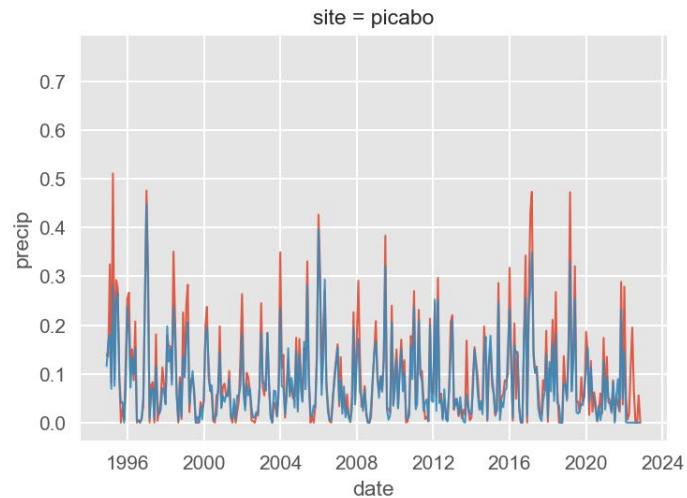
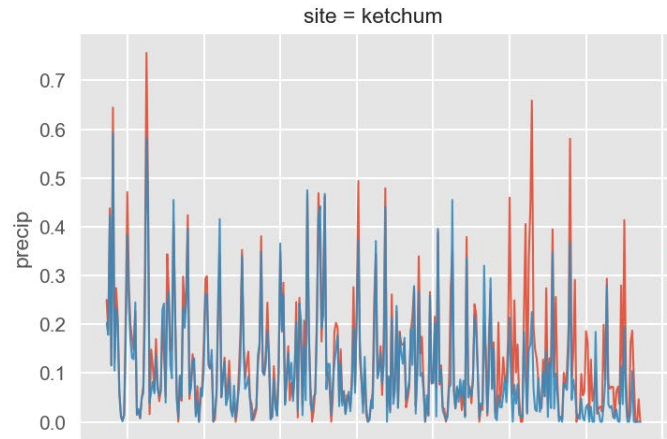
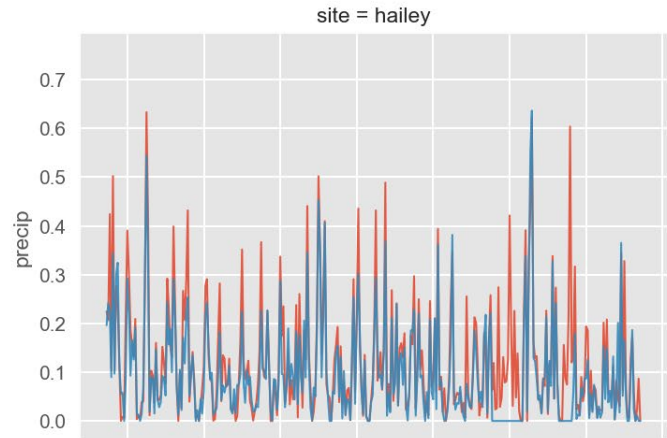
- ☐ Daymet gridded precipitation
 - ☐ ORNL product
 - ☐ 1 km resolution vs 4 km PRISM resolution
 - ☐ Tributary valley floor values less influenced by higher values
- ☐ Does higher resolution avoid pitfalls of PRISM?

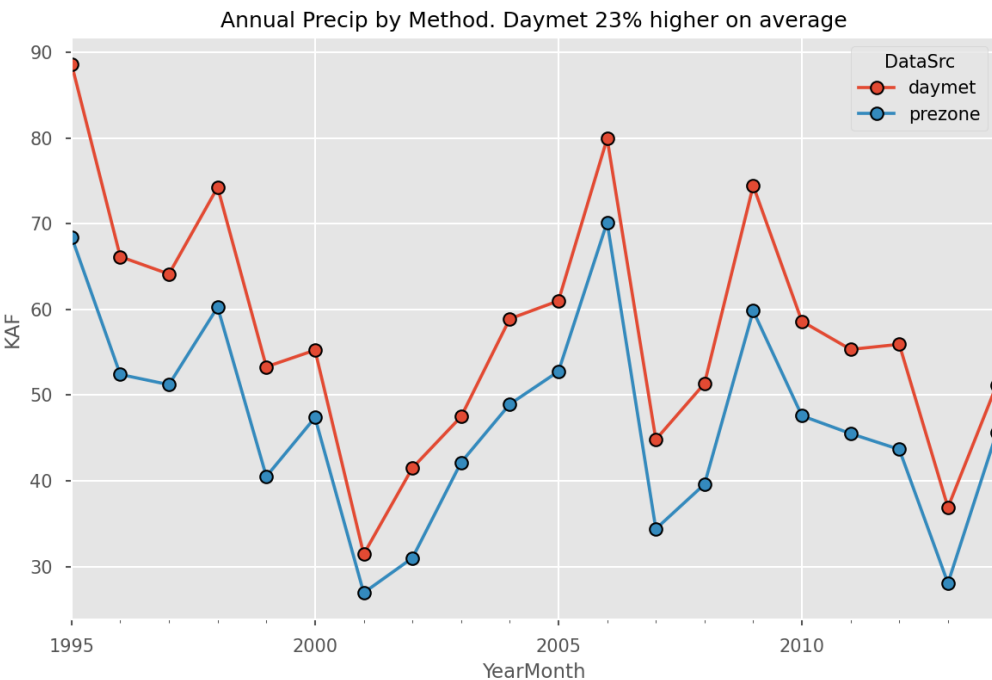
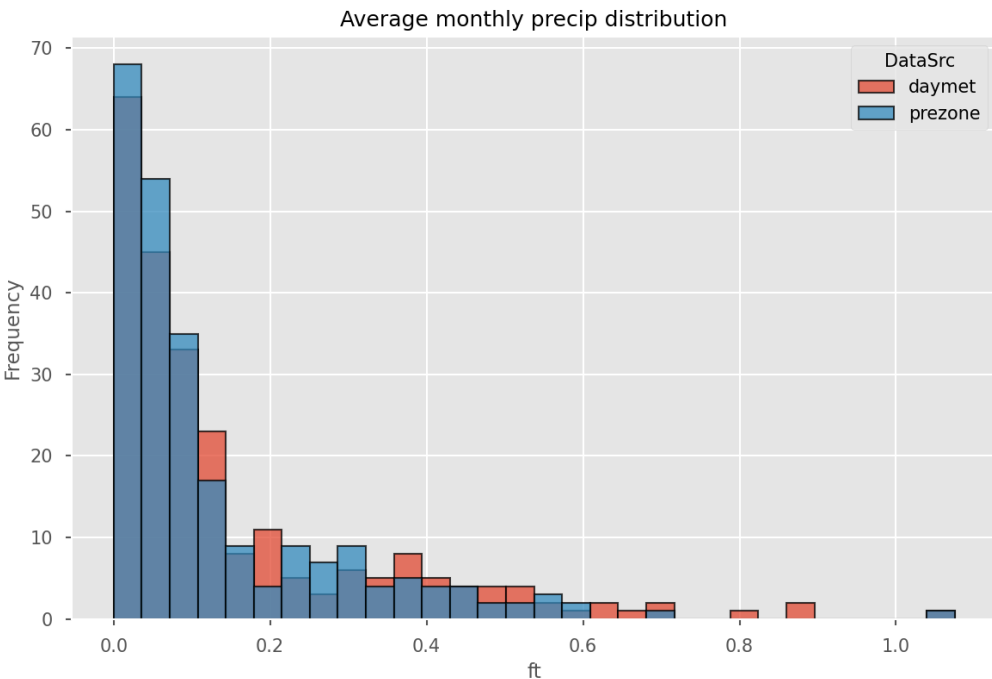
WRV boundary on Daymet 1km raster for March 2017



Station comparison

- R^2 for raw daily data
 - Picabo = 0.90
 - Hailey = 0.876
 - Ketchum = 0.81
- Ketchum annuals lower due to missing data. This is not accounting for modeled precip data





Snowmelt distributed results

- Biased higher than precip zone method: 23% more annual precipitation
- Effect may be reduced pumping north of Bellevue and increased recharge
- Is upper valley precipitation too much with daymet?

Anticipated Timeline

