

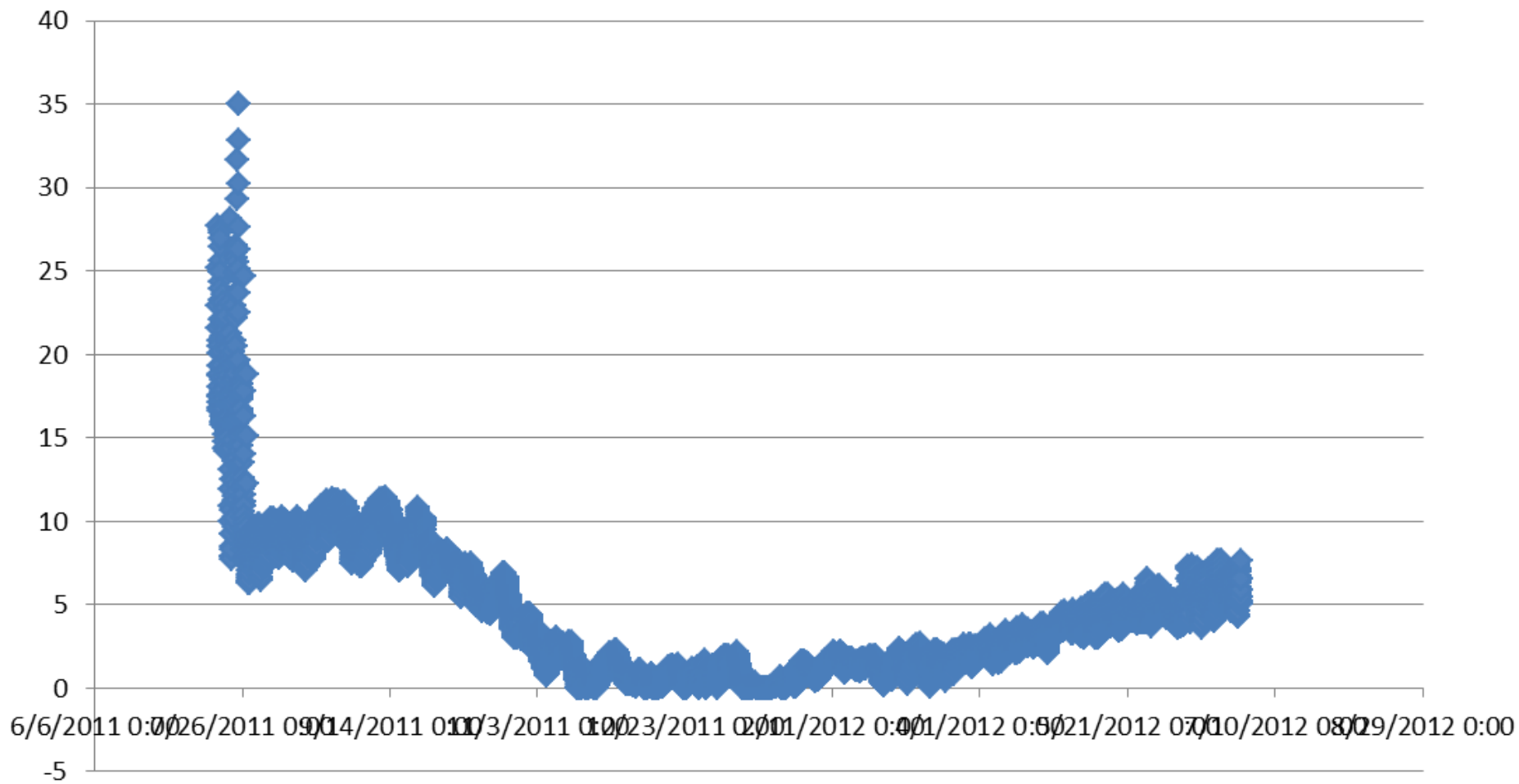


**CHaMP Stream Temperature Logger Data:  
Let's take a look, shall we?**

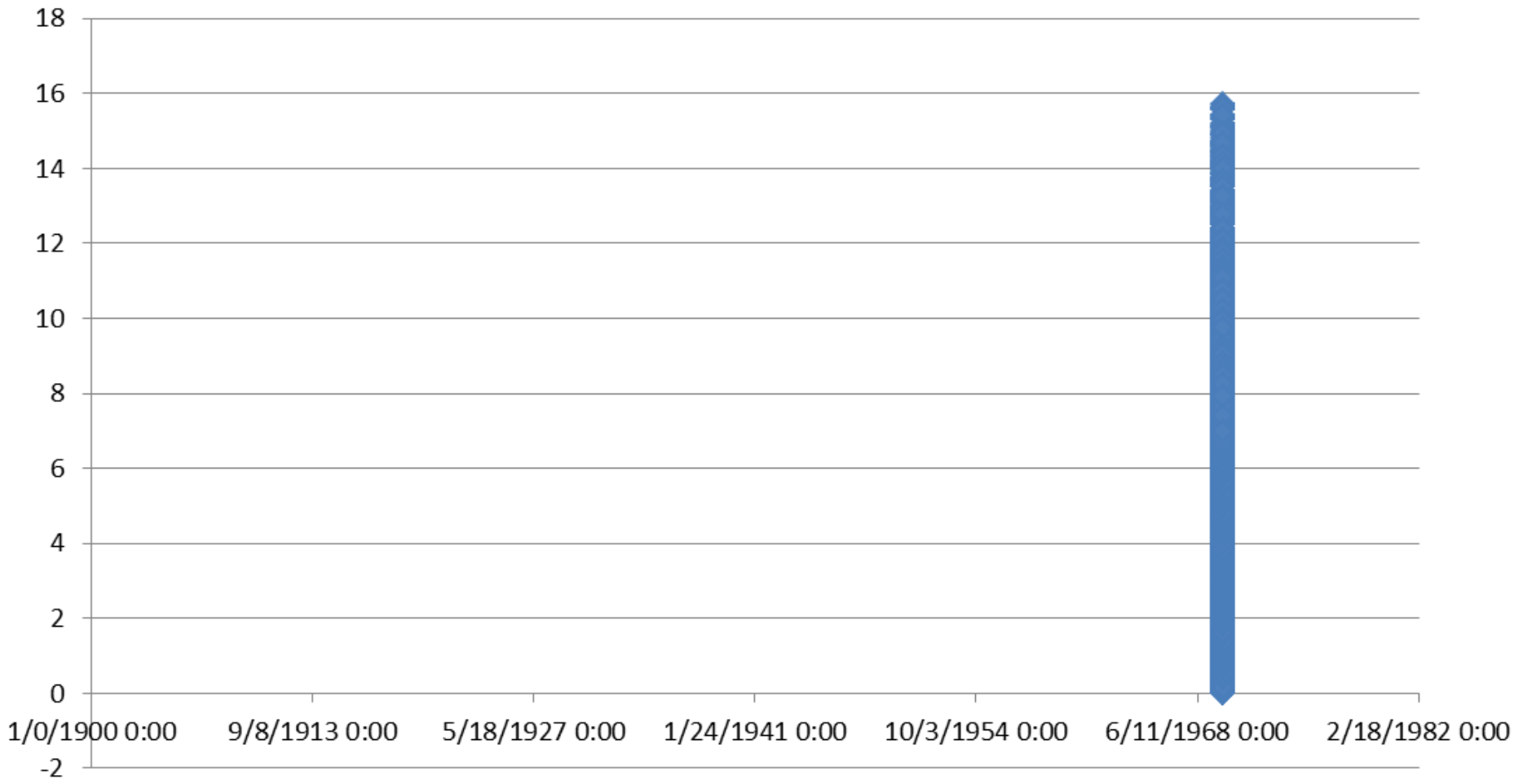
27 November 2012

**Kristina McNyset, South Fork Research, Inc.**

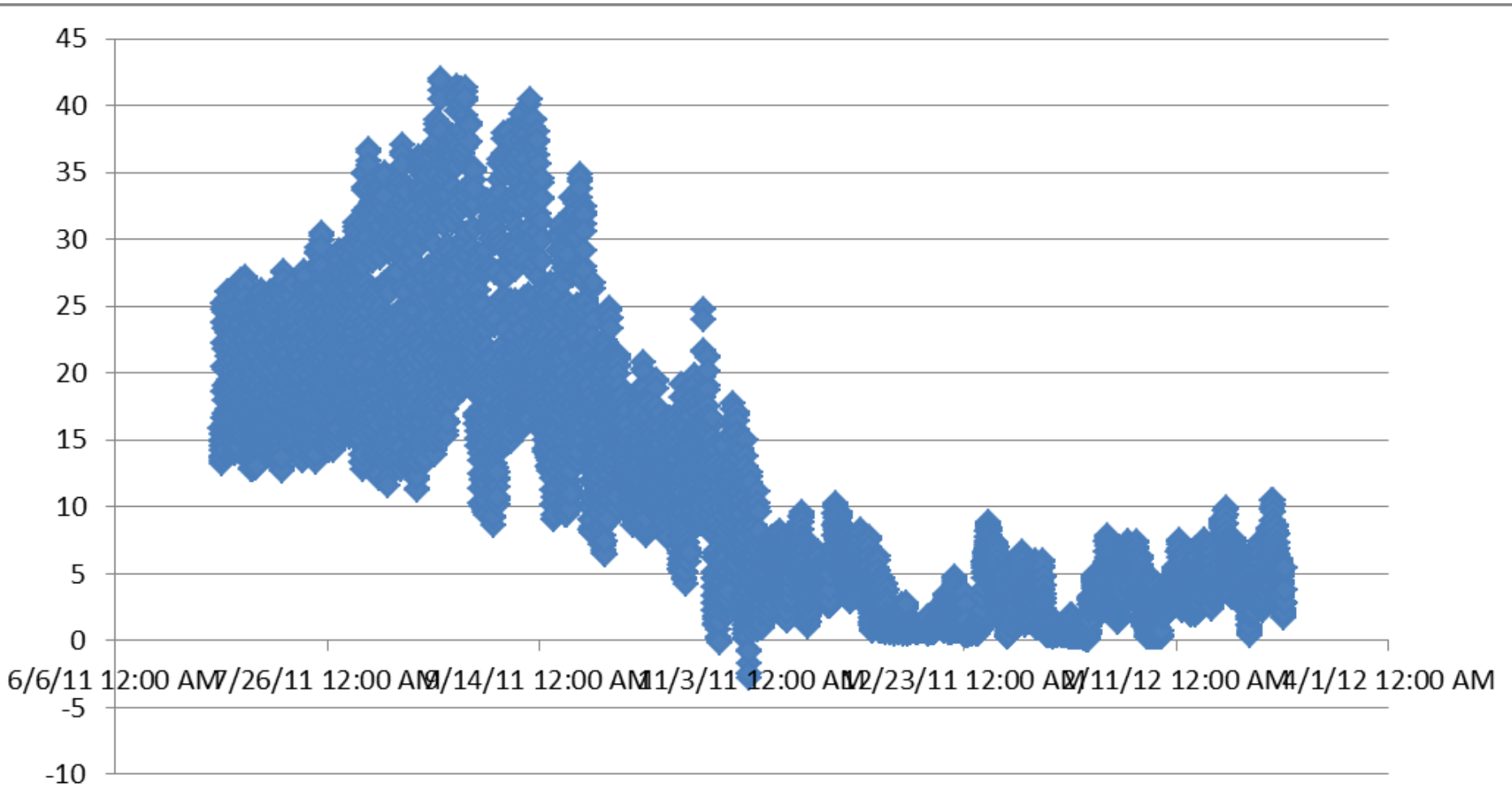
# Raw logger data common QA issue



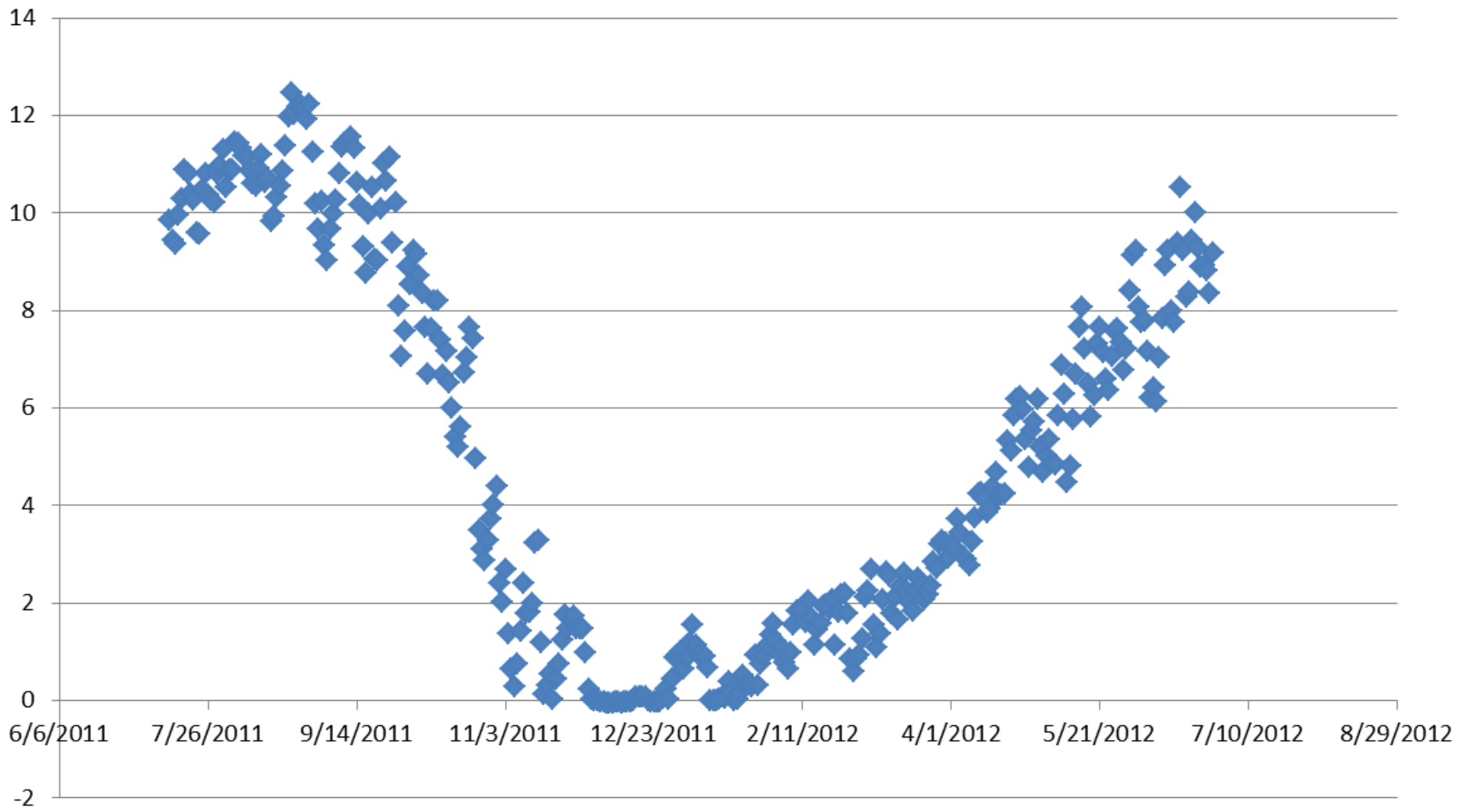
# Whoops!



Hmmmm....

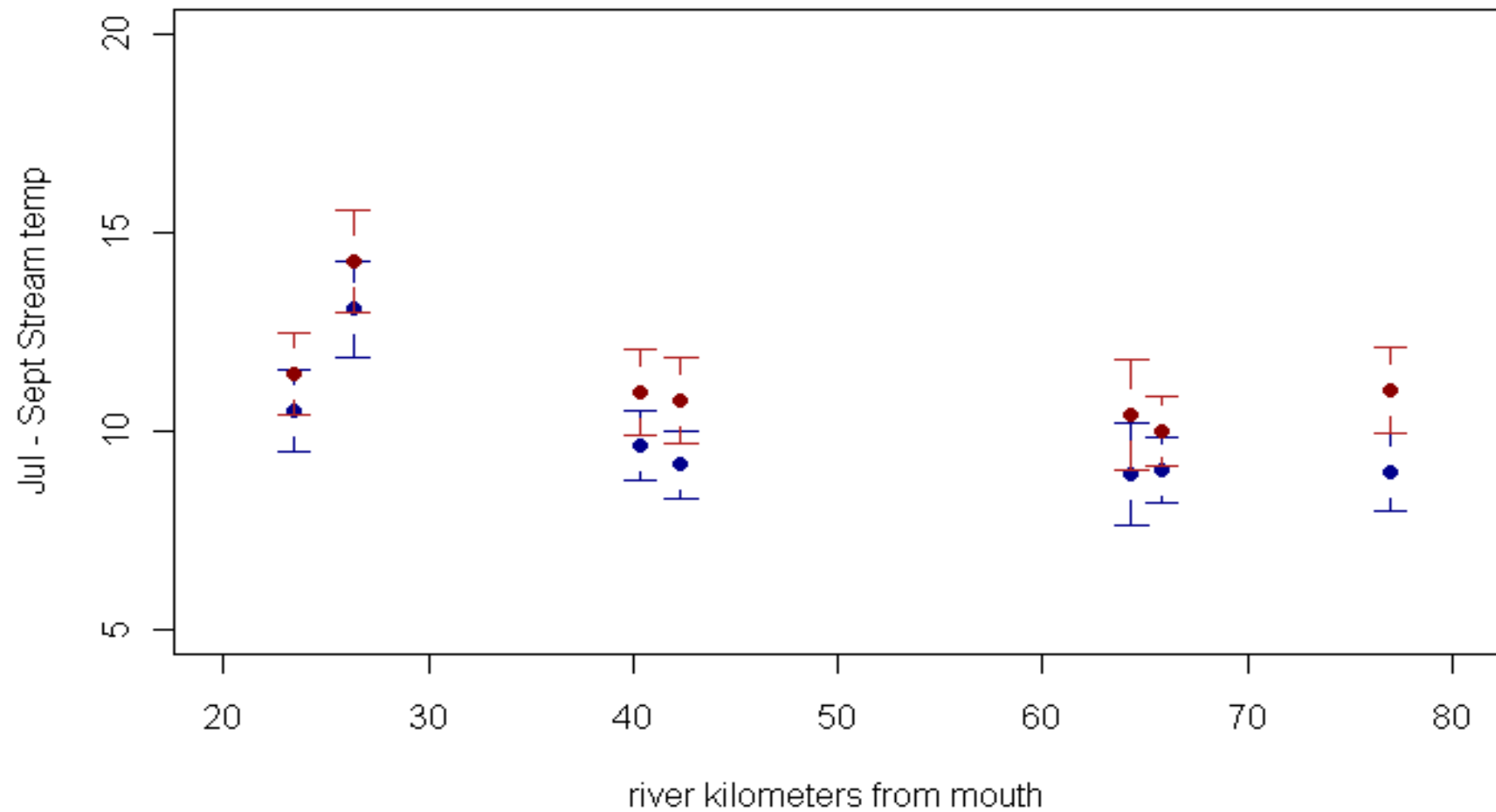


# Yay?



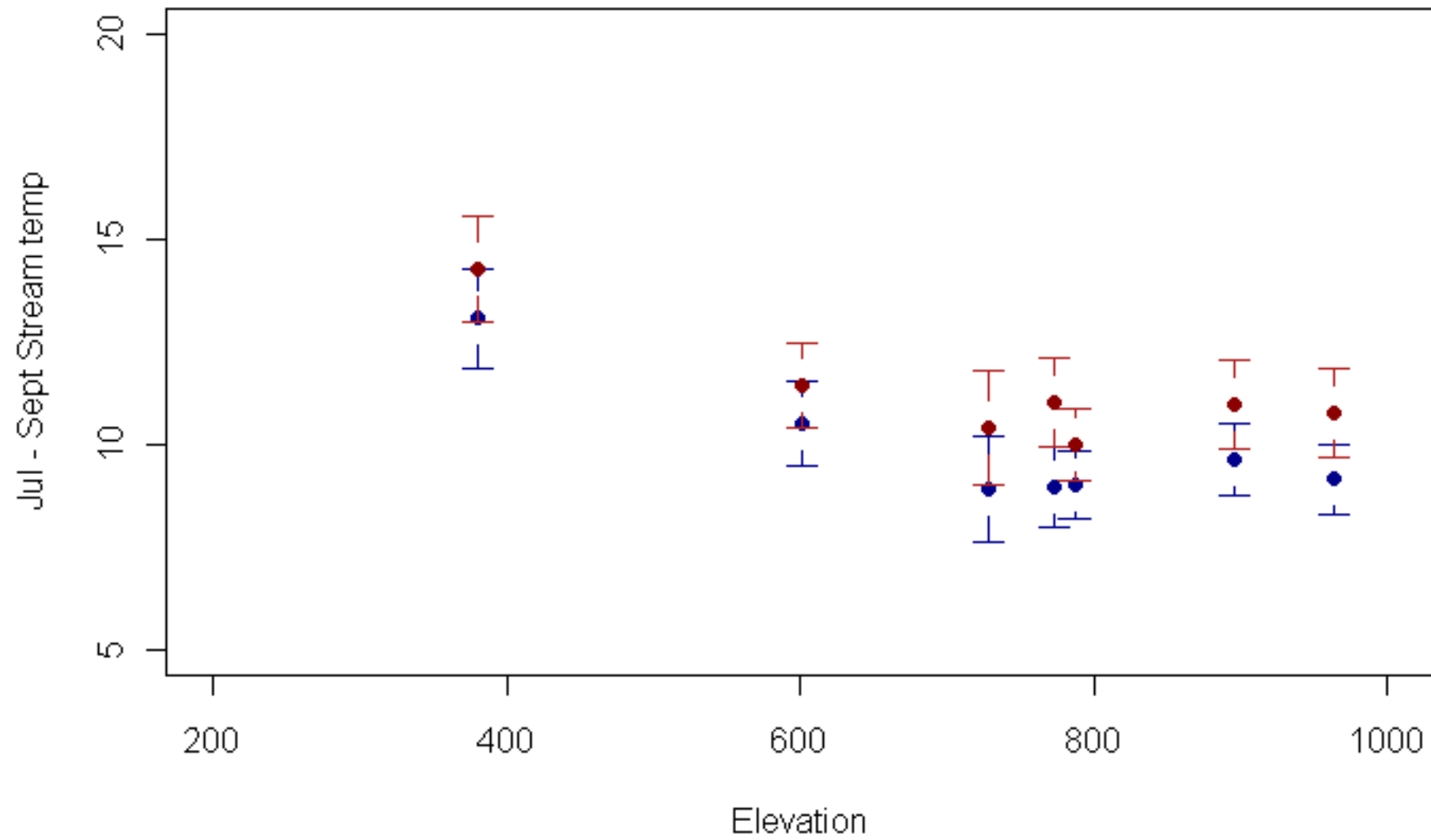
# Wenatchee sites

## Summer Mean & Max



# Wenatchee sites

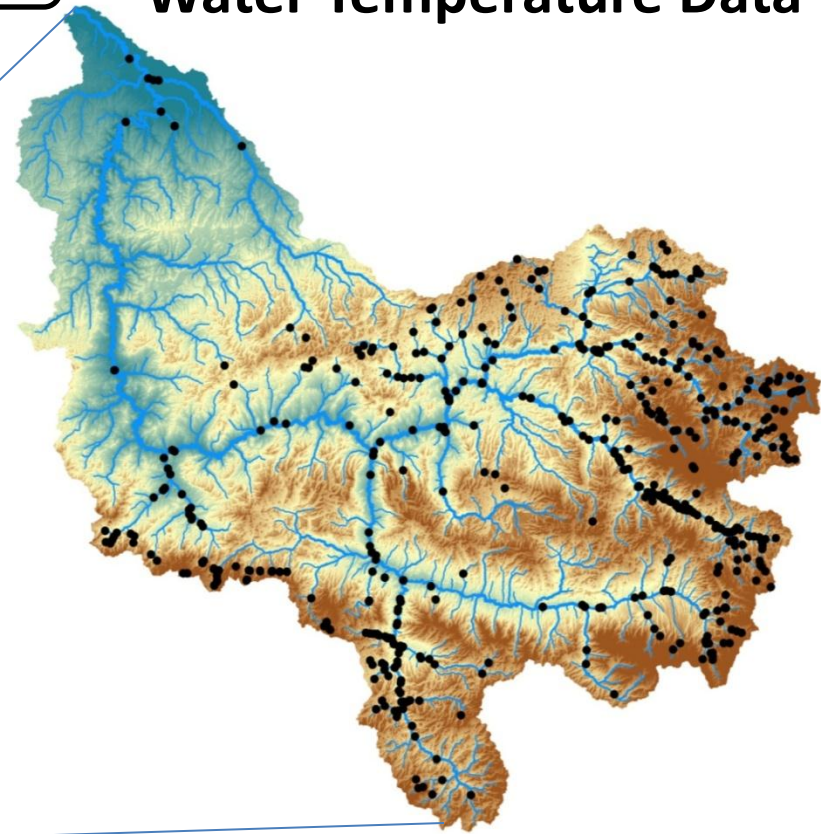
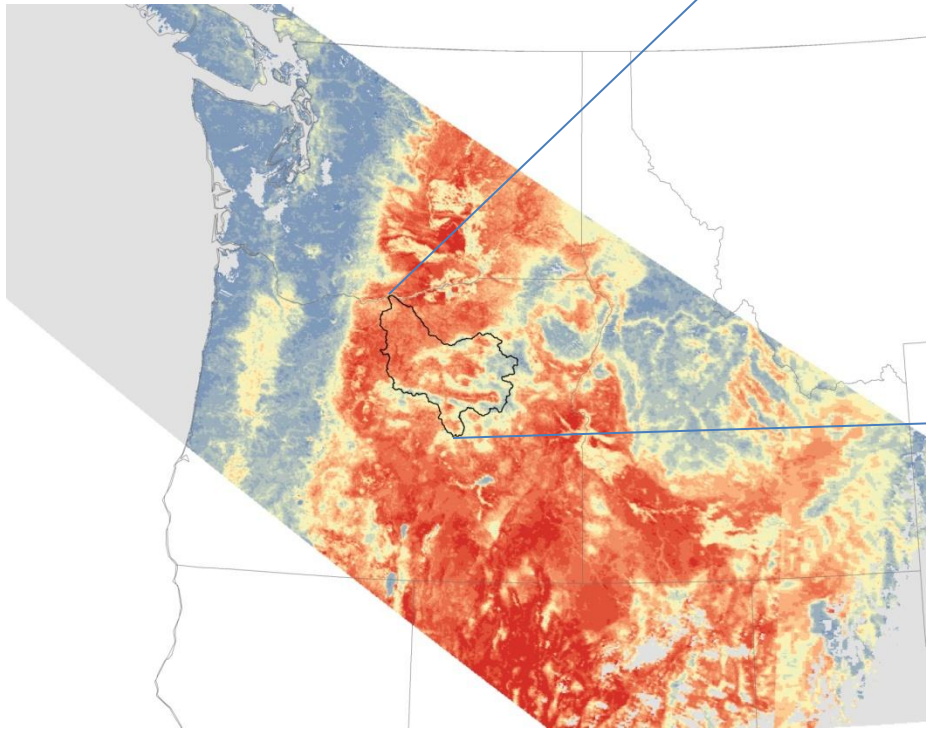
## Summer Mean & Max



# Modeling Stream Temperature

## Water Temperature Data

- MODIS Satellite Data (NASA)
- 1km<sup>2</sup> spatial resolution, daily, 8-day
- Spatially and temporally continuous

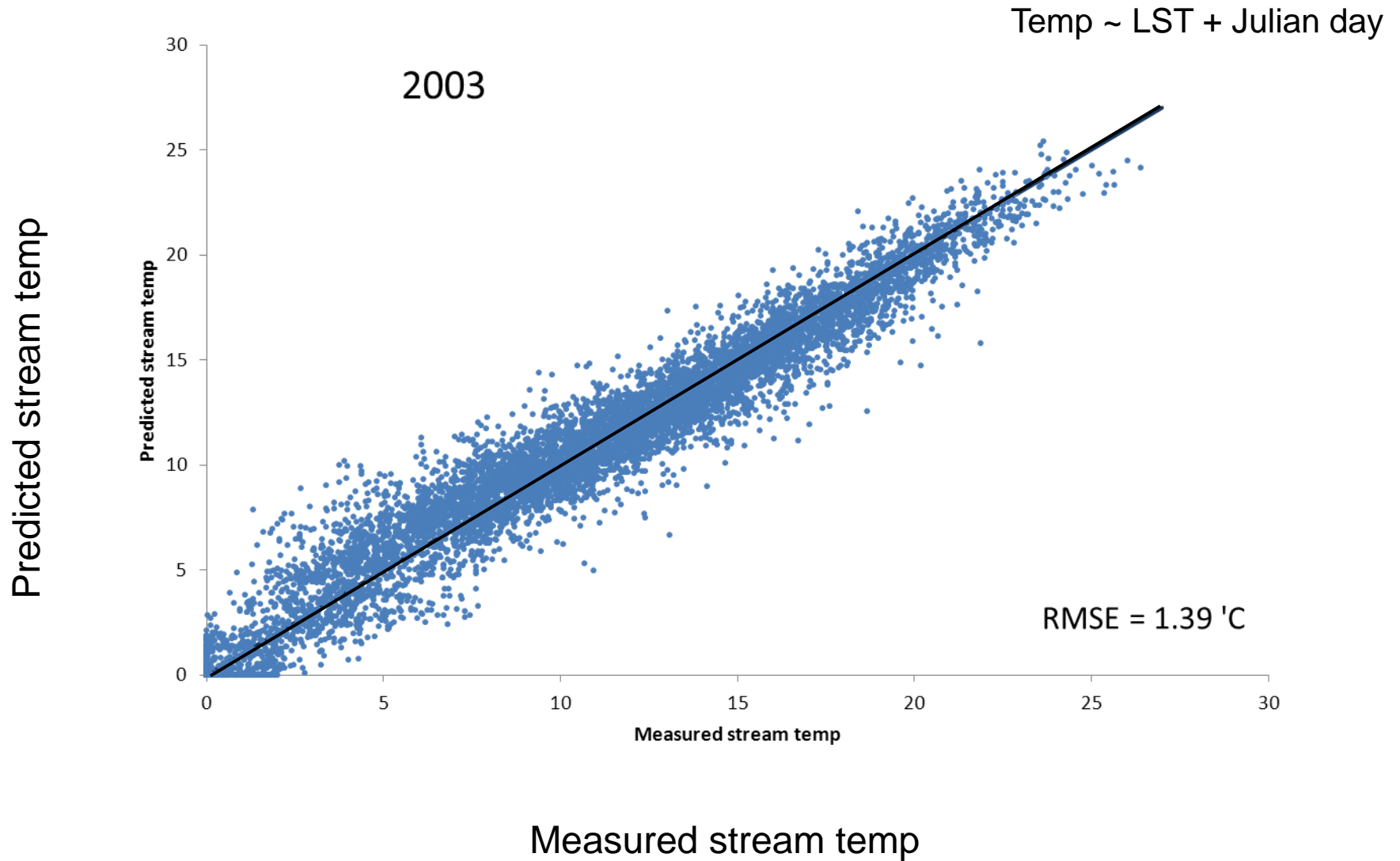


- Stream temp logger dataset
- ~1757 loggers
- Spatially and temporally patchy

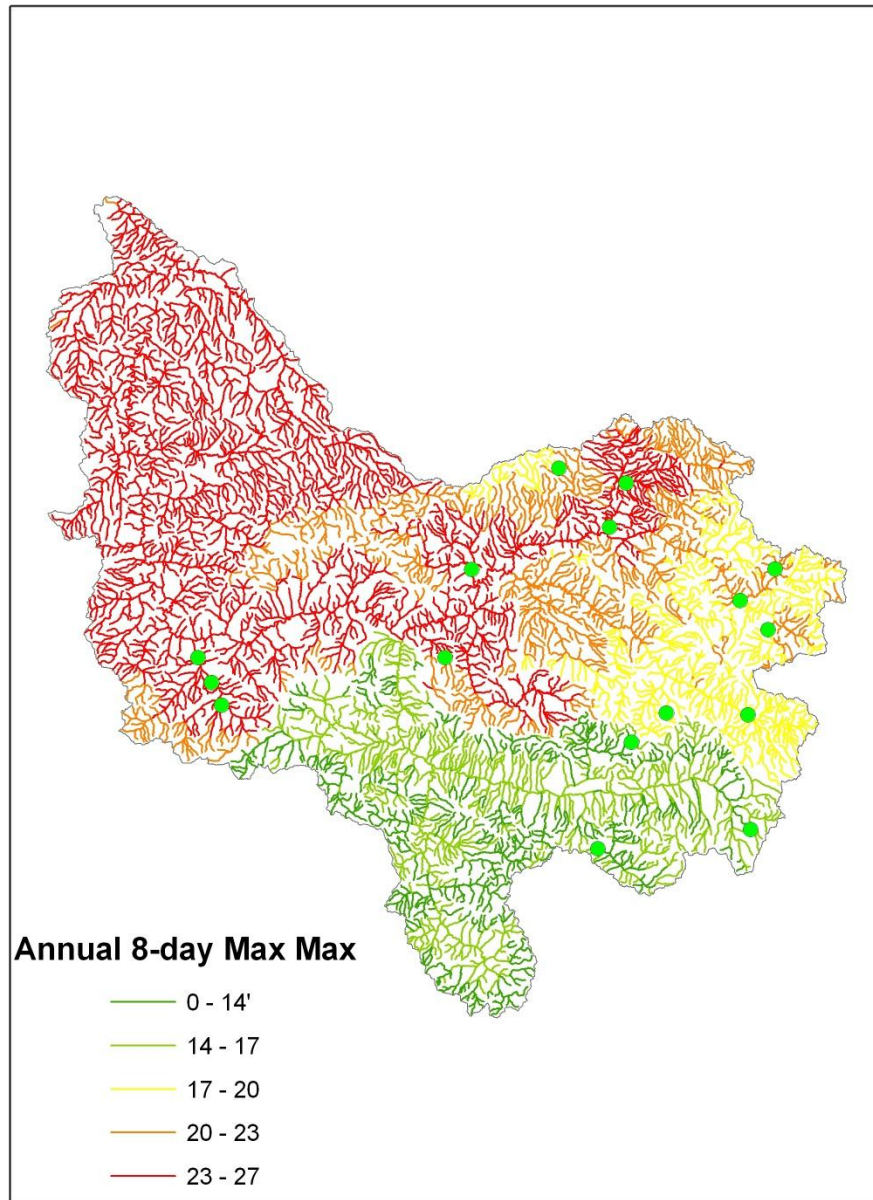
## Land Surface Temperature (LST)



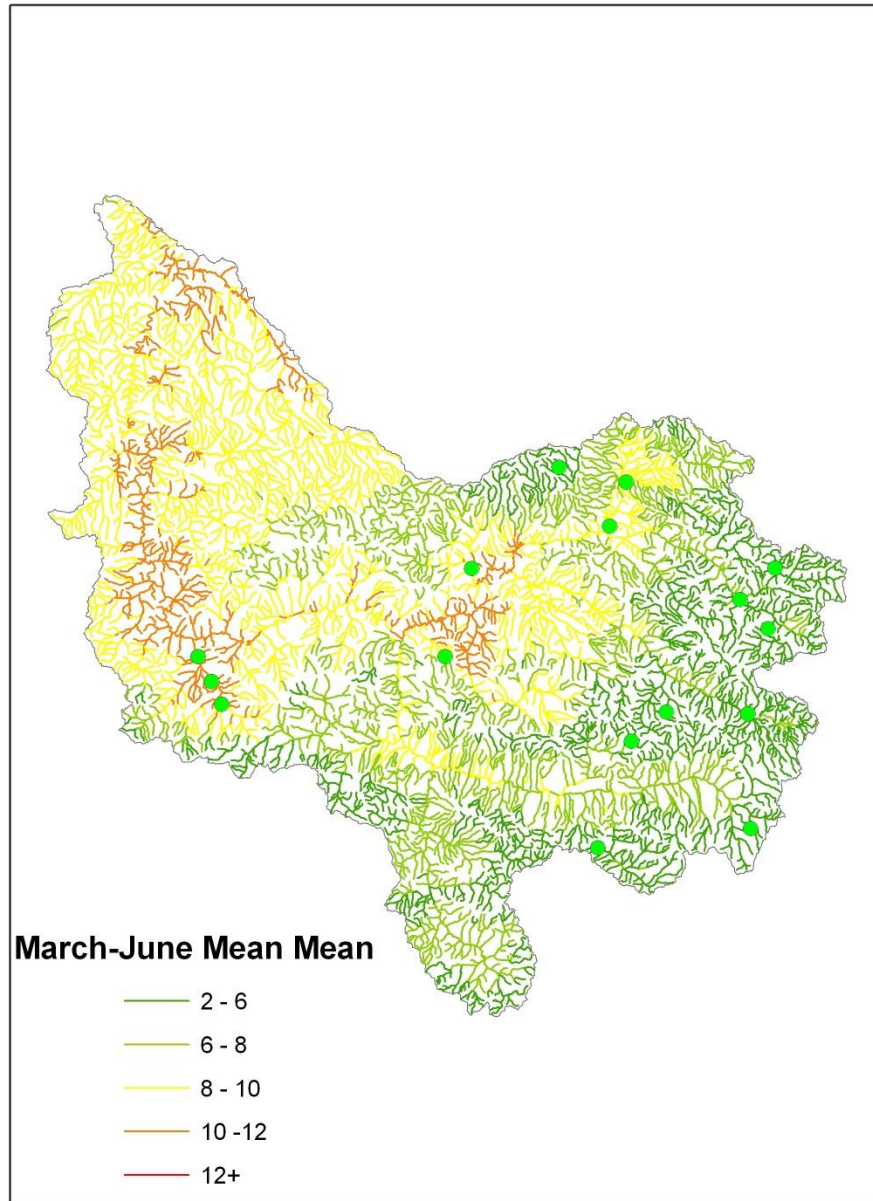
# Predicted Water Temperature



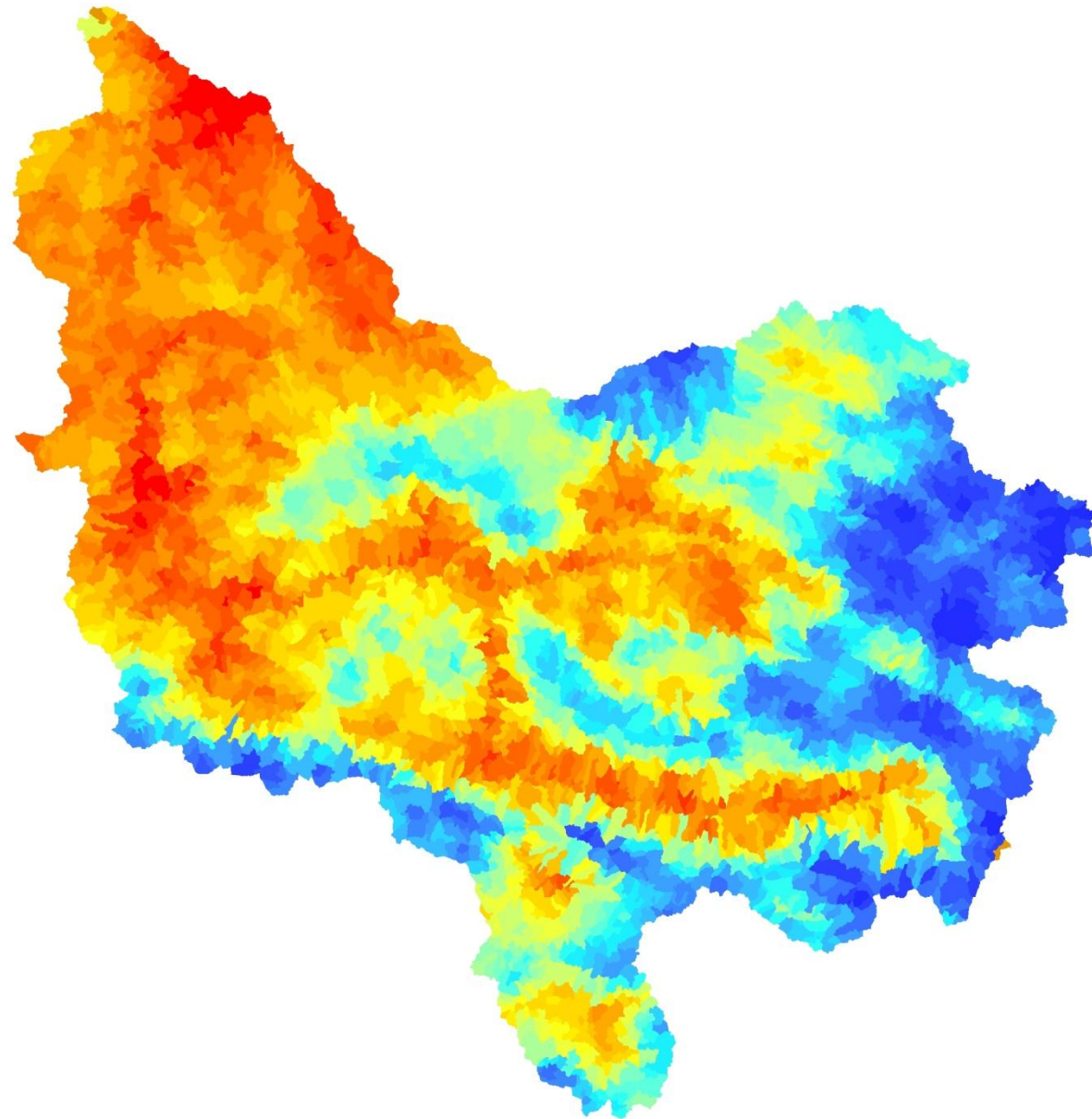
# 2012 8-day Max Max stream temp



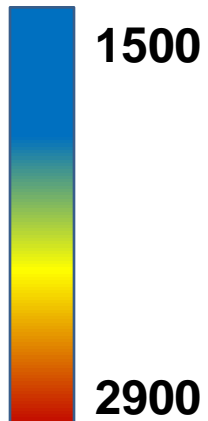
March – June 2012 8-day  
Mean Mean stream temp



# Fish growing season degree days



Growing season  
degree days (GSDD)





## CHaMP Sun Eye Data

27 November 2012

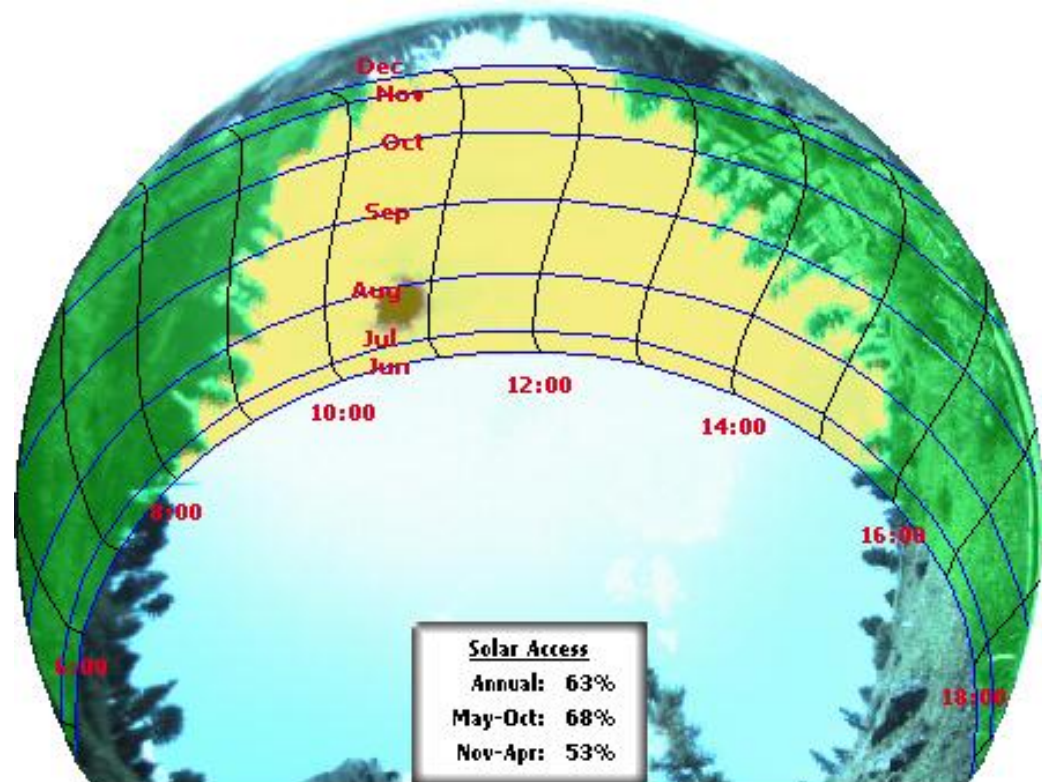
Kristina McNyset, South Fork Research, Inc.



# Summary of Solar Input in the Upper Grande River and Catherine Creek During Summer 2011

November 2011

Tarin Lewis



Data by Solmetric SunEye™ -- [www.solmetric.com](http://www.solmetric.com)

Insert image of a massive  
grid of data files here





**Solar Access %** = (Insolation accounting for shade / total potential insolation)\*100

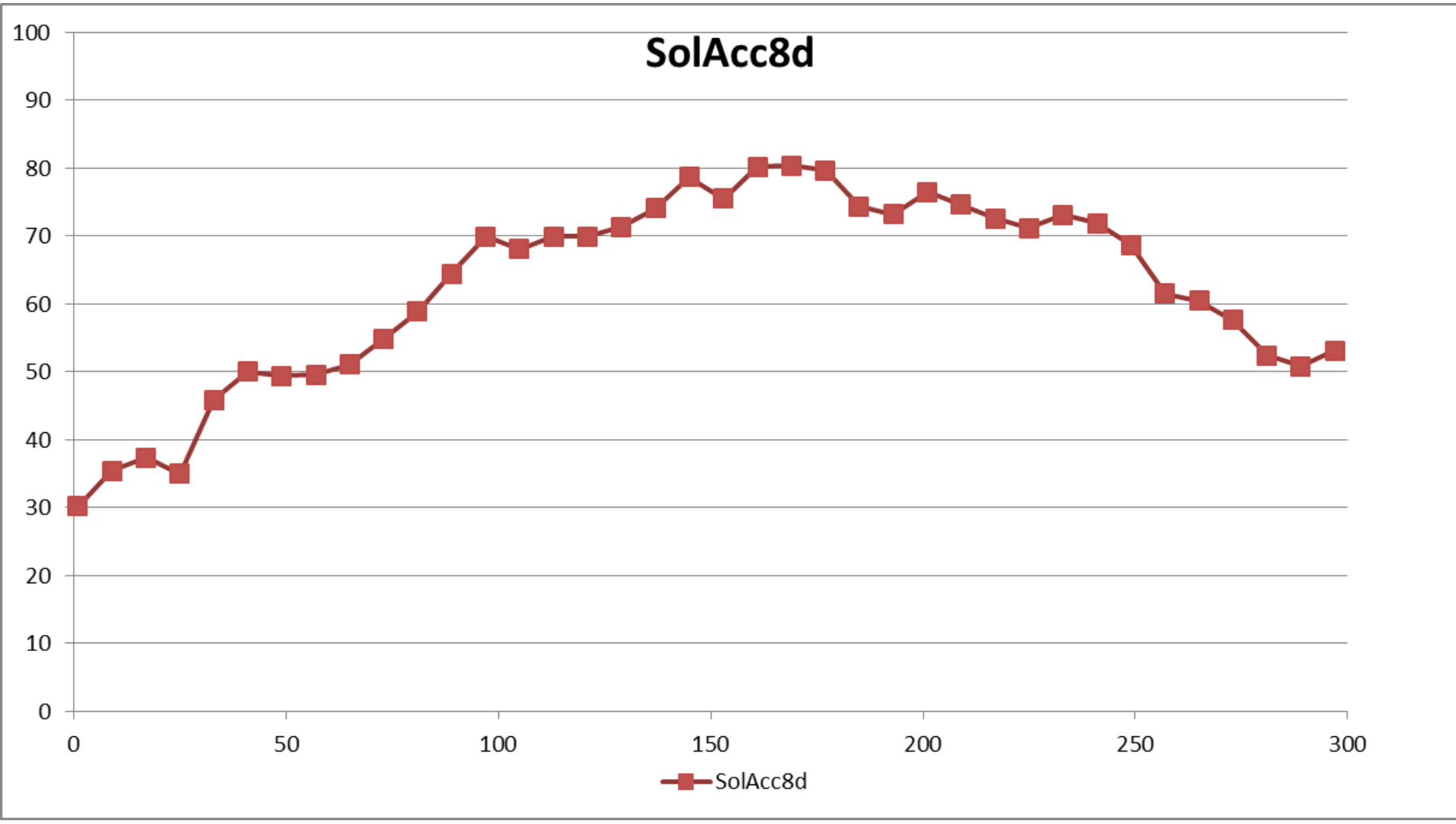
**Total potential daily insolation** (wh/m<sup>2</sup>) = Sum of quarter- hourly insolation values

**Total potential monthly insolation** (wh/m<sup>2</sup>) = Sum of daily total insolation for each day

**Total actual monthly insolation** (wh/m<sup>2</sup>) = (Solar access percentage/100)\*(total potential monthly insolation)

**Average actual daily insolation** (Kwh/m<sup>2</sup>/day) = ((total actual monthly insolation)/# days in the month)/1000

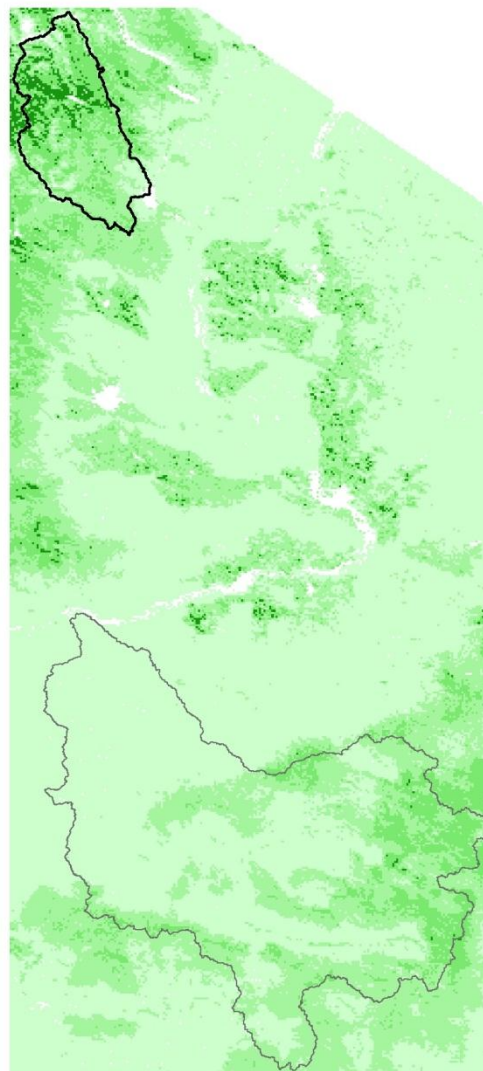
# SolAcc8d



Leaf Area Index [LAI]

14 Aug 2012

(Also could be Fraction of  
Photosynthetically Active  
Radiation [Fpar])

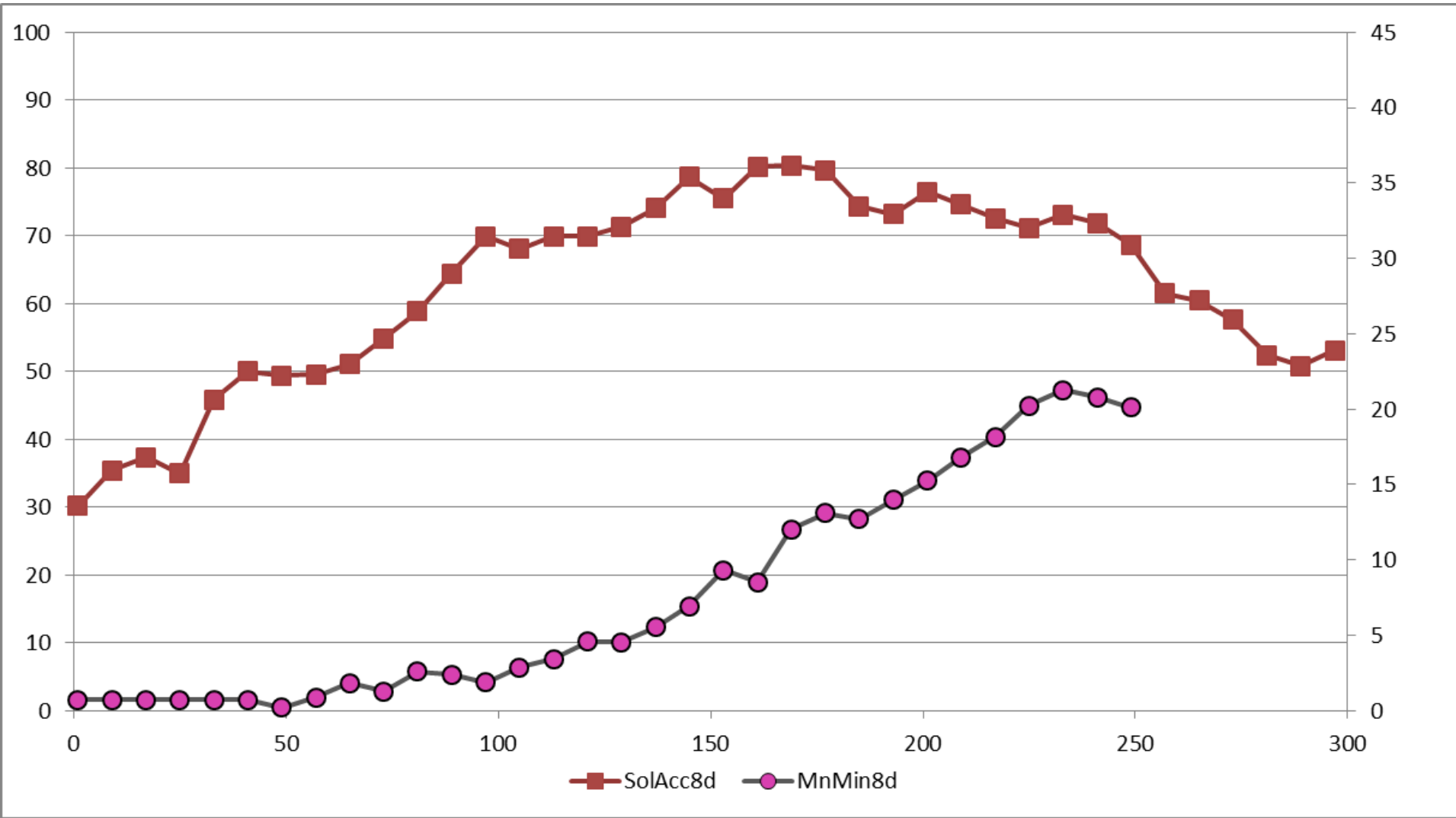


# Camas Creek, John Day basin



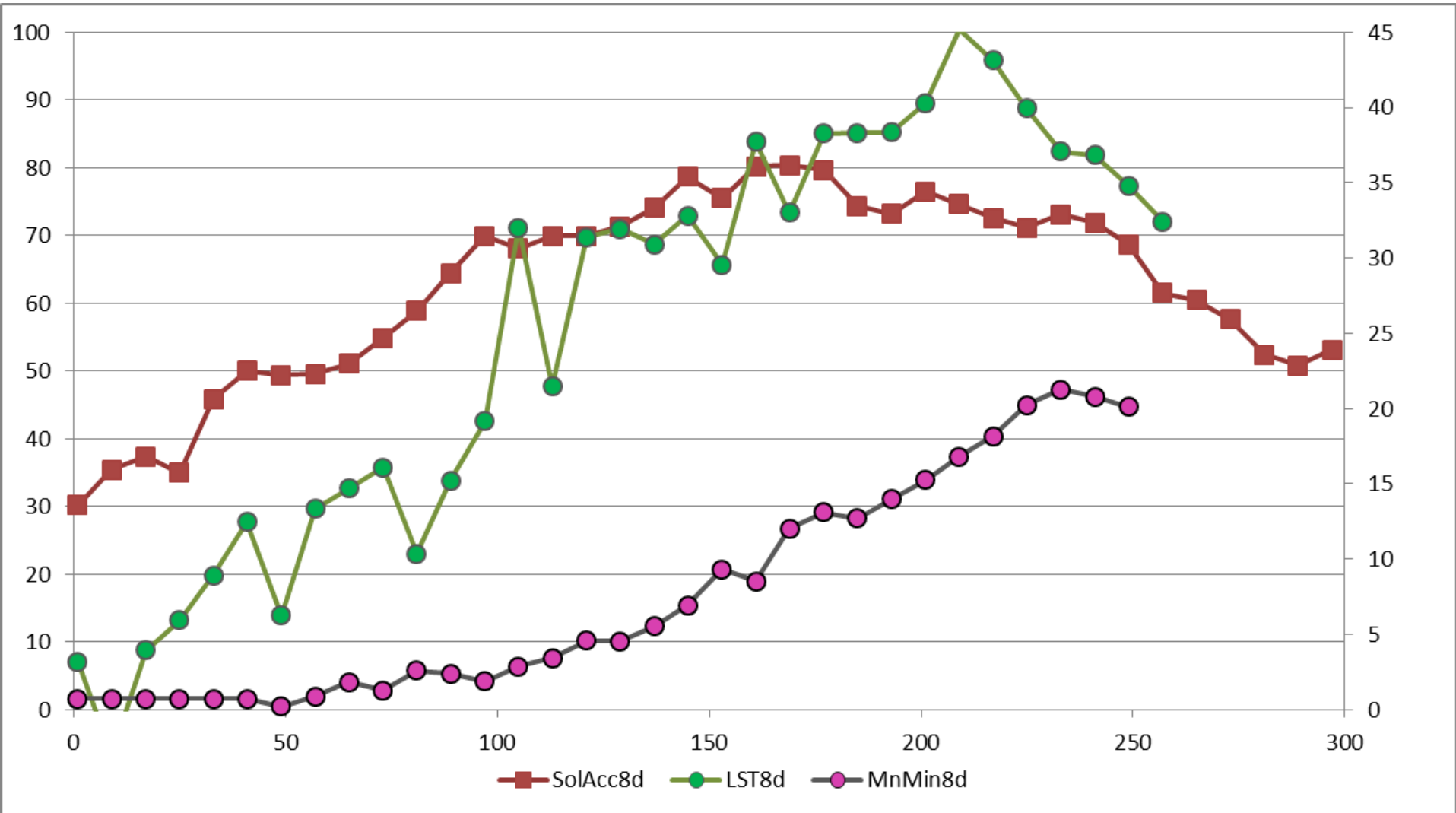
# Camas Creek, John Day Basin 2012

## Solar Access, Stream Temp, & LST



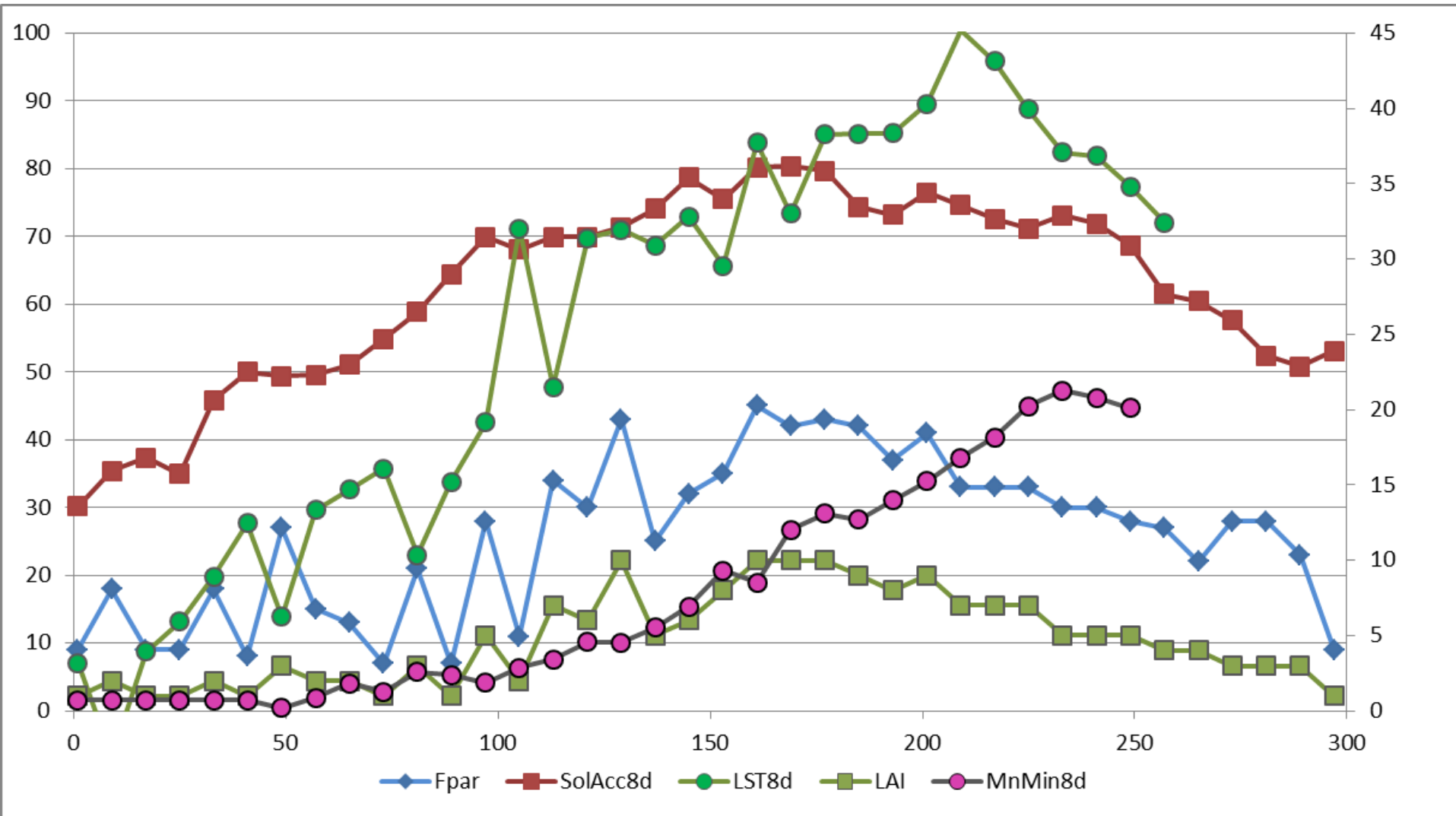
# Camas Creek, John Day Basin 2012

## Solar Access, Stream Temp, & LST



# Camas Creek, John Day Basin 2012

## Solar Access & Stream Temperature



Camas Creek, John Day basin

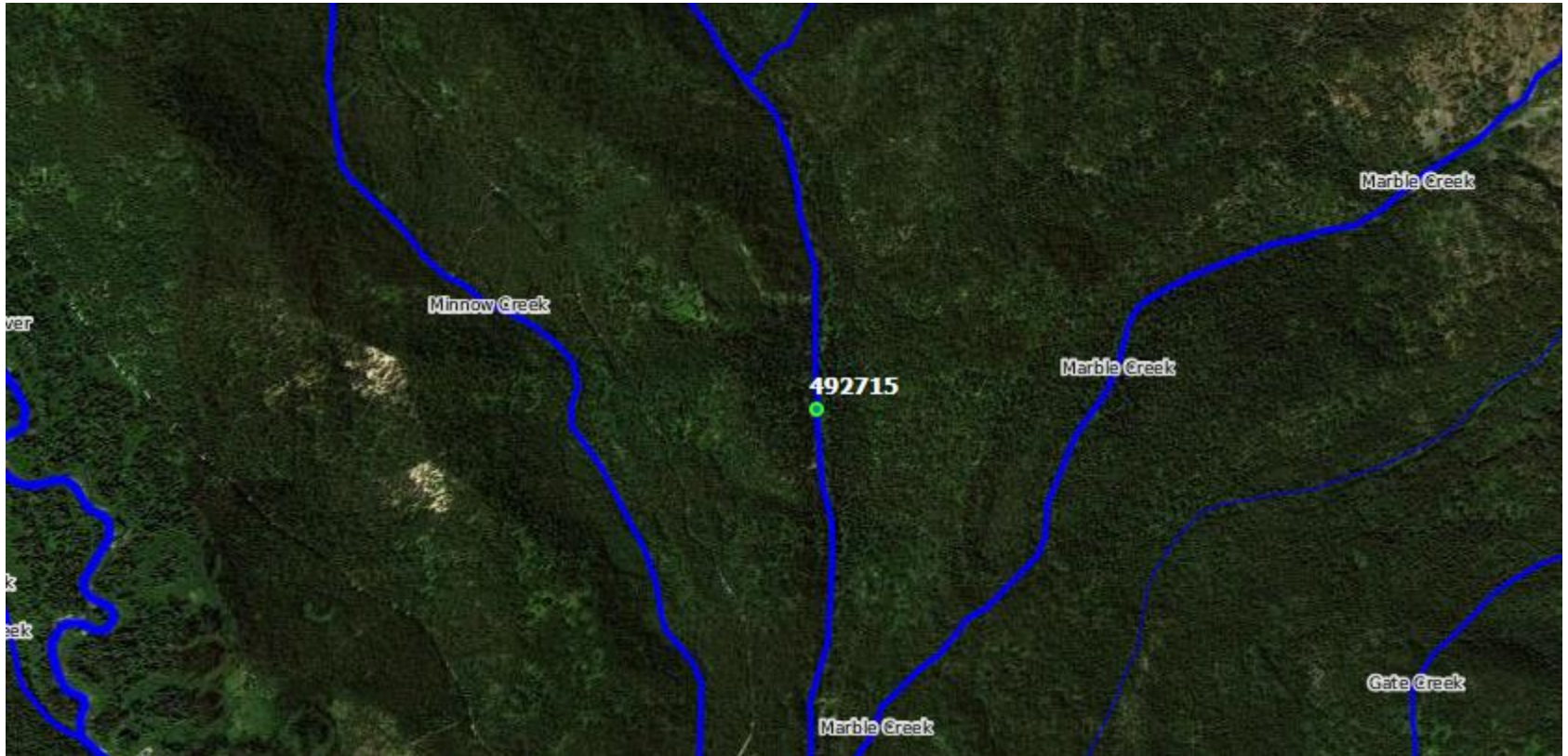
---

	<i>Solar Access</i>	<i>Fpar</i>	<i>LST</i>	<i>Logger</i>	<i>LAI</i>
Solar Access	1.00				
Fpar	0.13	1.00			
LST	0.59	0.61	1.00		
Logger	0.80	0.18	0.93	1.00	
LAI	0.21	0.89	0.71	0.27	1.00

---

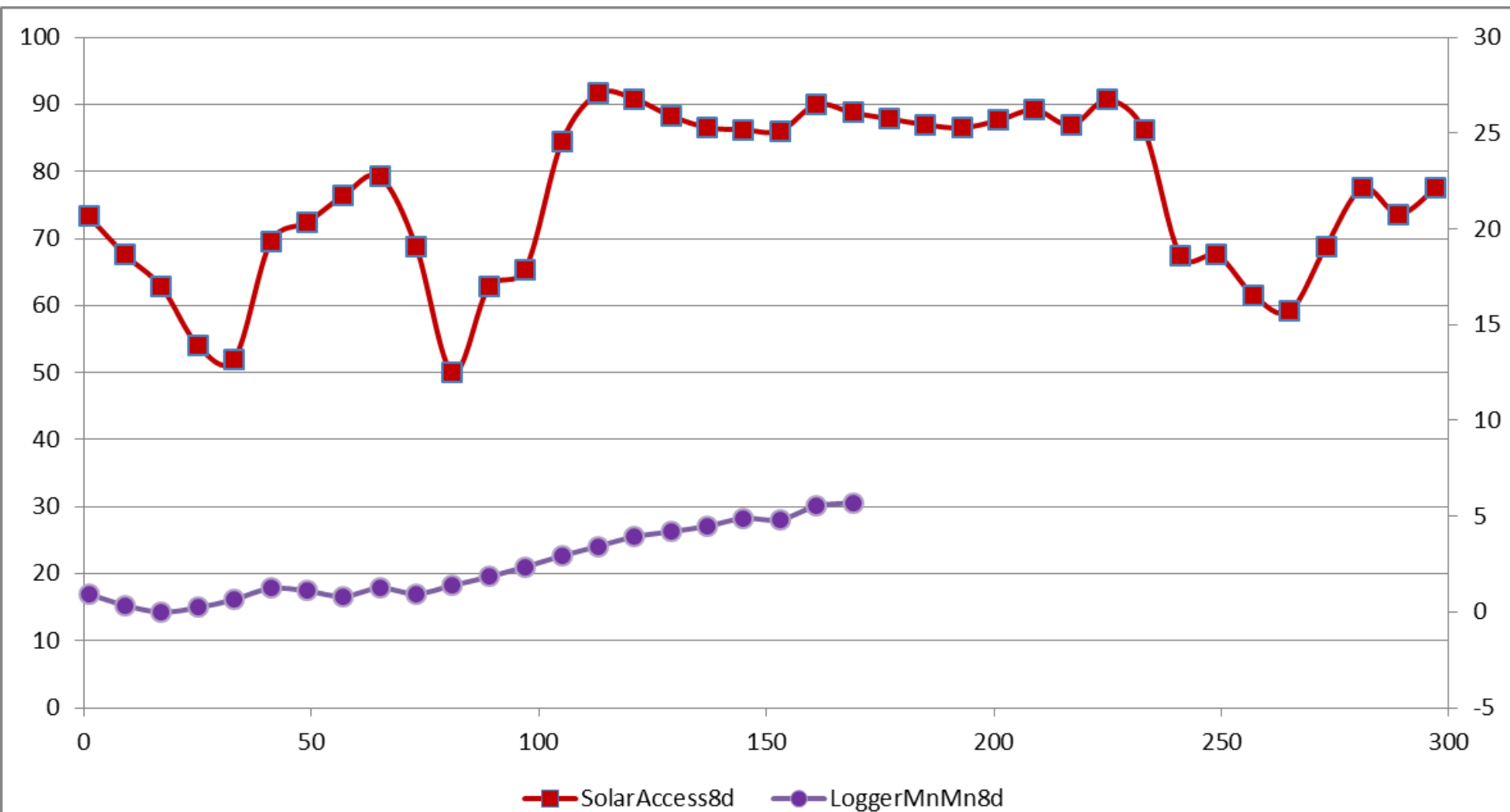


# Chikamin Creek, Wenatchee basin



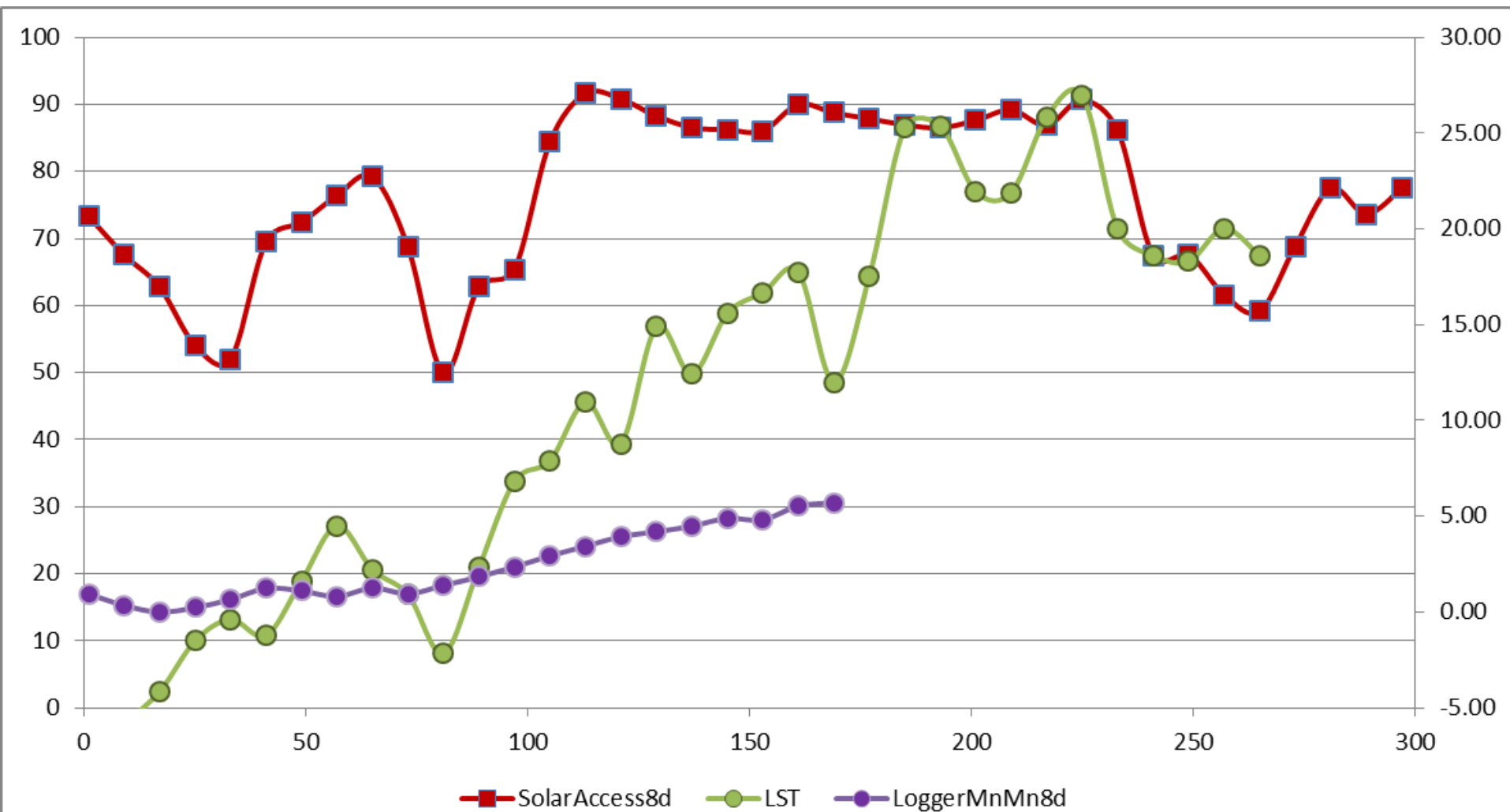
# Chikamin Creek, Wenatchee basin 2012

## Solar Access & Stream Temperature



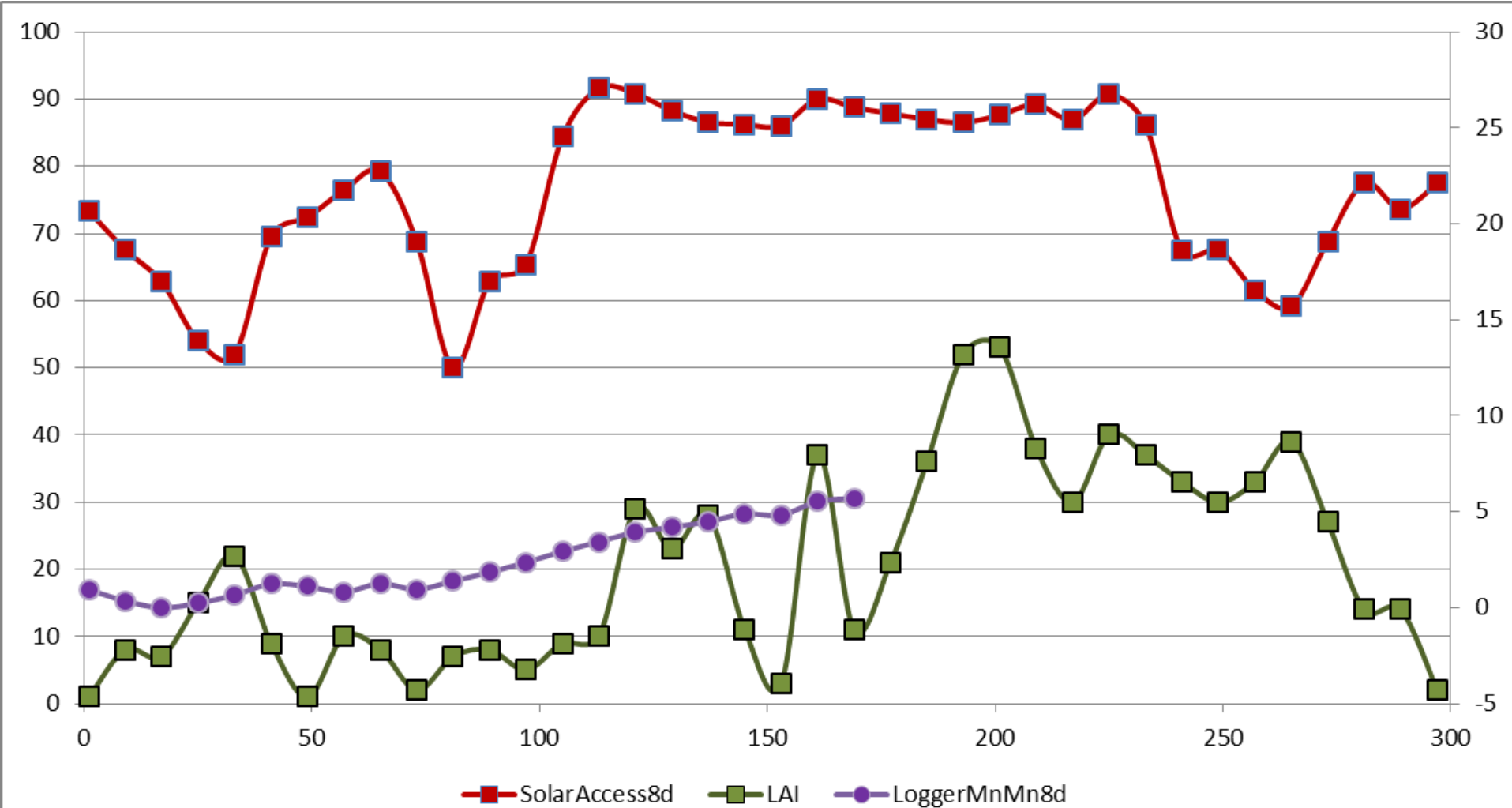
# Chikamin Creek, Wenatchee basin 2012

## Solar Access, Stream Temperature, LST



# Chikamin Creek, Wenatchee basin 2012

## Solar Access, Stream Temperature, LAI



Camas Creek, John Day basin

	<i>Solar Access</i>	<i>Fpar</i>	<i>LST</i>	<i>Logger</i>	<i>LAI</i>
Solar Access	1.00				
Fpar	0.13	1.00			
LST	0.59	0.61	1.00		
Logger	0.80	0.18	0.93	1.00	
LAI	0.21	0.89	0.71	0.27	1.00

Chikamin Creek, Wenatchee basin

	<i>Fpar</i>	<i>Solar Access</i>	<i>LST8d</i>	<i>LAI</i>
Fpar	1.00			
Solar Access	0.77	1.00		
LST8d	-0.04	-0.02	1.00	
LAI	0.96	0.83	-0.04	1.00
Logger	0.62	0.65	0.83	0.61

# Camas Creek, John Day Basin 2012

## Solar Access & LAI

