ESPAM2.1 2009-2010 and 1900 Validation Report

8 January 2013

Allan Wylie IDWR

Validation Report

Revision 2

ESPAM2.1

2009-2010 Validation Scenario

And

1900 Validation Scenario Report

Idaho Department of Water Resources

Allan Wylie

December 2012

- Validation report posted on ESHMC web page 18 December 2012.

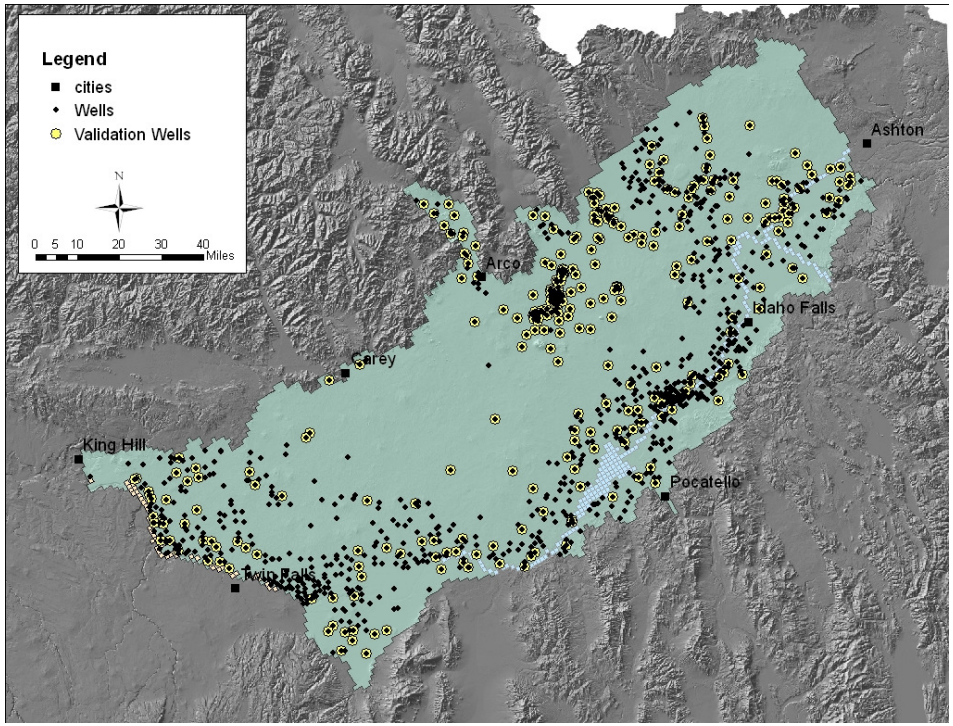
2010 Validation

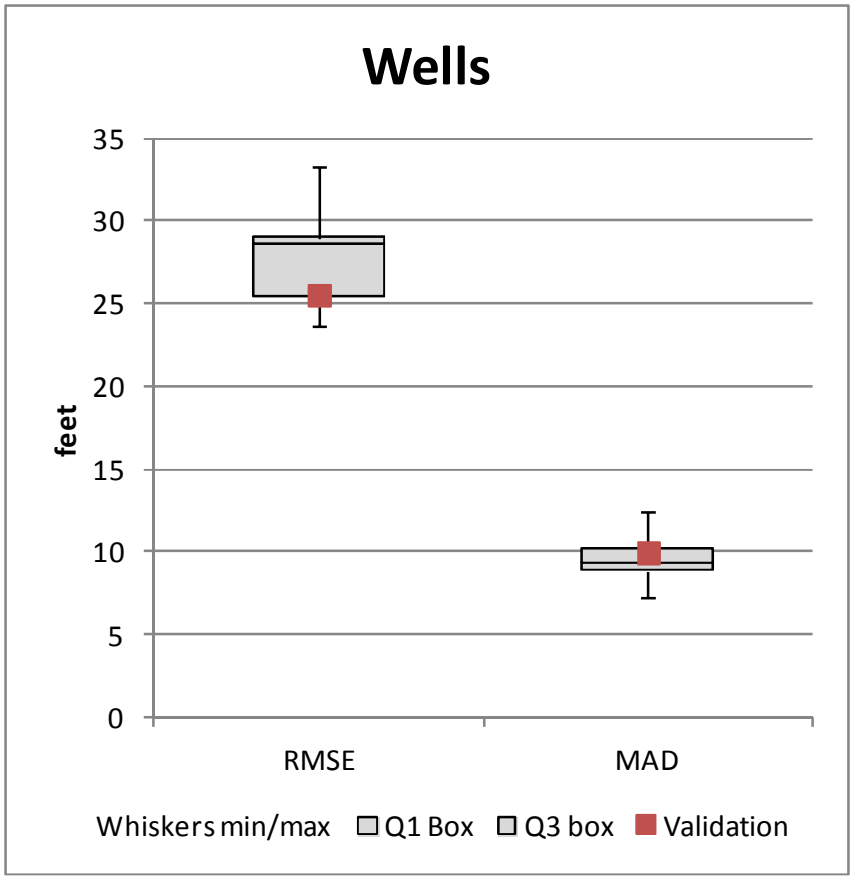
- Upon calibration had data for 2009 and 2010
- Added 2009 and 2010 to data set
- Ran model with no adjustments to see how 2009 and 2010 matched model output

2010 Validation

- IWRRI Dawkins (2012)
  - Compute statistics using two year groupings
  - RMSE
    - Sqrt(sse/df)
  - MAD
    - Median($|X_i$ – median$X_j|$)

2010 Validation





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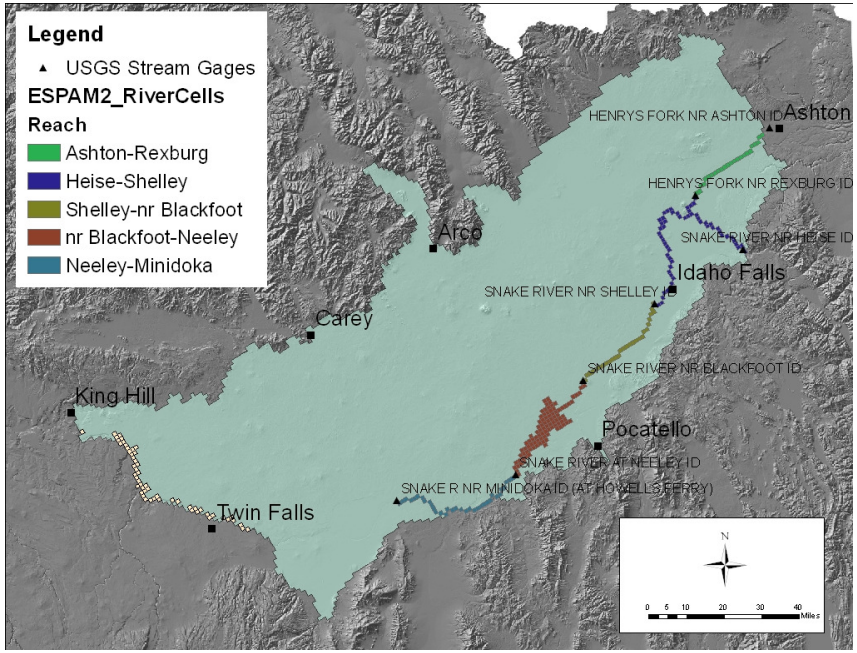

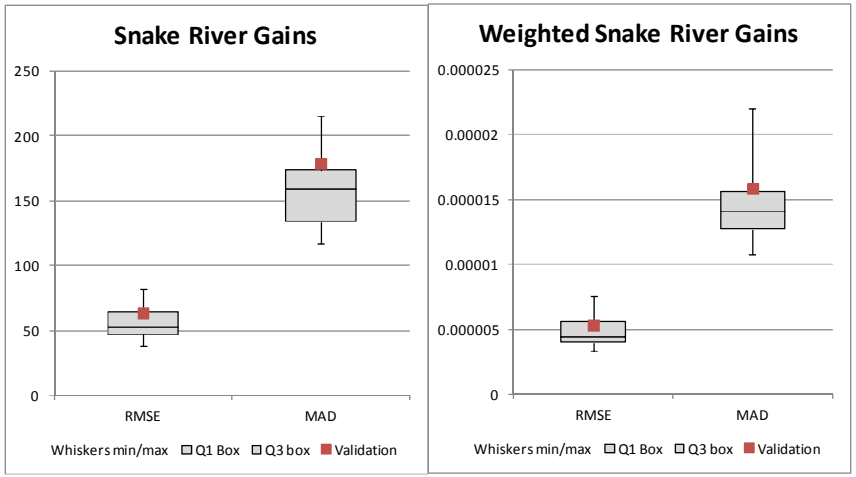

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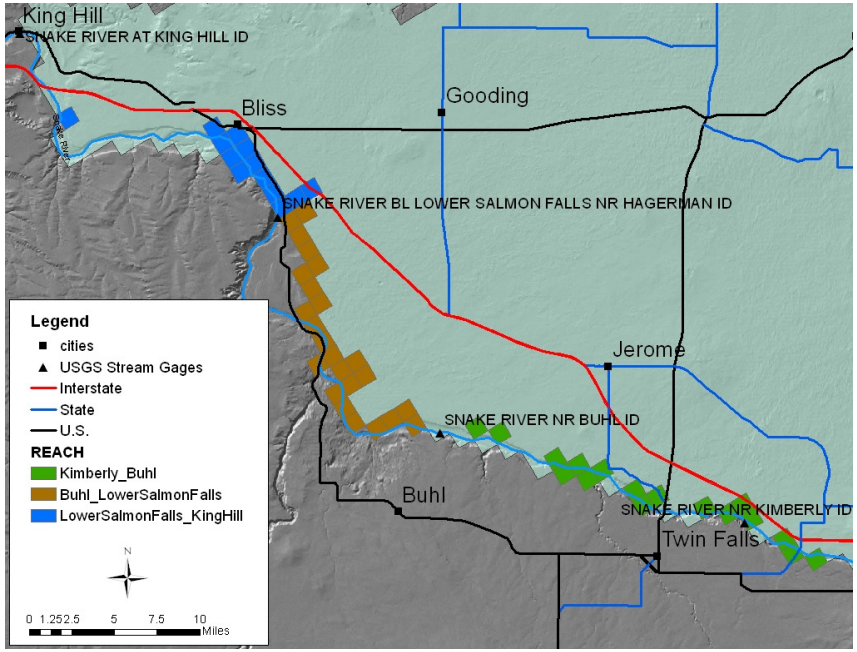

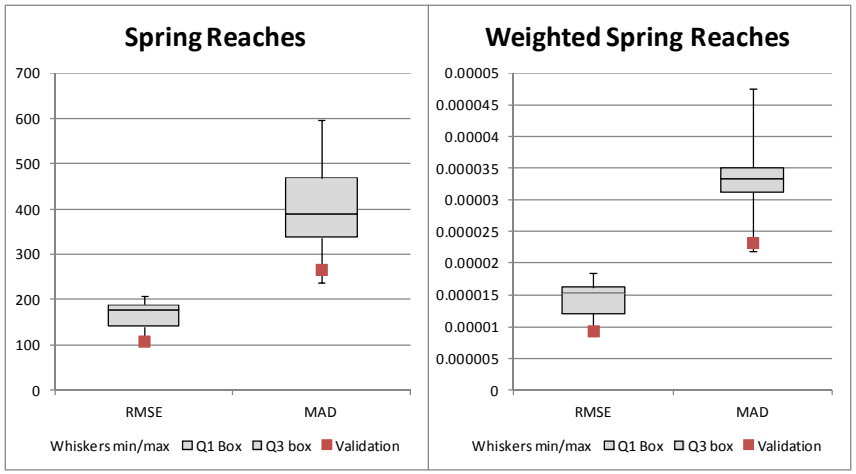

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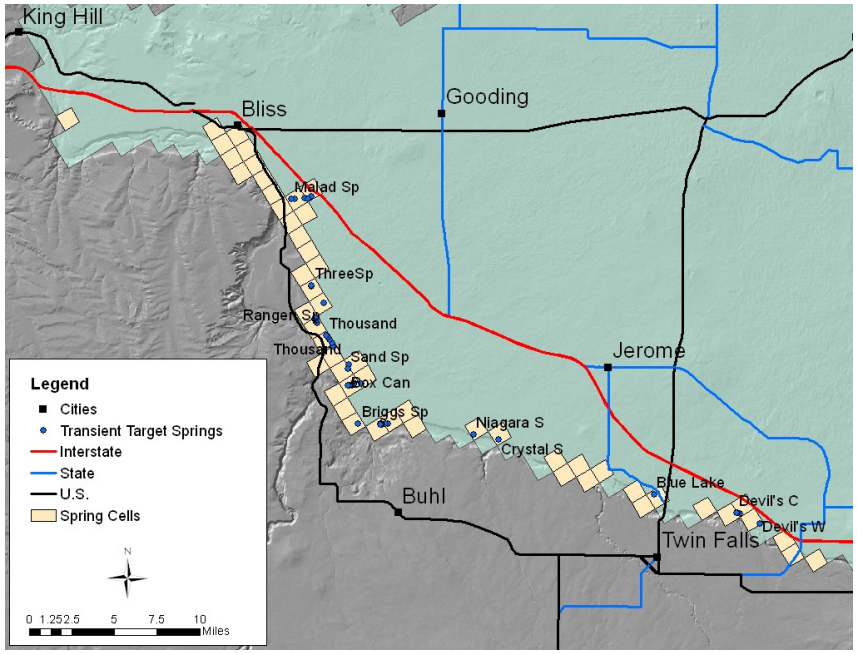

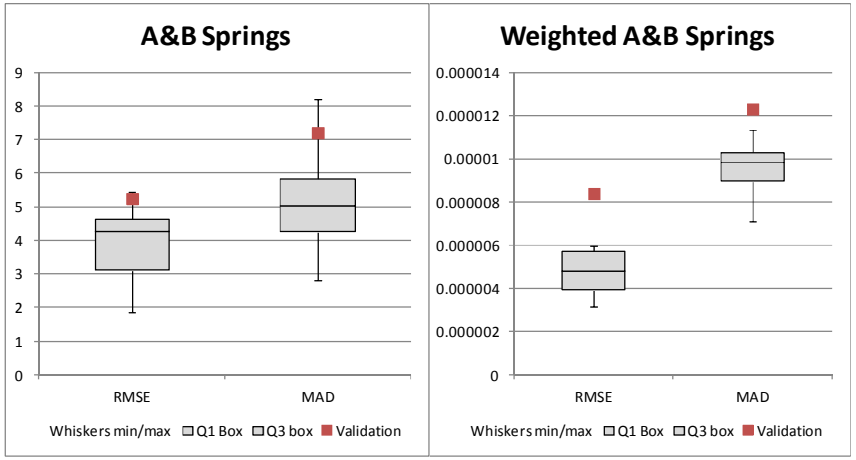

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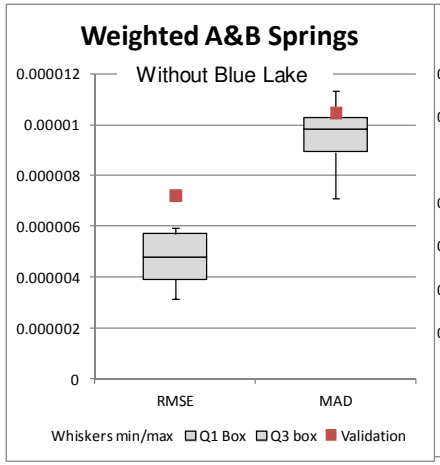
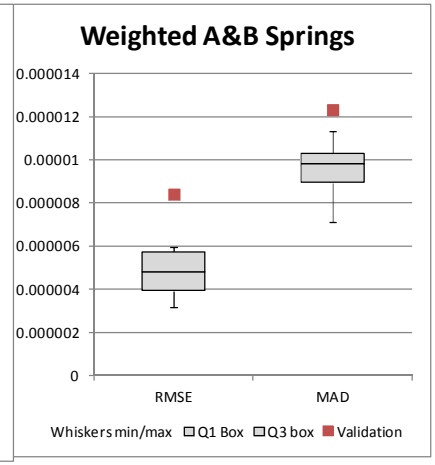
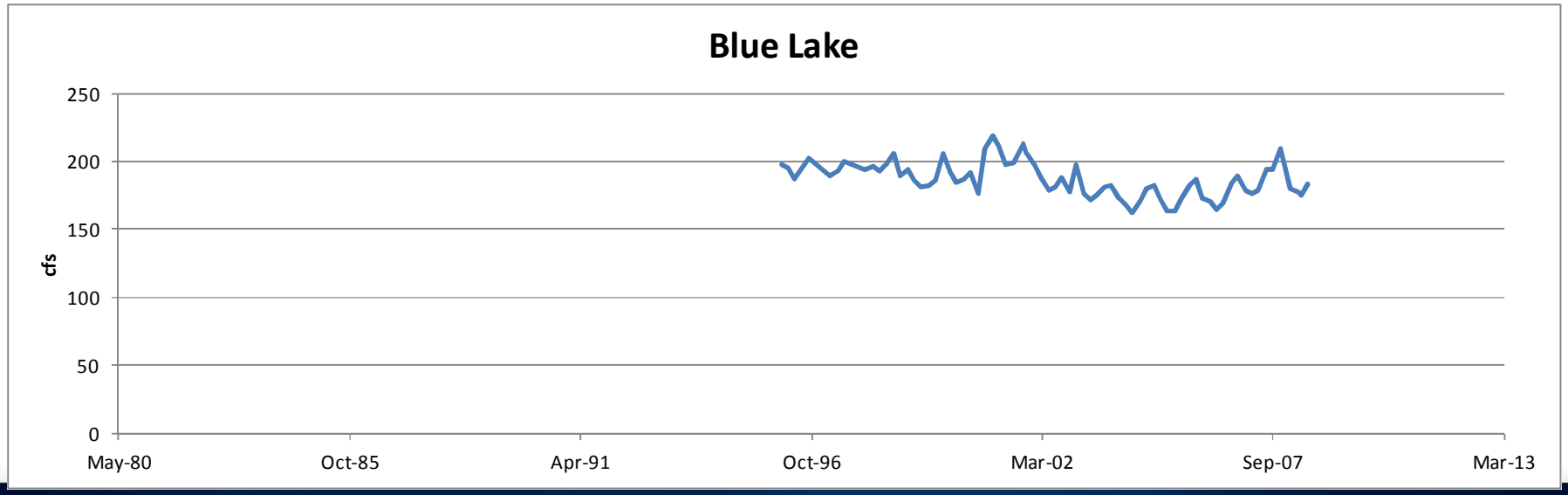




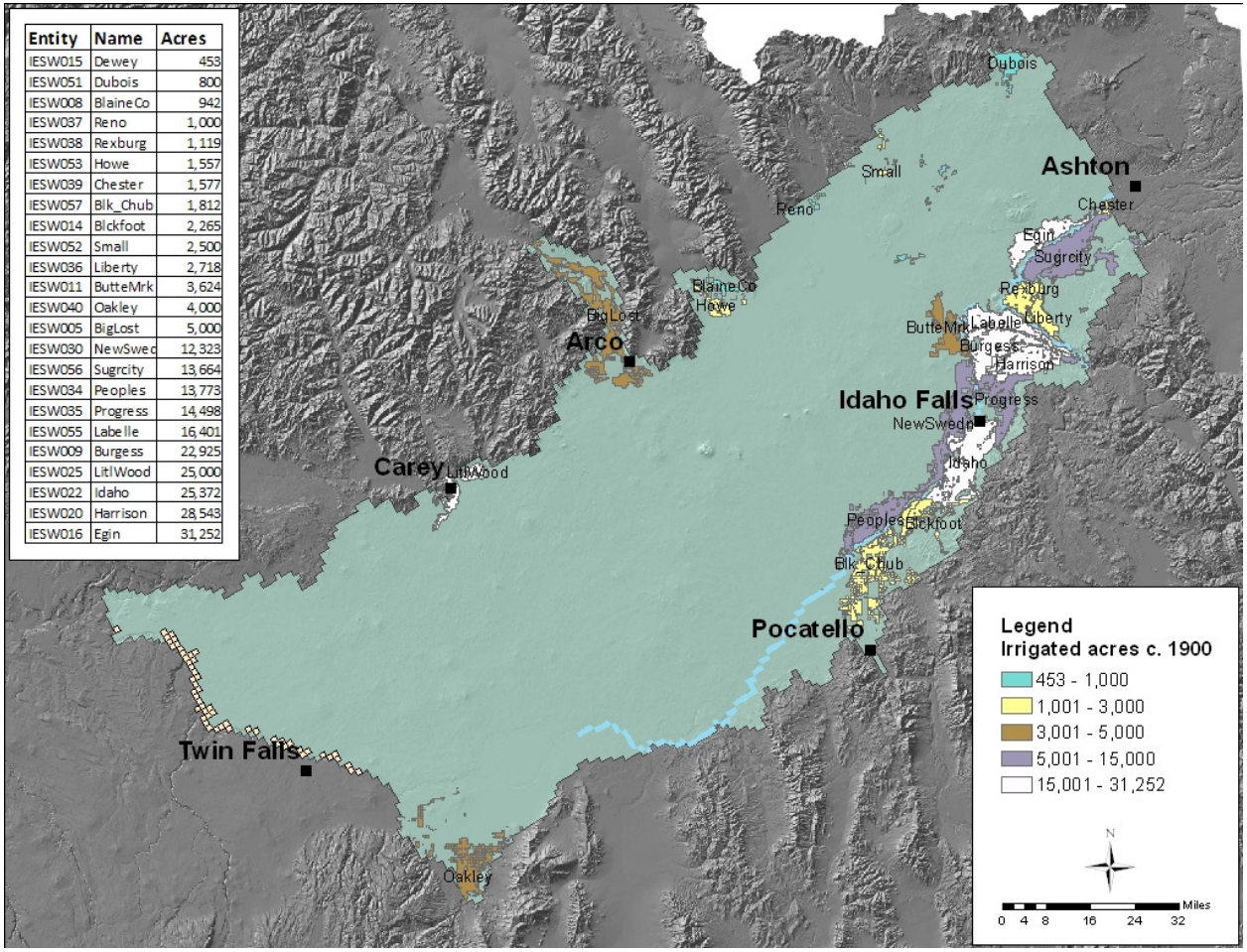


1900 Validation

- Compare model output with observations collected around 1900 by USGS and the office of the Idaho State Engineer
- Data not rich enough to support transient model
- No American Falls Reservoir
- Fewer acres irrigated

1900 Validation

Entity	Name	Acres
IESW015	Dewey	453
IESW051	Dubois	800
IESW008	BlaineCo	942
IESW037	Reno	1,000
IESW038	Rexburg	1,119
IESW053	Howe	1,557
IESW039	Chester	1,577
IESW057	Blk_Chub	1,812
IESW014	Blckfoot	2,265
IESW052	Small	2,500
IESW036	Liberty	2,718
IESW011	ButteMrk	3,624
IESW040	Oakley	4,000
IESW005	BigLost	5,000
IESW030	NewSwed	12,323
IESW056	Sugrcity	13,664
IESW034	Peoples	13,773
IESW035	Progress	14,498
IESW055	Labelle	16,401
IESW009	Burgess	22,925
IESW025	LitlWood	25,000
IESW022	Idaho	25,372
IESW020	Harrison	28,543
IESW016	Egin	31,252



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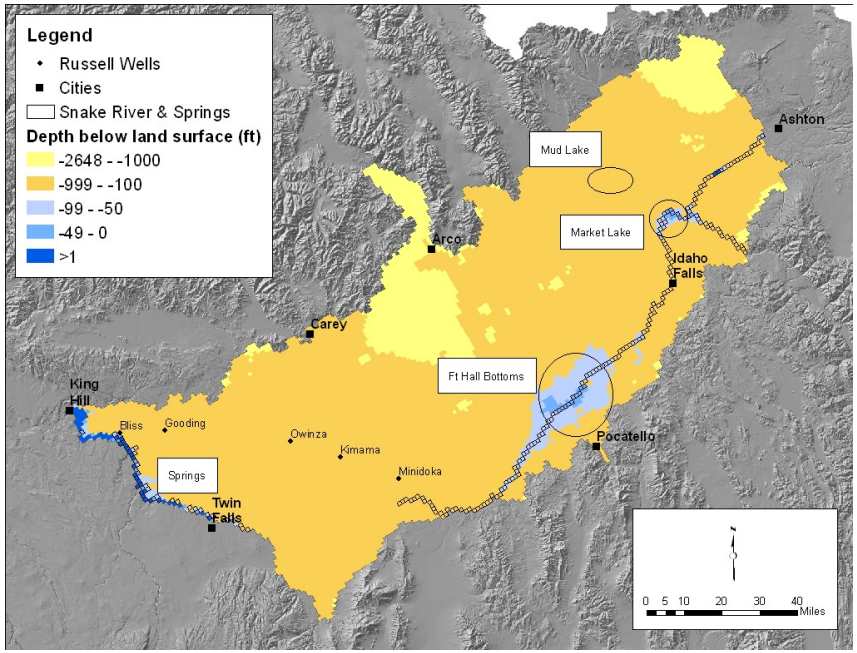
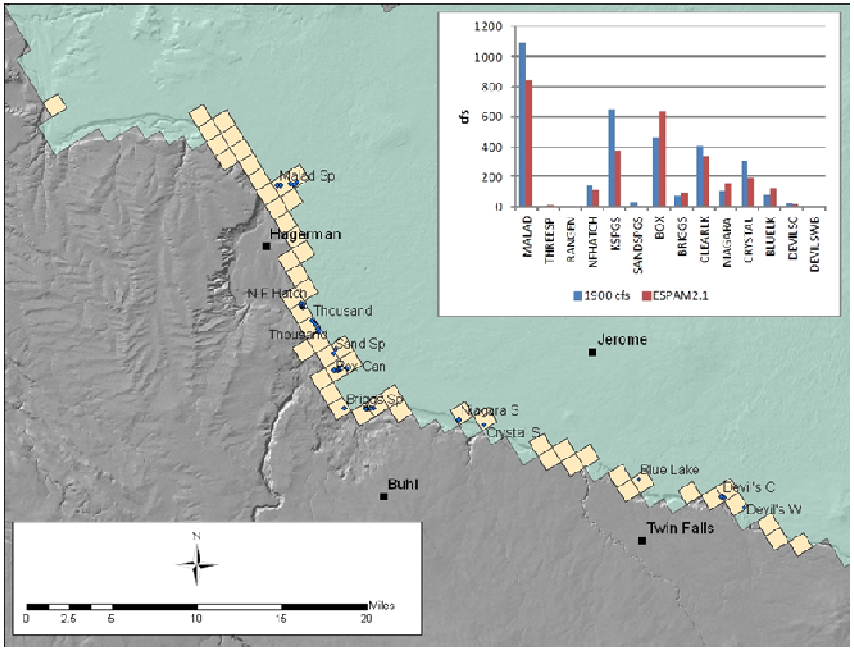


Well	Source	Measured (ftamsl)	Modeled (ftamsl)	Residual (ft)
GOODING	Russell	3463	3280	183
OWINZA	OSL	3865	3882	-17
KIMAMA	OSL	4007	3968	39
MINIDOKA	OSL	3906	3970	-64
BLISS	OSL	2841	3057	-216

- Head match
  - Observations from 5 wells
    - Something appears wrong with Bliss well
  - Compare modeled head with land surface elevation
    - Modeled head low in Mud Lake area

1900 Validation



- Spring discharge
  - Most observations collected by Stannard and recorded in the 1902 Biennial Report of the State Engineer
  - No field observations collected for Three Sp or Rangen
  - Model shows low discharge for Sand Springs
    - Model head 5 ft below upper Sand Springs drain
    - Lower Sand Springs drain has low conductance

Summary

- Unweighted RMSE and MAD for the 2009-2010 validation period fell within the bounds computed for the calibration period
- Weighted RMSE and MAD for the 2009-2010 validation period fell within the bound computed for the calibration period for everything but spring discharge.
  - Much of the misfit appears to be with Blue Lake
  - The procedure for collecting measurements from one of the devices used in computing the Blue Lake discharge changed.

Summary

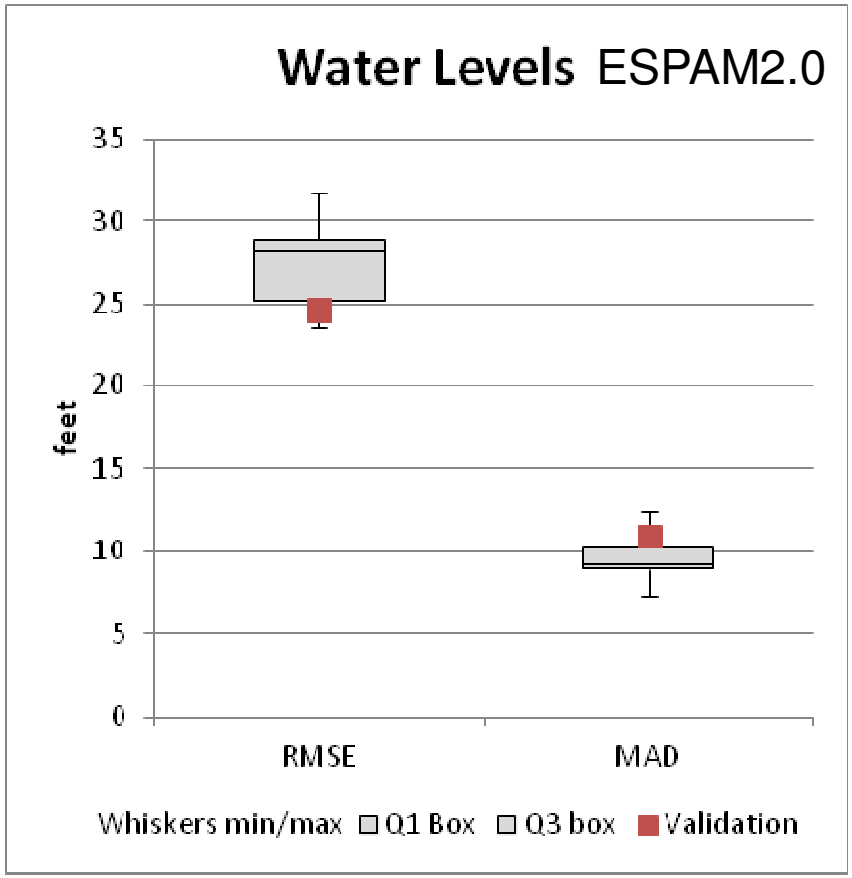
- Evaluation of 1900 validation is more qualitative than 2009-2010 validation
- Spring discharges and head observations match reasonably well

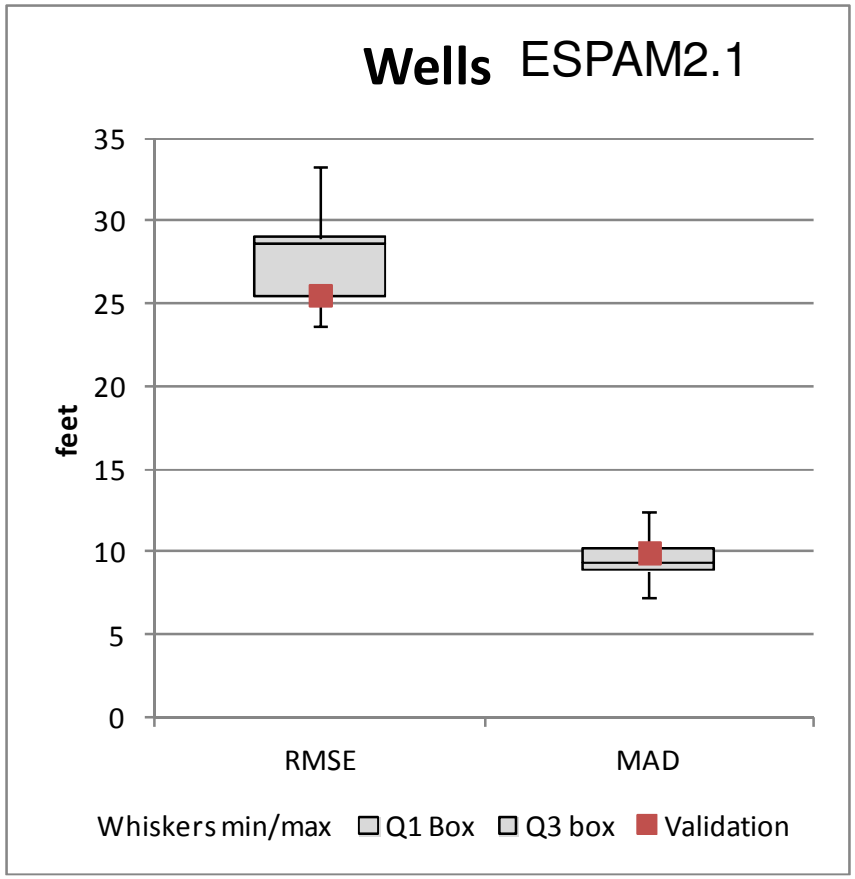
Conclusion

- ESPAM2.1 is not invalidated.

END

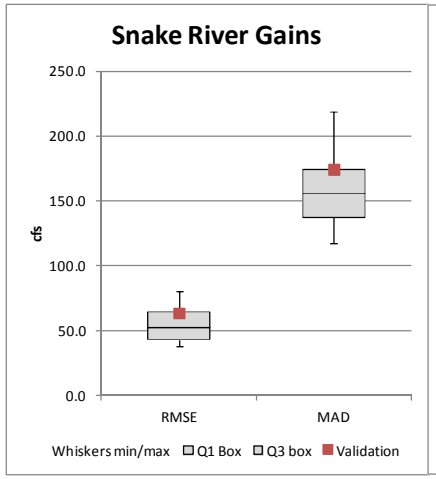
2010 Validation

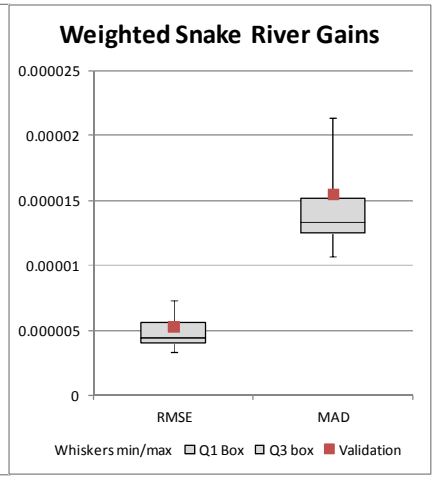




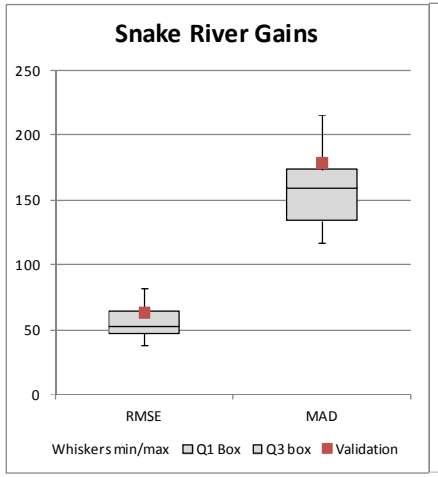
2010 Validation

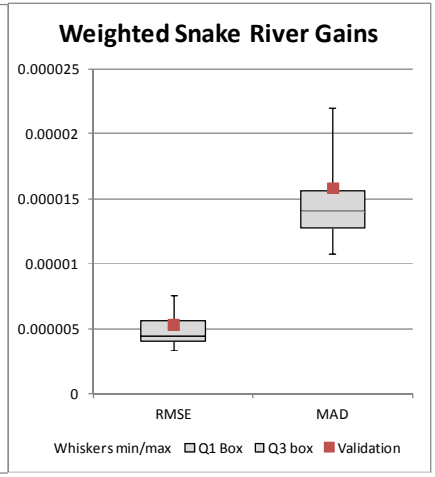
ESPAM2.0





ESPAM2.1





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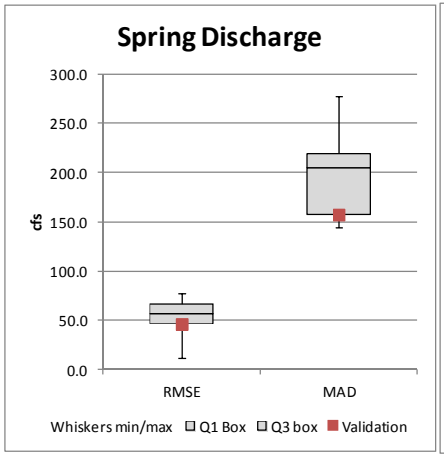

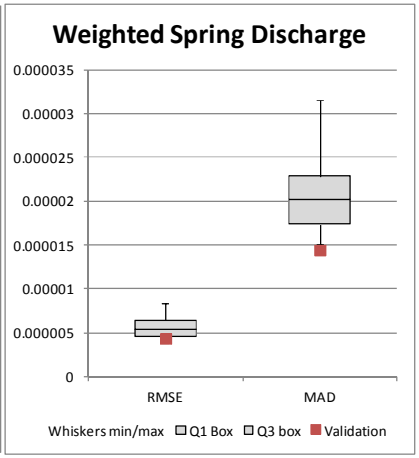

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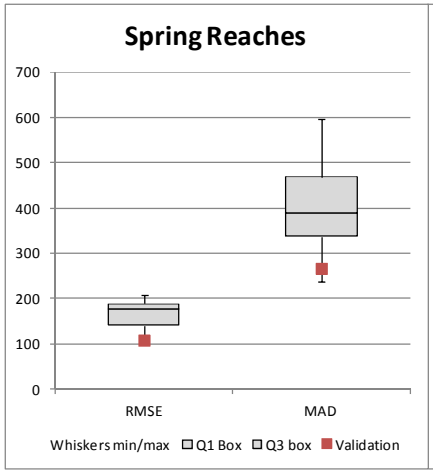

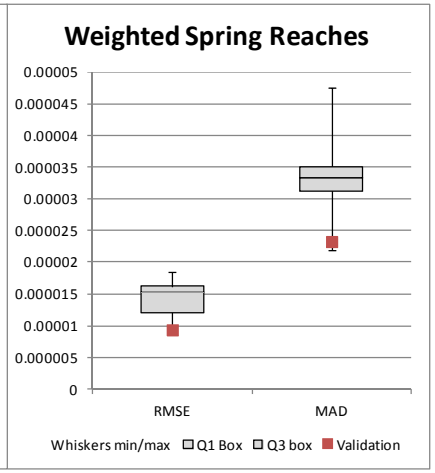

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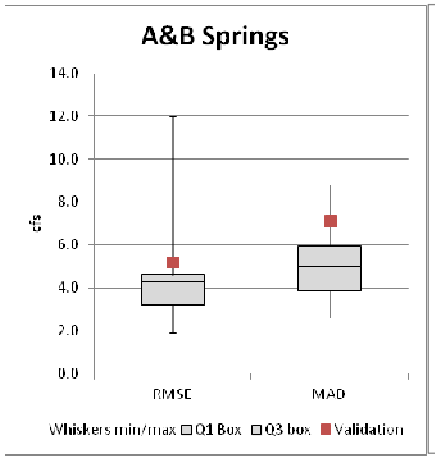

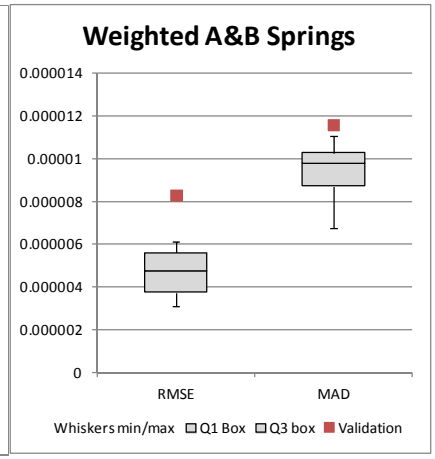

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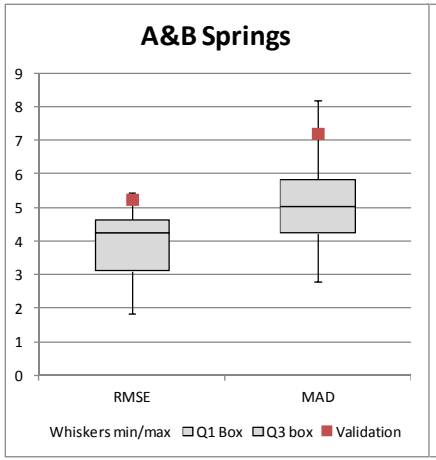

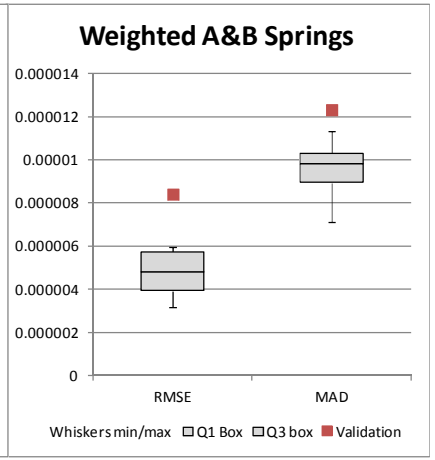

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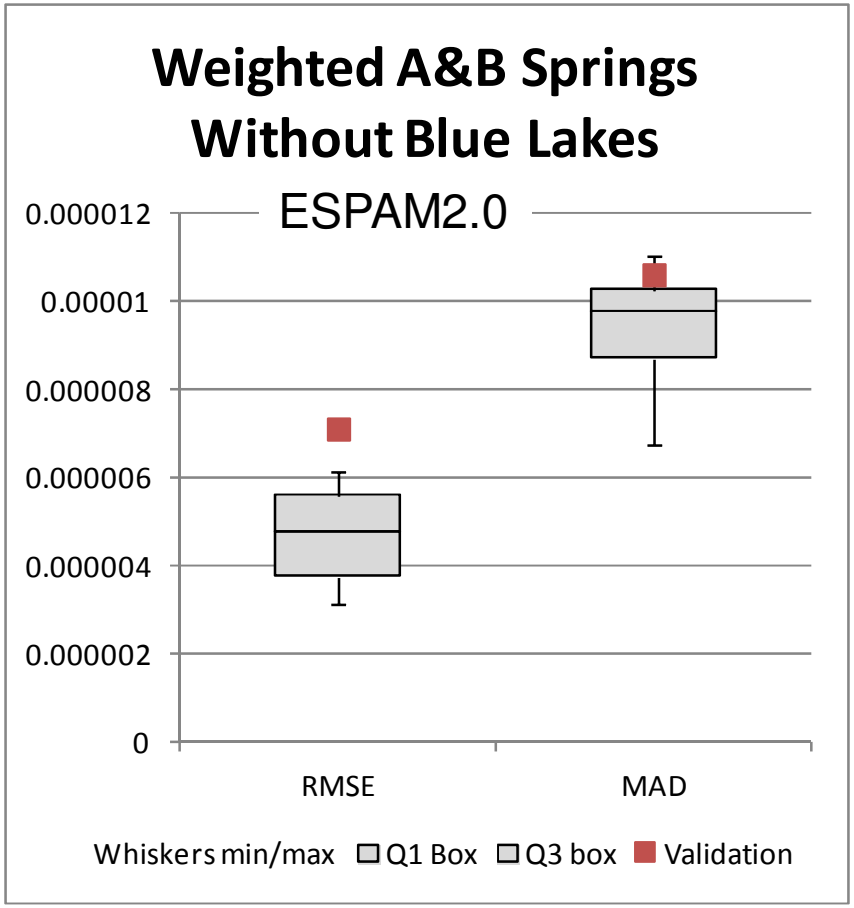
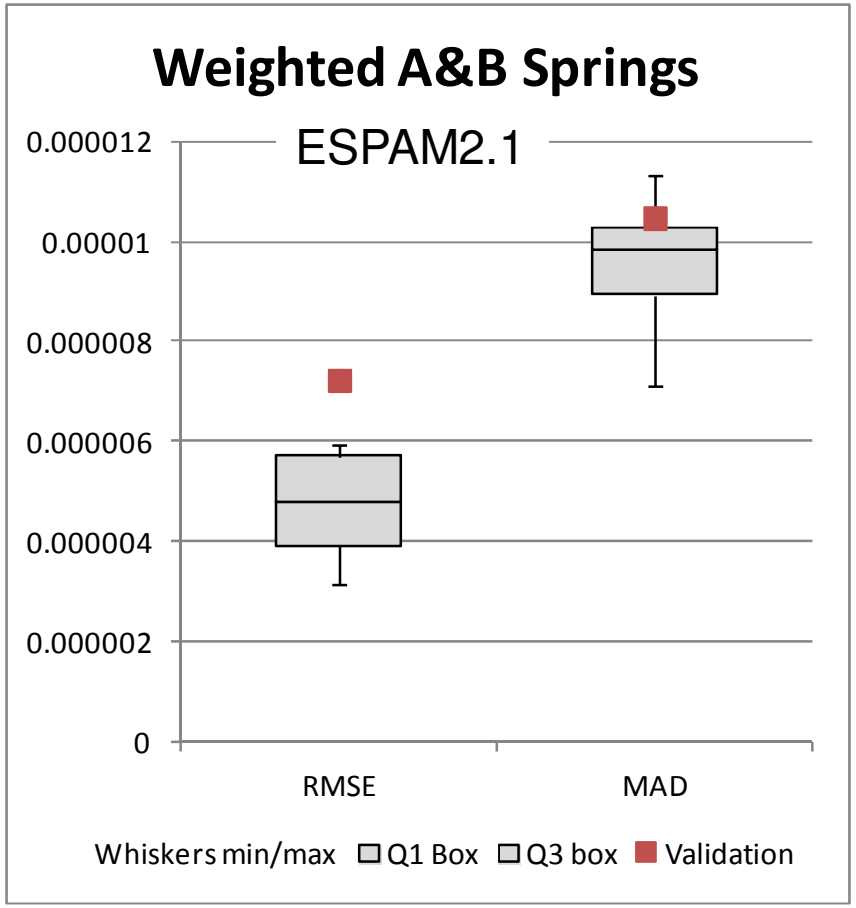


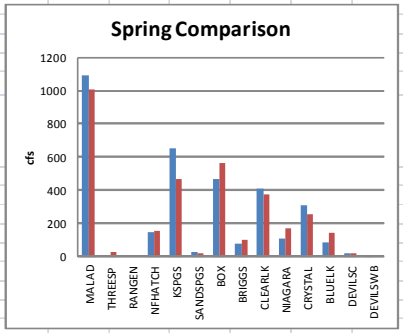


1900 Validation

ESPAM2.0

Head Comparison				
Well	Source	1900 Water Level (ft)	Modeled Water Level (ft)	Residual
GOODING	Russell	3463	3329	134
OWINZA	OSL	3865	3919	-54
KIMAMA	OSL	4007	4004	3
MINIDOKA	OSL	3906	4008	-102
BLISS	OSL	2841	3067	-226

OSL - Oregon Short Line Railroad



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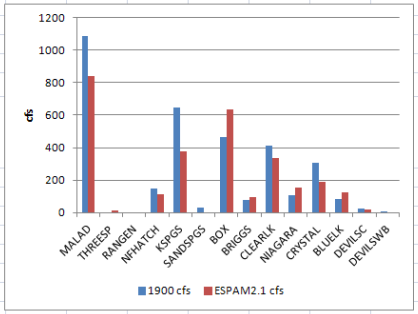
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