ESPAM2.0 – E121025A001

Allan Wylie IDWR

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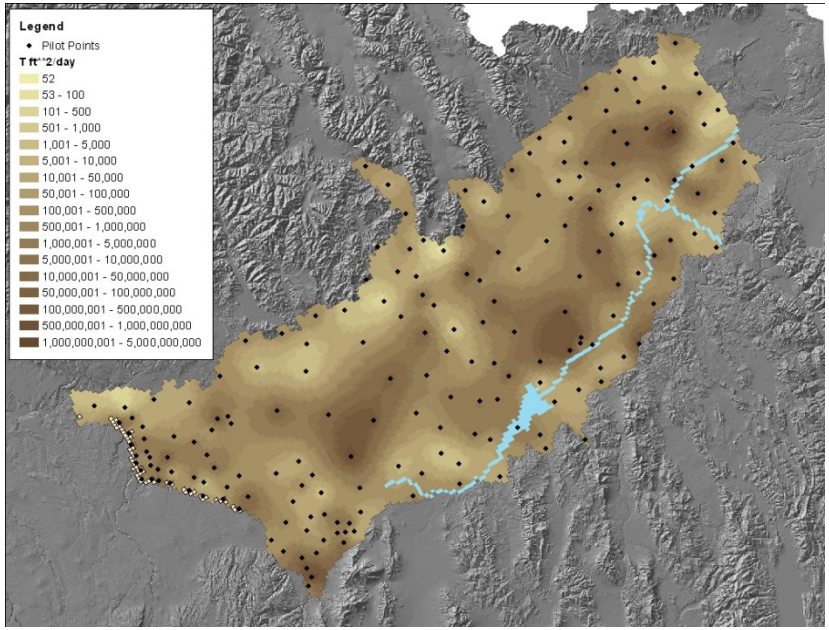

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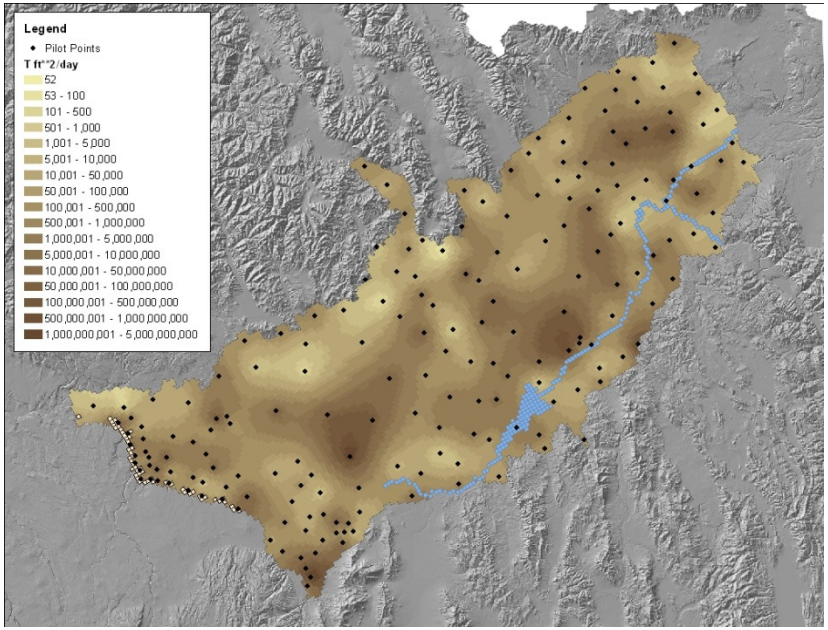

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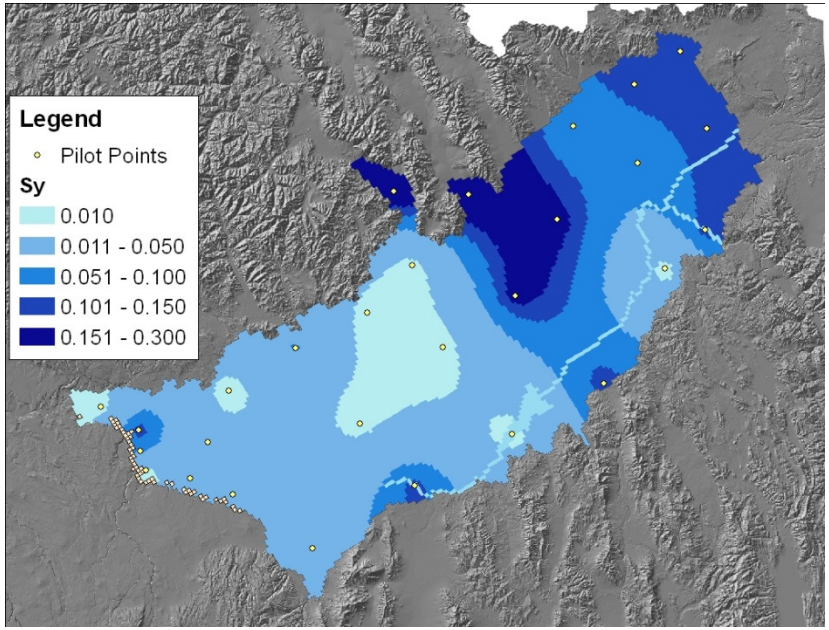

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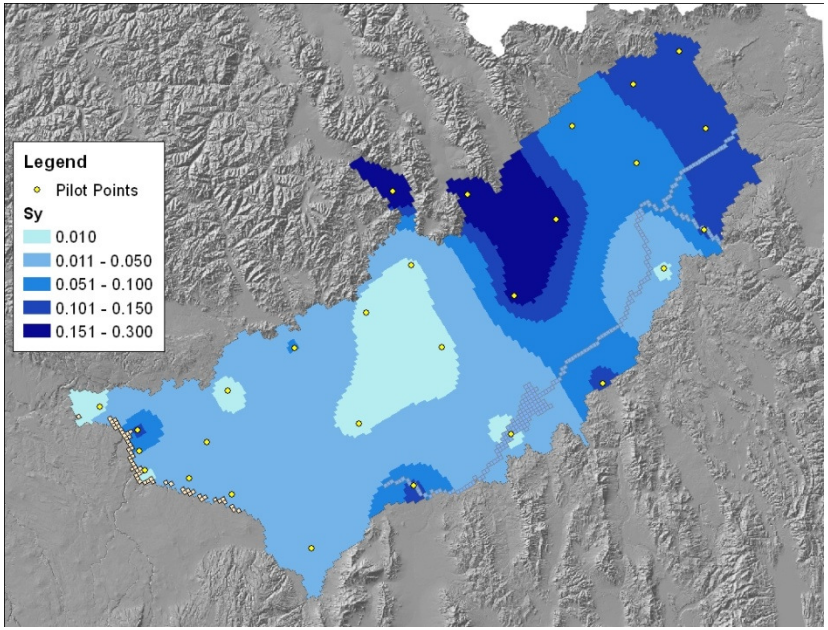

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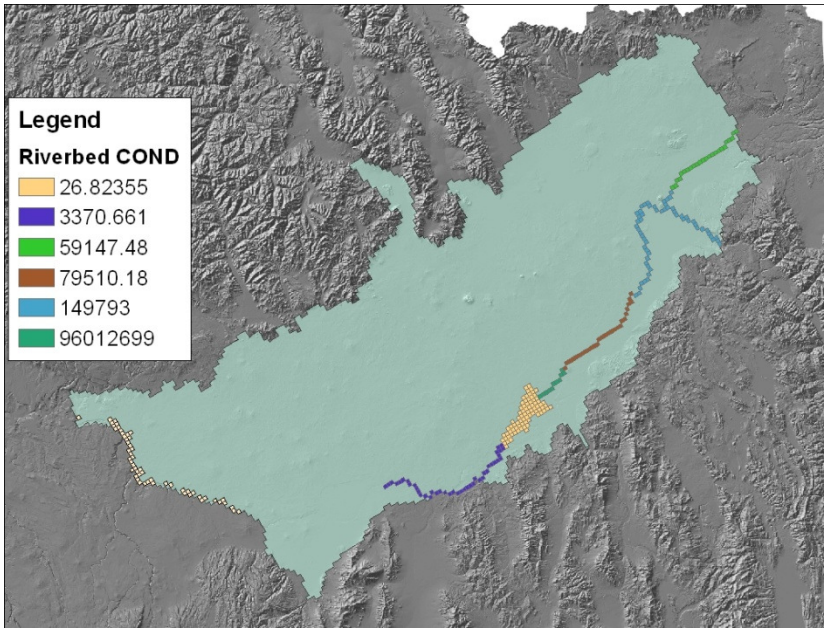

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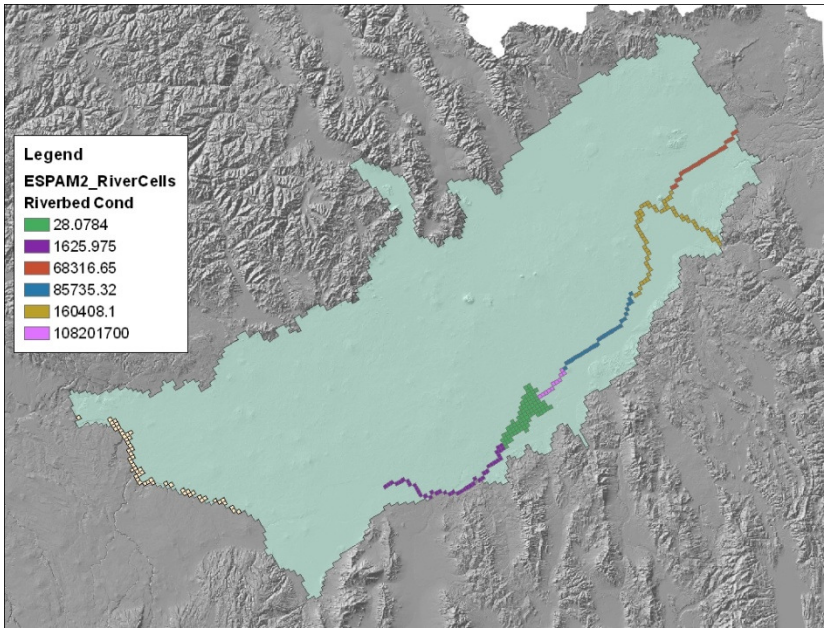

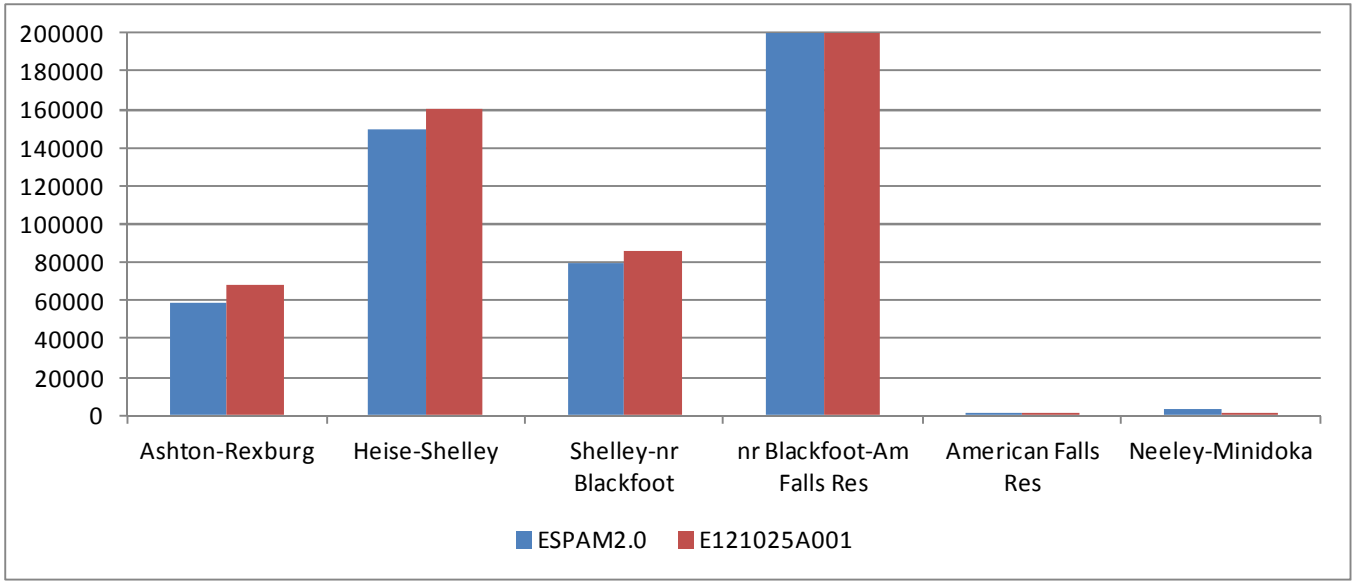

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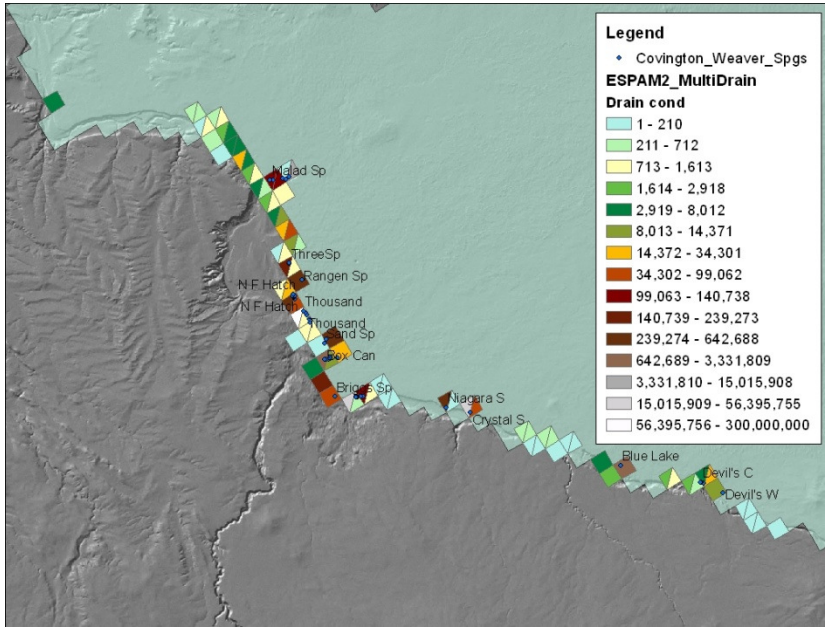

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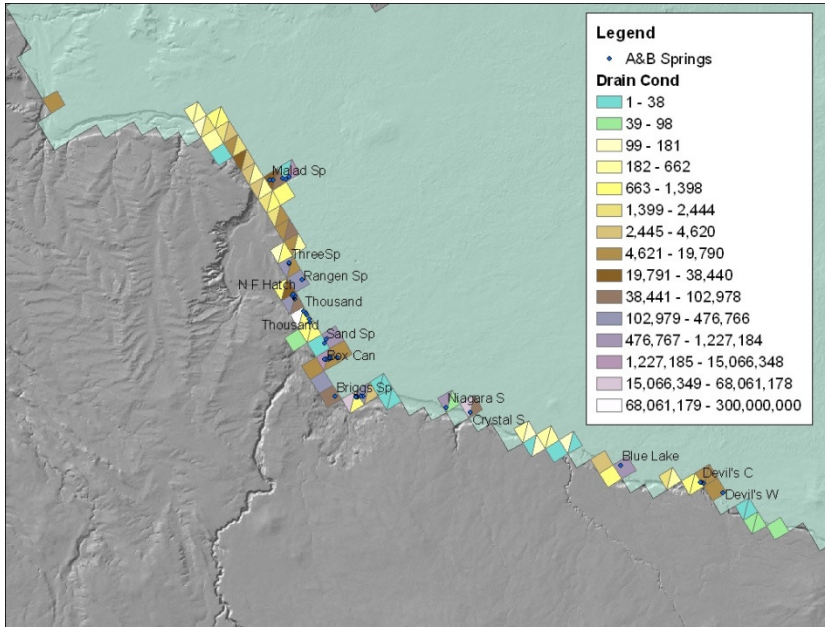

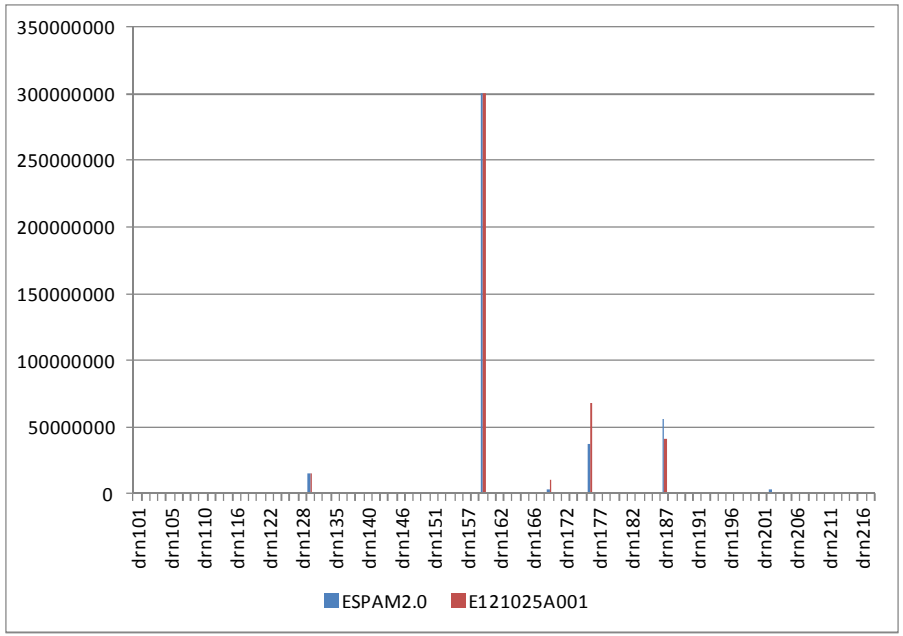

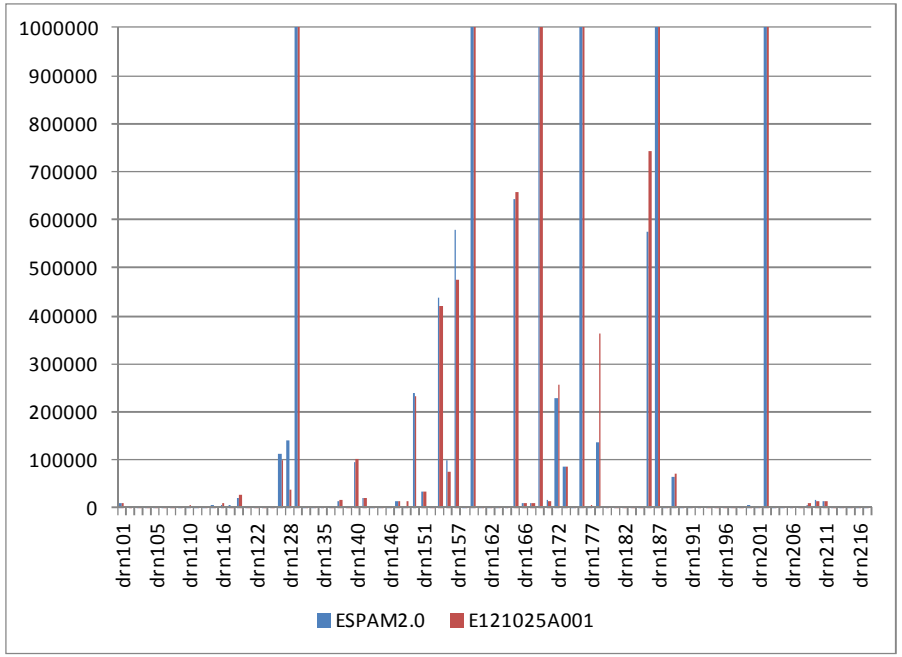

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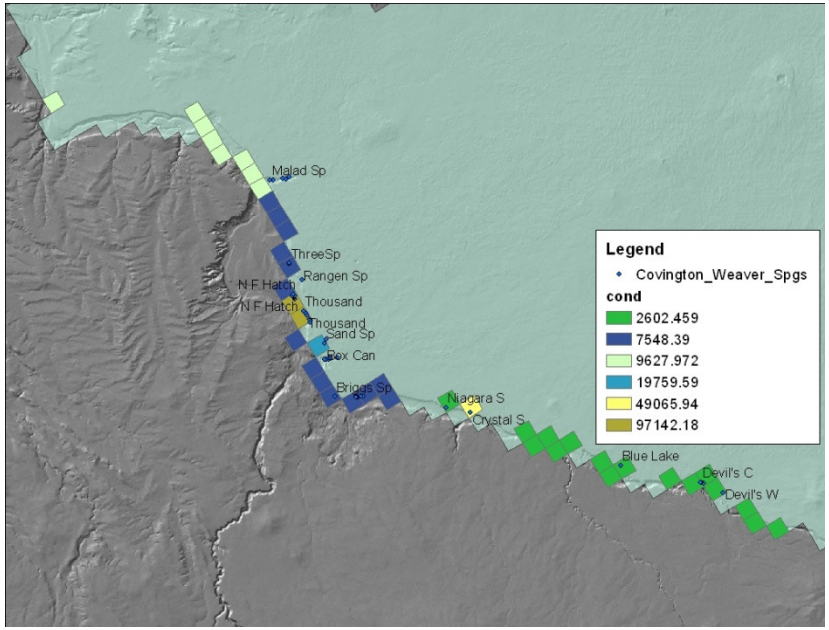

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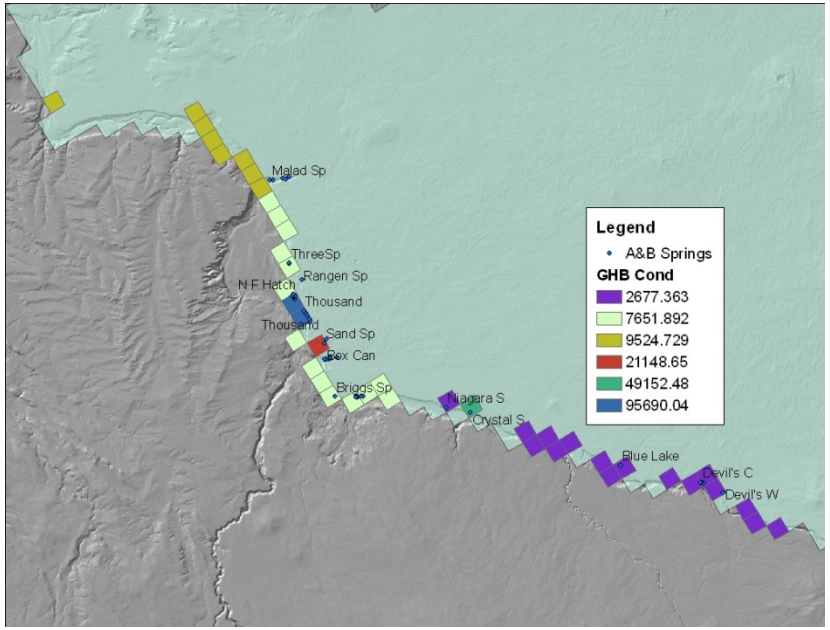

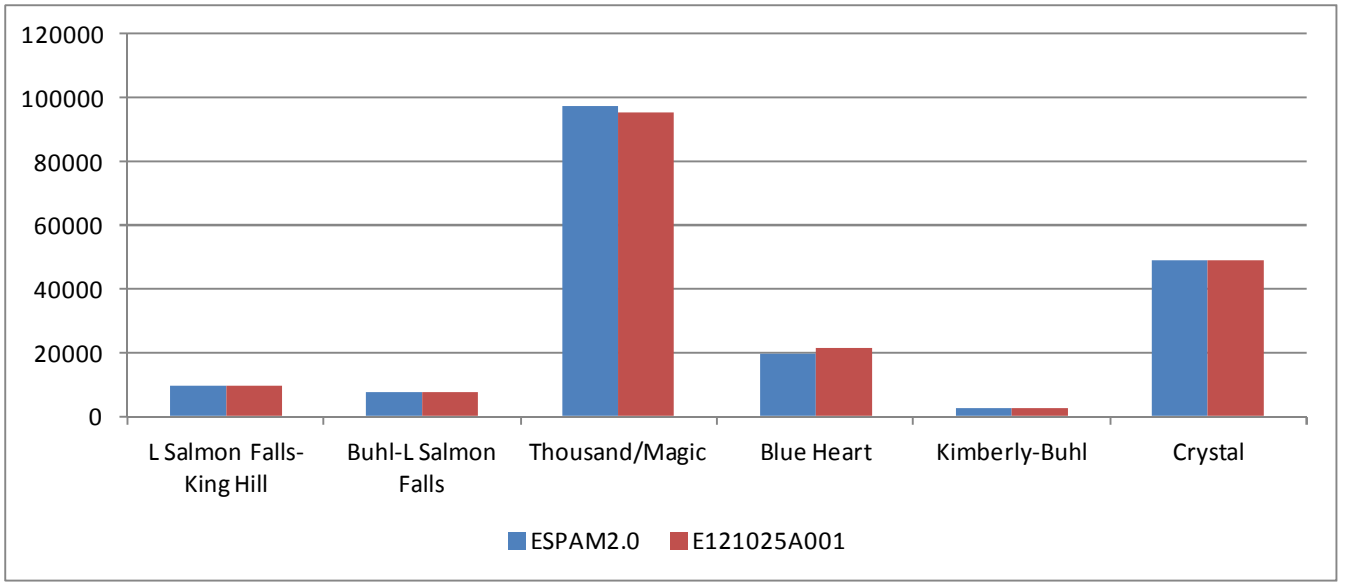

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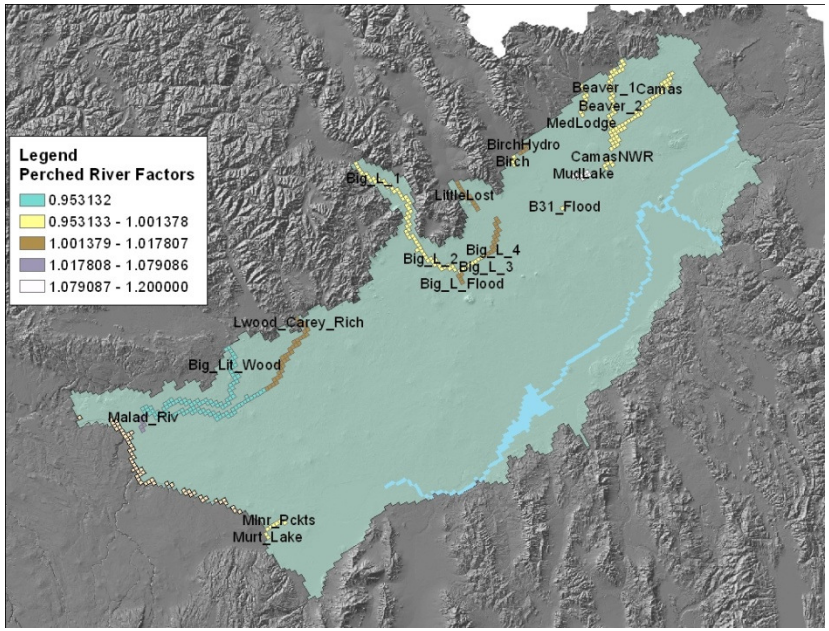

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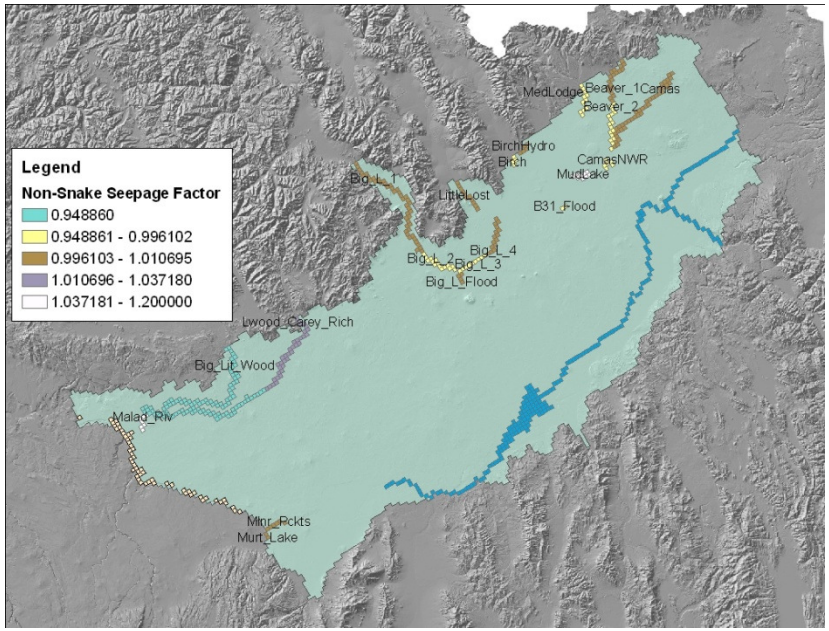

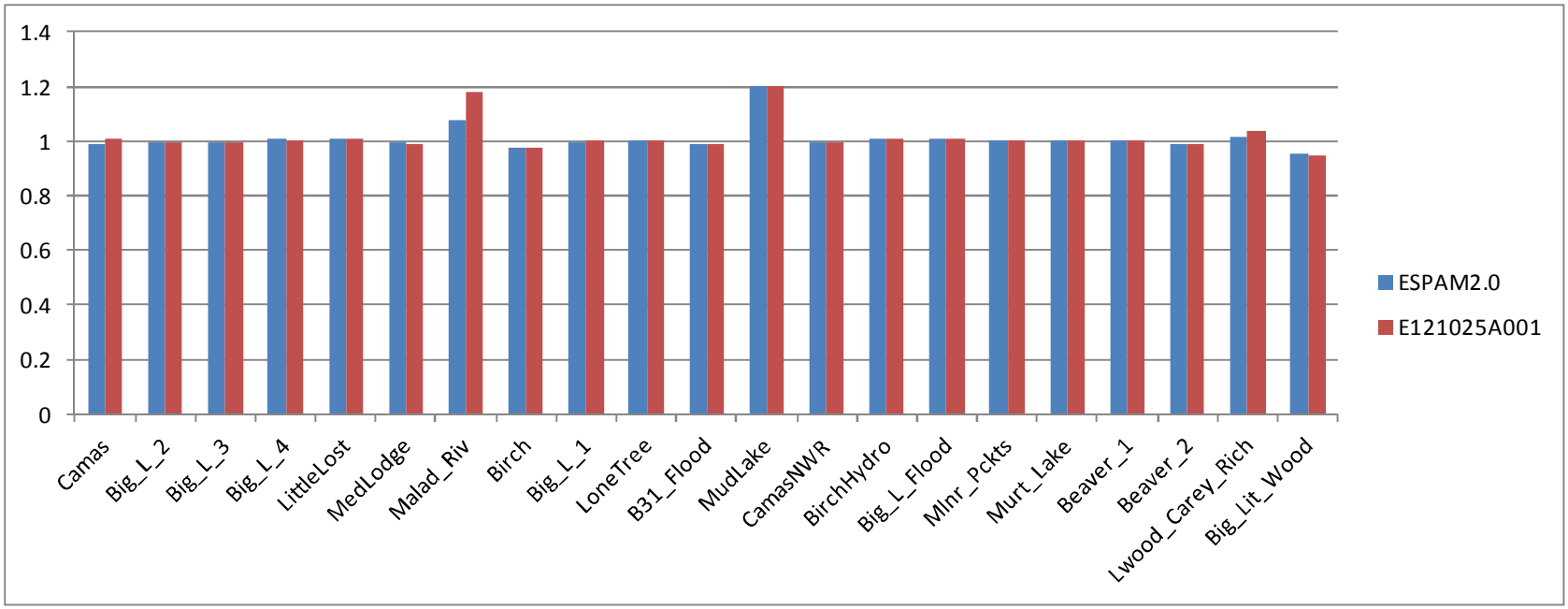

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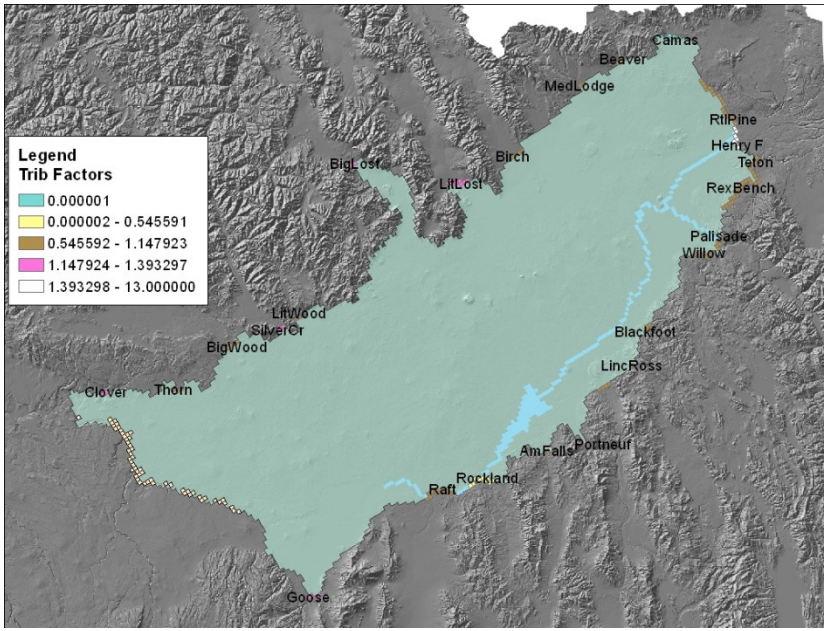

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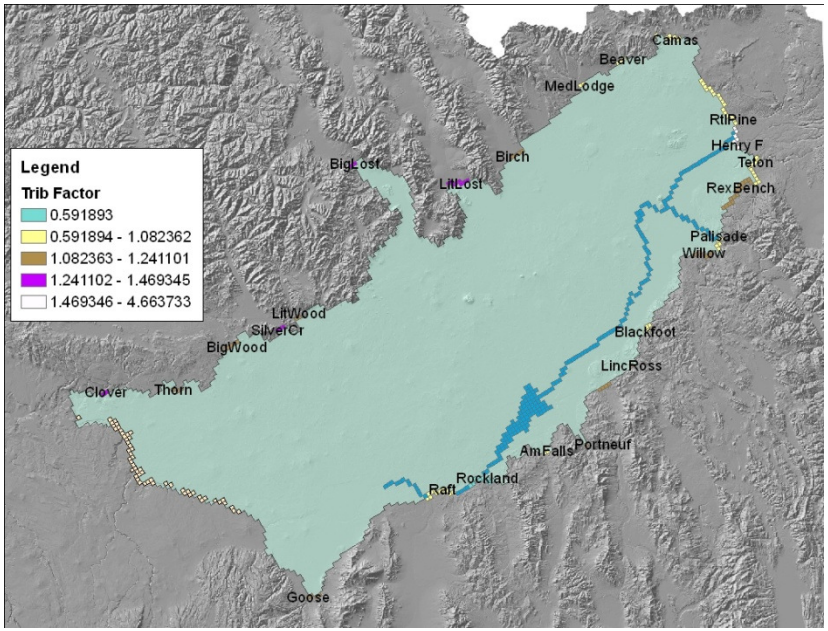

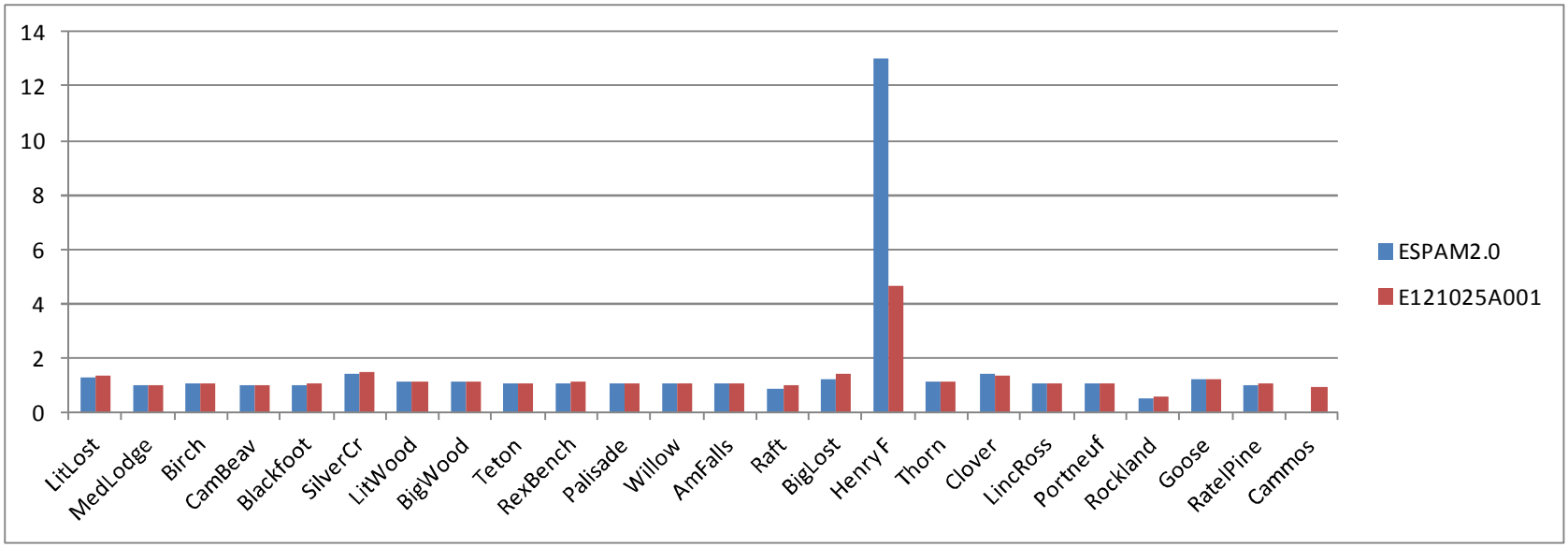

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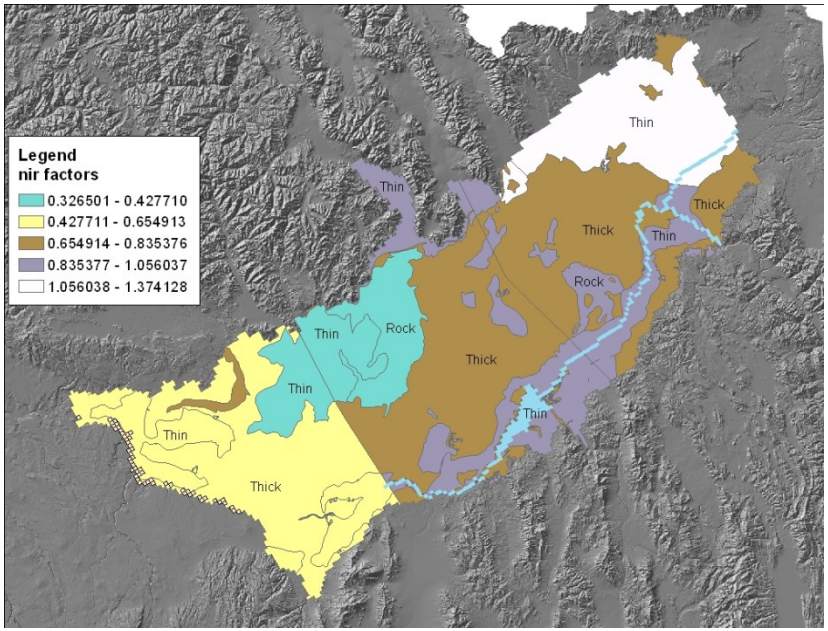

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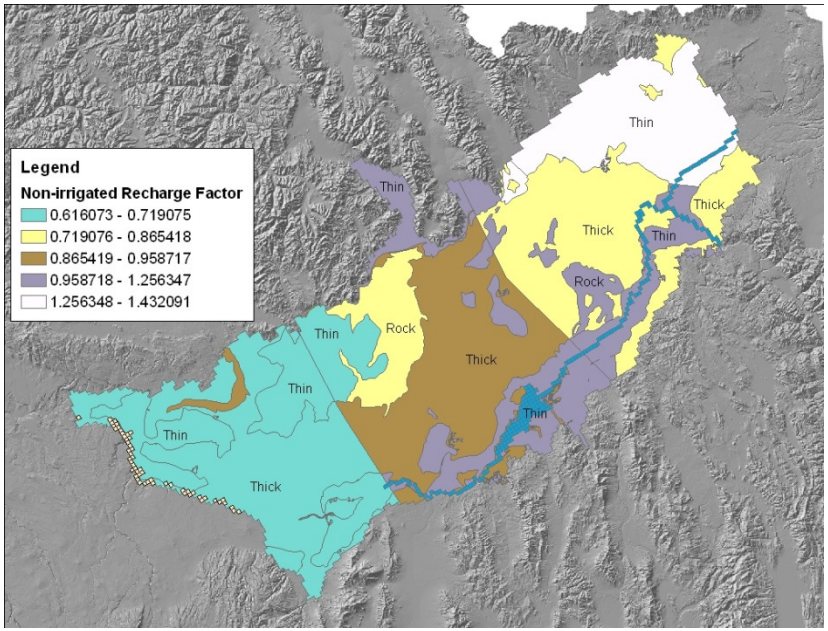

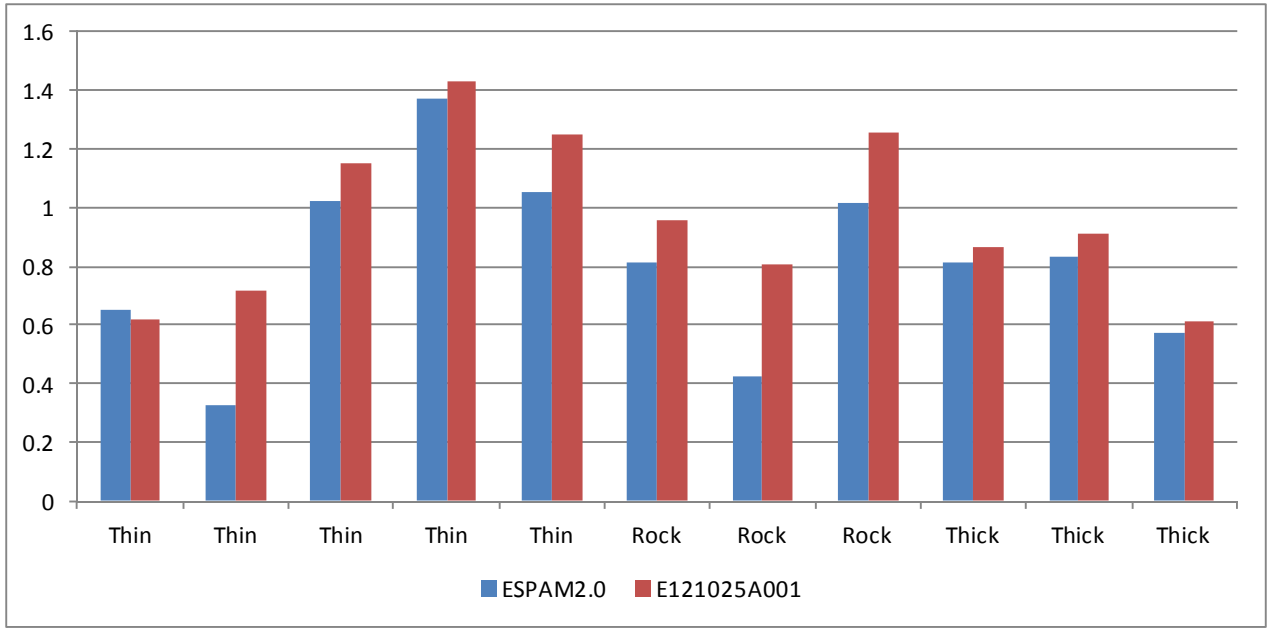

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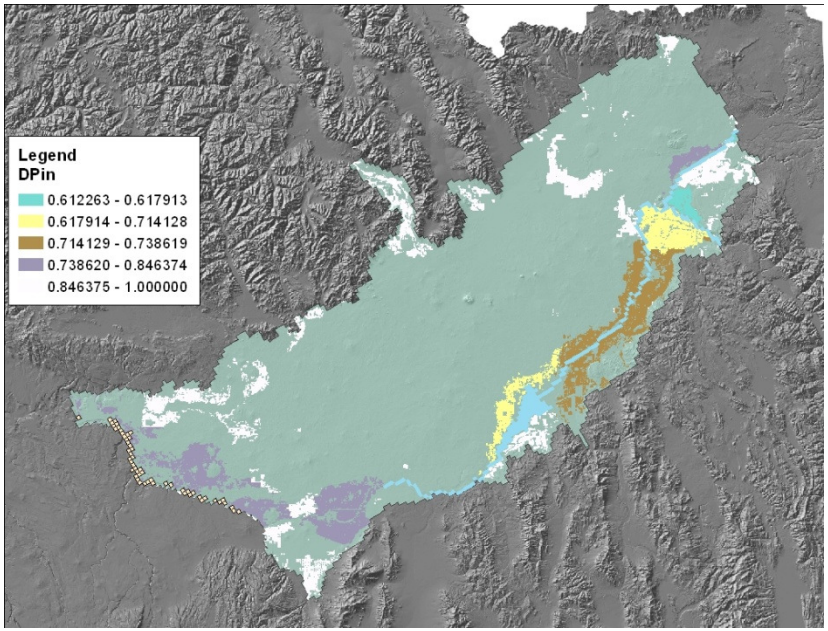

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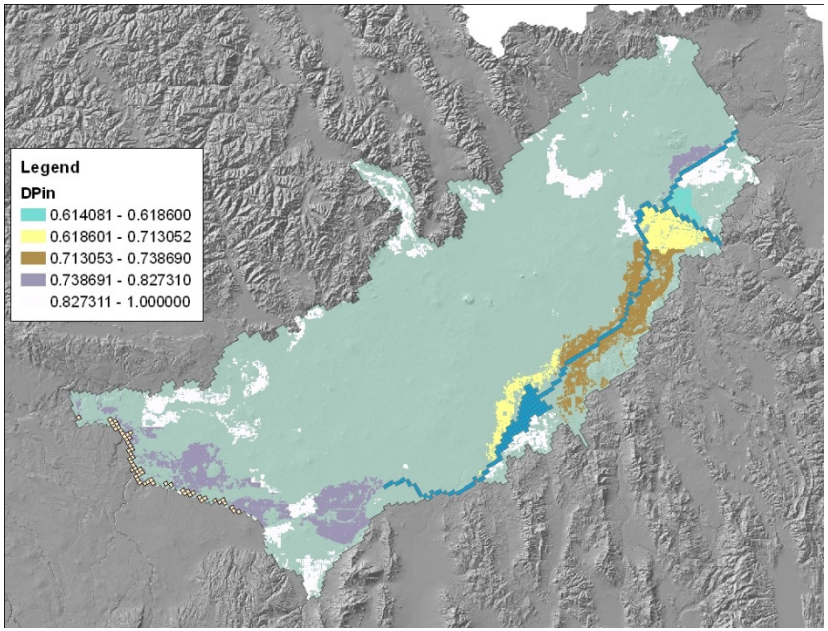

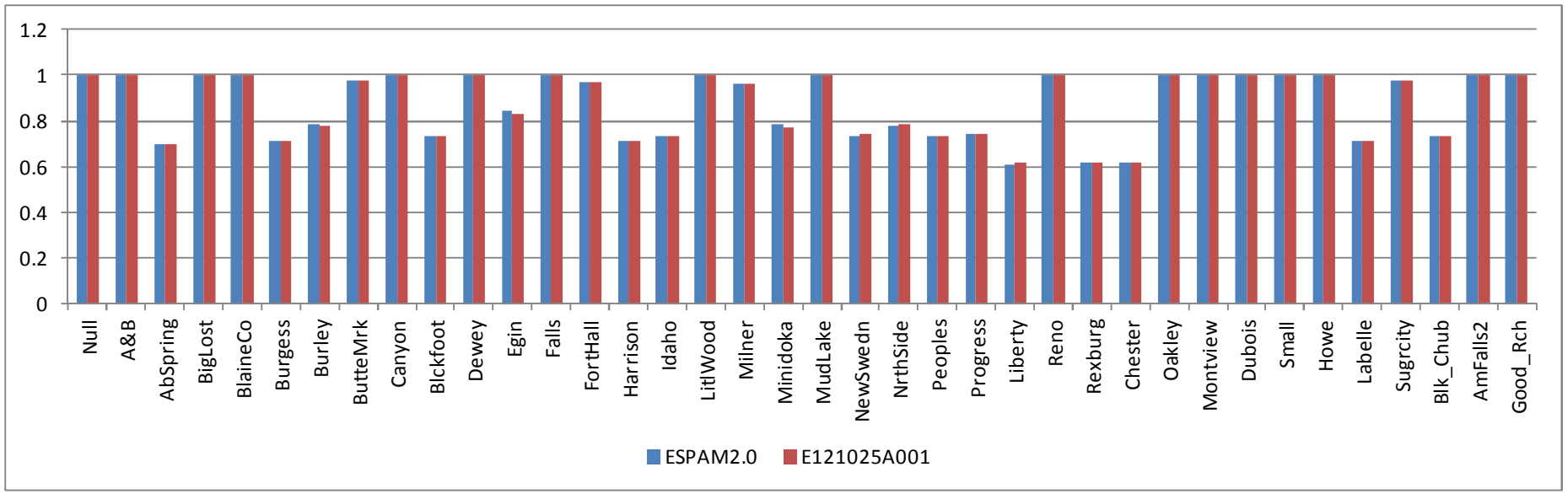

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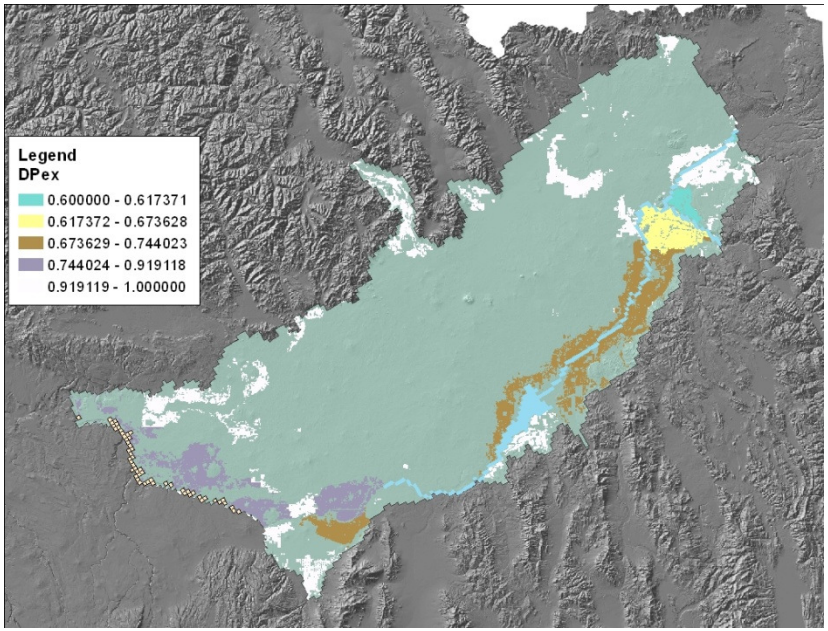

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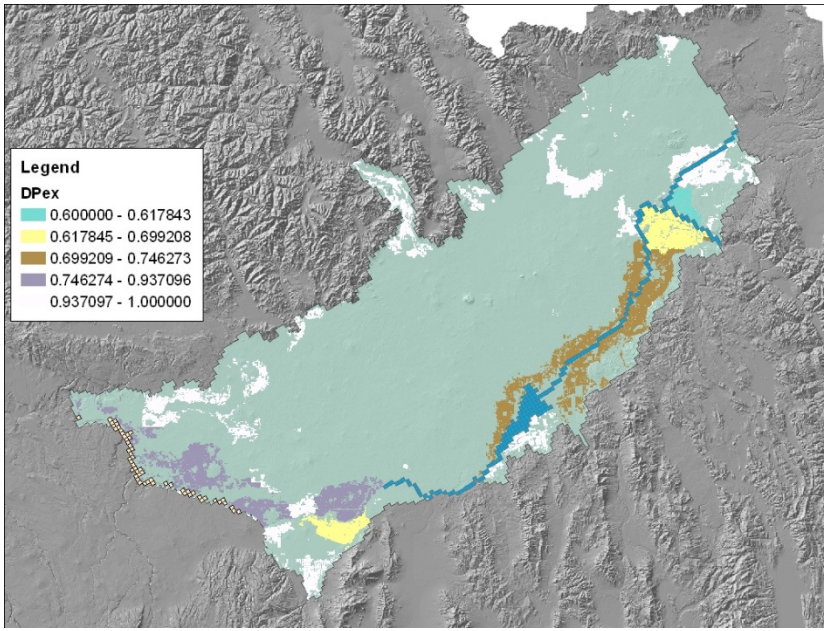

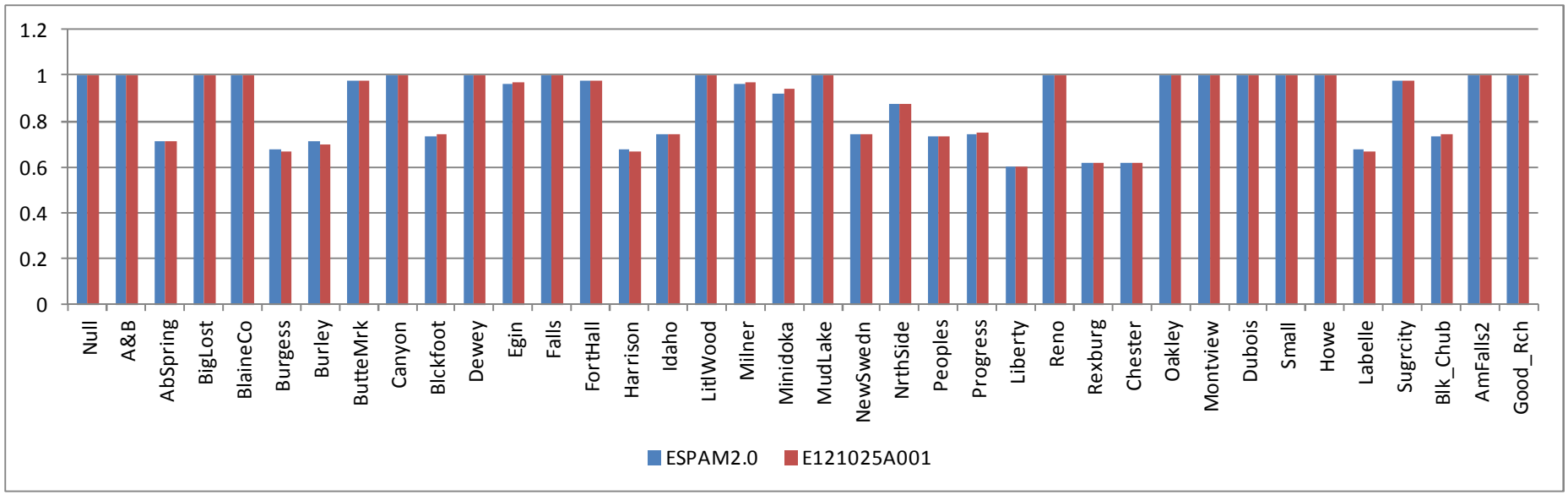

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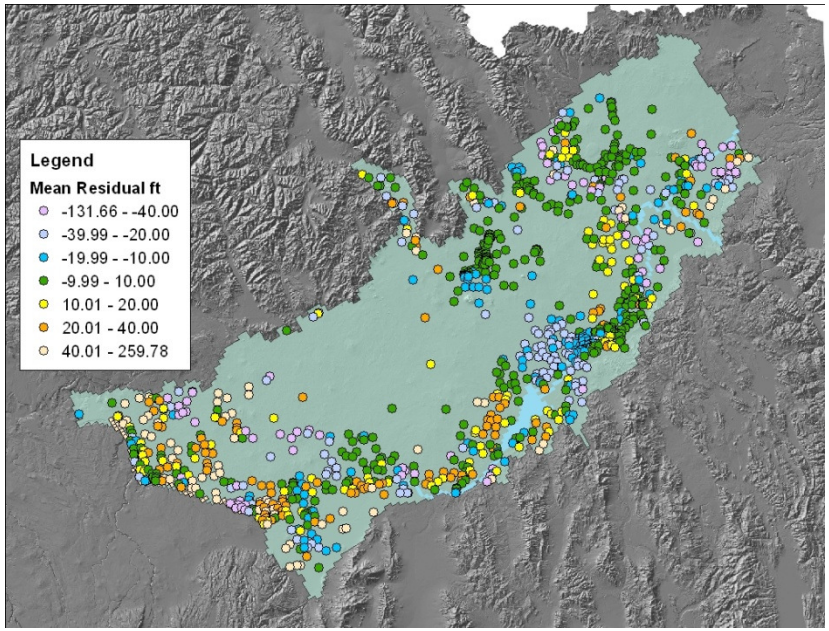

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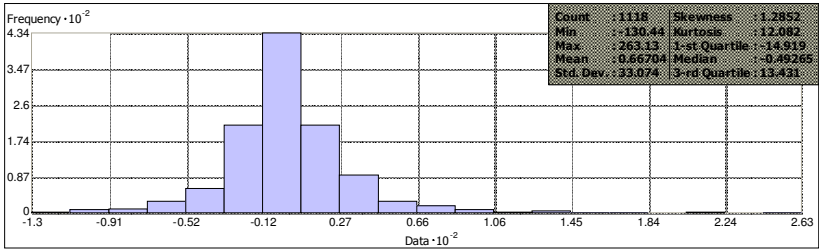

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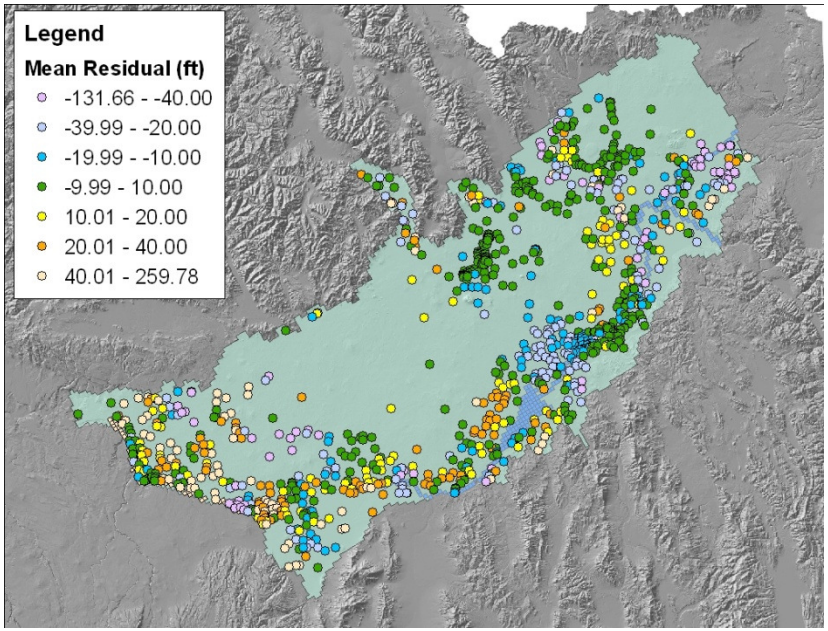

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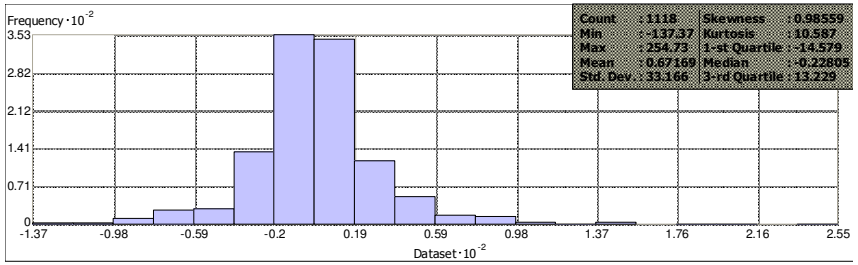

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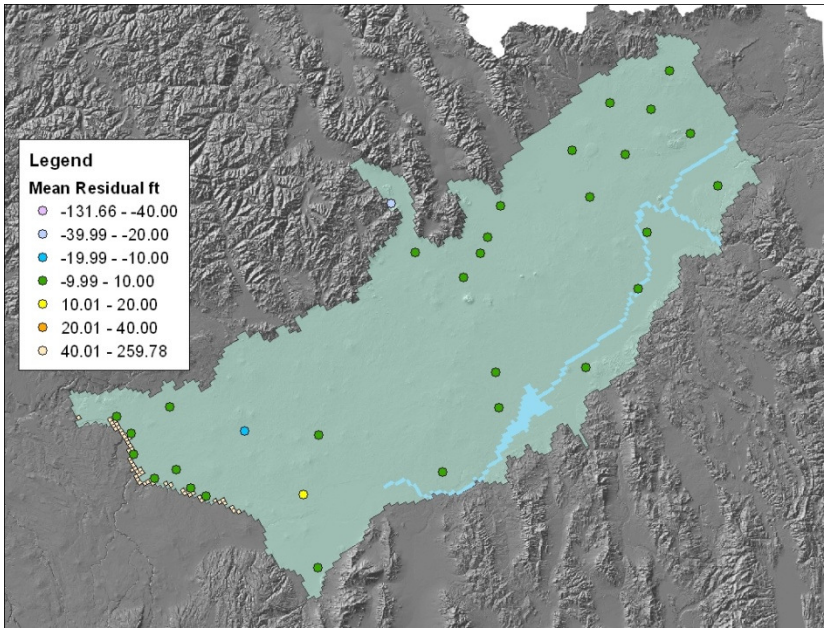

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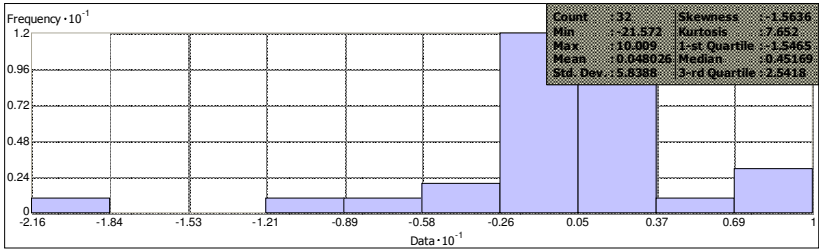

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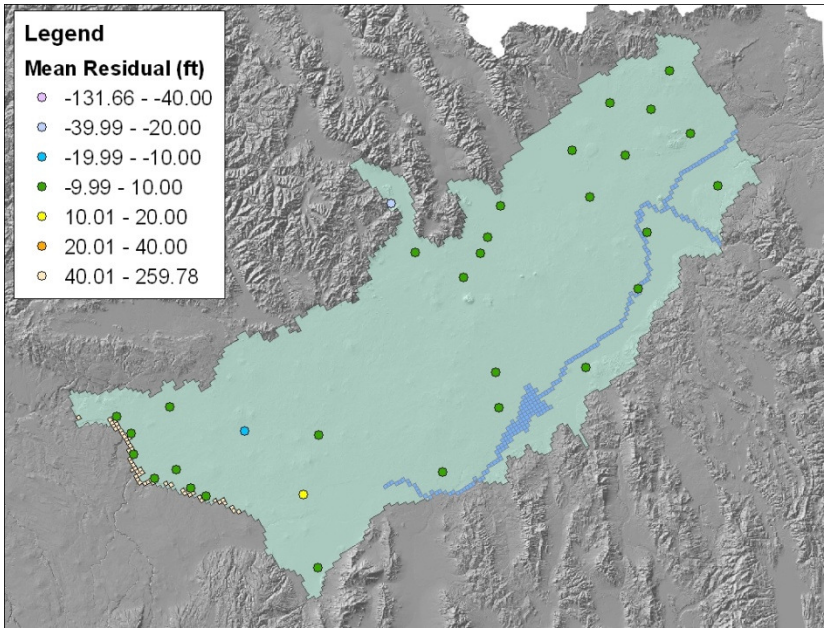

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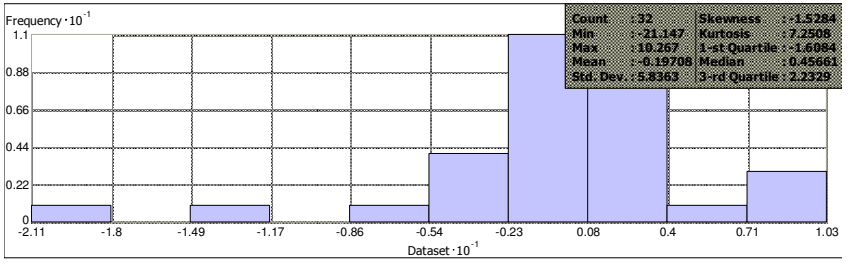

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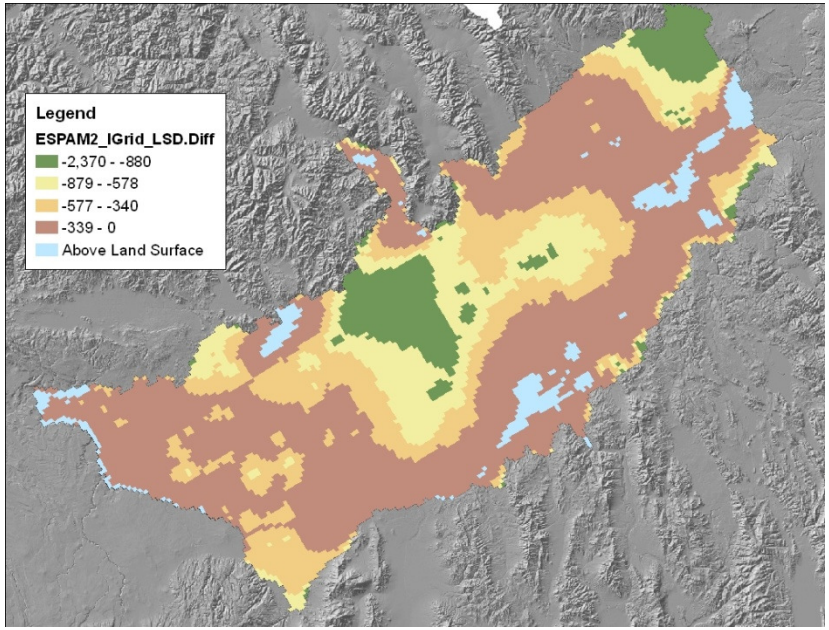
ESPAM02



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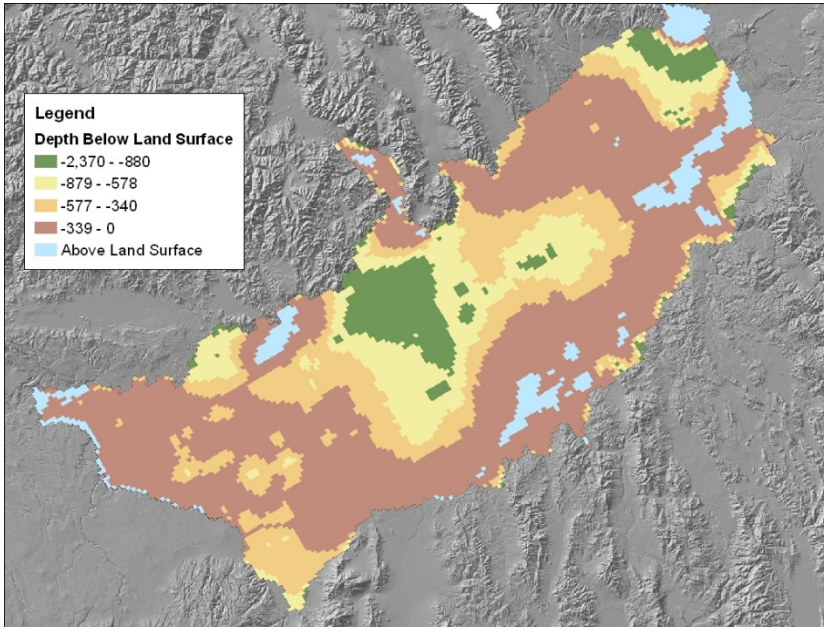
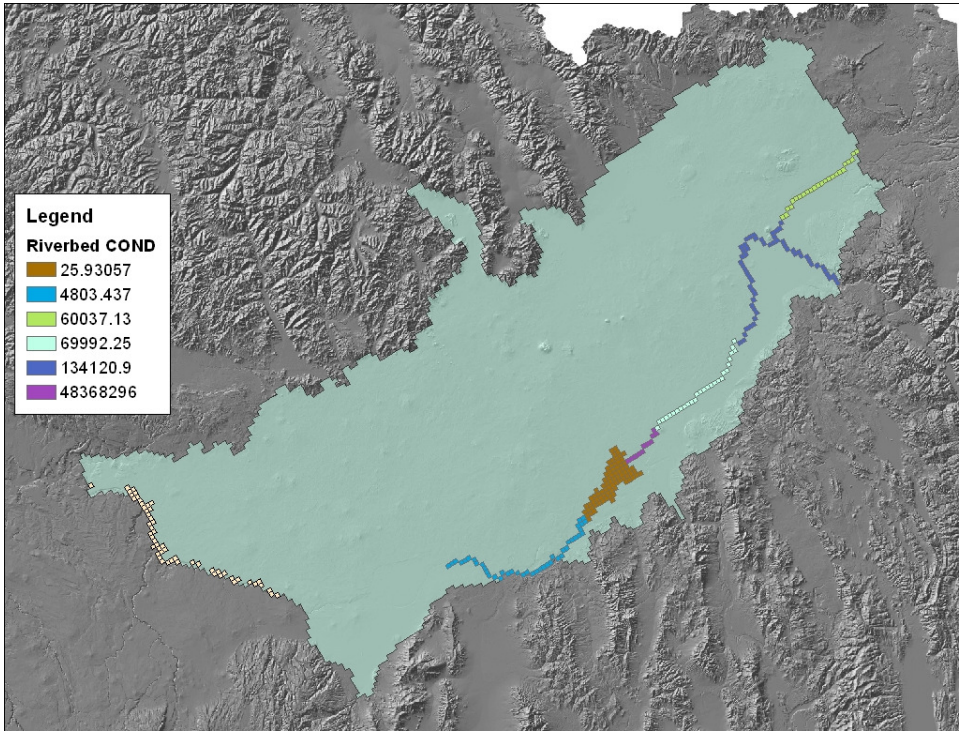
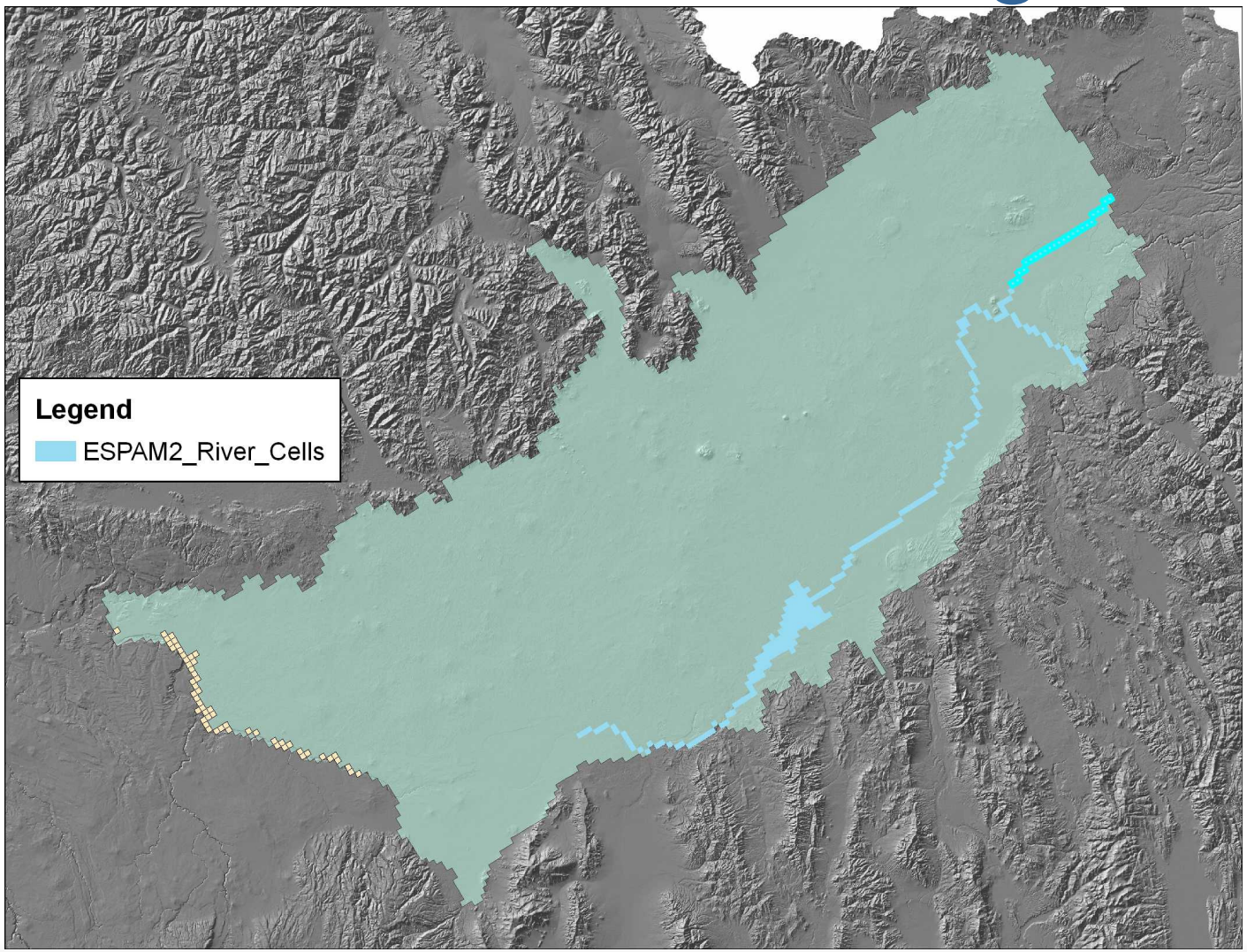




- Snake River reaches

Ashton - Rexburg



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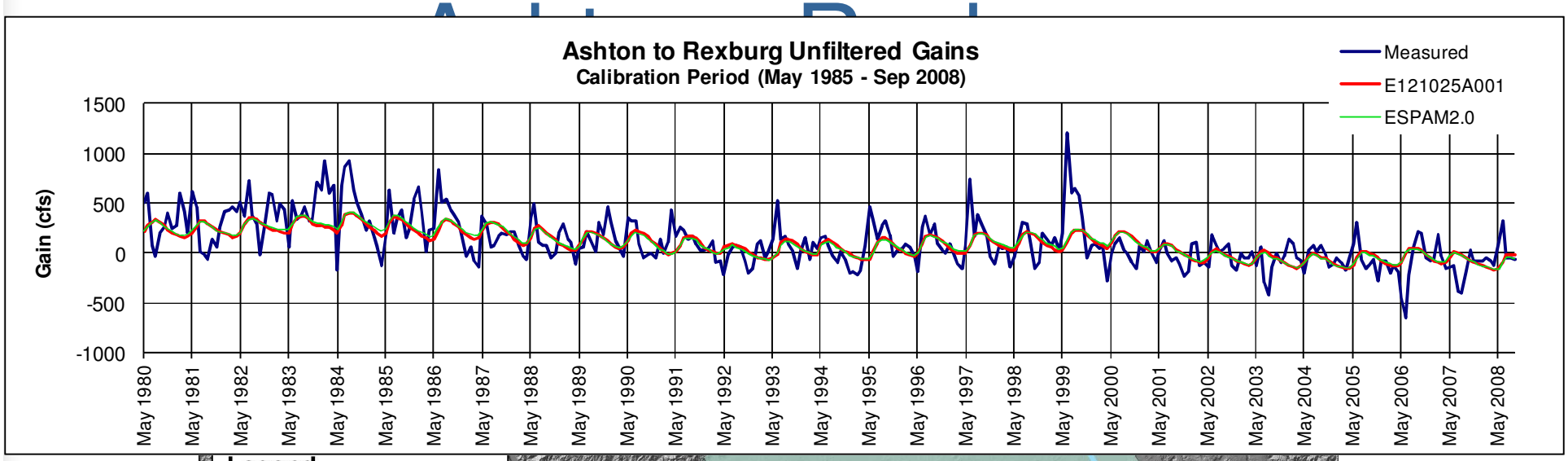
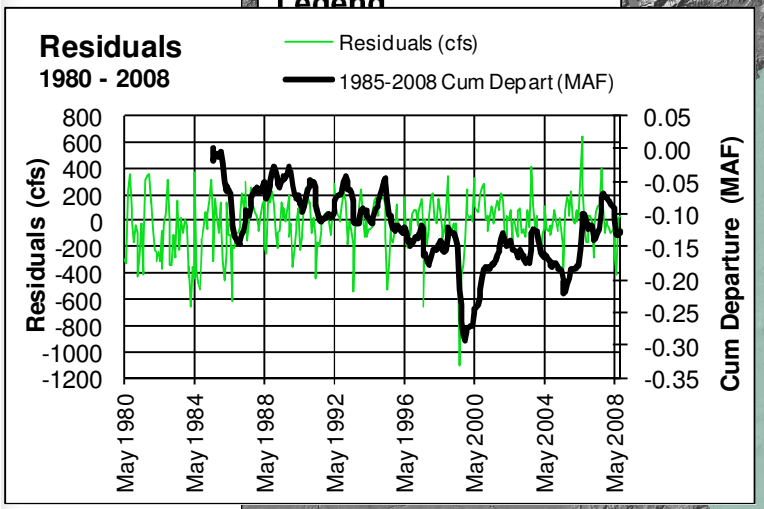
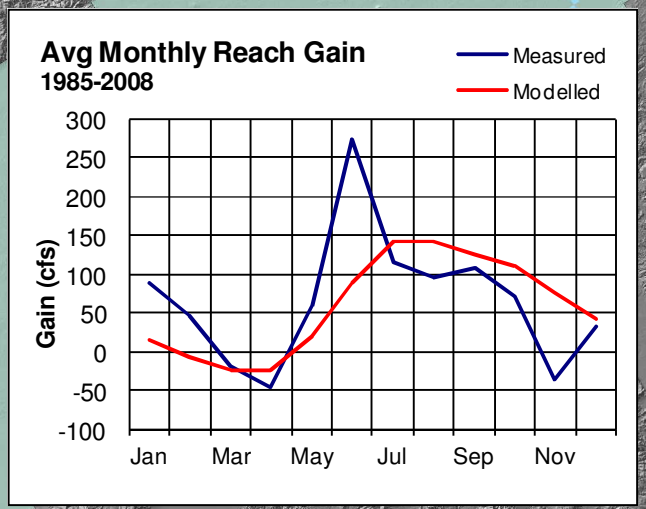
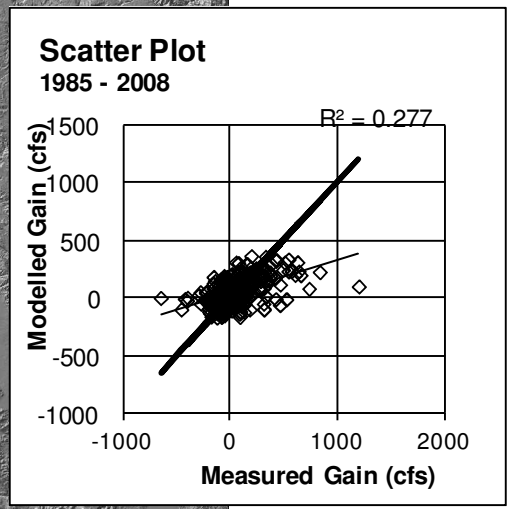
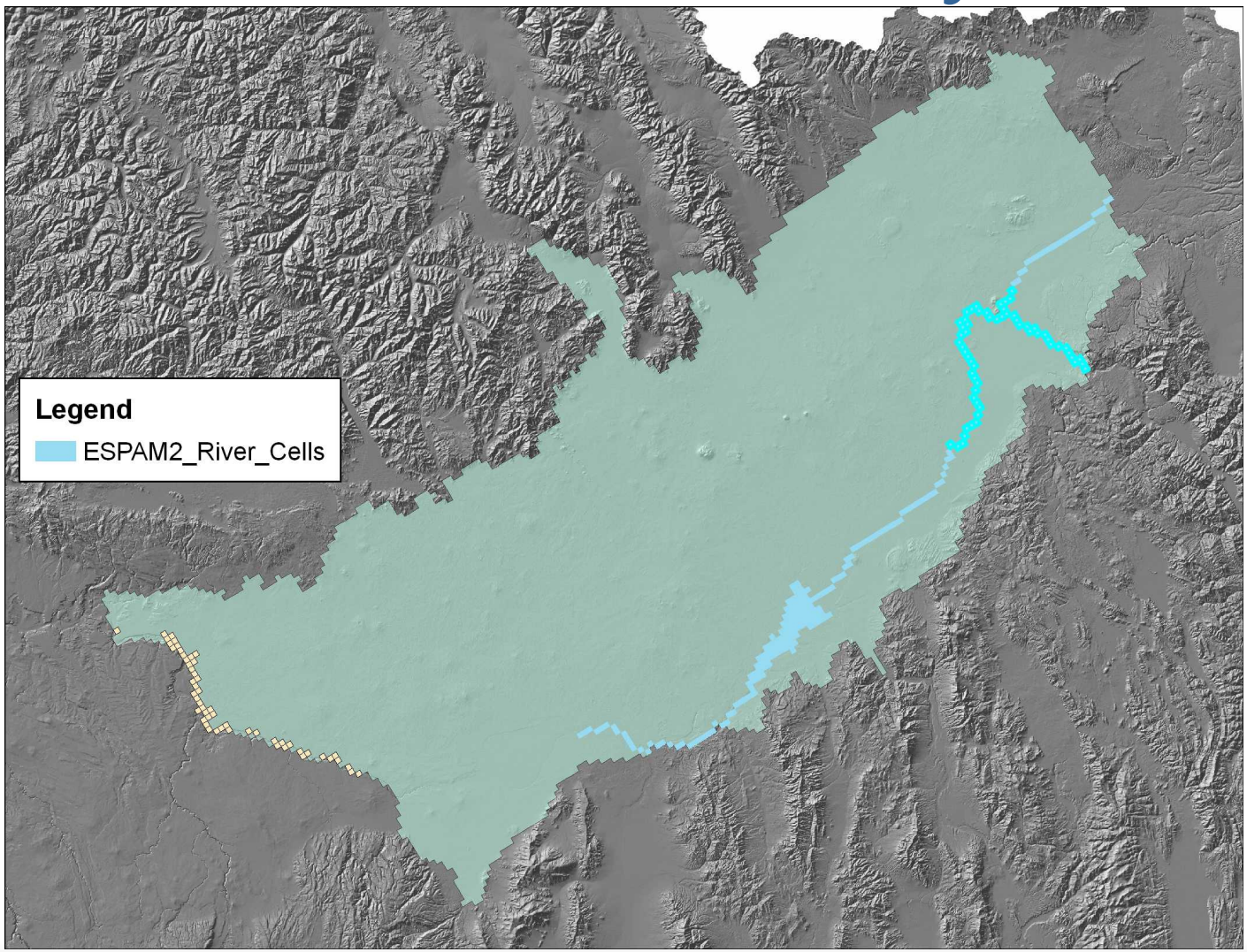








Heise - Shelley



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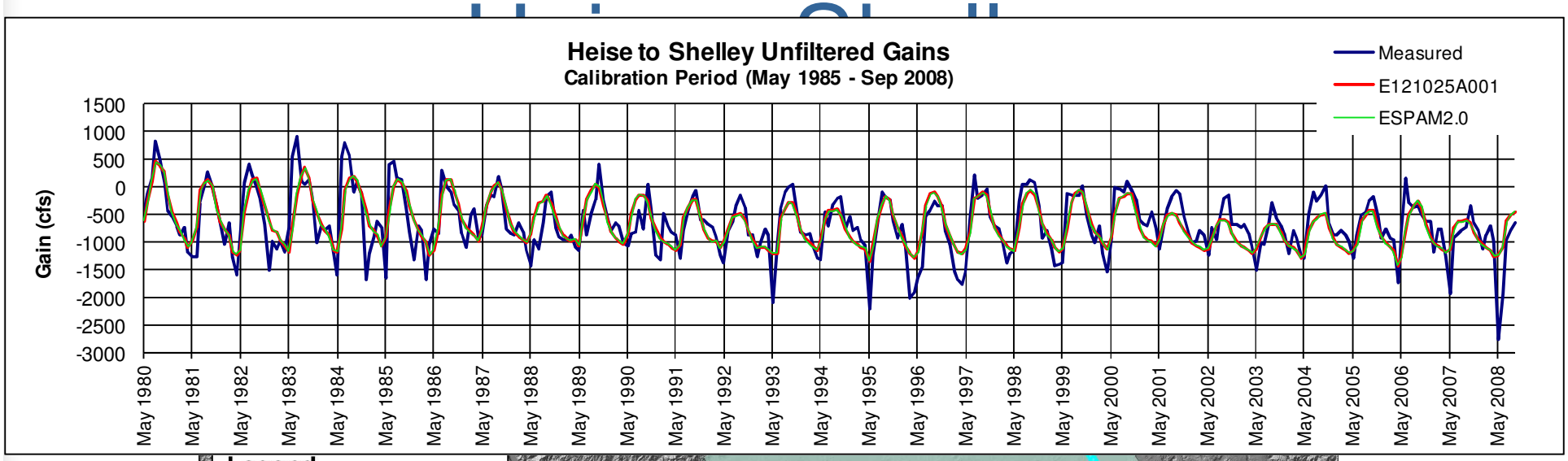
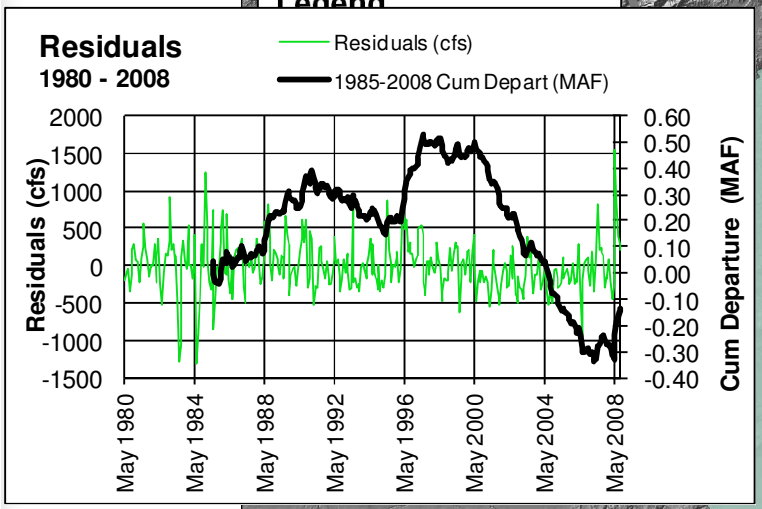
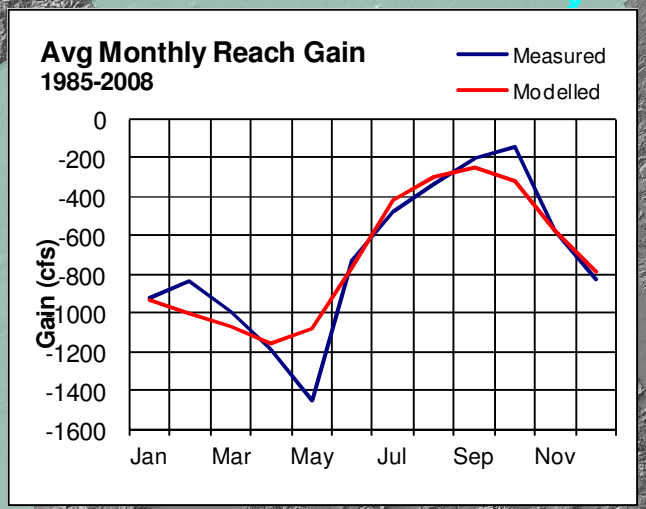
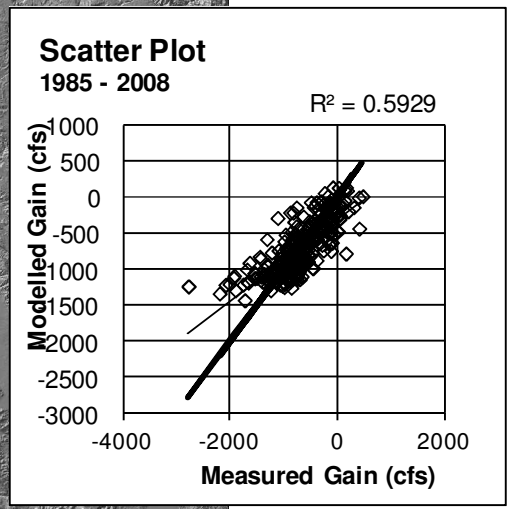
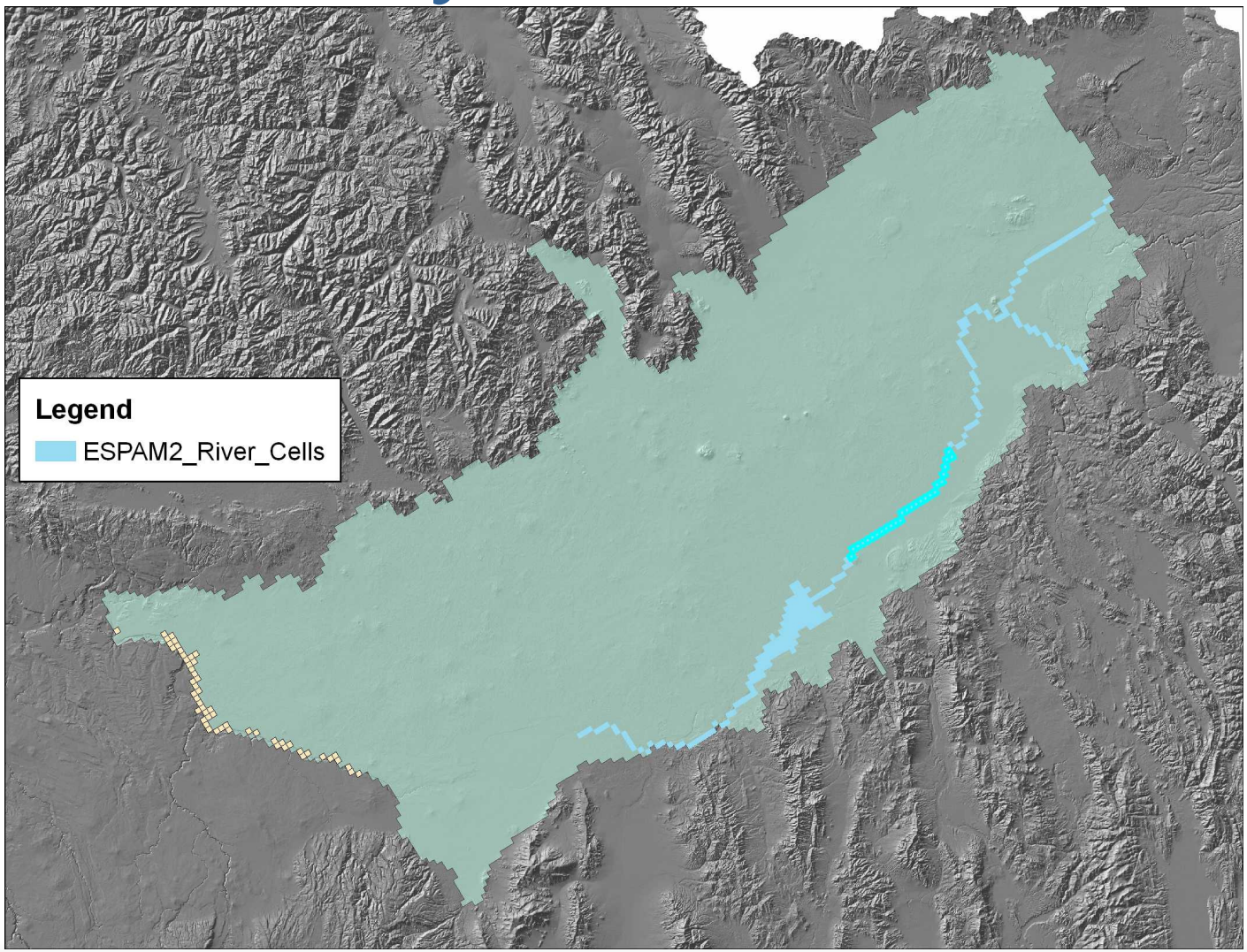








Shelley – nr Blackfoot



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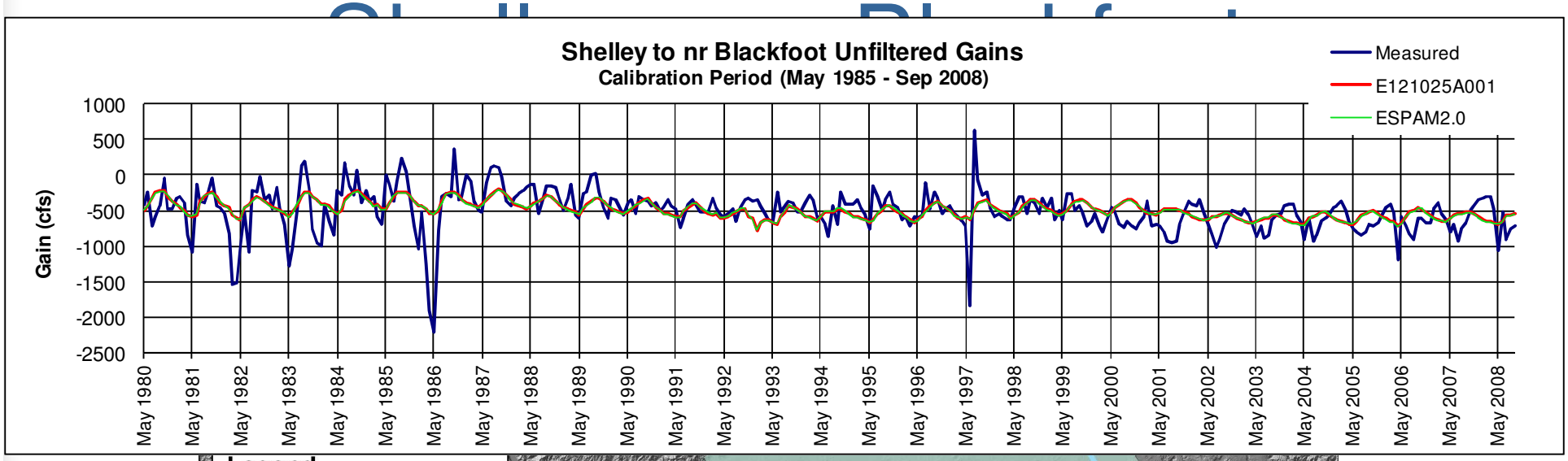
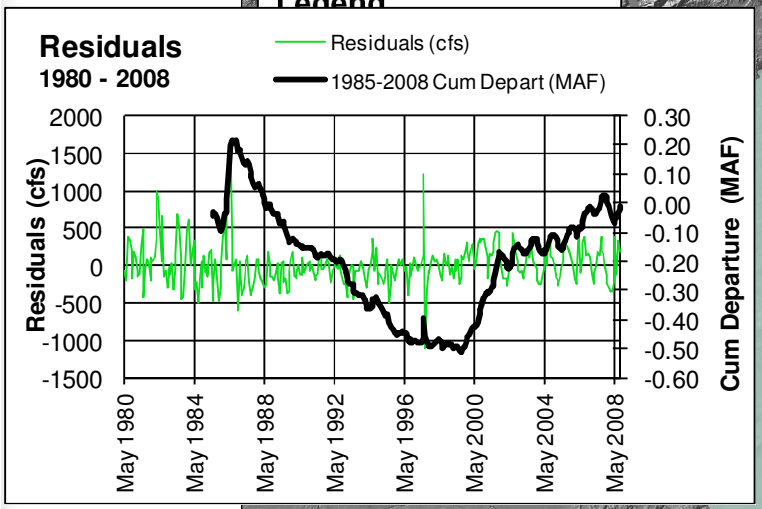
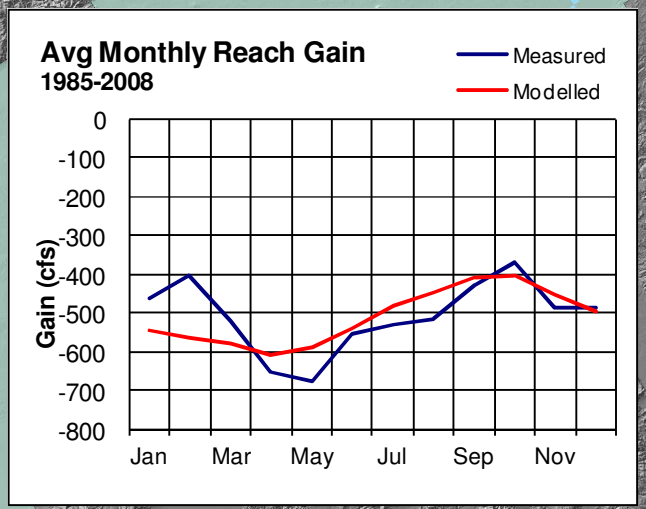
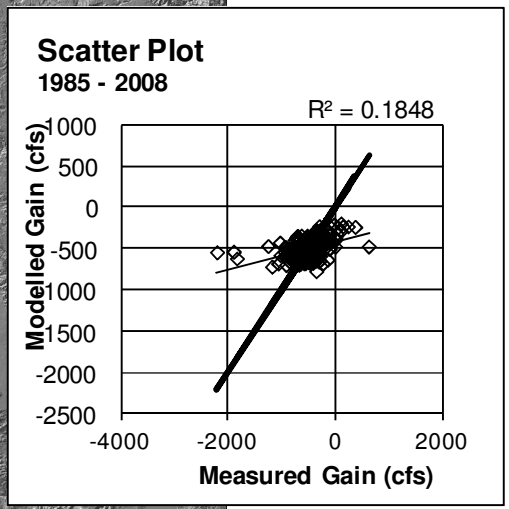
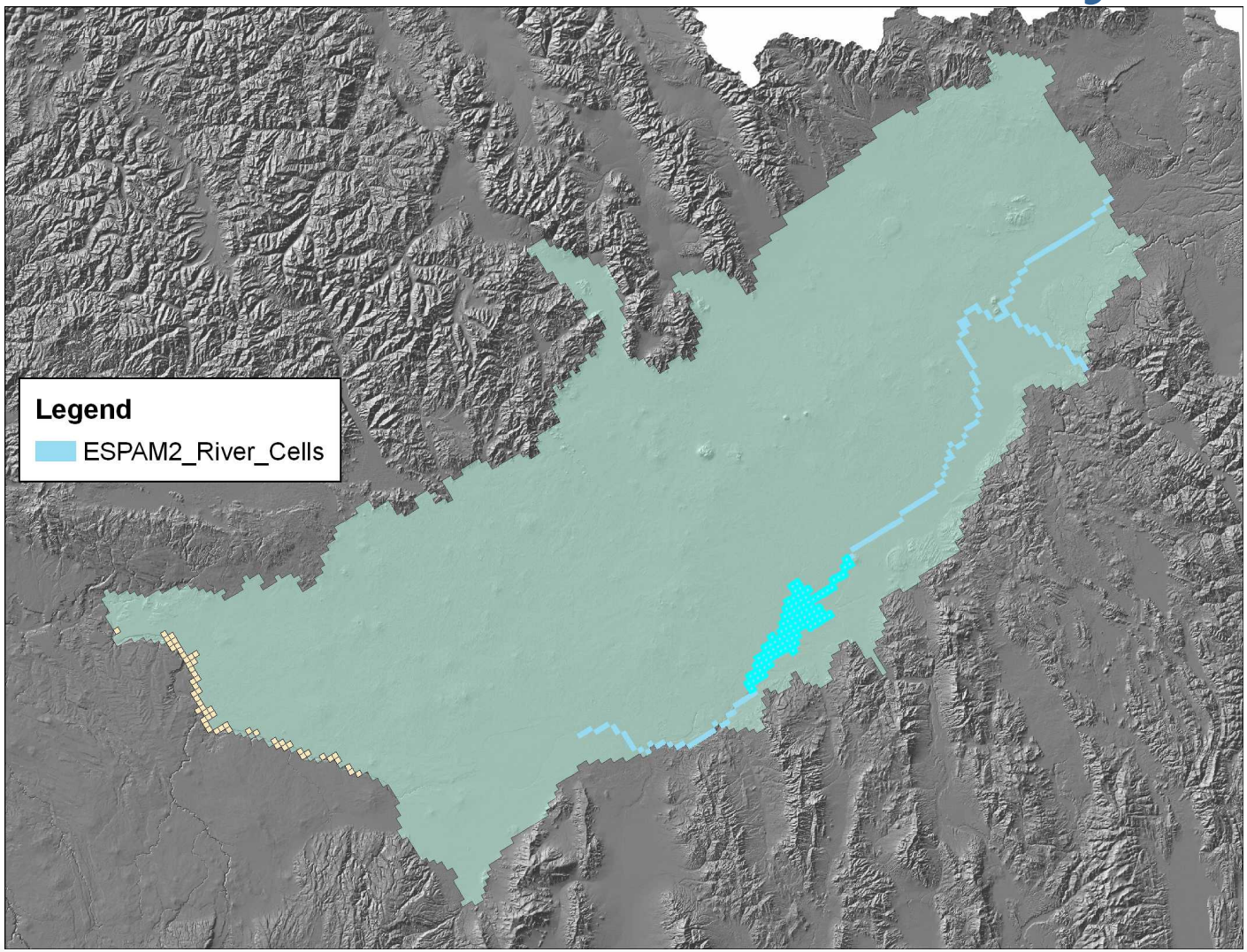








Nr Blackfoot - Neeley



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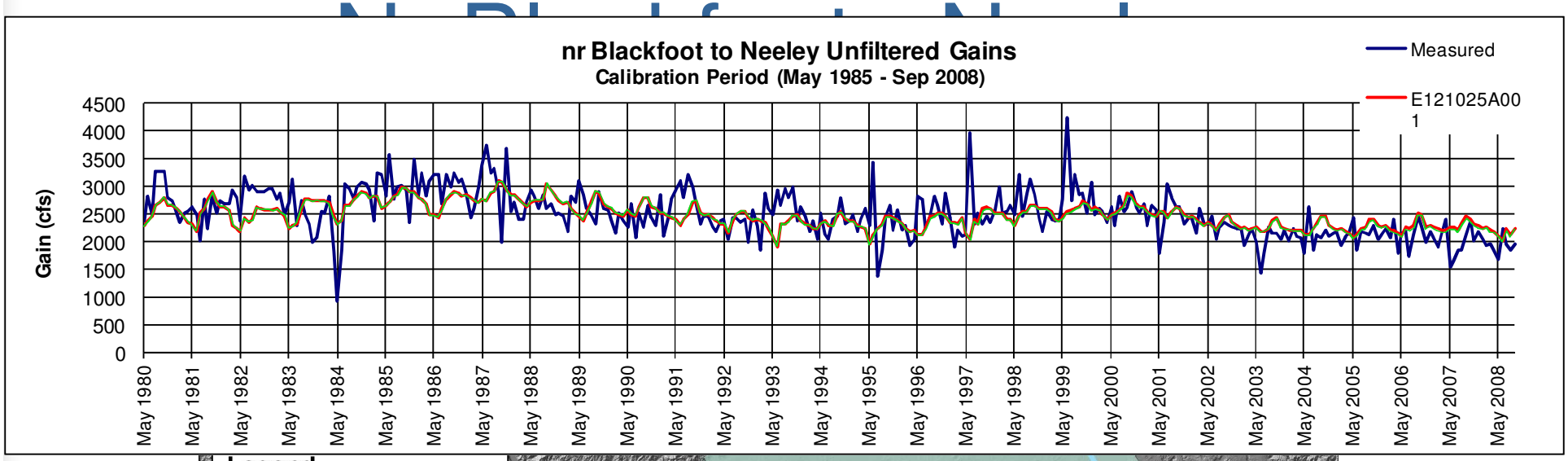
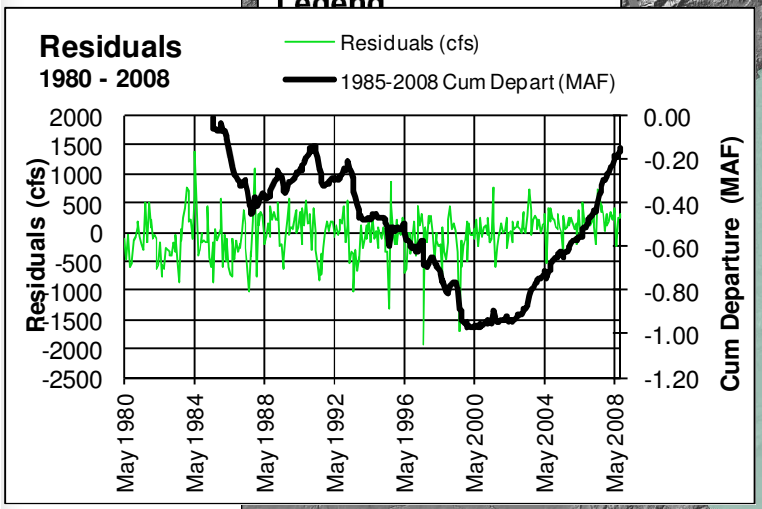
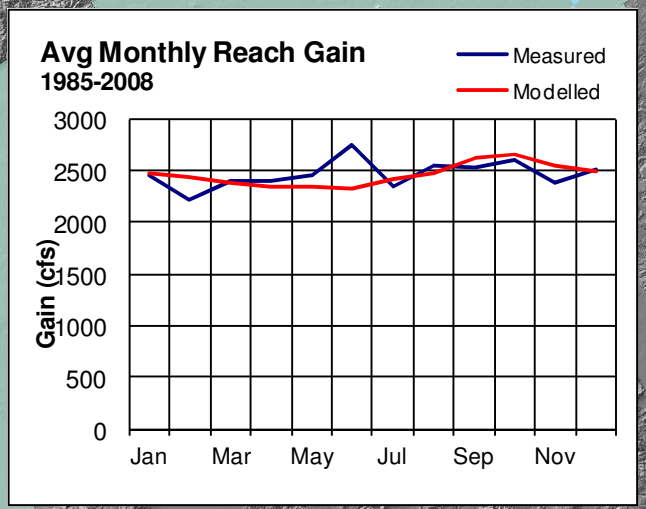
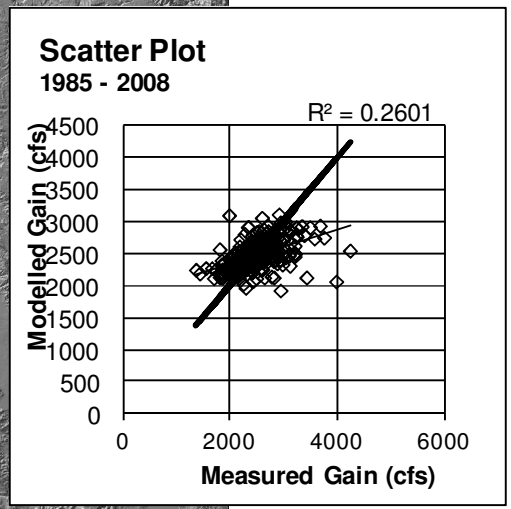


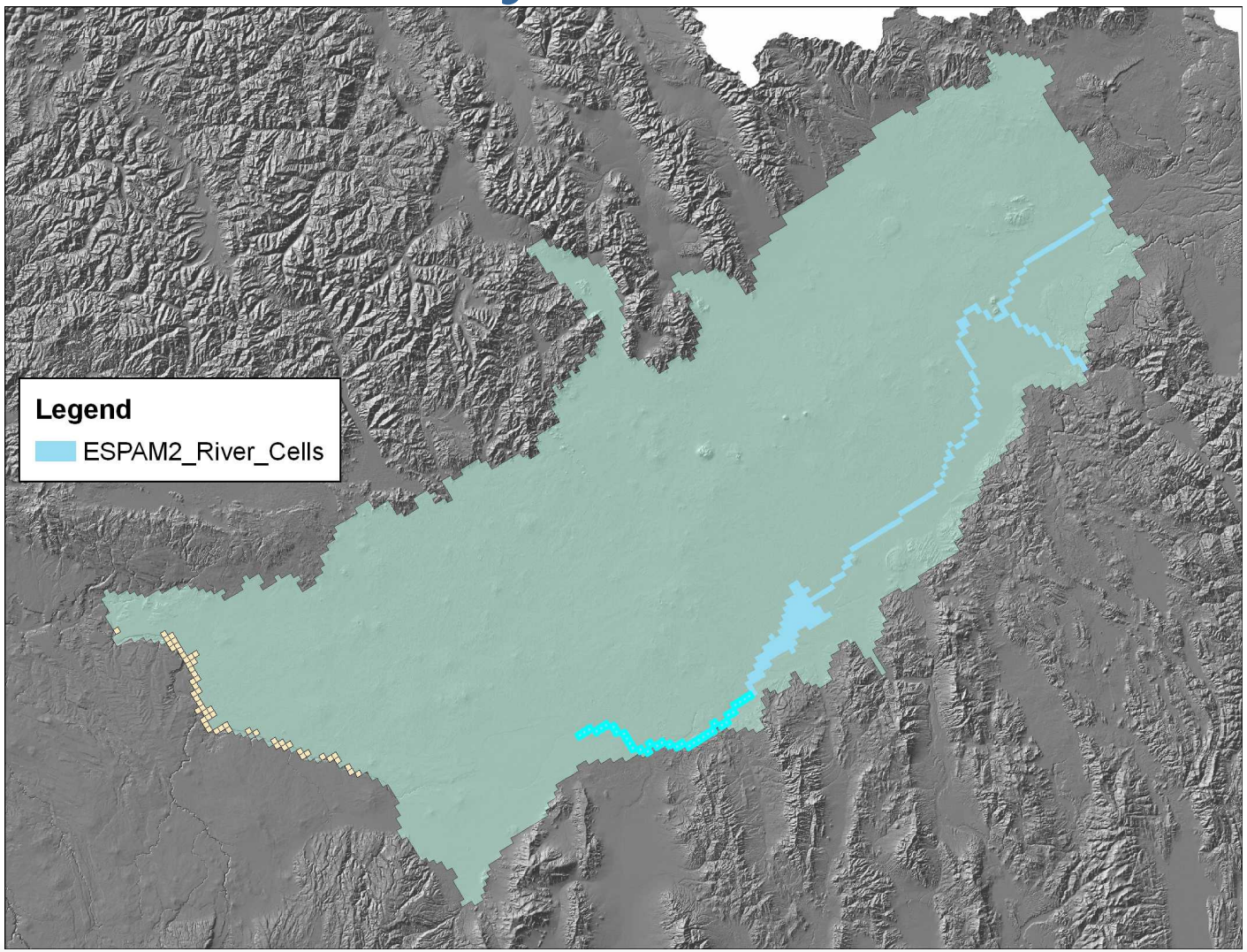
Legend







Neeley - Minidoka



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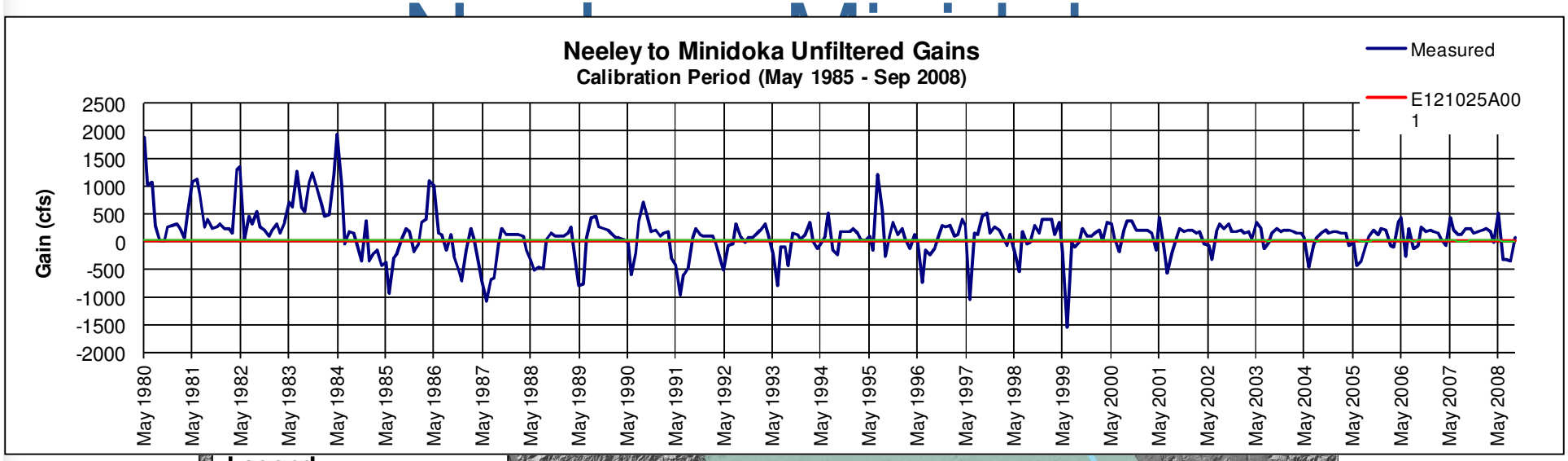
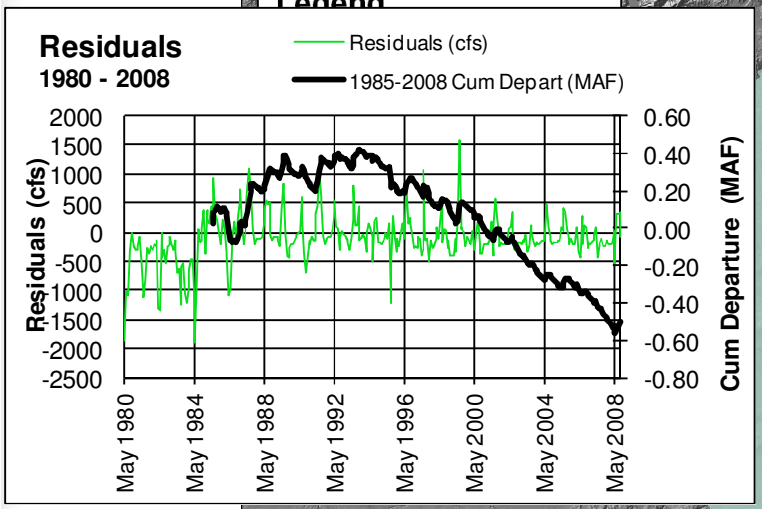
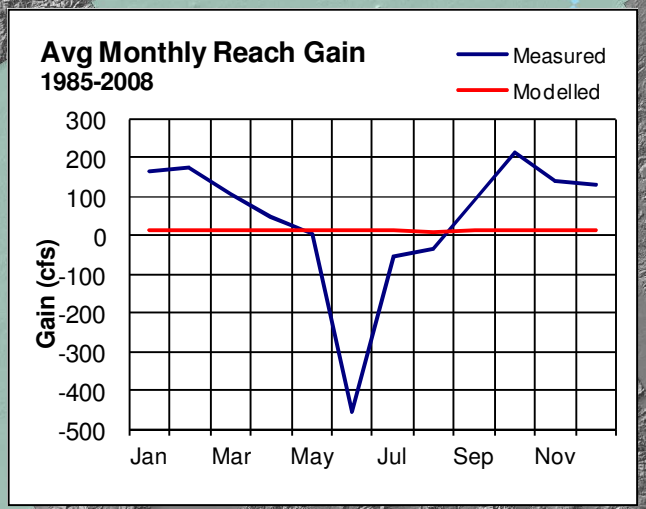
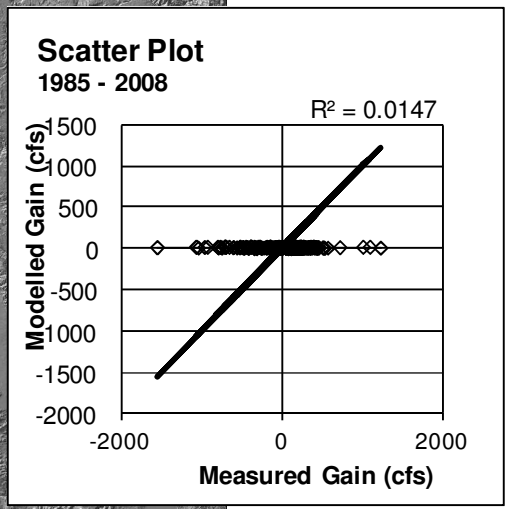


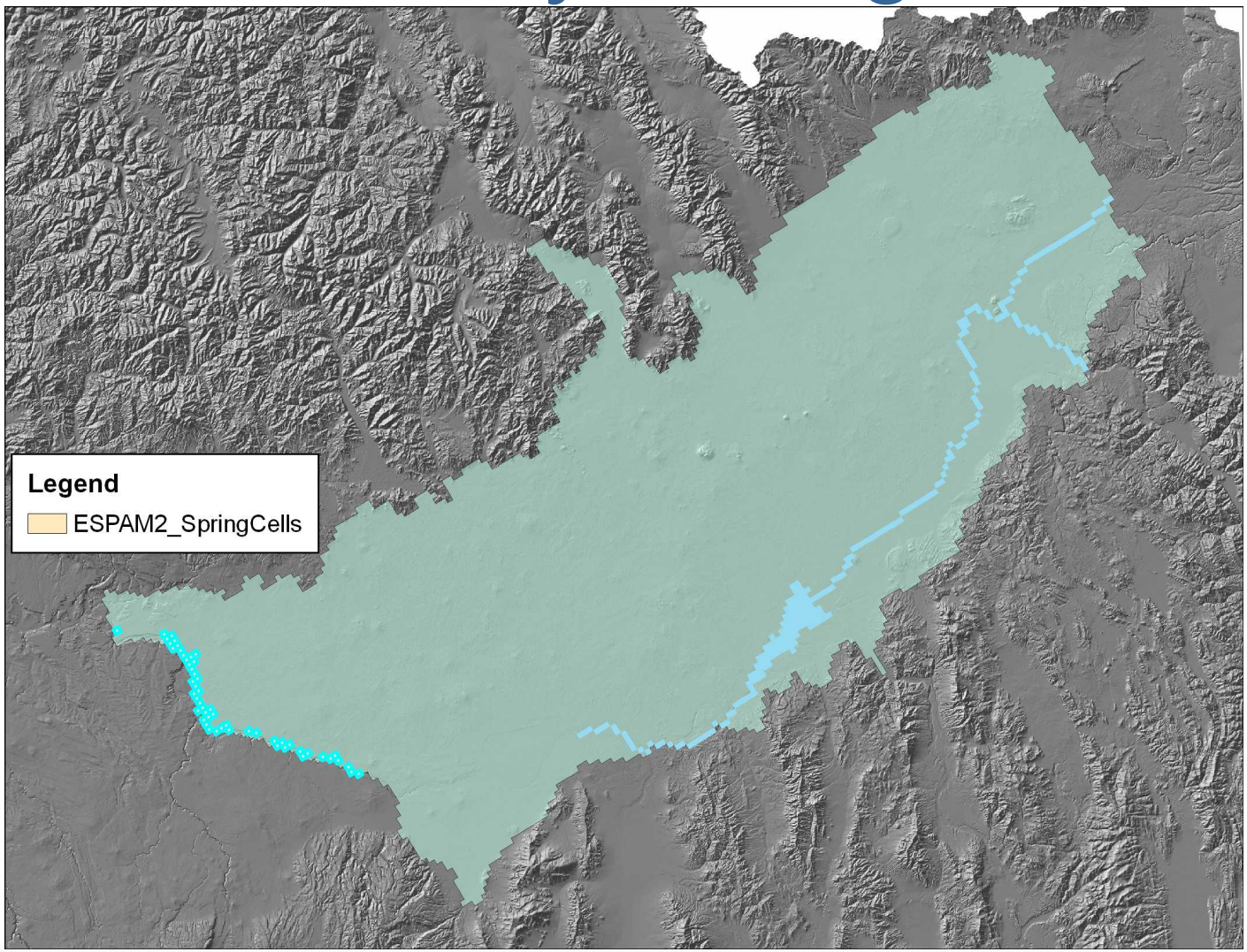
Legend







Kimberly – King Hill



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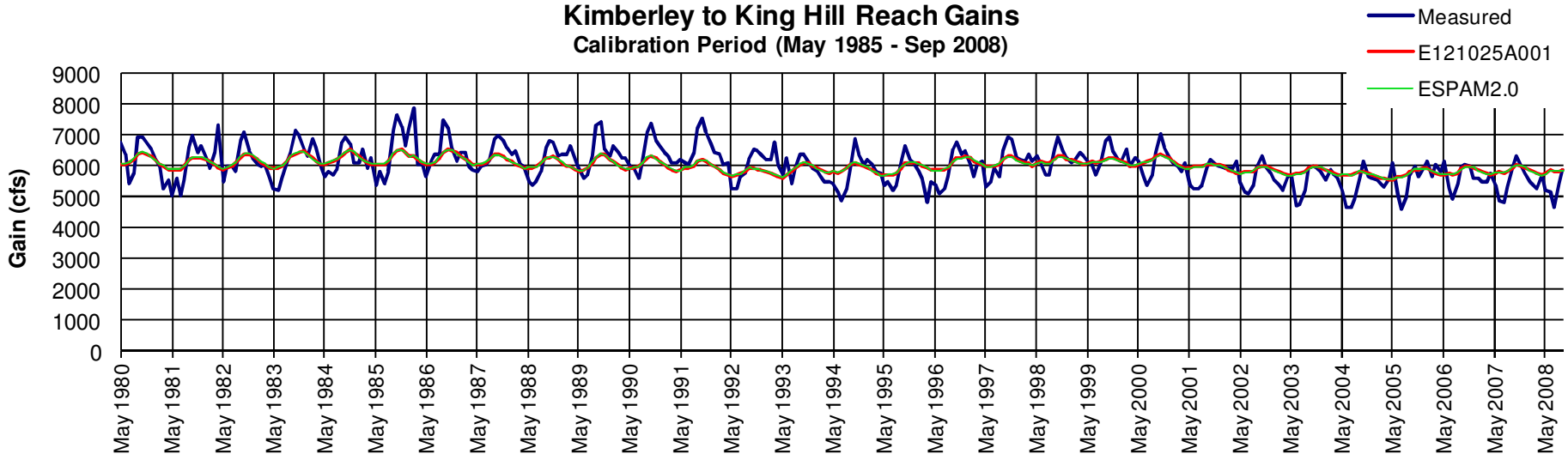
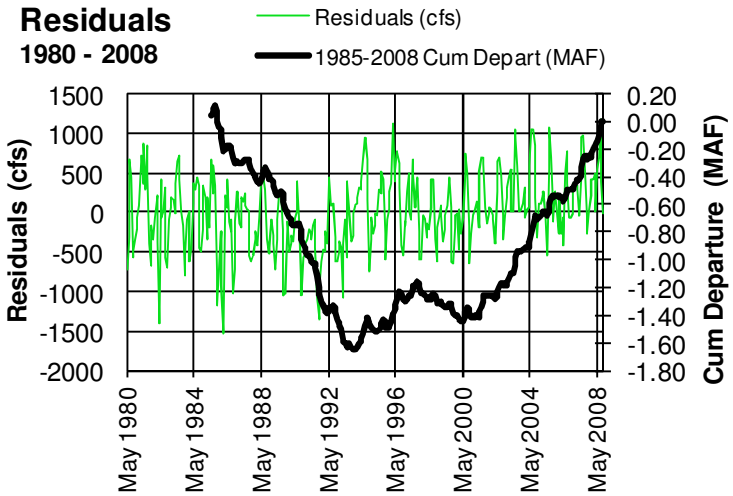
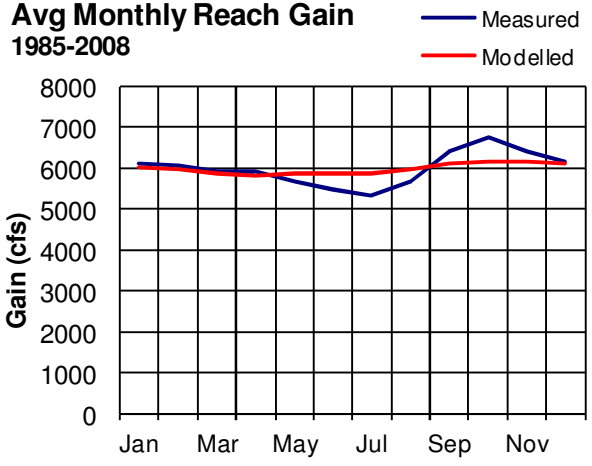
Kimberley to King Hill Reach Gains
Calibration Period (May 1985 - Sep 2008)



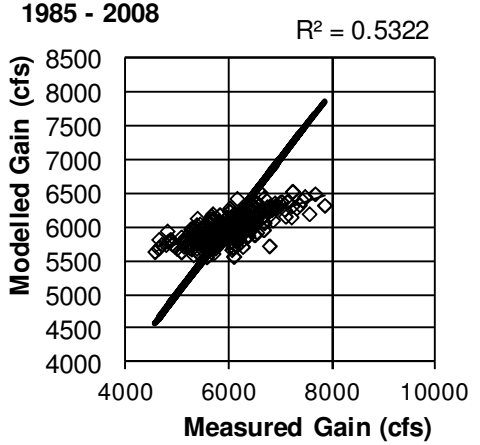
Residuals
1980 - 2008



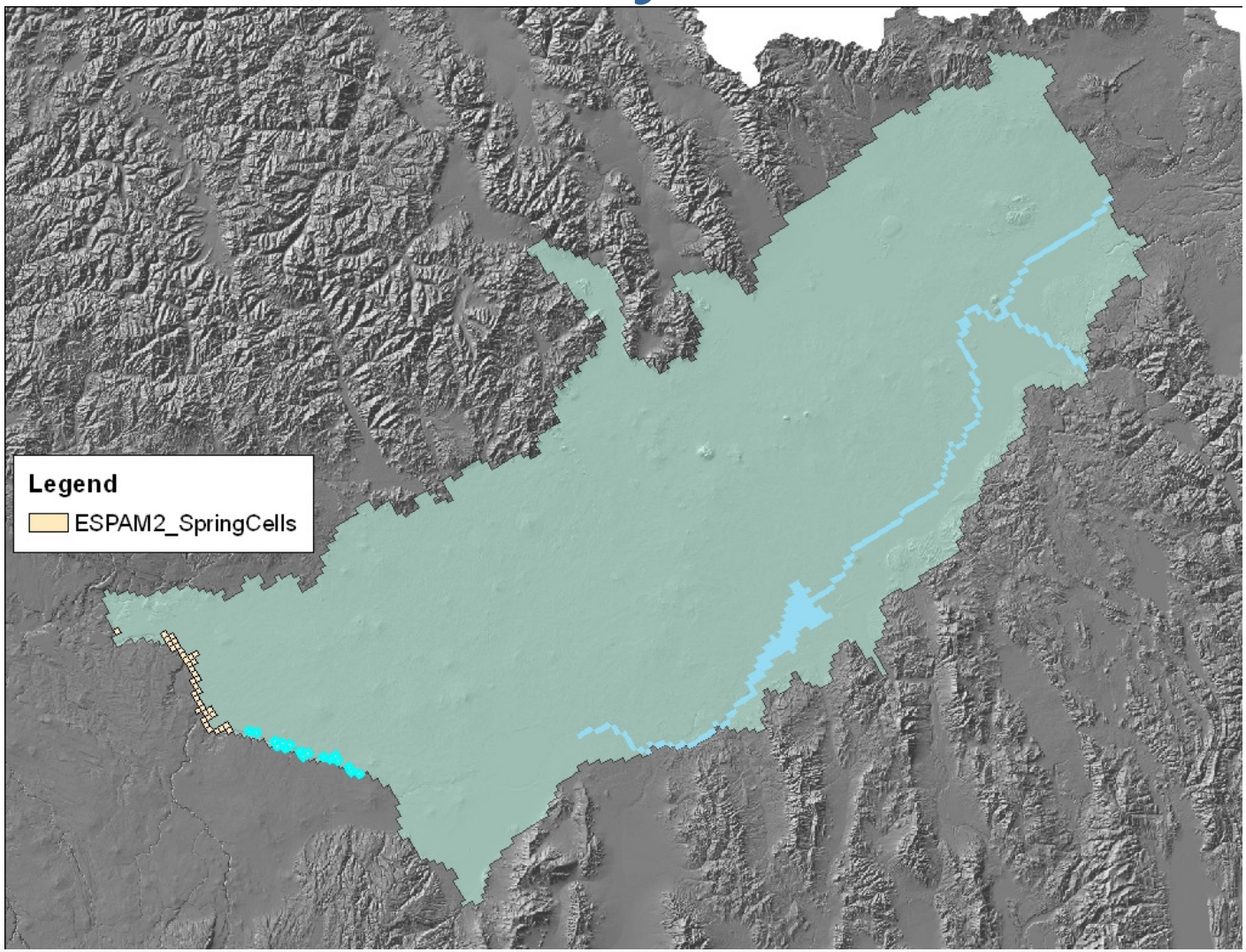
Avg Monthly Reach Gain
1985-2008



Scatter Plot
1985 - 2008



Kimberly – Buhl



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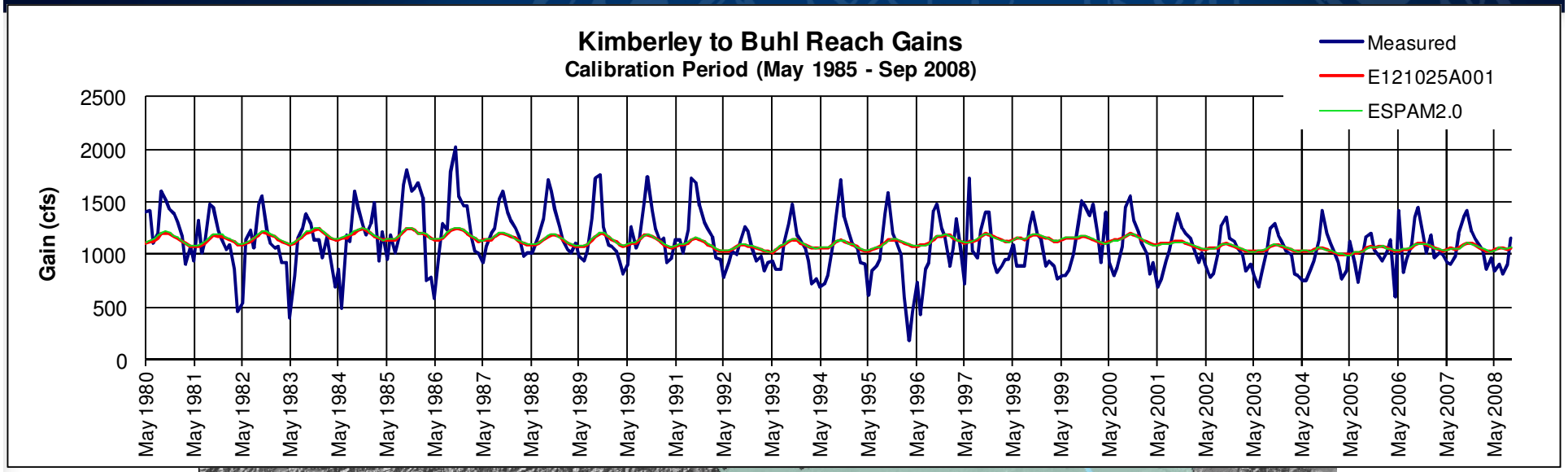
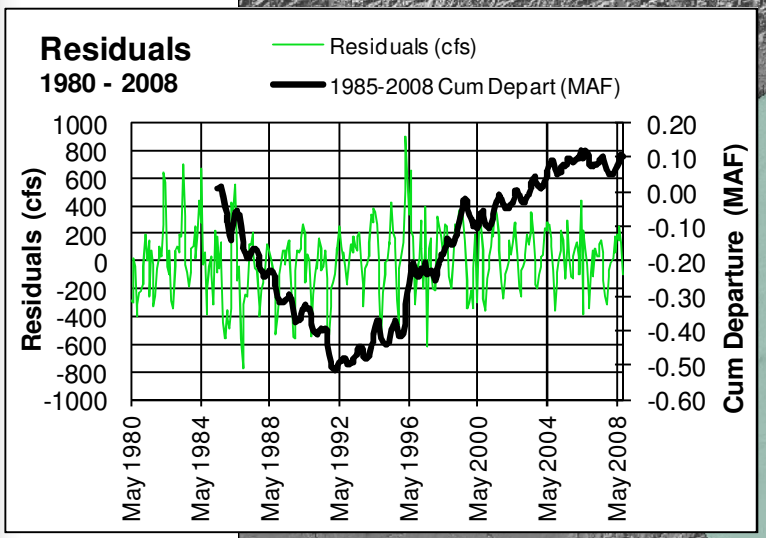
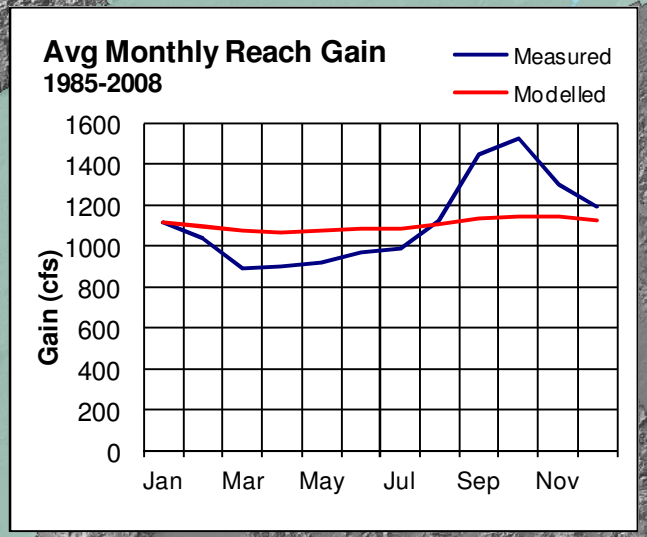
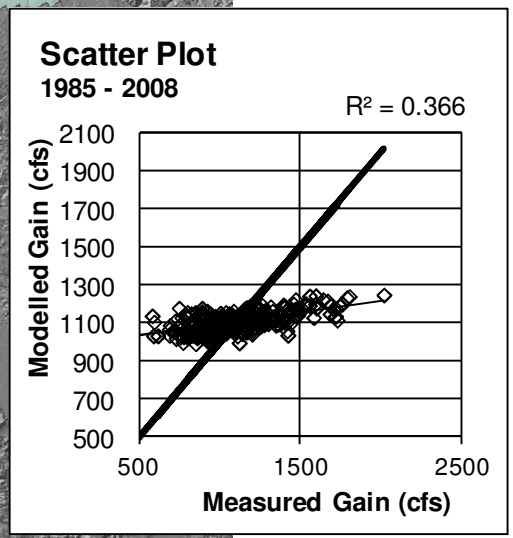
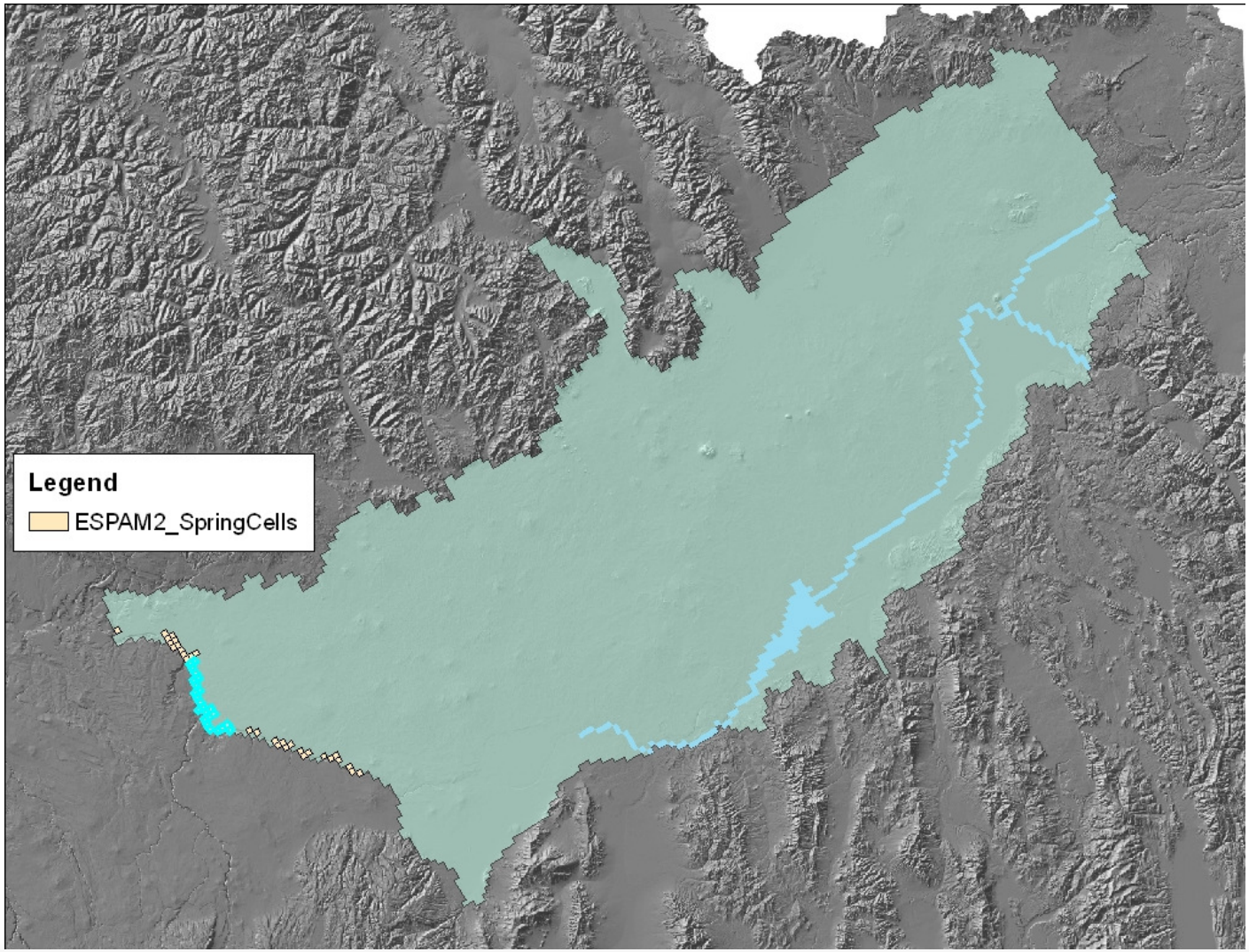








Buhl-Lower Salmon Falls



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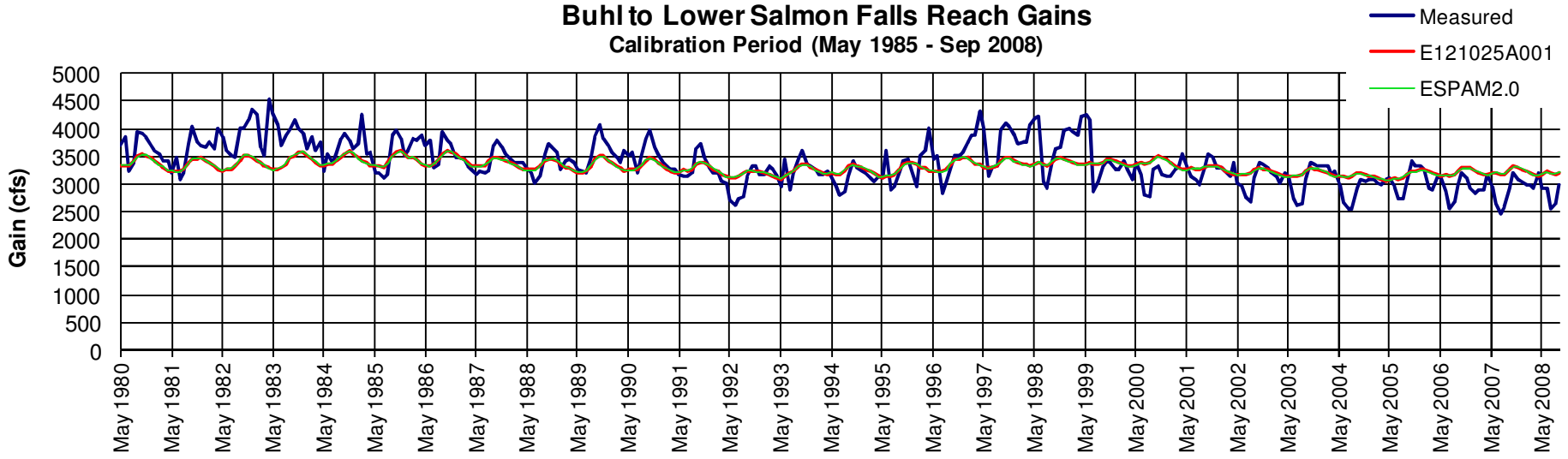
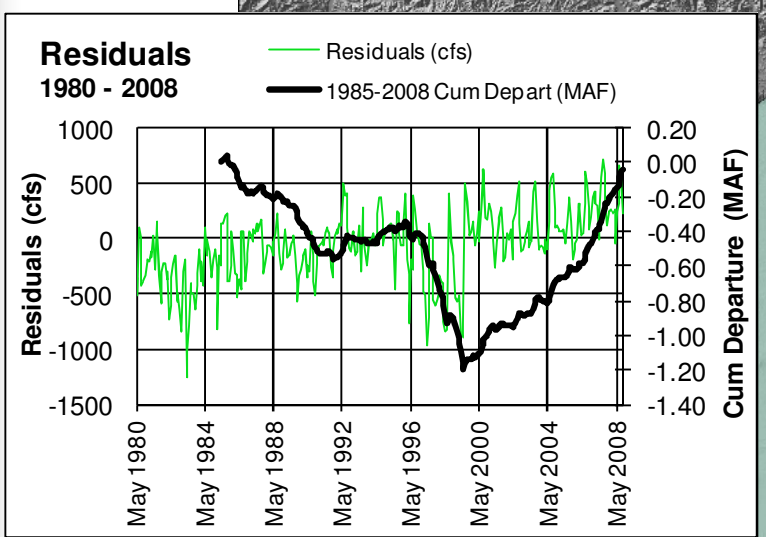
Buhl to Lower Salmon Falls Reach Gains

Calibration Period (May 1985 - Sep 2008)



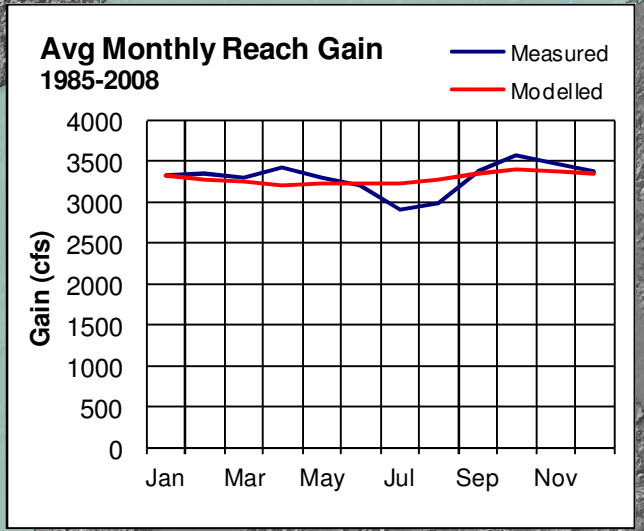
Residuals

1980 - 2008



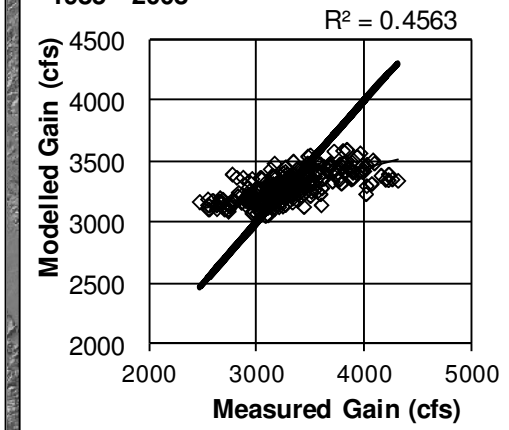
Avg Monthly Reach Gain

1985-2008

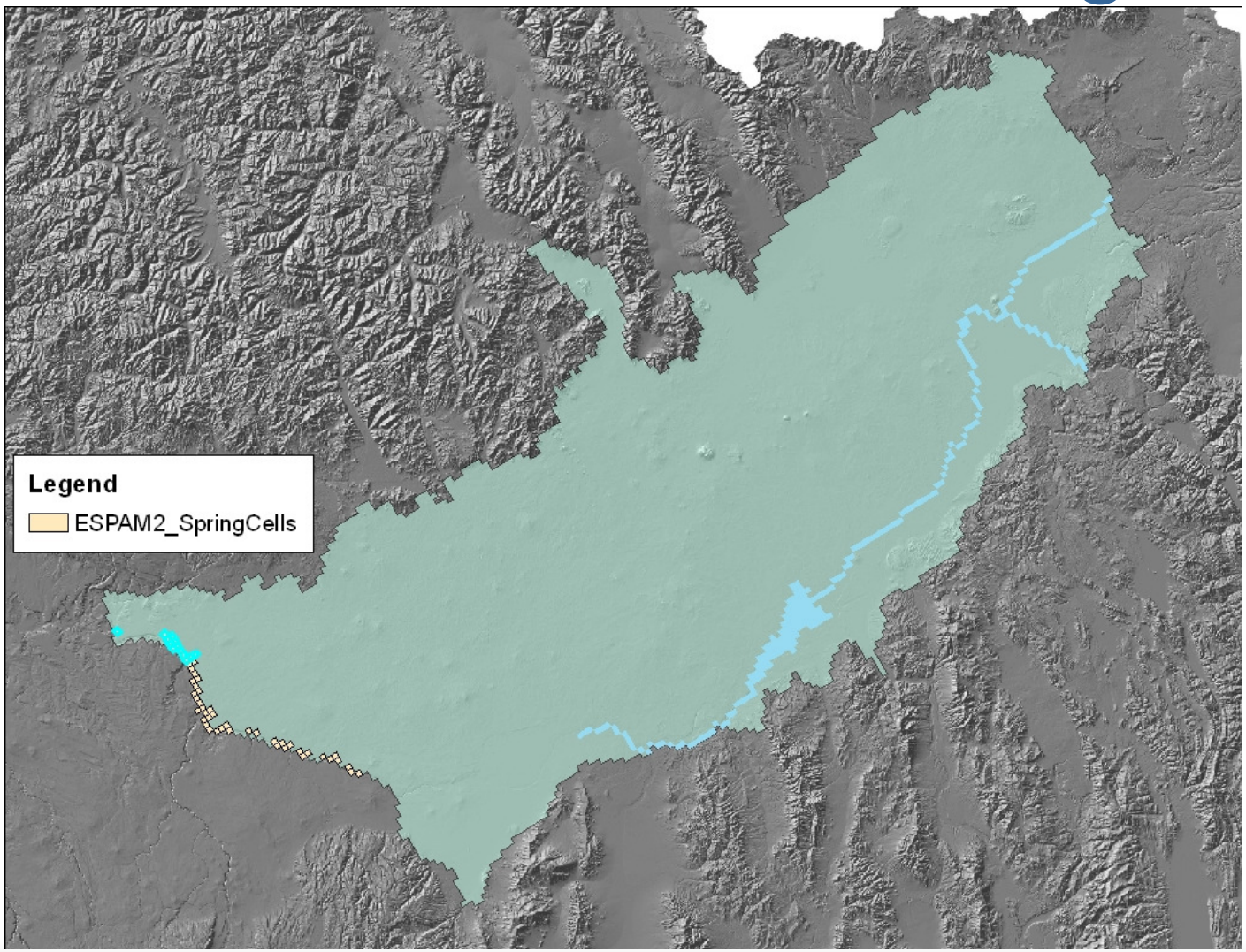


Scatter Plot

1985 - 2008

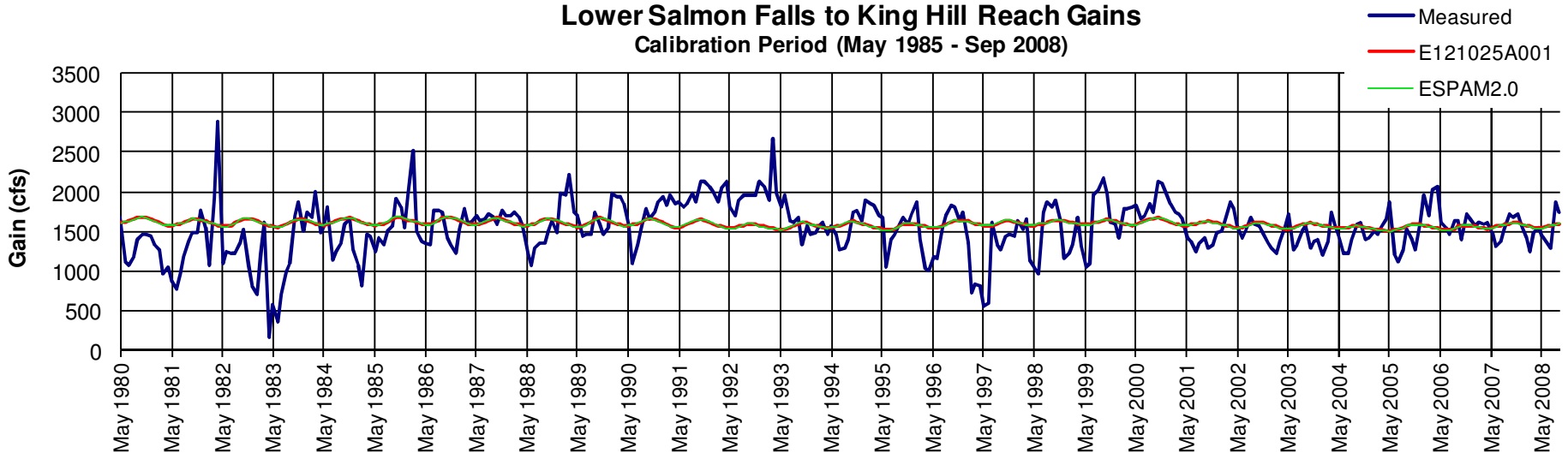


Lower Salmon Falls-King Hill

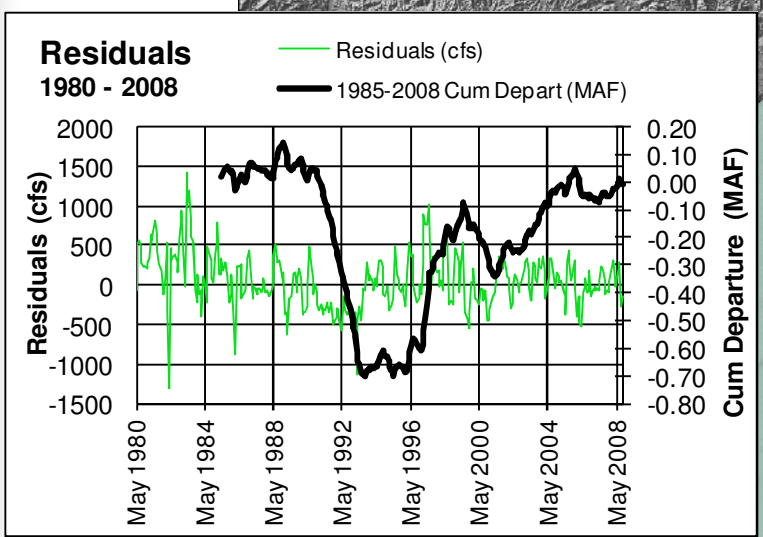


IDAHO Department of Water Resources

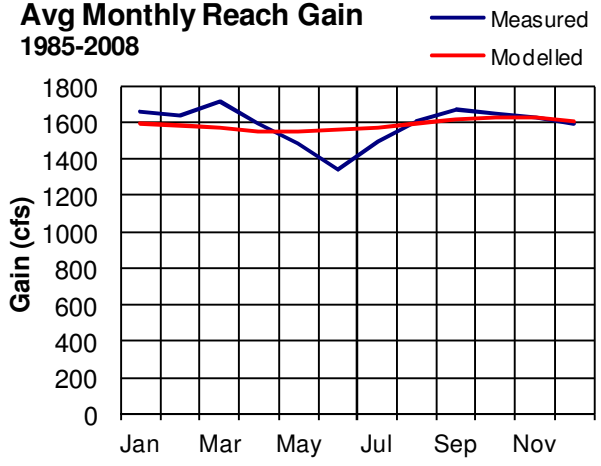
Lower Salmon Falls to King Hill Reach Gains
Calibration Period (May 1985 - Sep 2008)



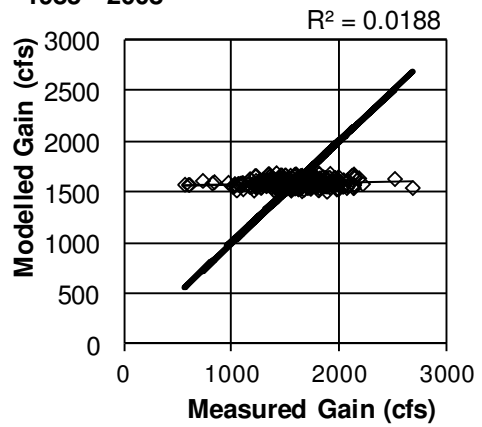
Residuals
1980 - 2008



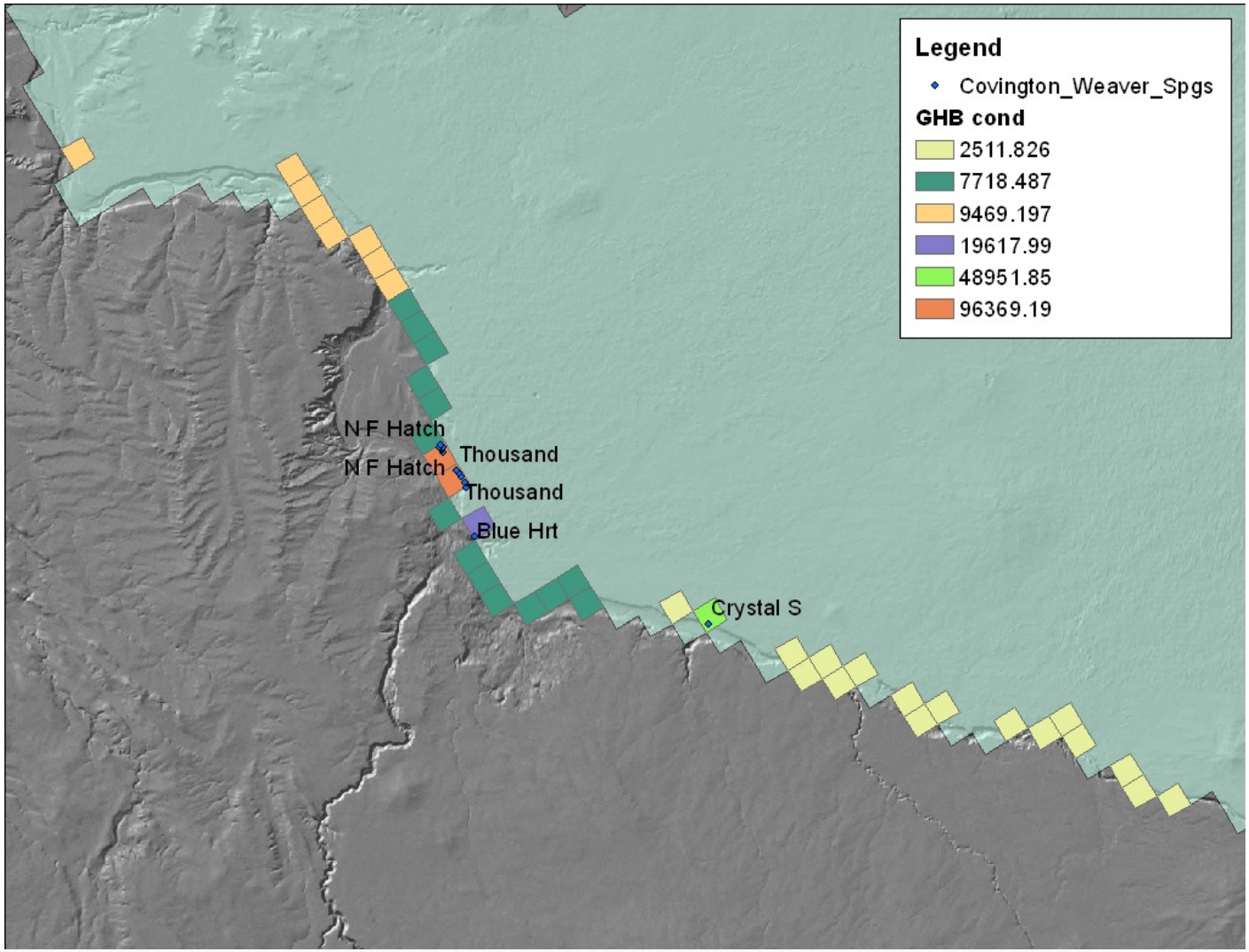
Avg Monthly Reach Gain
1985-2008



Scatter Plot
1985 - 2008

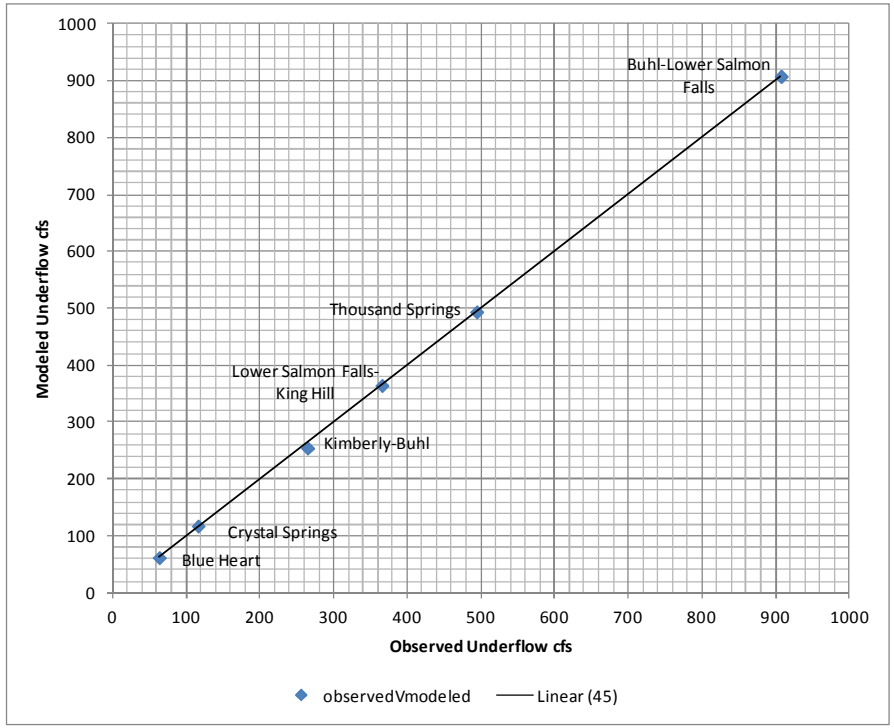


Base Flow


Legend
Covington_Weaver_Spgs
GHB cond
2511.826
7718.487
9469.197
19617.99
48951.85
96369.19
N F Hatch
Thousand
N F Hatch
Thousand
Blue Hrt
Crystal S

Base Flow

ESPAM02



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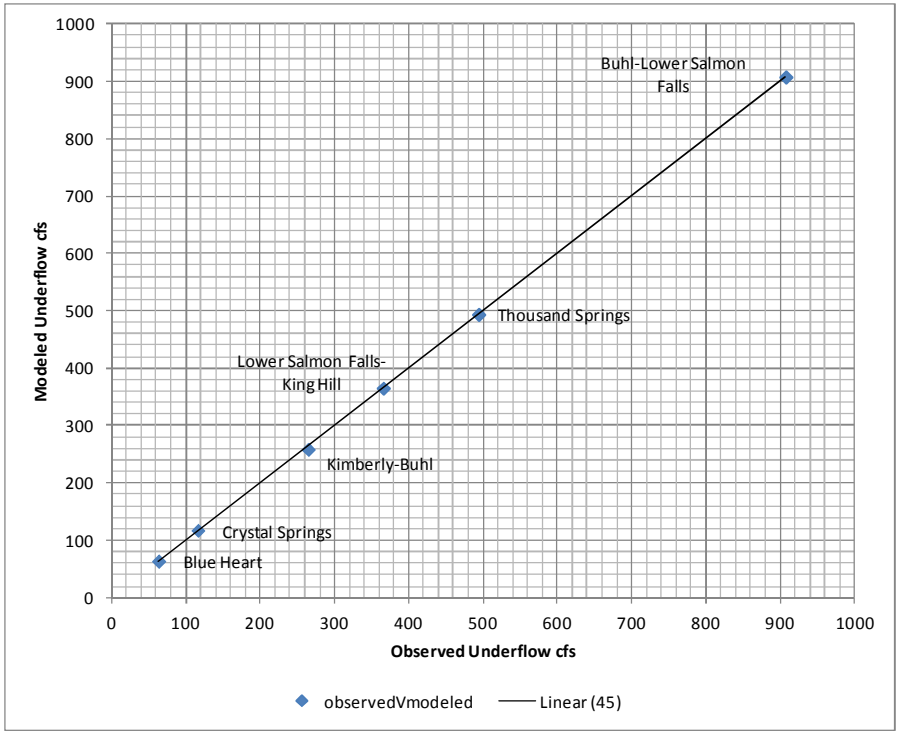

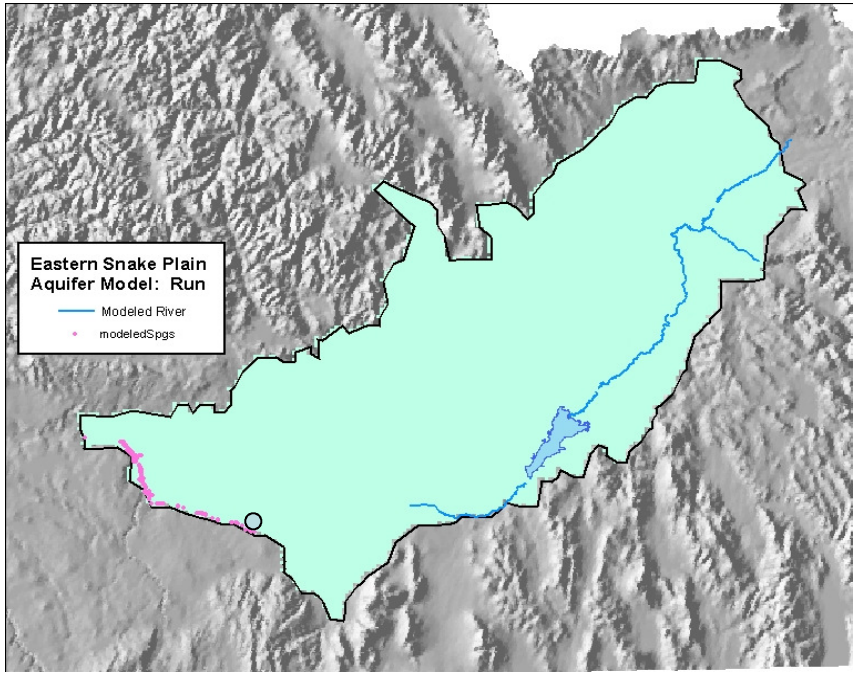

- Devils Washbowl

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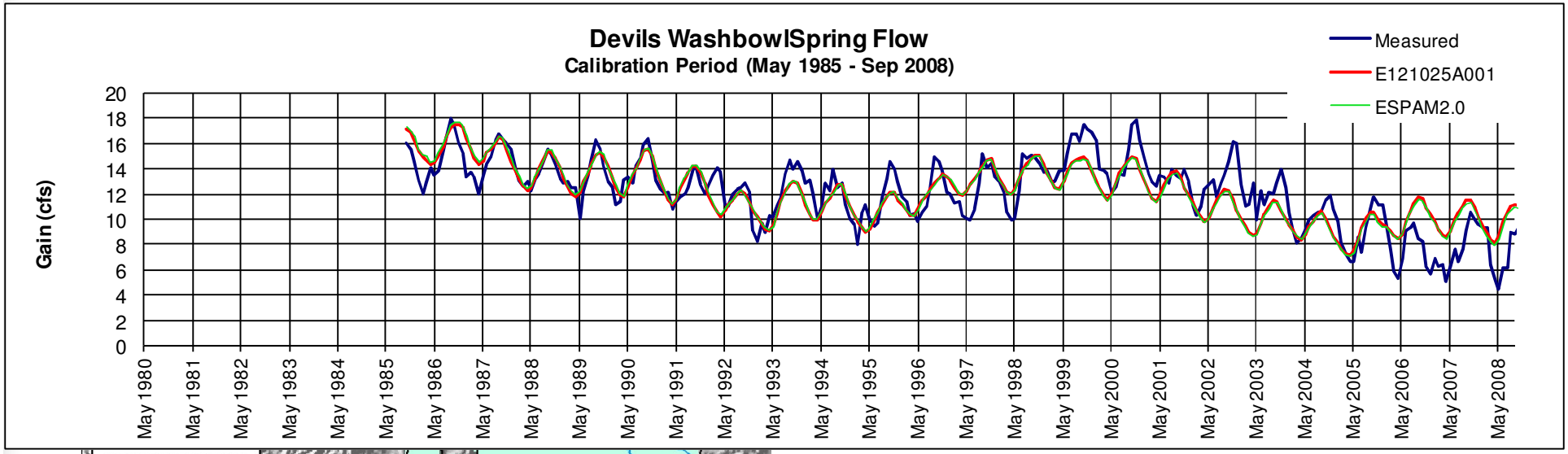
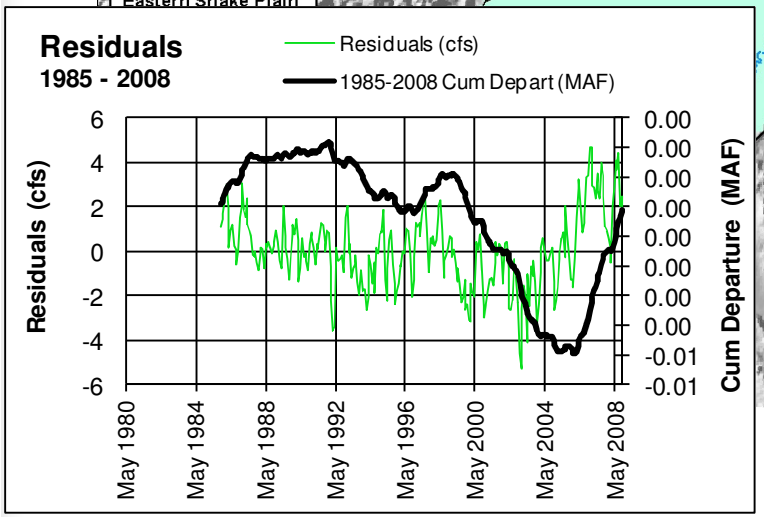
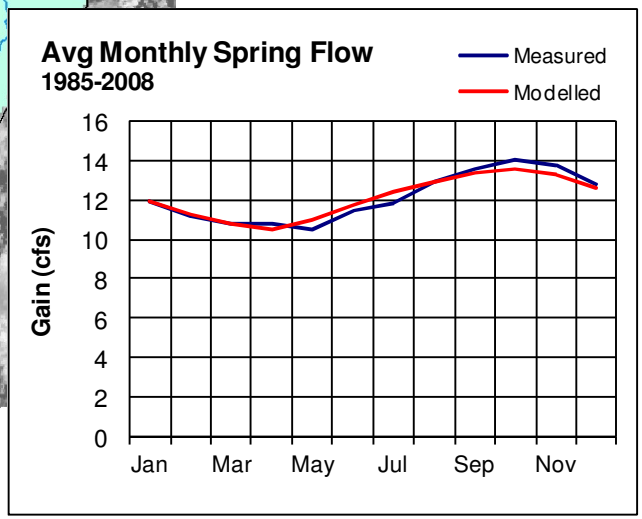
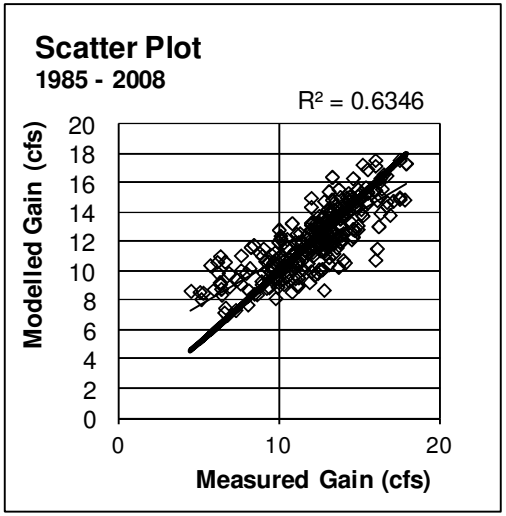
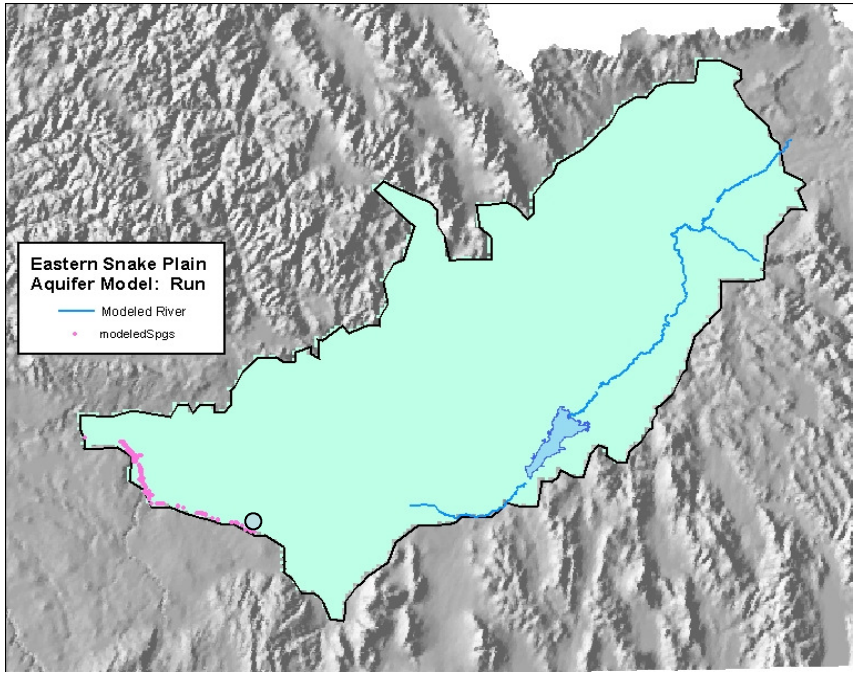


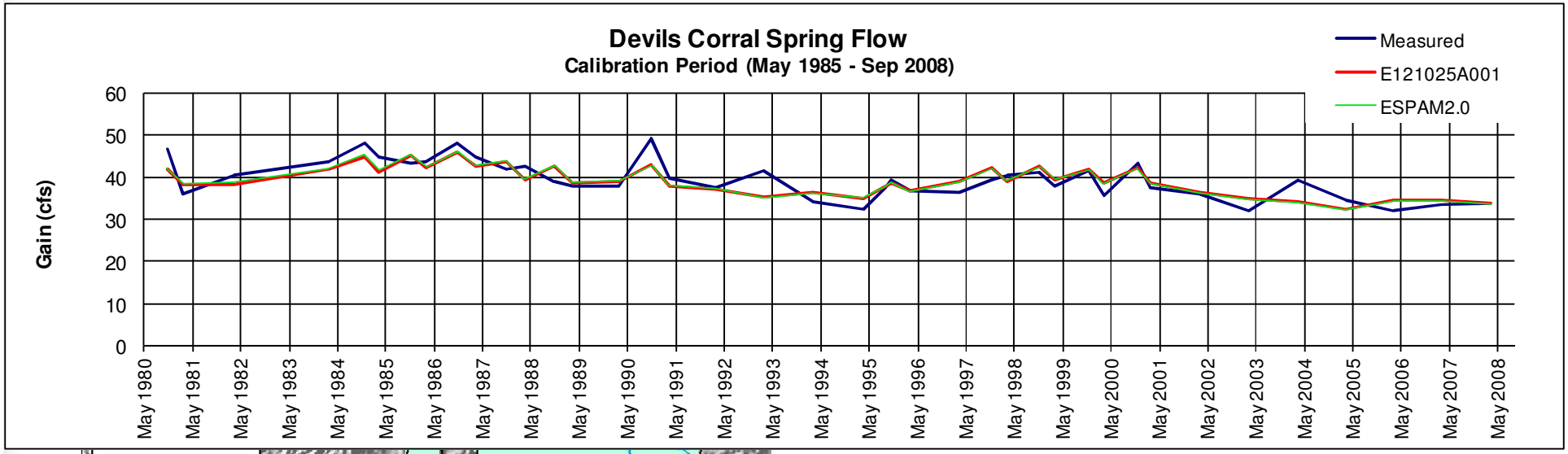


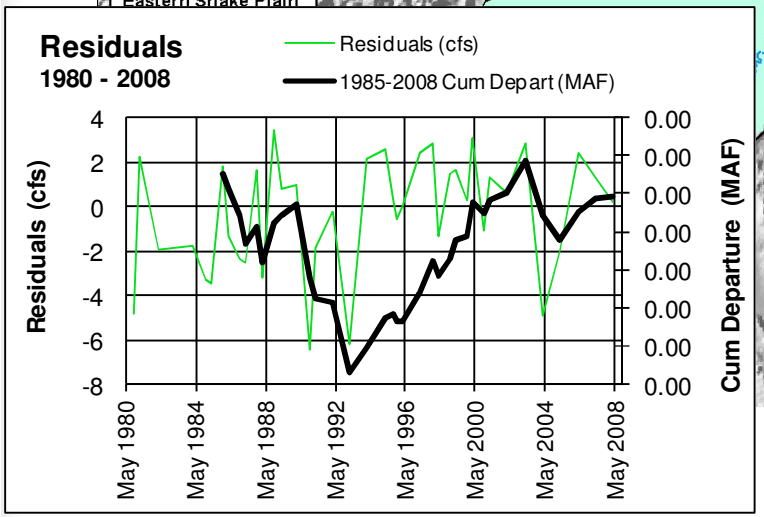


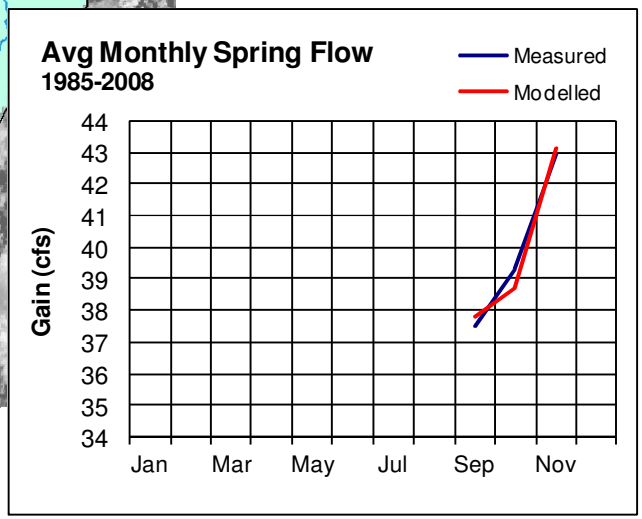


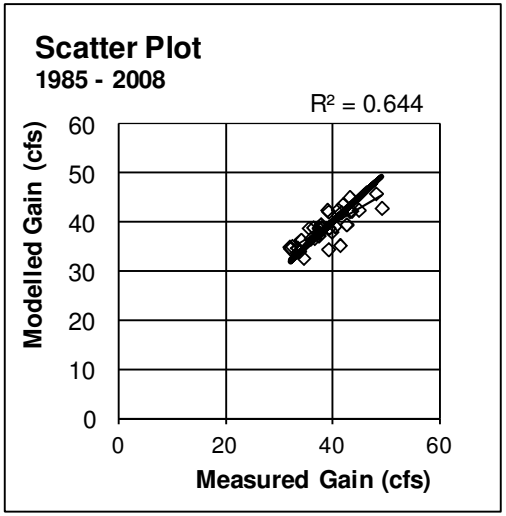


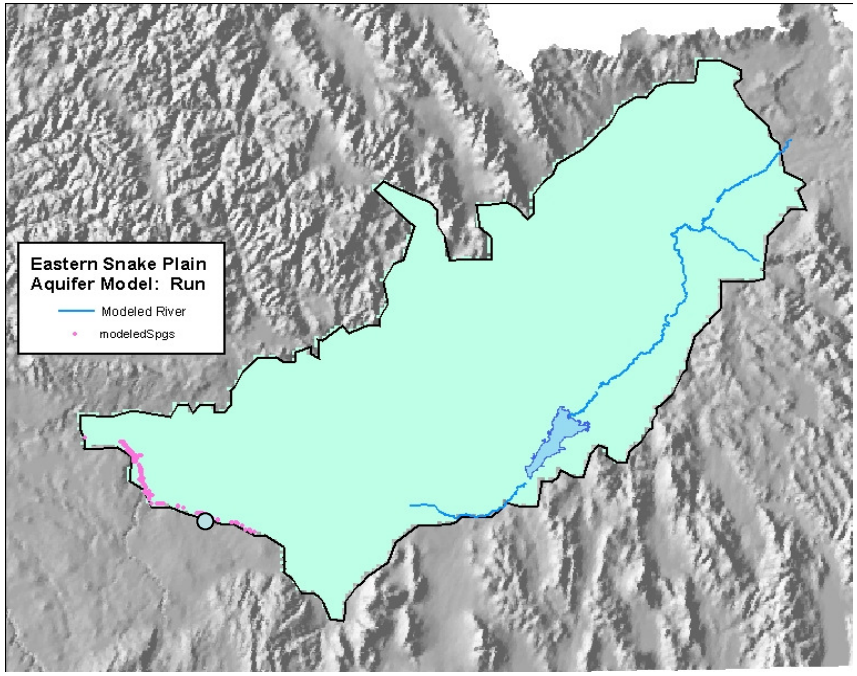
- Devils Corral


Devils Corral Spring Flow
Calibration Period (May 1985 - Sep 2008)
Measured
E121025A001
ESPAM2.0
Gain (cfs)
60
50
40
30
20
10
0
May 1980
May 1981
May 1982
May 1983
May 1984
May 1985
May 1986
May 1987
May 1988
May 1989
May 1990
May 1991
May 1992
May 1993
May 1994
May 1995
May 1996
May 1997
May 1998
May 1999
May 2000
May 2001
May 2002
May 2003
May 2004
May 2005
May 2006
May 2007
May 2008


Residuals
1980 - 2008
Residuals (cfs)
1985-2008 Cum Depart (MAF)
Residuals (cfs)
Cum Departure (MAF)
4
2
0
-2
-4
-6
-8
0.00
0.00
0.00
0.00
0.00
0.00
0.00
May 1980
May 1984
May 1988
May 1992
May 1996
May 2000
May 2004
May 2008

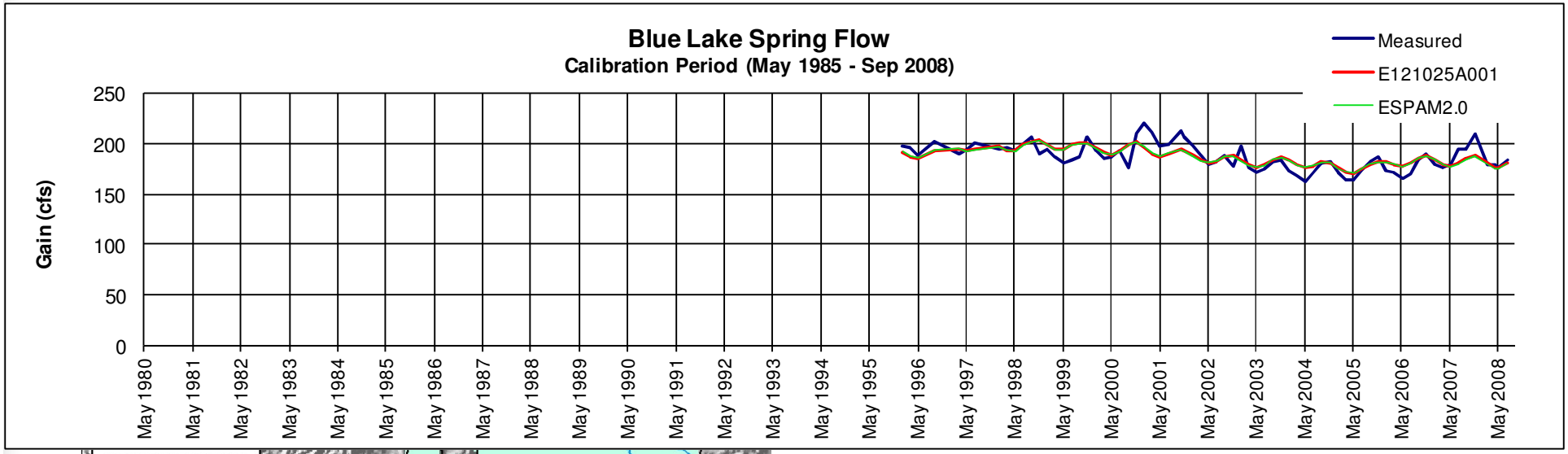

Avg Monthly Spring Flow
1985-2008
Measured
Modelled
Gain (cfs)
44
43
42
41
40
39
38
37
36
35
34
Jan
Mar
May
Jul
Sep
Nov

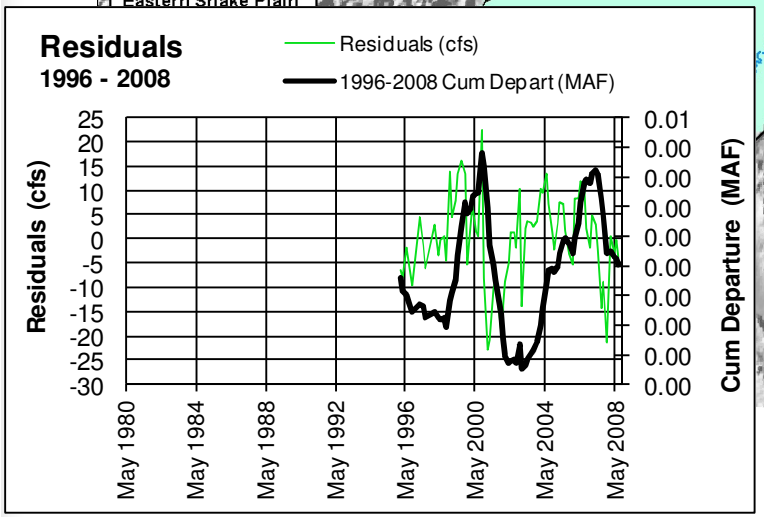

Scatter Plot
1985 - 2008
R² = 0.644
Modelled Gain (cfs)
60
50
40
30
20
10
0
0
20
40
60
Measured Gain (cfs)

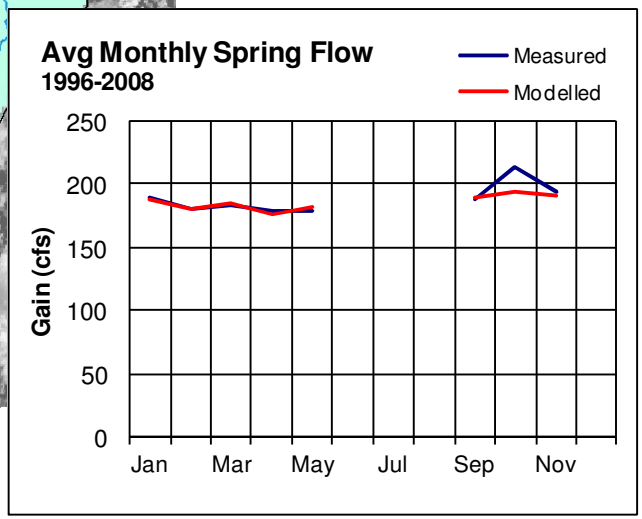

Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

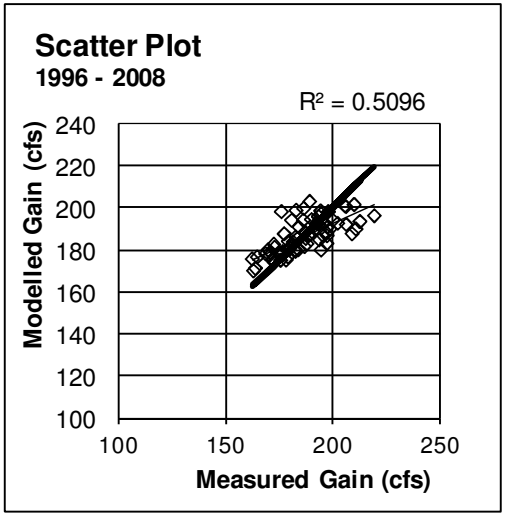
- Blue Lakes

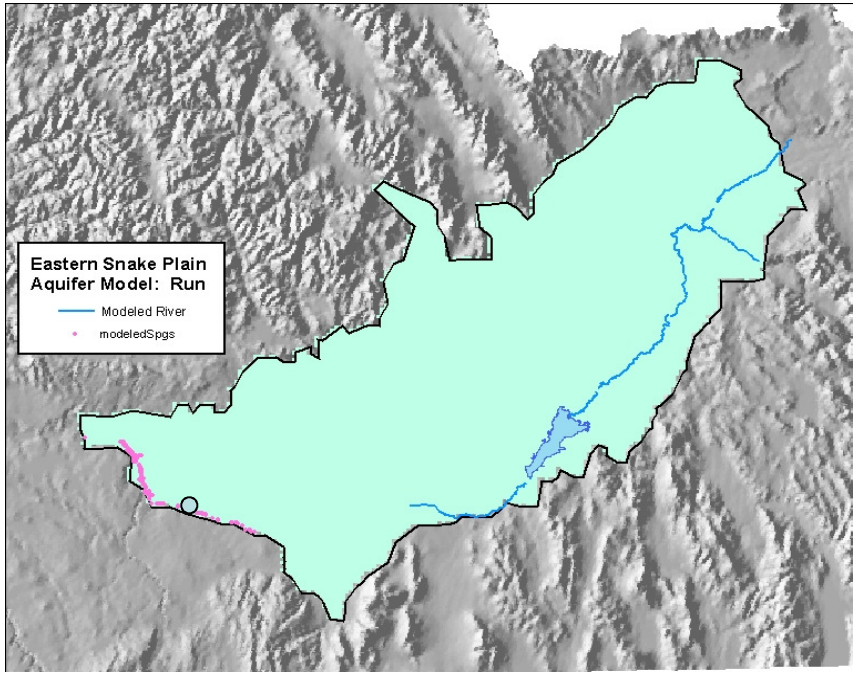
IDAHO Department of Water Resources





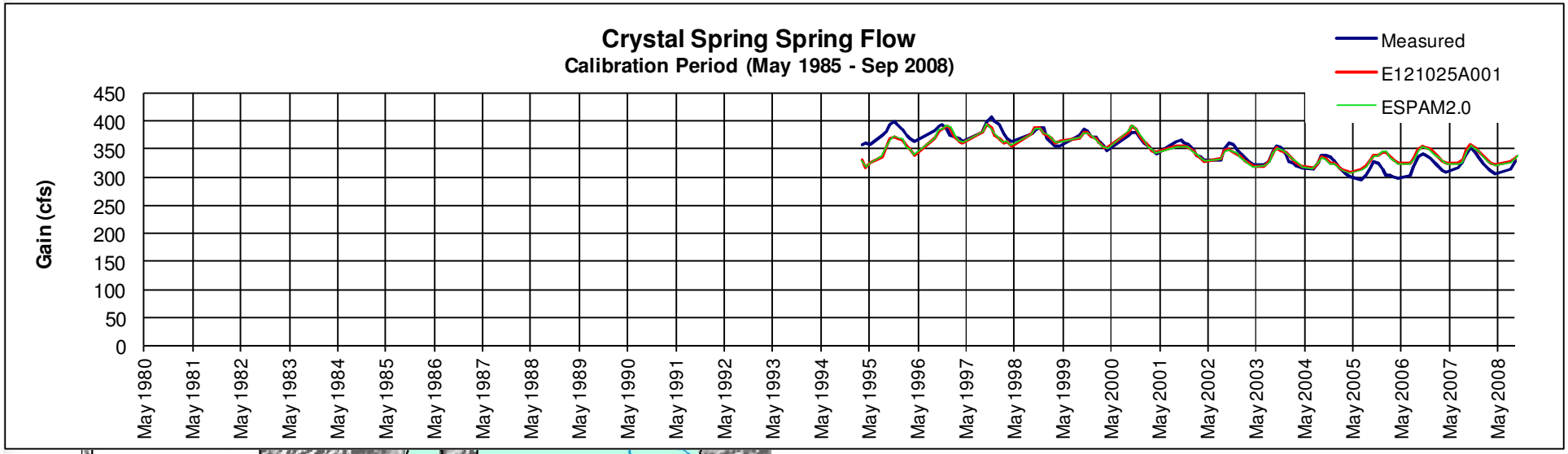


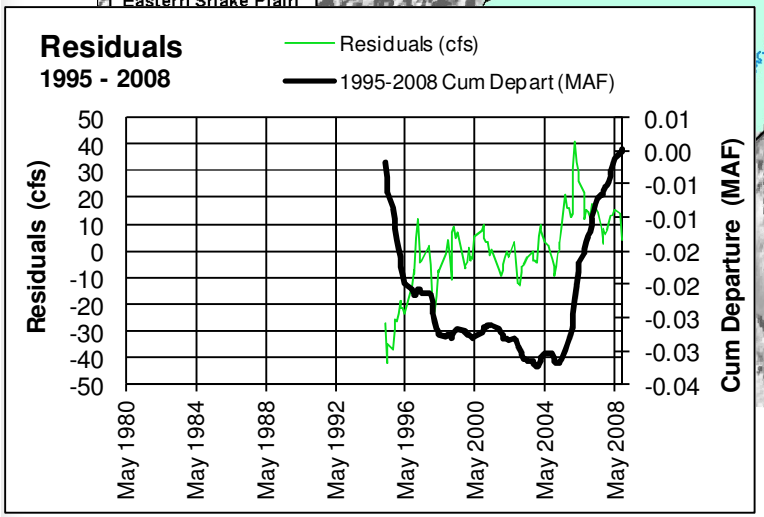


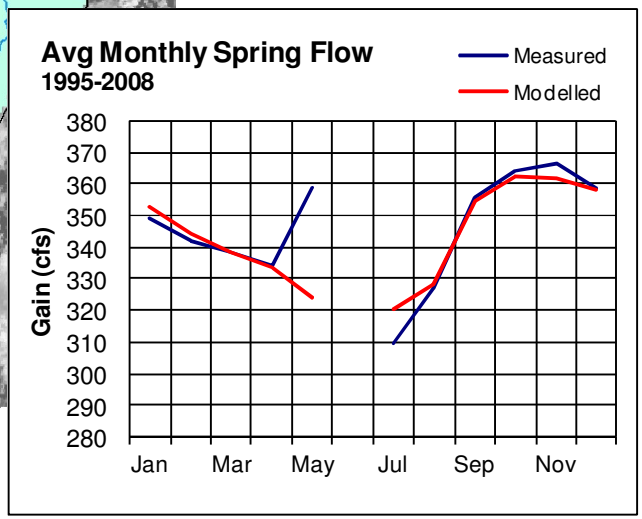


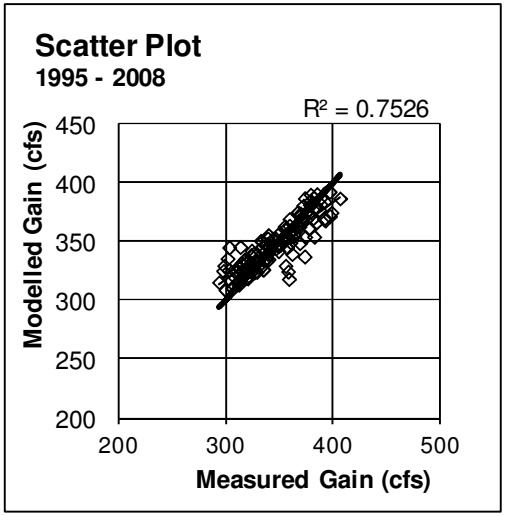
- Crystal Springs

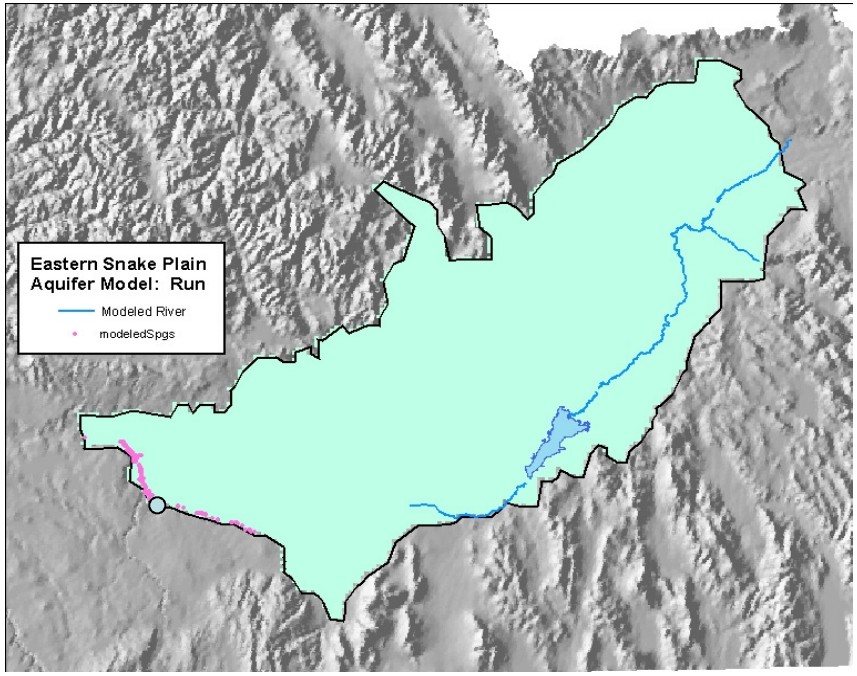
IDAHO Department of Water Resources





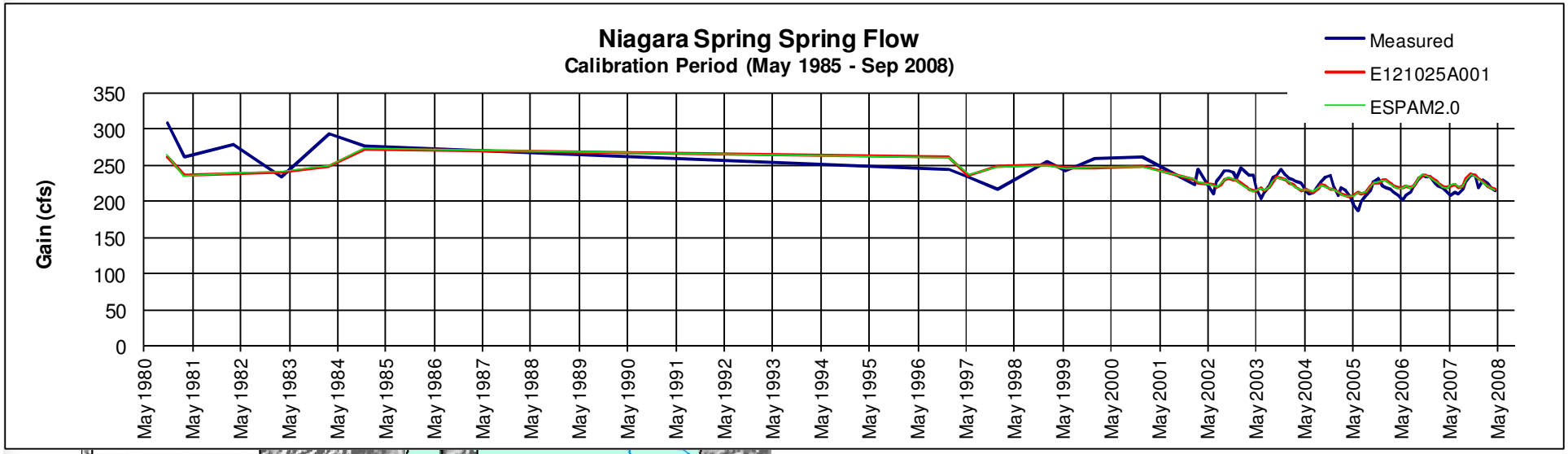


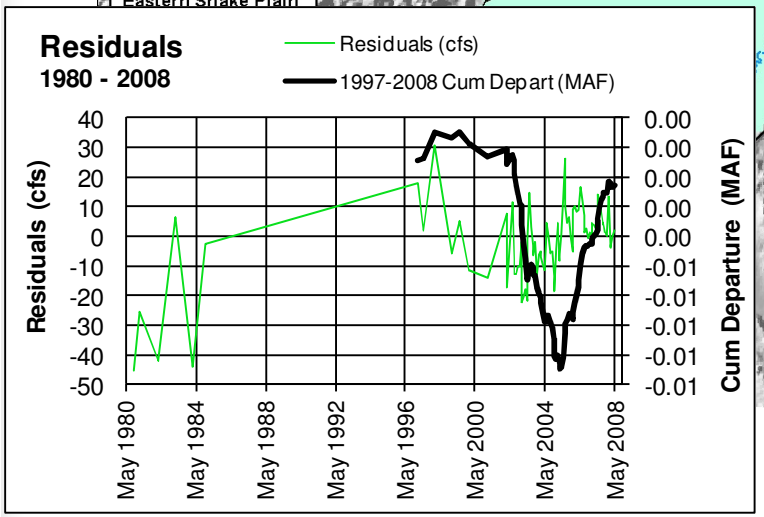


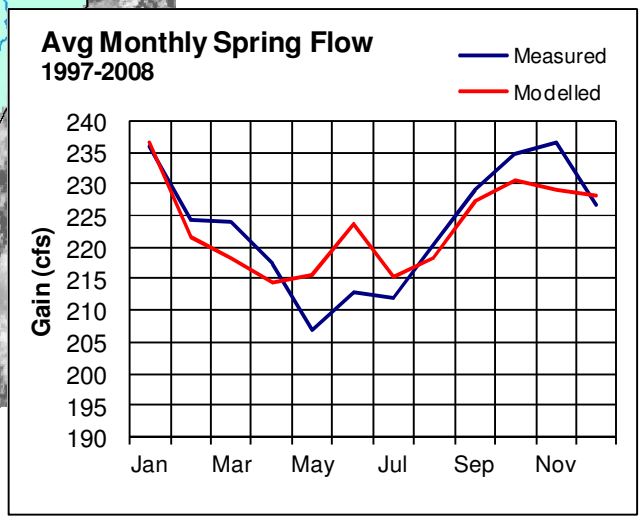

Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

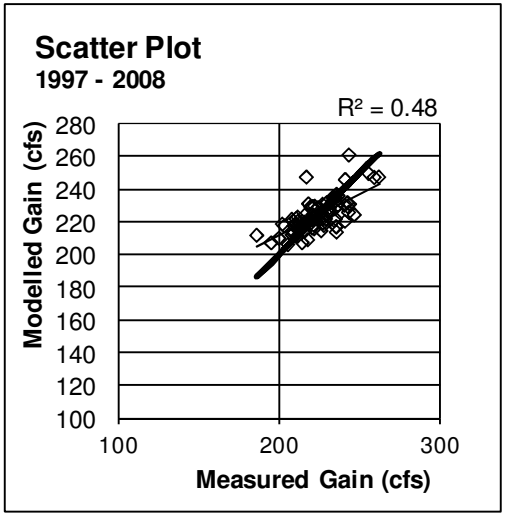
- Niagara

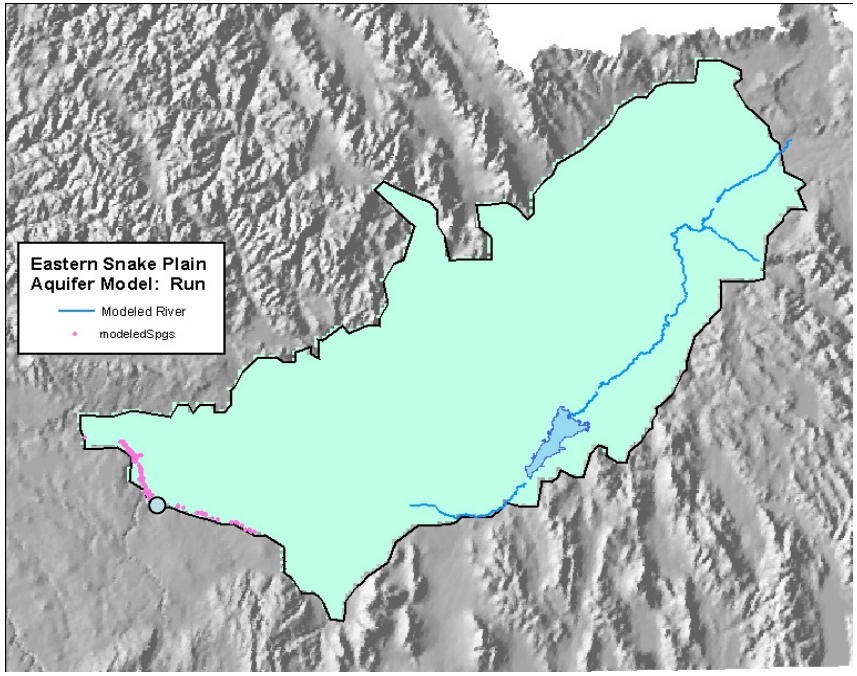
IDAHO Department of Water Resources



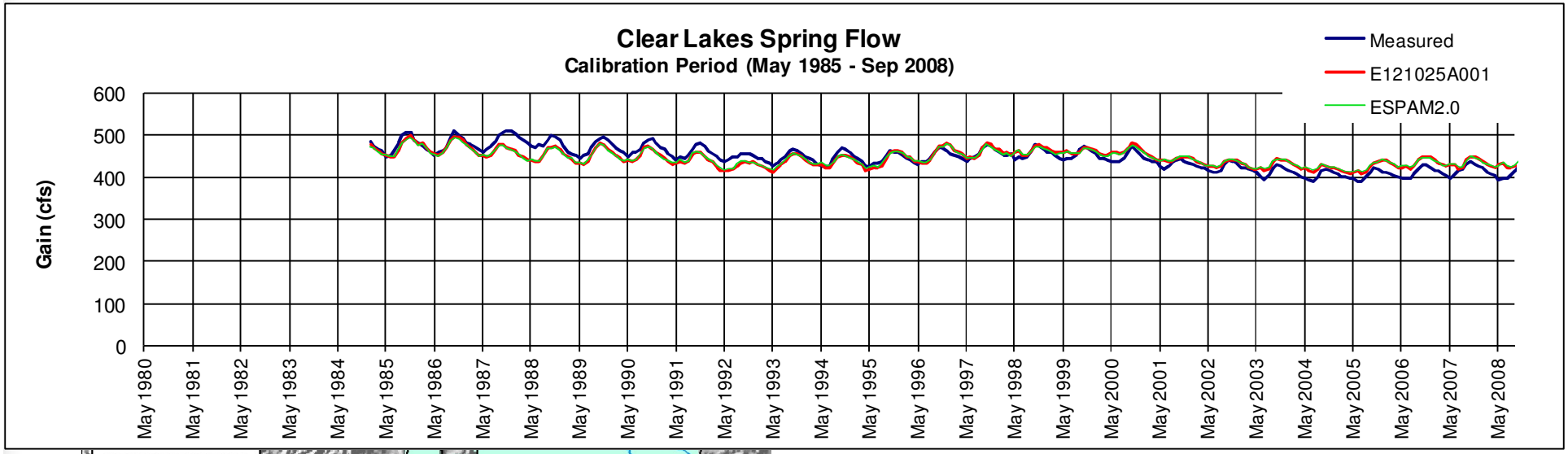


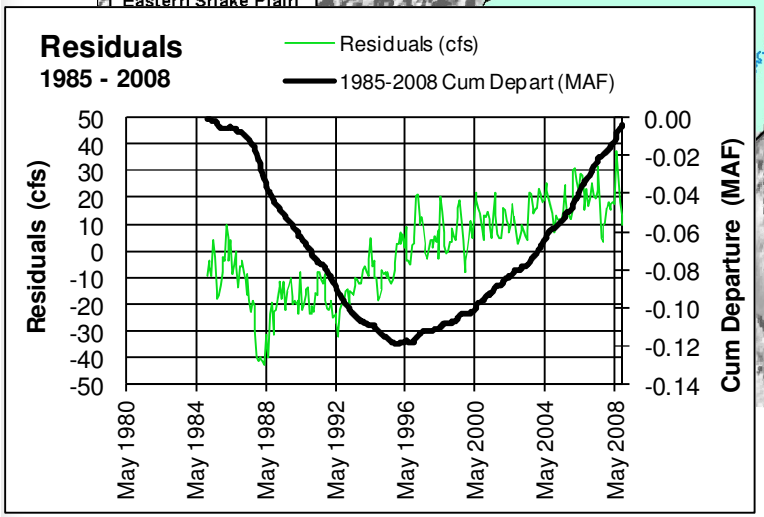


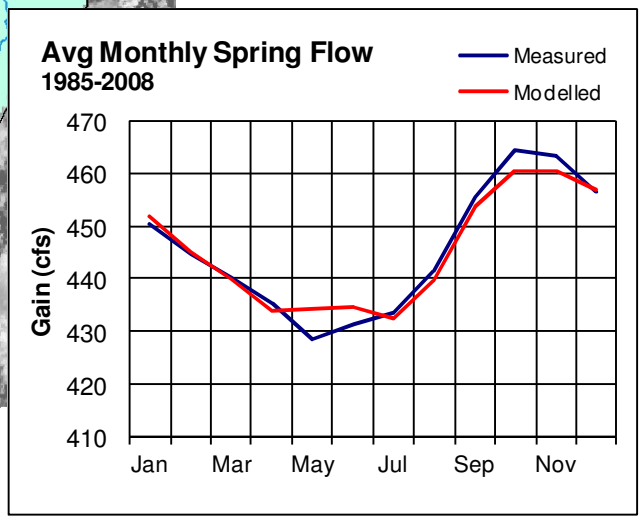


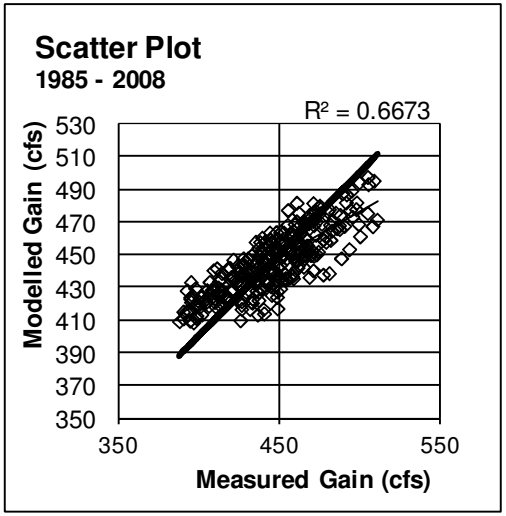

Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

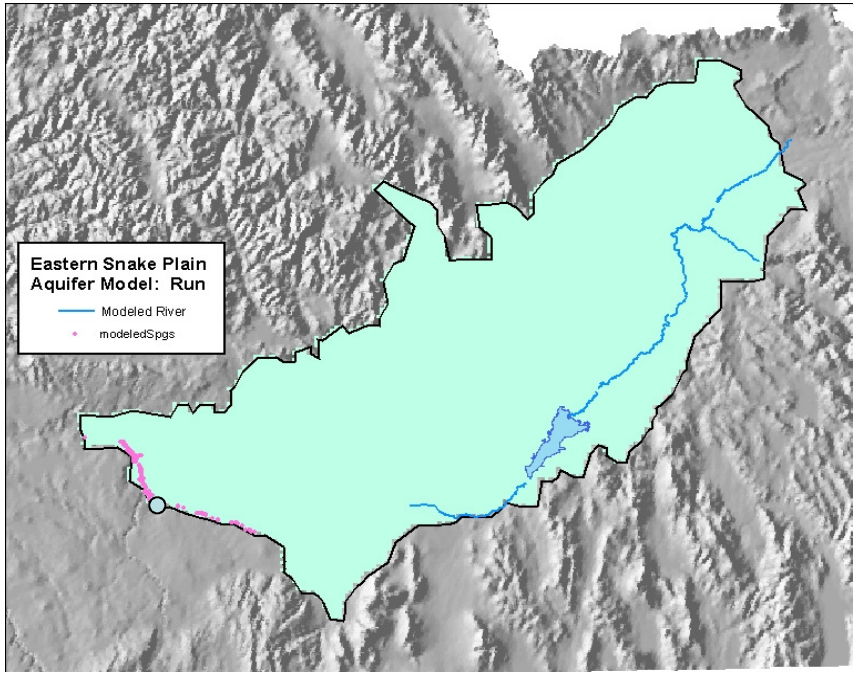
- Clear Lakes


Clear Lakes Spring Flow
Calibration Period (May 1985 - Sep 2008)
Measured
E121025A001
ESPAM2.0
Gain (cfs)
600
500
400
300
200
100
0
May 1980
May 1981
May 1982
May 1983
May 1984
May 1985
May 1986
May 1987
May 1988
May 1989
May 1990
May 1991
May 1992
May 1993
May 1994
May 1995
May 1996
May 1997
May 1998
May 1999
May 2000
May 2001
May 2002
May 2003
May 2004
May 2005
May 2006
May 2007
May 2008

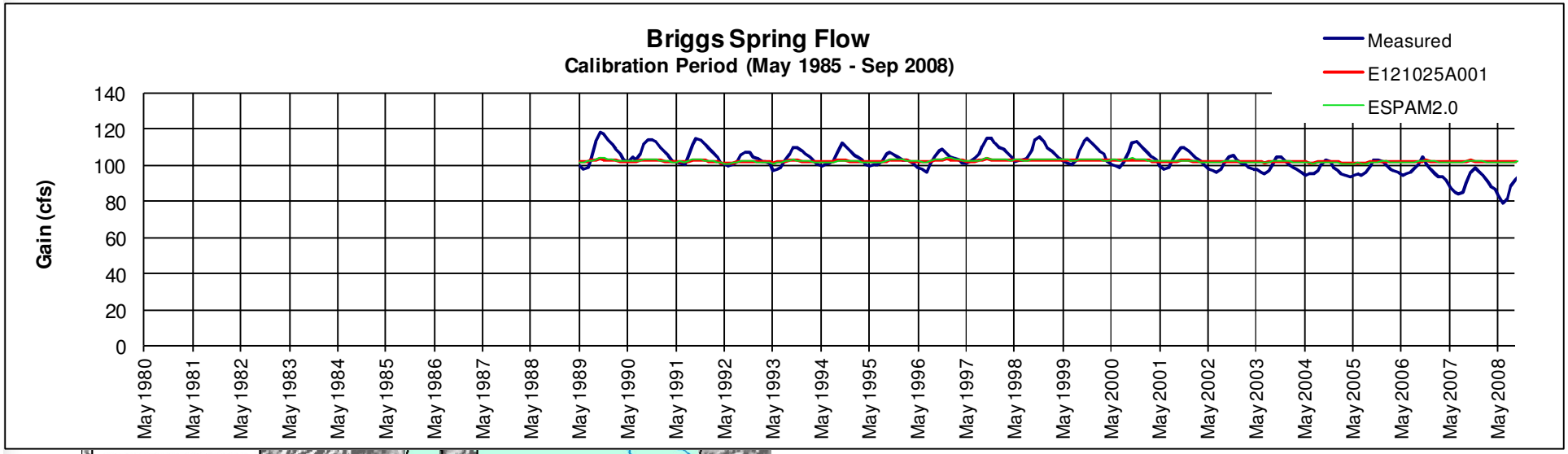

Residuals
1985 - 2008
Residuals (cfs)
1985-2008 Cum Depart (MAF)
Residuals (cfs)
Cum Departure (MAF)
50
40
30
20
10
0
-10
-20
-30
-40
-50
0.00
-0.02
-0.04
-0.06
-0.08
-0.10
-0.12
-0.14
May 1980
May 1984
May 1988
May 1992
May 1996
May 2000
May 2004
May 2008

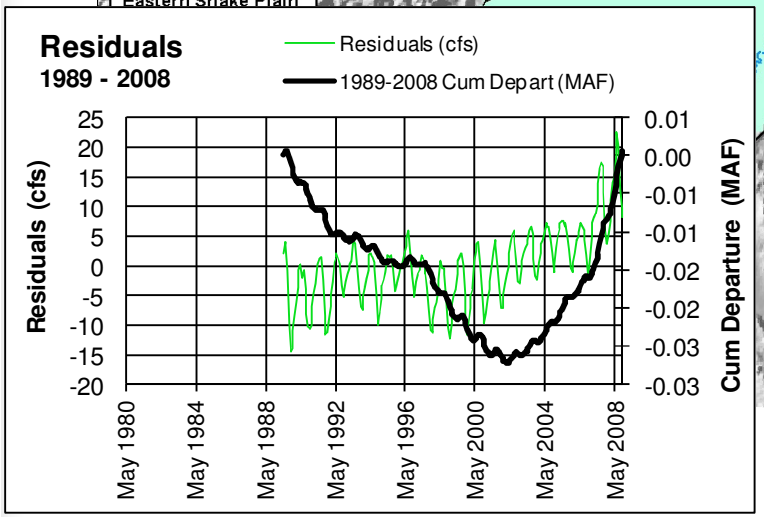

Avg Monthly Spring Flow
1985-2008
Measured
Modelled
Gain (cfs)
470
460
450
440
430
420
410
Jan
Mar
May
Jul
Sep
Nov

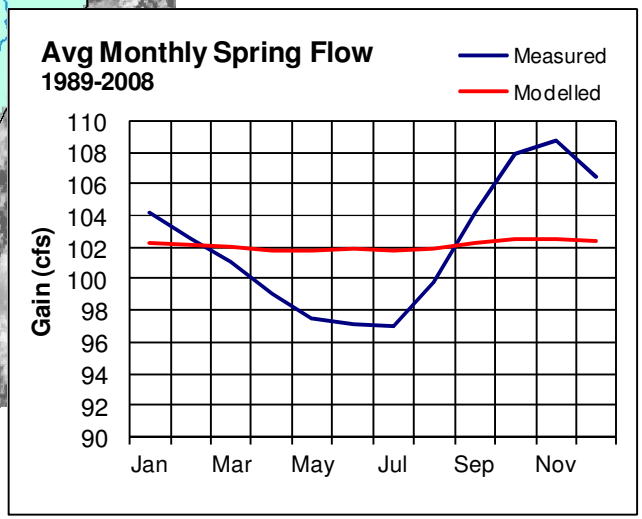

Scatter Plot
1985 - 2008
R² = 0.6673
Modelled Gain (cfs)
530
510
490
470
450
430
410
390
370
350
350
450
550
Measured Gain (cfs)

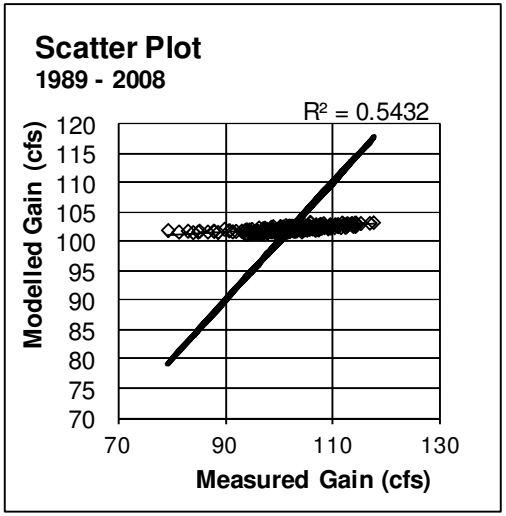


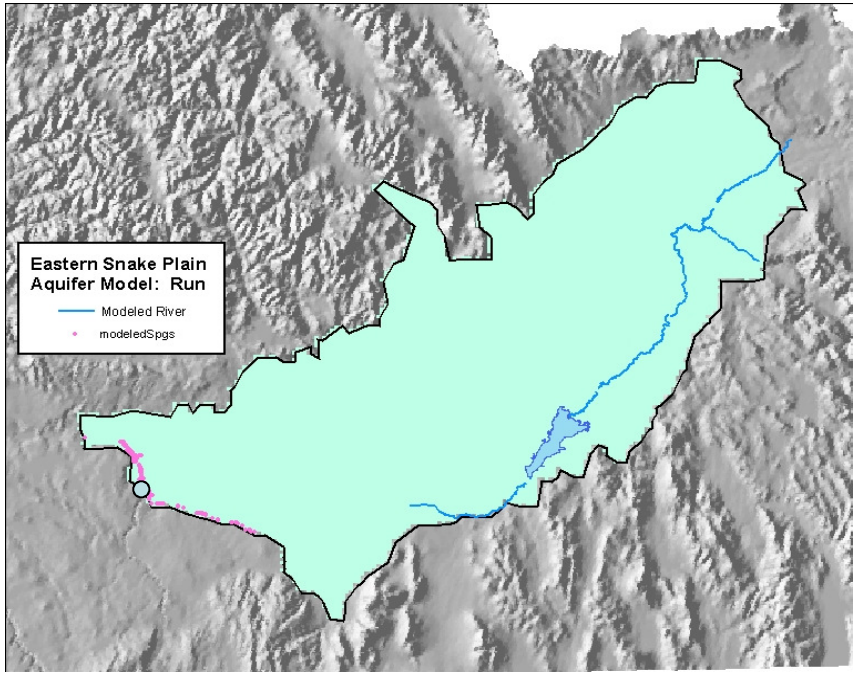
- Briggs Spring


Briggs Spring Flow
Calibration Period (May 1985 - Sep 2008)
Measured
E121025A001
ESPAM2.0
Gain (cfs)
140
120
100
80
60
40
20
0
May 1980
May 1981
May 1982
May 1983
May 1984
May 1985
May 1986
May 1987
May 1988
May 1989
May 1990
May 1991
May 1992
May 1993
May 1994
May 1995
May 1996
May 1997
May 1998
May 1999
May 2000
May 2001
May 2002
May 2003
May 2004
May 2005
May 2006
May 2007
May 2008


Residuals
1989 - 2008
Residuals (cfs)
1989-2008 Cum Depart (MAF)
Residuals (cfs)
25
20
15
10
5
0
-5
-10
-15
-20
Cum Departure (MAF)
0.01
0.00
-0.01
-0.01
-0.02
-0.02
-0.03
-0.03
May 1980
May 1984
May 1988
May 1992
May 1996
May 2000
May 2004
May 2008


Avg Monthly Spring Flow
1989-2008
Measured
Modelled
Gain (cfs)
110
108
106
104
102
100
98
96
94
92
90
Jan
Mar
May
Jul
Sep
Nov


Scatter Plot
1989 - 2008
R² = 0.5432
Modelled Gain (cfs)
120
115
110
105
100
95
90
85
80
75
70
70
90
110
130
Measured Gain (cfs)



- Box Canyon Spring

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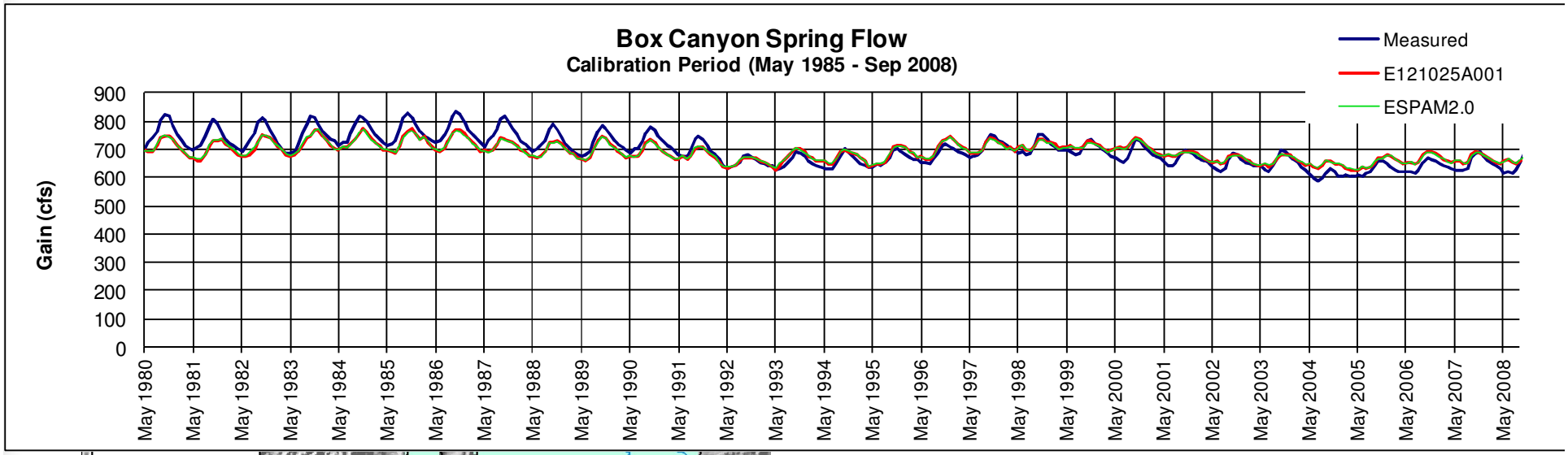

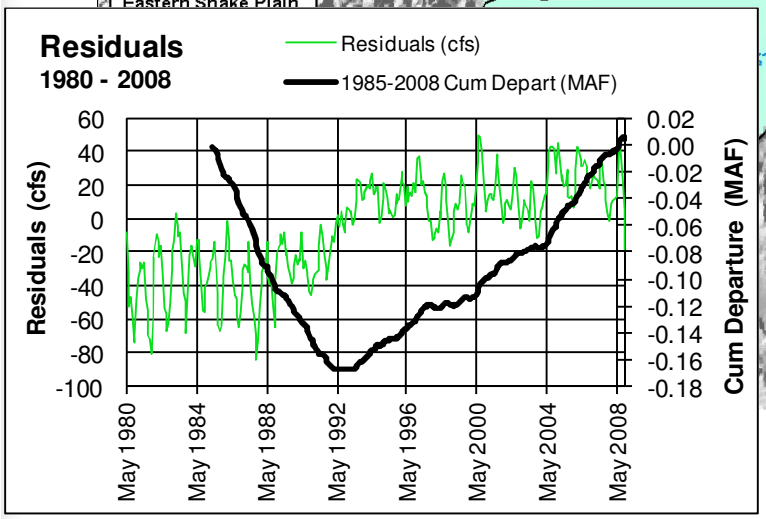

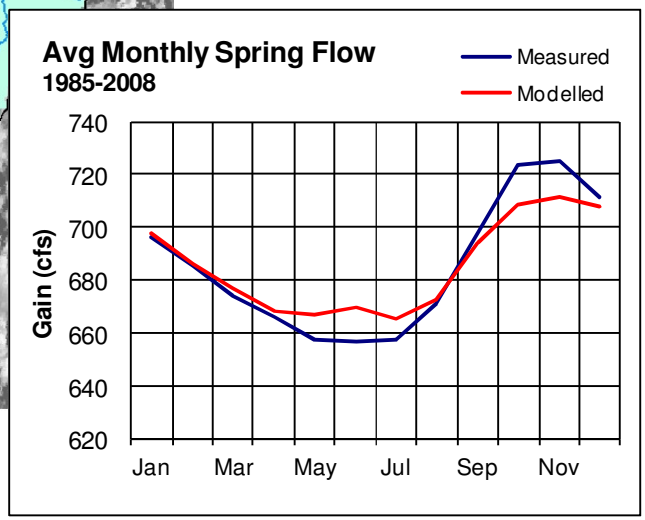

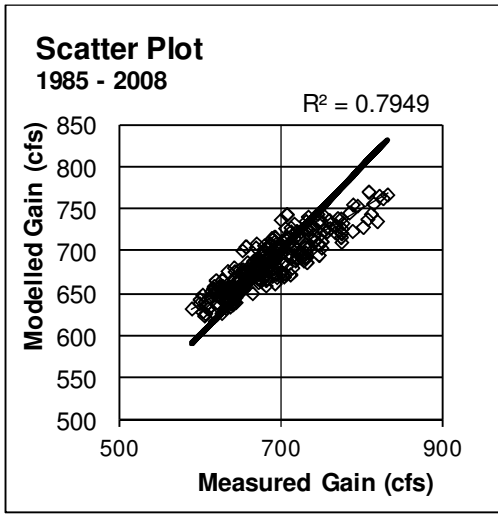

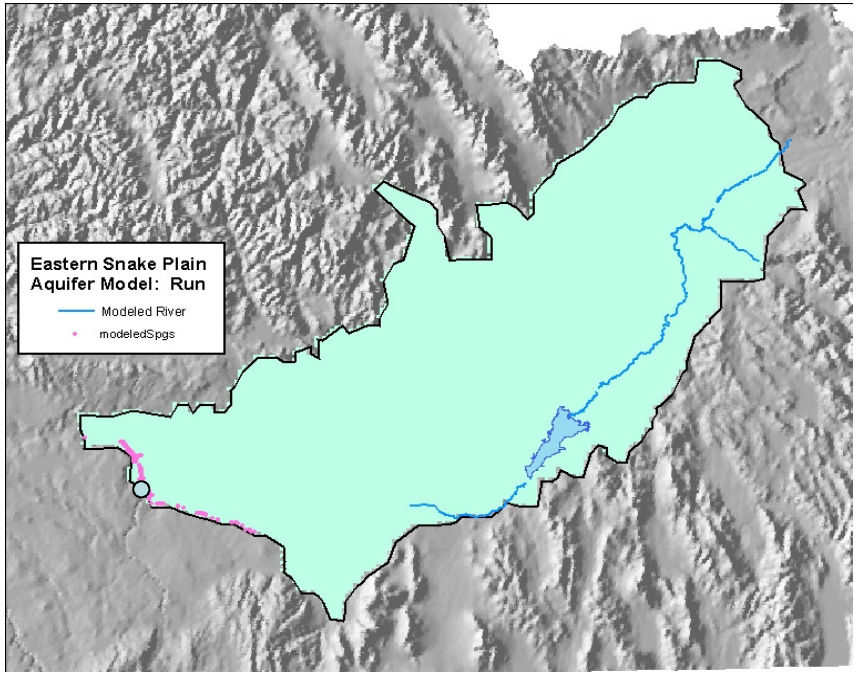

- Sand Springs

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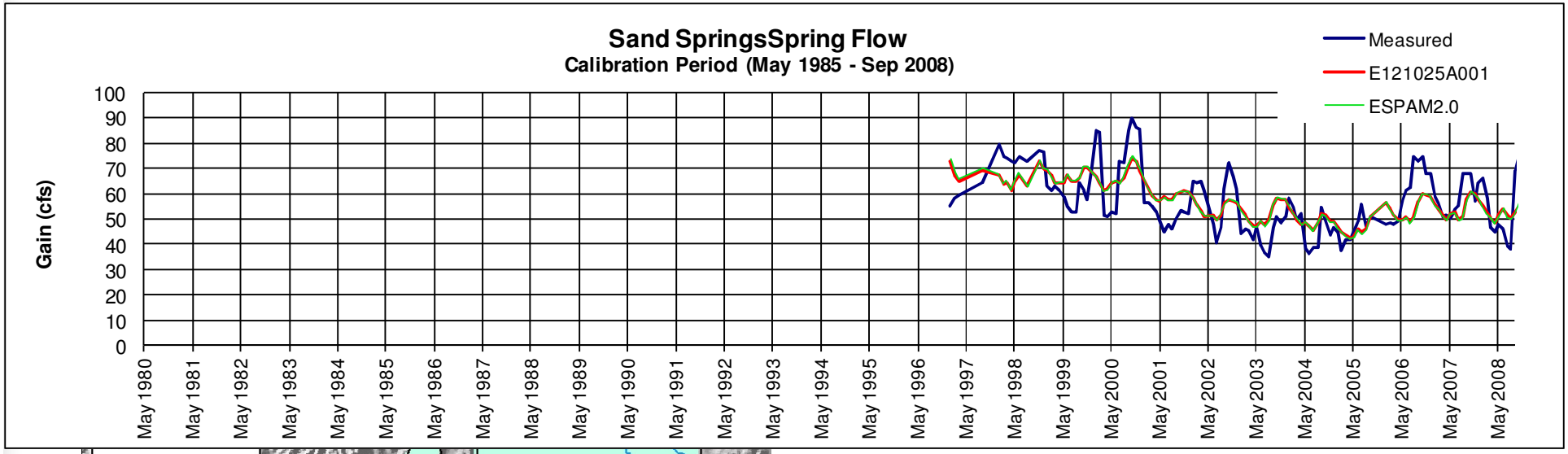

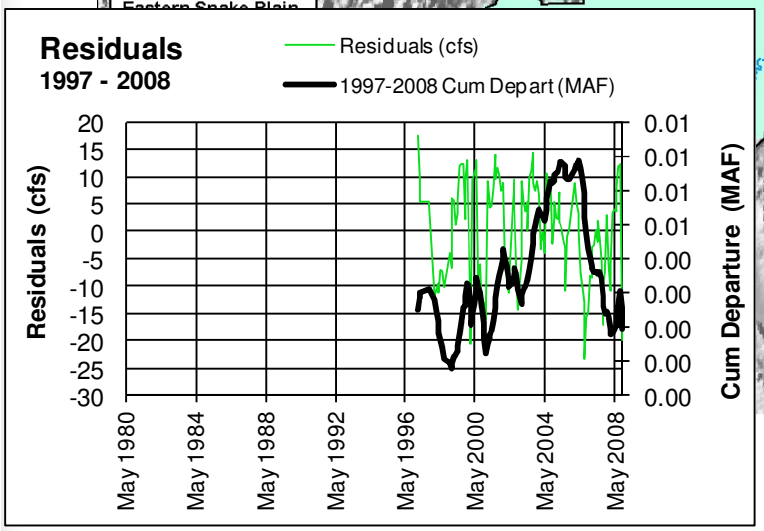

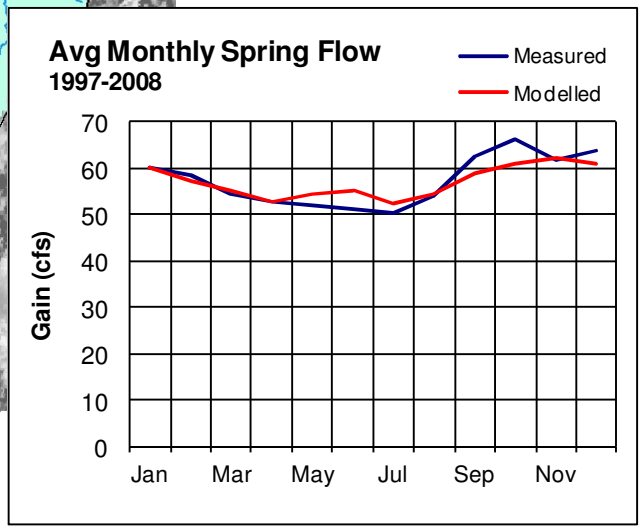

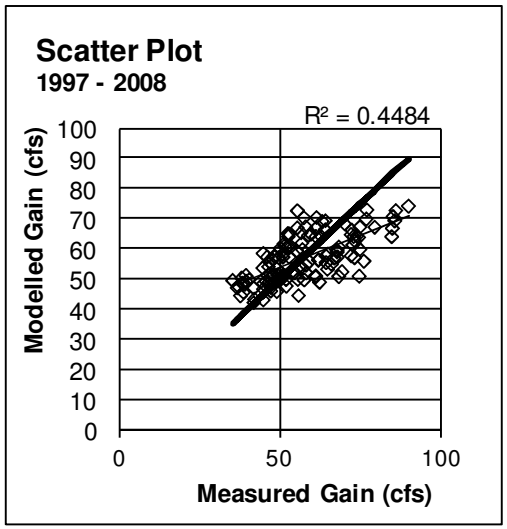

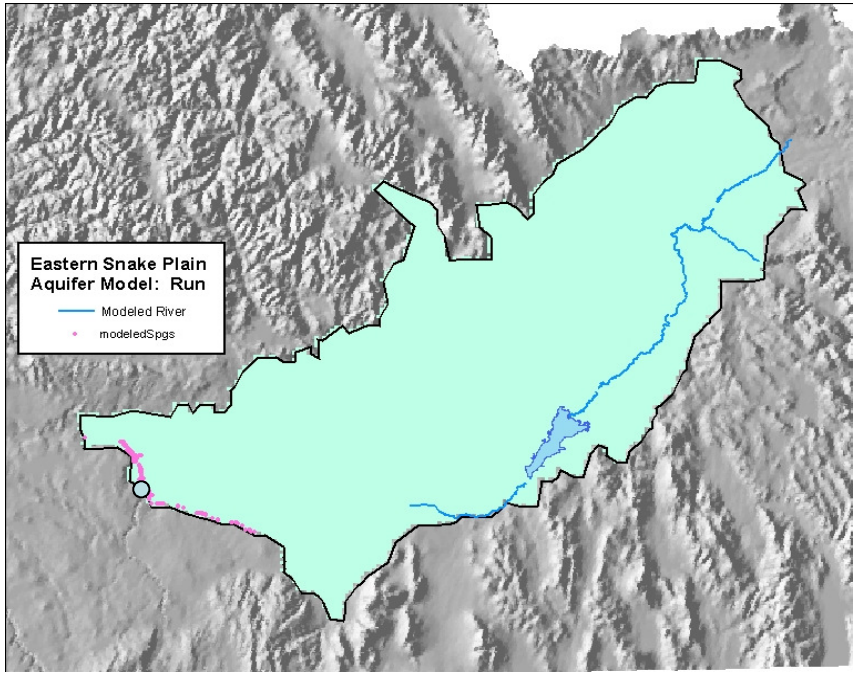

- Thousand Springs

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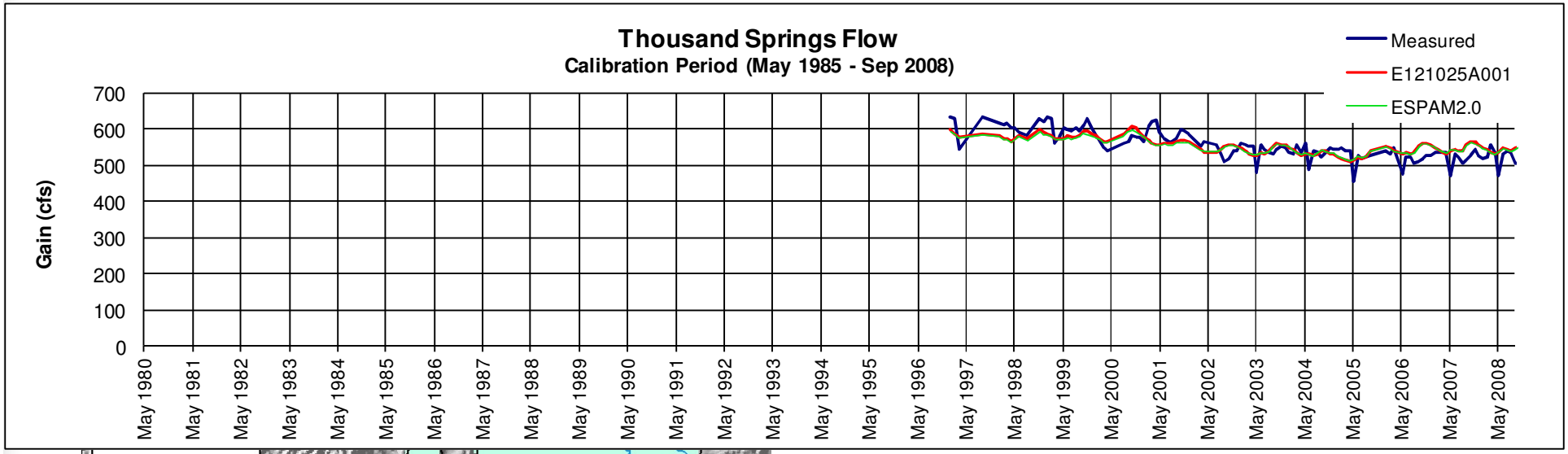
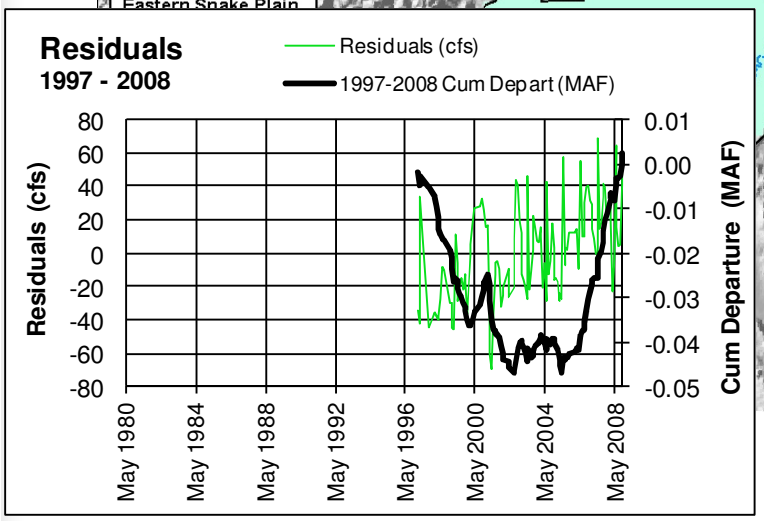
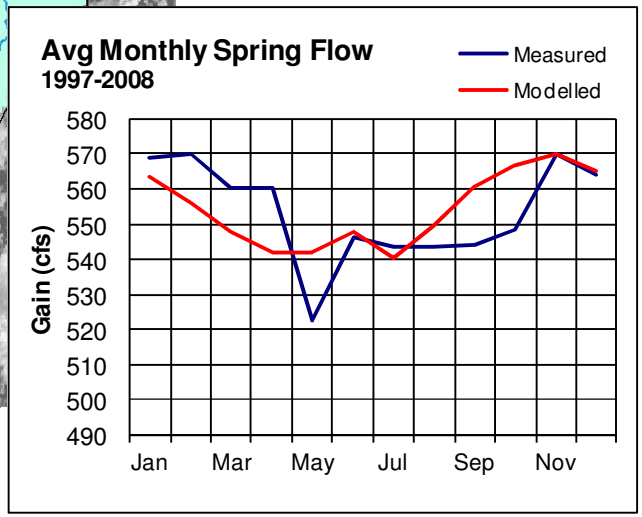
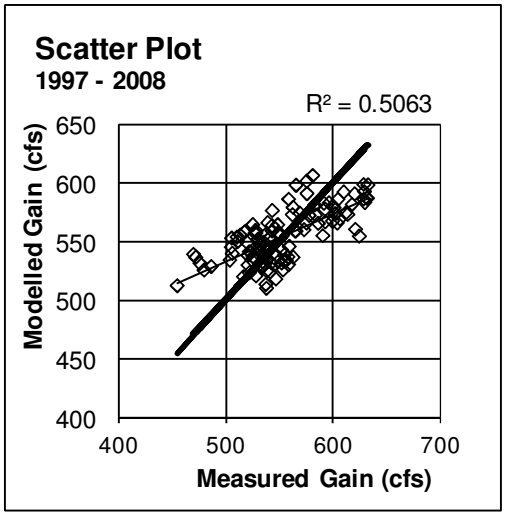
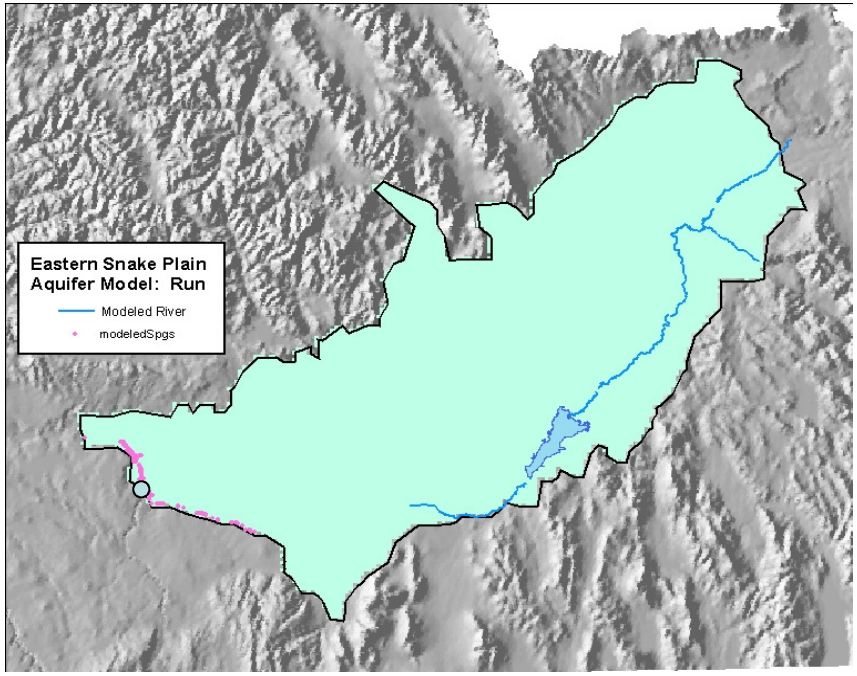




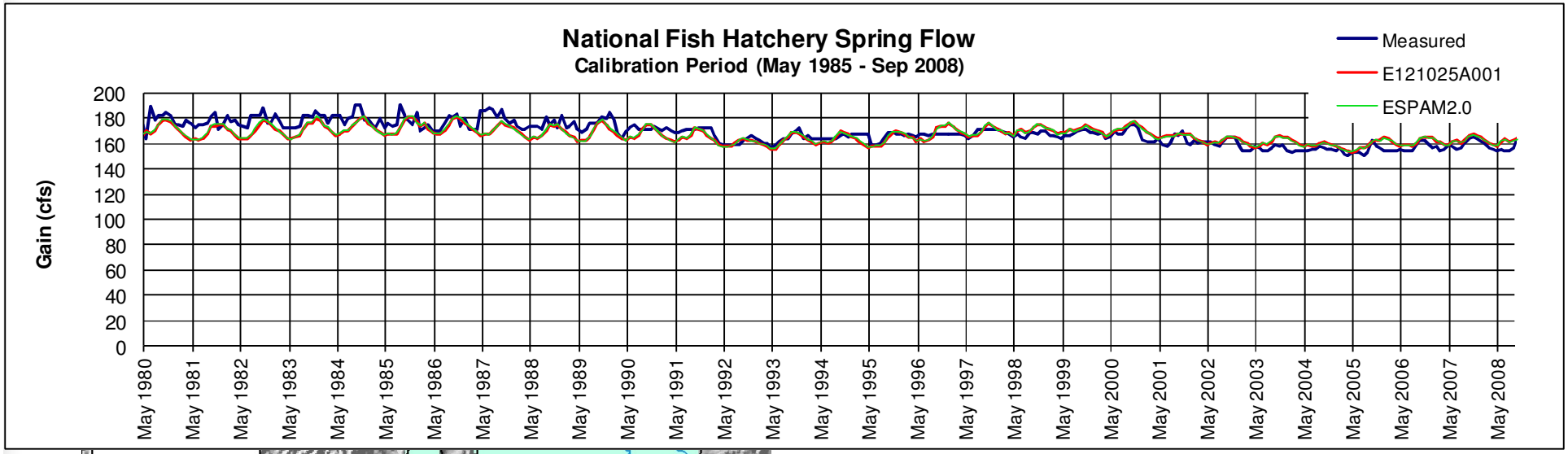


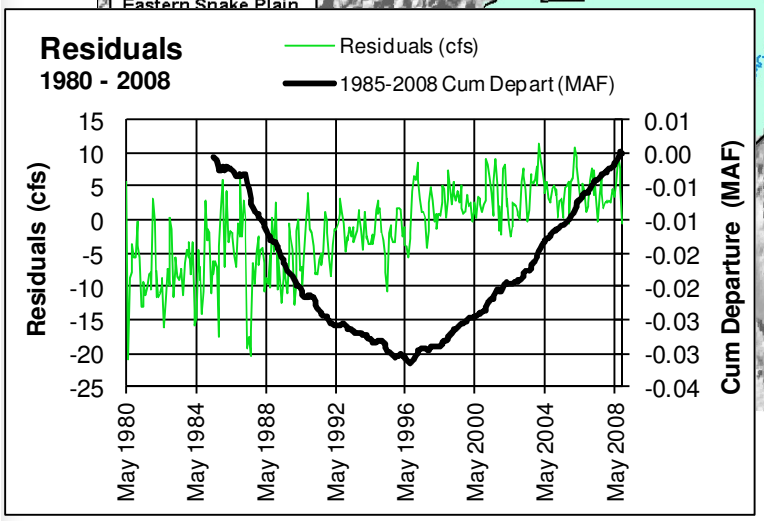


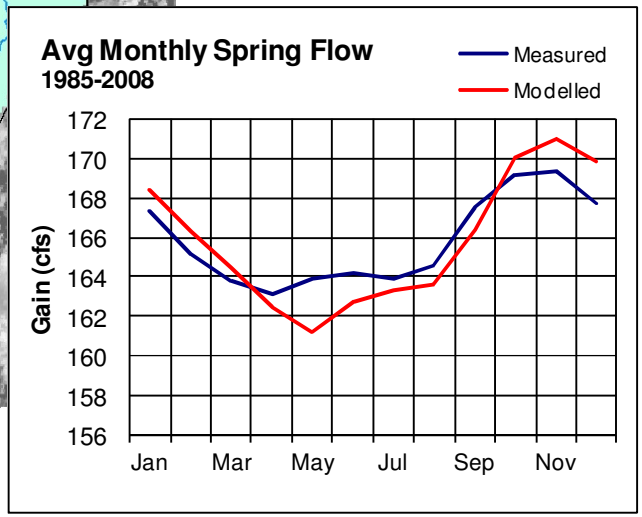


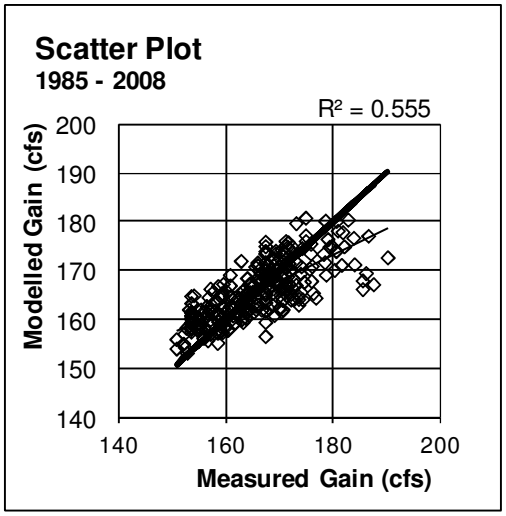
- Ntl Fish Hatchery

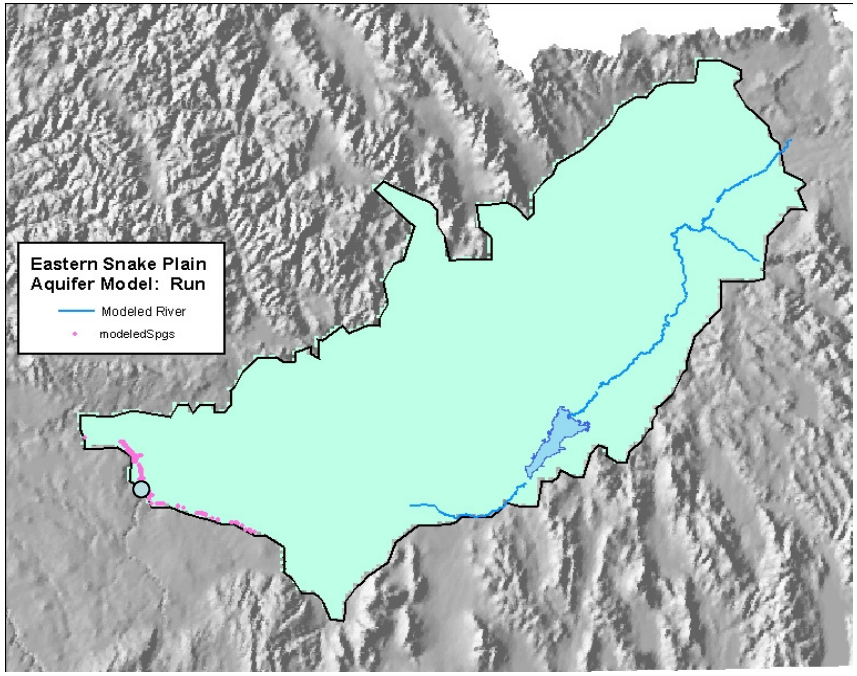
IDAHO Department of Water Resources



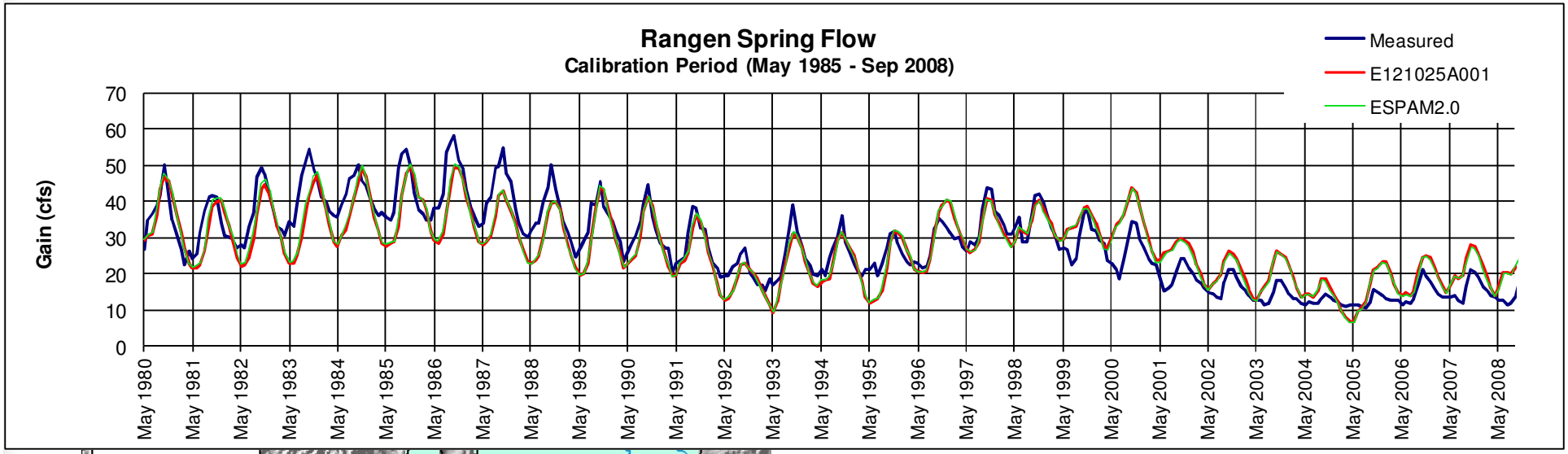


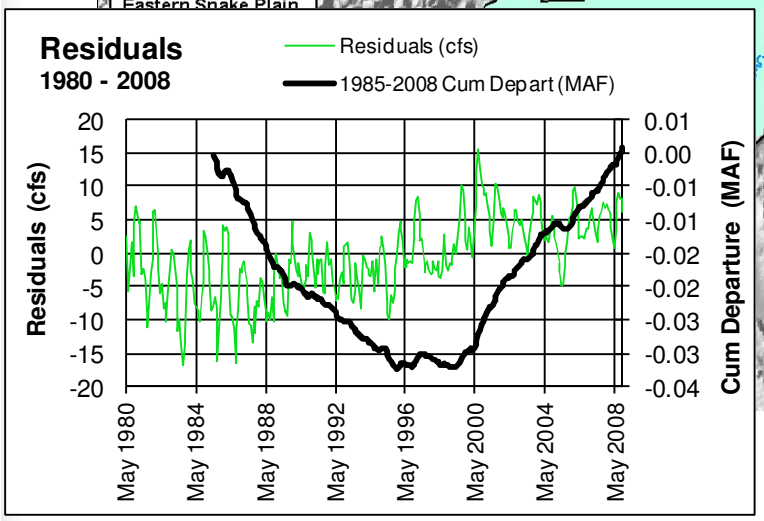


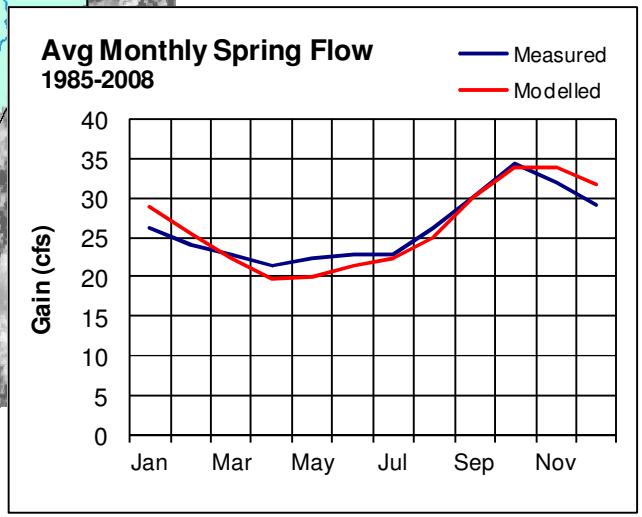


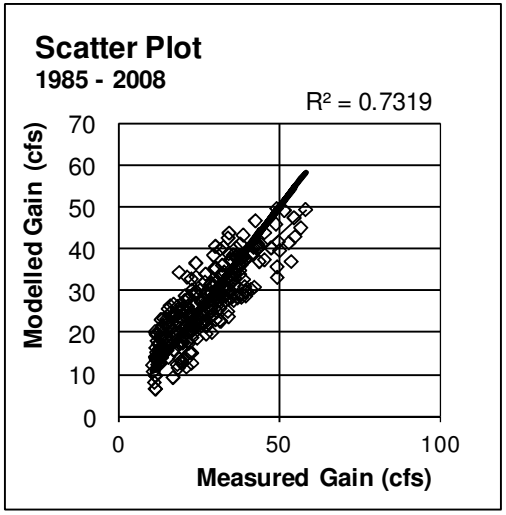


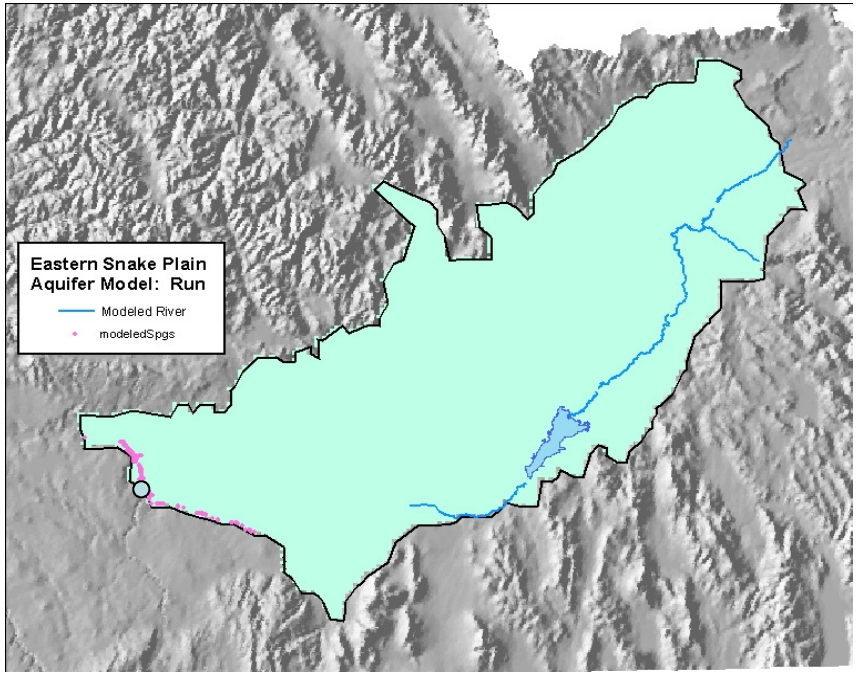
- Rangen Spring


Rangen Spring Flow
Calibration Period (May 1985 - Sep 2008)
Measured
E121025A001
ESPAM2.0
Gain (cfs)
70
60
50
40
30
20
10
0
May 1980
May 1981
May 1982
May 1983
May 1984
May 1985
May 1986
May 1987
May 1988
May 1989
May 1990
May 1991
May 1992
May 1993
May 1994
May 1995
May 1996
May 1997
May 1998
May 1999
May 2000
May 2001
May 2002
May 2003
May 2004
May 2005
May 2006
May 2007
May 2008

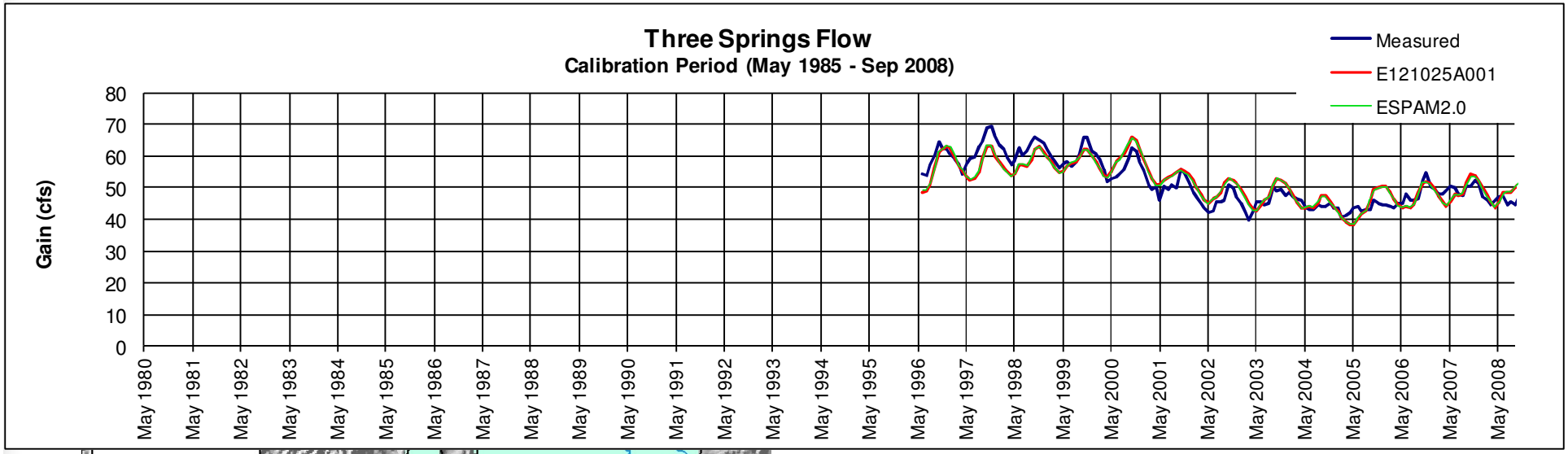

Residuals
1980 - 2008
Residuals (cfs)
1985-2008 Cum Depart (MAF)
Residuals (cfs)
Cum Departure (MAF)
20
15
10
5
0
-5
-10
-15
-20
0.01
0.00
-0.01
-0.01
-0.02
-0.02
-0.03
-0.03
-0.04
May 1980
May 1984
May 1988
May 1992
May 1996
May 2000
May 2004
May 2008

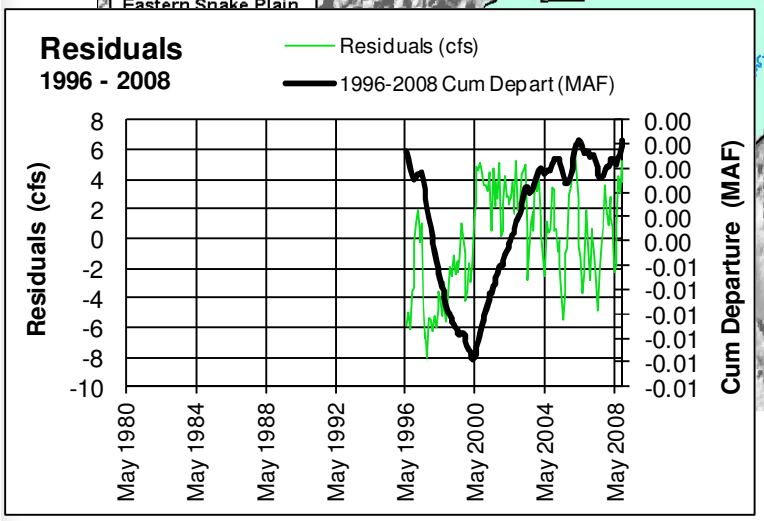

Avg Monthly Spring Flow
1985-2008
Measured
Modelled
Gain (cfs)
40
35
30
25
20
15
10
5
0
Jan
Mar
May
Jul
Sep
Nov

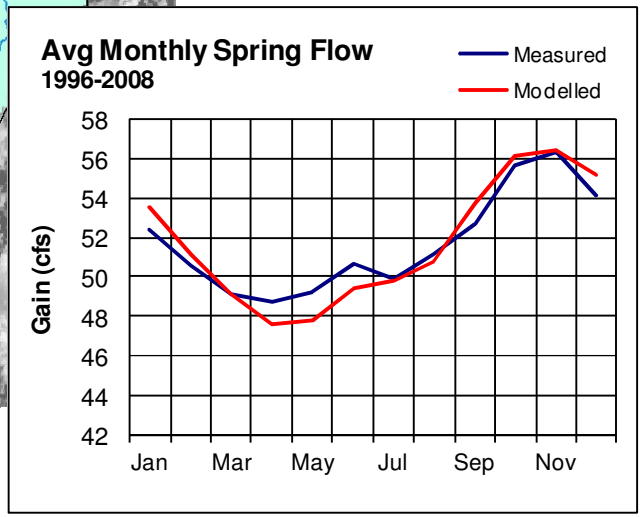

Scatter Plot
1985 - 2008
R² = 0.7319
Modelled Gain (cfs)
70
60
50
40
30
20
10
0
0
50
100
Measured Gain (cfs)

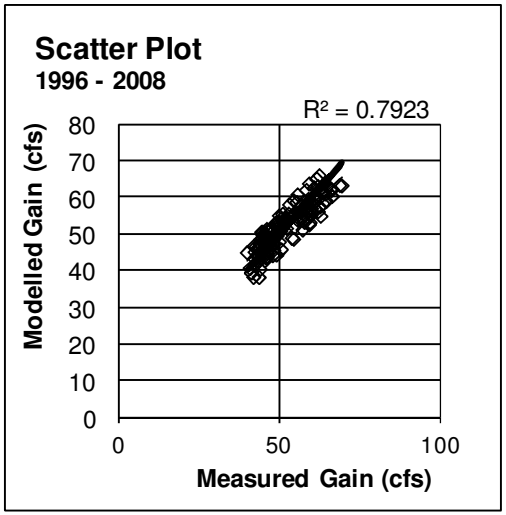


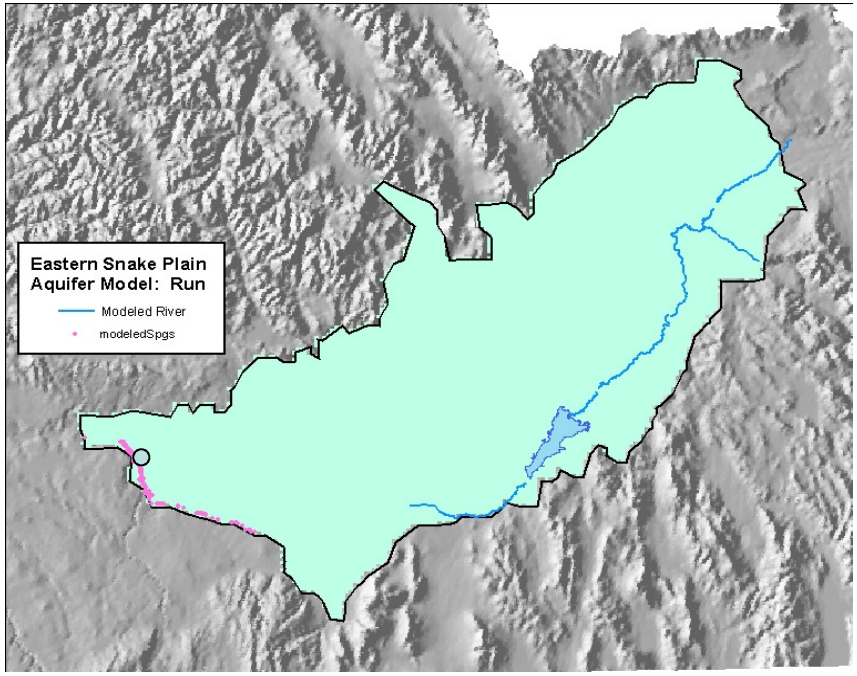
- Three Springs


Three Springs Flow
Calibration Period (May 1985 - Sep 2008)
Measured
E121025A001
ESPAM2.0
Gain (cfs)
80
70
60
50
40
30
20
10
0
May 1980
May 1981
May 1982
May 1983
May 1984
May 1985
May 1986
May 1987
May 1988
May 1989
May 1990
May 1991
May 1992
May 1993
May 1994
May 1995
May 1996
May 1997
May 1998
May 1999
May 2000
May 2001
May 2002
May 2003
May 2004
May 2005
May 2006
May 2007
May 2008


Residuals
1996 - 2008
Residuals (cfs)
1996-2008 Cum Depart (MAF)
Residuals (cfs)
Cum Departure (MAF)
8
6
4
2
0
-2
-4
-6
-8
-10
0.00
0.00
0.00
0.00
0.00
0.00
-0.01
-0.01
-0.01
-0.01
-0.01
-0.01
May 1980
May 1984
May 1988
May 1992
May 1996
May 2000
May 2004
May 2008


Avg Monthly Spring Flow
1996-2008
Measured
Modelled
Gain (cfs)
58
56
54
52
50
48
46
44
42
Jan
Mar
May
Jul
Sep
Nov


Scatter Plot
1996 - 2008
R² = 0.7923
Modelled Gain (cfs)
80
70
60
50
40
30
20
10
0
0
50
100
Measured Gain (cfs)


Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Malad

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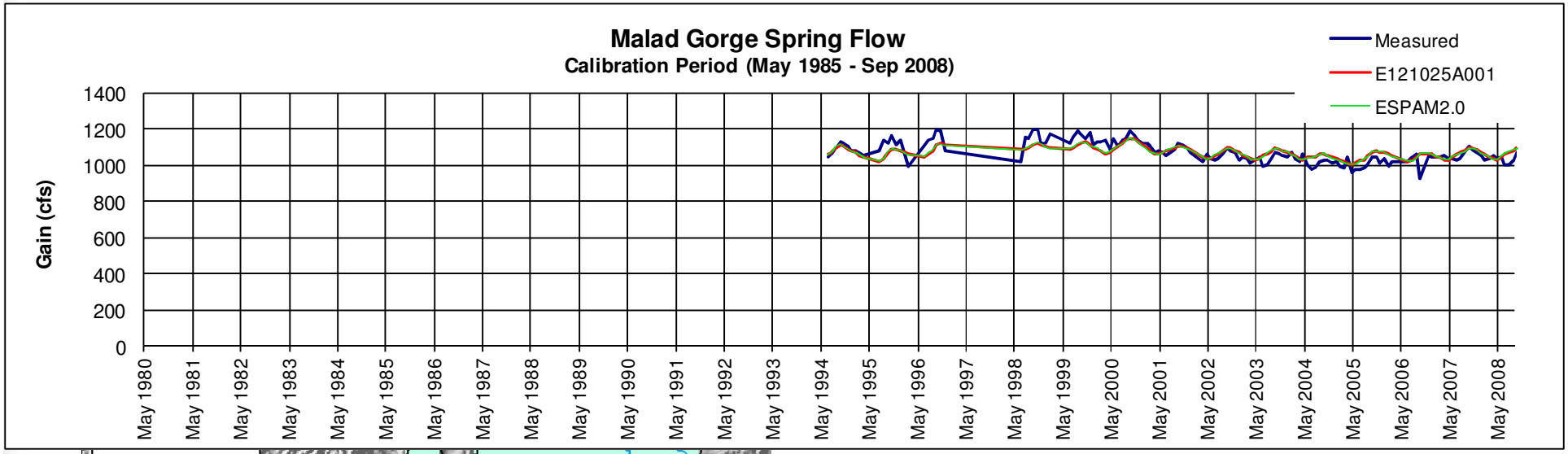
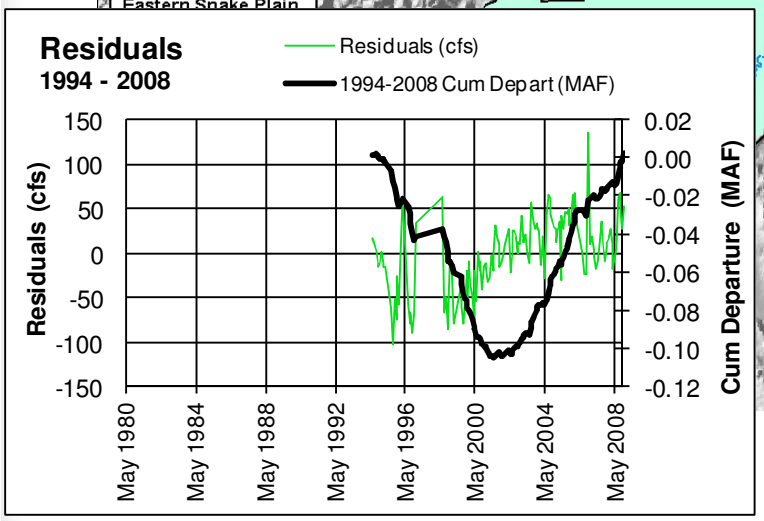
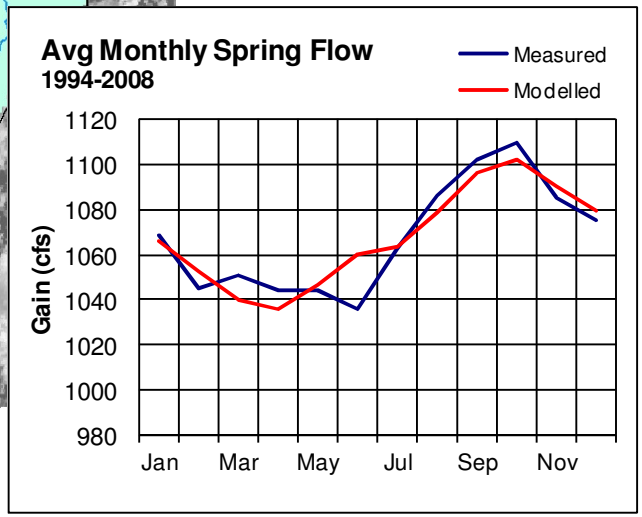
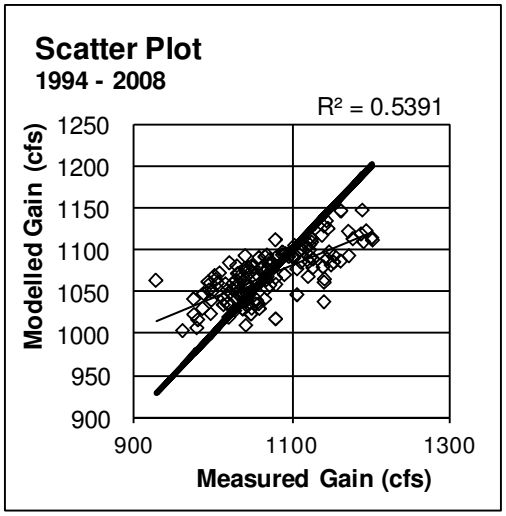


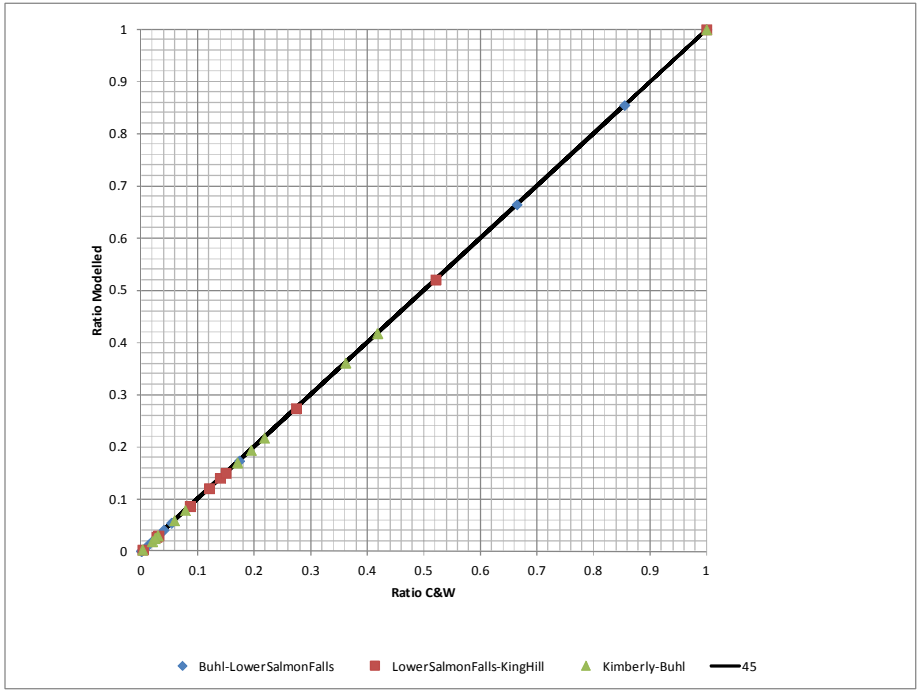






Group C Springs

ESPAM02



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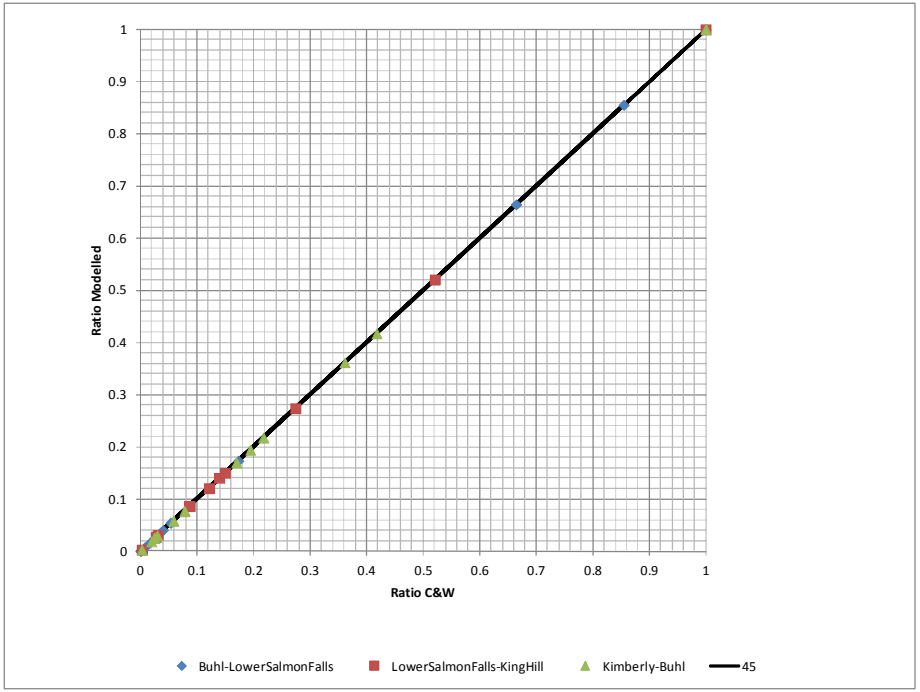
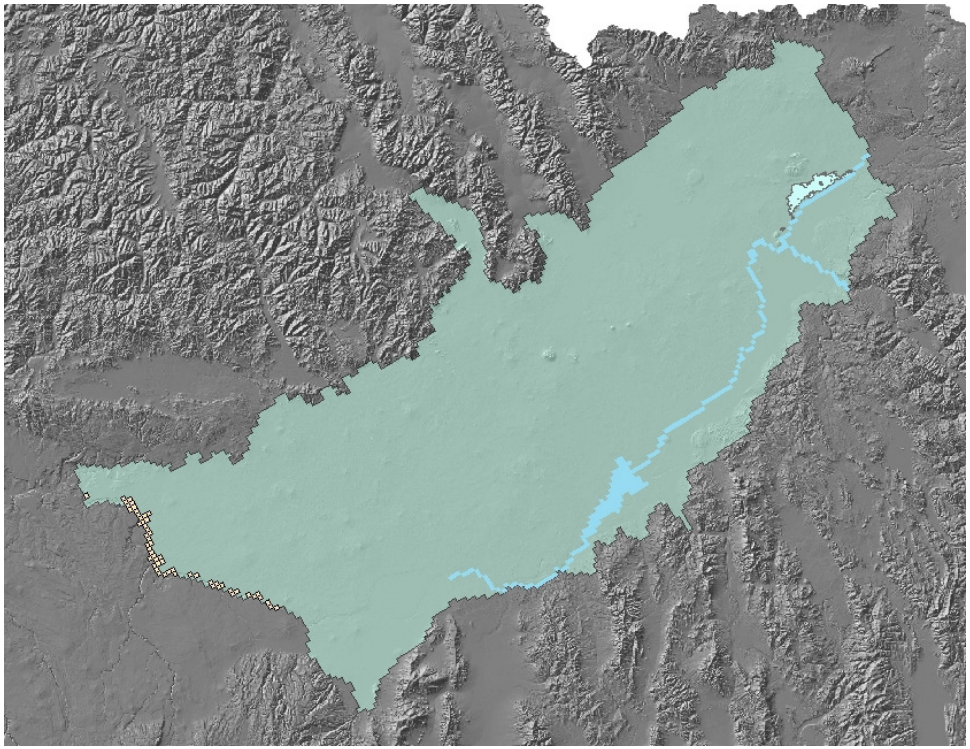
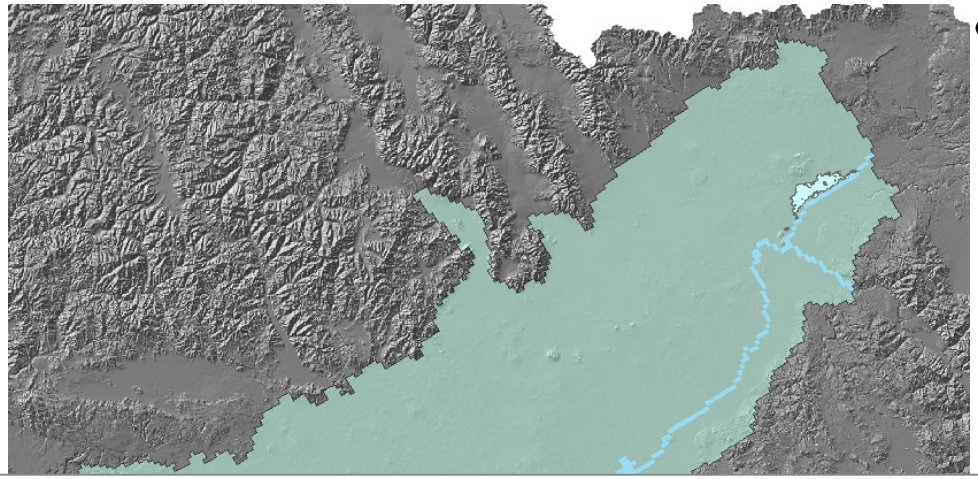




- Egin returns



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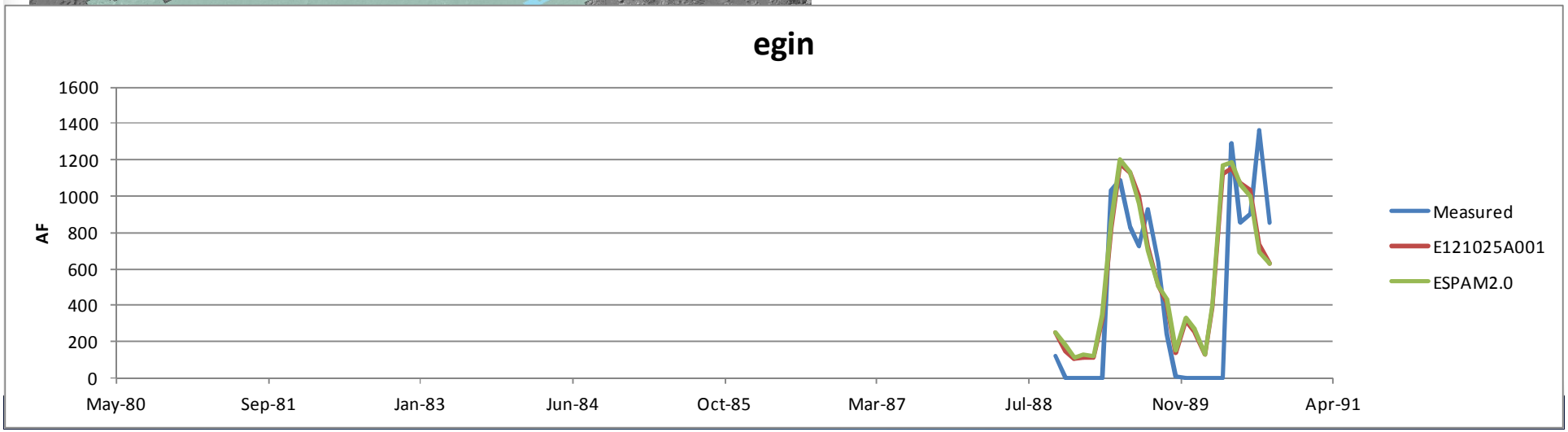

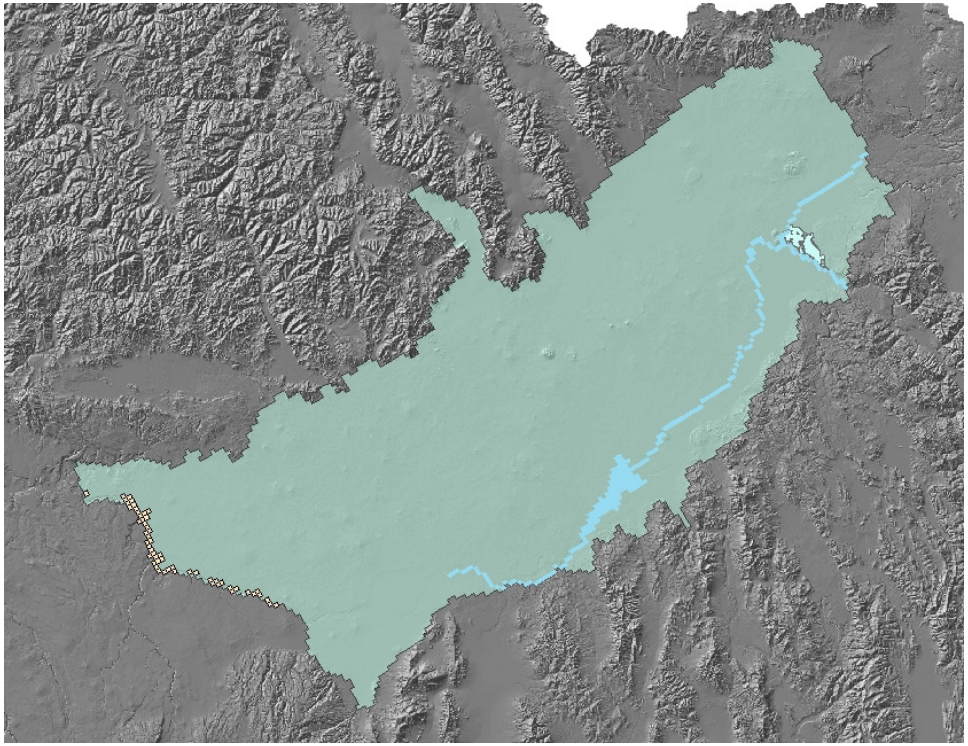

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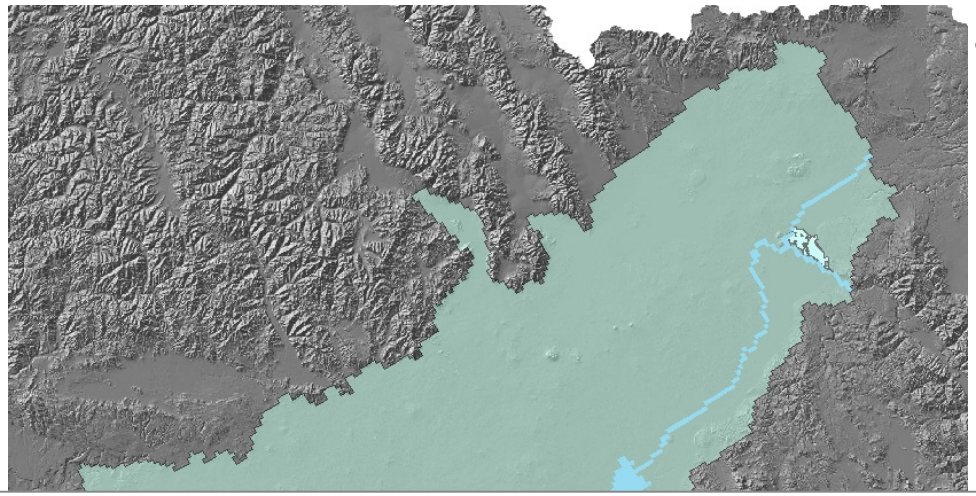

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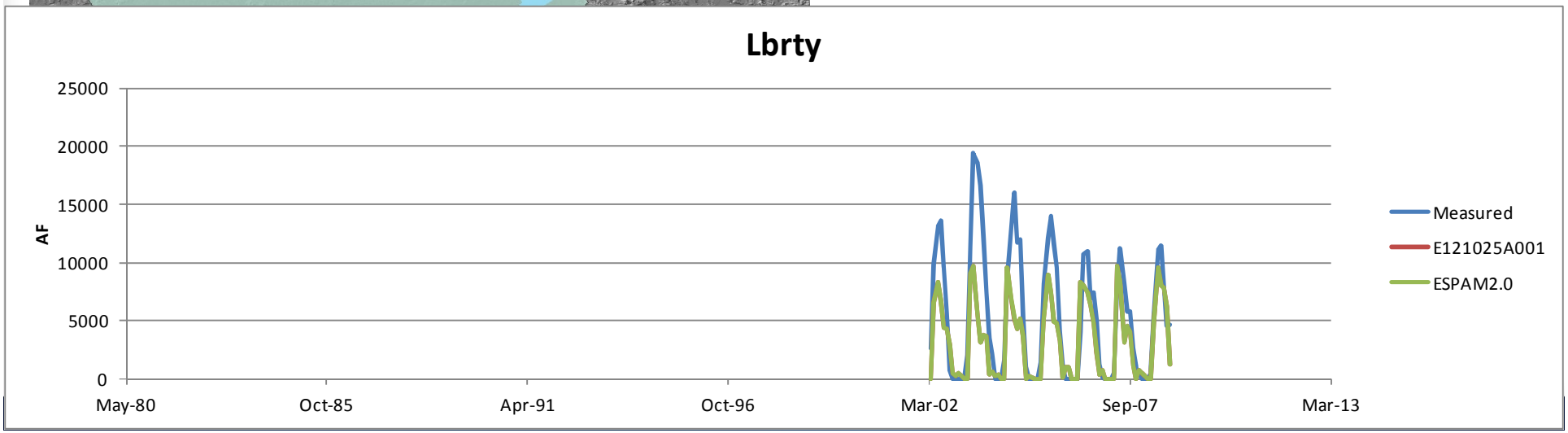
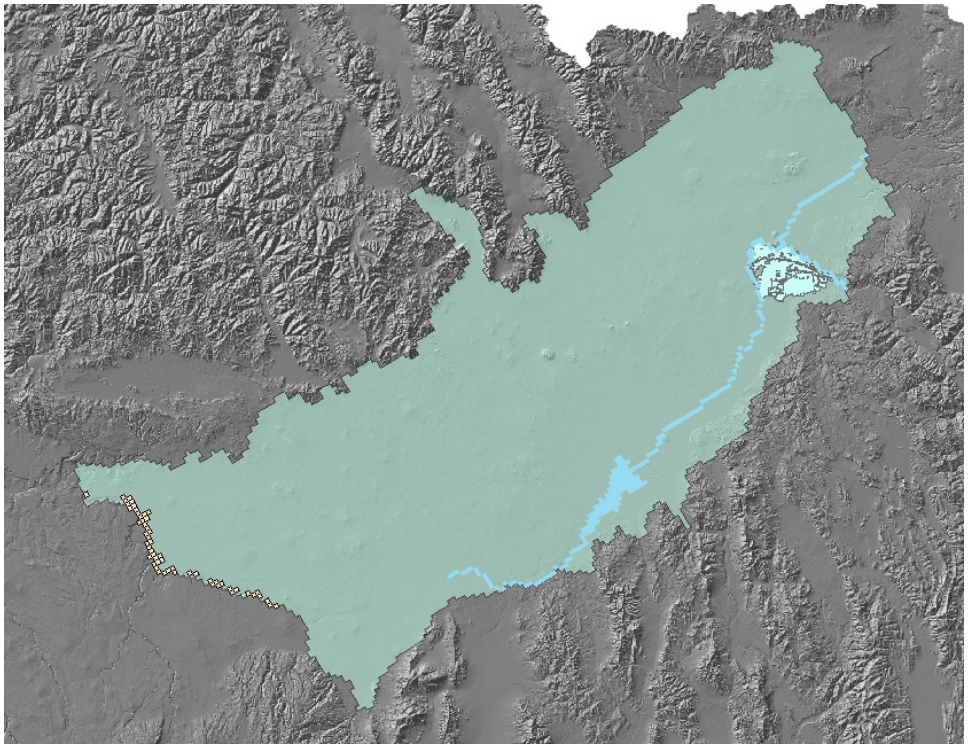
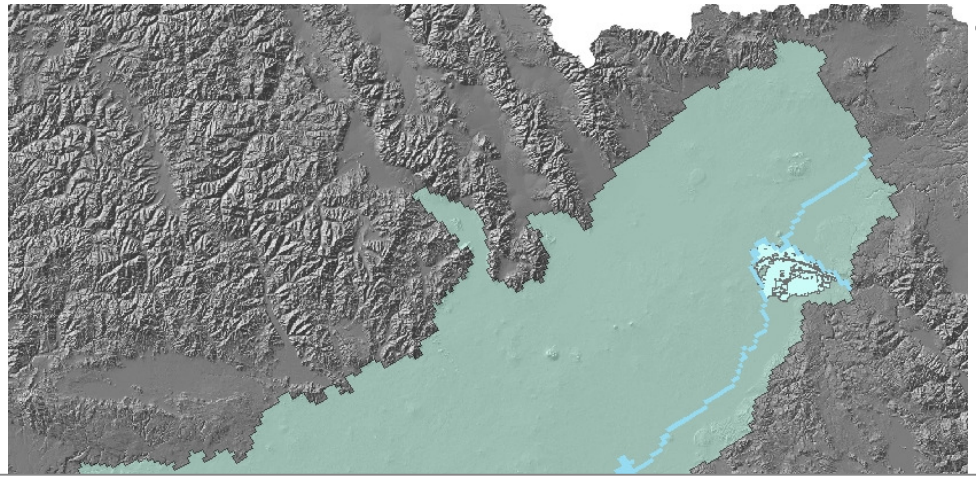
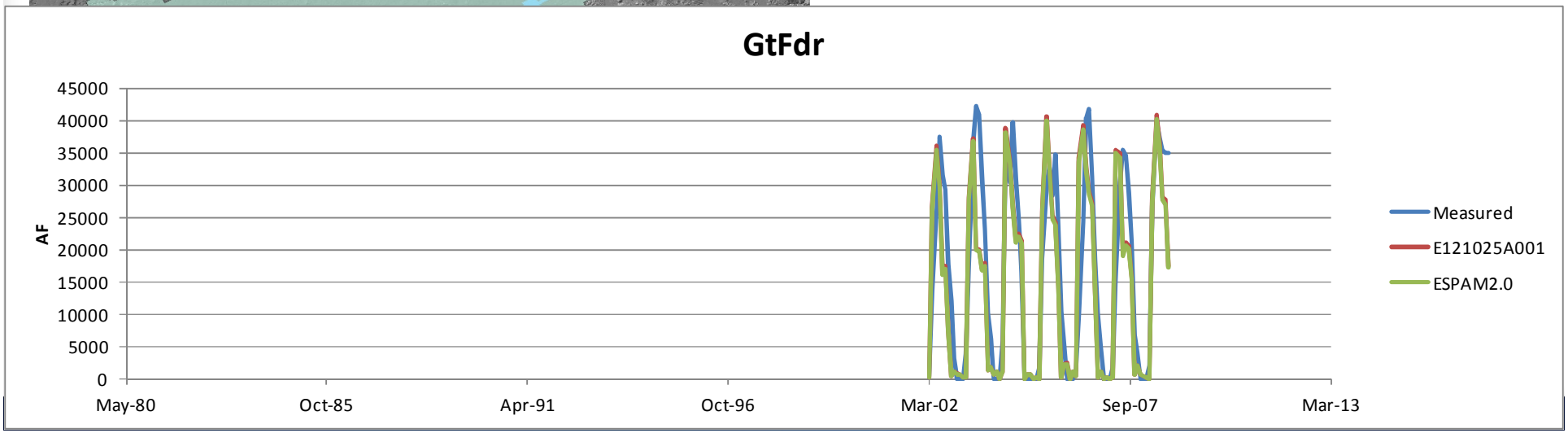


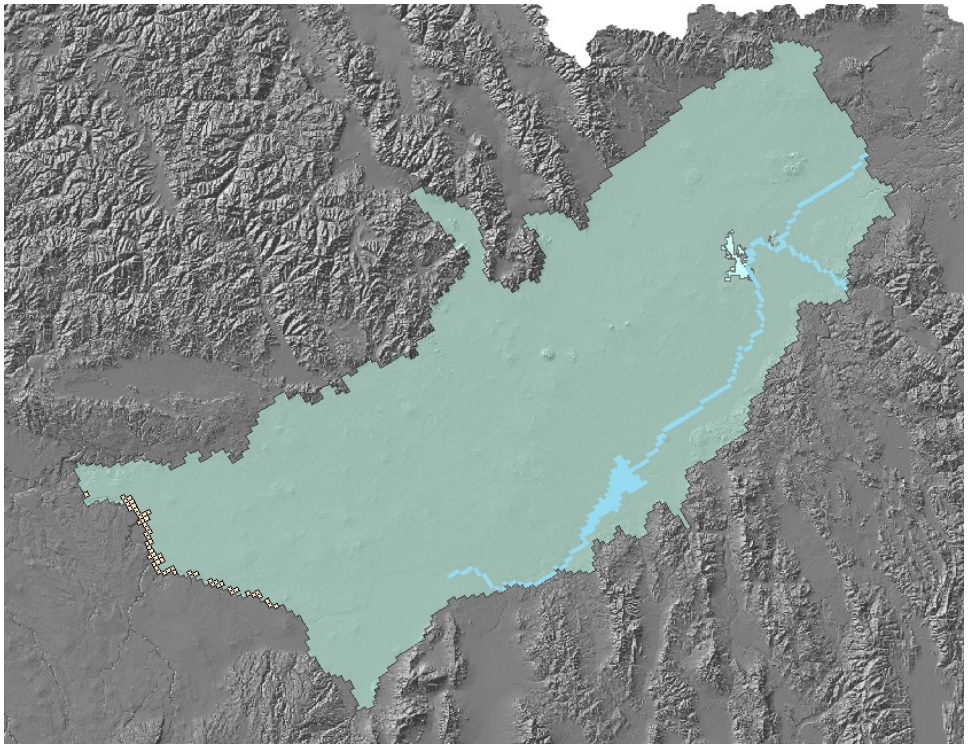


- Great Feeder Group returns

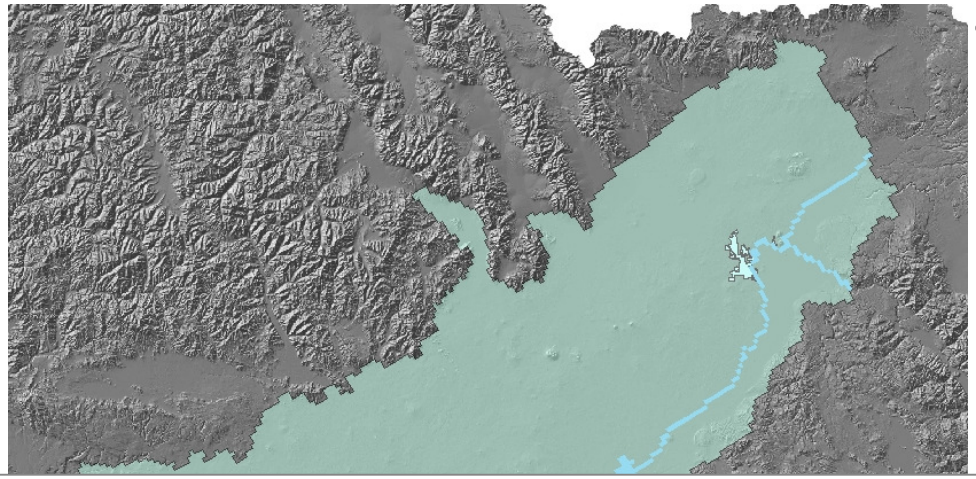


- Great Feeder Group returns

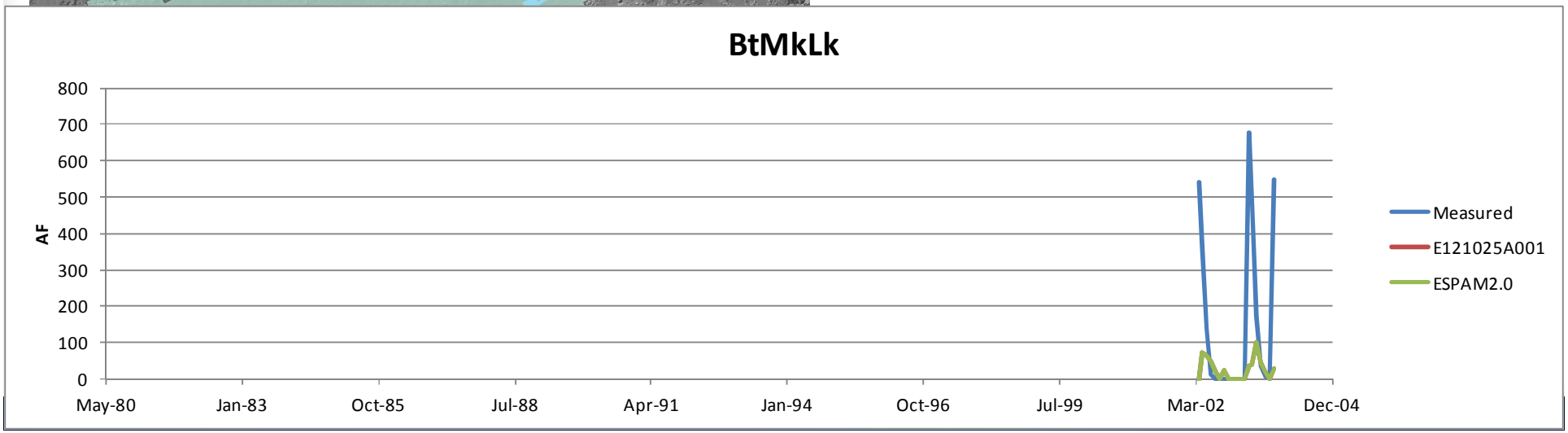


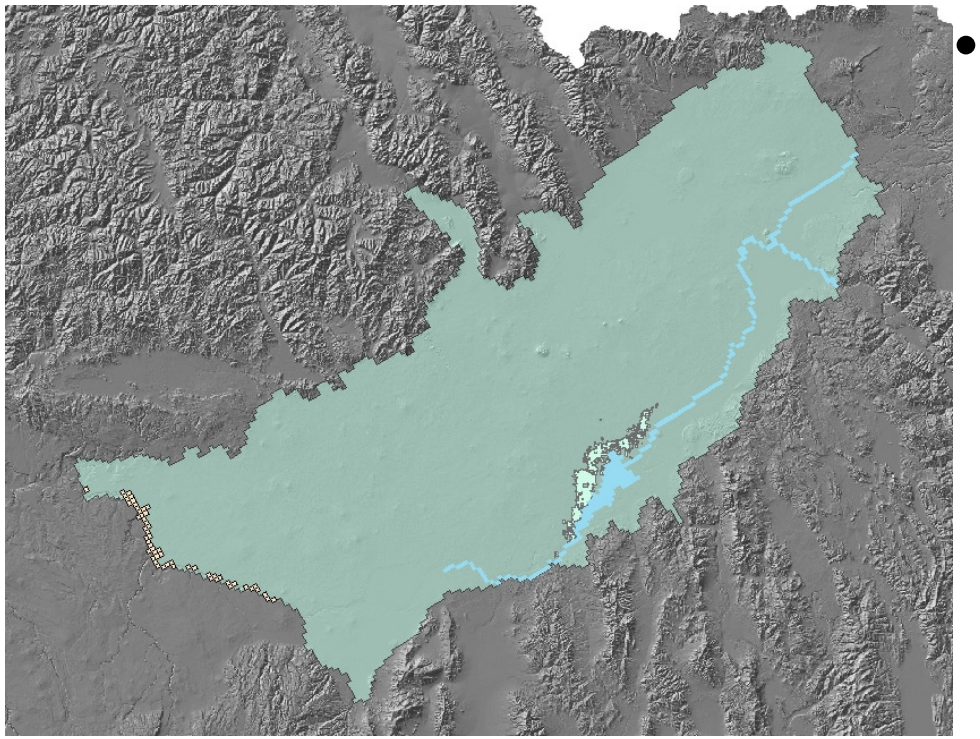


- Butte-Market Lake returns



- Butte-Market Lake returns





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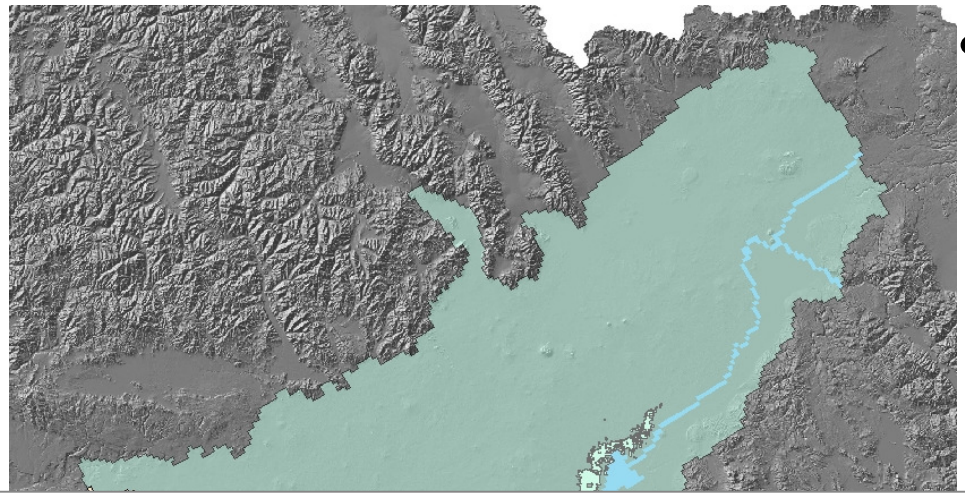
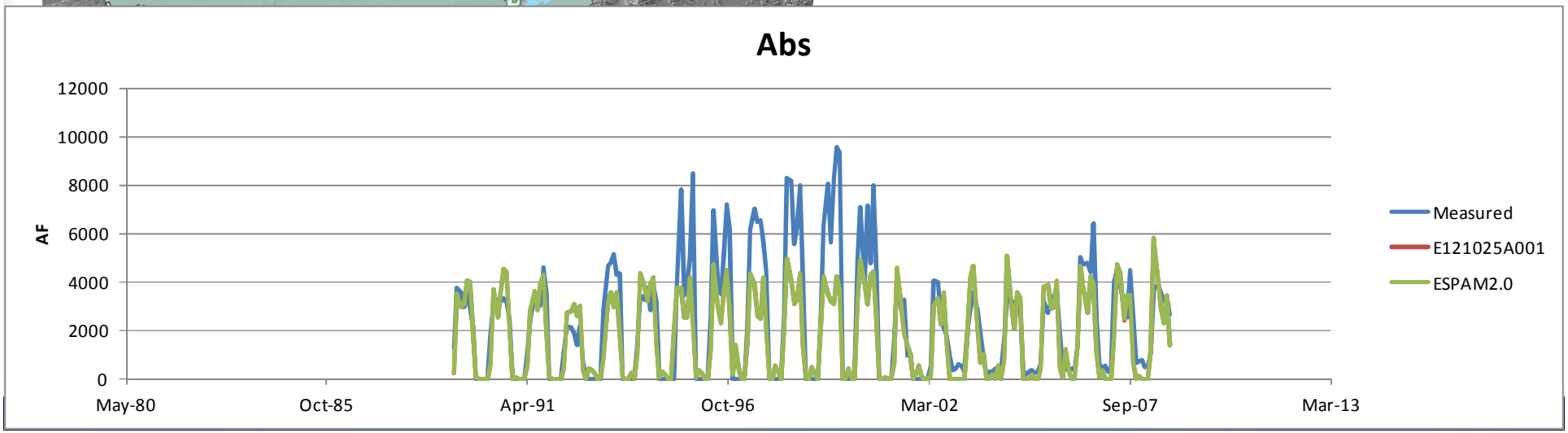
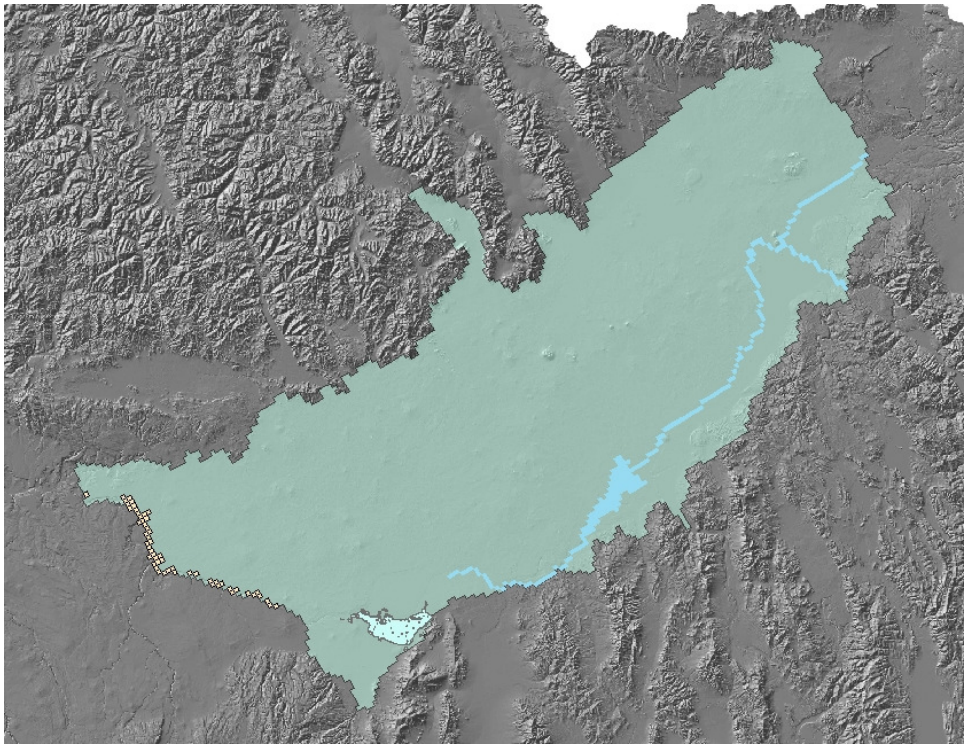
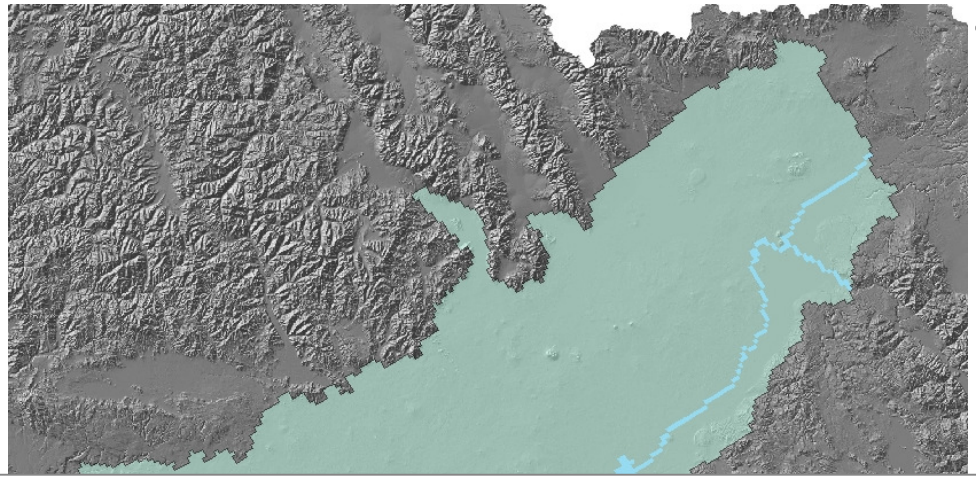


- Aberdeen-Springfield returns

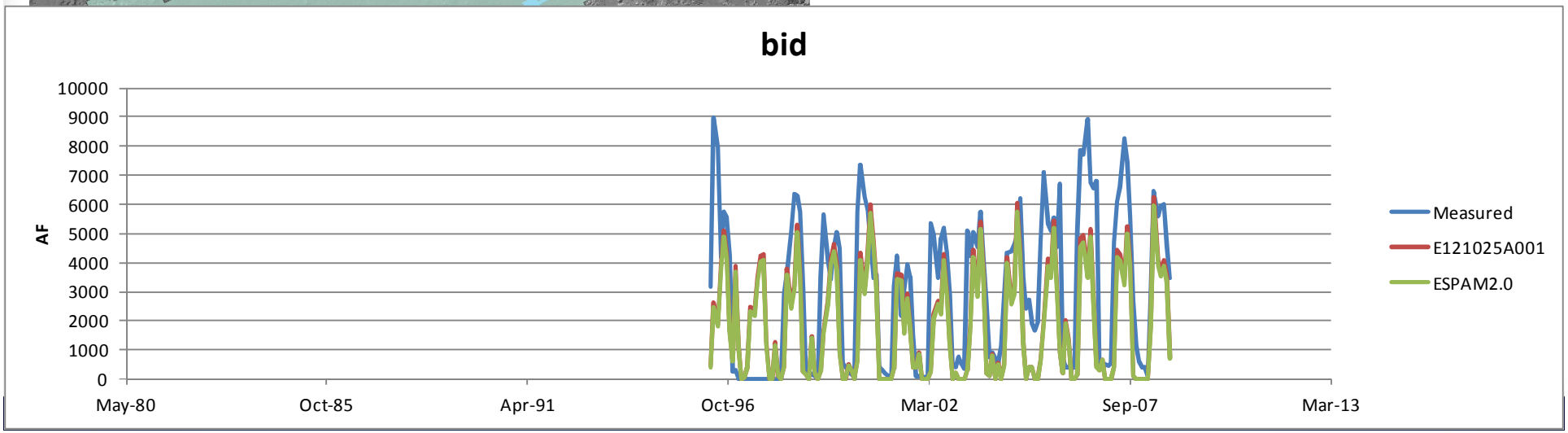


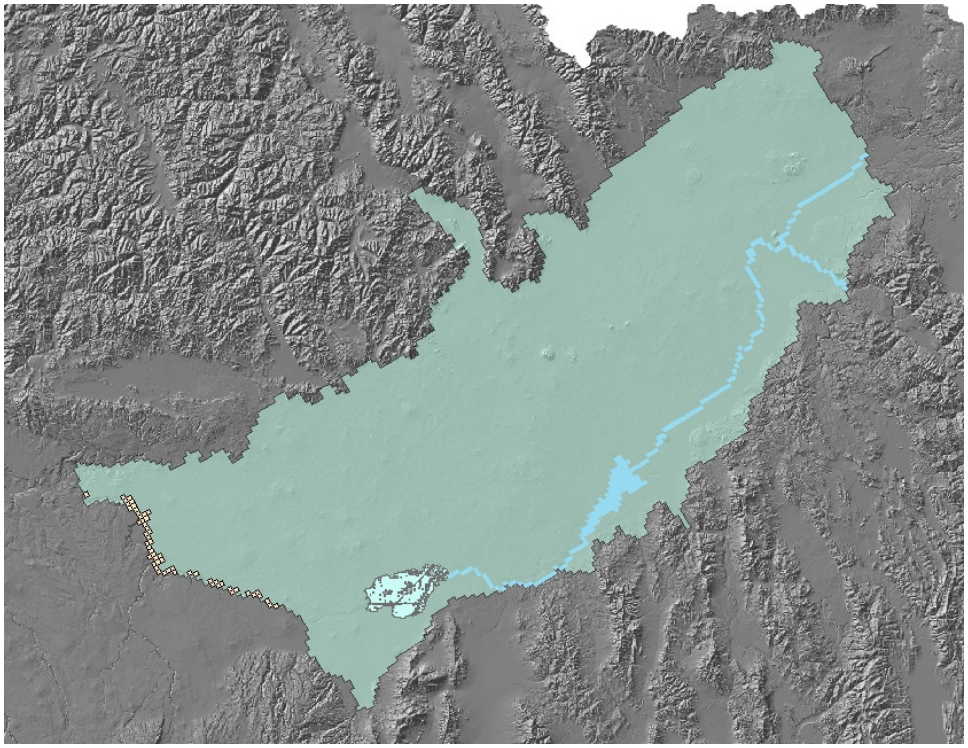


- Burley Irrigation District returns

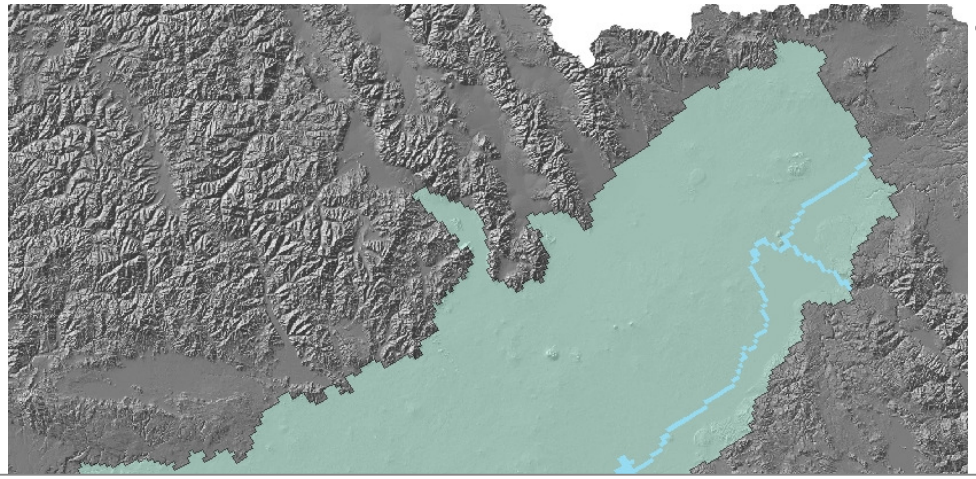


- Burley Irrigation District returns

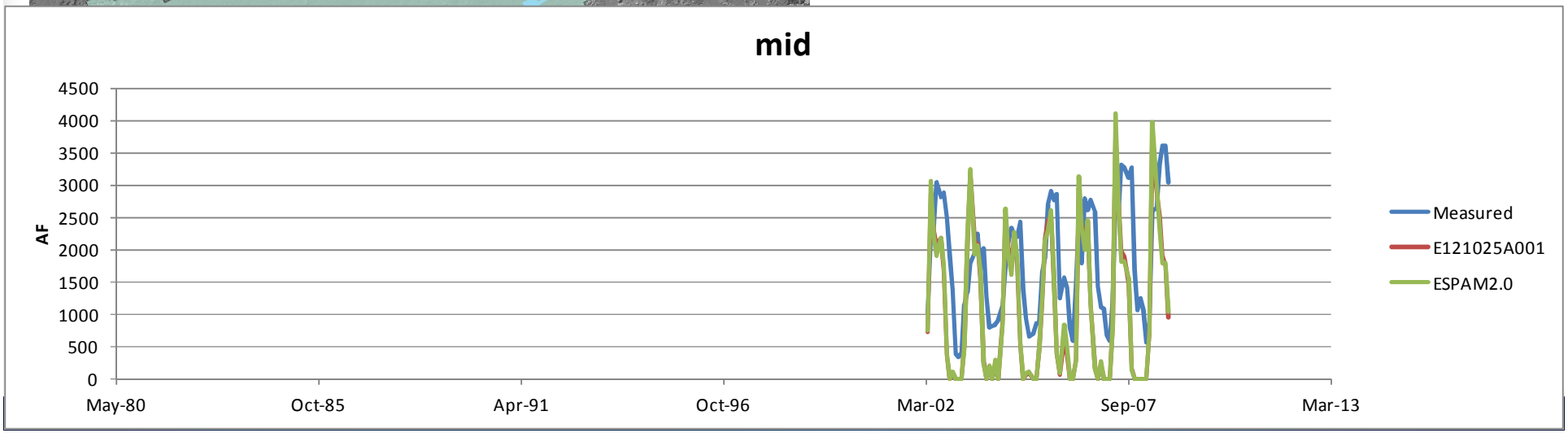


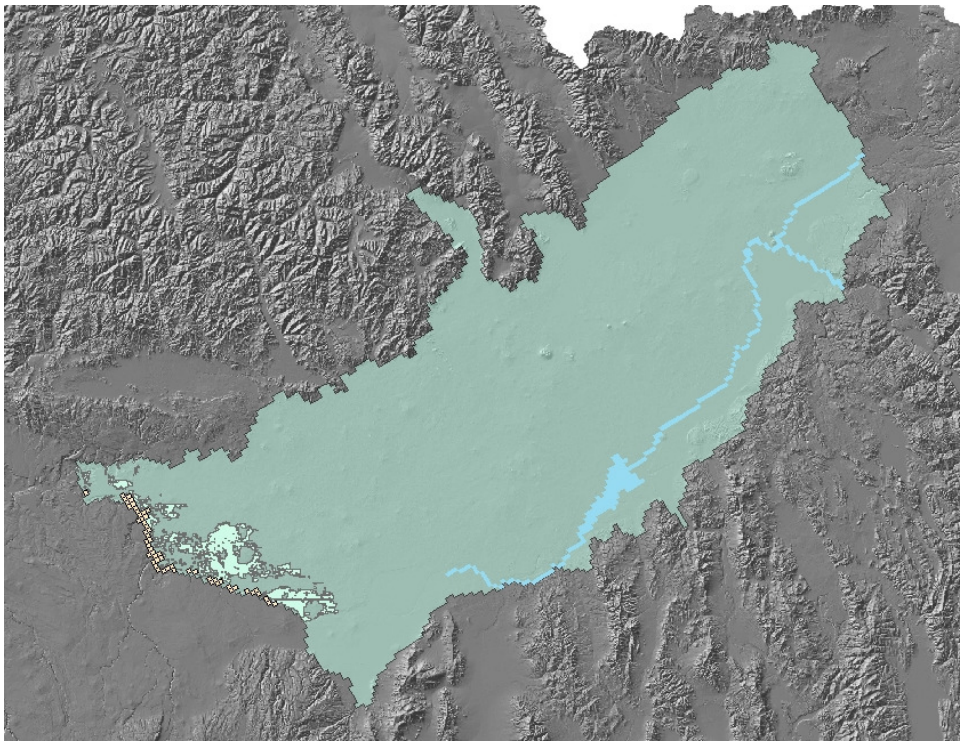


- Minidoka Irrigation District returns

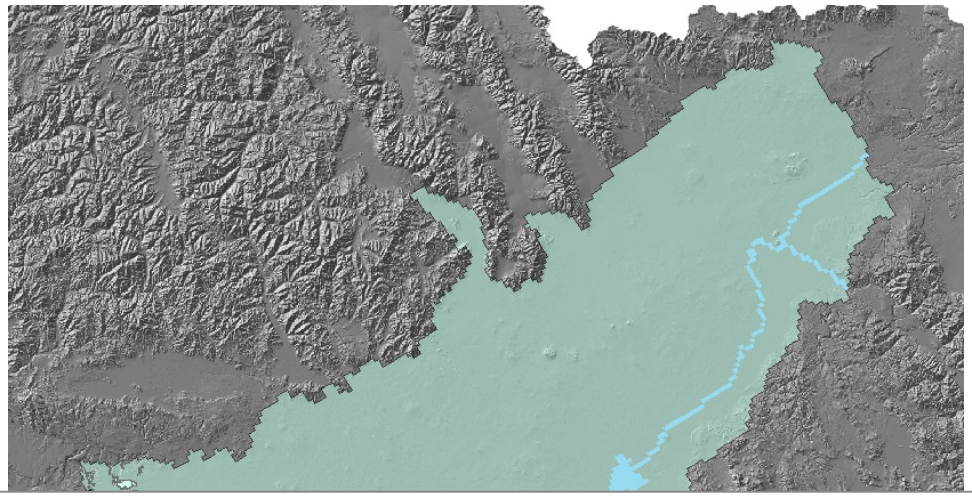


- Minidoka Irrigation District returns

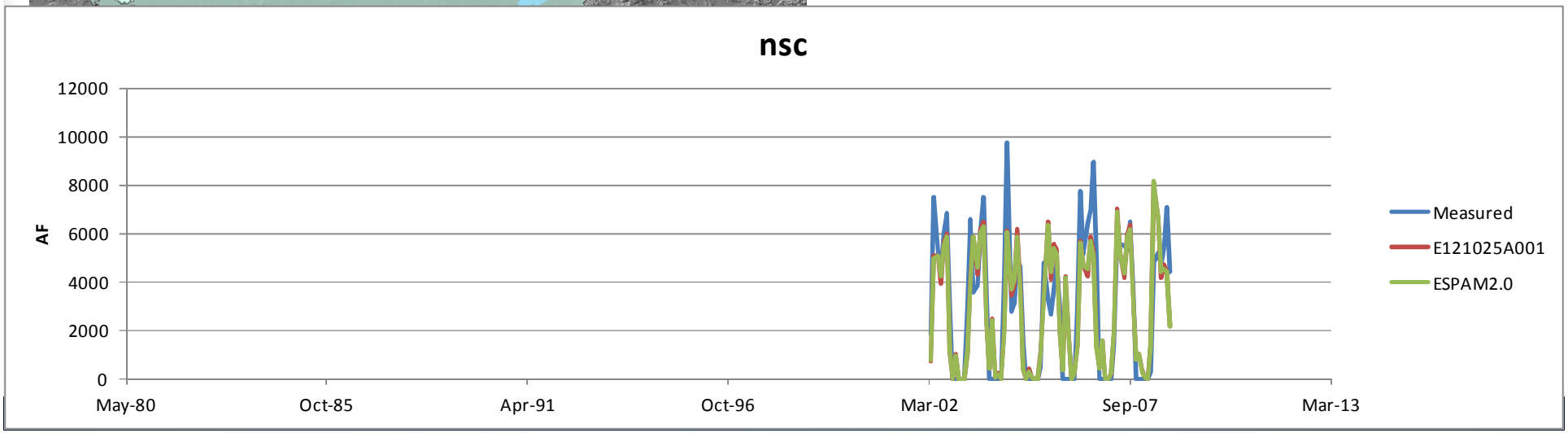




- North Side Canal Co returns



- North Side Canal Co returns



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