On Farm Water Budget

Allan Wylie IDWR

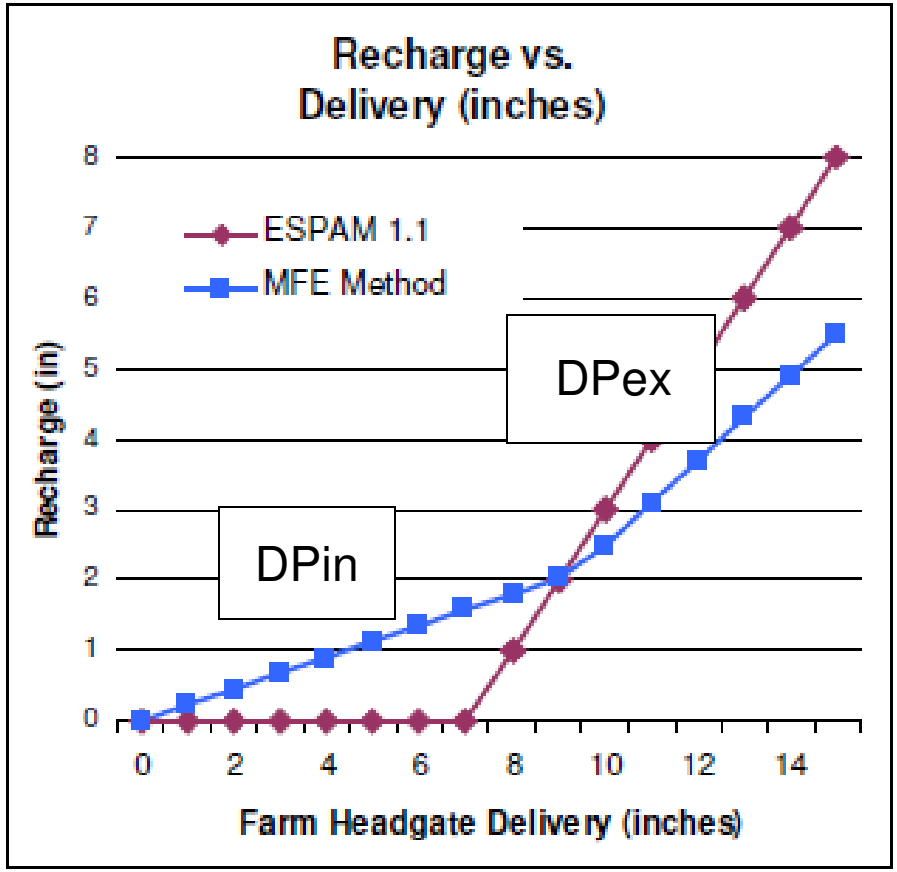
On Farm Water Budget

- Evaluate Sullivan/Schroder On Farm module
  - ESHMC recommendations
    - Remove all steady state targets
    - Add in transient head targets as elevation
    - Rebalance weights, weighting spring reach gains somewhat less than other groups
    - Add in Rangen Sp targets, Update Clear Lakes Sp

On Farm Water Budget

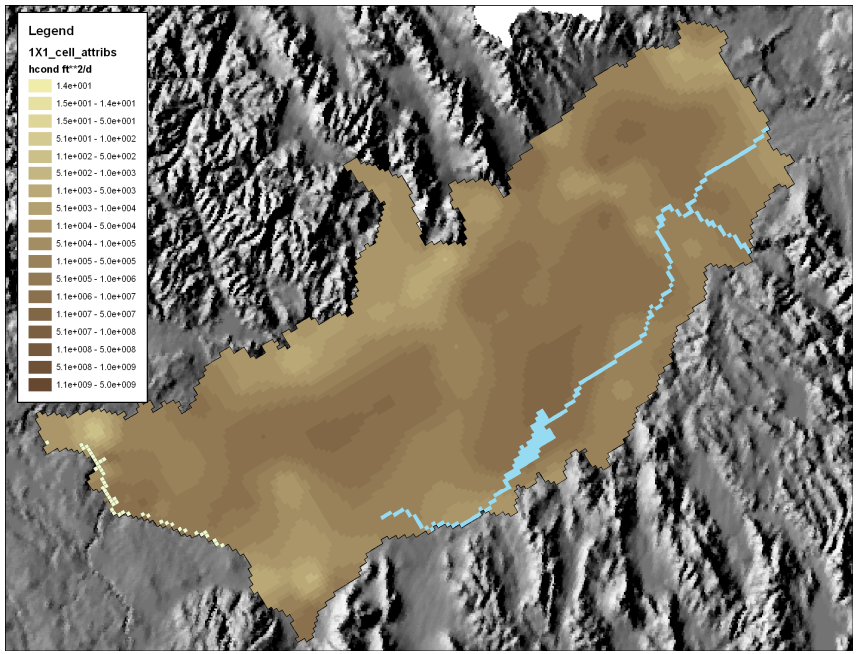
- 4 parameters per entity
  - Flood efficiency (EffGR)
  - Sprinkler efficiency (EffSP)
  - Deep percolation of excess water (DPex)
  - Deep percolation of infiltrating water (DPin)
- 41 SW irrigation entities
- 164 adjustable parameters

Deep Percolation Parameters



- For both flood and sprinkler irrigation
  - Deep percolation of excess water (DPex)
  - Deep percolation of infiltrating water (DPin)

V 1.1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hcond ft**2/d
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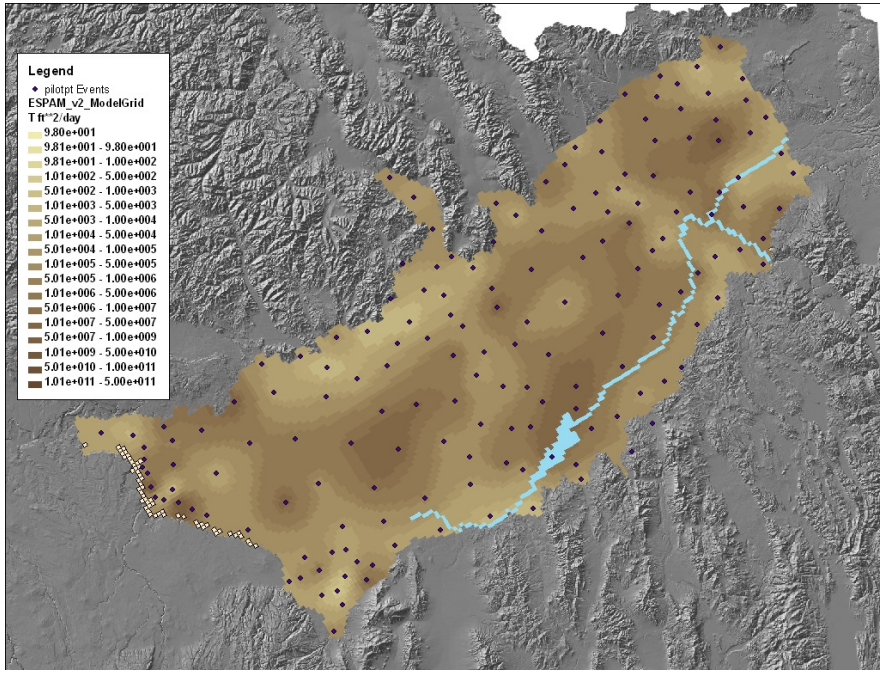
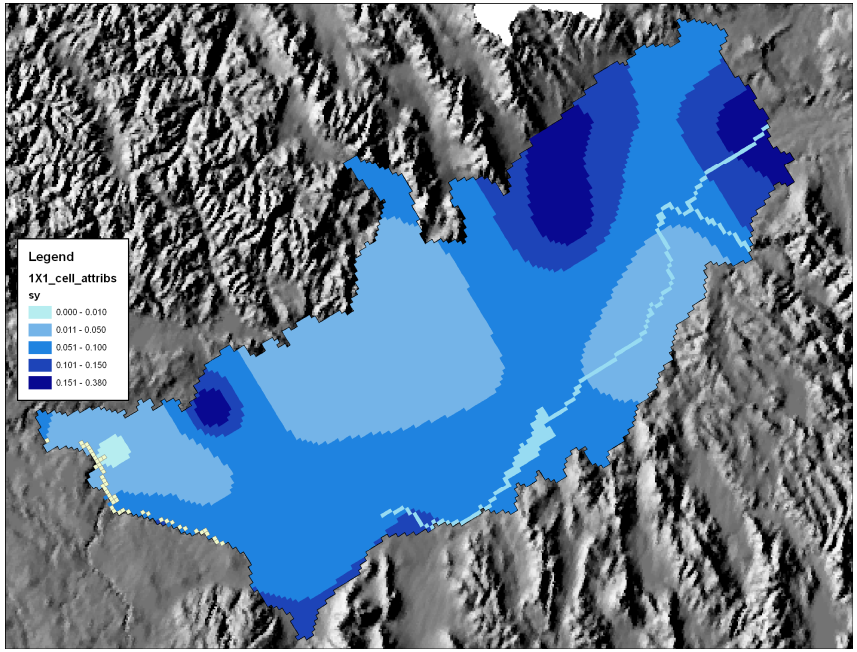
1.5e+001 - 1.4e+001
1.5e+001 - 5.0e+001
5.1e+001 - 1.0e+002
1.1e+002 - 5.0e+002
5.1e+002 - 1.0e+003
1.1e+003 - 5.0e+003
5.1e+003 - 1.0e+004
1.1e+004 - 5.0e+004
5.1e+004 - 1.0e+005
1.1e+005 - 5.0e+005
5.1e+005 - 1.0e+006
1.1e+006 - 1.0e+007
1.1e+007 - 5.0e+007
5.1e+007 - 1.0e+008
1.1e+008 - 5.0e+008
5.1e+008 - 1.0e+009
1.1e+009 - 5.0e+009


Legend
pilotpt Events
ESPAM_v2_ModelGrid
T ft**2/day
9.80e+001
9.81e+001 - 9.80e+001
9.81e+001 - 1.00e+002
1.01e+002 - 5.00e+002
5.01e+002 - 1.00e+003
1.01e+003 - 5.00e+003
5.01e+003 - 1.00e+004
1.01e+004 - 5.00e+004
5.01e+004 - 1.00e+005
1.01e+005 - 5.00e+005
5.01e+005 - 1.00e+006
1.01e+006 - 5.00e+006
5.01e+006 - 1.00e+007
1.01e+007 - 5.00e+007
5.01e+007 - 1.00e+009
1.01e+009 - 5.00e+010
5.01e+010 - 1.00e+011
1.01e+011 - 5.00e+011

V 1.1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sy
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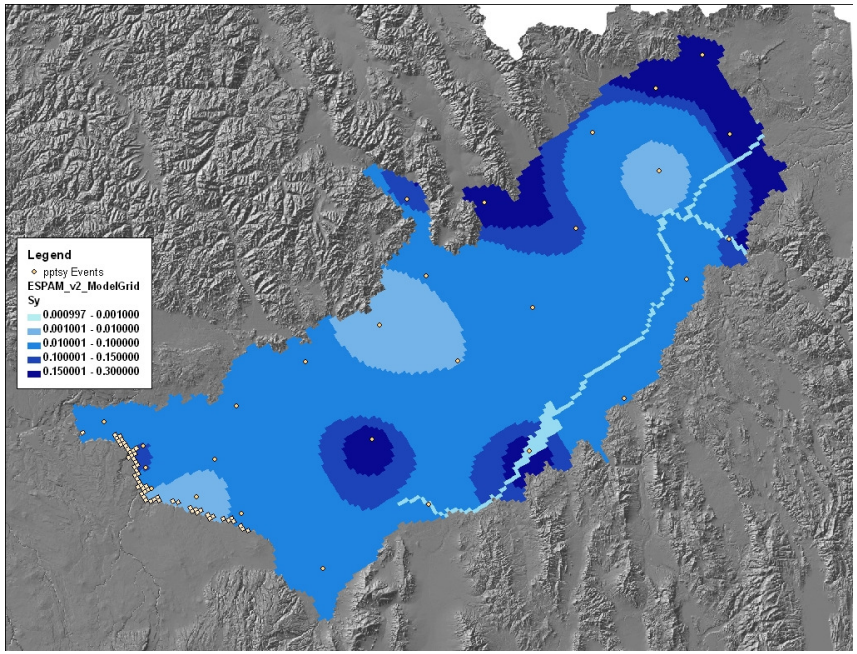
0.011 - 0.050
0.051 - 0.100
0.101 - 0.150
0.151 - 0.380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pptsy Events
ESPAM_v2_ModelGrid
Sy
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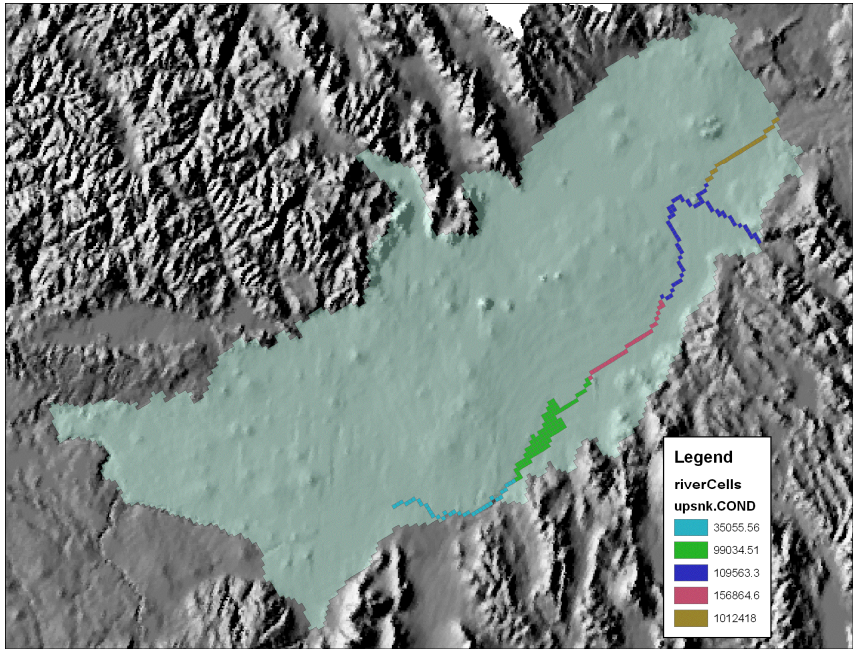
V 1.1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99034.51
109563.3
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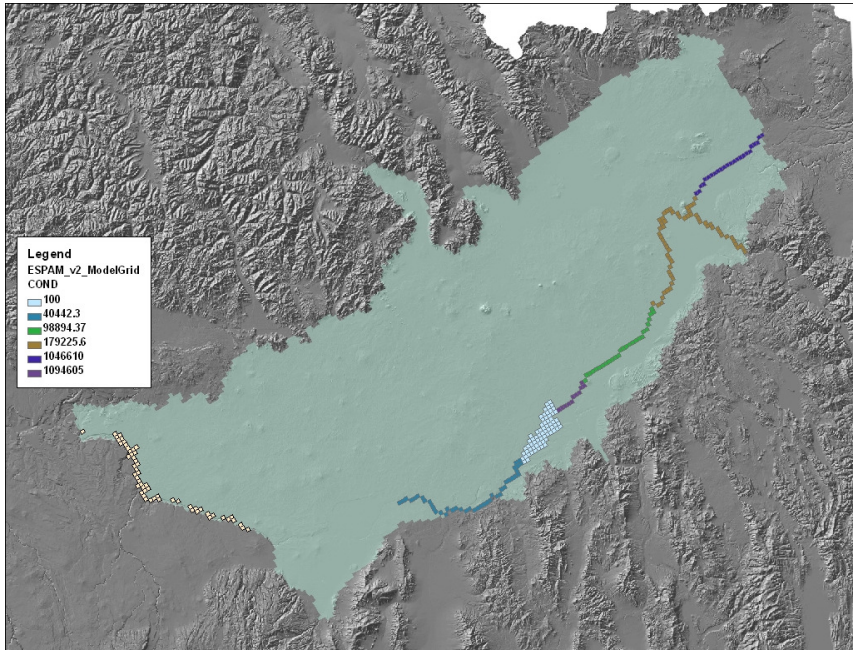
Legend
ESPAM_v2_ModelGrid
COND
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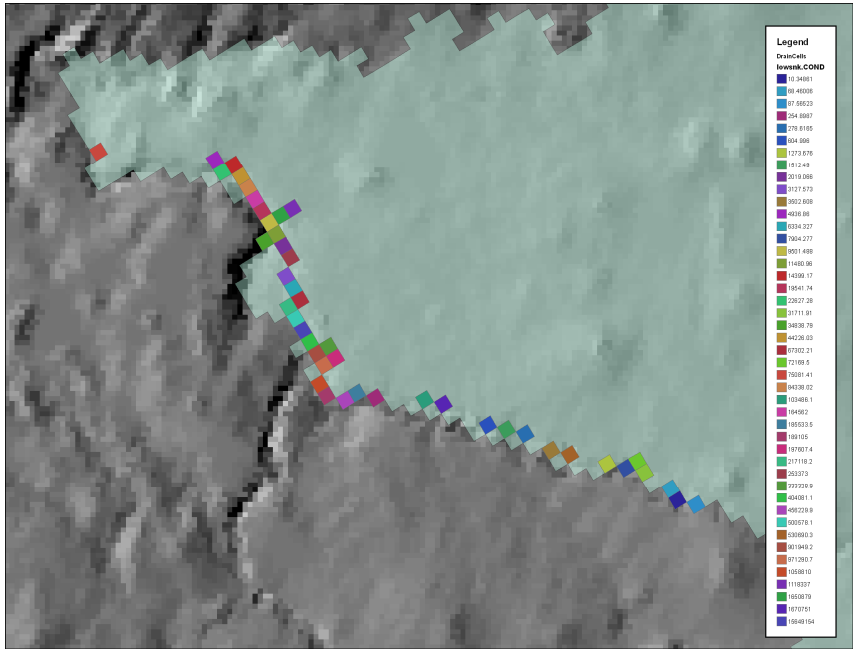
1094605

V 1.1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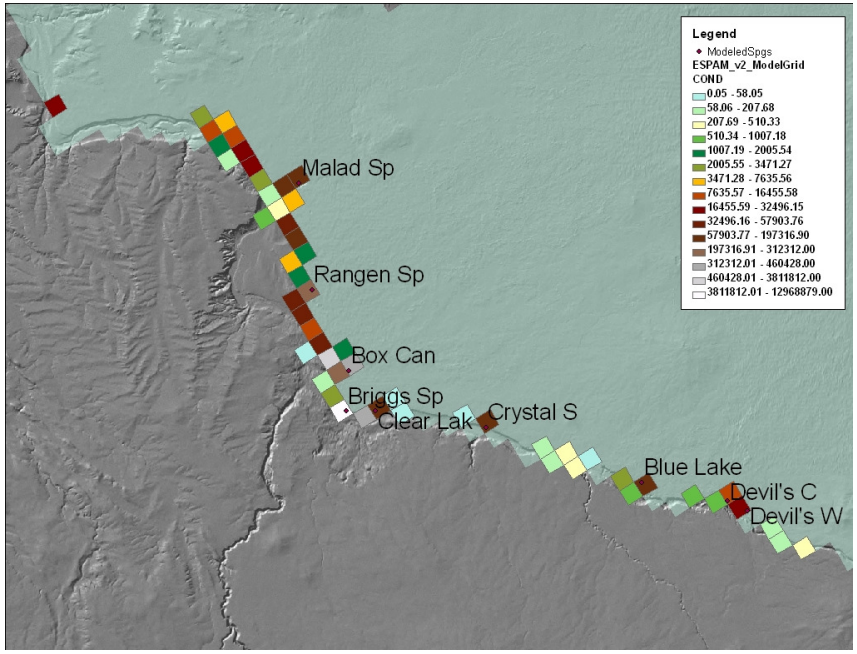
DrainCells
lowmtk.COND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ModeledSpgs
ESPAM_v2_ModelGrid
COND
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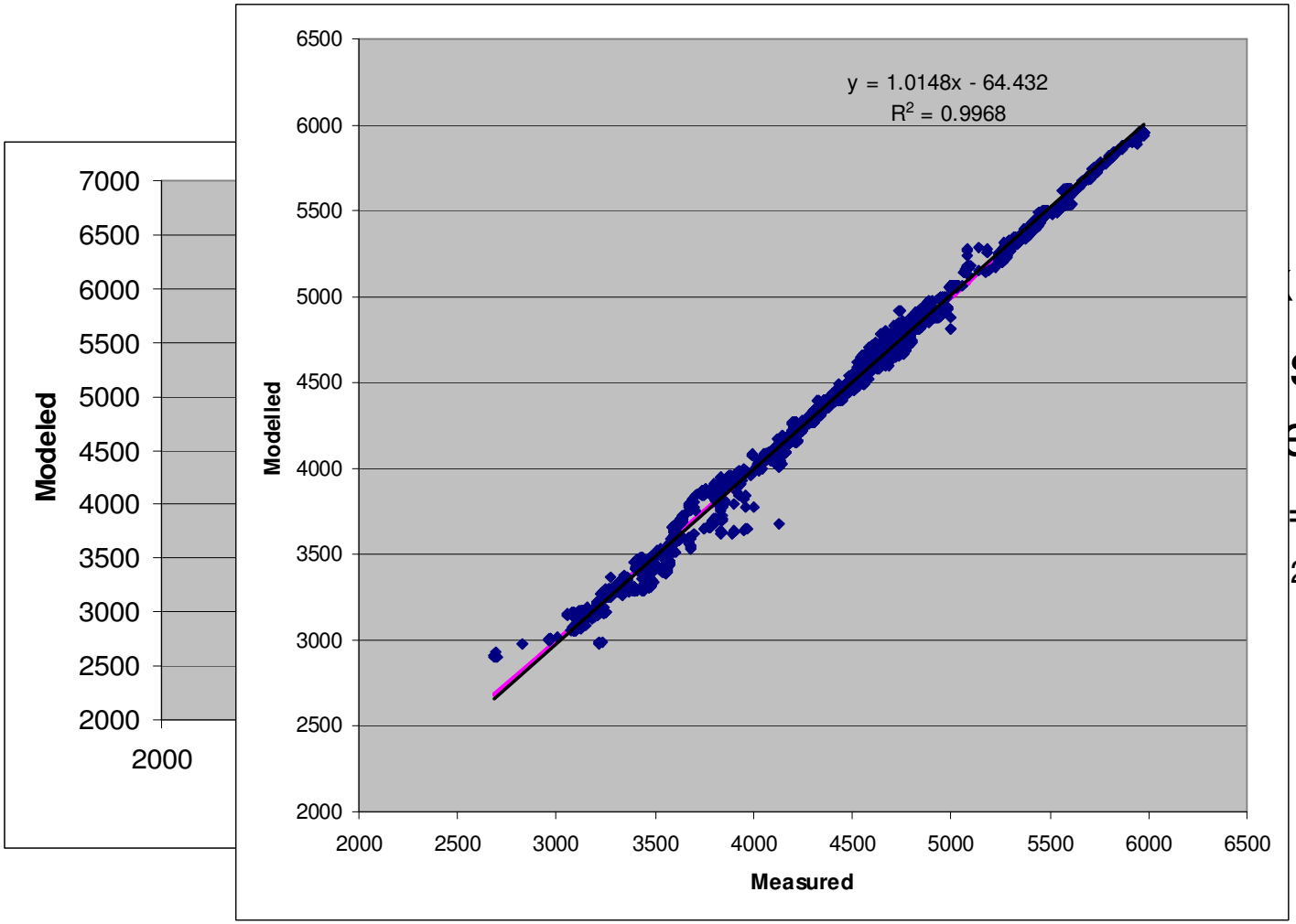
207.69 - 510.33
510.34 - 1007.18
1007.19 - 2005.54
2005.55 - 3471.27
3471.28 - 7635.56
7635.57 - 16455.58
16455.59 - 32496.15
32496.16 - 57903.76
57903.77 - 197316.90
197316.91 - 312312.00
312312.01 - 460428.00
460428.01 - 3811812.00
3811812.01 - 12968879.00
Malad Sp
Rangen Sp
Box Can
Briggs Sp
Clear Lak
Crystal S
Blue Lake
Devil's C
Devil's W



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=1x + 0

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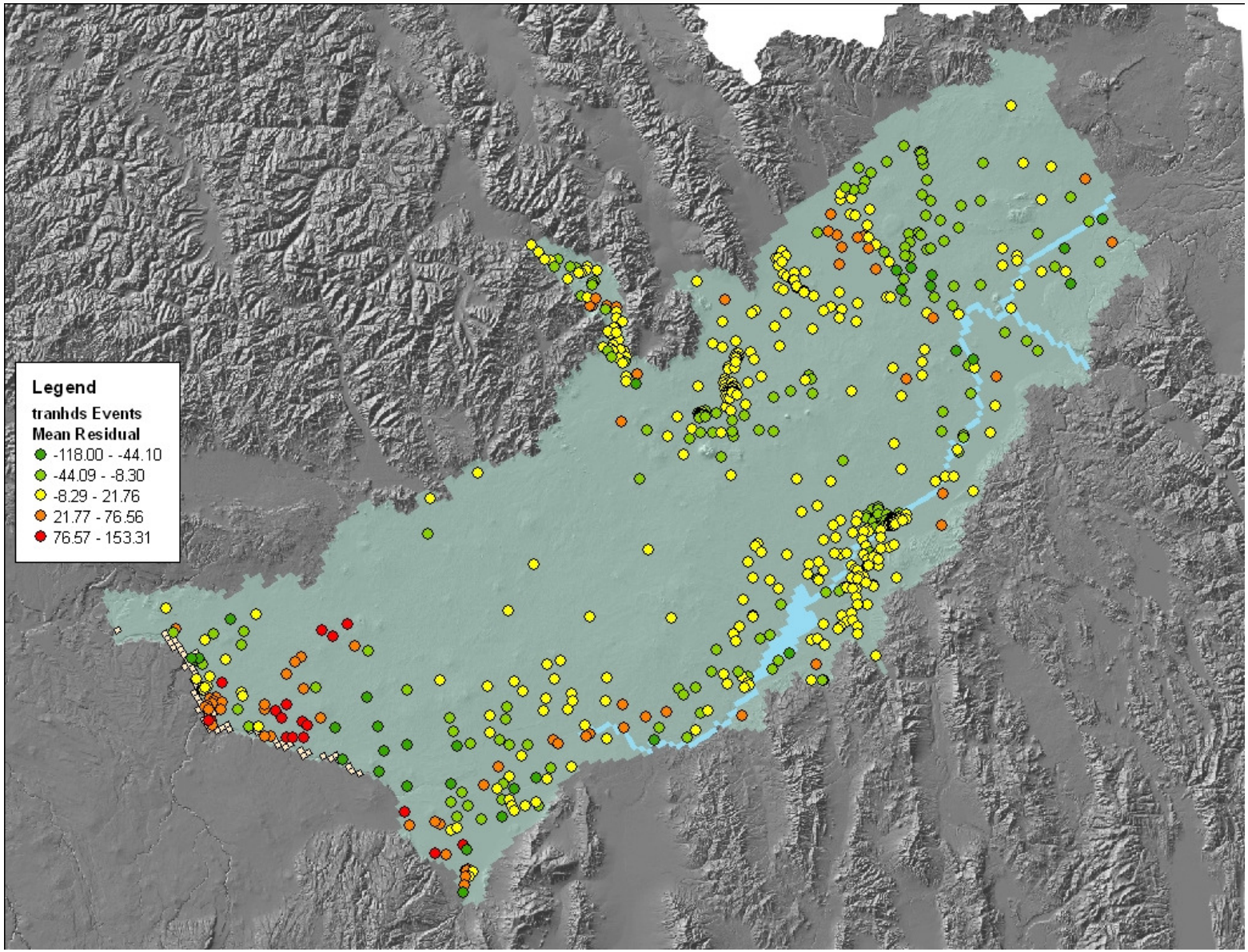
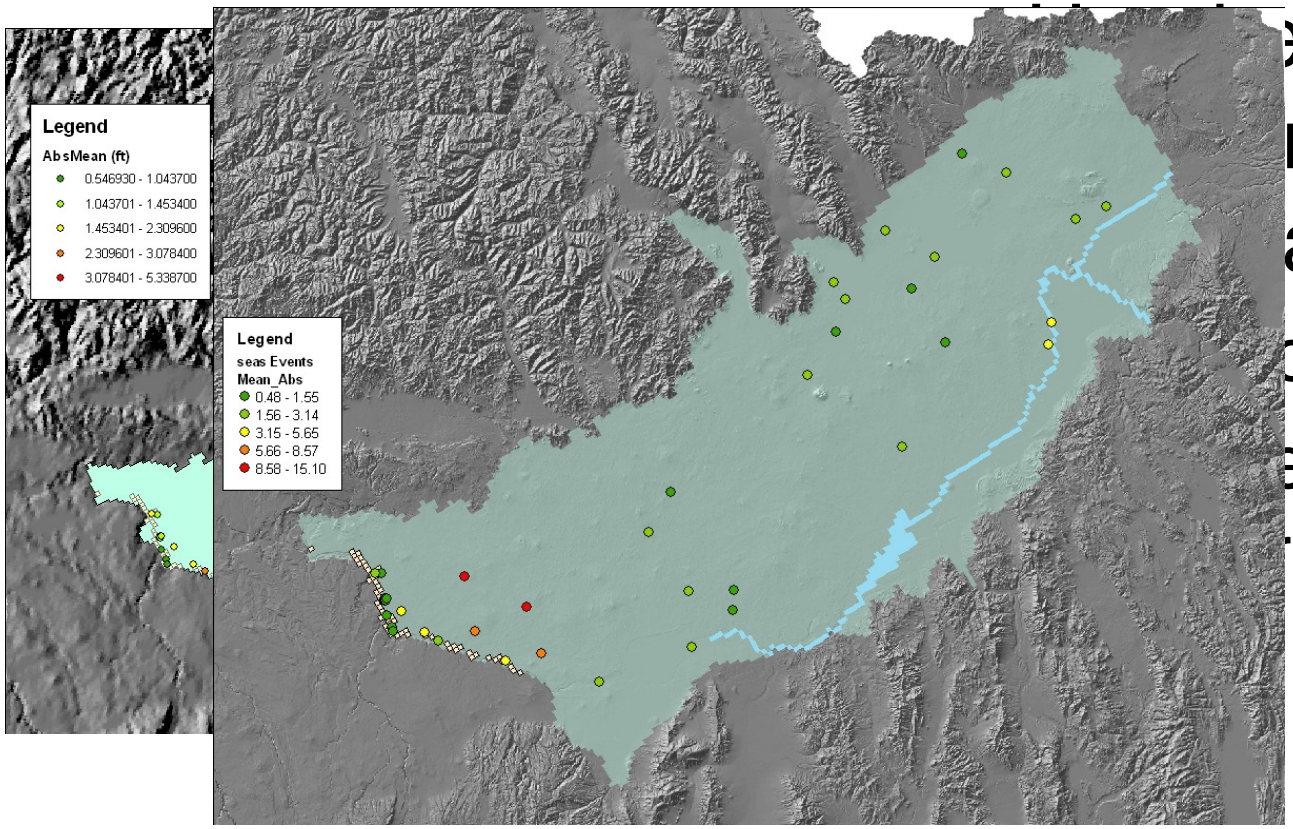
IDAHO Department of Water Resources





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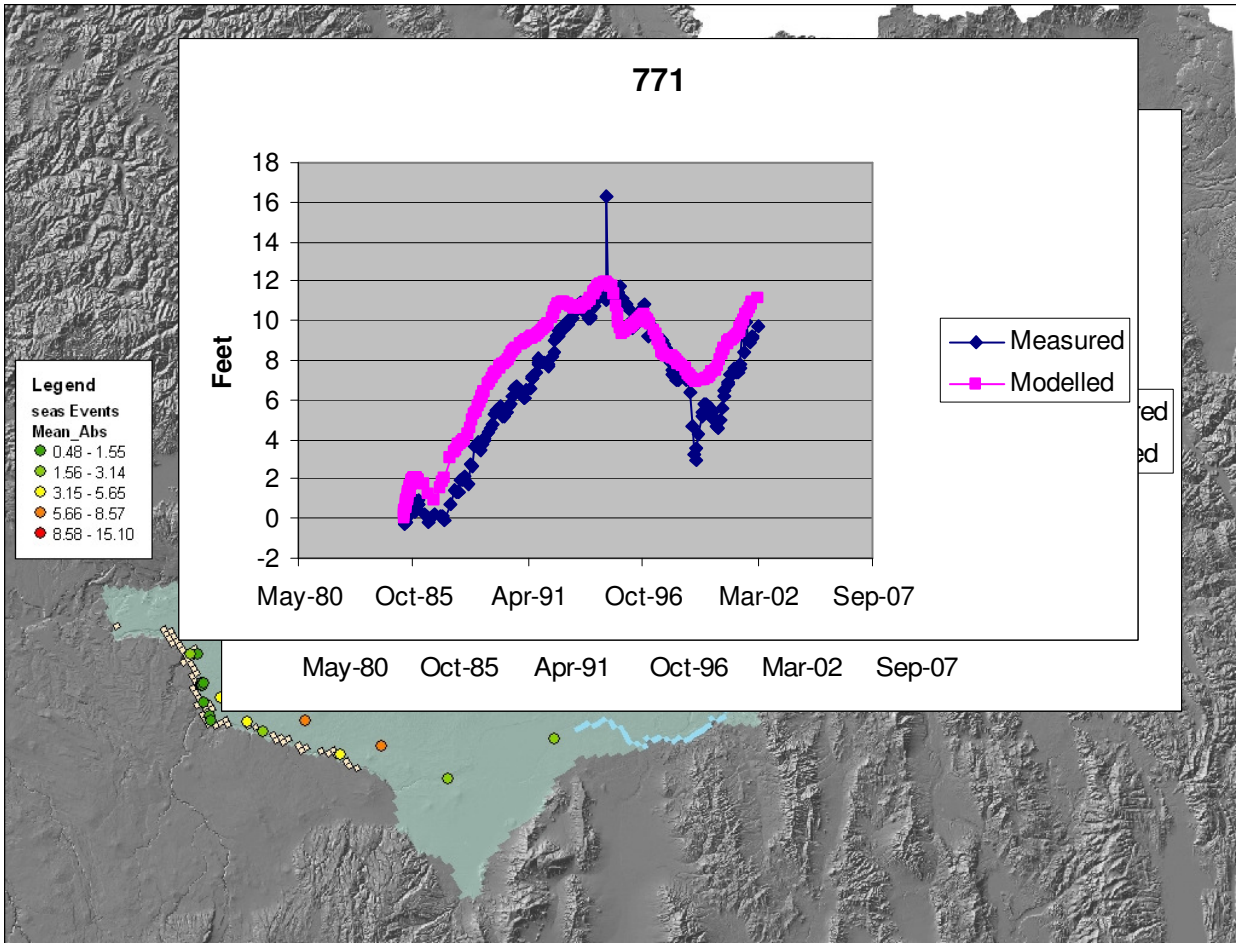
771
Feet
18
16
14
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4
2
0
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
Legend
seas Events
Mean_Abs
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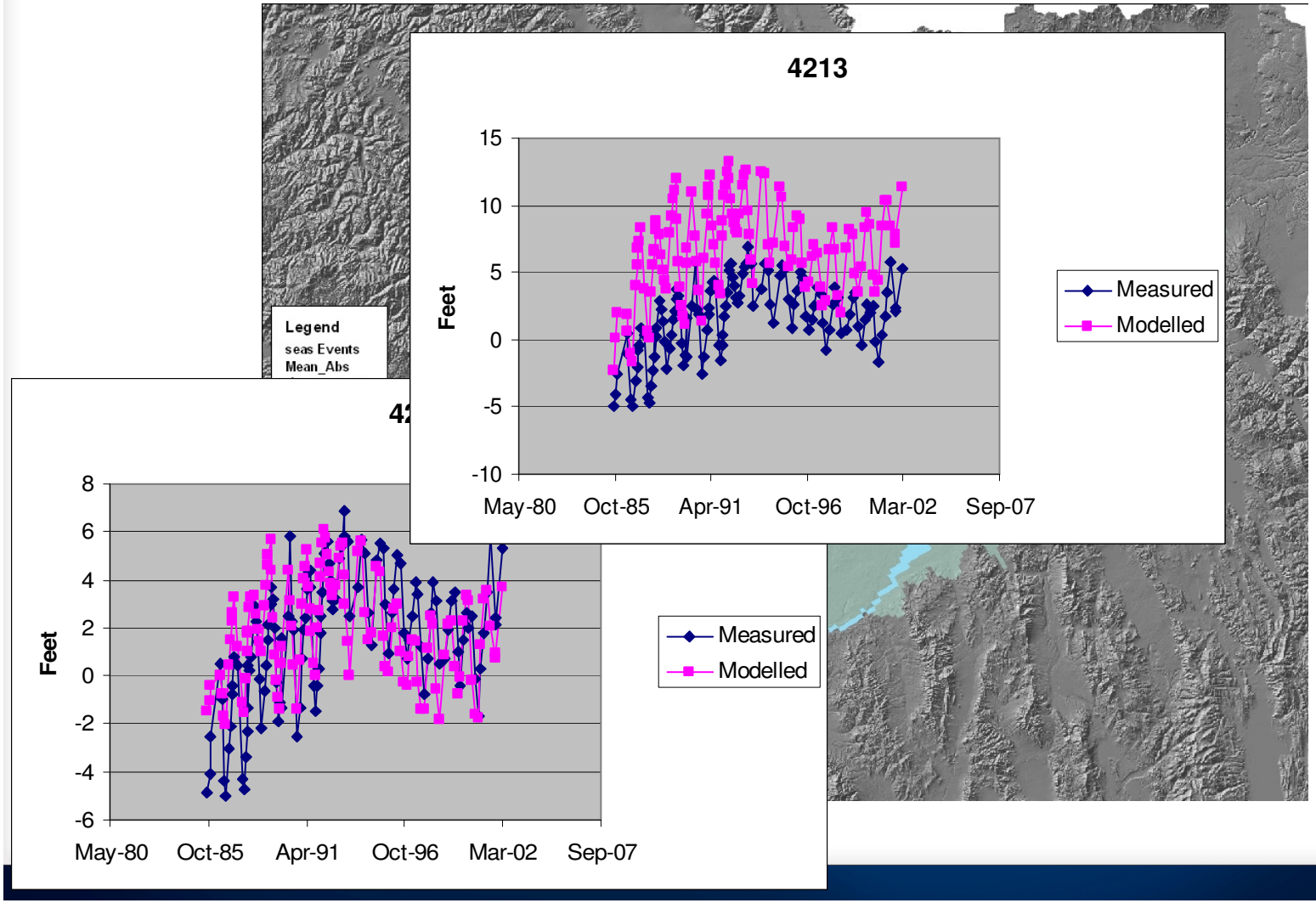
1.56 - 3.14
3.15 - 5.65
5.66 - 8.57
8.58 - 15.10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Feet
15
10
5
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-5
-10
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
Legend
seas Events
Mean_Abs
Feet
8
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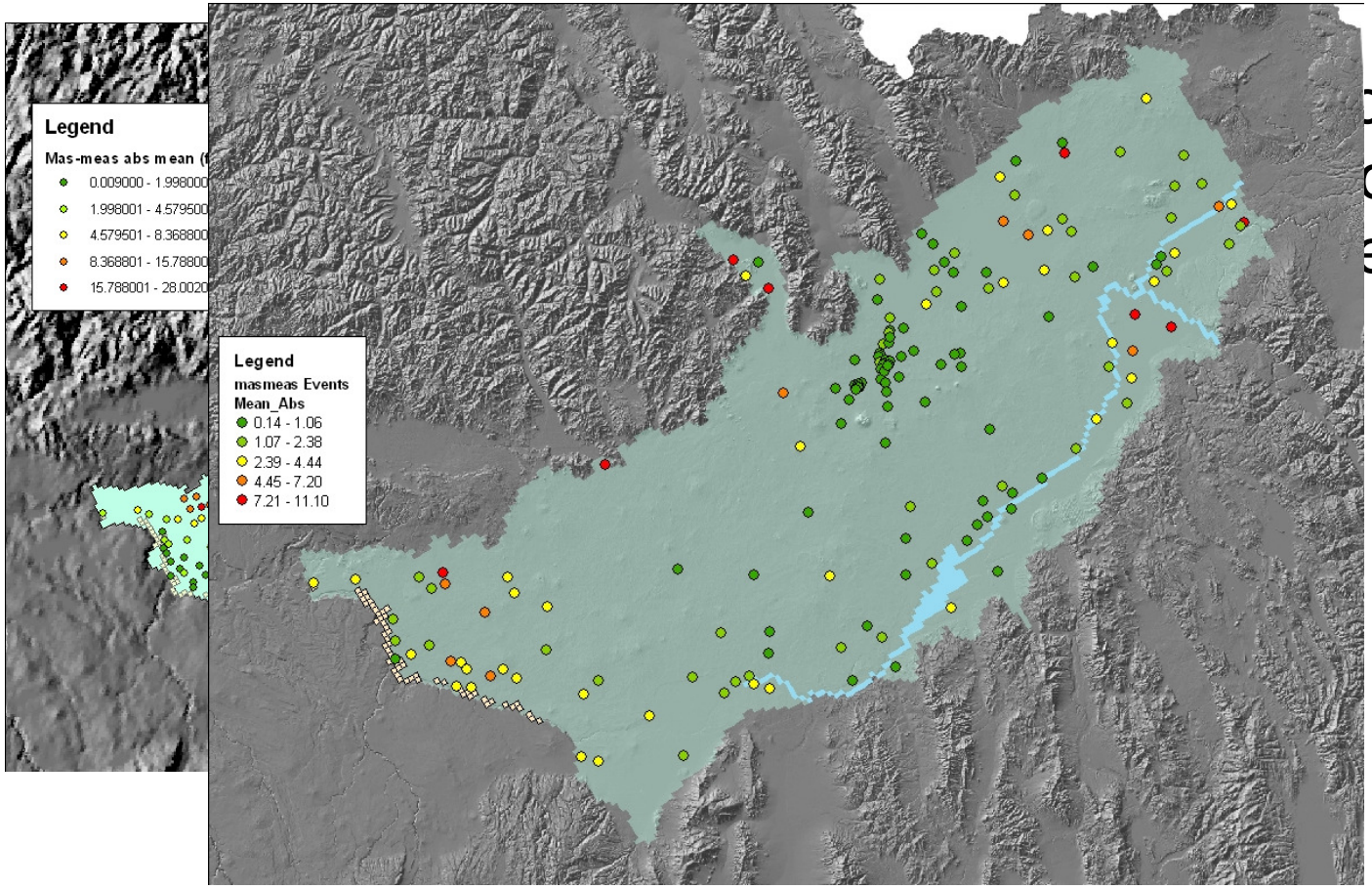
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled



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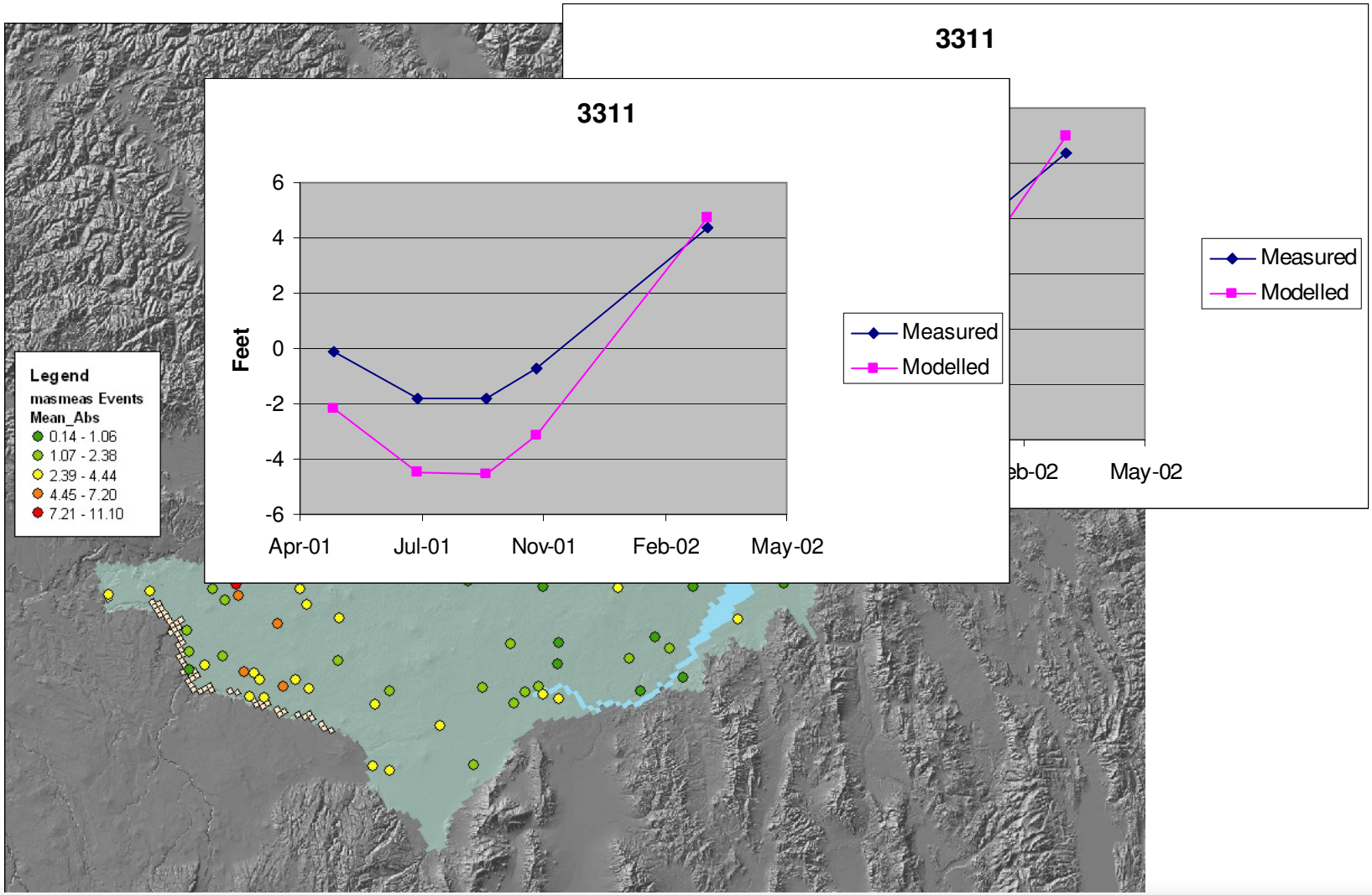
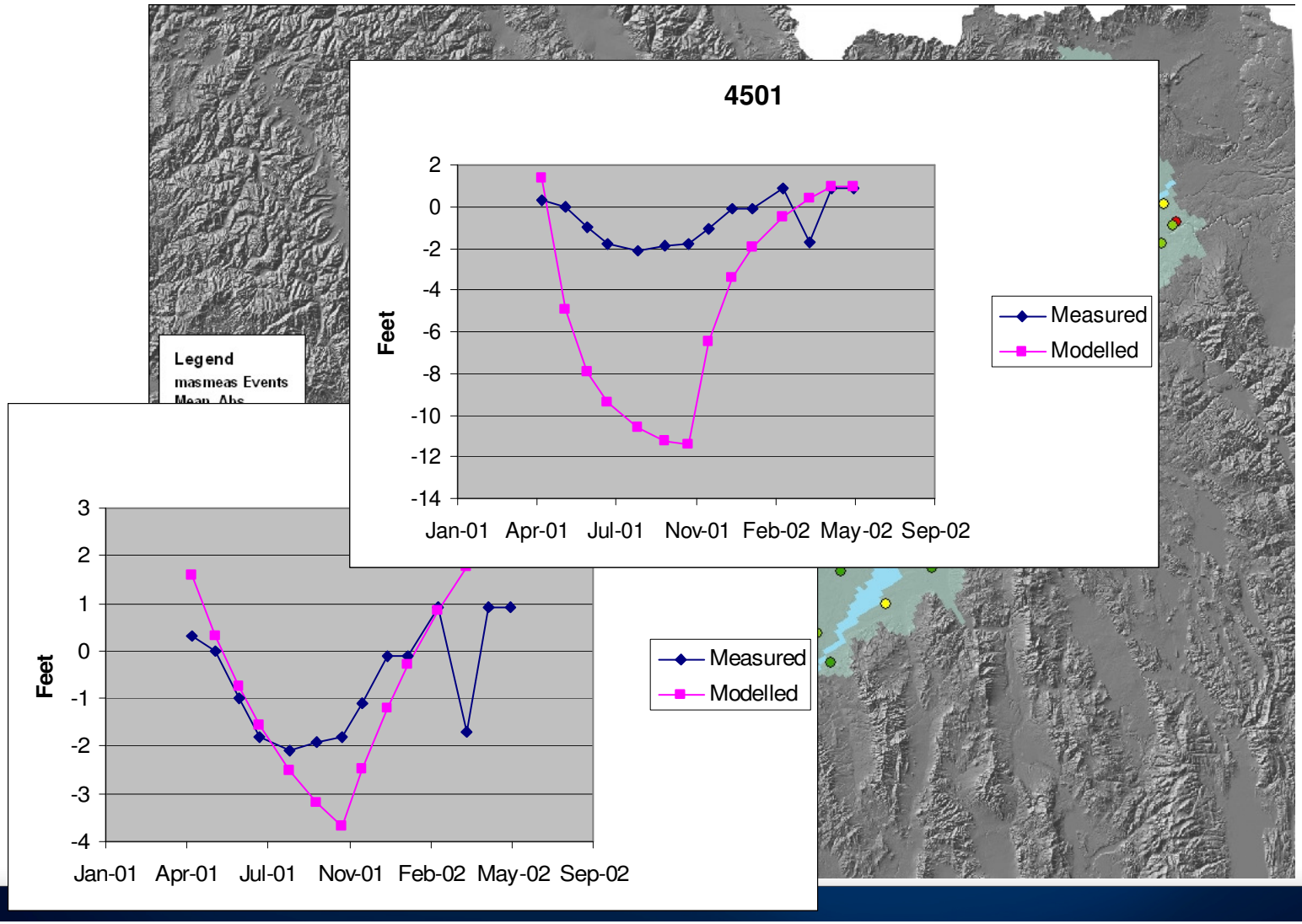

Legend
masmeas Events
Mean_Abs
0.14 - 1.06
1.07 - 2.38
2.39 - 4.44
4.45 - 7.20
7.21 - 11.10
3311
Feet
6
4
2
0
-2
-4
-6
Apr-01
Jul-01
Nov-01
Feb-02
May-02
Measured
Modelled
3311
eb-02
May-02
Measured
Modelled


4501
Feet
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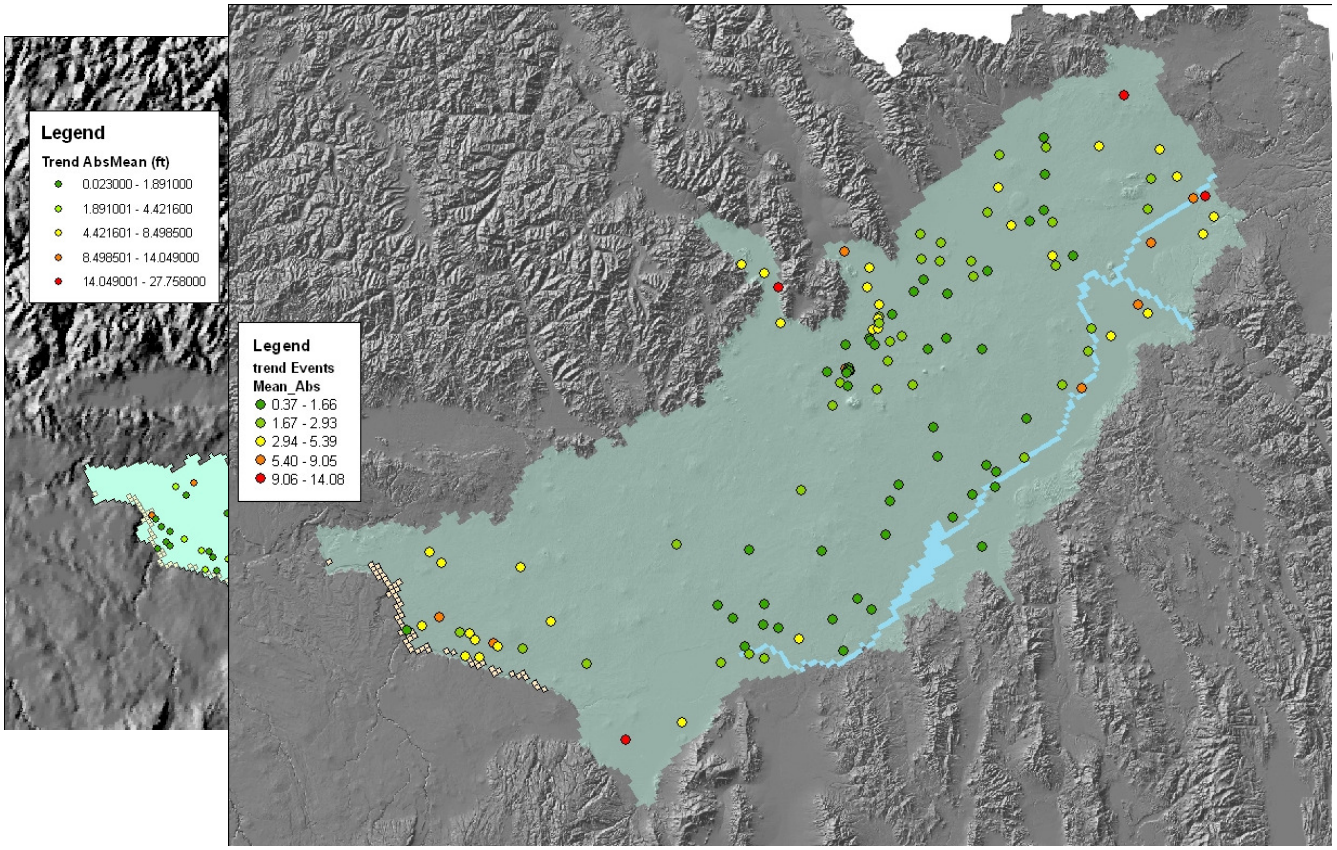
0
-2
-4
-6
-8
-10
-12
-14
Jan-01
Apr-01
Jul-01
Nov-01
Feb-02
May-02
Sep-02
Measured
Modelled
Legend
masmeas Events
Feet
3
2
1
0
-1
-2
-3
-4
Jan-01
Apr-01
Jul-01
Nov-01
Feb-02
May-02
Sep-02
Measured
Modelled



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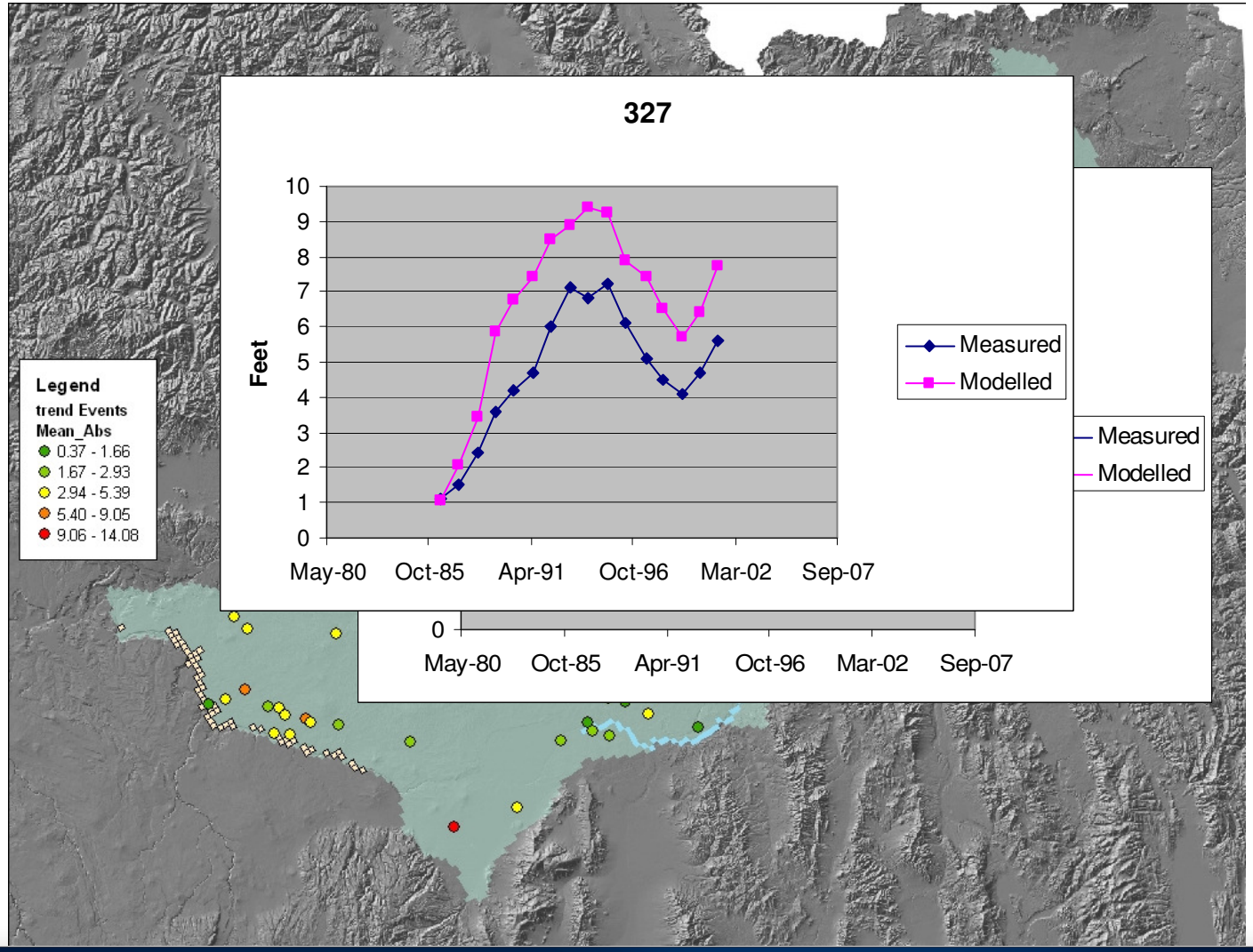
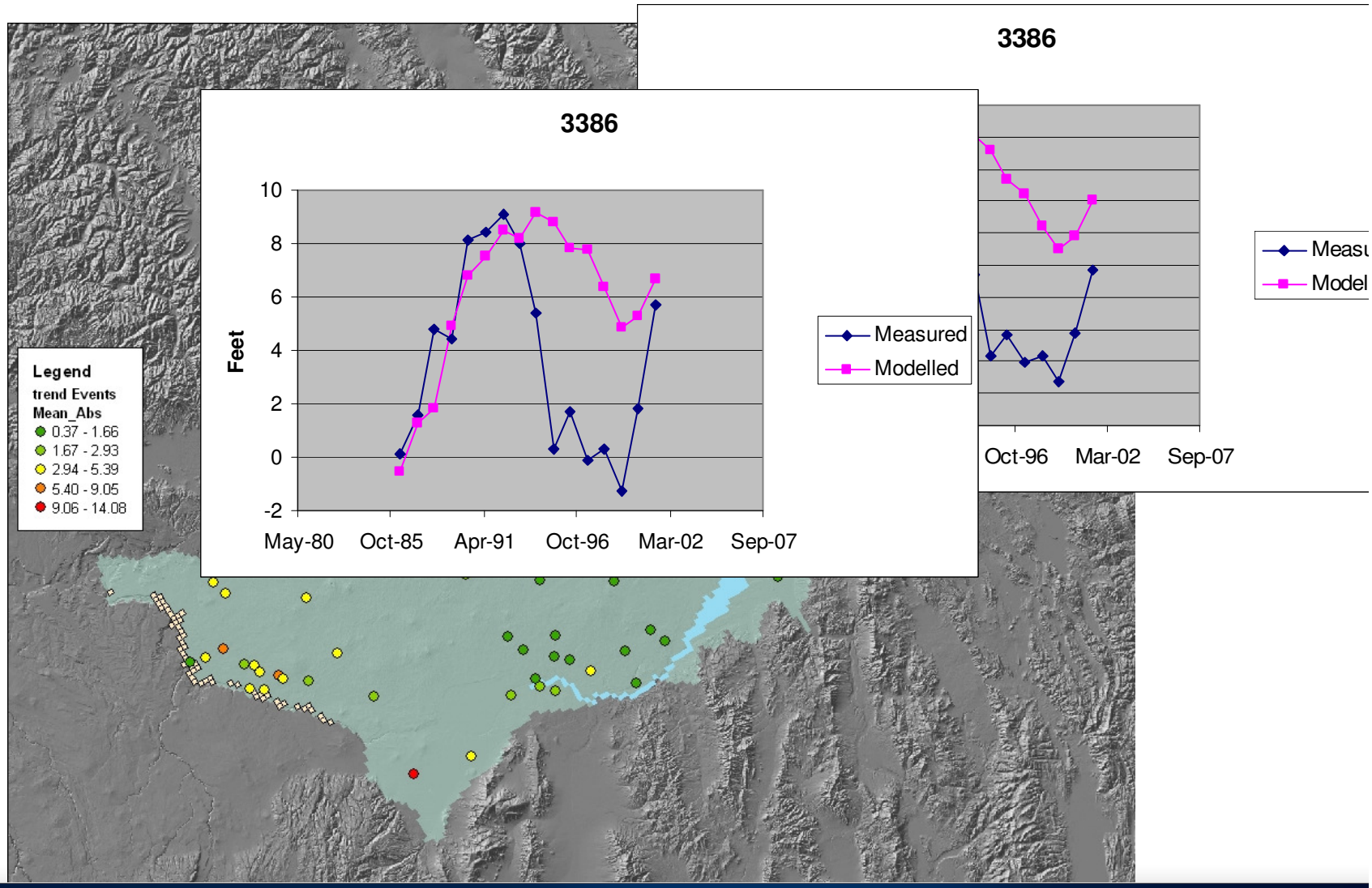
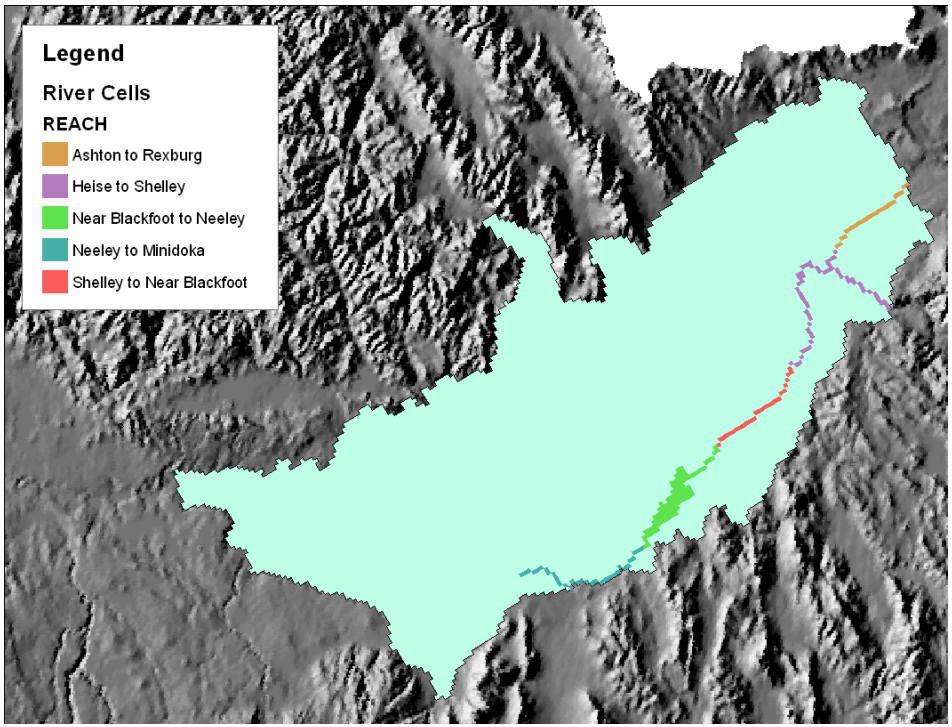
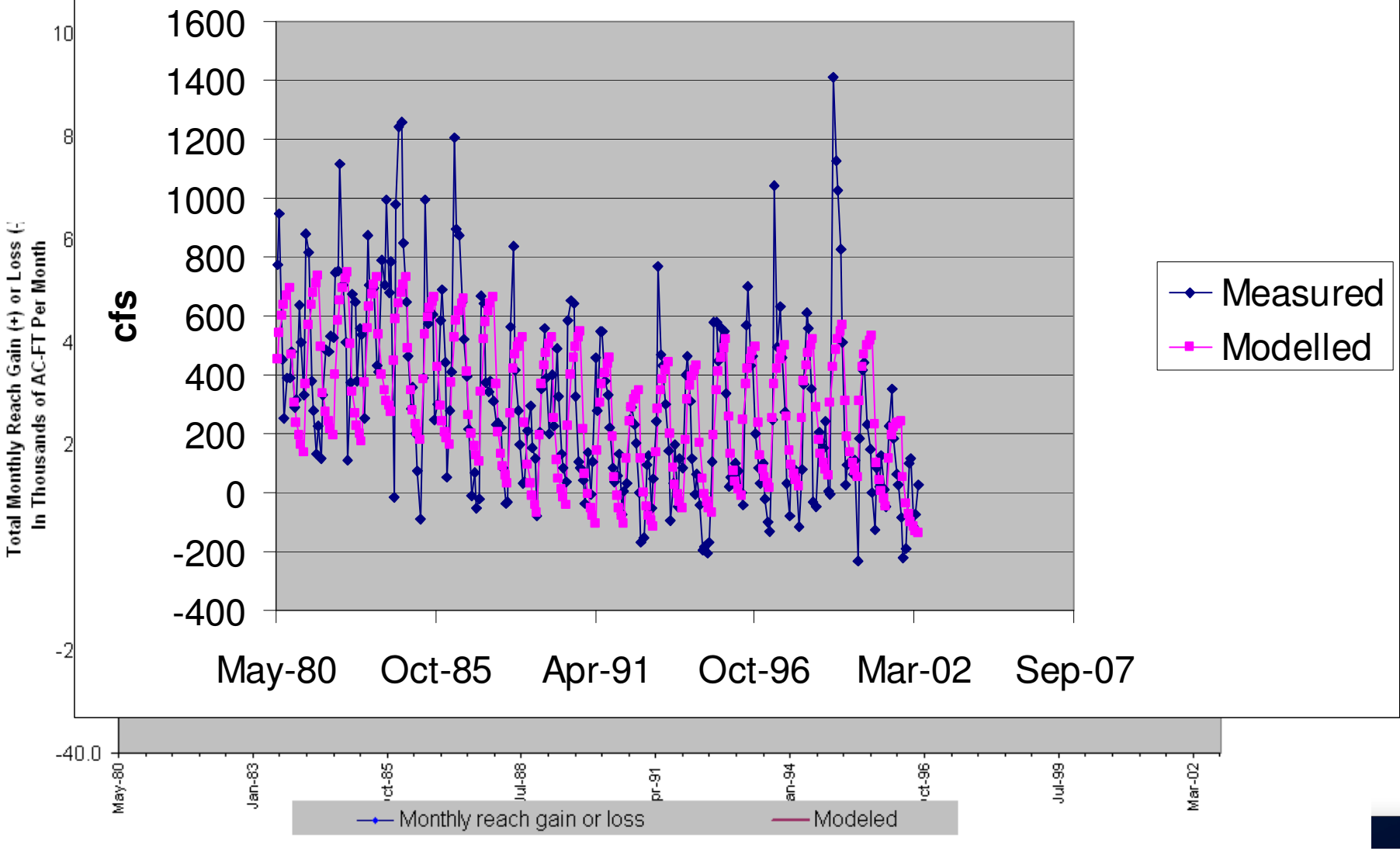

327
Feet
10
9
8
7
6
5
4
3
2
1
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
Legend
trend Events
Mean_Abs
0.37 - 1.66
1.67 - 2.93
2.94 - 5.39
5.40 - 9.05
9.06 - 14.08
Measured
Modelled
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07


Legend
trend Events
Mean_Abs
0.37 - 1.66
1.67 - 2.93
2.94 - 5.39
5.40 - 9.05
9.06 - 14.08
3386
Feet
10
8
6
4
2
0
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
3386
Oct-96
Mar-02
Sep-07

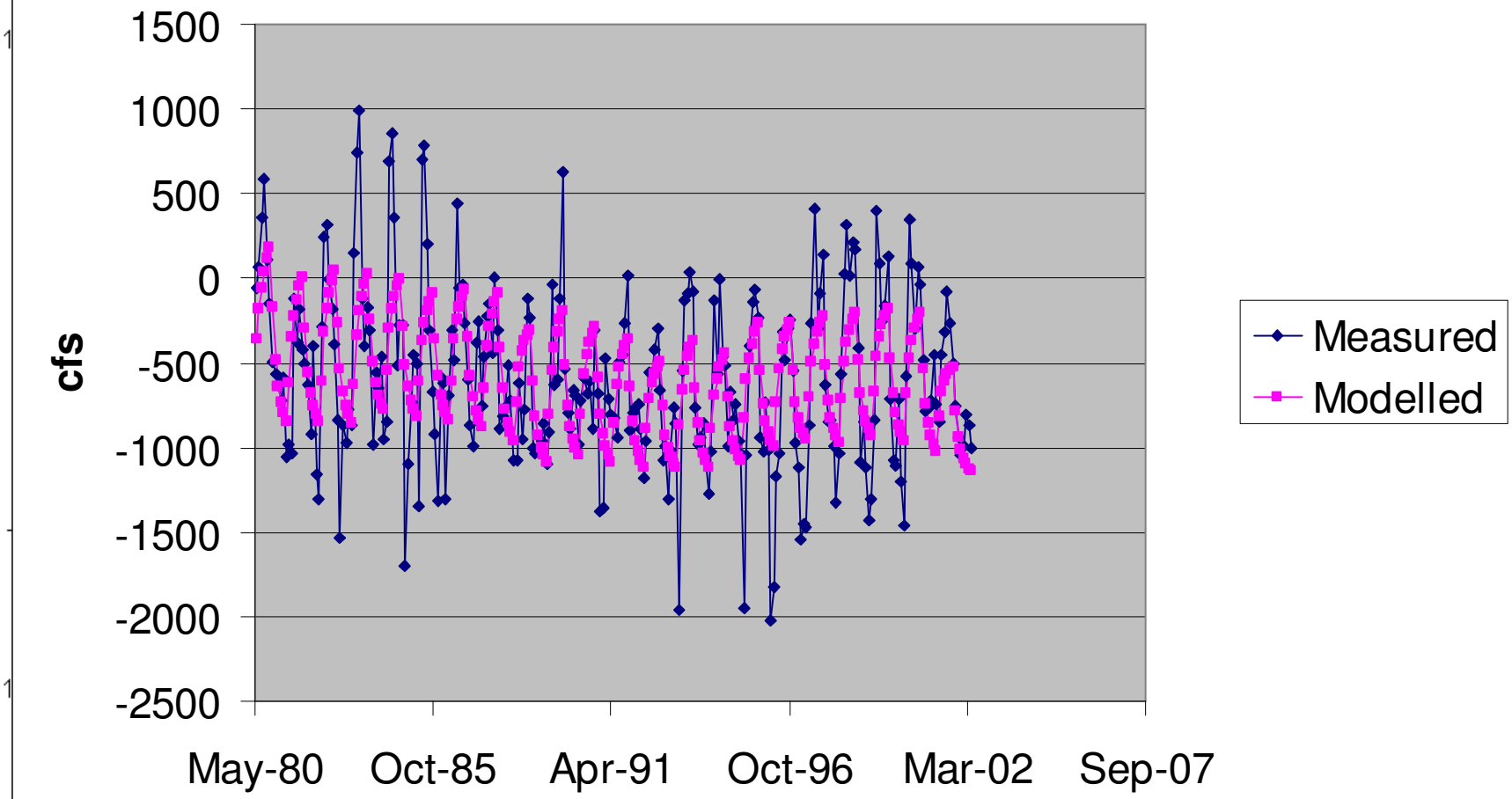


- Snake River reaches

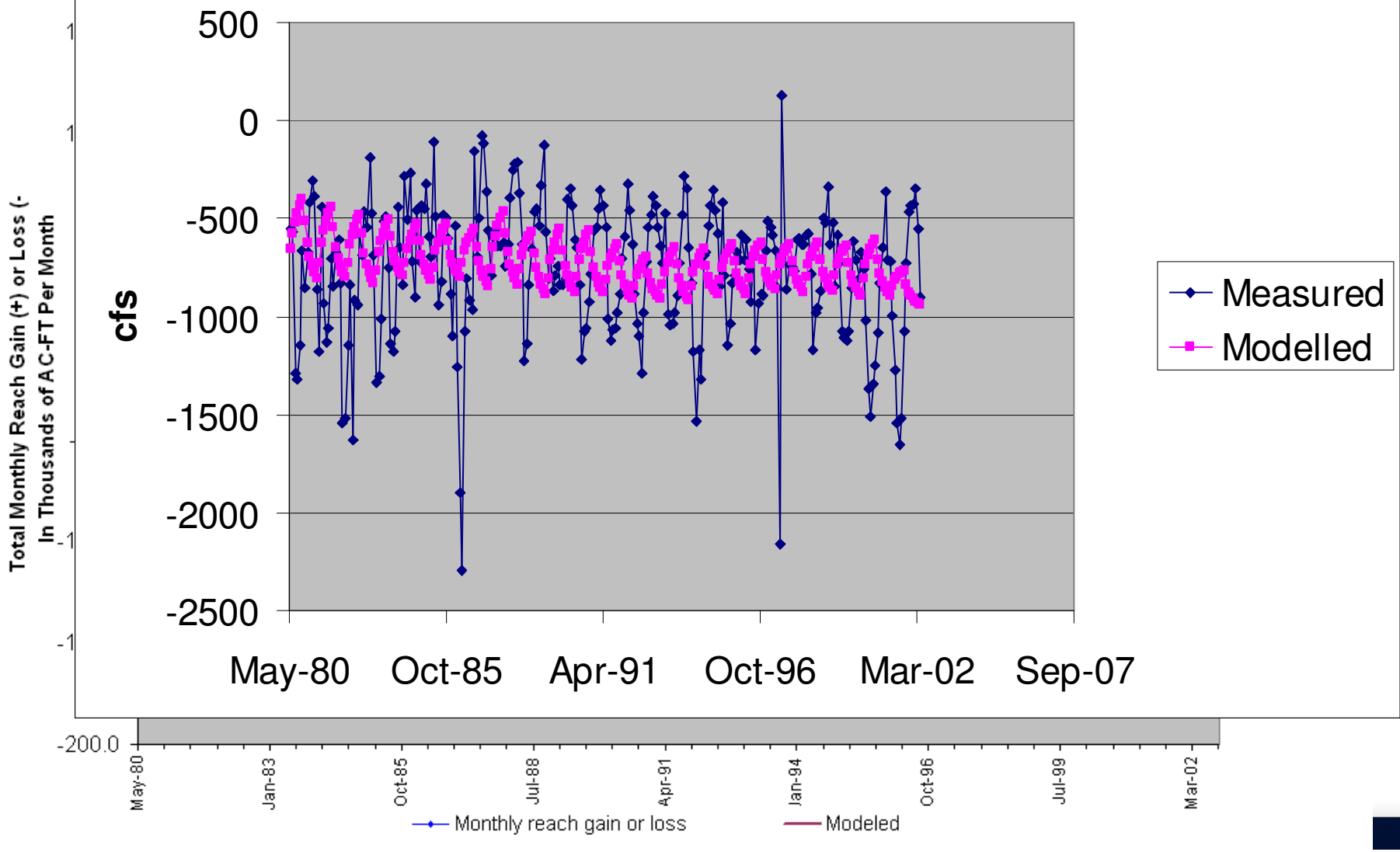
Ashton-Rexburg



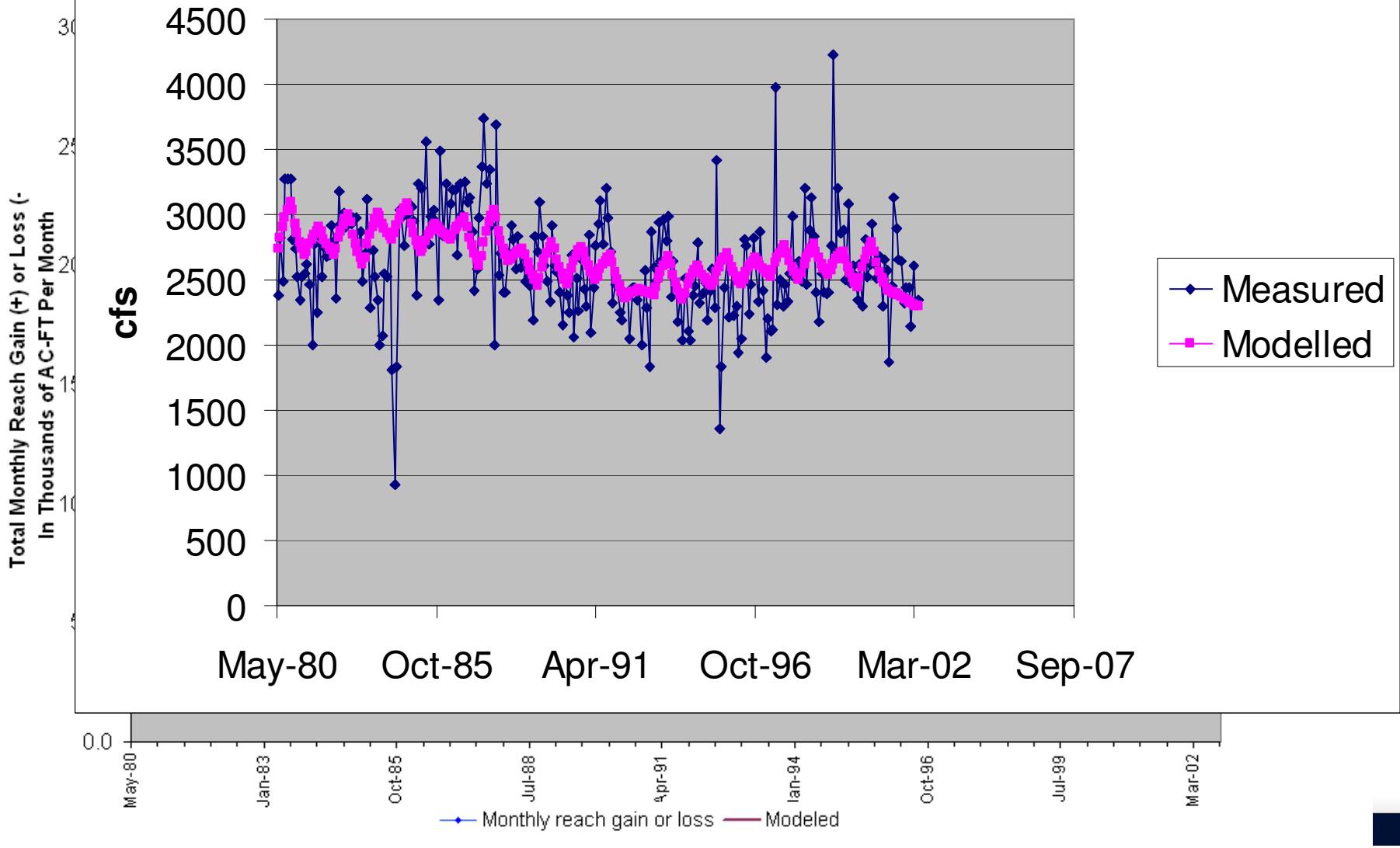
Heise-Shelley



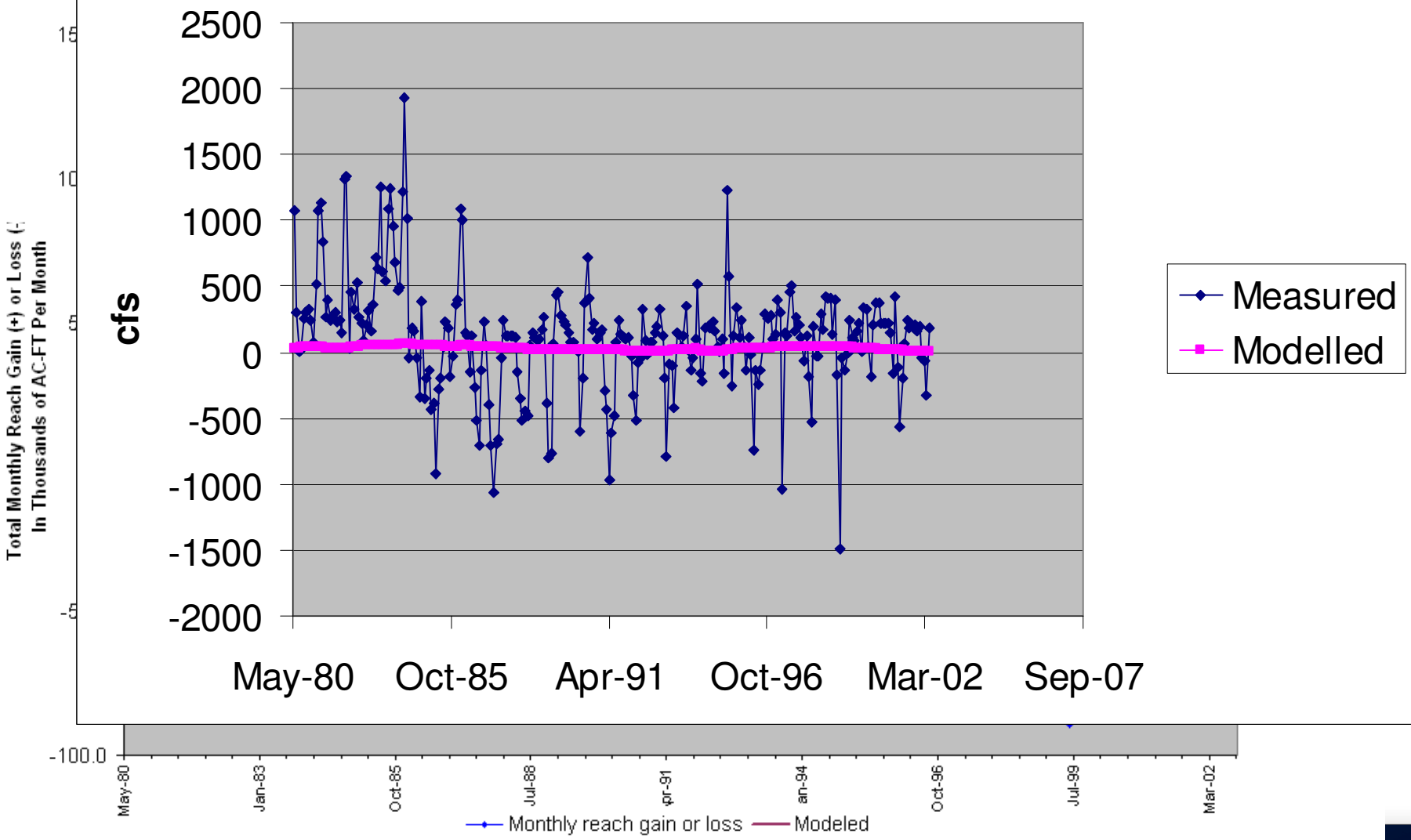
Shelley-nr Blackfoot

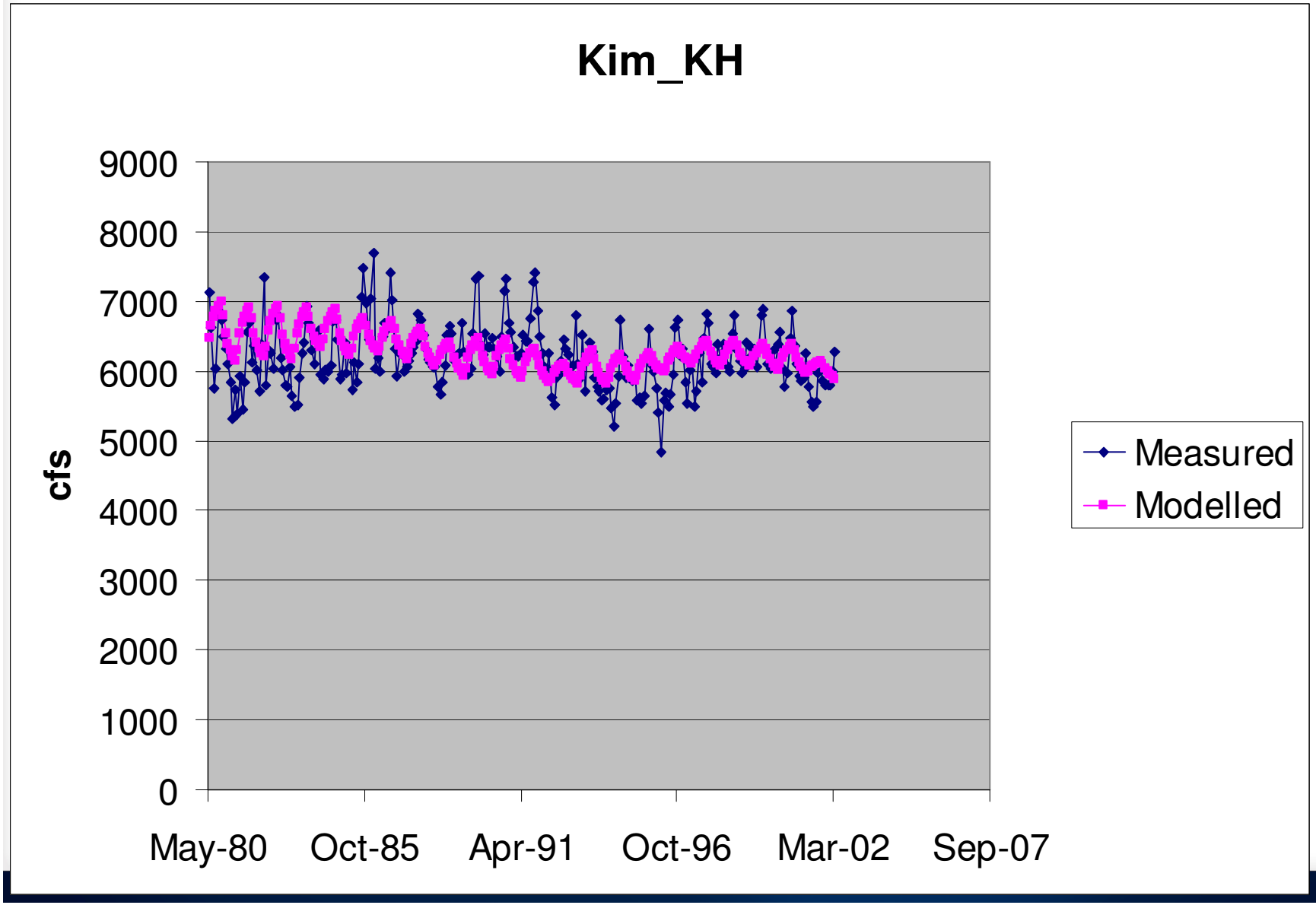


nr Blackfoot-Neeley



Neeley-Minidoka




Kim_KH
cfs
9000
8000
7000
6000
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2000
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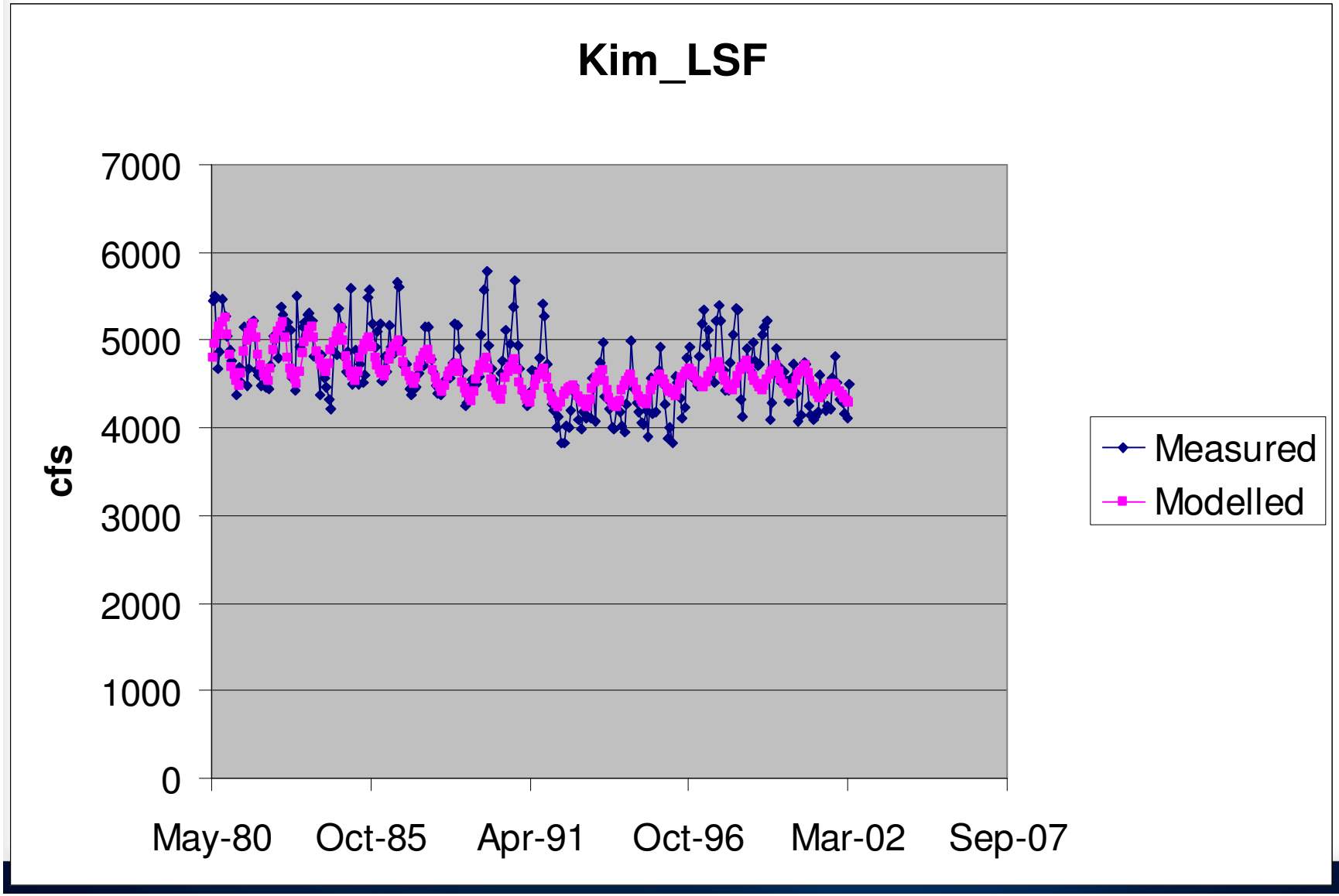
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


Kim_LSF
7000
6000
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May-80
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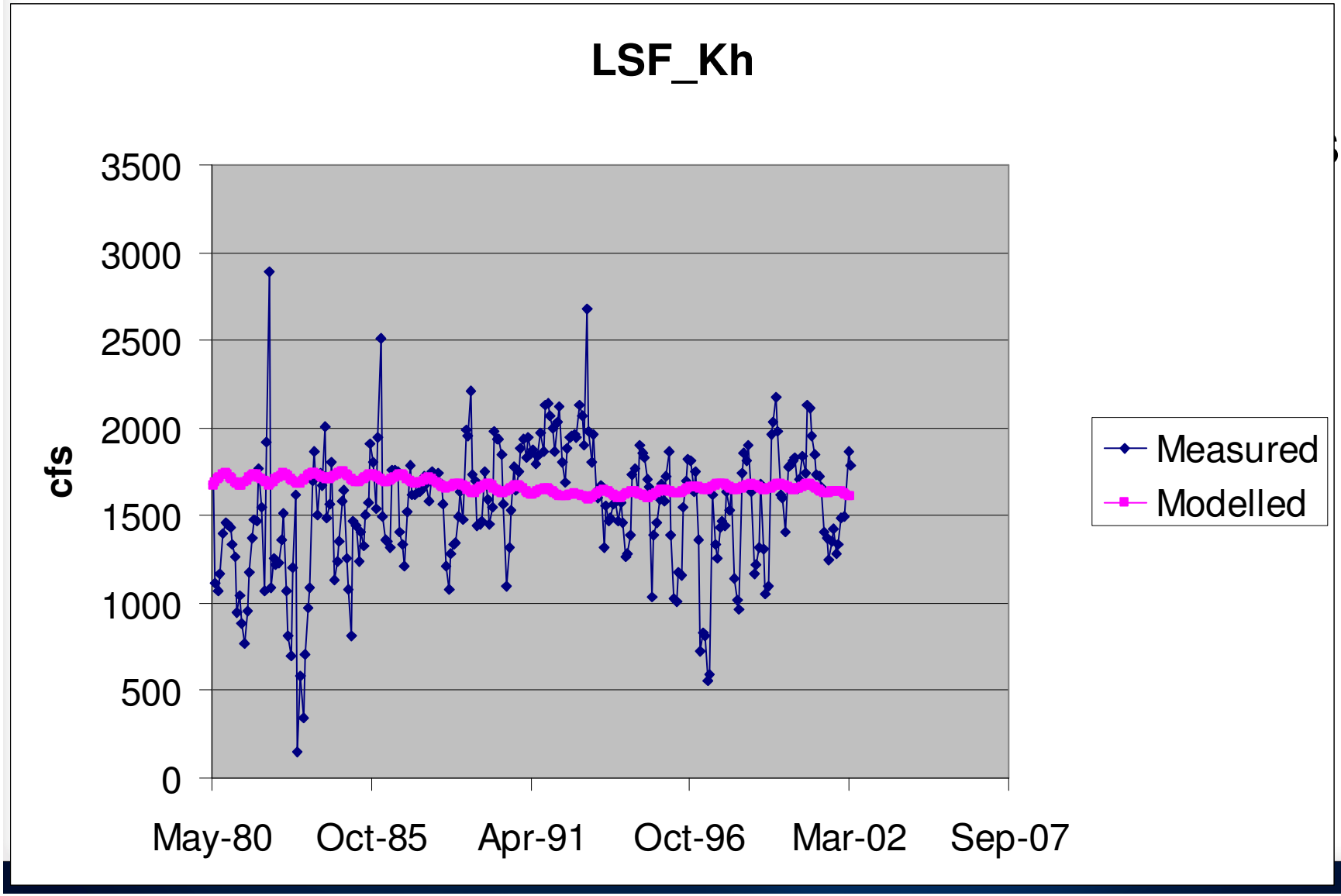
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


LSF_Kh
3500
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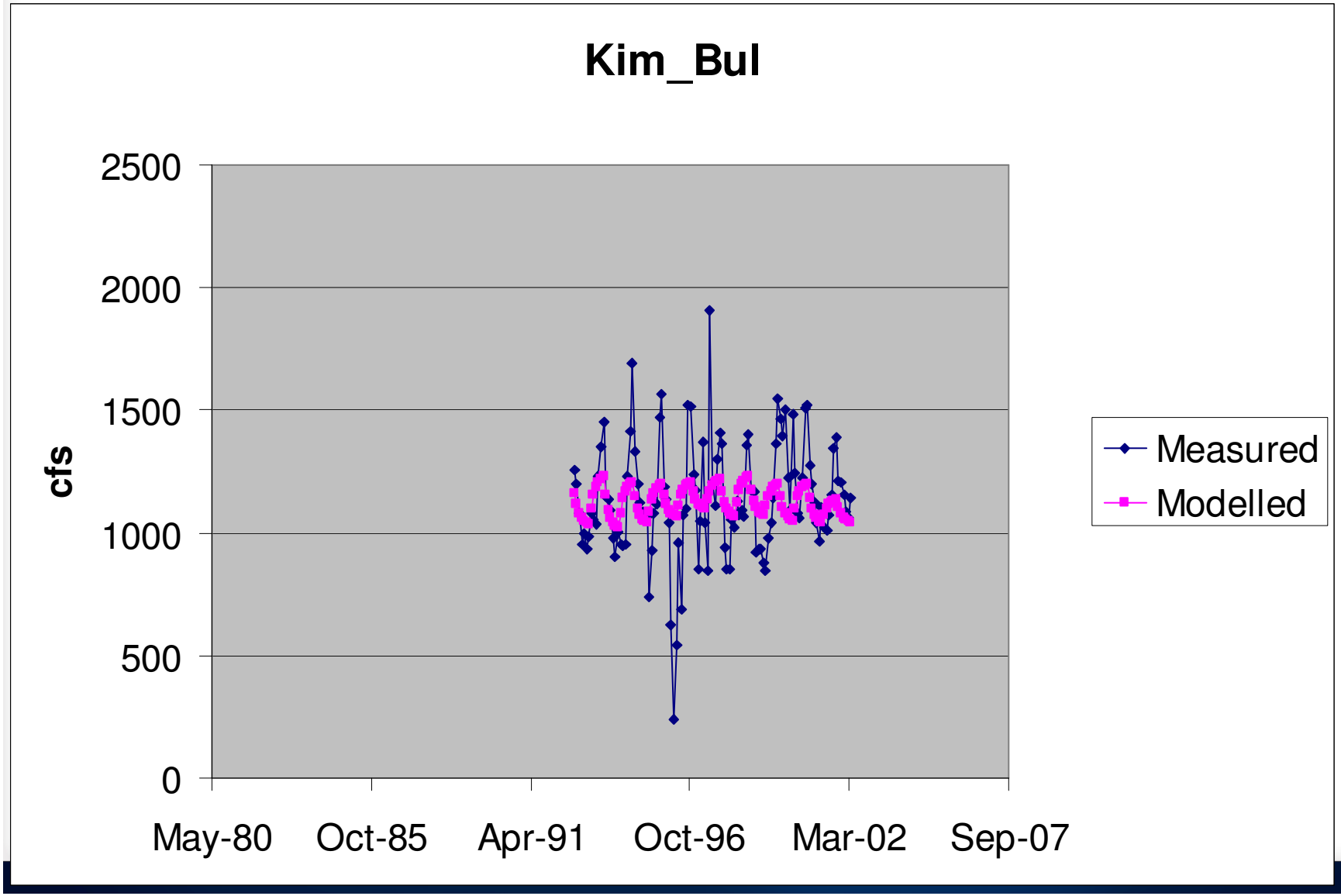
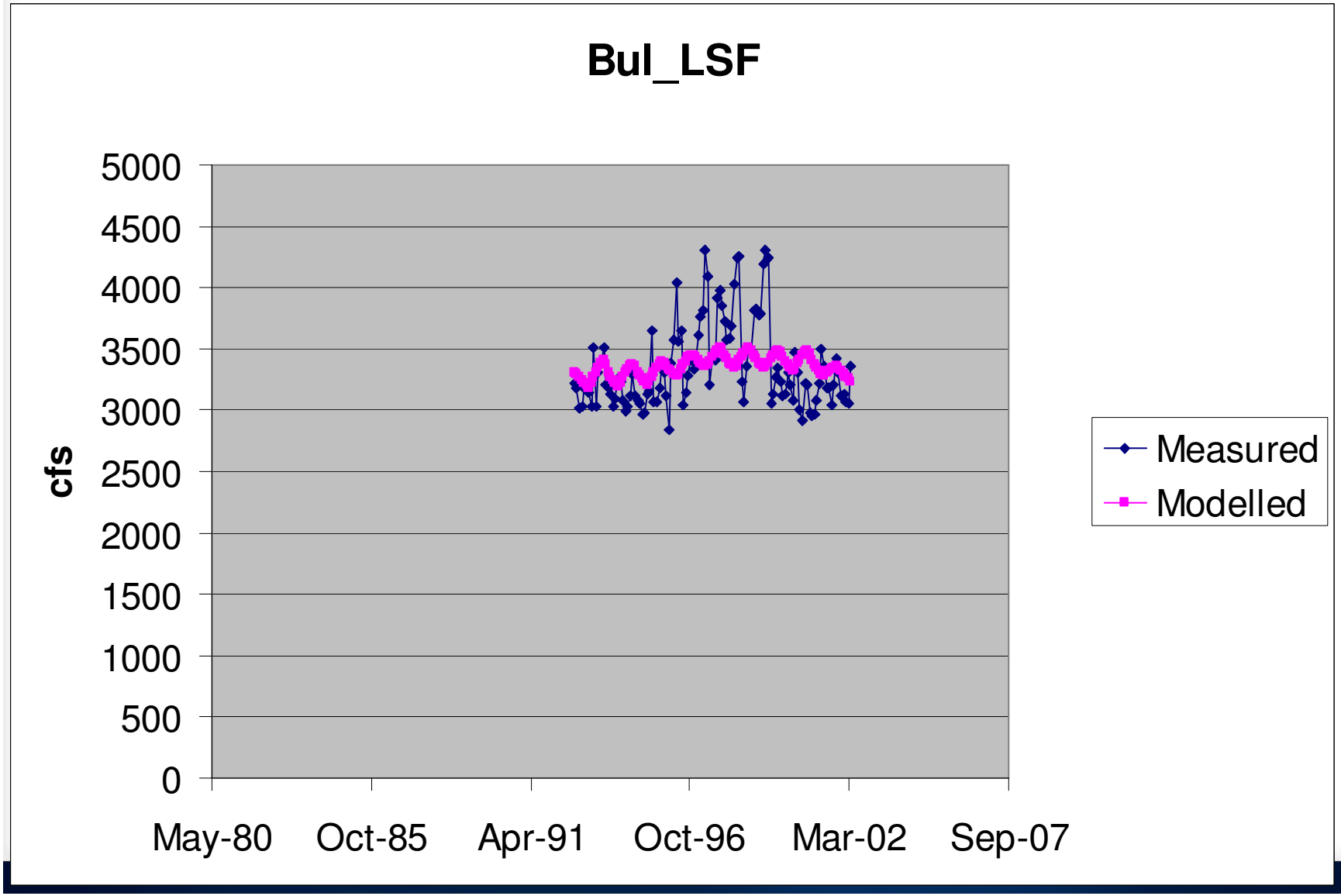
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


Kim_Bul
2500
2000
1500
1000
500
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


Bul_LSF
cfs
5000
4500
4000
3500
3000
2500
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1500
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500
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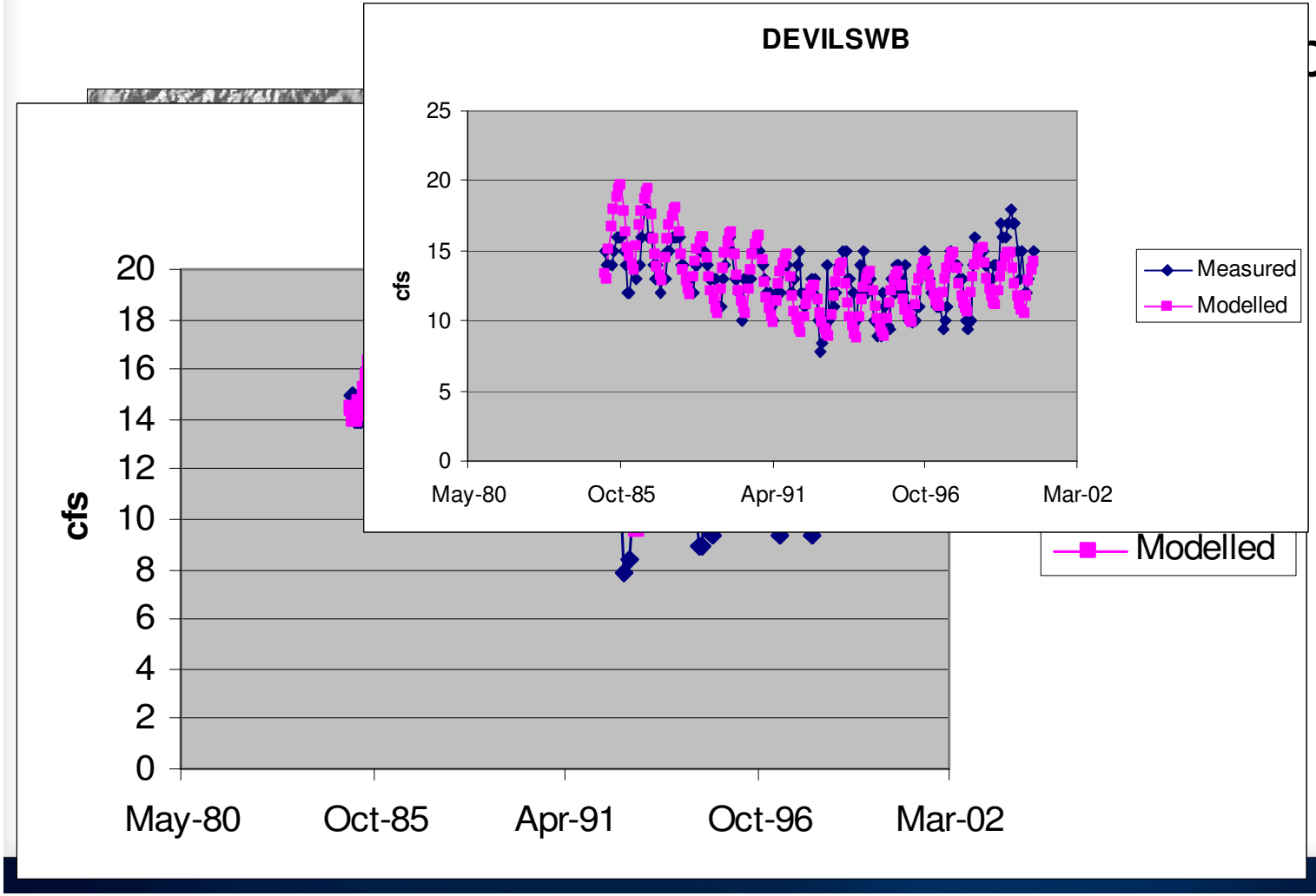
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


DEVILSWB
cfs
25
20
15
10
5
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled
cfs
20
18
16
14
12
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8
6
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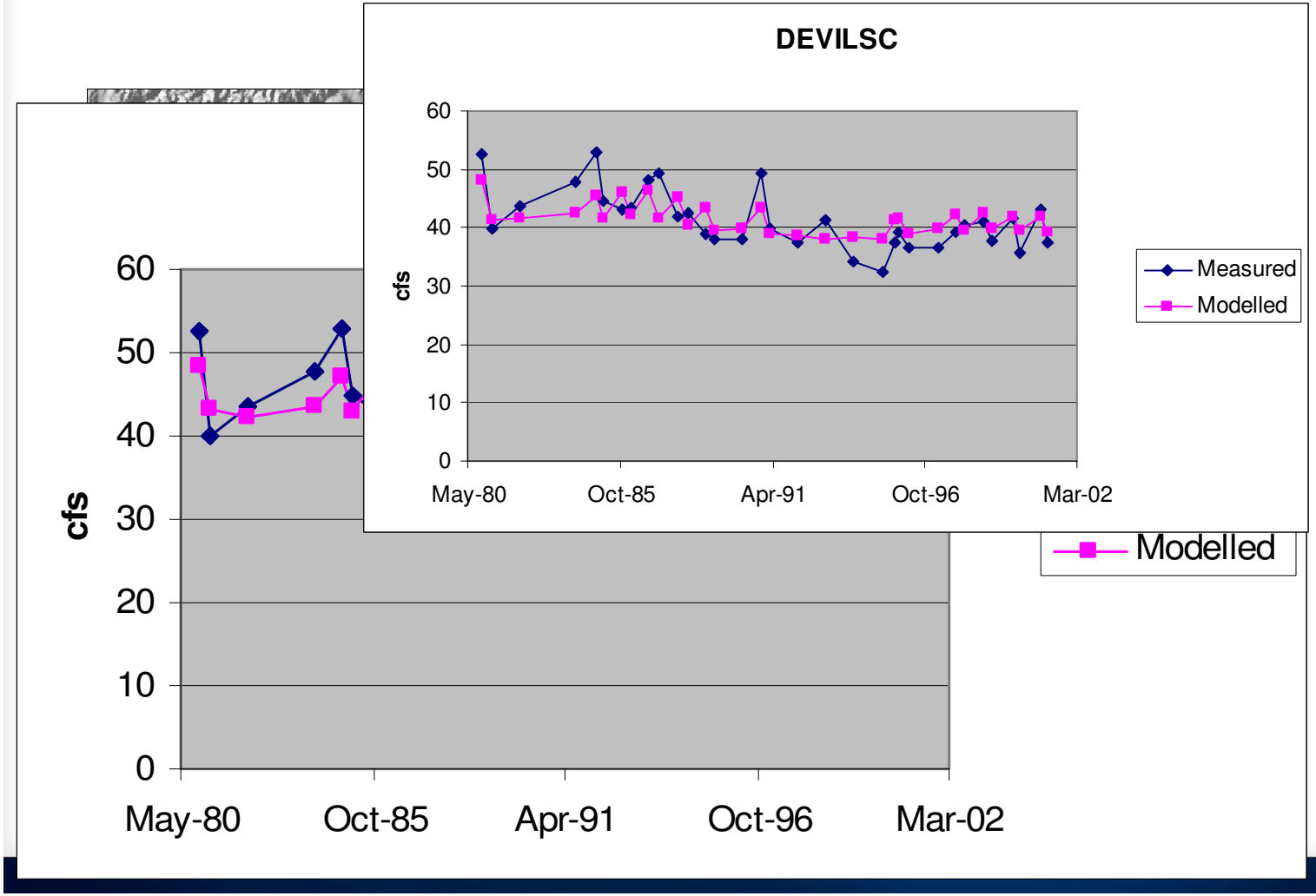
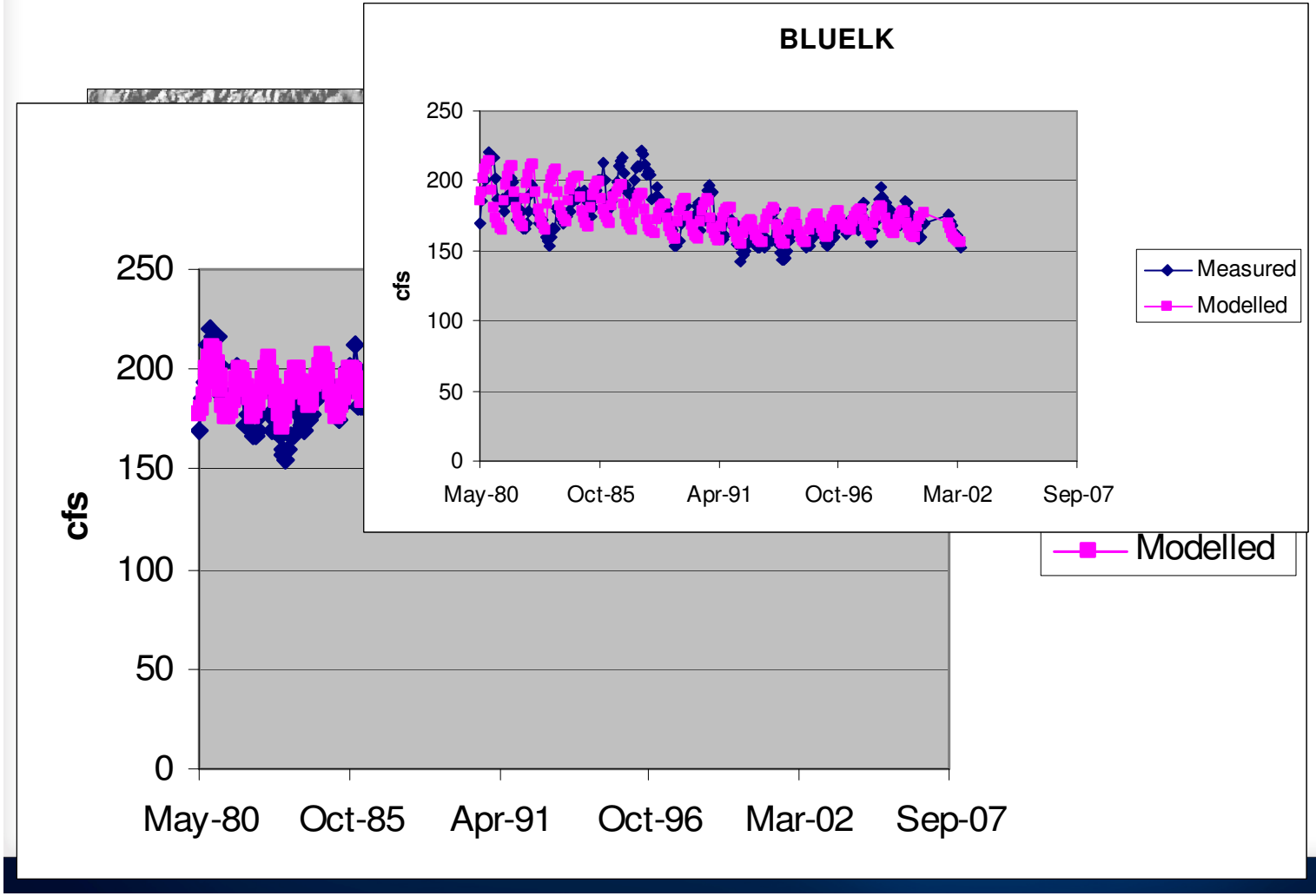
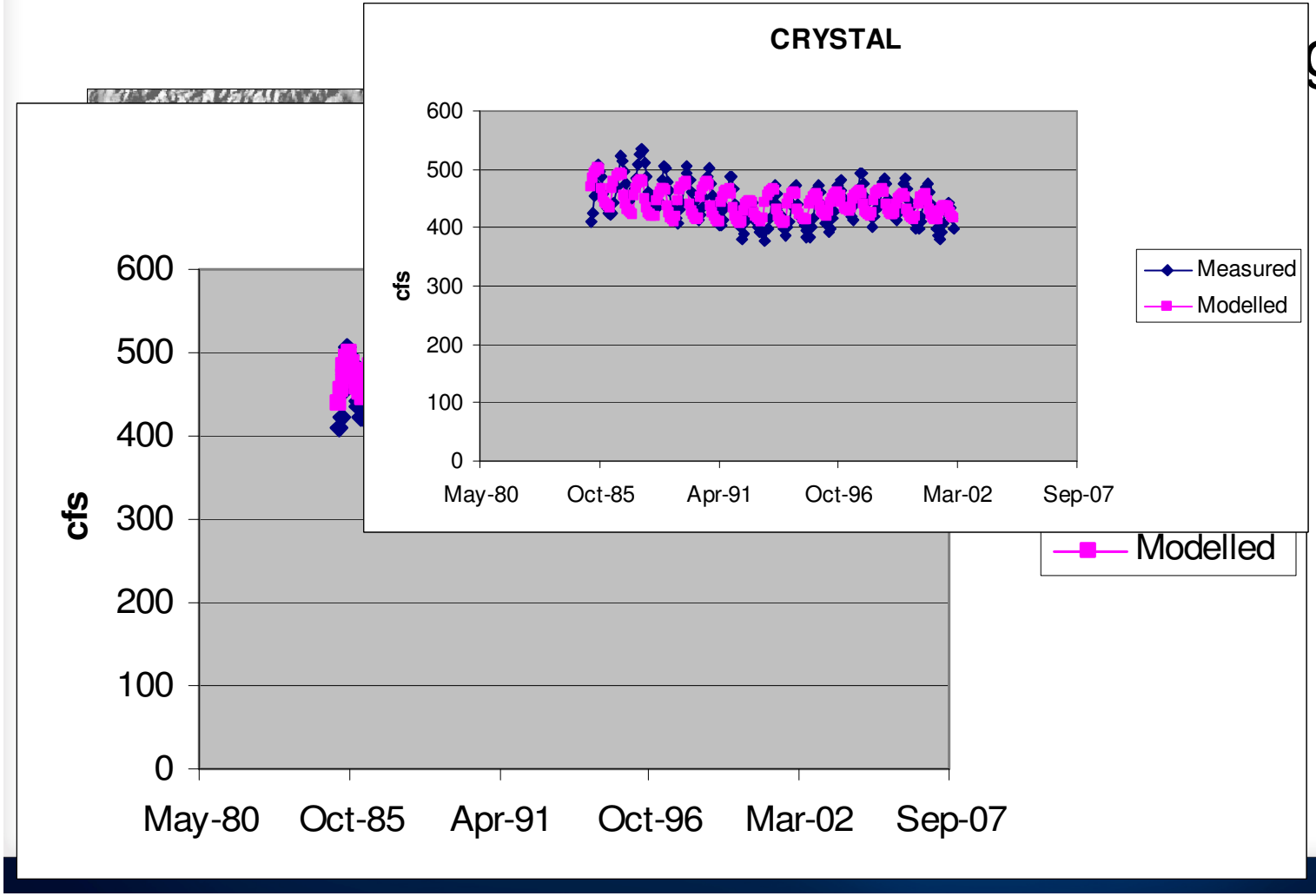
2
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Modelled

owl

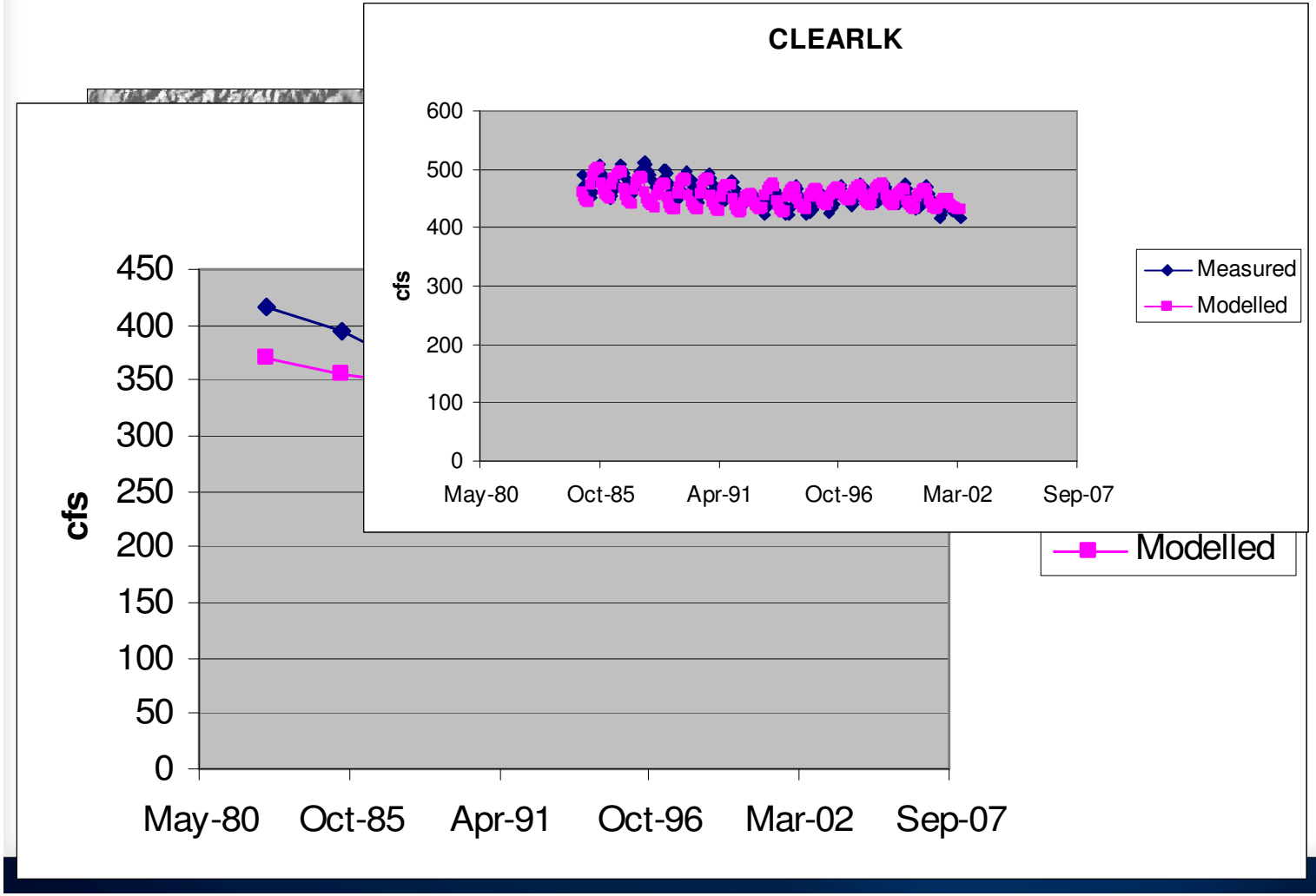

DEVILSC
cfs
60
50
40
30
20
10
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled
Modelled


BLUELK
250
200
150
100
50
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
Modelled

gs


600
500
400
300
200
100
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Modelled

CRYSTAL
600
500
400
300
200
100
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


CLEARLK
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500
400
300
200
100
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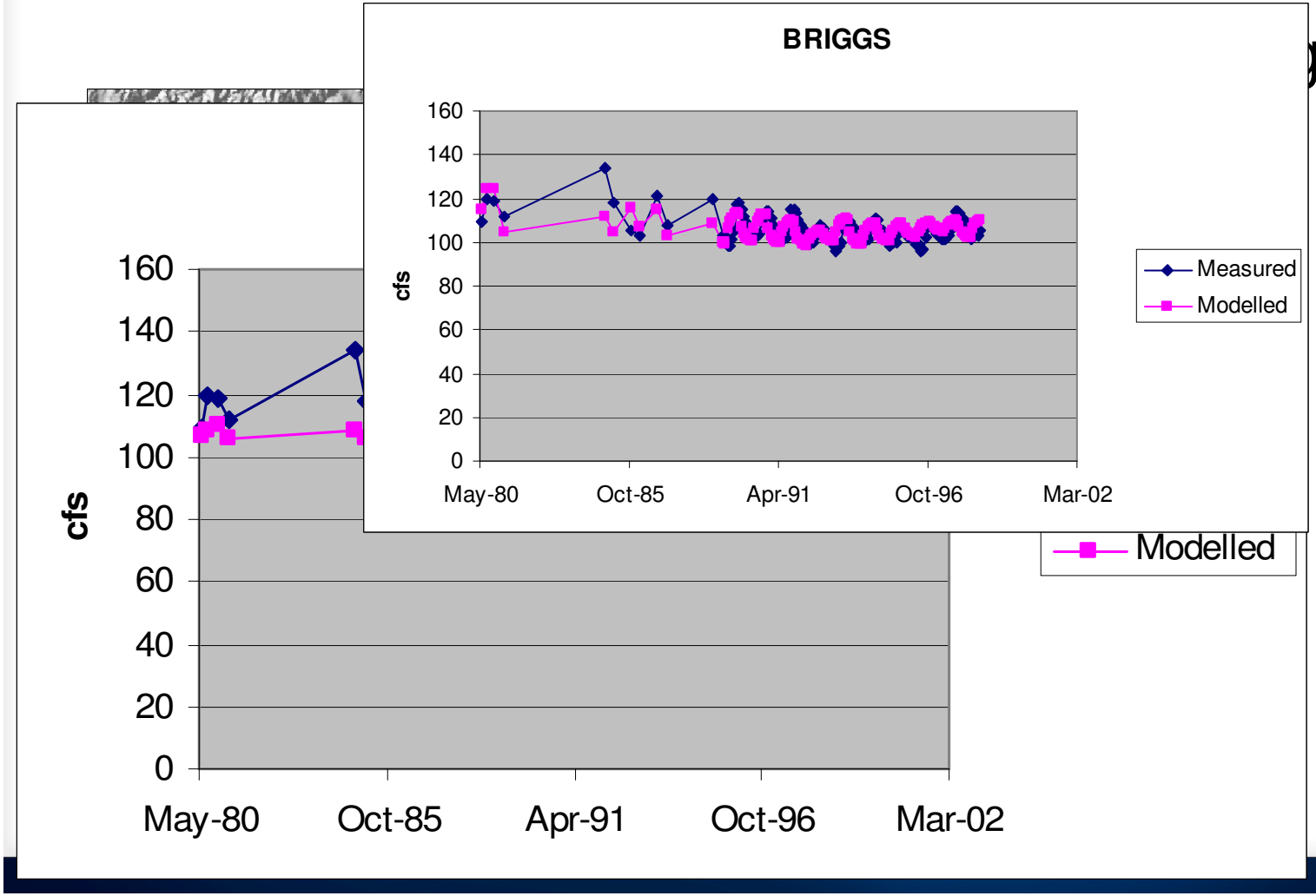
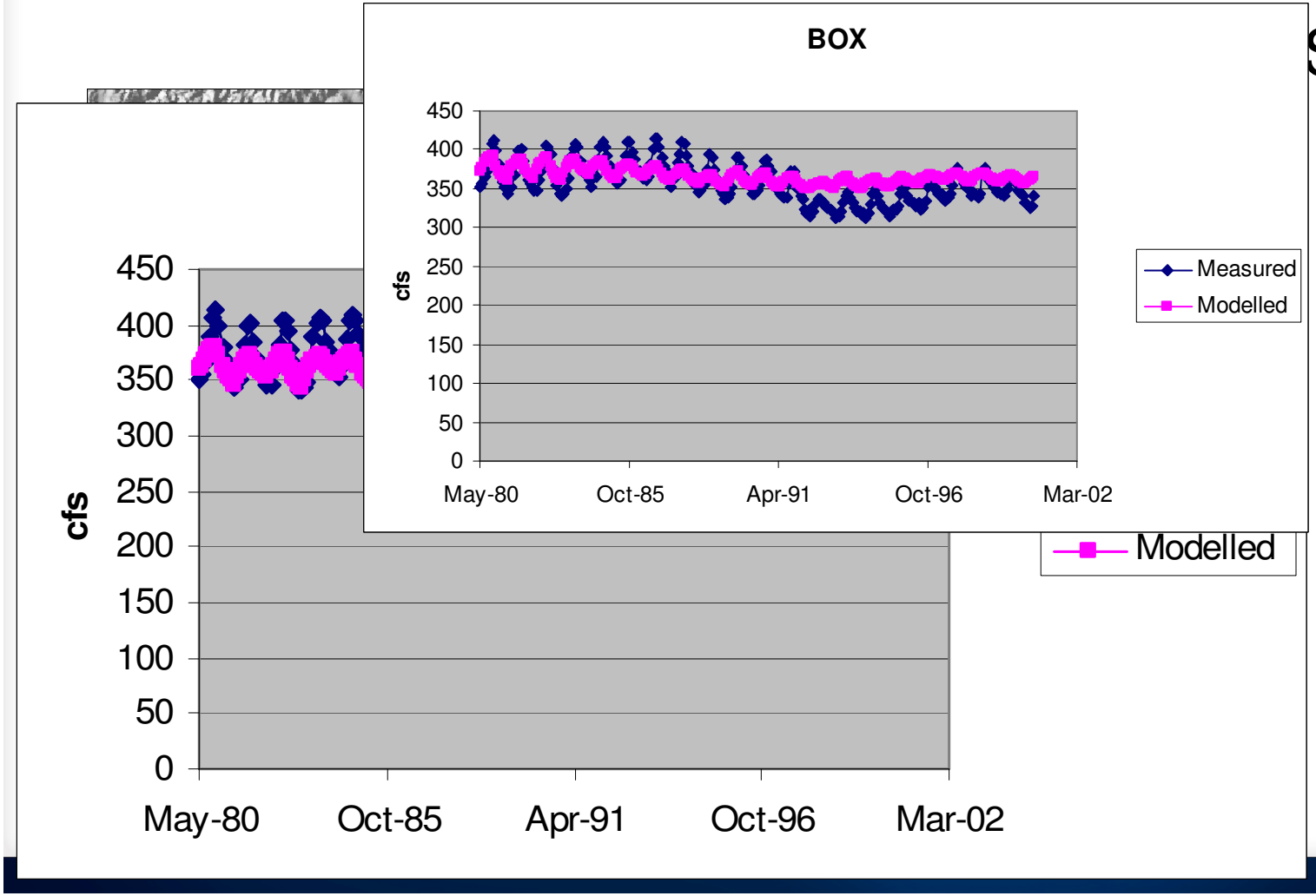
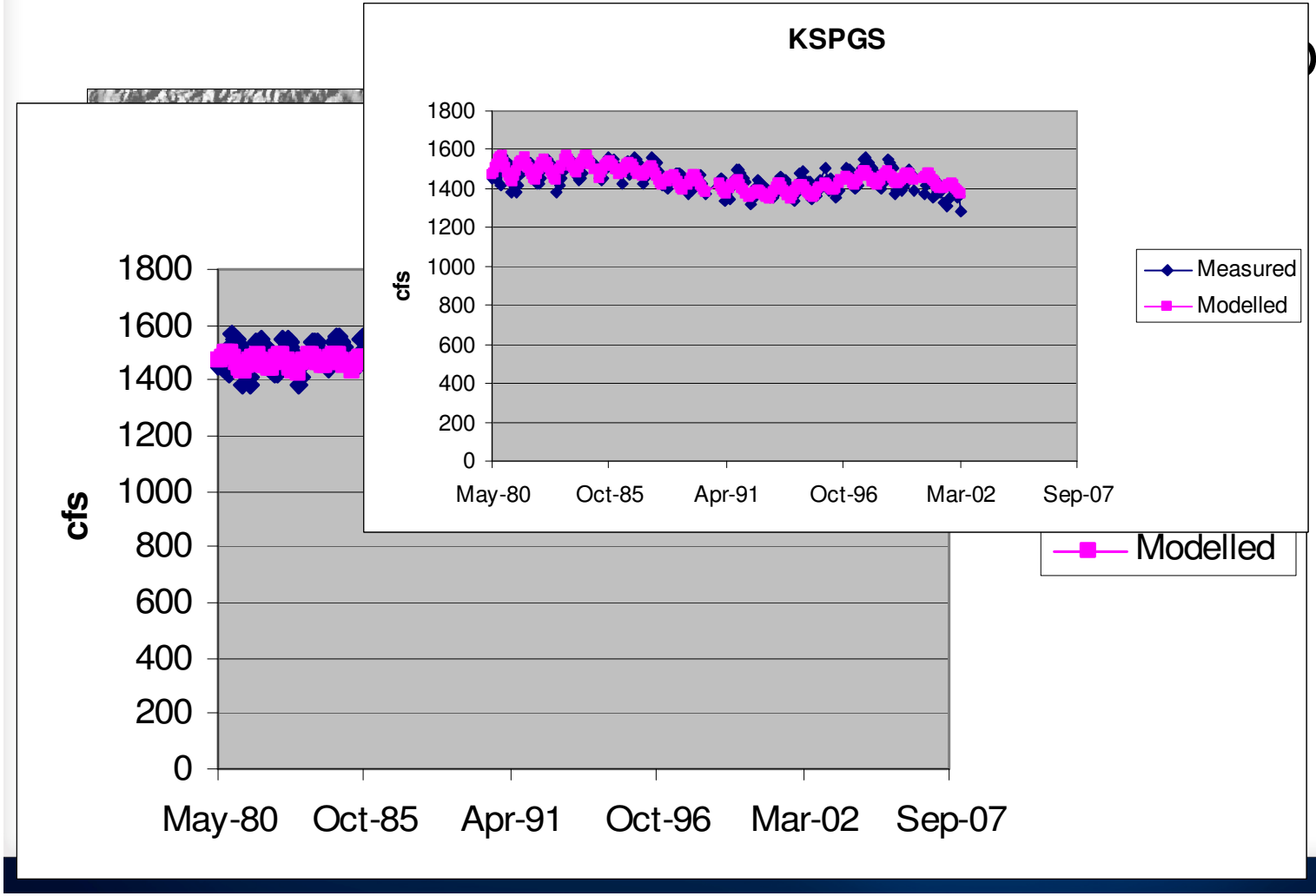
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
450
400
350
300
250
200
150
100
50
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Modelled


BRIGGS
cfs
160
140
120
100
80
60
40
20
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled
Modelled

Spring

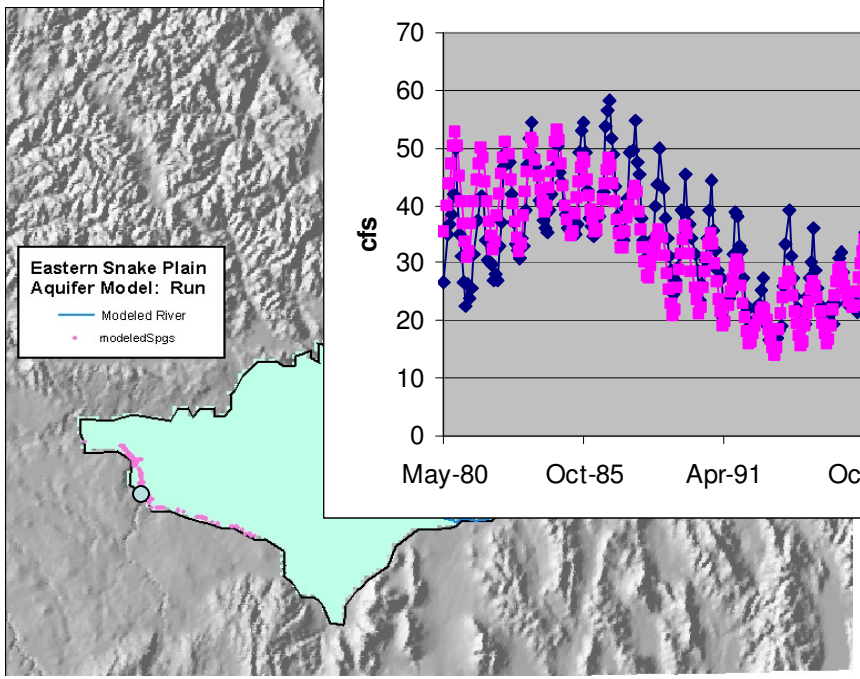

BOX
cfs
450
400
350
300
250
200
150
100
50
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled
Modelled

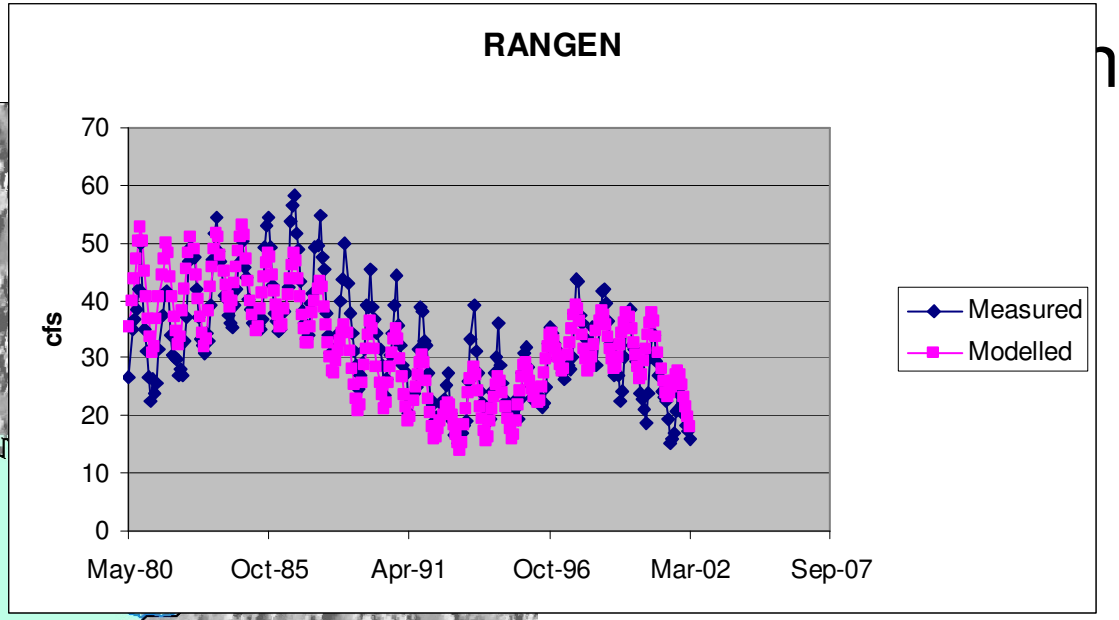
rings

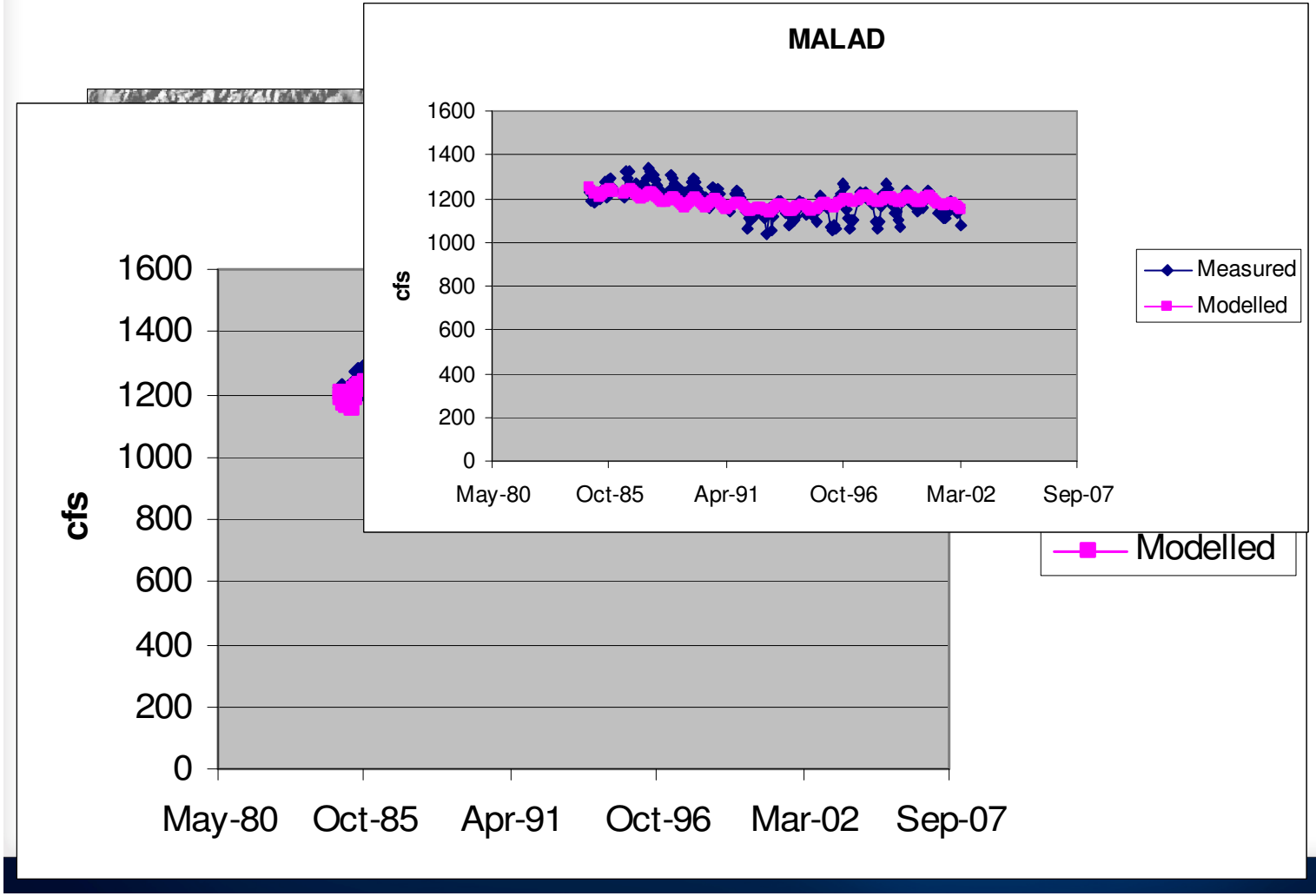

1800
1600
1400
1200
1000
800
600
400
200
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Modelled

KSPGS
1800
1600
1400
1200
1000
800
600
400
200
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

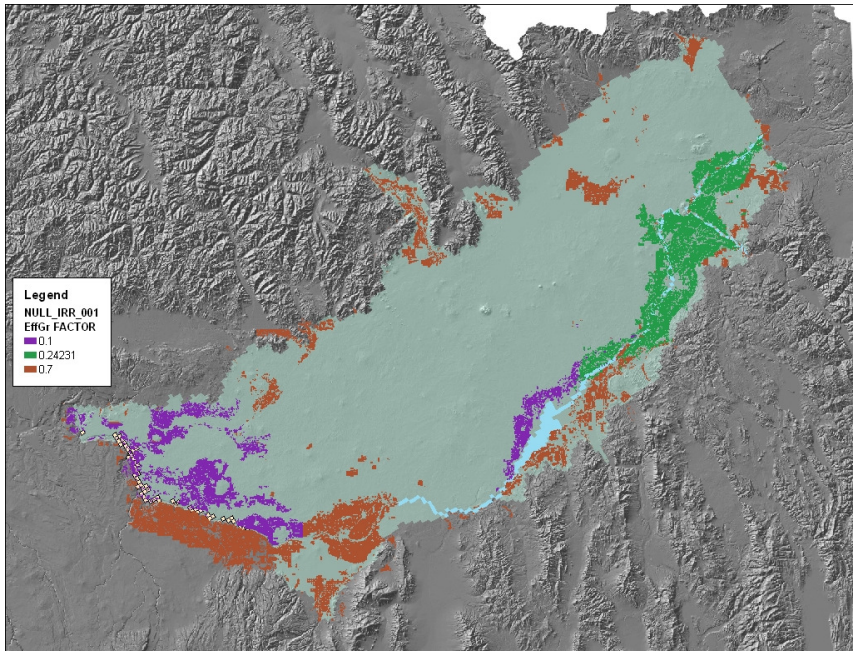
ng


Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs


RANGEN
cfs
70
60
50
40
30
20
10
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

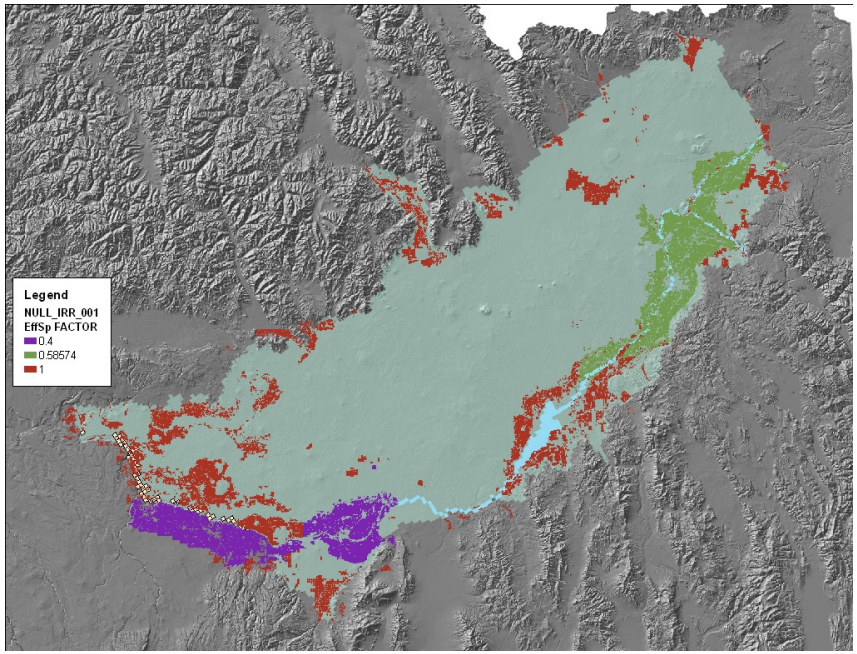

MALAD
1600
1400
1200
1000
800
600
400
200
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
1600
1400
1200
1000
800
600
400
200
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Modelled

On Farm Water Budget



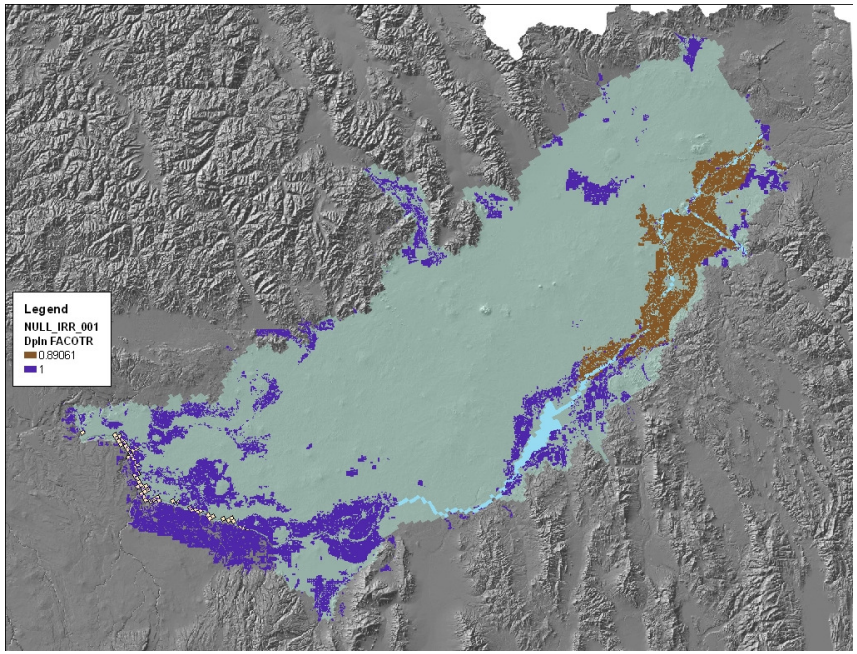
- EffGR and EffSP adjustable

On Farm Water Budget



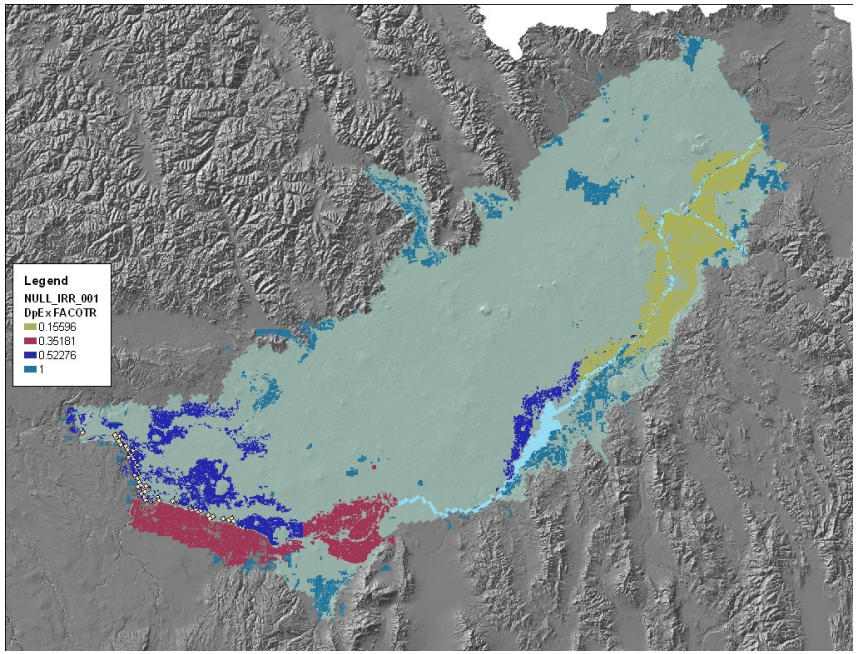
- EffSP adjustable

On Farm Water Budget



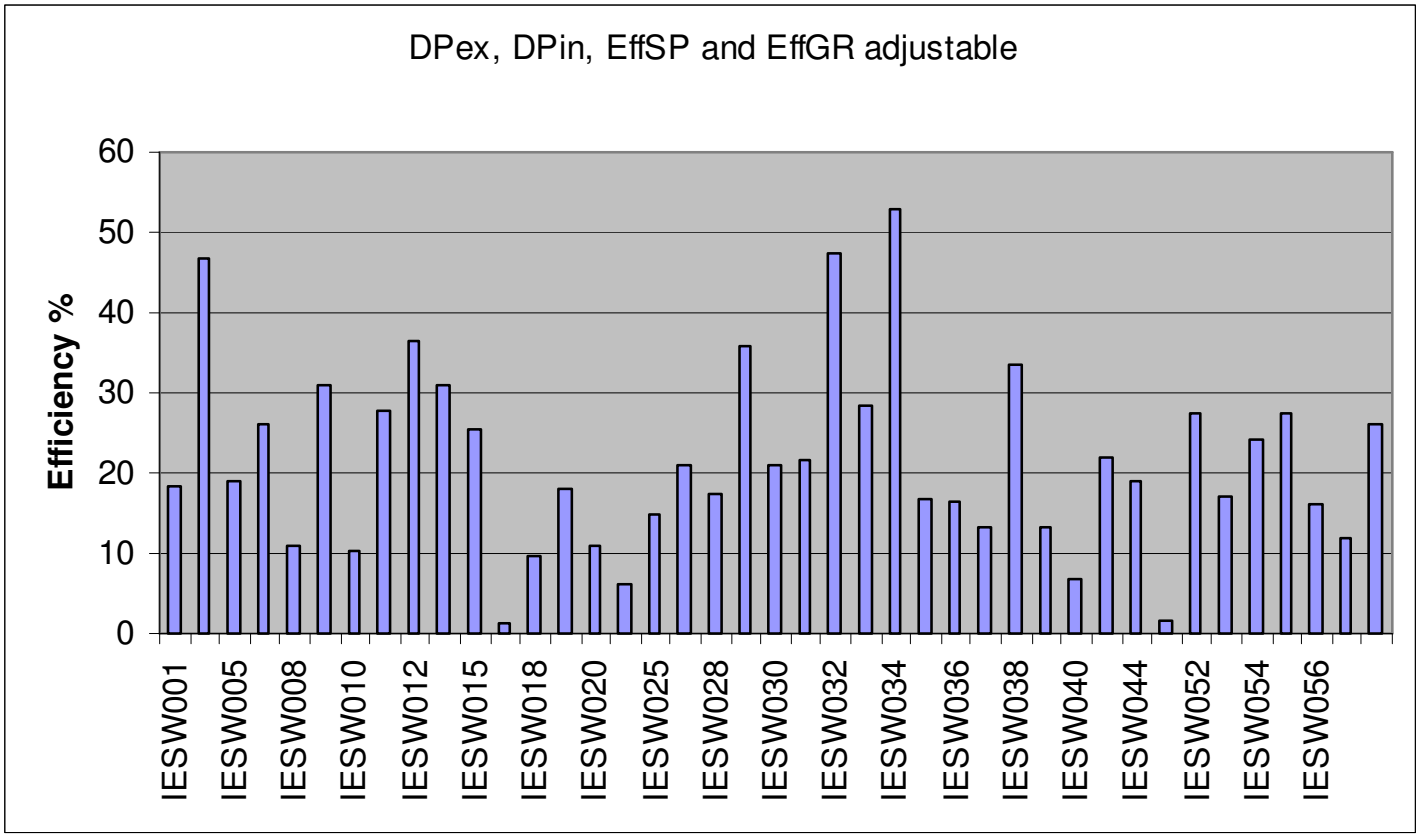
- DPin adjustable

On Farm Water Budget



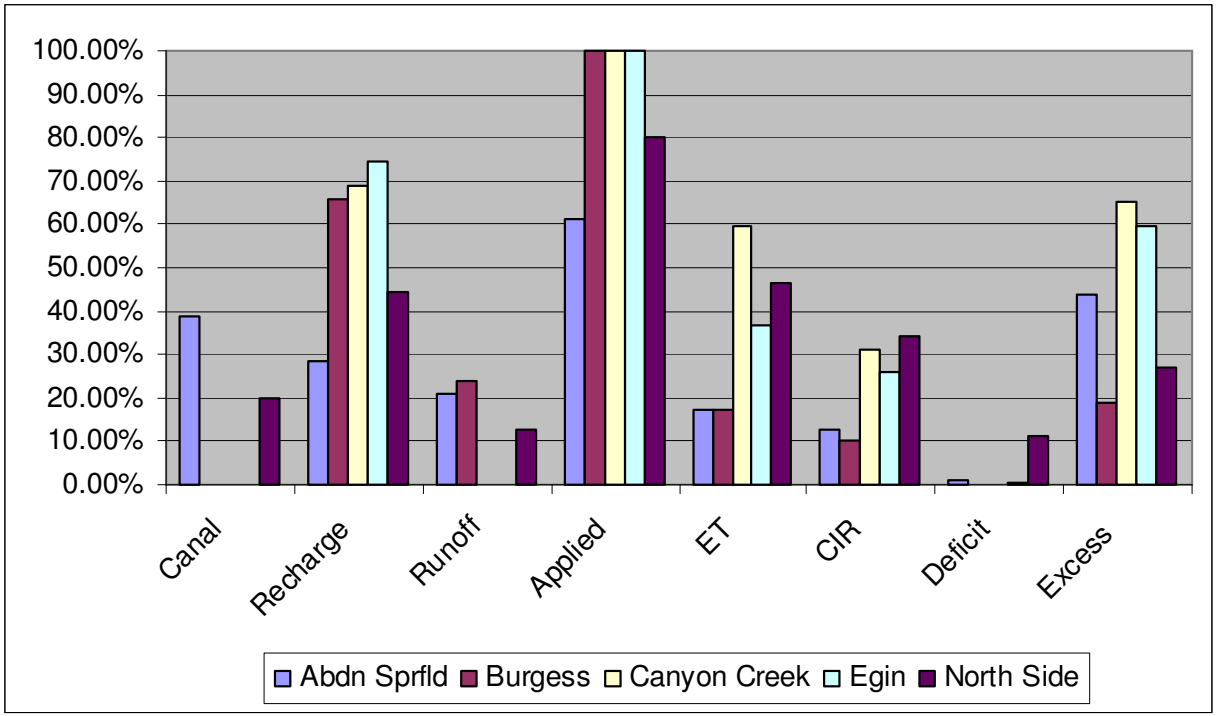
- DPex adjustable

Surface water irrigation/system efficiency



- IESW001 A & B SW,
- IESW002 Abdn Sprfld,
- IESW005 Big Lost River,
- IESW007 Big Wood,
- IESW008 Blaine,
- IESW009 Burgess,
- IESW010 Burley,
- IESW011 Butte and Market,
- IESW012 Canyon Creek,
- IESW014 Corbett,
- IESW015 Dewey,
- IESW016 Egin,
- IESW018 Falls,
- IESW019 Fort Hall,
- IESW020 Harrison,
- IESW022 Idaho,
- IESW025 Little Wood,
- IESW027 Milner,
- IESW028 Minidoka,
- IESW029 Mud Lake,
- IESW030 New Sweden,
- IESW031 North Fremont,
- IESW032 North Side,
- IESW033 Osgood,
- IESW034 Peoples,
- IESW035 Progressive,
- IESW036 Reid,
- IESW037 Reno,
- IESW038 Rexburg,
- IESW039 Silky,
- IESW040 Southwest,
- IESW041 Twin Falls,
- IESW044 Jefferson,
- IESW051 Private Basin 31,
- IESW052 Private Basin 32,
- IESW053 Private Basin 33,
- IESW054 Richfield,
- IESW055 Dry Bed,
- IESW056 Henrys Fork,
- IESW057 Blackfoot River

Surface Water Fate DPin, DPex, EffSP and EffGR adjustable



Canal	Canal Seepage
Recharge	Deep percolation to groundwater
Runoff	Surface runoff
Applied	Applied surface water irrigation
ET	Evapotranspiration
CIR	Crop Irrigation Requirement
Deficit	Unmet CIR
Excess	Irrigation more than CIR

END