Non-Irrigated Recharge Experiment

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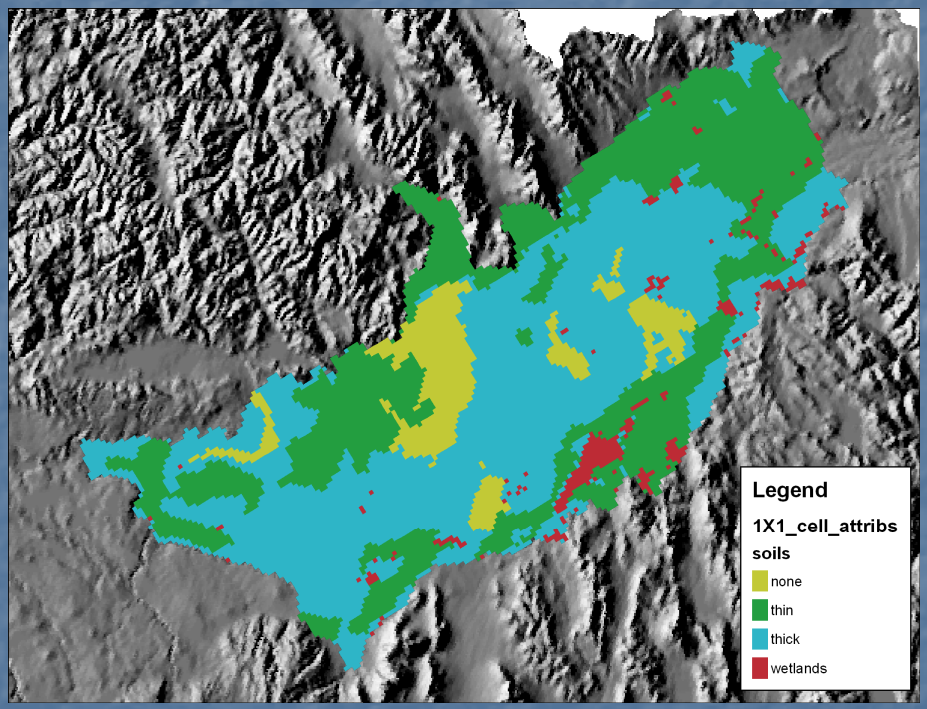
IDWR

Outline

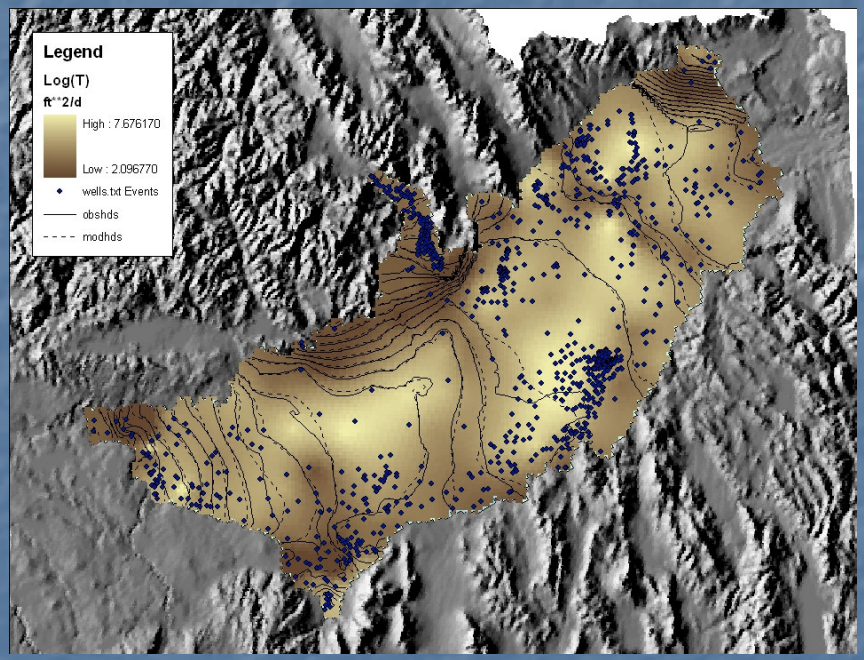
- Changes to non-irrigated recharge
- Physical properties
- Steady state match
  - Head
  - Gain and loss
- Transient match
  - Head
  - Gain and loss match

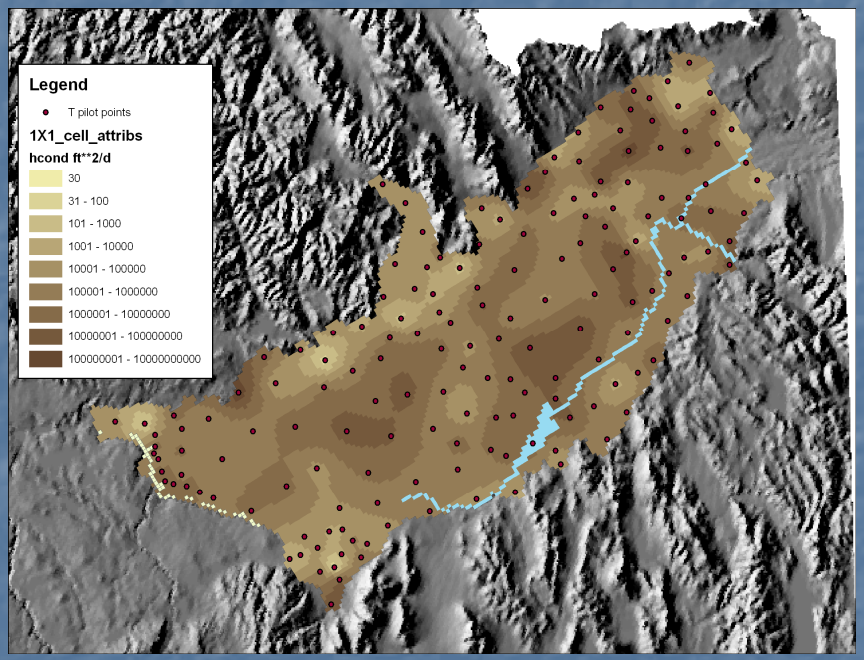
Changes to non-irrigated recharge



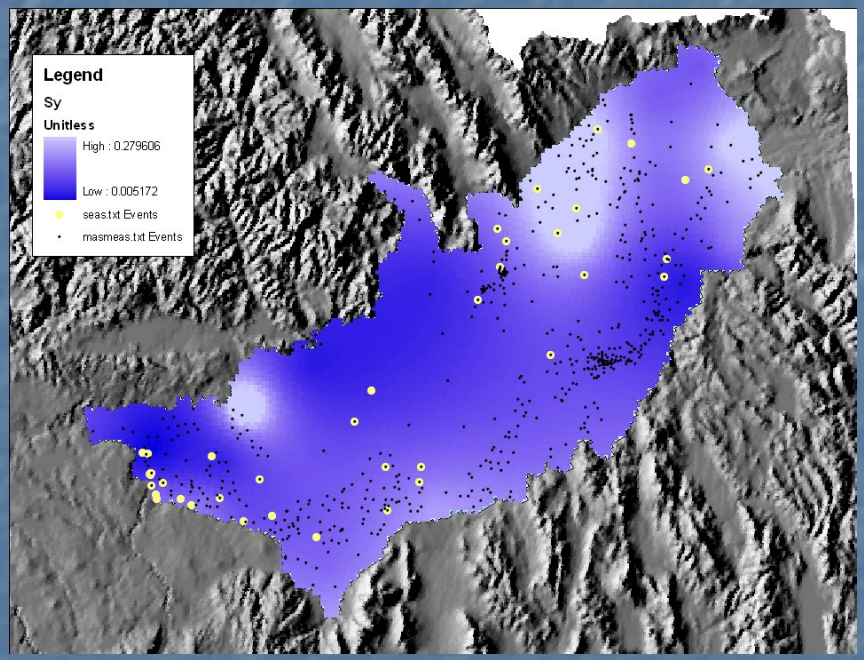
- None (basalt) - 1.74
- Thin soil – 0.14
- Thick soil – 1e-10
- Other – not adjusted

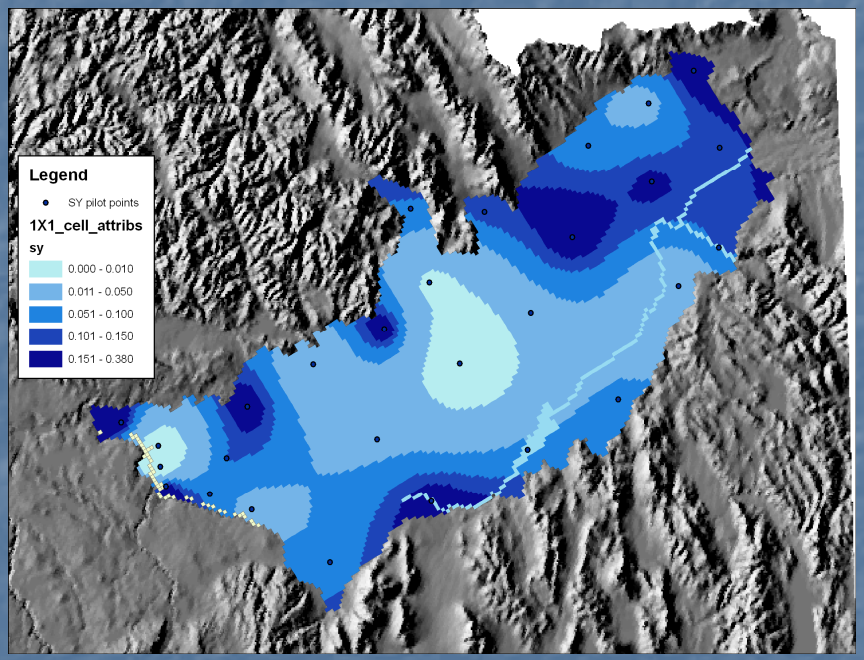
Transmissivity



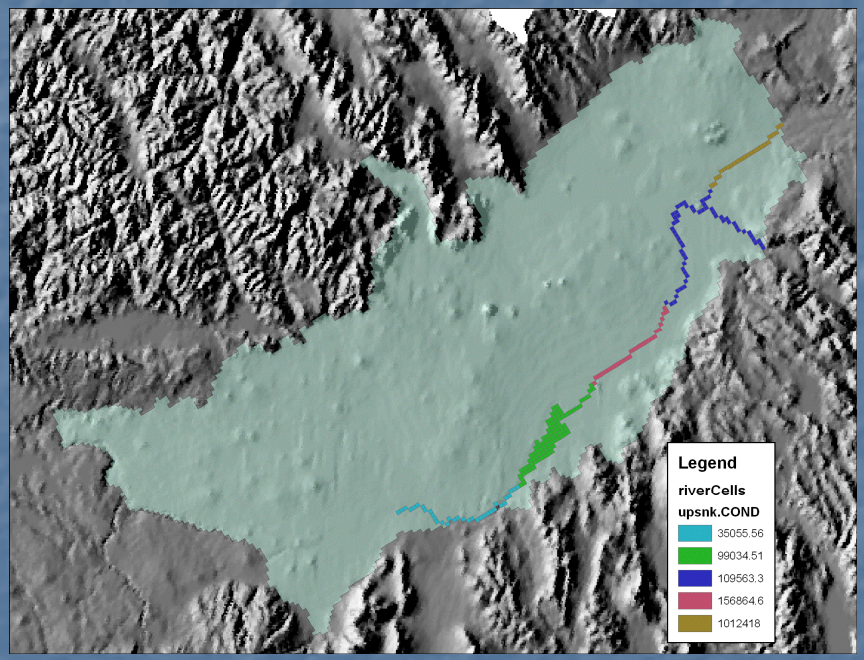


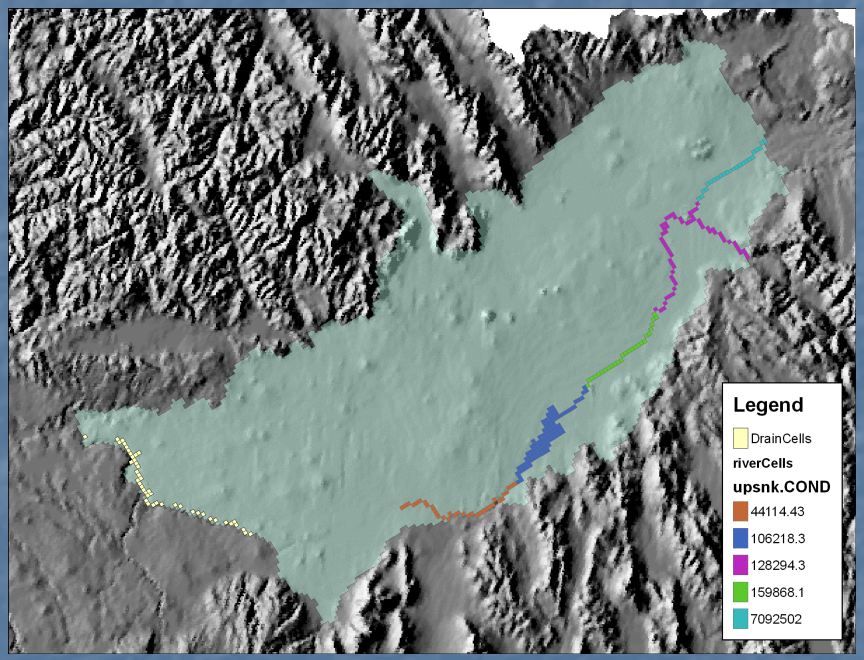
Storage


Legend
Sy
Unitless
High : 0.279606
Low : 0.005172
seas.txt Events
masmeas.txt Events

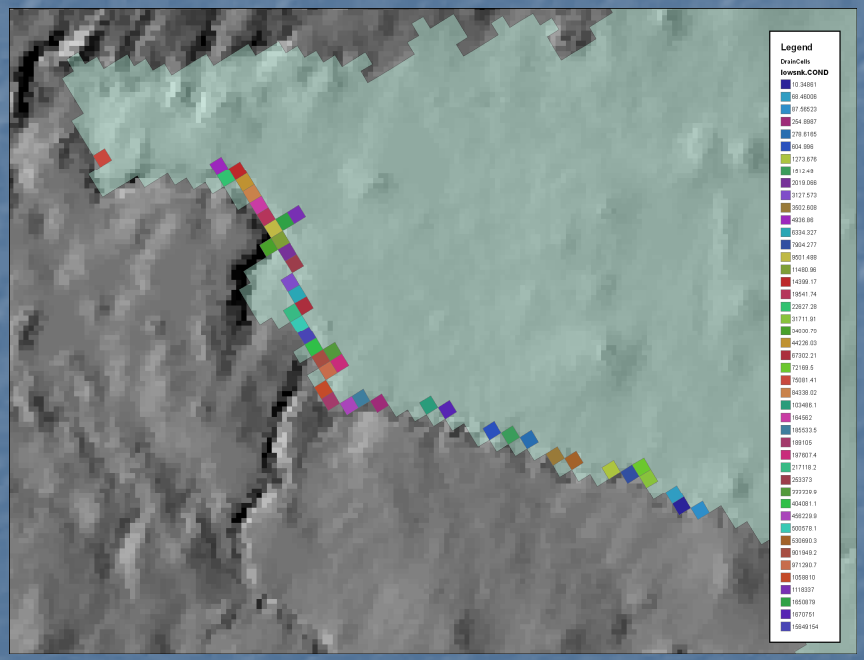

Legend
SY pilot points
1X1_cell_attribs
sy
0.000 - 0.010
0.011 - 0.050
0.051 - 0.100
0.101 - 0.150
0.151 - 0.380

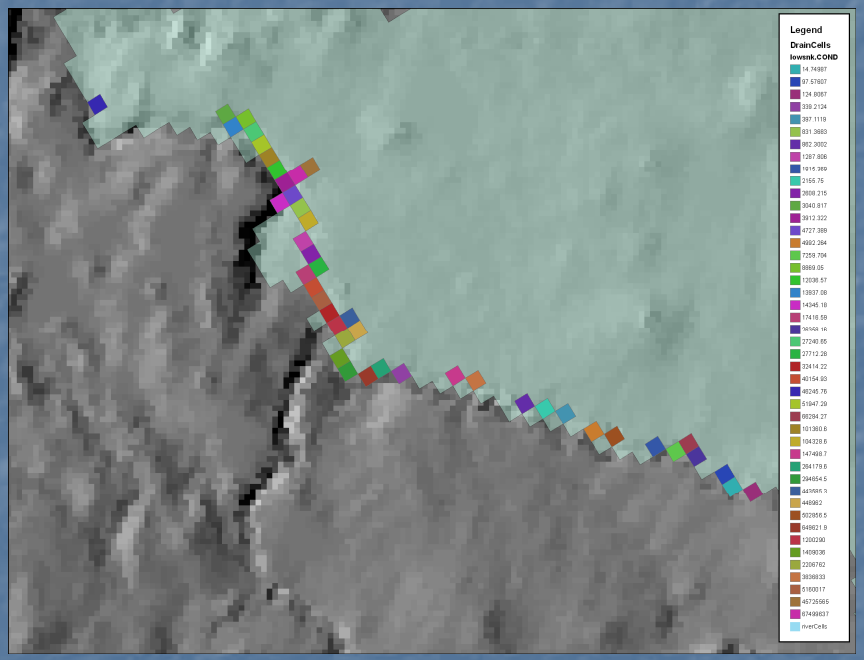
Riverbed conductance



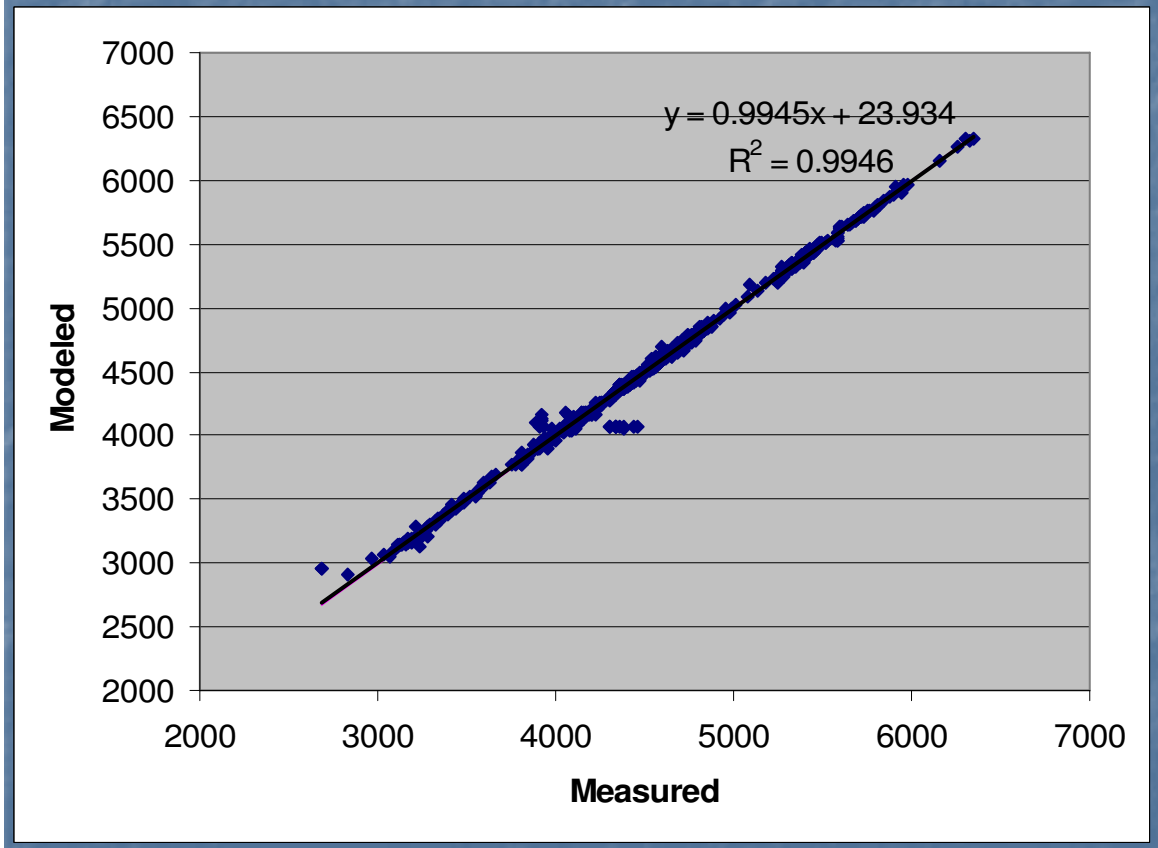


Drain Conductance



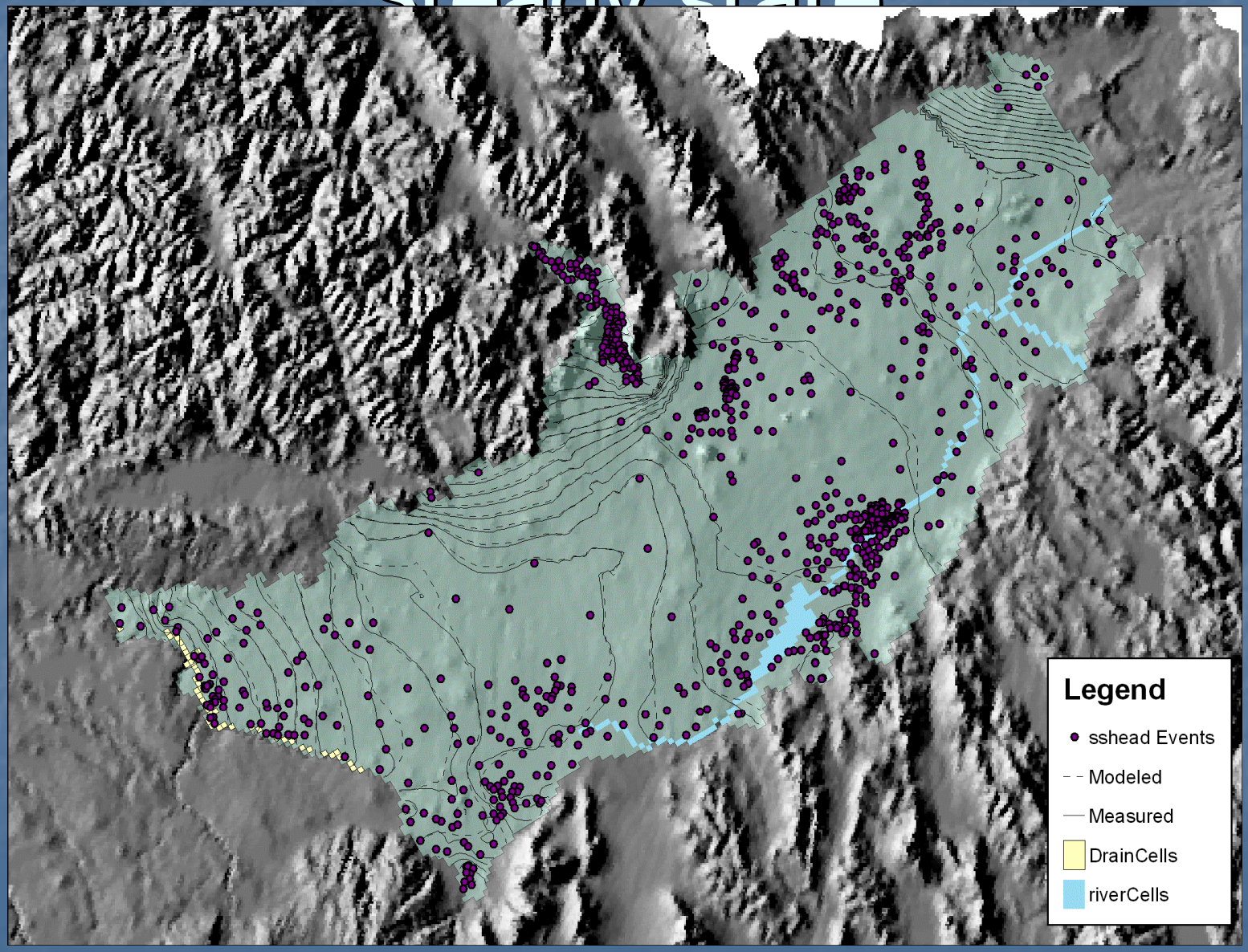


Steady state

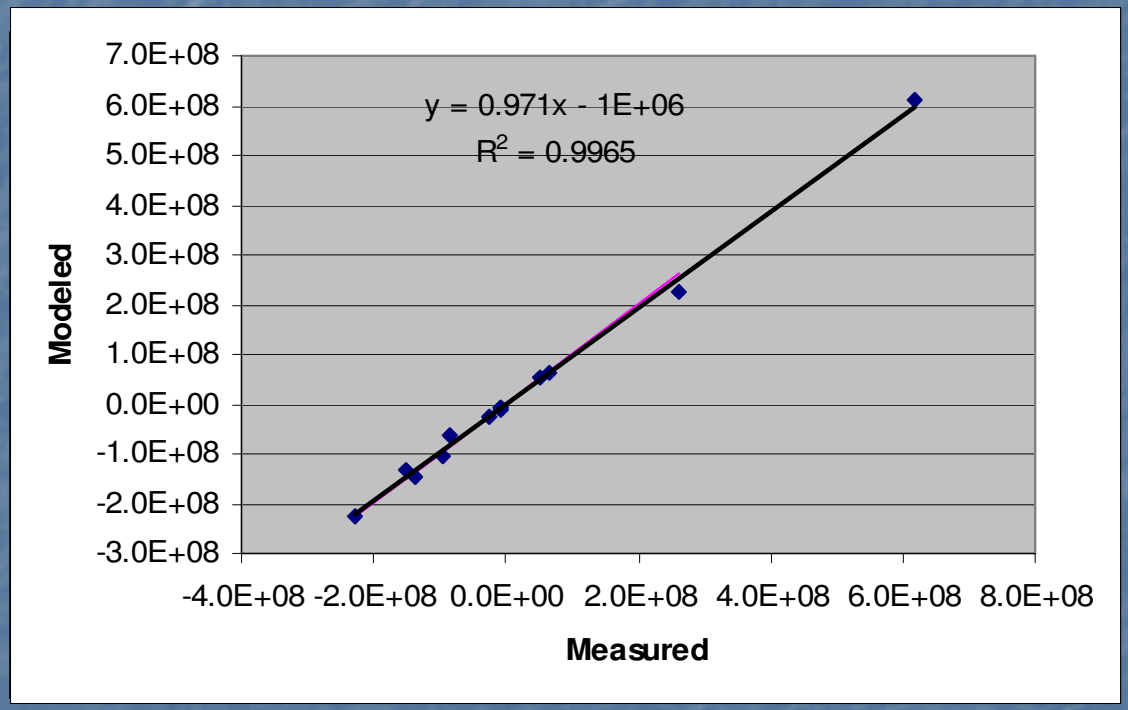


- Head
  - Pink line is 45°
  - If this were a perfect match
    - Y=1x + 0
    - $R^2 = 1$

Steady state

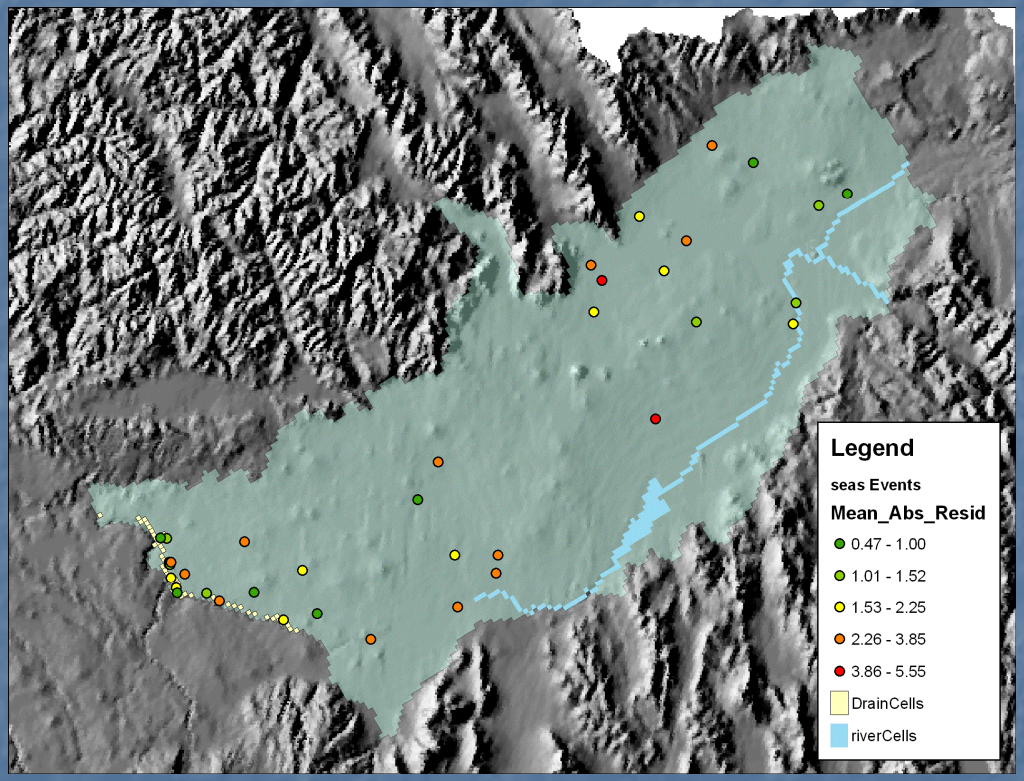


Steady state



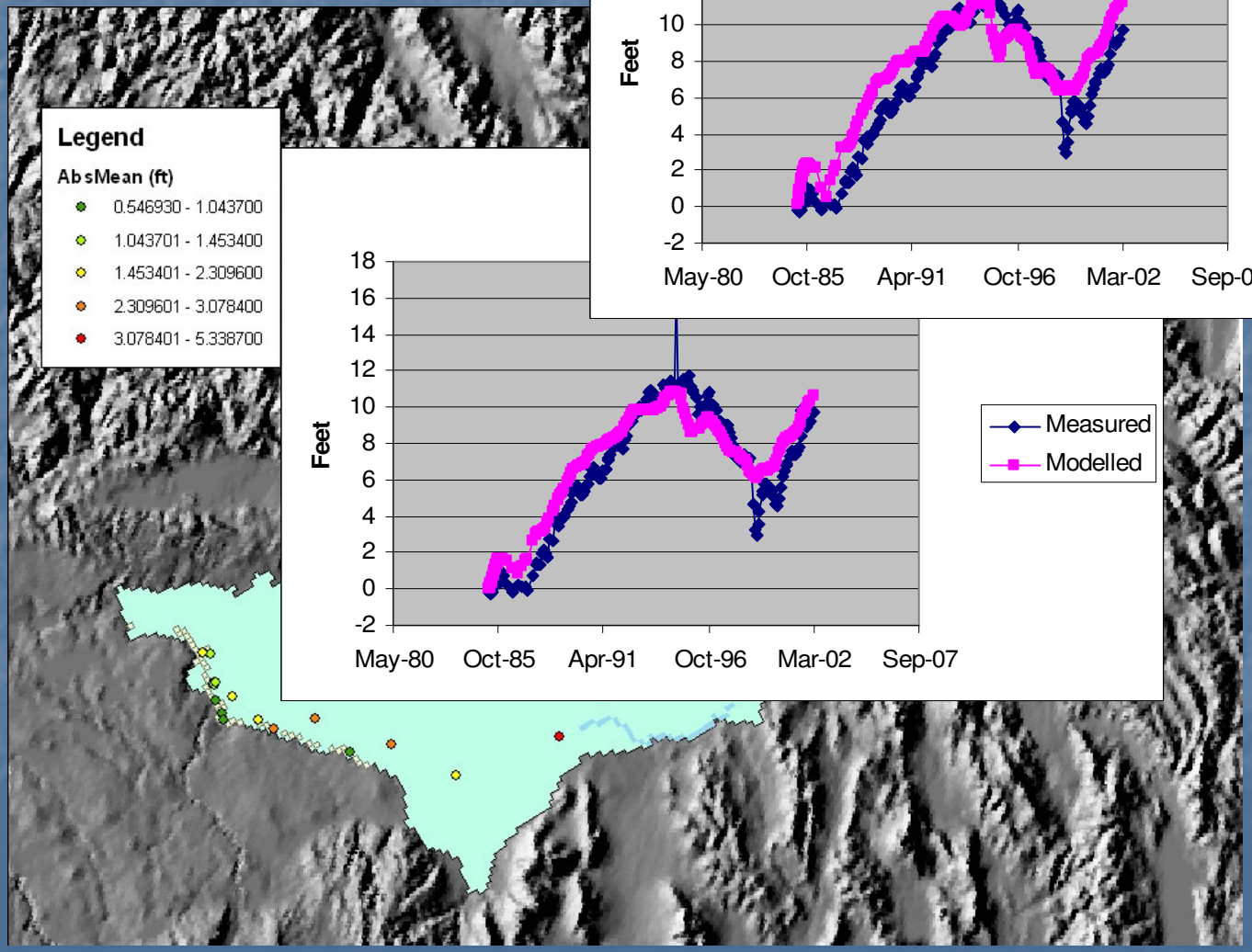
- Gain and loss match
  - Pink line is 45°
  - If this were a perfect match
    - Y=1x + 0
    - $R^2 = 1$

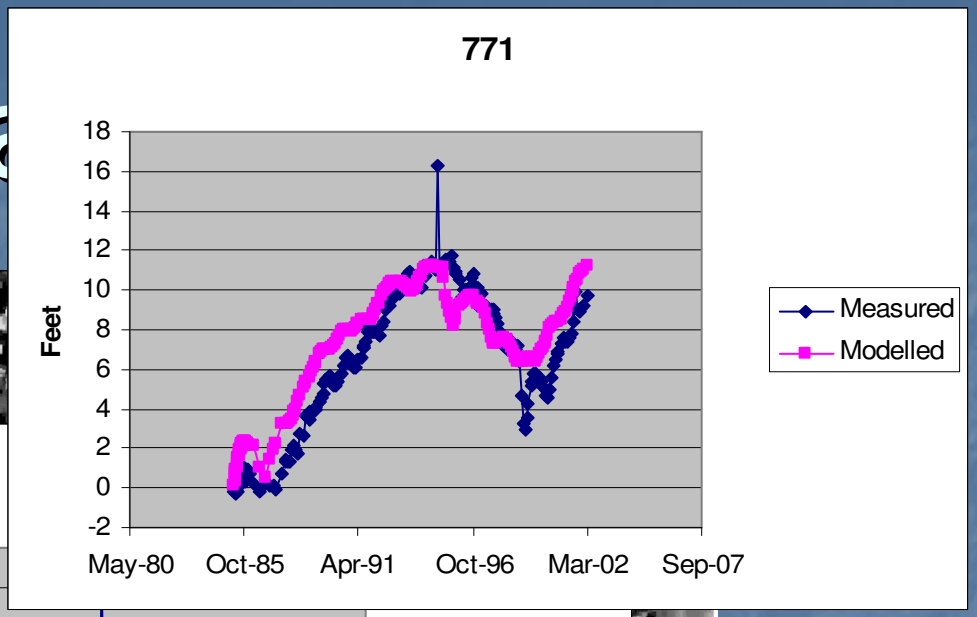
Seasonal data set



- Hundreds to thousands of observations
  - Lots of data
  - Limited spatial coverage

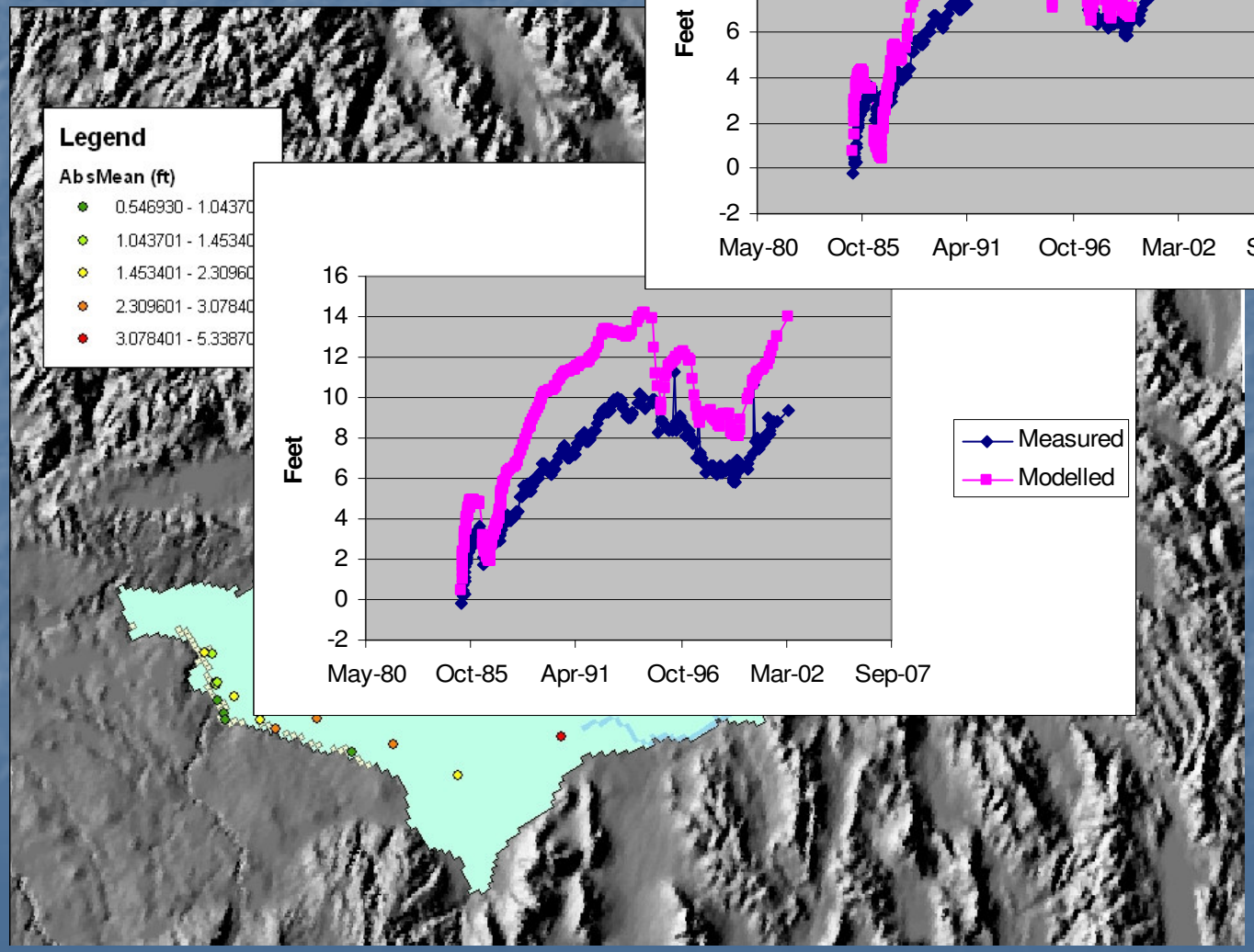
Seasona


Legend
AbsMean (ft)
0.546930 - 1.043700
1.043701 - 1.453400
1.453401 - 2.309600
2.309601 - 3.078400
3.078401 - 5.338700

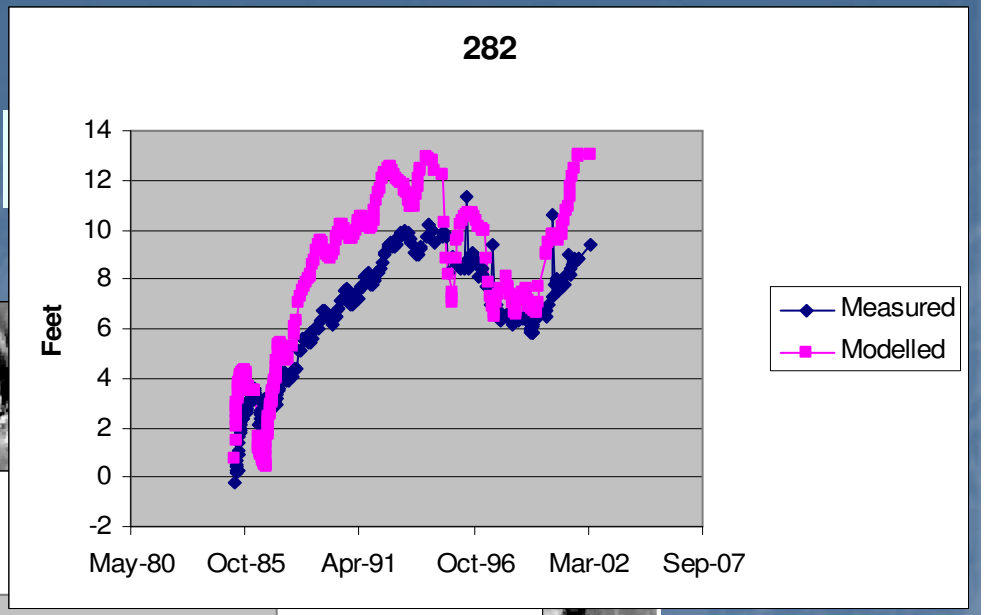

771
Feet
18
16
14
12
10
8
6
4
2
0
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

Feet
18
16
14
12
10
8
6
4
2
0
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

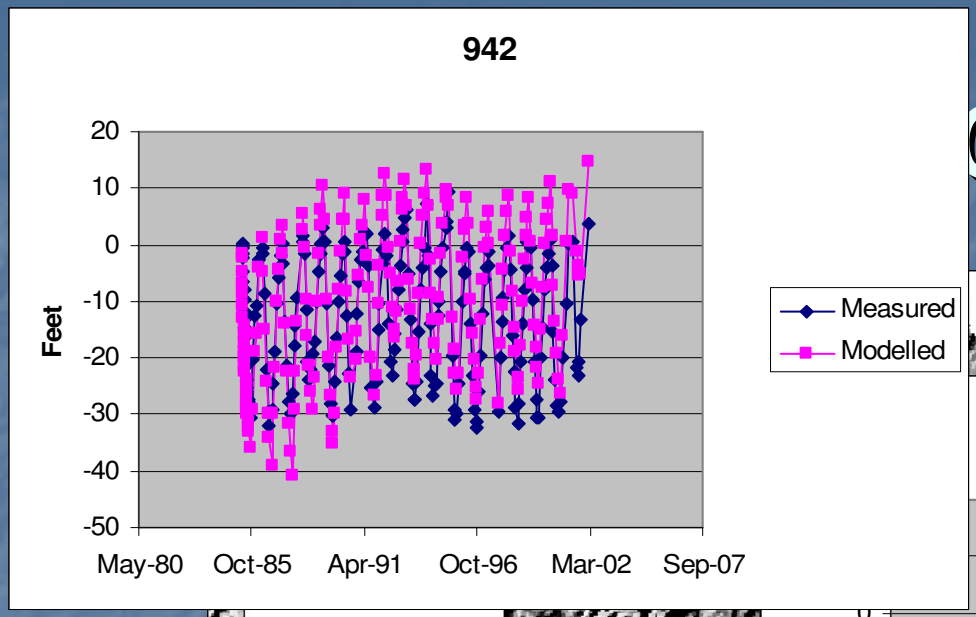
Seasonal

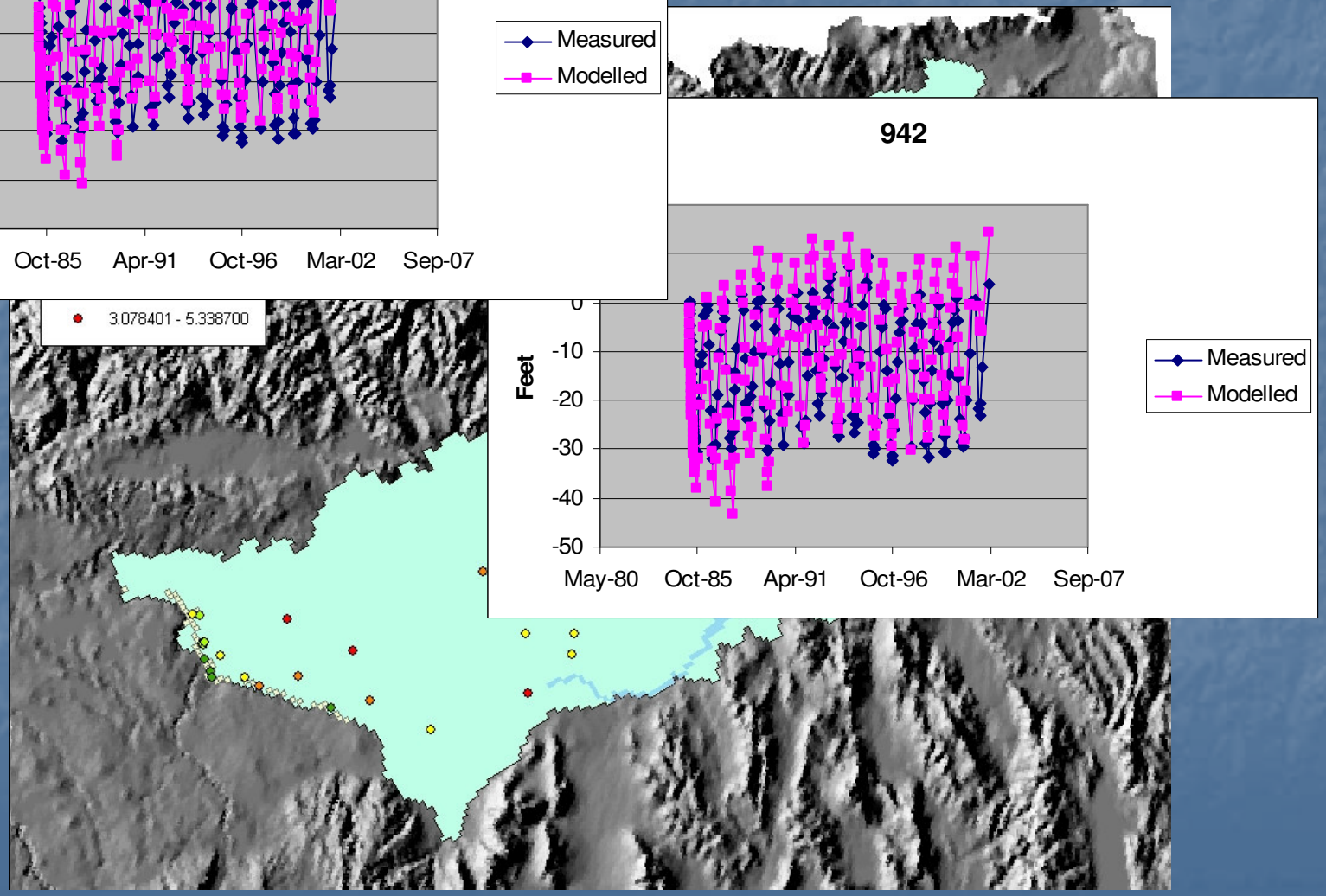

Legend
AbsMean (ft)
0.546930 - 1.04370
1.043701 - 1.45340
1.453401 - 2.30960
2.309601 - 3.07840
3.078401 - 5.33870

Feet
16
14
12
10
8
6
4
2
0
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


282
Feet
14
12
10
8
6
4
2
0
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

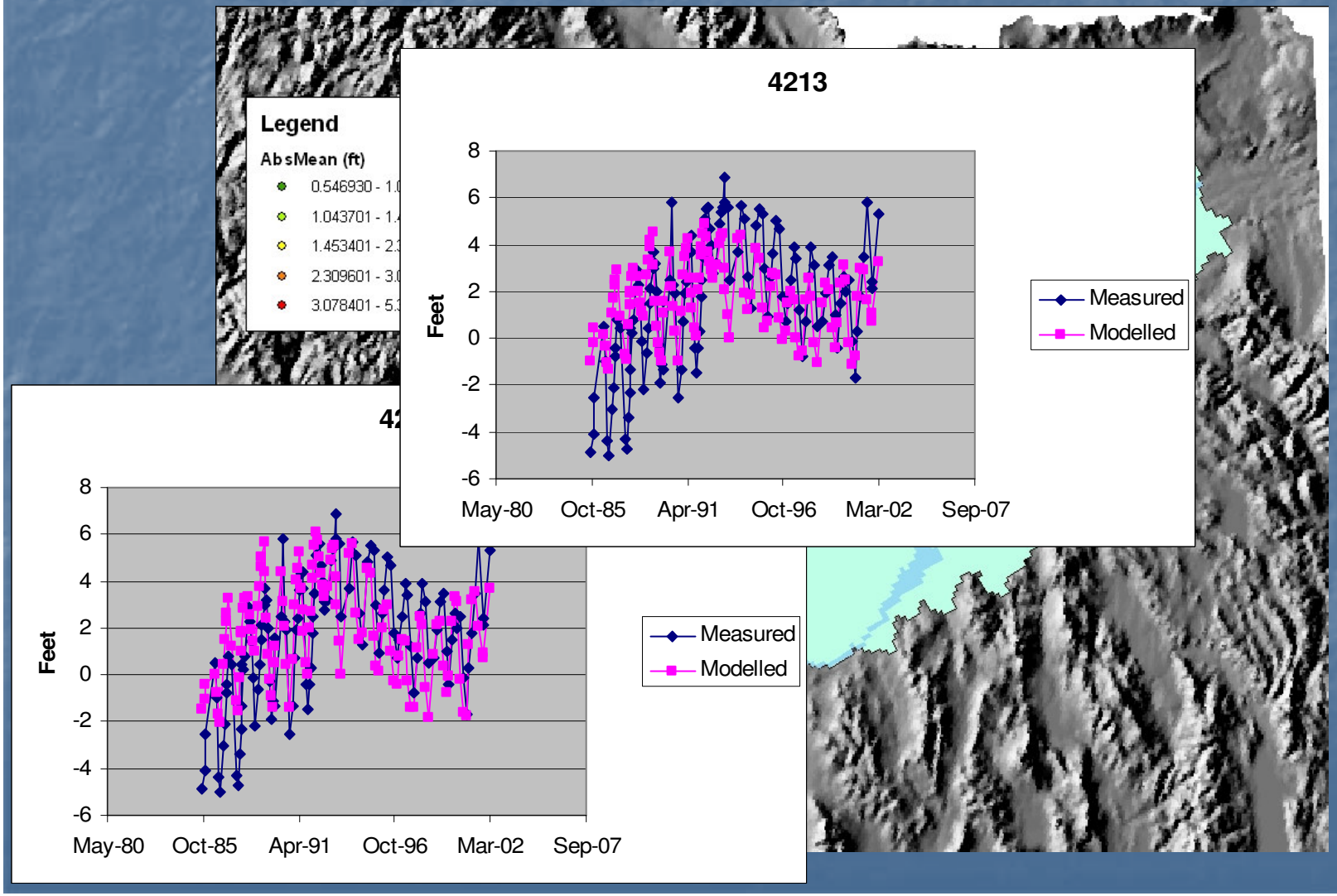
data set


942
20
10
0
-10
-20
-30
-40
-50
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

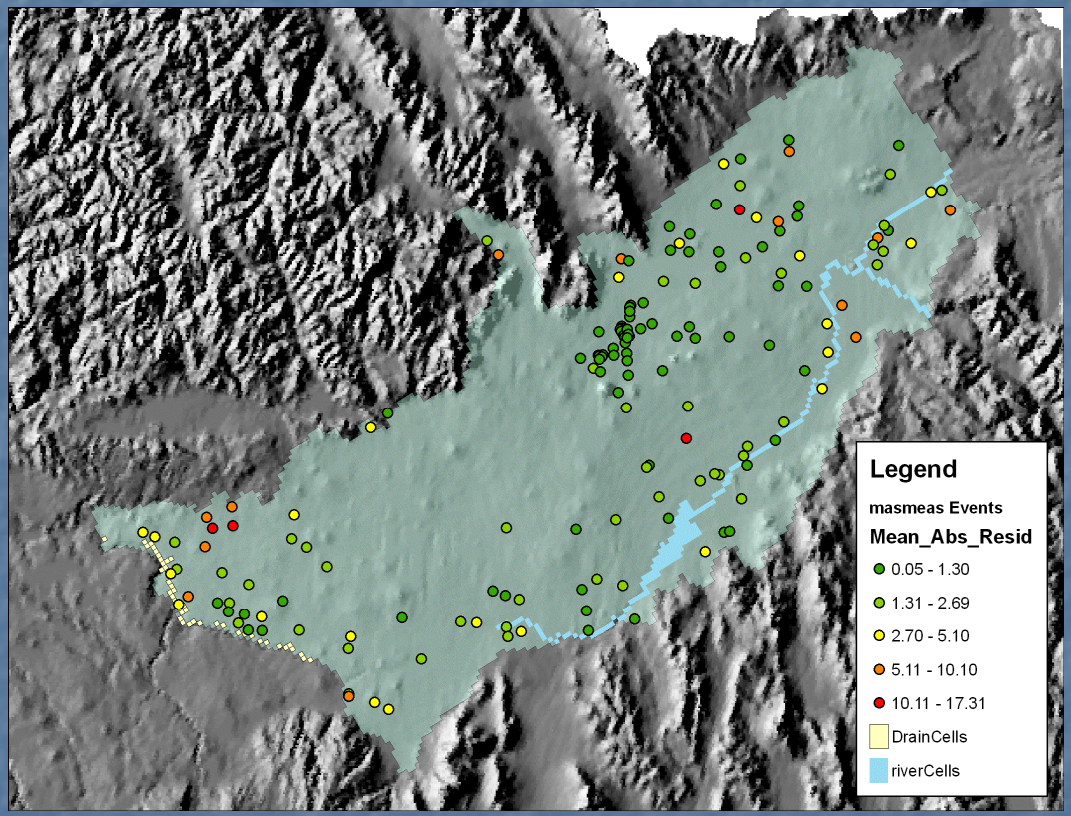

3.078401 - 5.338700

942
0
-10
-20
-30
-40
-50
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

Seasonal data set

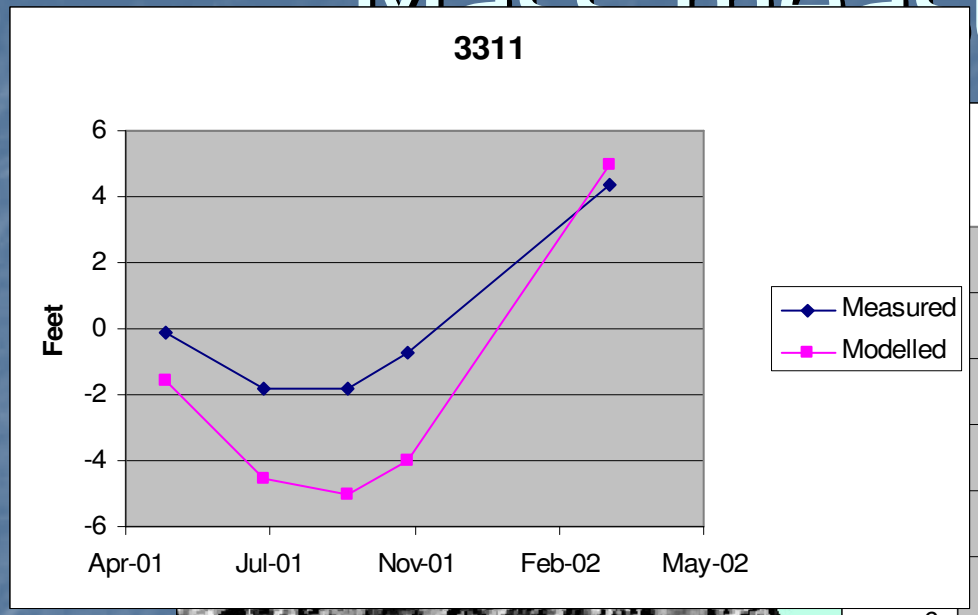


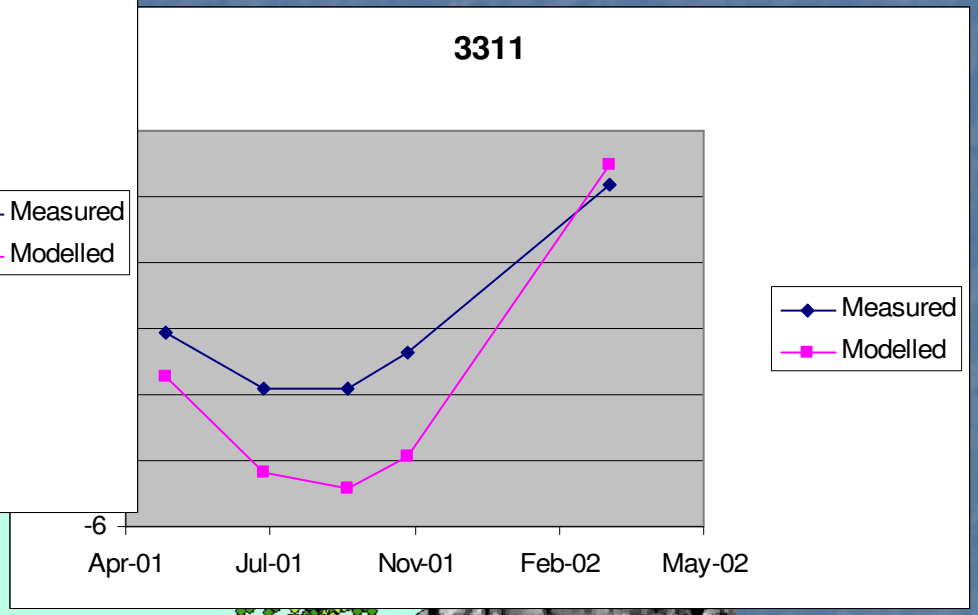
Mass measurement

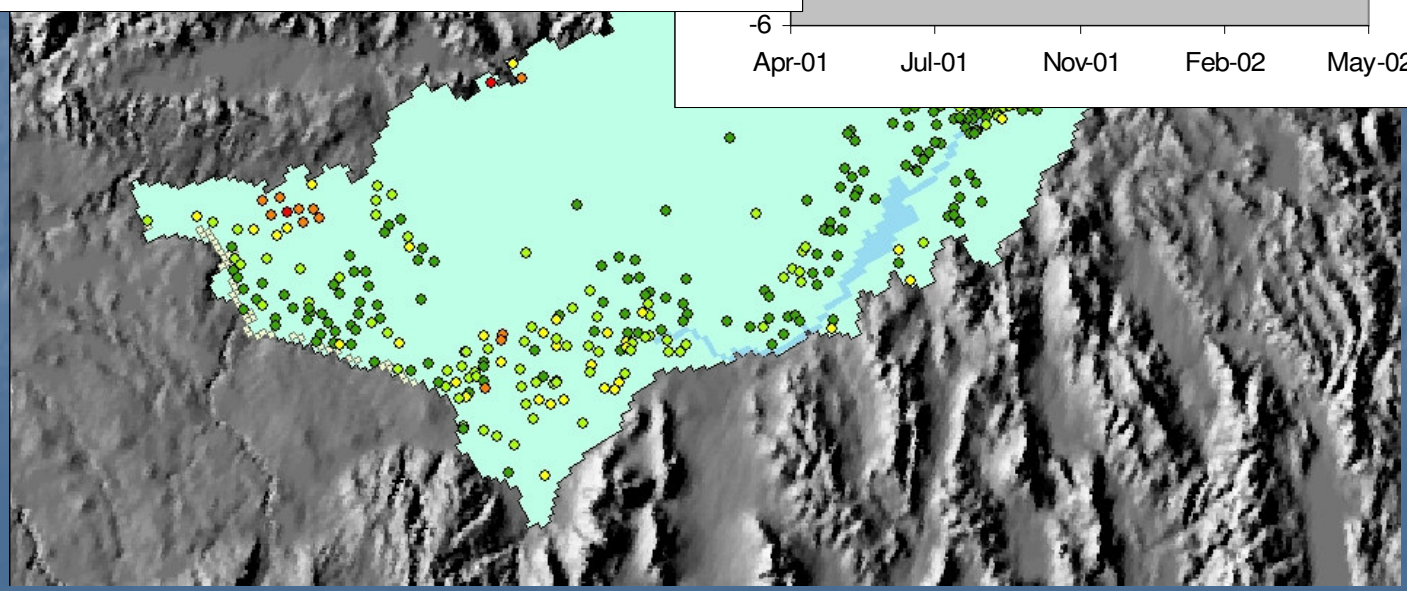


- Observations collected on behalf of this modeling effort
  - 3/1/2001 –5/8/2002

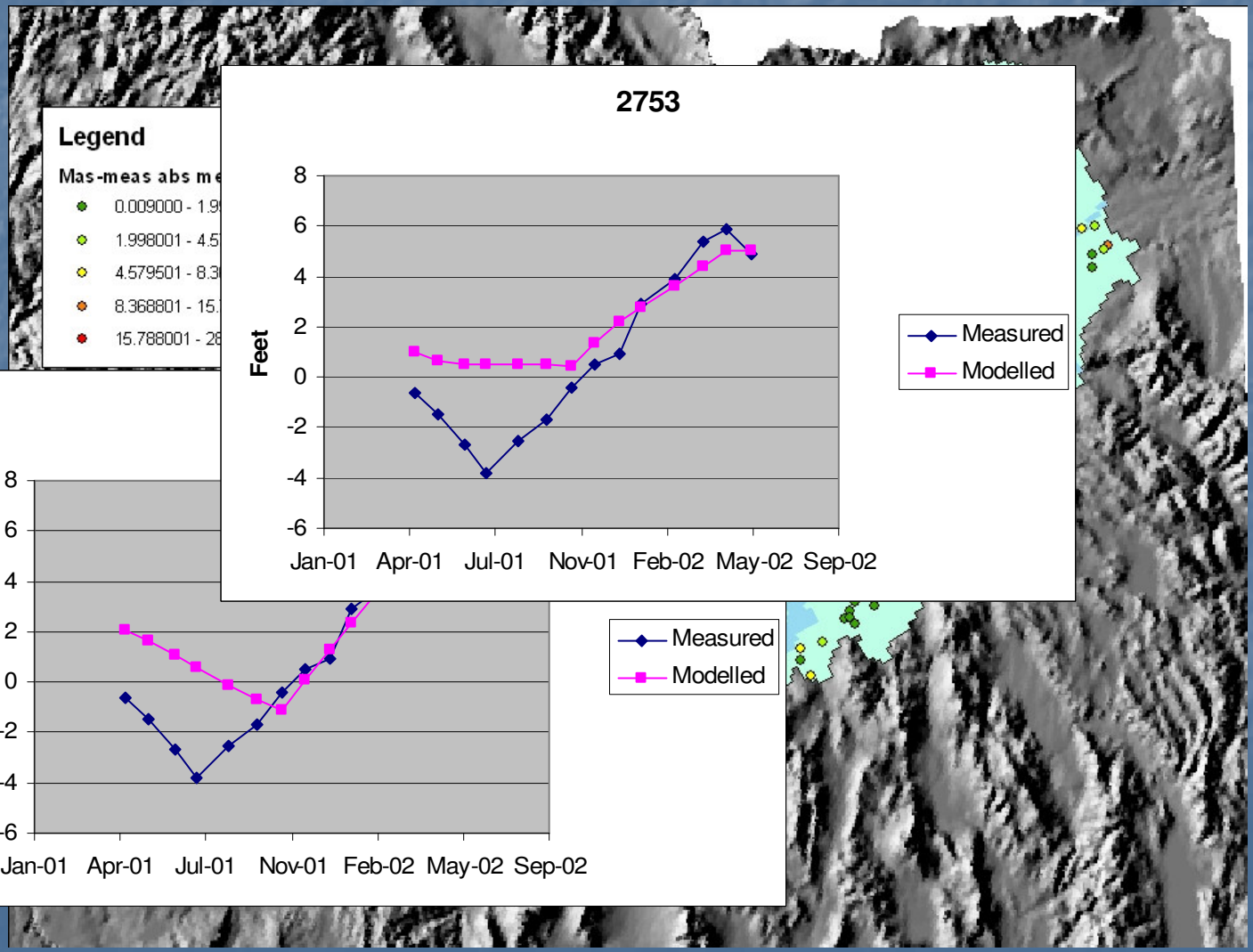
Mass measurement



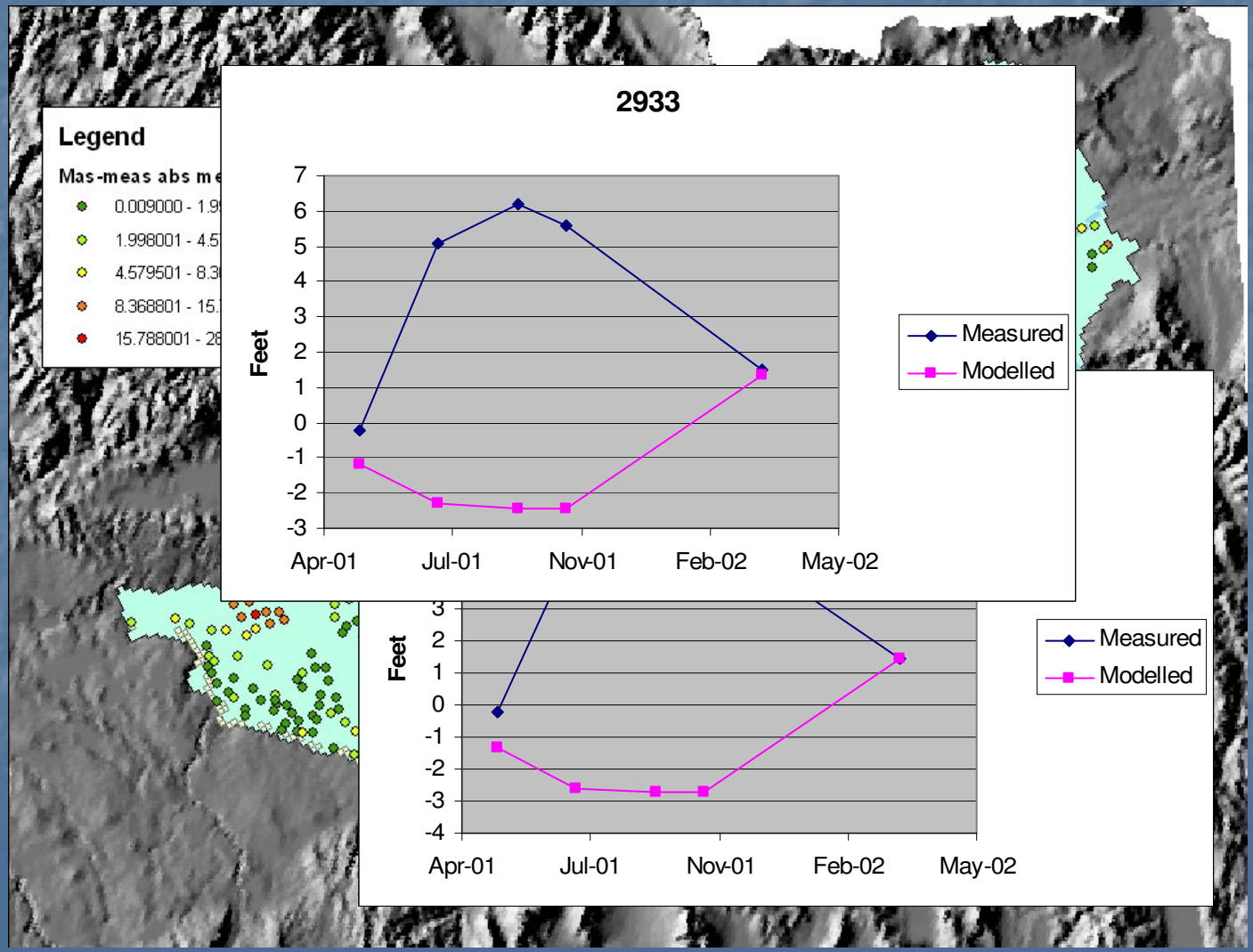




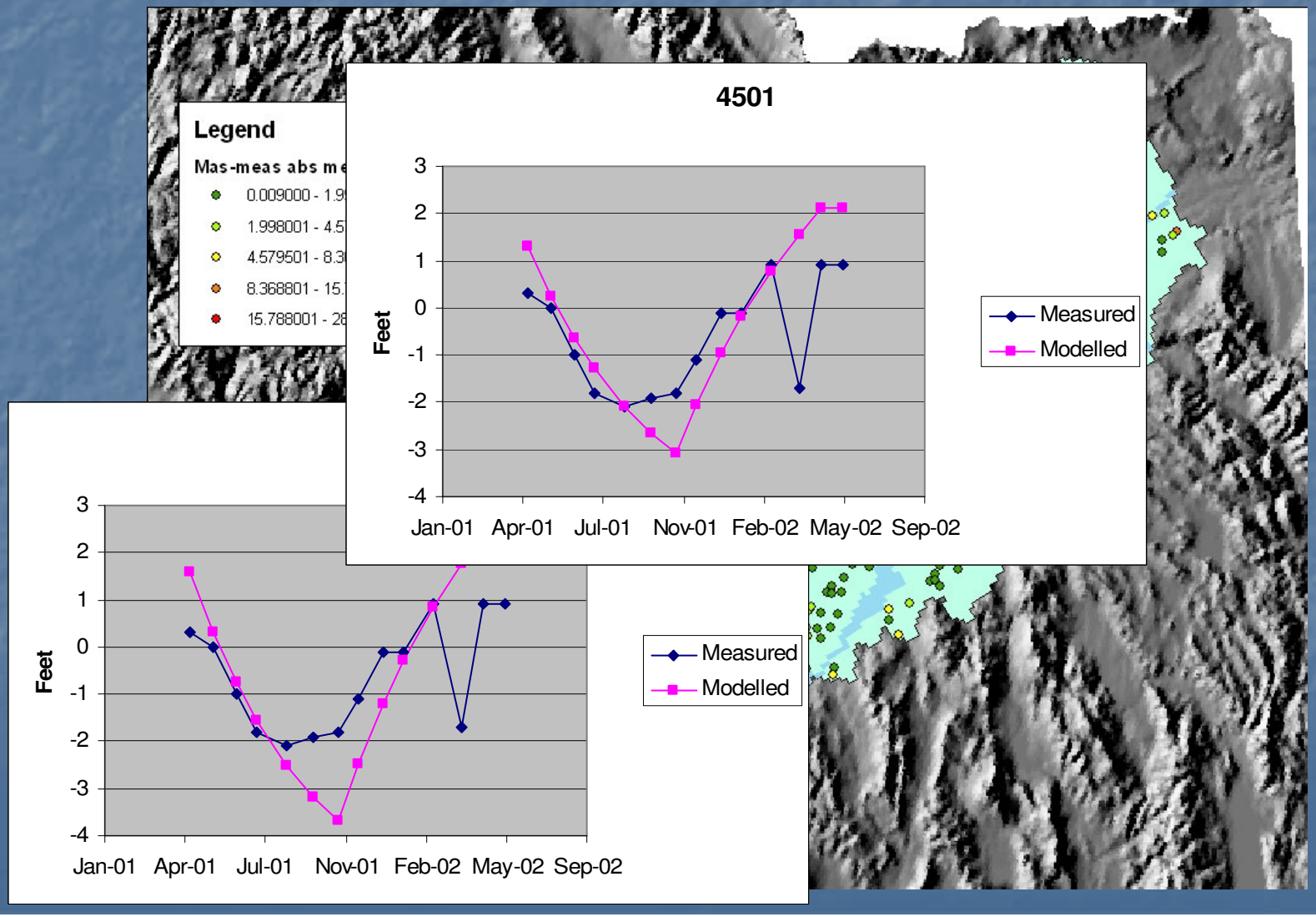
Mass measurement



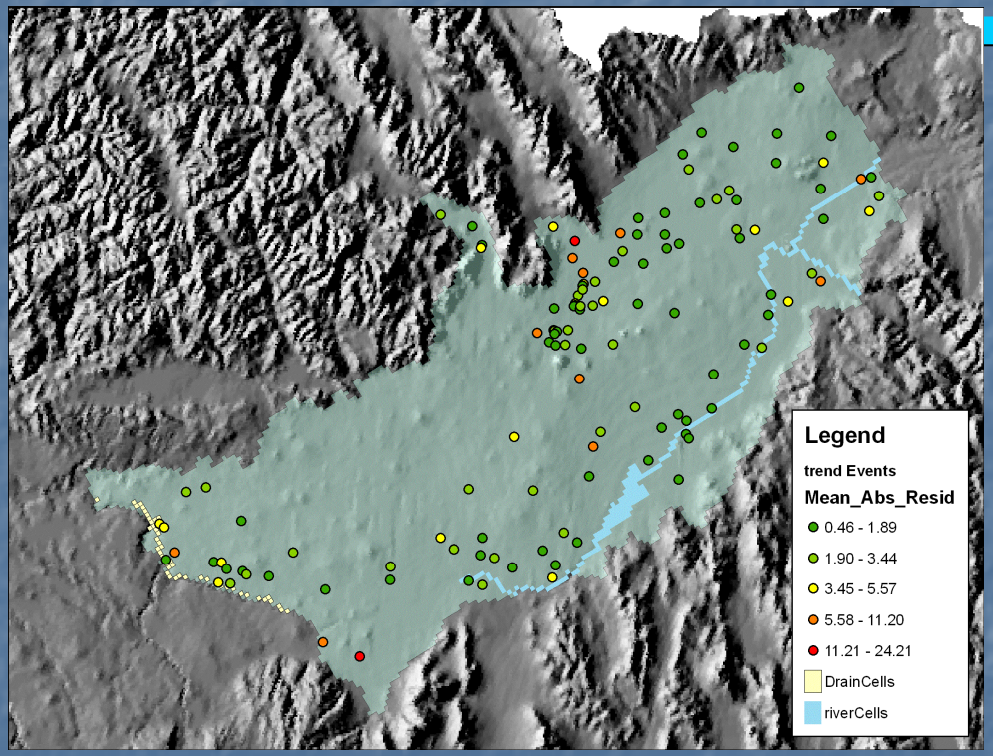
Mass measurement



Mass measurement

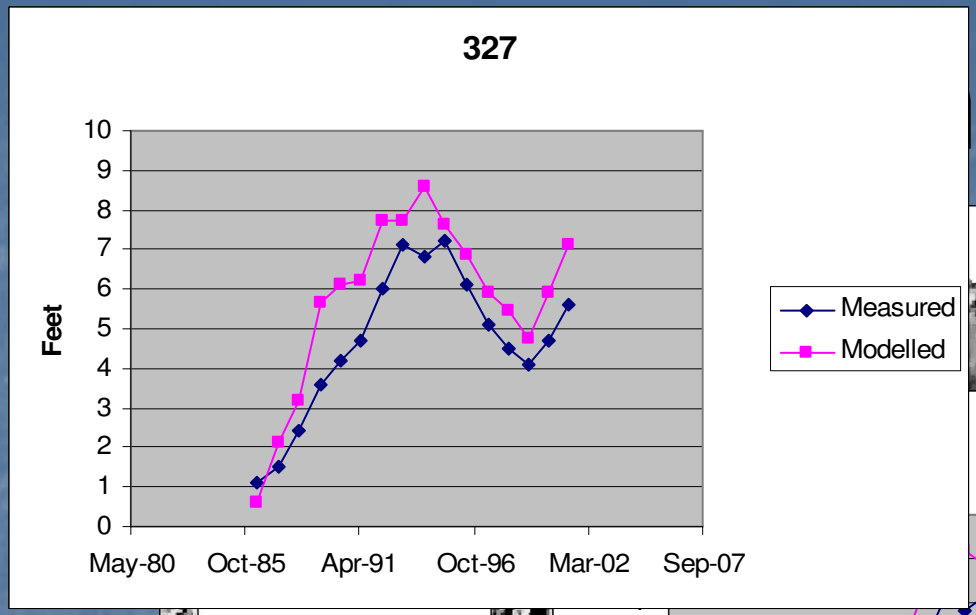


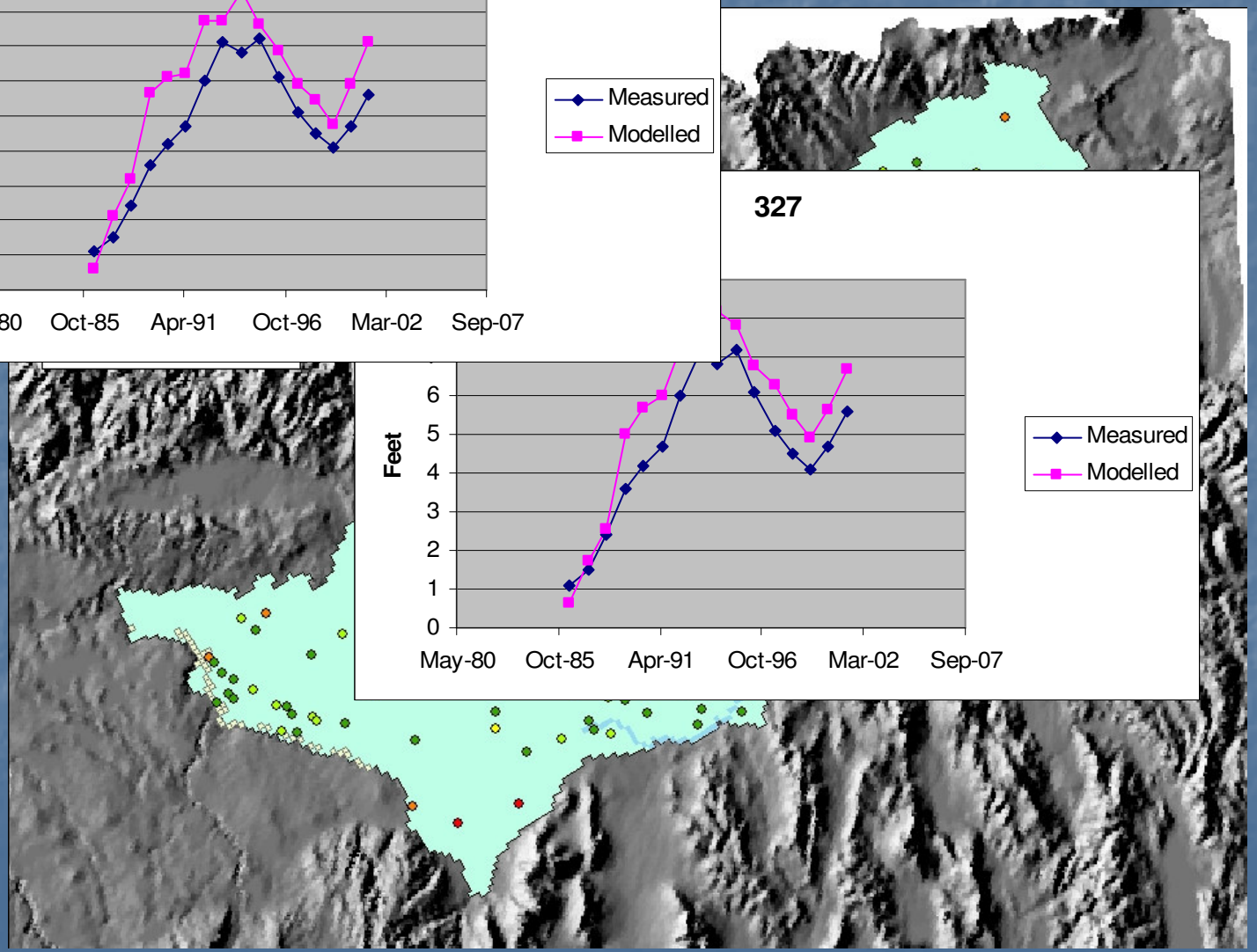
Trend

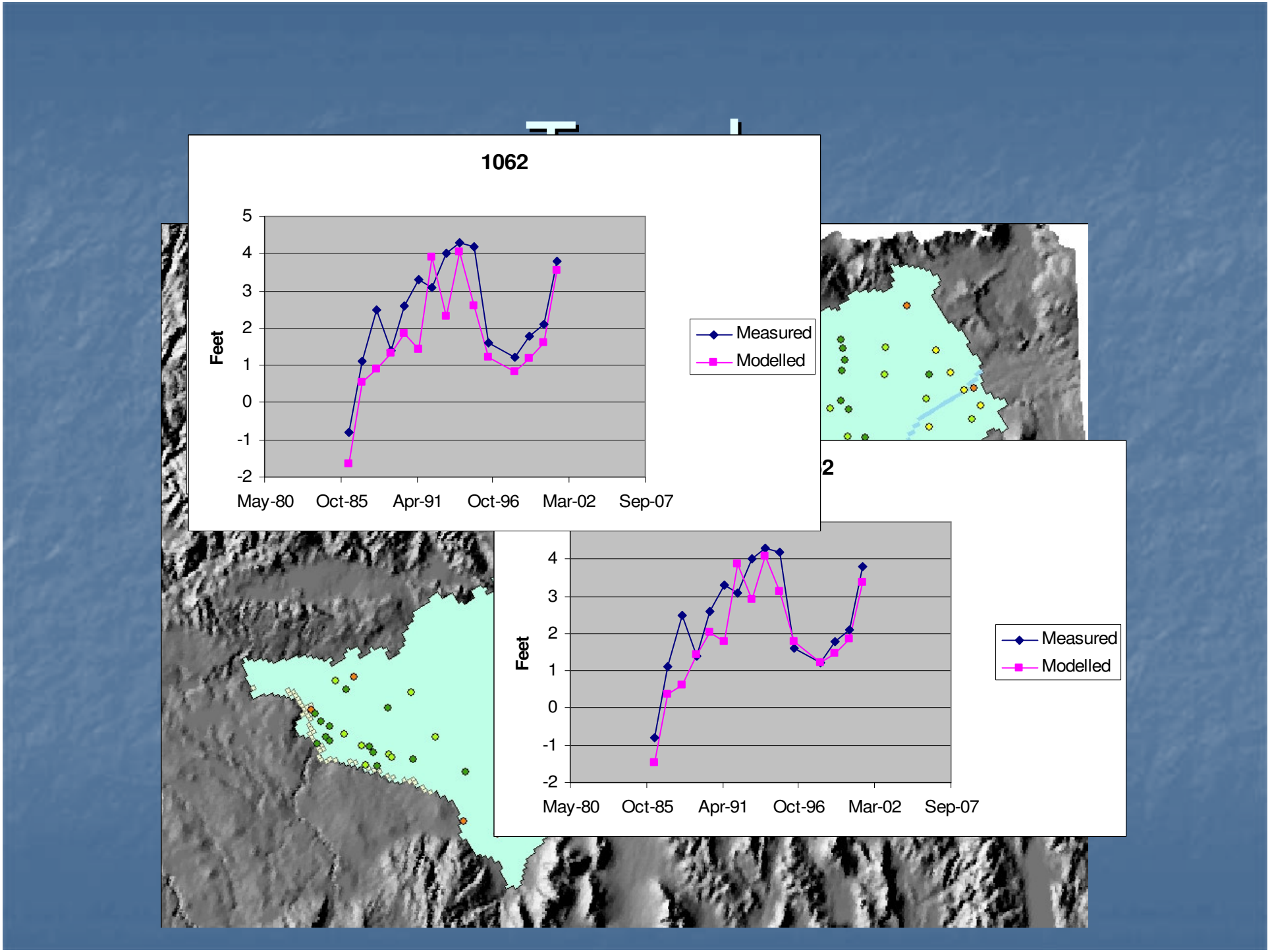


- Annual observations in wells

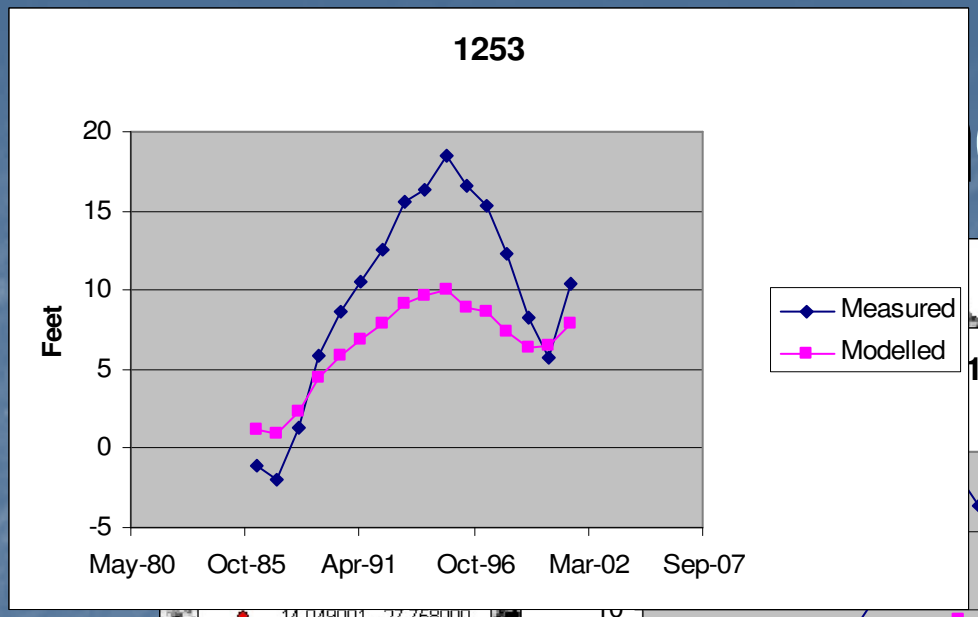
d

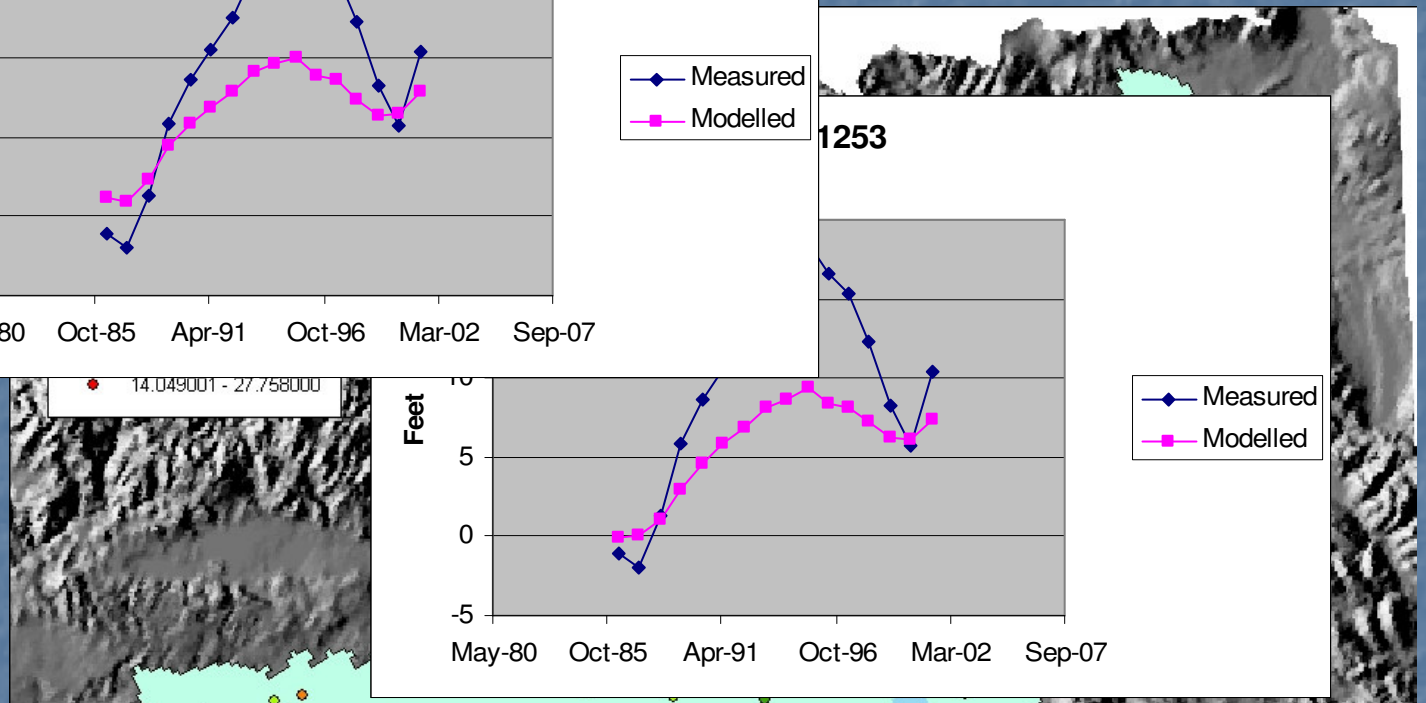

327
Feet
10
9
8
7
6
5
4
3
2
1
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


327
Feet
6
5
4
3
2
1
0
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

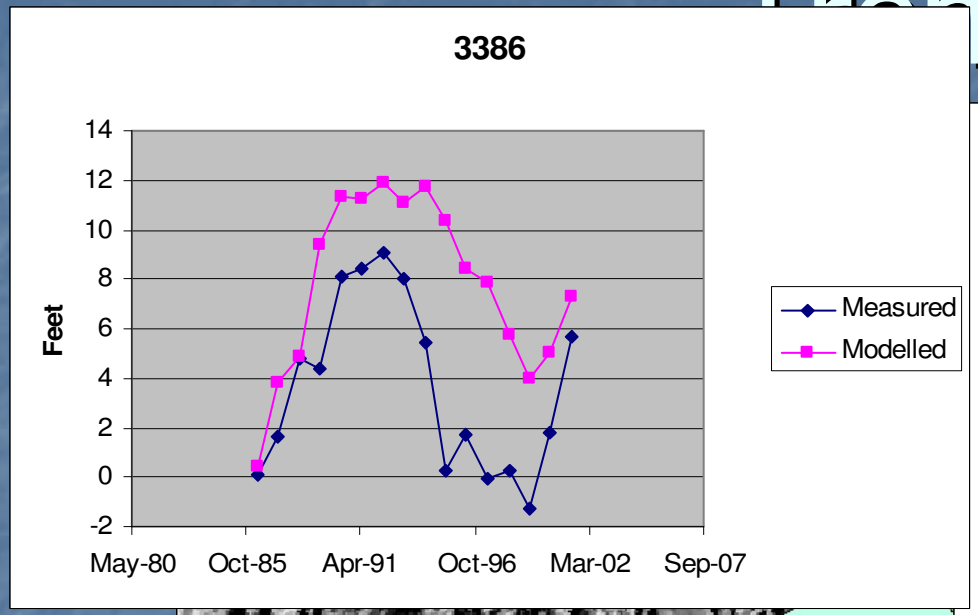

1062
Feet
5
4
3
2
1
0
-1
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled
Feet
4
3
2
1
0
-1
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

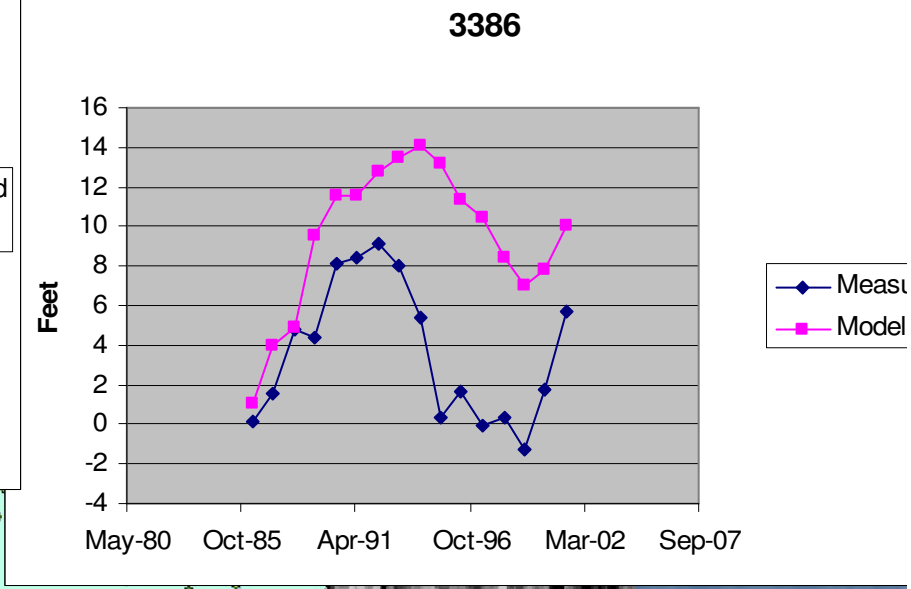
d

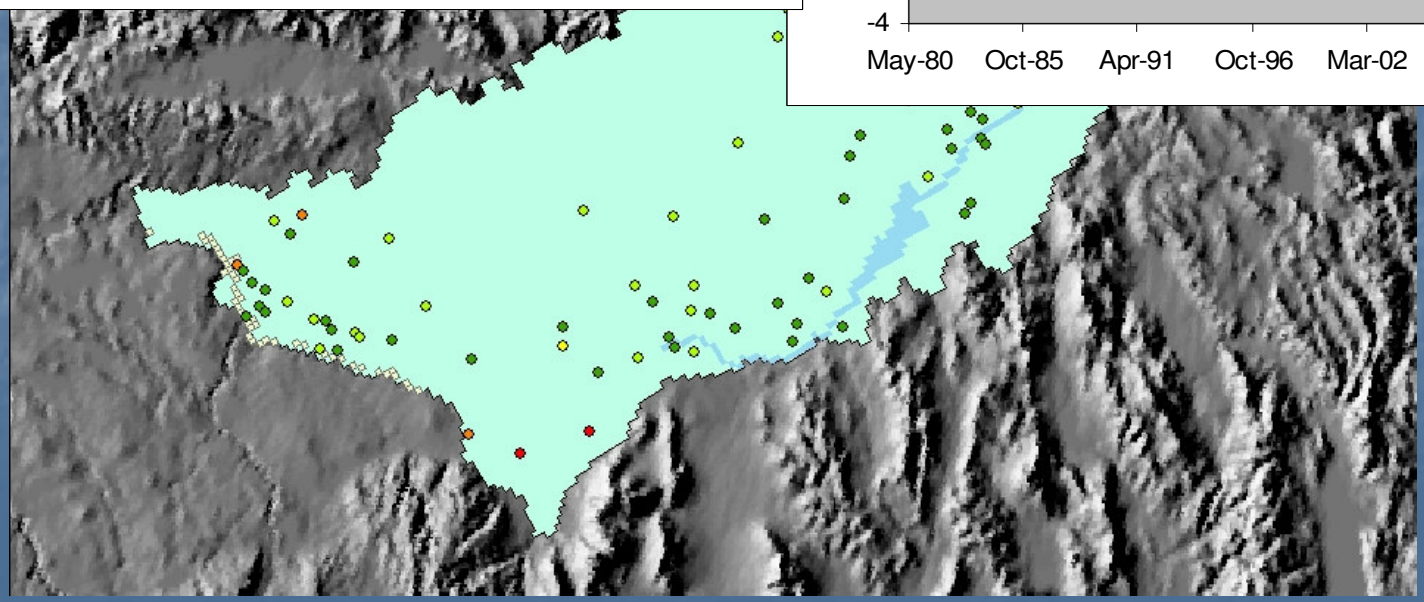

1253
Feet
20
15
10
5
0
-5
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


1253
Feet
5
0
-5
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

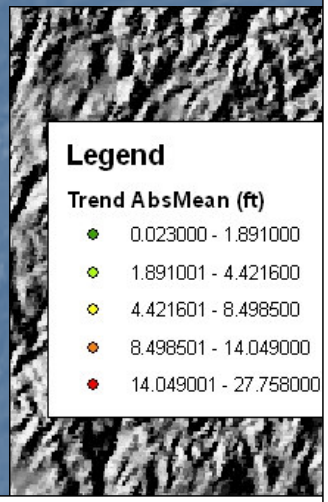
Trend

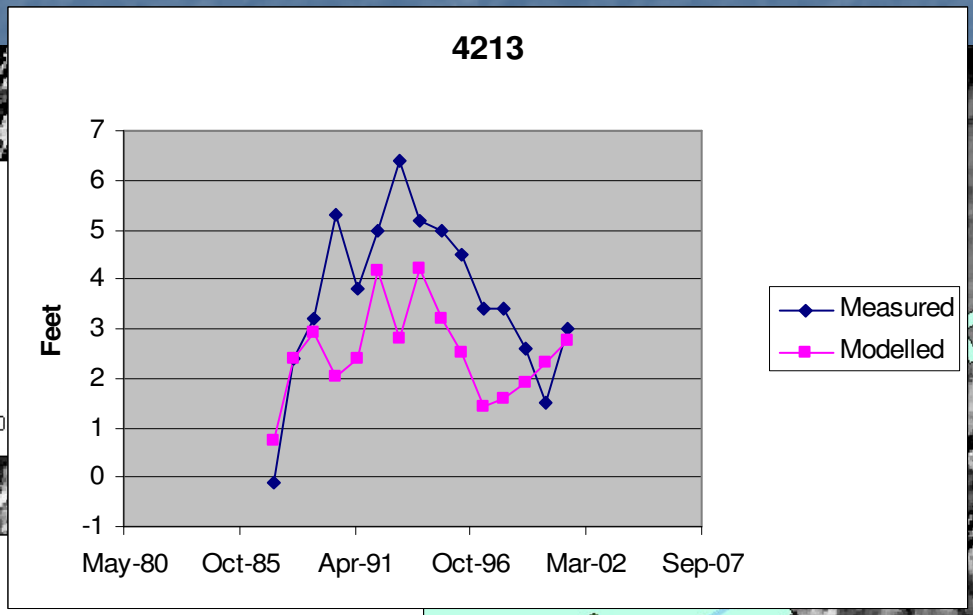

3386
Feet
14
12
10
8
6
4
2
0
-2
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

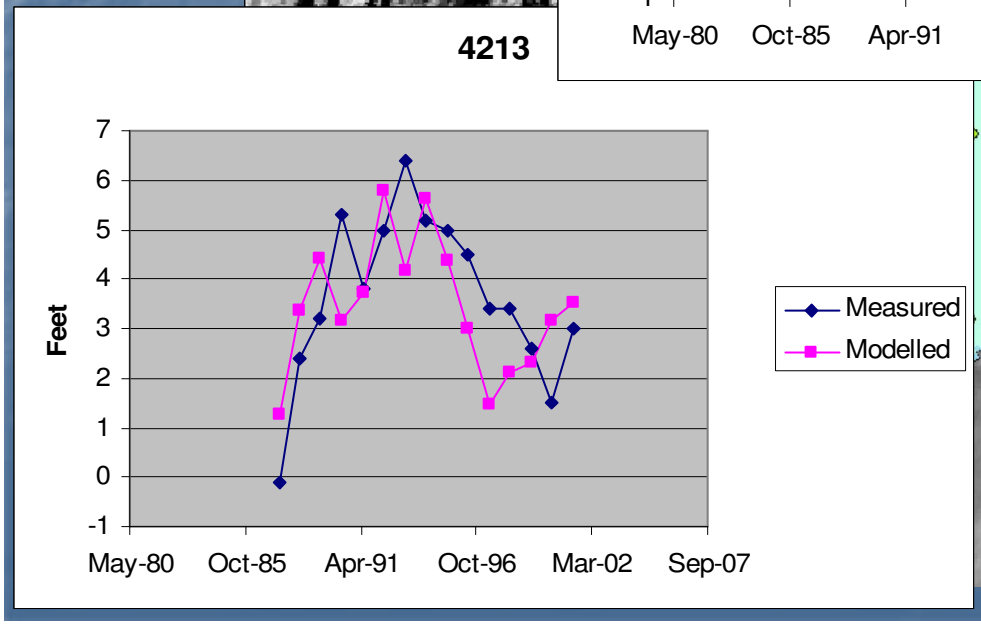

3386
Feet
16
14
12
10
8
6
4
2
0
-2
-4
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measu
Model

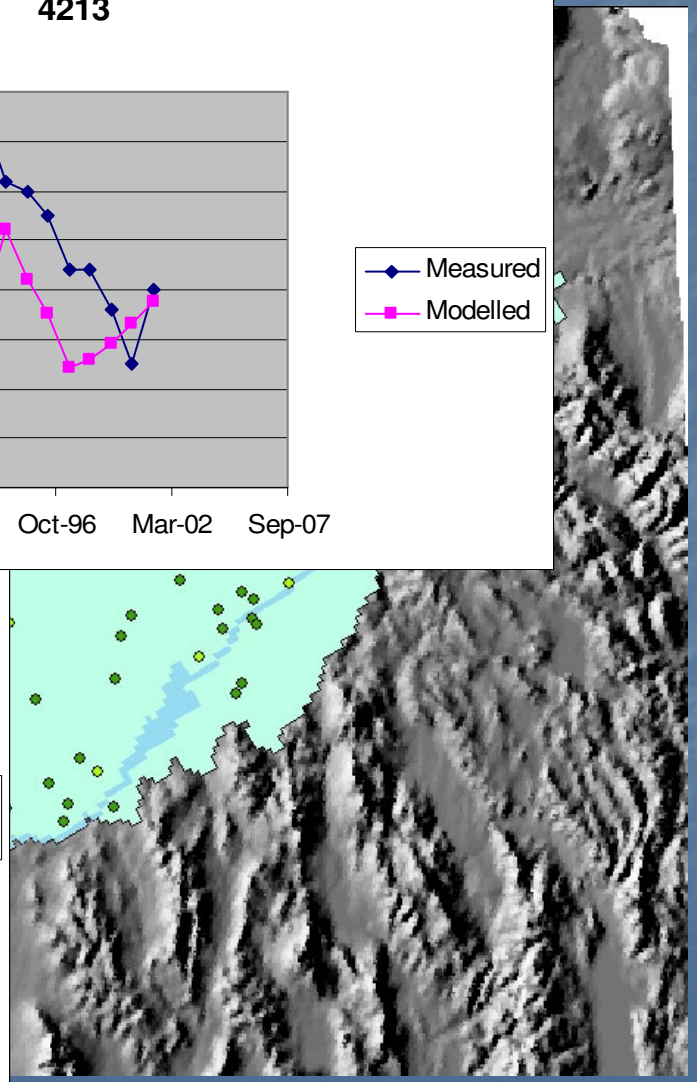


Trend

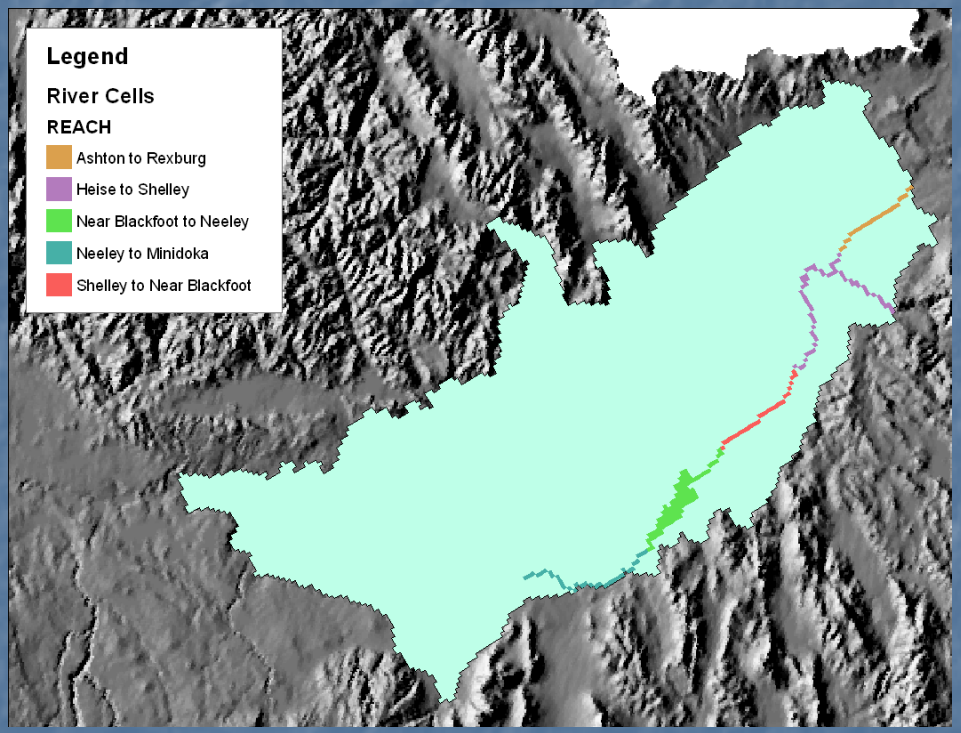

Legend
Trend AbsMean (ft)
0.023000 - 1.891000
1.891001 - 4.421600
4.421601 - 8.498500
8.498501 - 14.049000
14.049001 - 27.758000


4213
Feet
7
6
5
4
3
2
1
0
-1
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

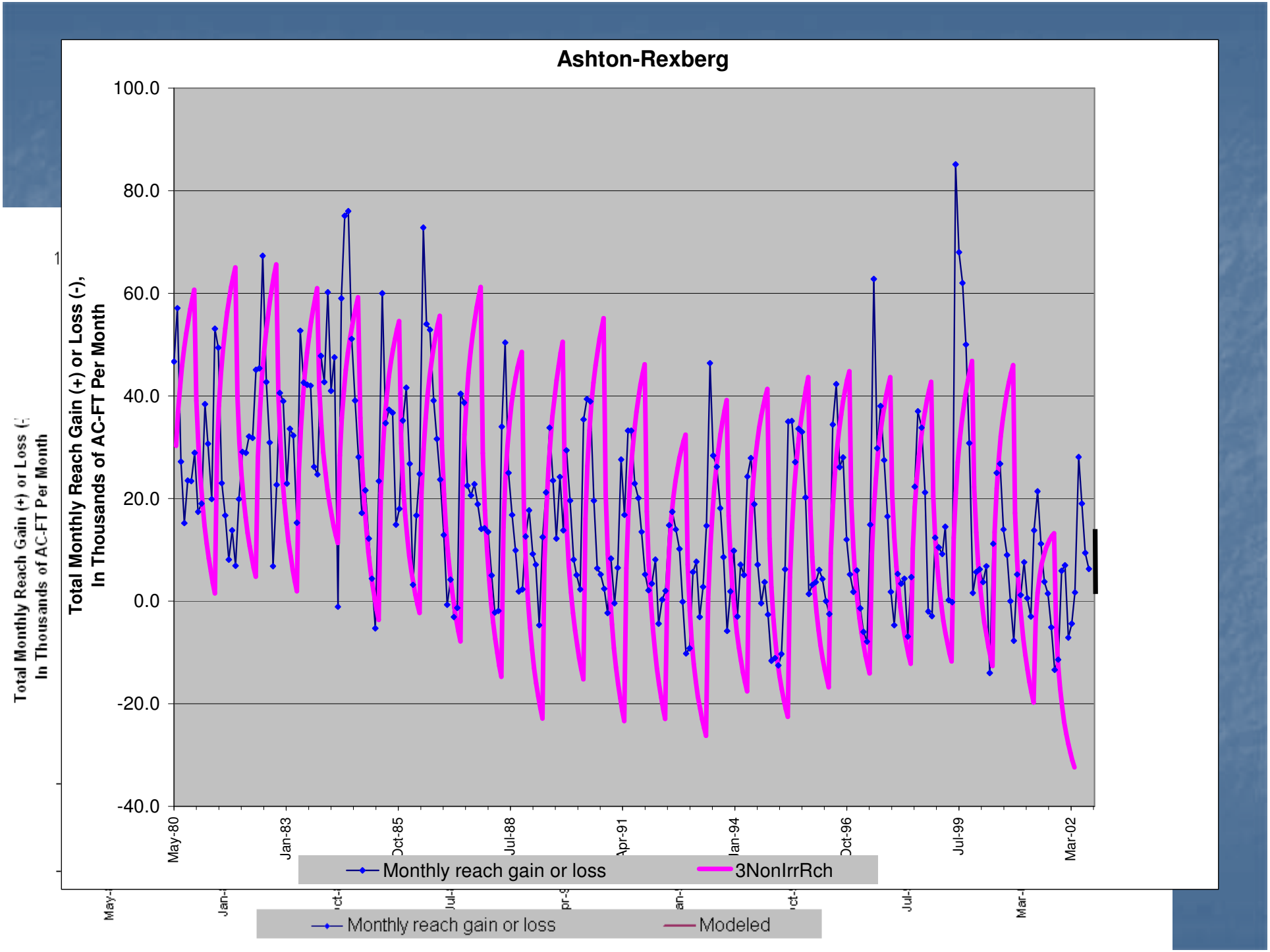

4213
Feet
7
6
5
4
3
2
1
0
-1
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

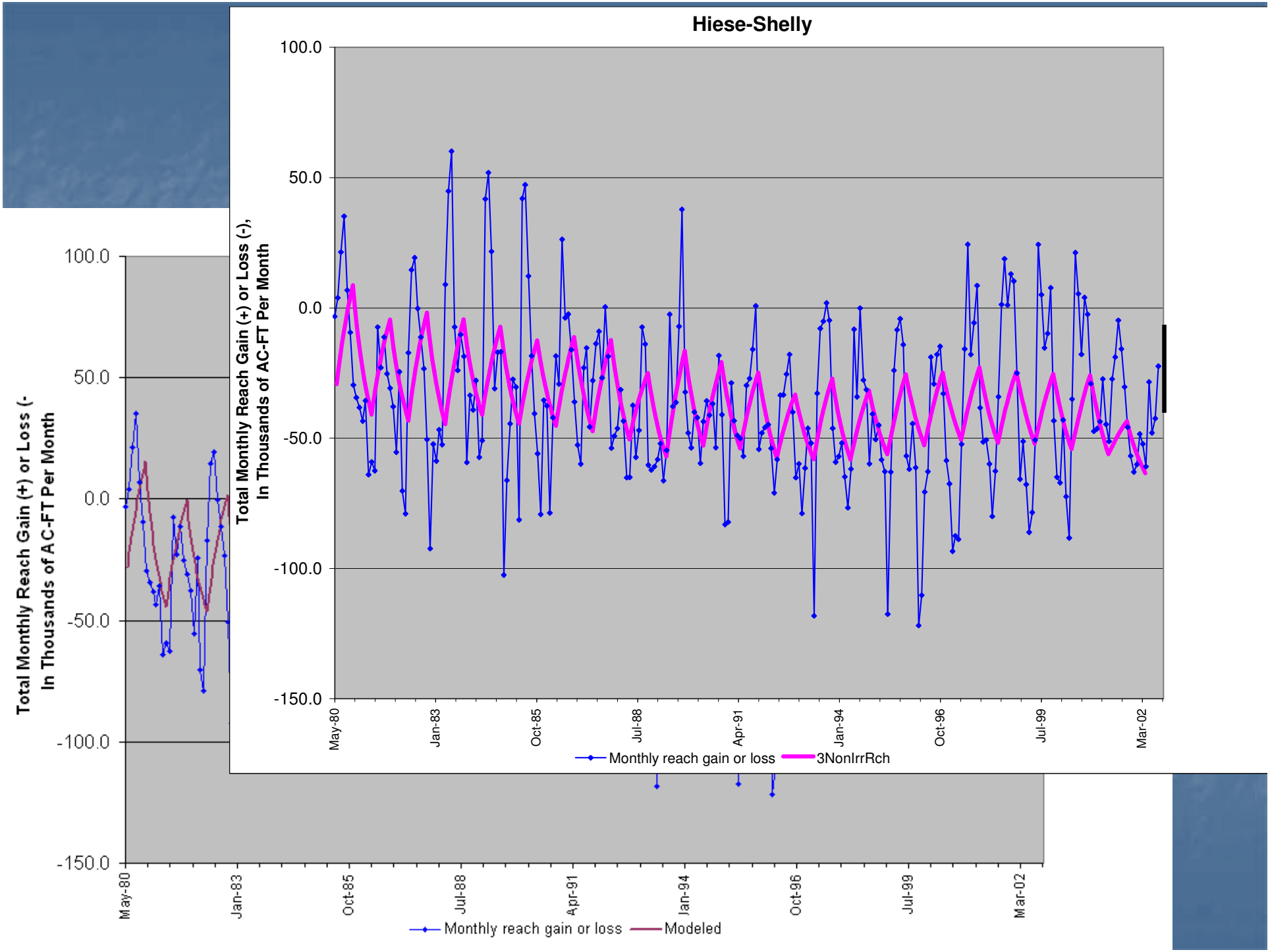


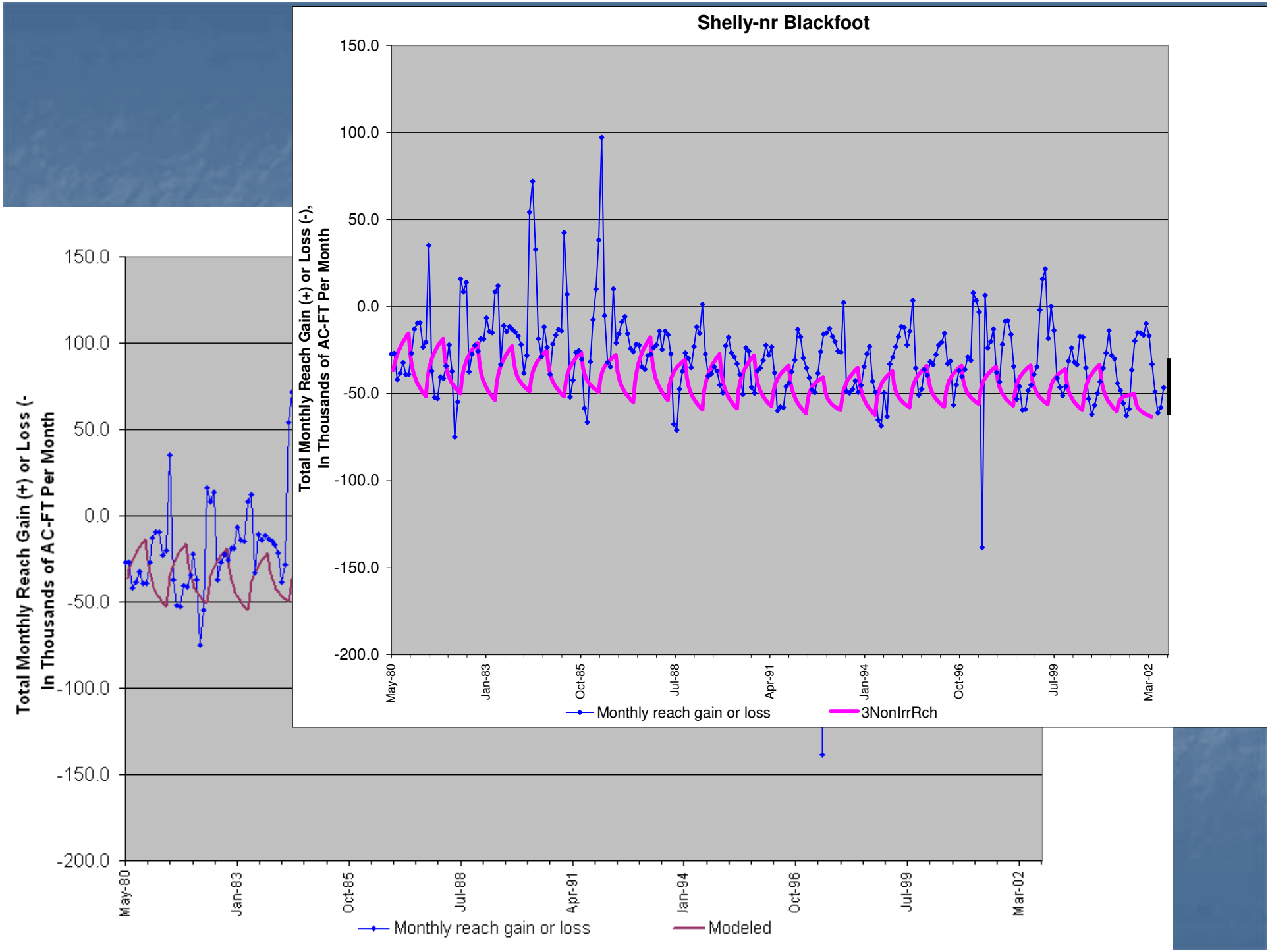
Snake River

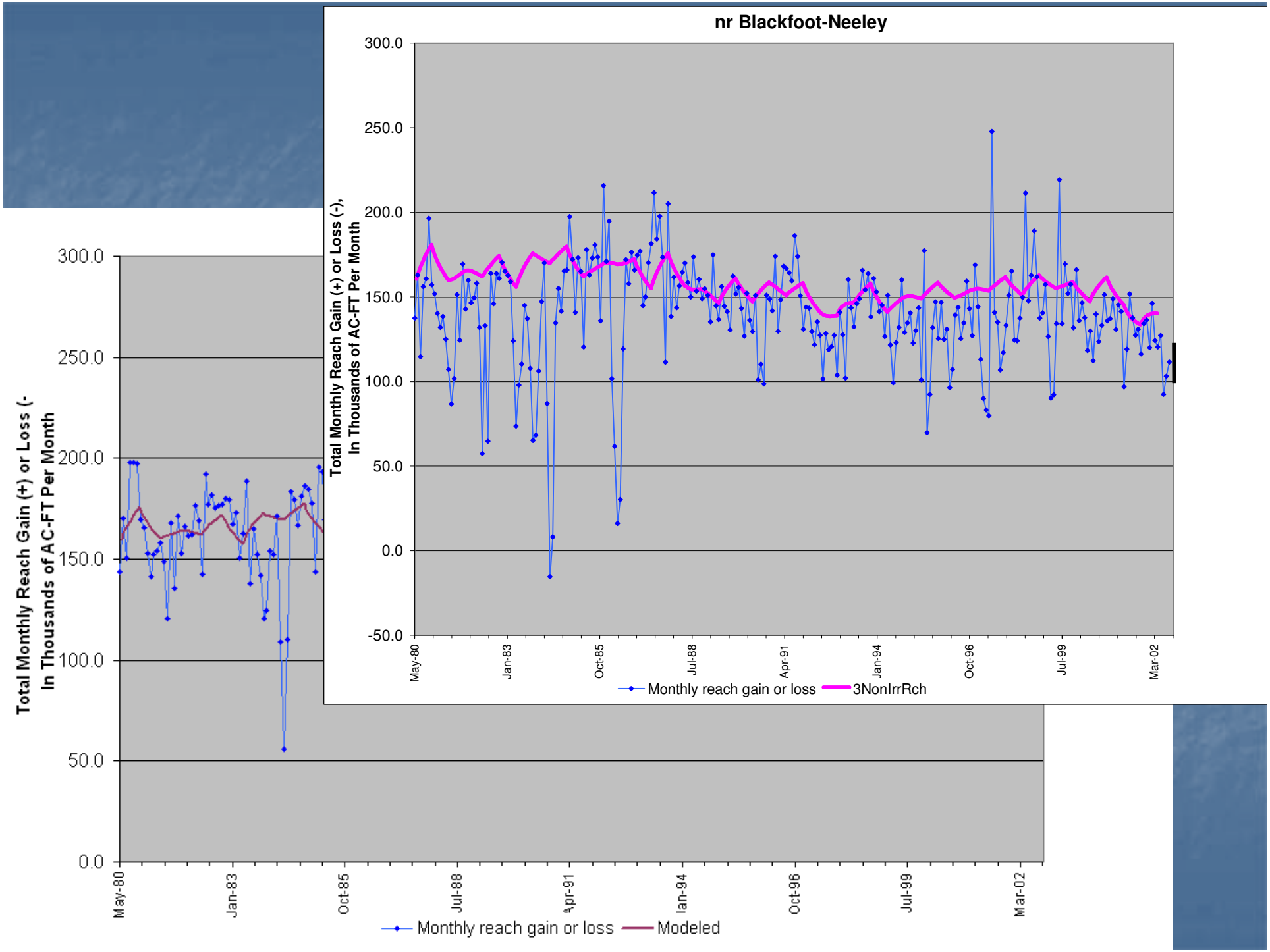


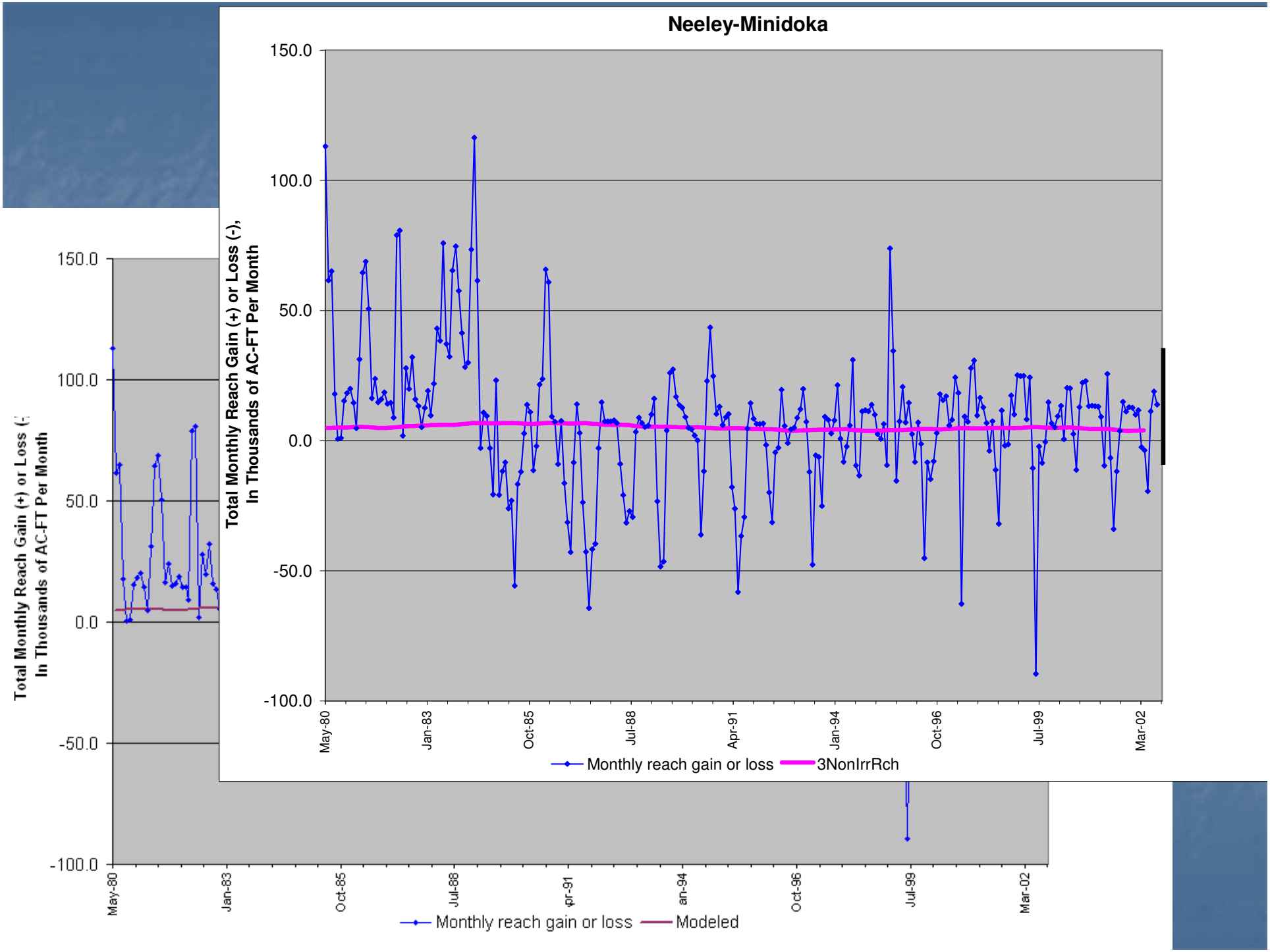
- Snake River reaches


Ashton-Rexberg
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
May-80
Jan-83
Oct-85
Jul-88
Apr-91
Jan-94
Oct-96
Jul-99
Mar-02
Monthly reach gain or loss
3NonIrrRch
Monthly reach gain or loss
Modeled

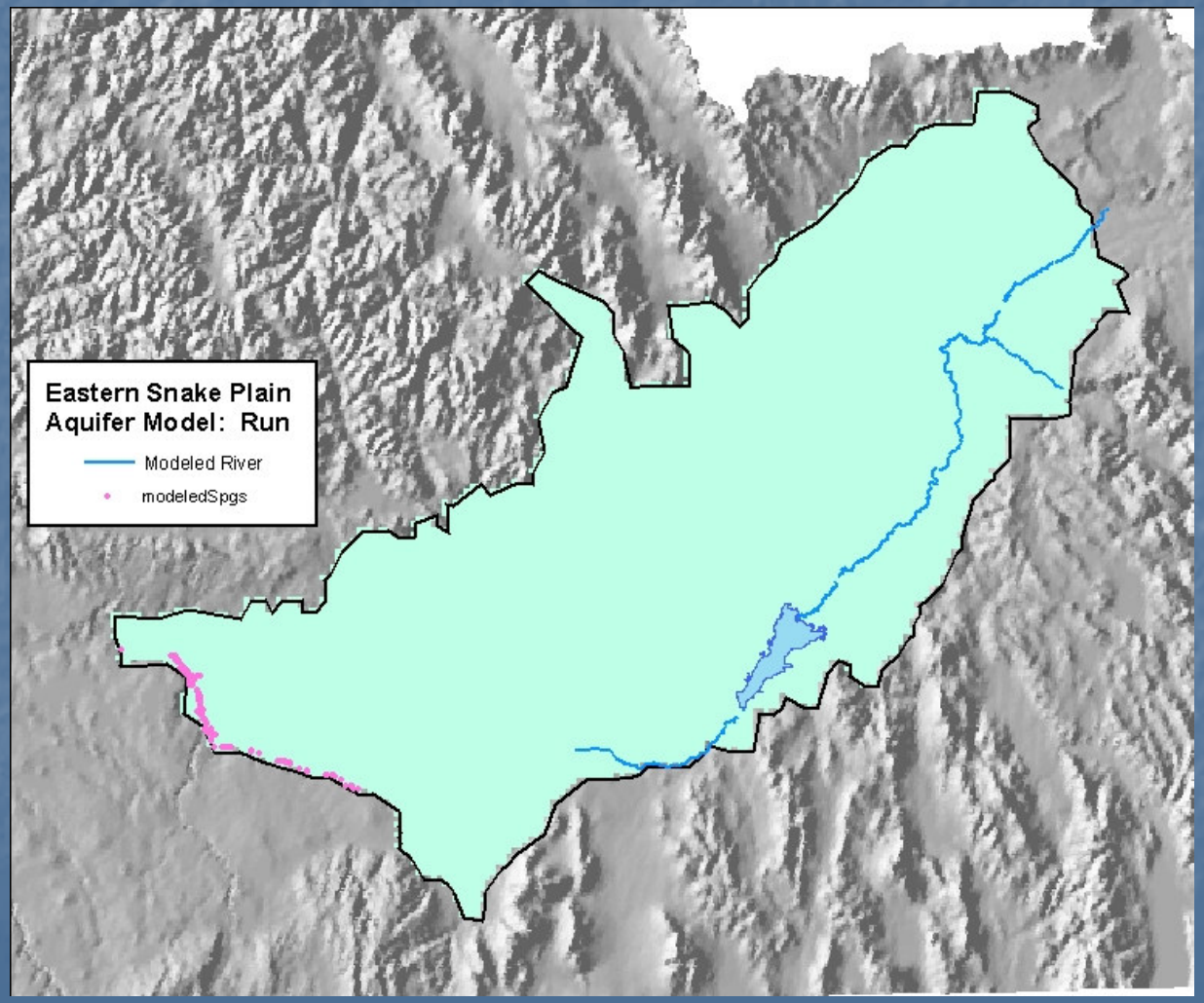

Hiese-Shelly
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
100.0
50.0
0.0
-50.0
-100.0
-150.0
May-80
Jan-83
Oct-85
Jul-88
Apr-91
Jan-94
Oct-96
Jul-99
Mar-02
Monthly reach gain or loss
3NonIrrRch
Total Monthly Reach Gain (+) or Loss (-, In Thousands of AC-FT Per Month
Monthly reach gain or loss
Modeled


Shelly-nr Blackfoot
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
150.0
100.0
50.0
0.0
-50.0
-100.0
-150.0
-200.0
May-80
Jan-83
Oct-85
Jul-88
Apr-91
Jan-94
Oct-96
Jul-99
Mar-02
Monthly reach gain or loss
3NonIrrRch
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
Monthly reach gain or loss
Modeled

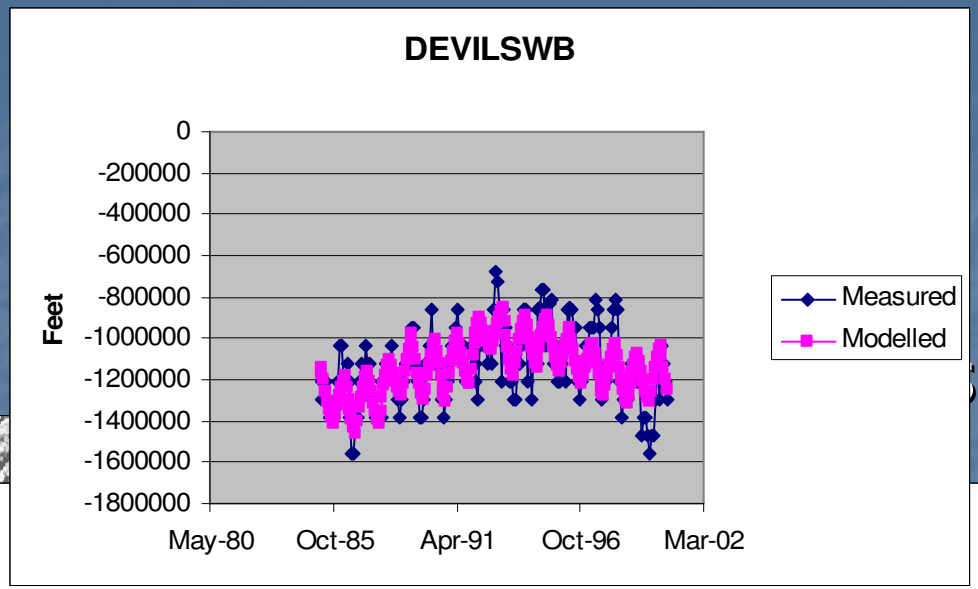

nr Blackfoot-Neeley
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
300.0
250.0
200.0
150.0
100.0
50.0
0.0
-50.0
May-80
Jan-83
Oct-85
Jul-88
Apr-91
Jan-94
Oct-96
Jul-99
Mar-02
Monthly reach gain or loss
3NonIrrRch
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
Monthly reach gain or loss
Modeled

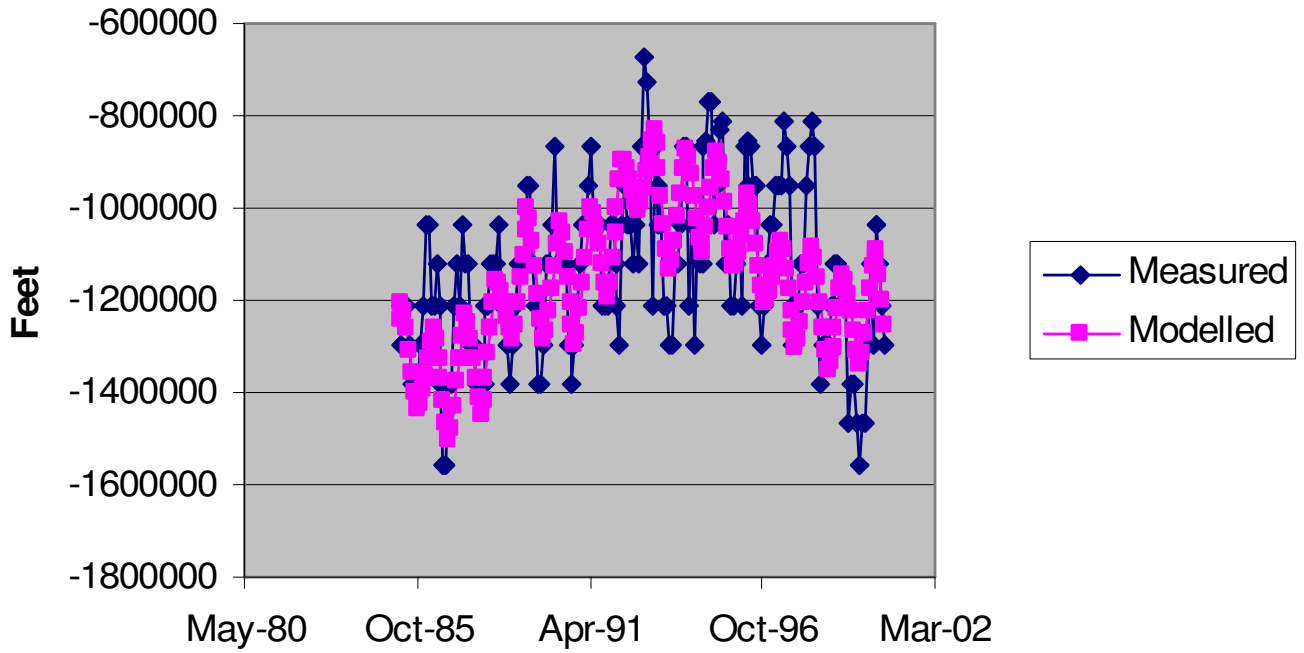

Neeley-Minidoka
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
150.0
100.0
50.0
0.0
-50.0
-100.0
May-80
Jan-83
Oct-85
Jul-88
Apr-91
Jan-94
Oct-96
Jul-99
Mar-02
Monthly reach gain or loss
3NonIrrRch
Total Monthly Reach Gain (+) or Loss (-), In Thousands of AC-FT Per Month
Monthly reach gain or loss
Modeled

Springs

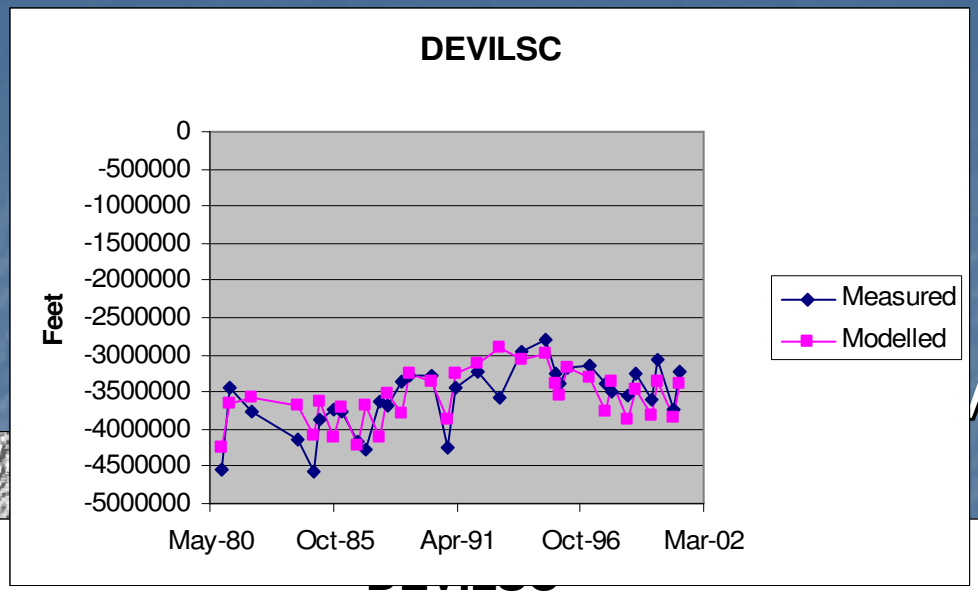

Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

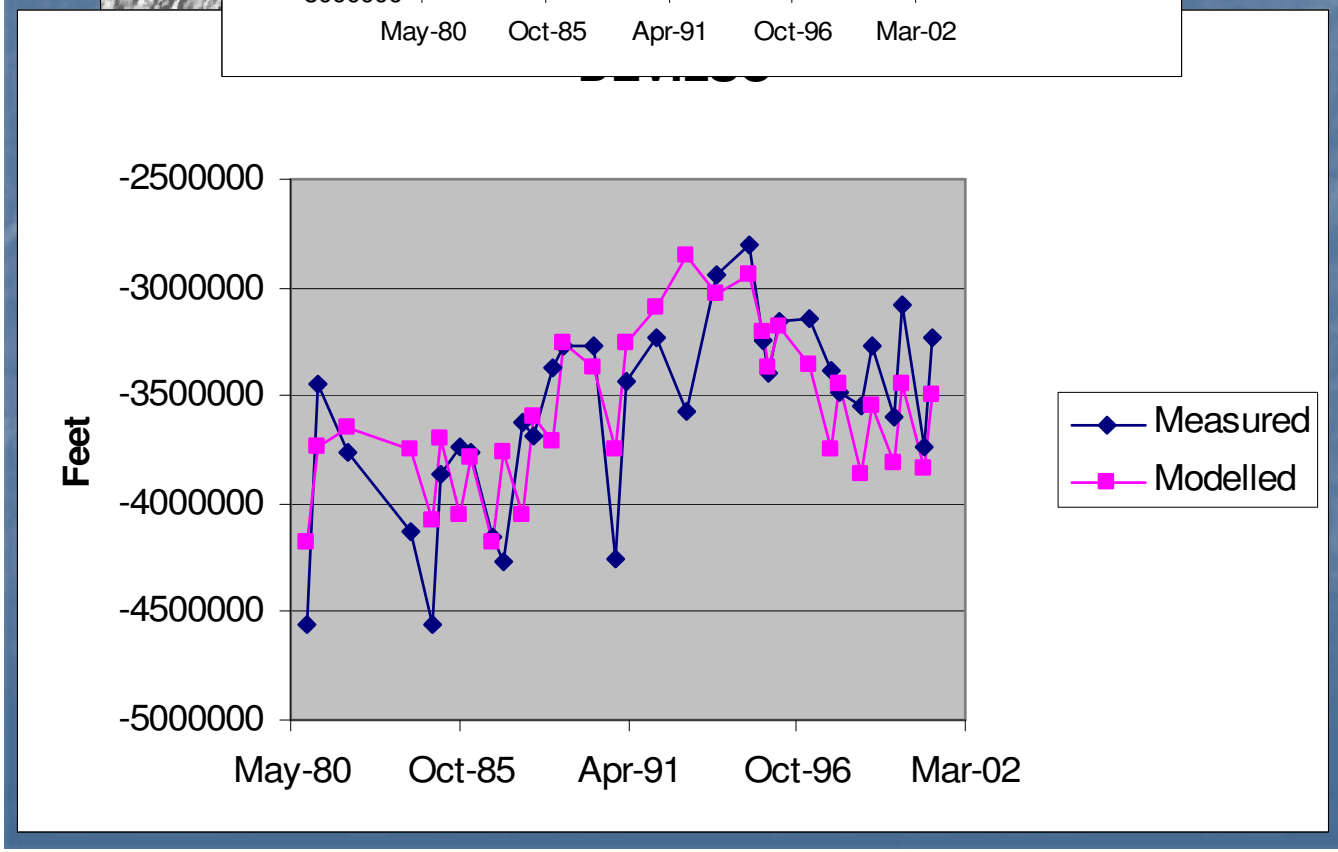
s Washbowl


DEVILSWB
Feet
0
-200000
-400000
-600000
-800000
-1000000
-1200000
-1400000
-1600000
-1800000
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled

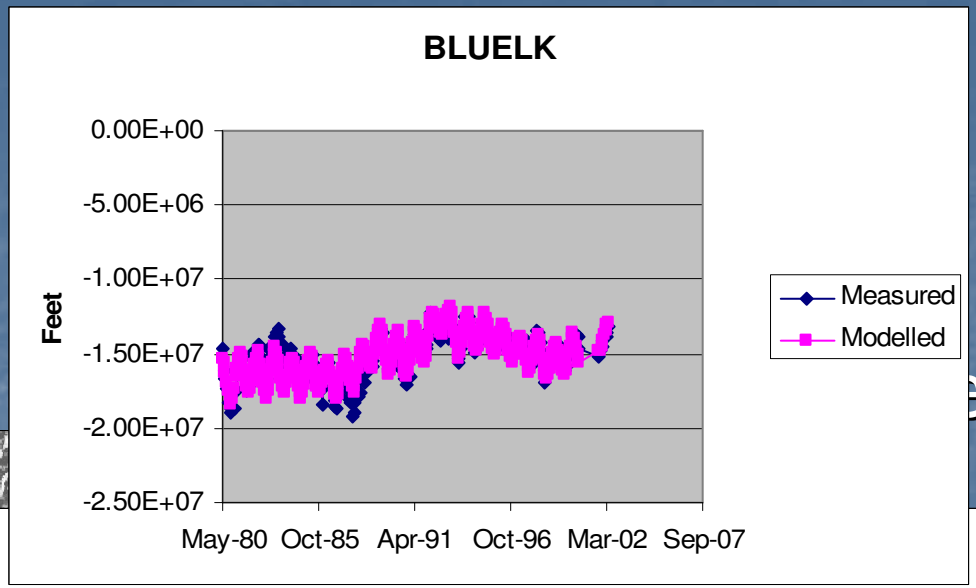

Feet
-600000
-800000
-1000000
-1200000
-1400000
-1600000
-1800000
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled

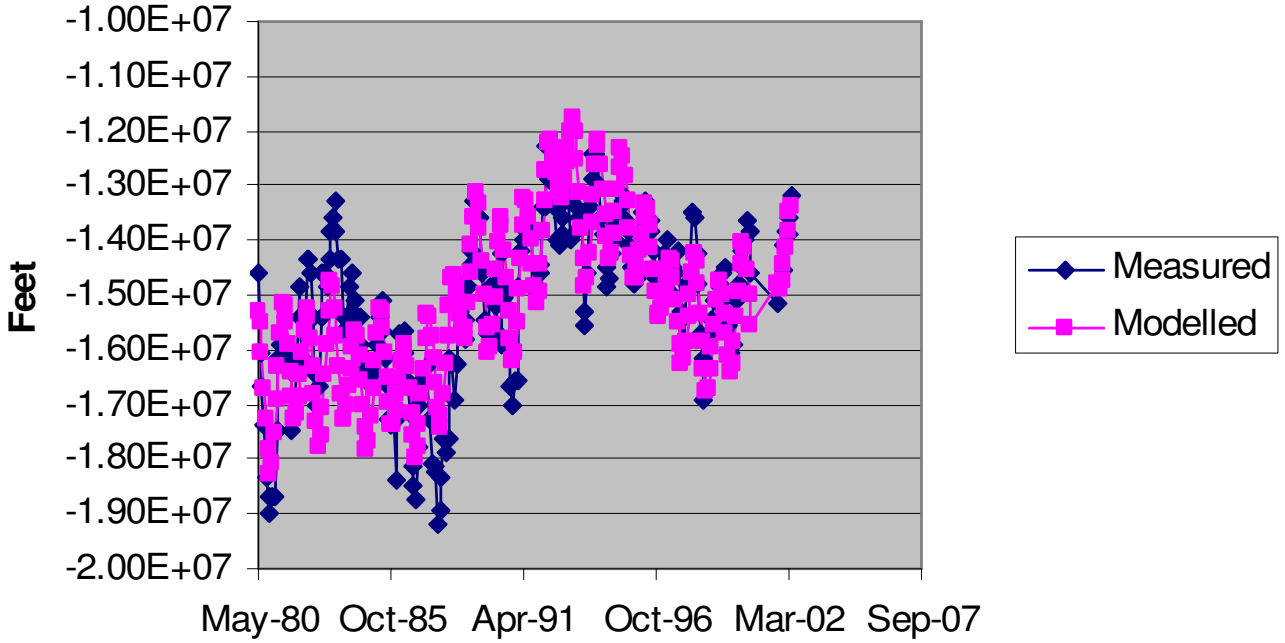
vils Corral


DEVILSC
Feet
0
-500000
-1000000
-1500000
-2000000
-2500000
-3000000
-3500000
-4000000
-4500000
-5000000
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled

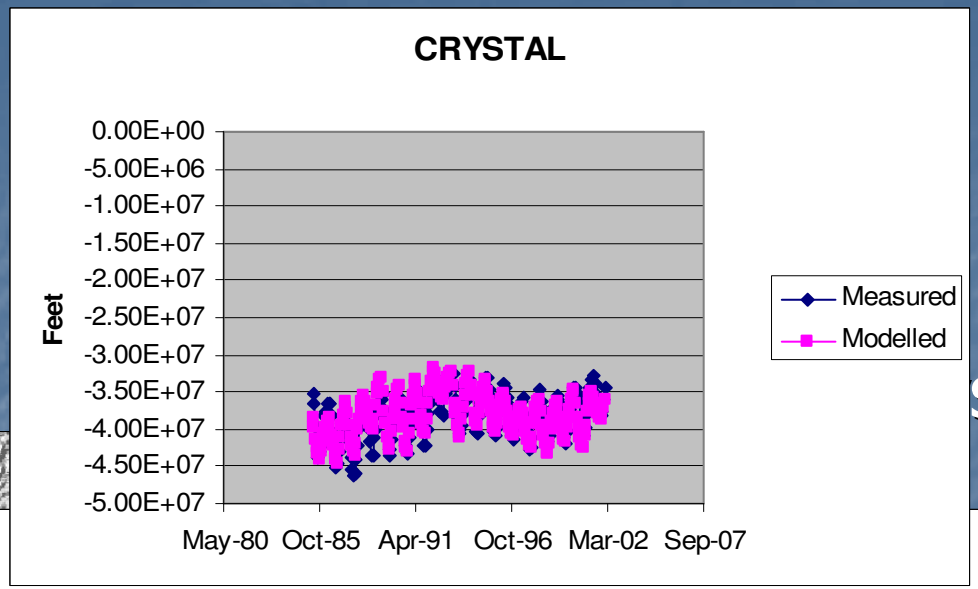

Feet
-2500000
-3000000
-3500000
-4000000
-4500000
-5000000
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled

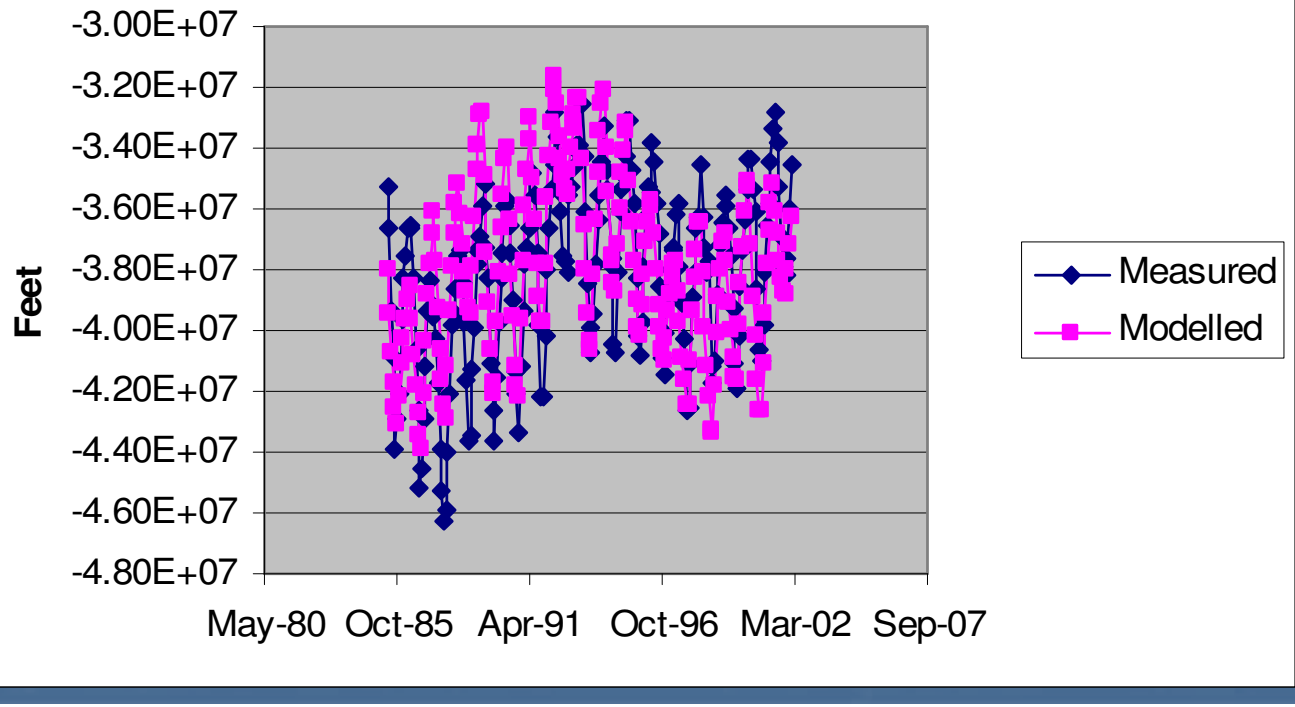
e Lakes


BLUELK
0.00E+00
-5.00E+06
-1.00E+07
-1.50E+07
-2.00E+07
-2.50E+07
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

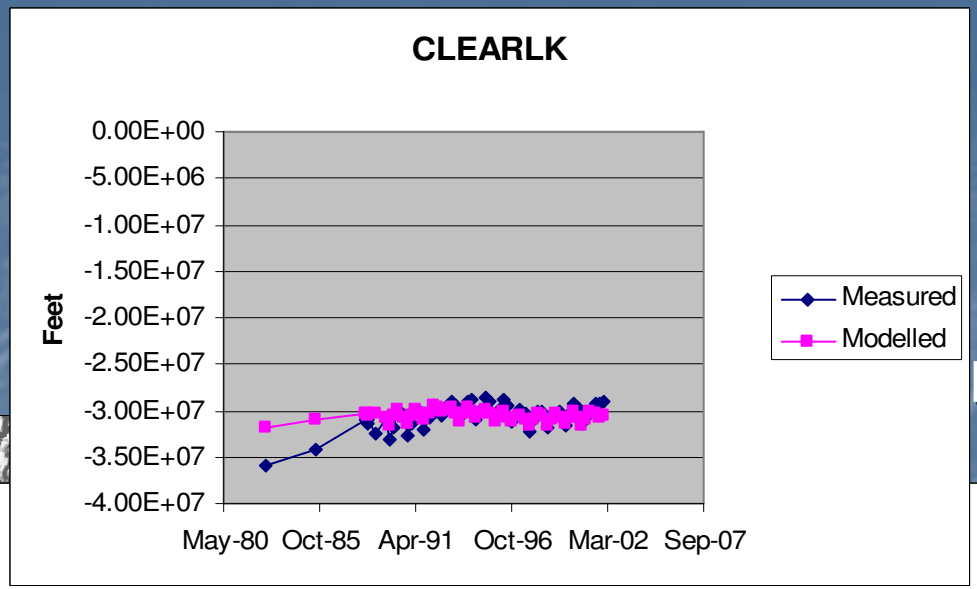

-1.00E+07
-1.10E+07
-1.20E+07
-1.30E+07
-1.40E+07
-1.50E+07
-1.60E+07
-1.70E+07
-1.80E+07
-1.90E+07
-2.00E+07
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

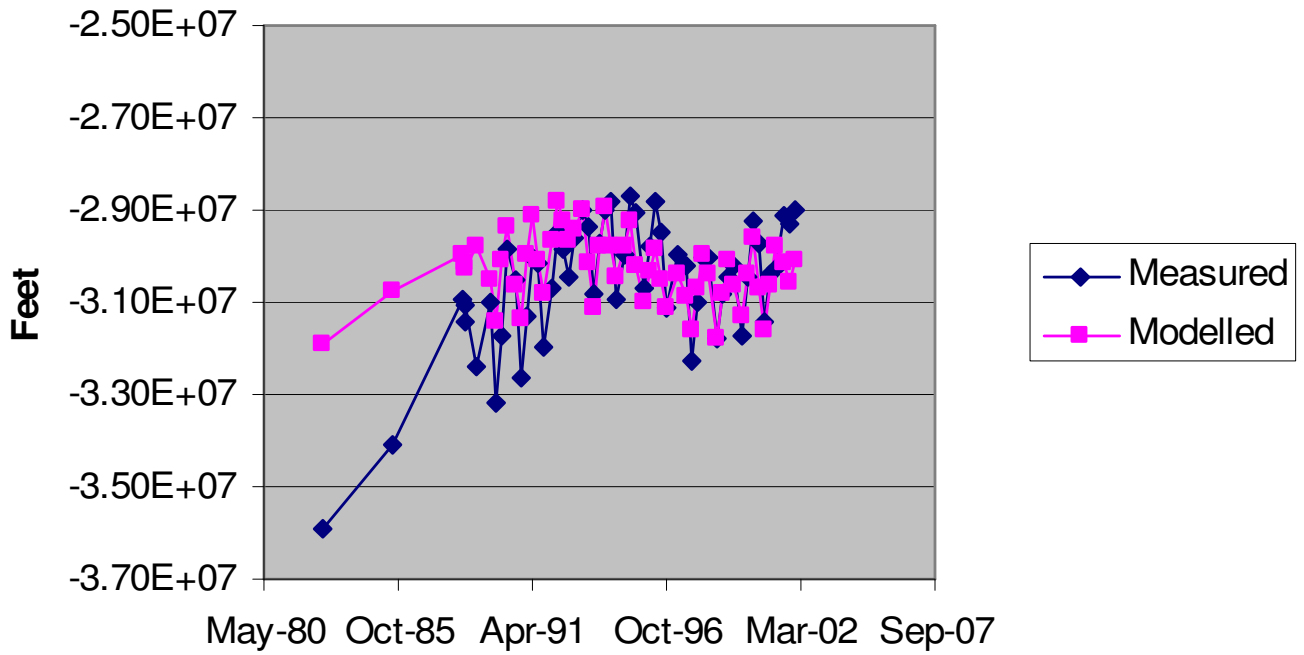
stal Springs



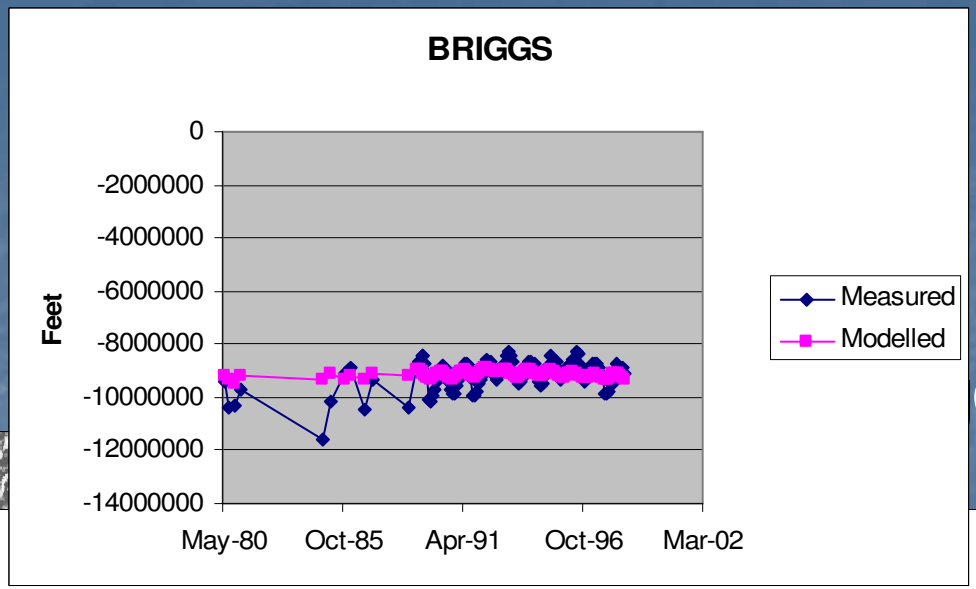


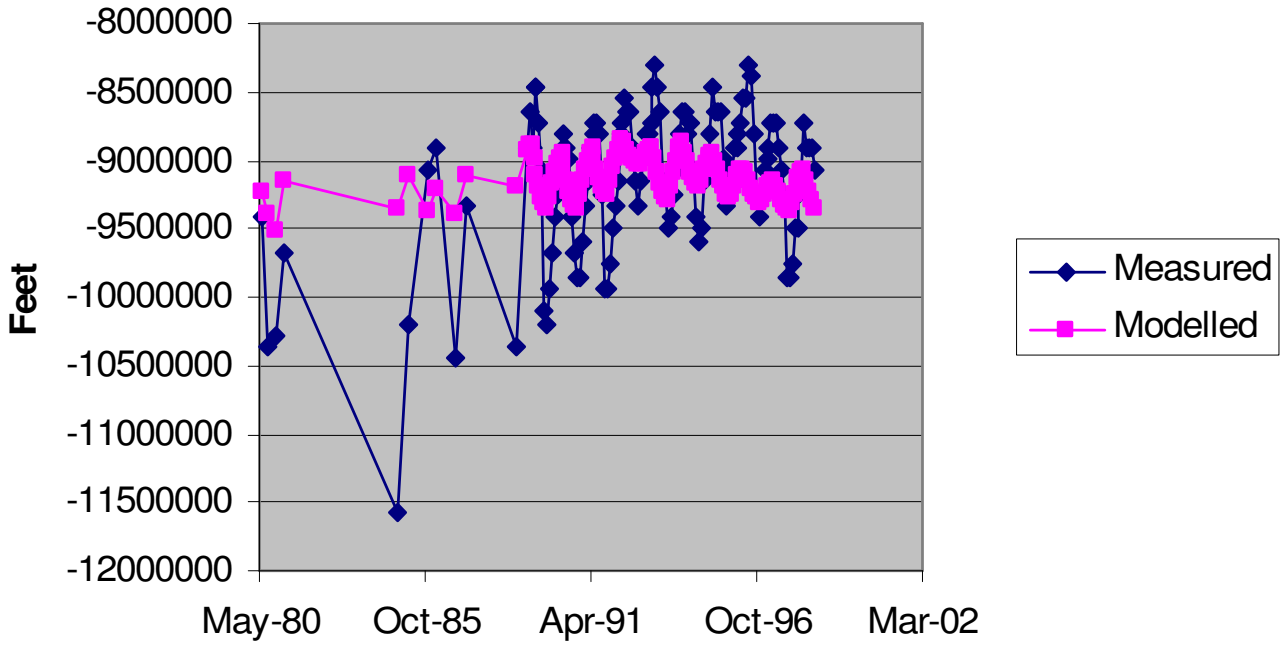
r Lakes


CLEARLK
0.00E+00
-5.00E+06
-1.00E+07
-1.50E+07
-2.00E+07
-2.50E+07
-3.00E+07
-3.50E+07
-4.00E+07
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled


-2.50E+07
-2.70E+07
-2.90E+07
-3.10E+07
-3.30E+07
-3.50E+07
-3.70E+07
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

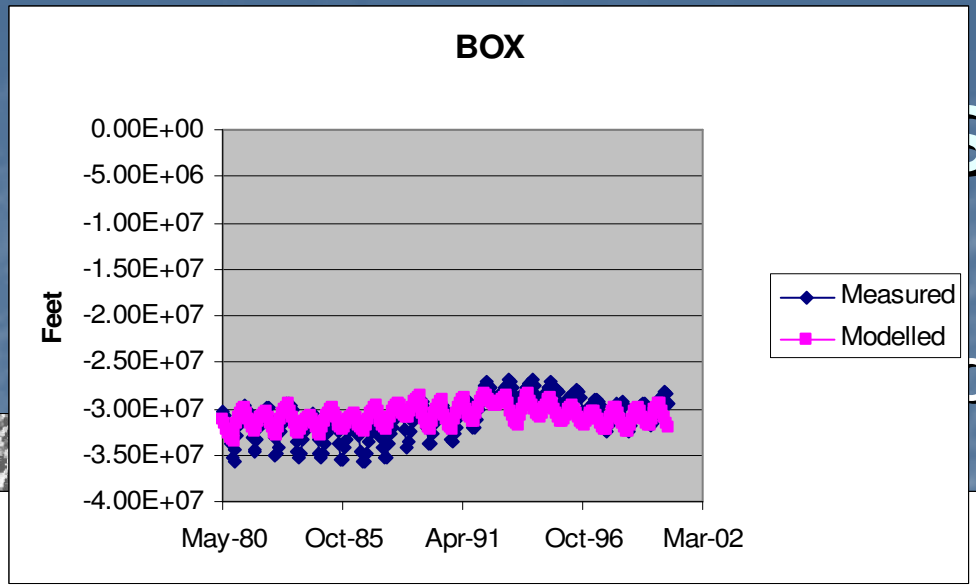
gs Spring

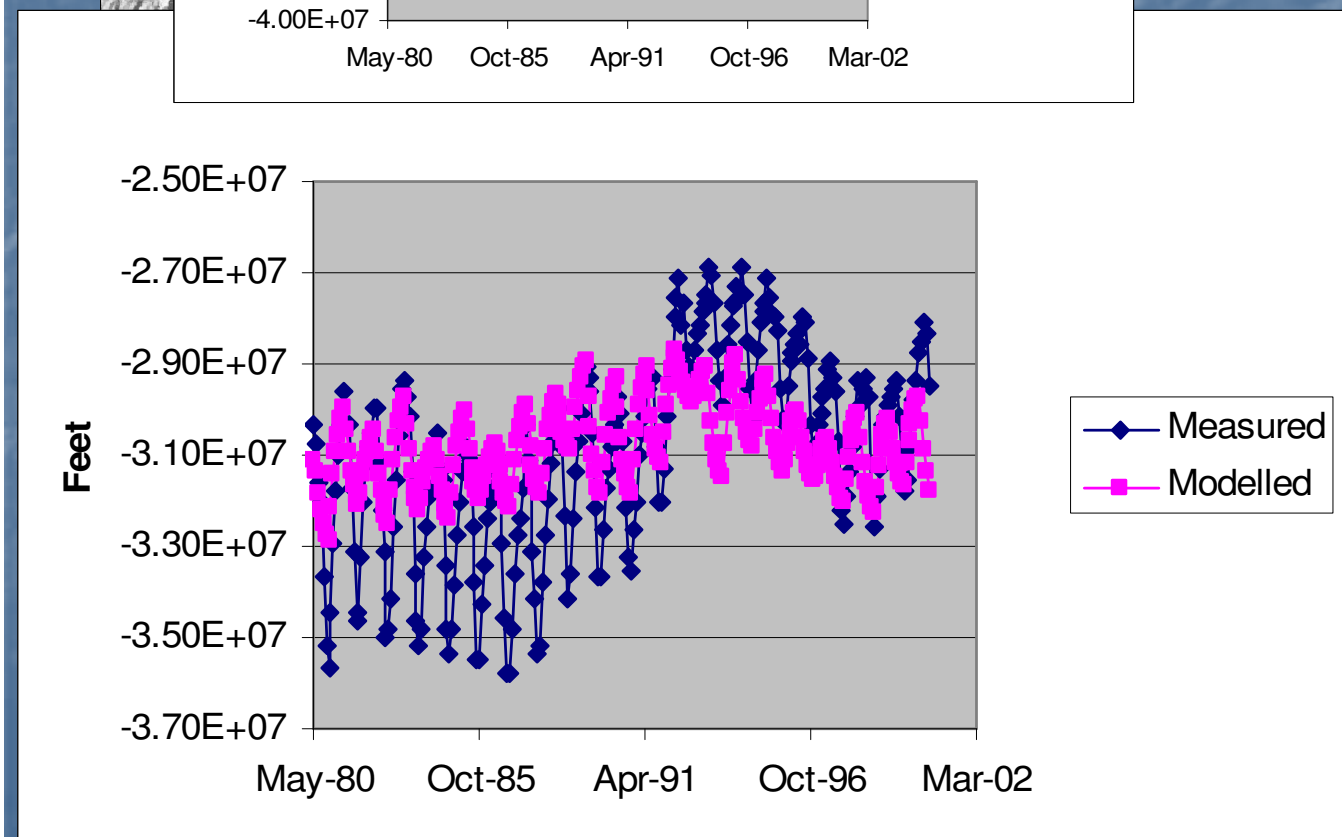

BRIGGS
0
-2000000
-4000000
-6000000
-8000000
-10000000
-12000000
-14000000
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled


-8000000
-8500000
-9000000
-9500000
-10000000
-10500000
-11000000
-11500000
-12000000
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Measured
Modelled

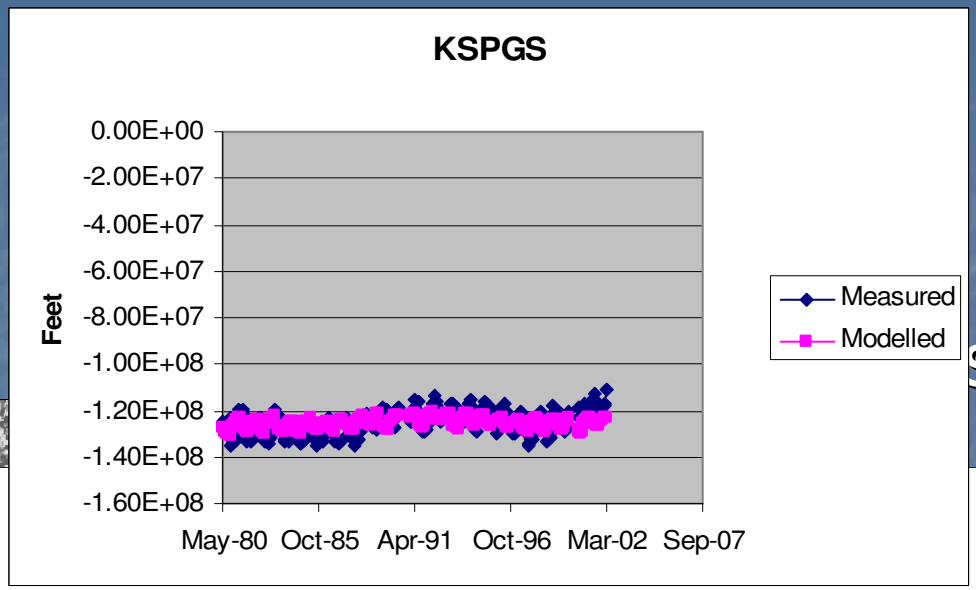
S

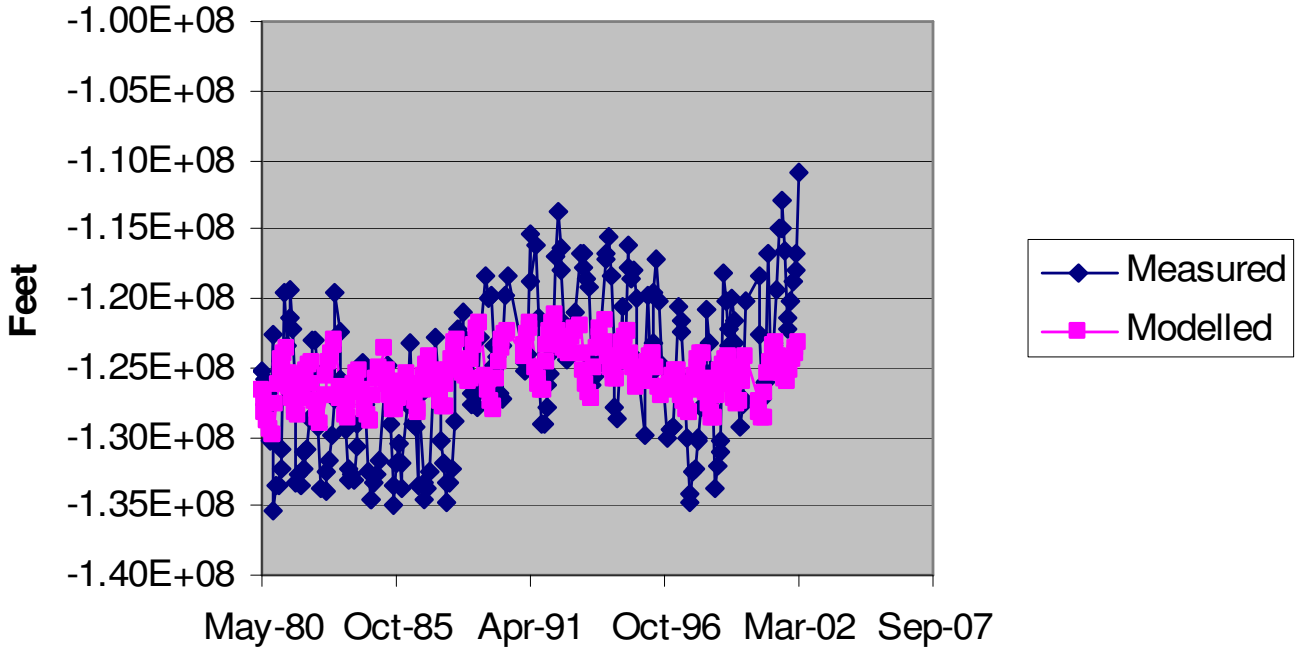
ox Canyon Spring

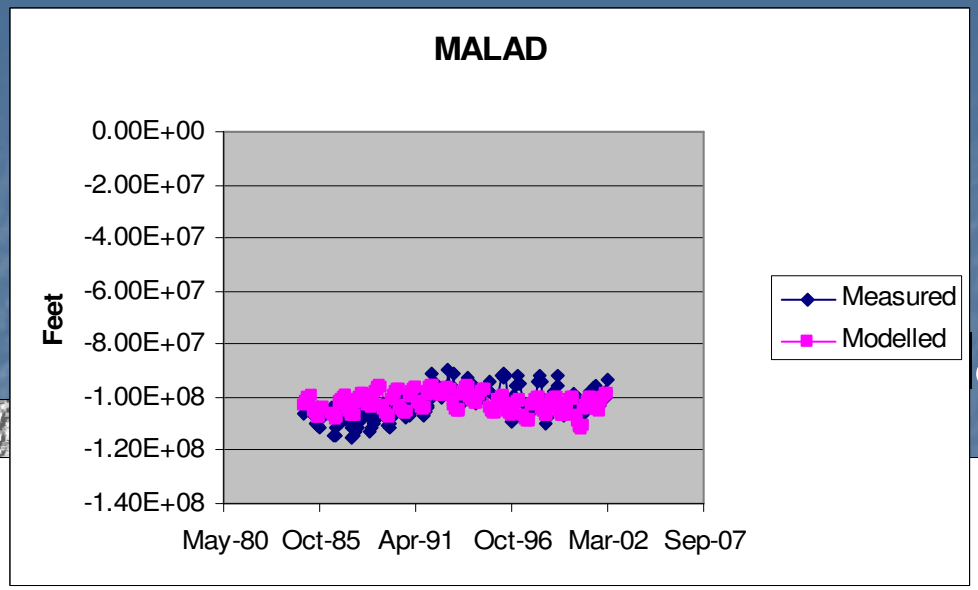




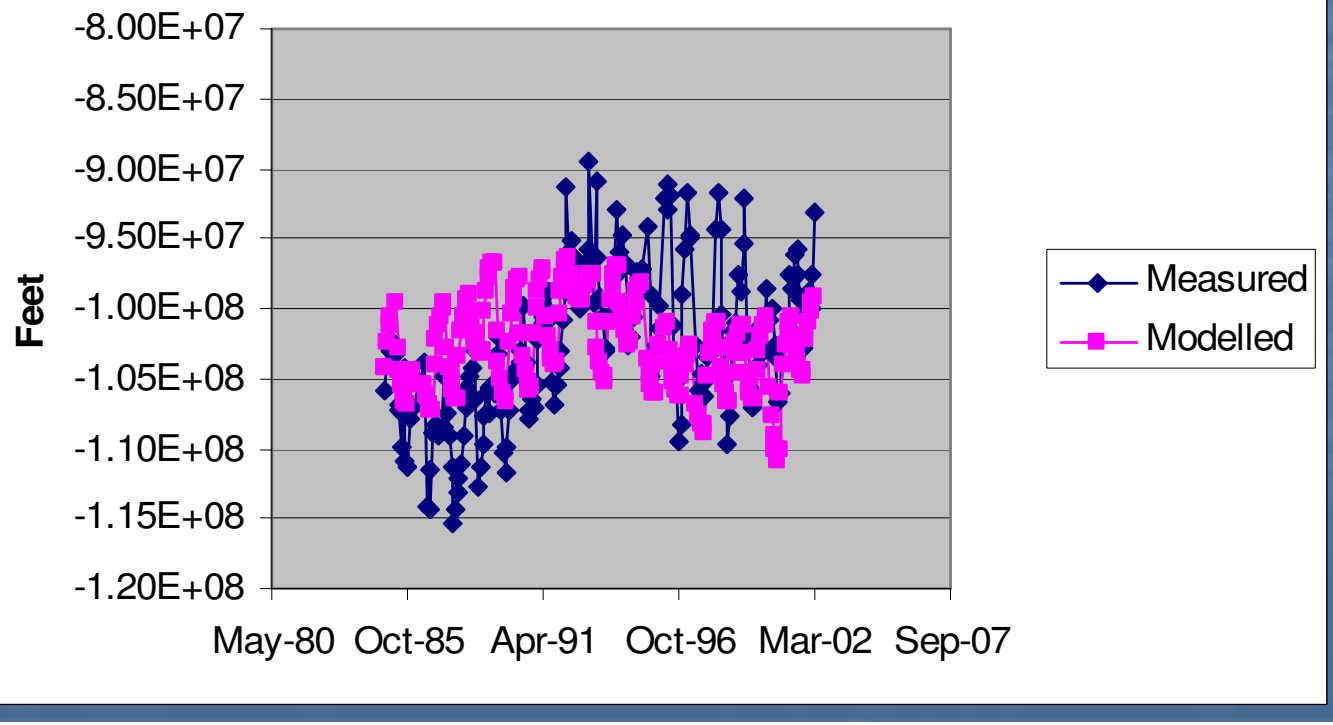
sand Springs






MALAD
0.00E+00
-2.00E+07
-4.00E+07
-6.00E+07
-8.00E+07
-1.00E+08
-1.20E+08
-1.40E+08
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

ad


-8.00E+07
-8.50E+07
-9.00E+07
-9.50E+07
-1.00E+08
-1.05E+08
-1.10E+08
-1.15E+08
-1.20E+08
Feet
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Measured
Modelled

End