High Elevation Springs

Allan Wylie IDWR

September 21-22, 2009

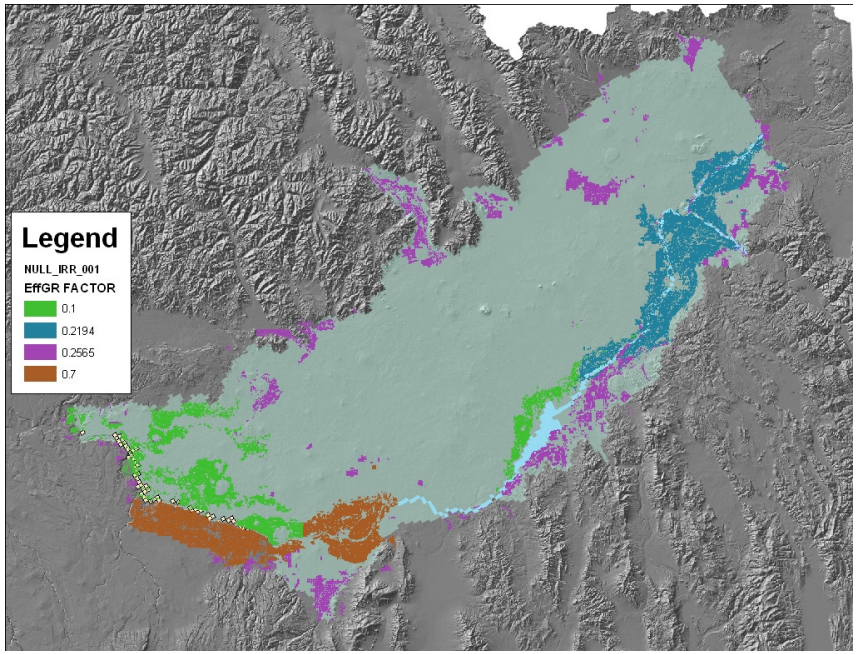
High elevation springs experiment

- ESHMC recommendations
  - Tie high elevation springs within each spring reach and make them adjustable
  - Base run
    - Use “Maximum Farm Efficiency using Runoff for Returns” (FER)
    - Adjust DPex, DPin, EffSp and EffGr

Run EffSP, EffGR, DPin, and DPex adjustable

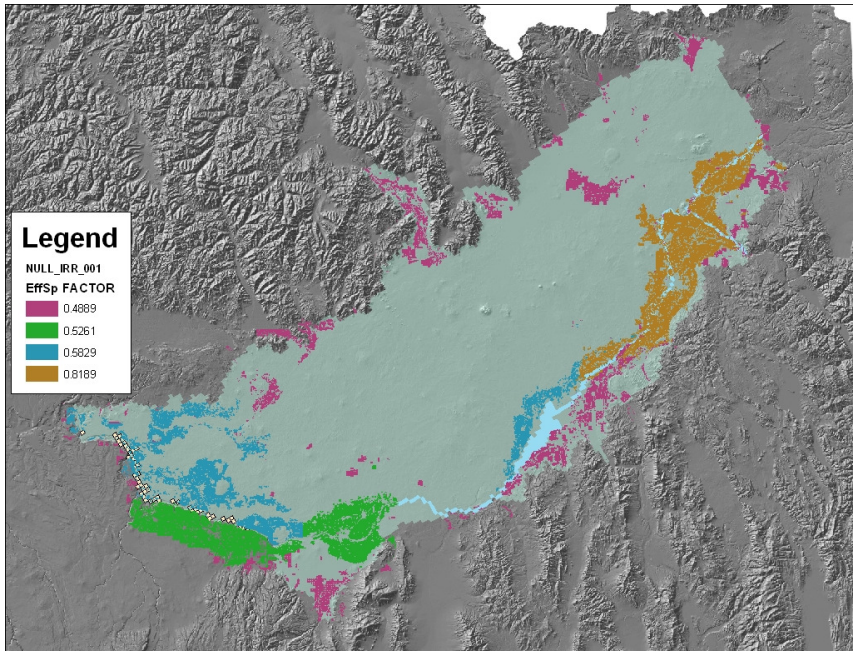
- Use “Maximum Farm Efficiency using Runoff for Returns”
- DPex adjustable 1.0 – 0.00001
- DPin adjustable 1.0 – 0.00001
- EffSP adjustable 1.0 – 0.4
- EffGR adjustable 0.7 – 0.4
- Group surface water entities
  - Those with long canals
    - Aberdeen Springfield, AFRD#2 and Northside
  - Those diverting above American Falls
  - Those diverting below American Falls
  - Those not diverting from the Snake River
- High Springs tied and adjustable by reach

On Farm Water Budget



- EffGR and EffSP adjustable
- DPin and DPex adjustable
- OnFarm
  - Standard error = 7.384
- High Springs
  - Standard error = 7.485

On Farm Water Budget



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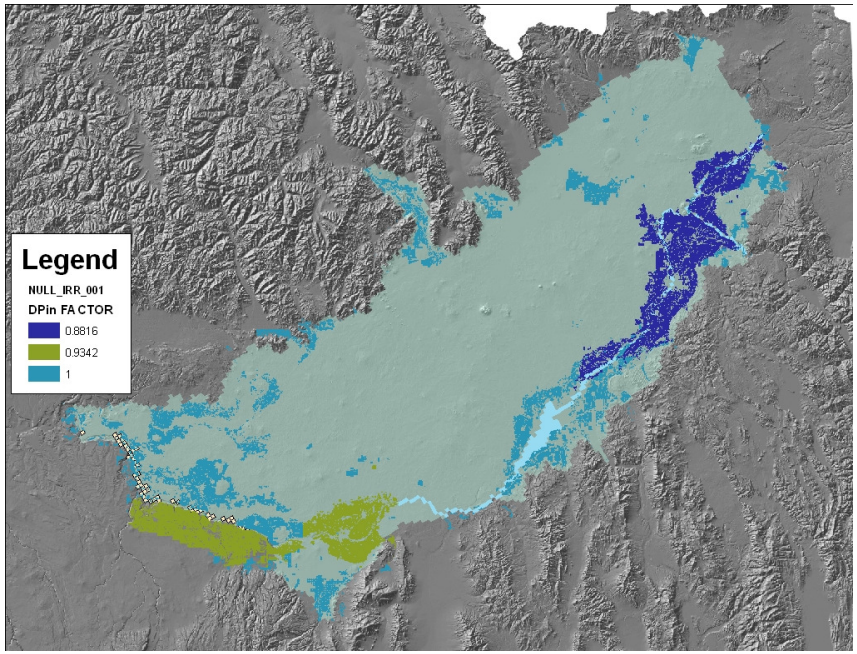

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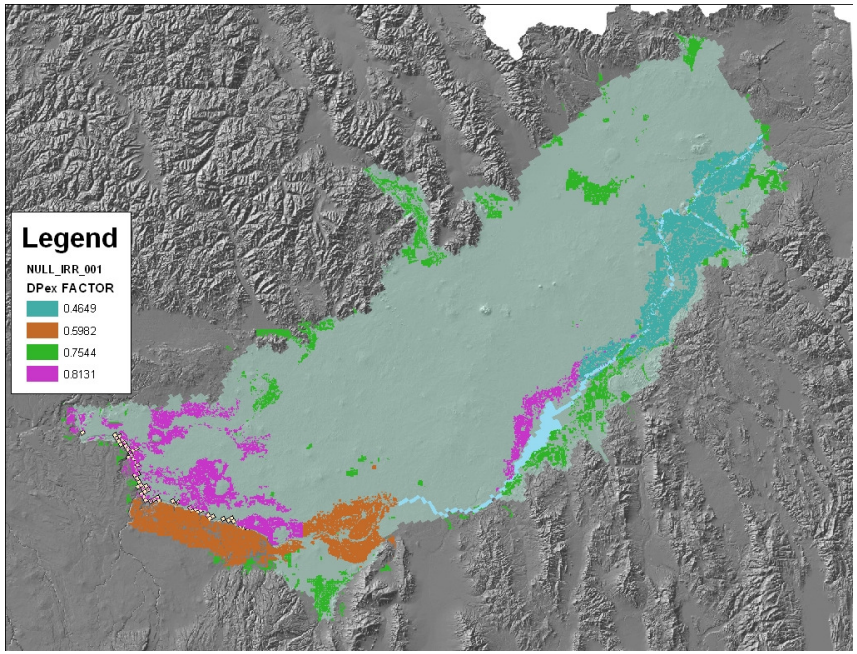
On Farm Water Budget



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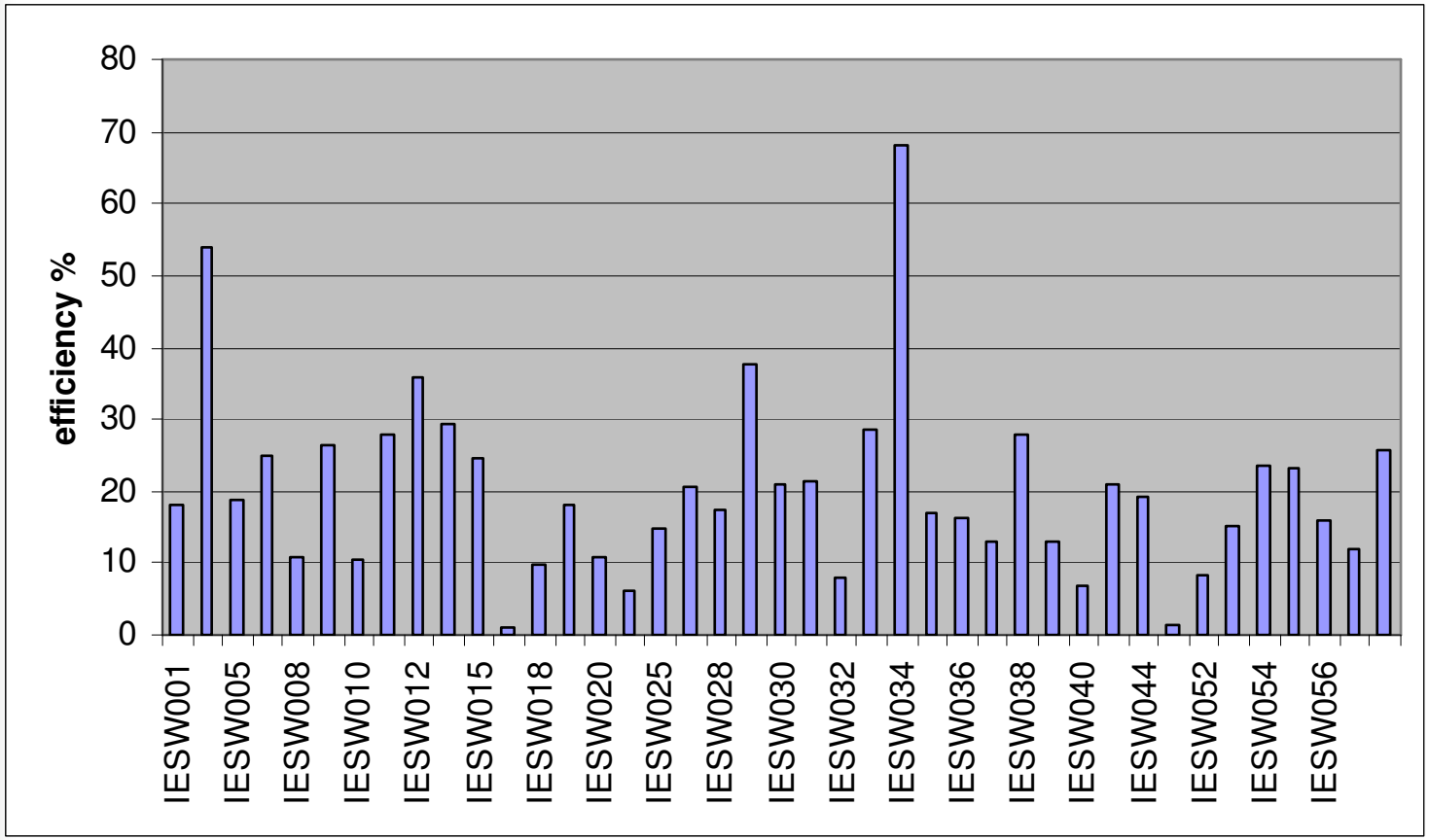
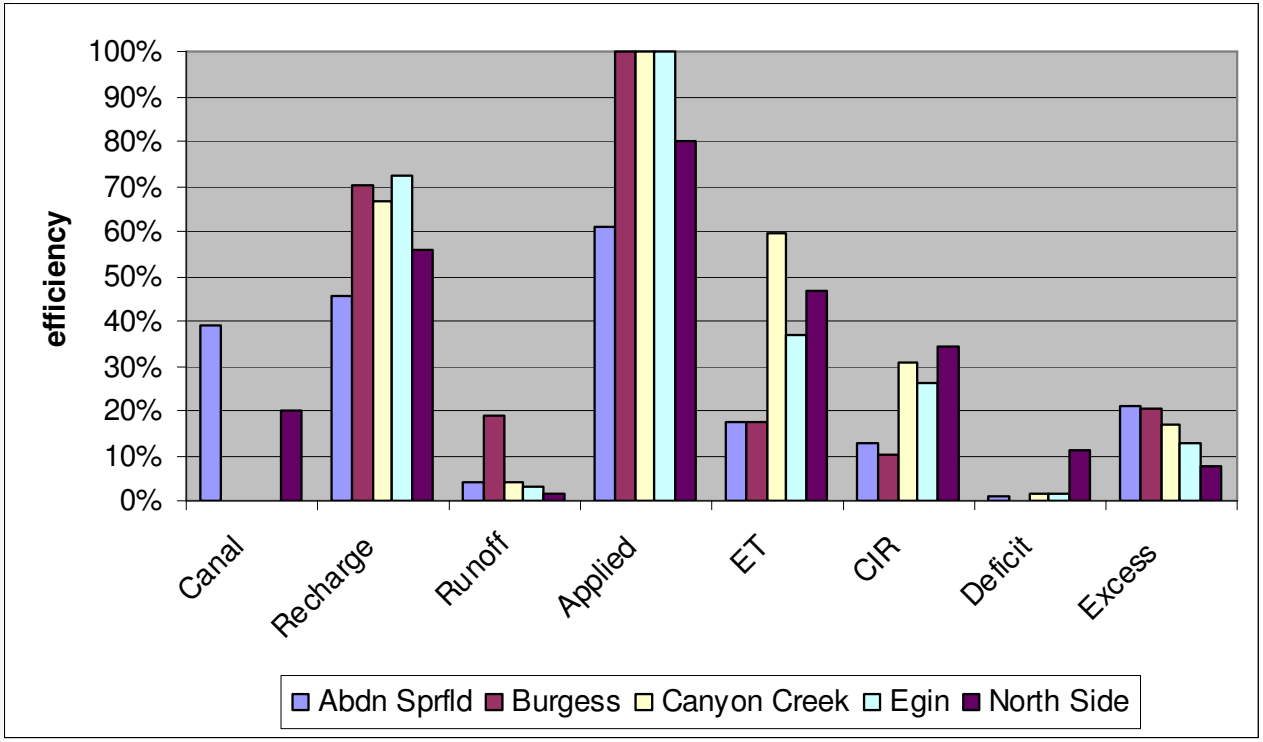
Surface water irrigation/system efficiency



- 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

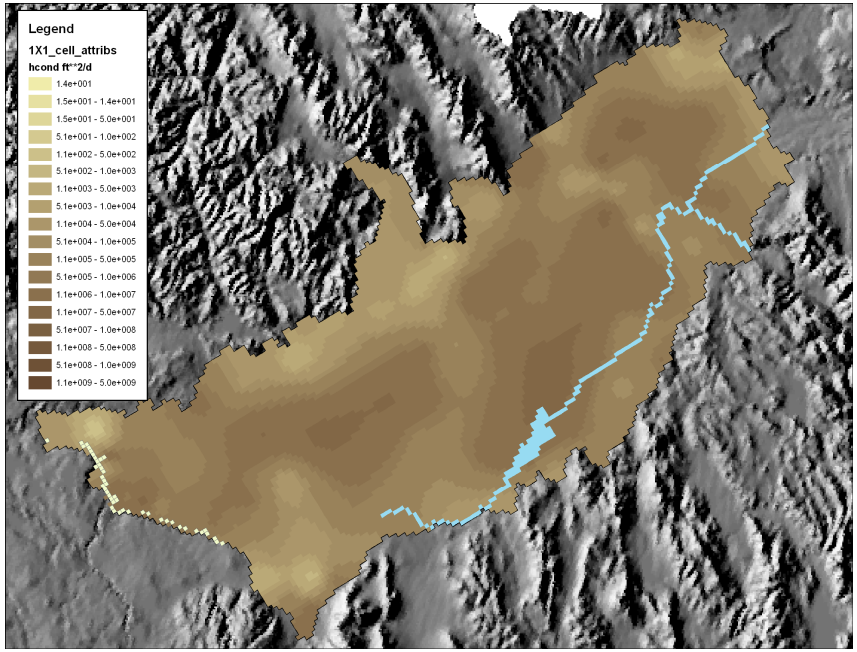
Surface Water Fate DPin, DPex, EffSP and EffGR adjustable

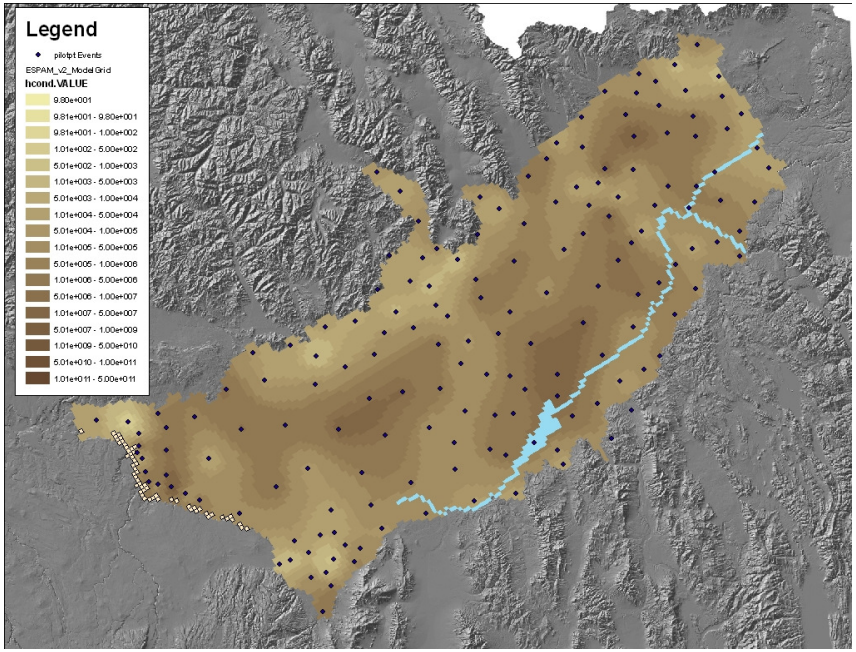


Canal	Canal Seepage
Recharge	Deep percolation to groundwater
Runoff	Surface runoff
Applied	Applied surface water irrigation
ET	Evapotranspiration
CIR	Crop Irrigation Requirement
Deficit	Unmet CIR
Excess	Irrigation more than CIR

Transmissivity

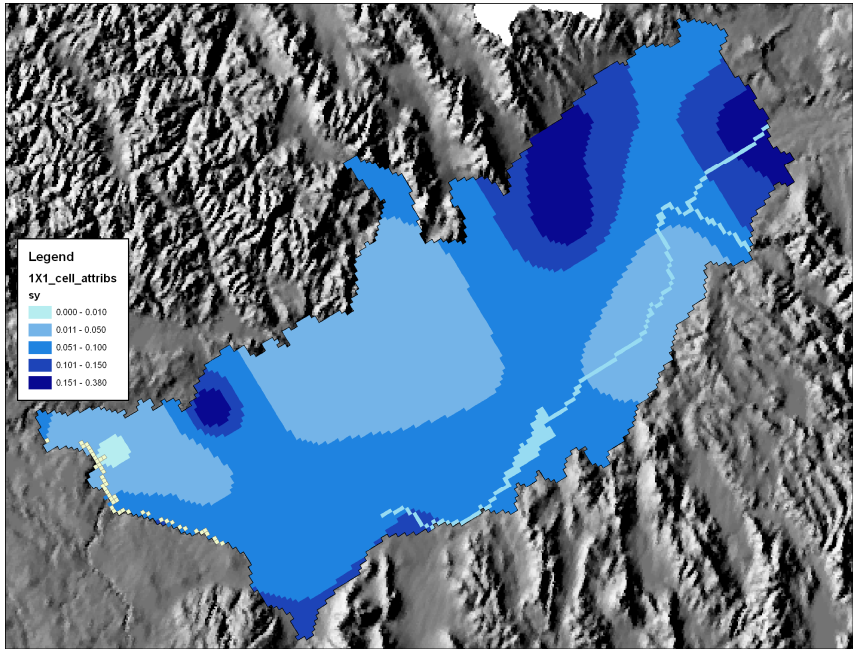
V 1.1

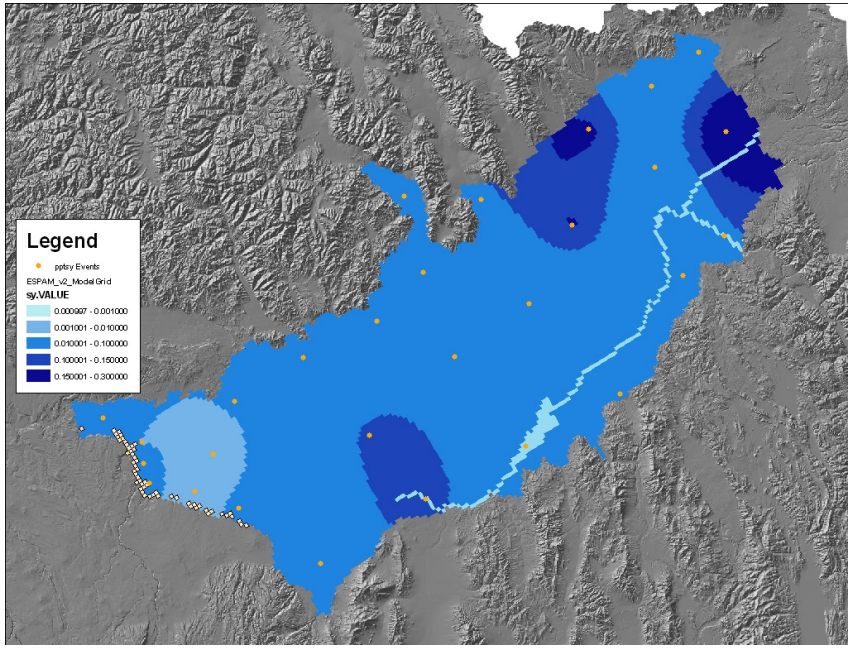




Specific Yield

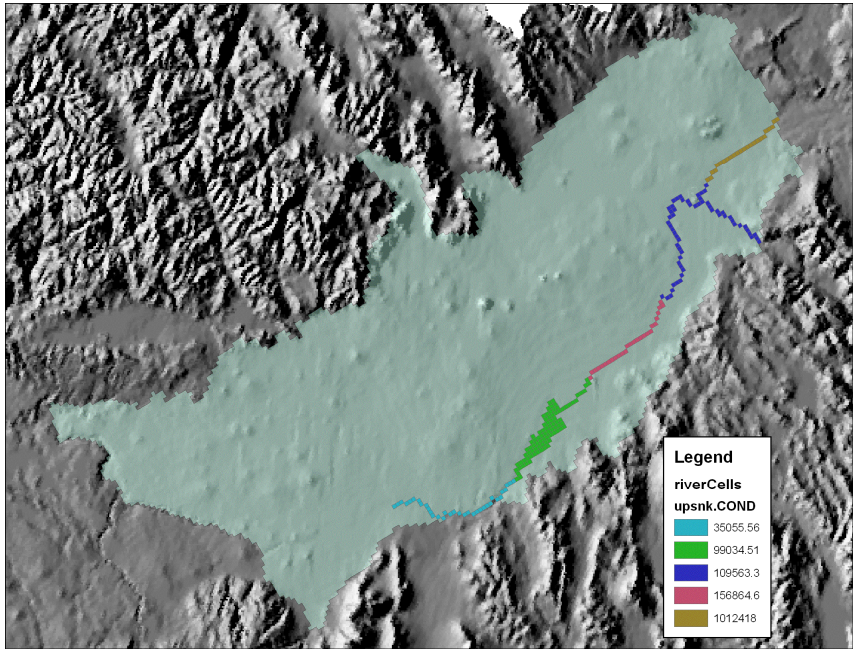
V 1.1

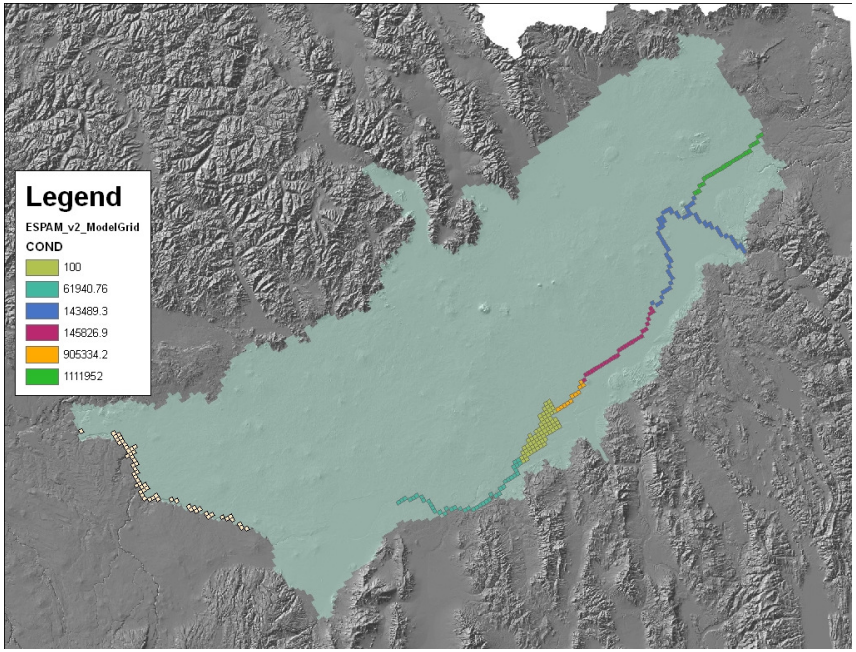




Riverbed conductance

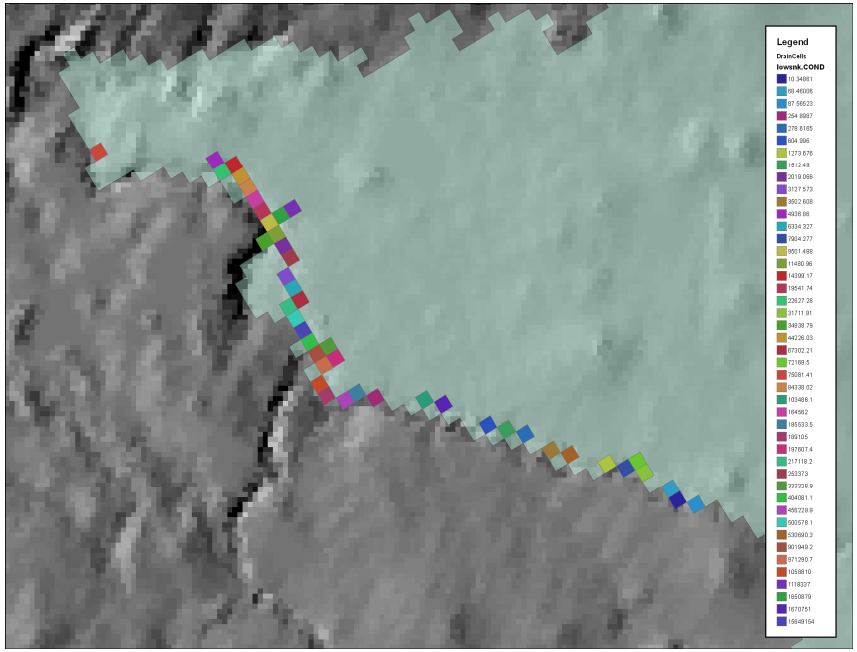
V 1.1

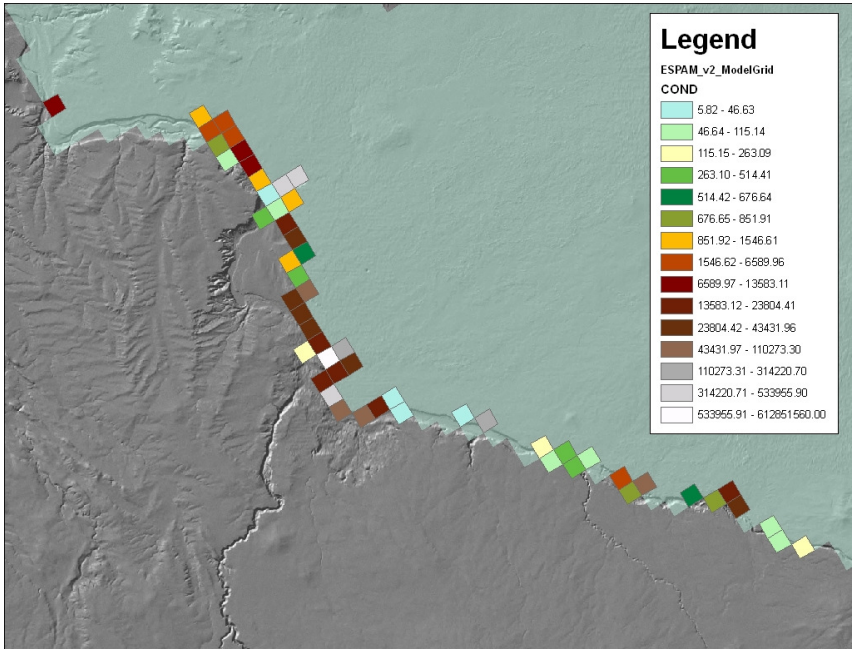




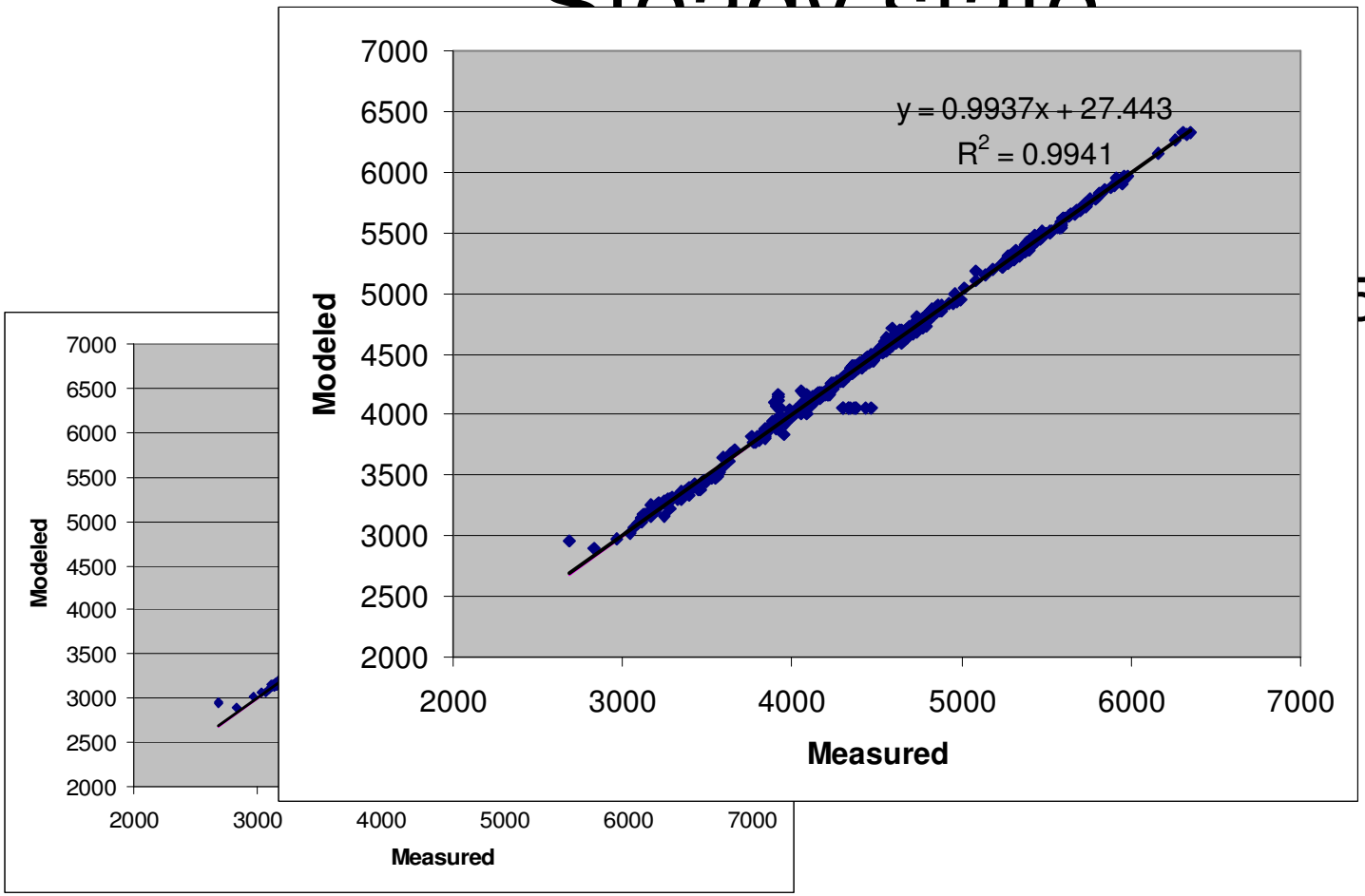
Drain conductance

V 1.1



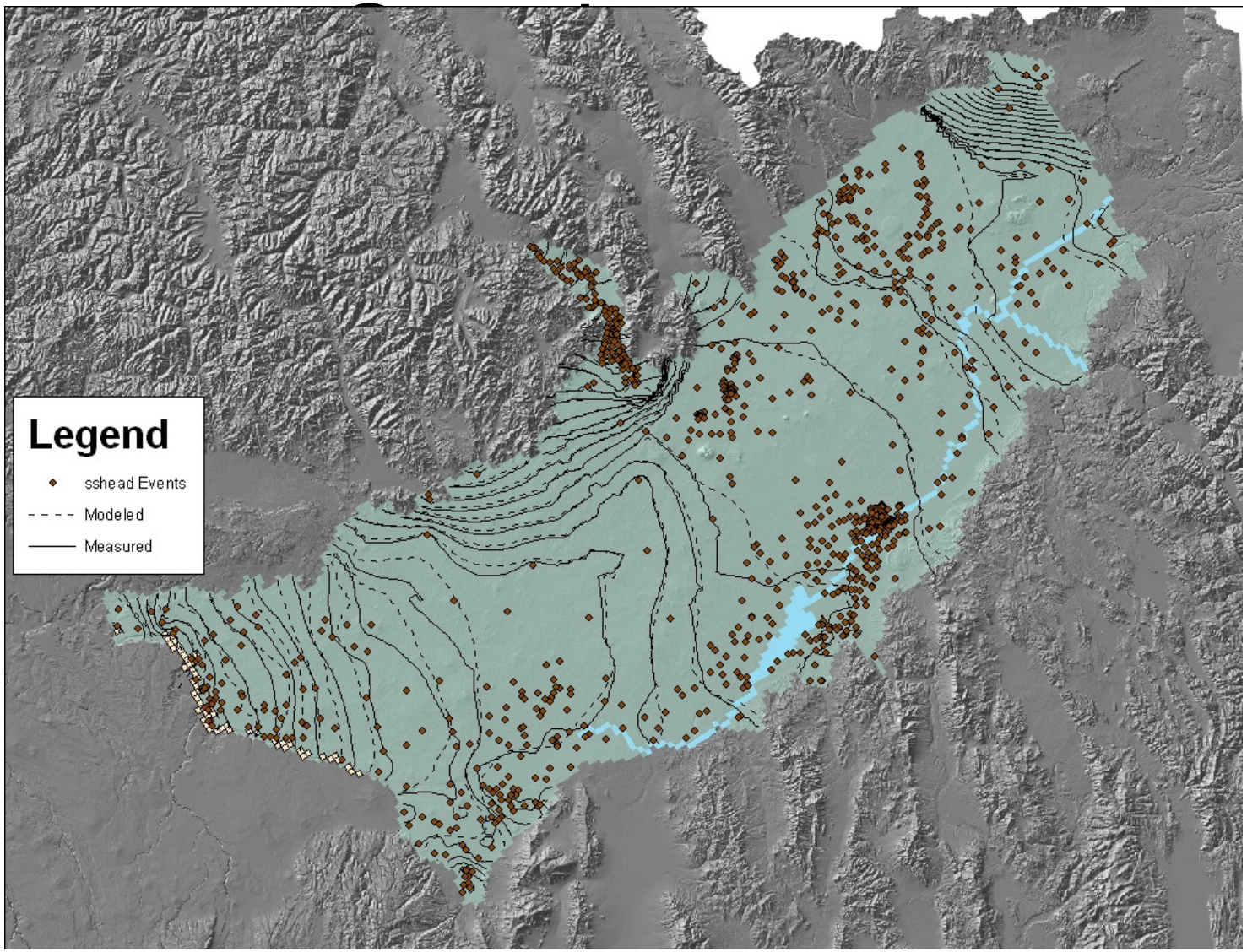


Steady state



5°

perfect


Legend
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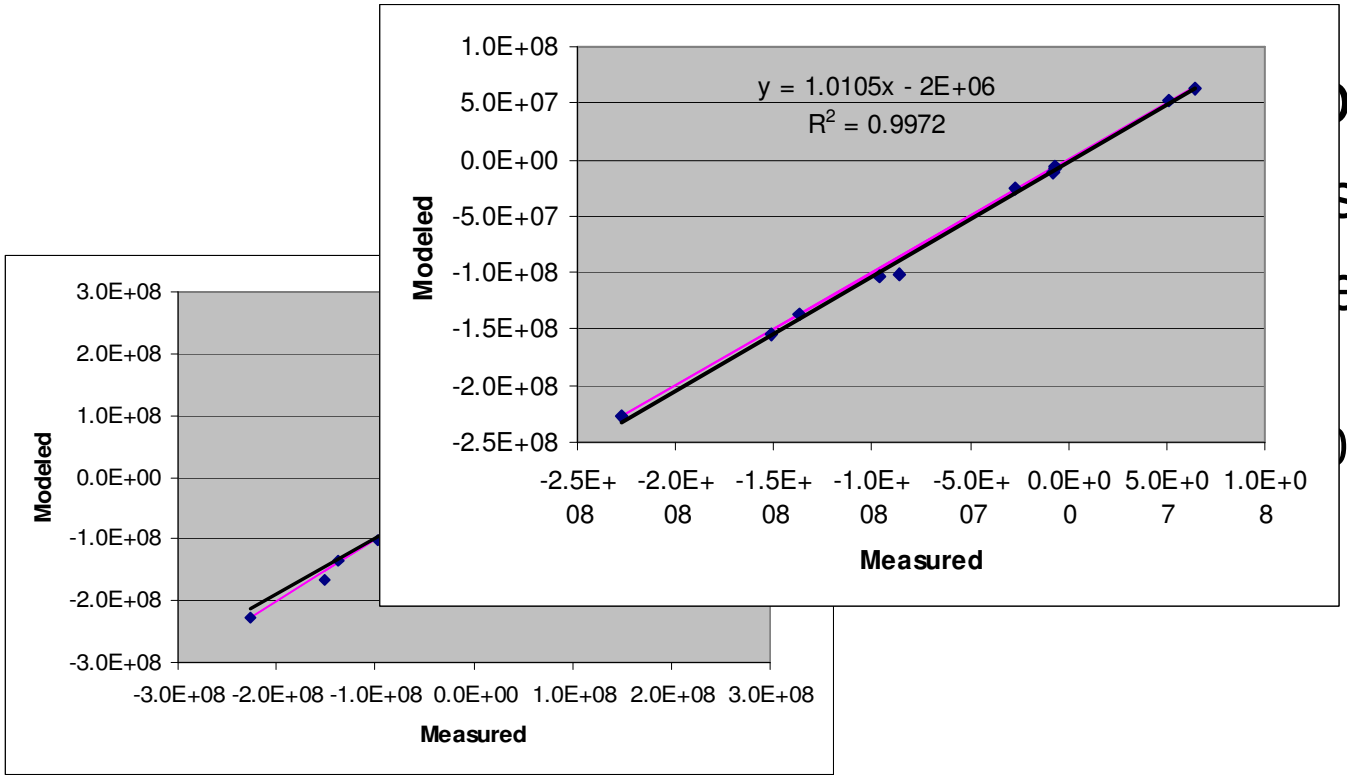
Steady state



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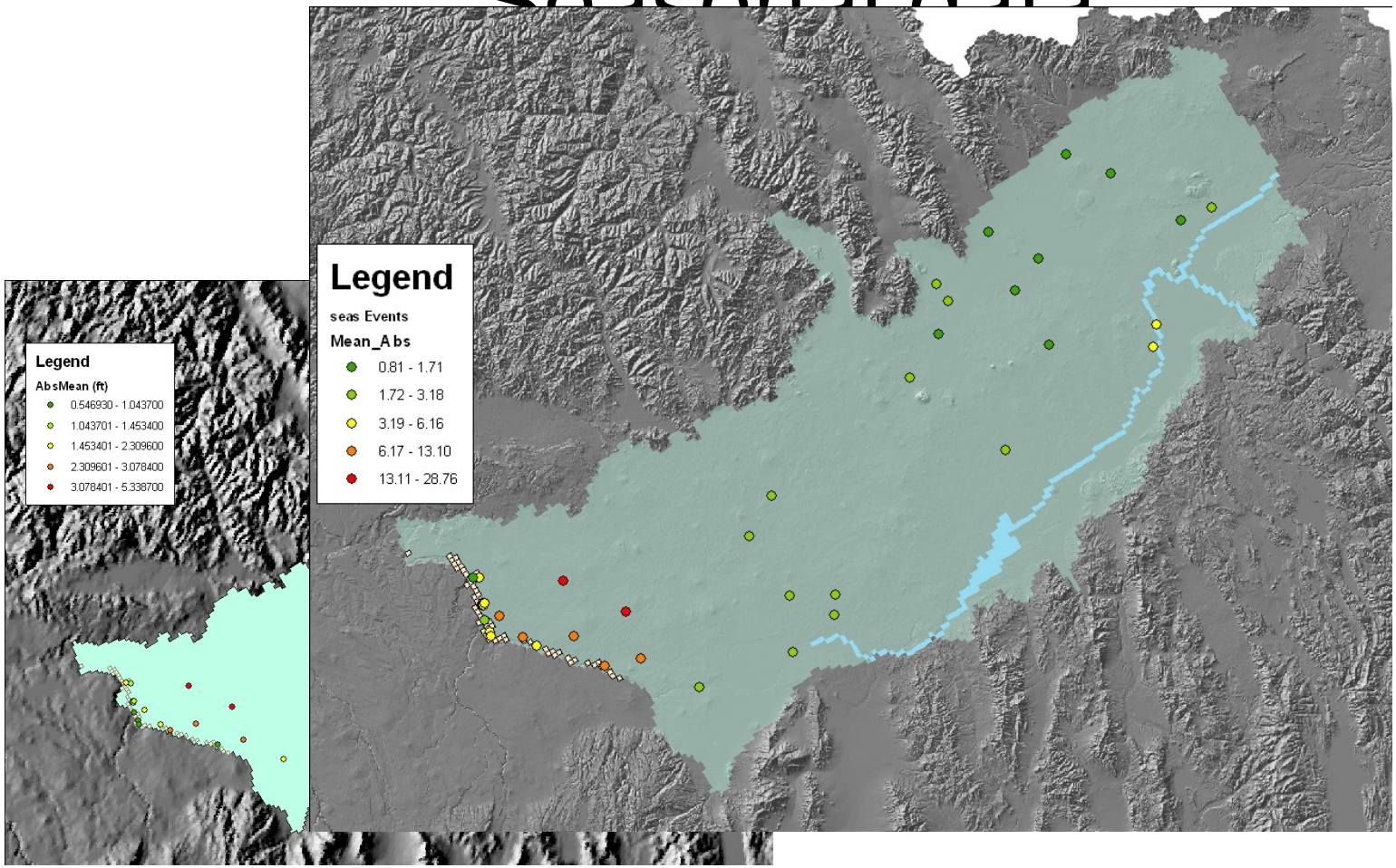
Seasonal data



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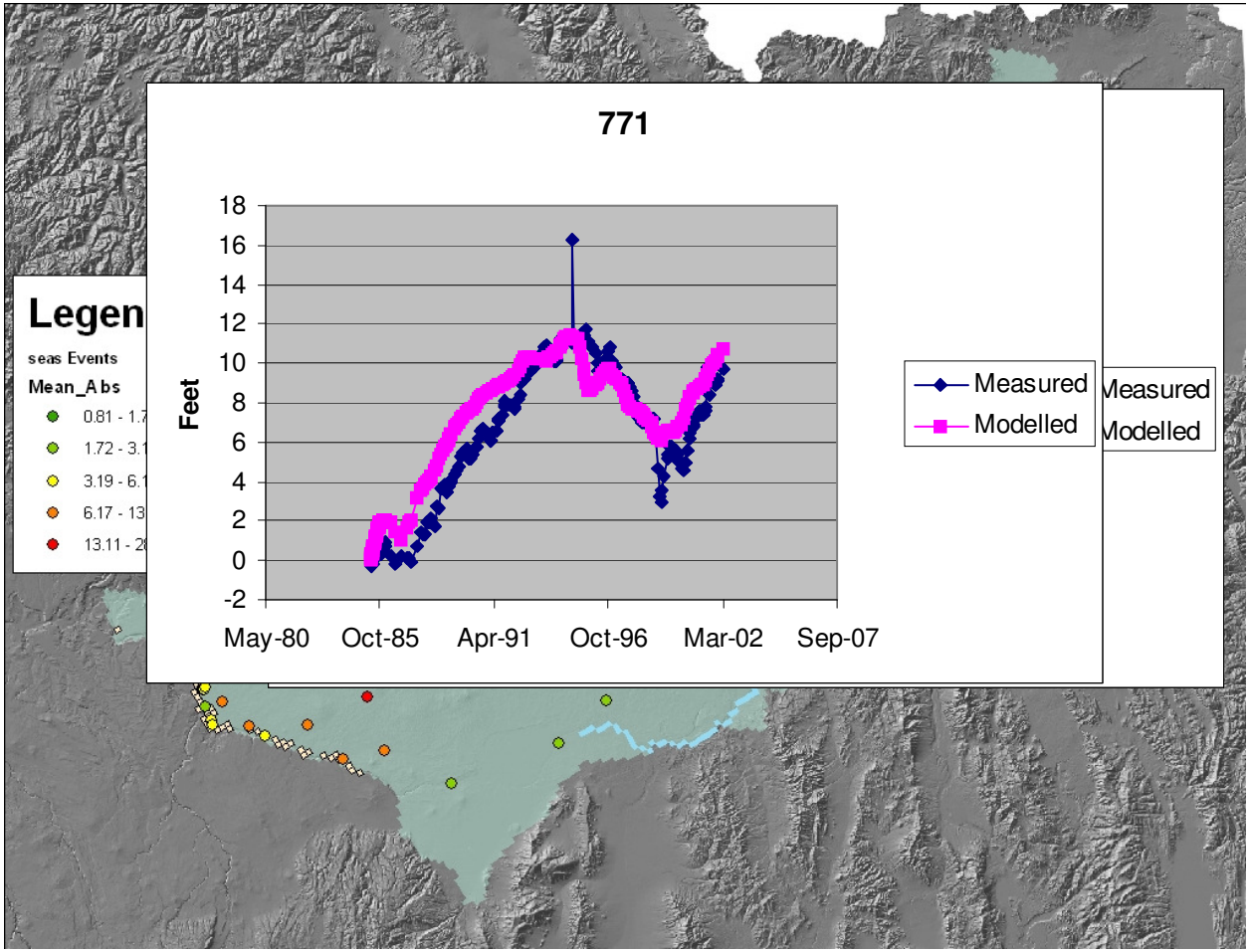
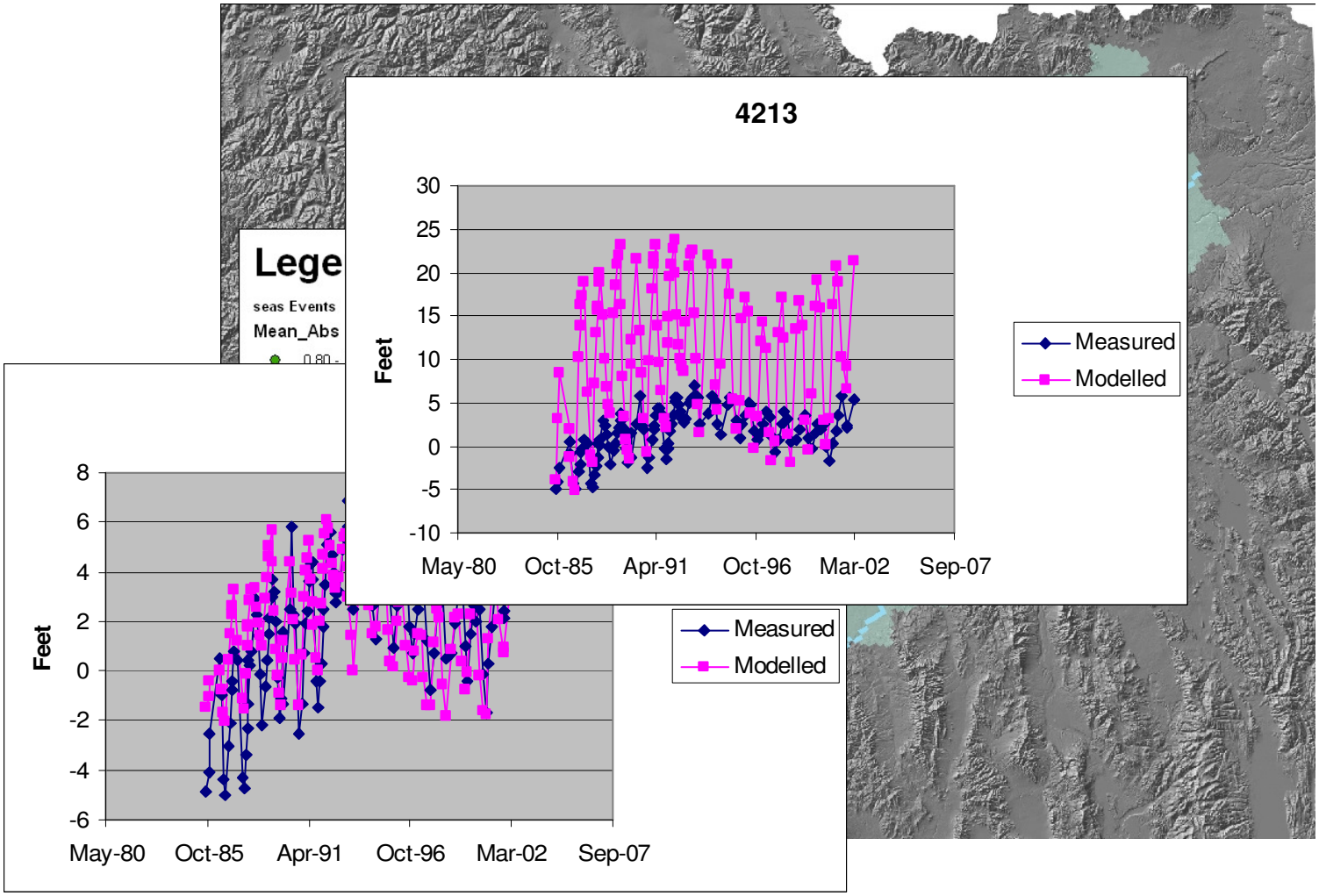
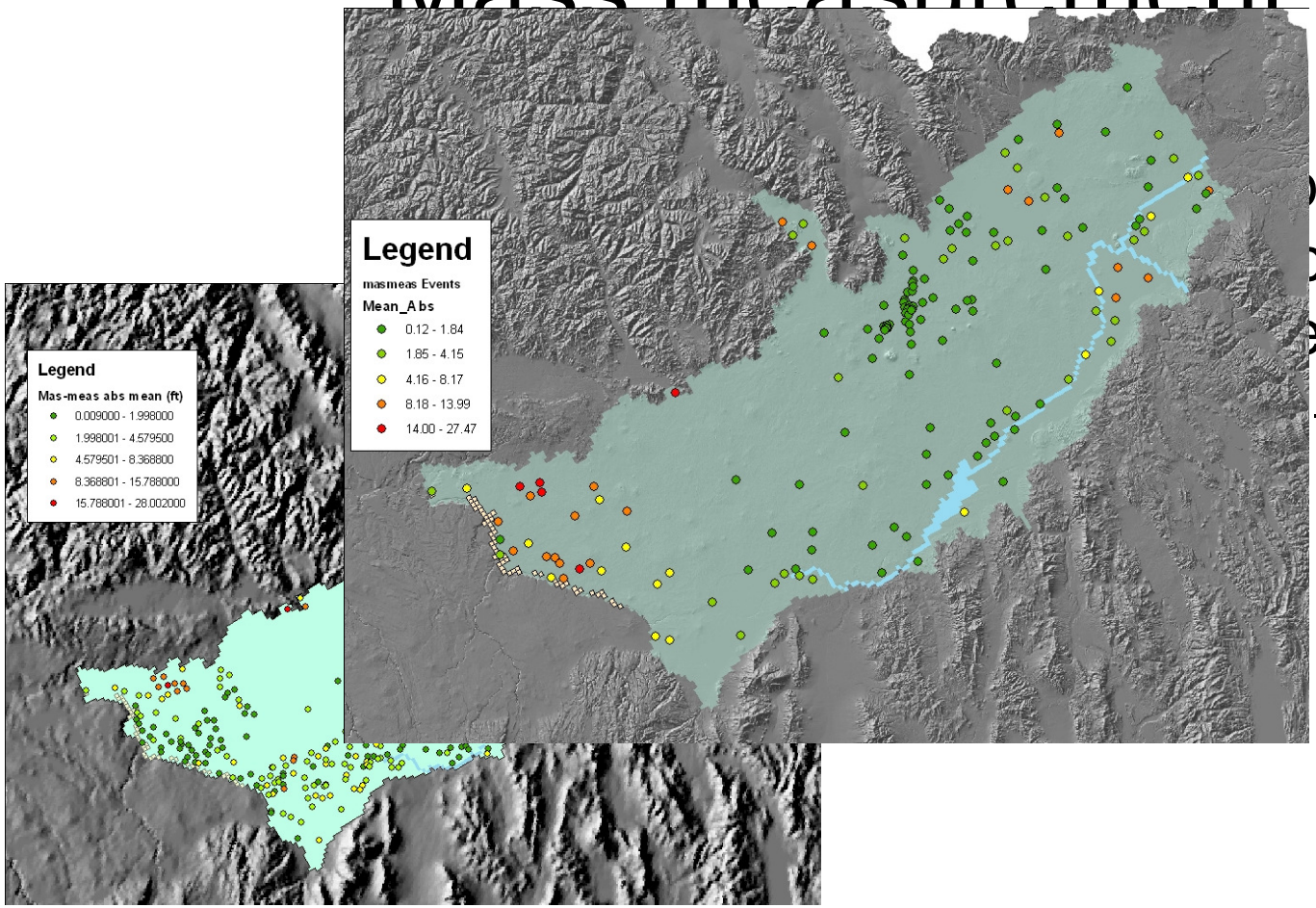


Seasonal Data



Mass measurement



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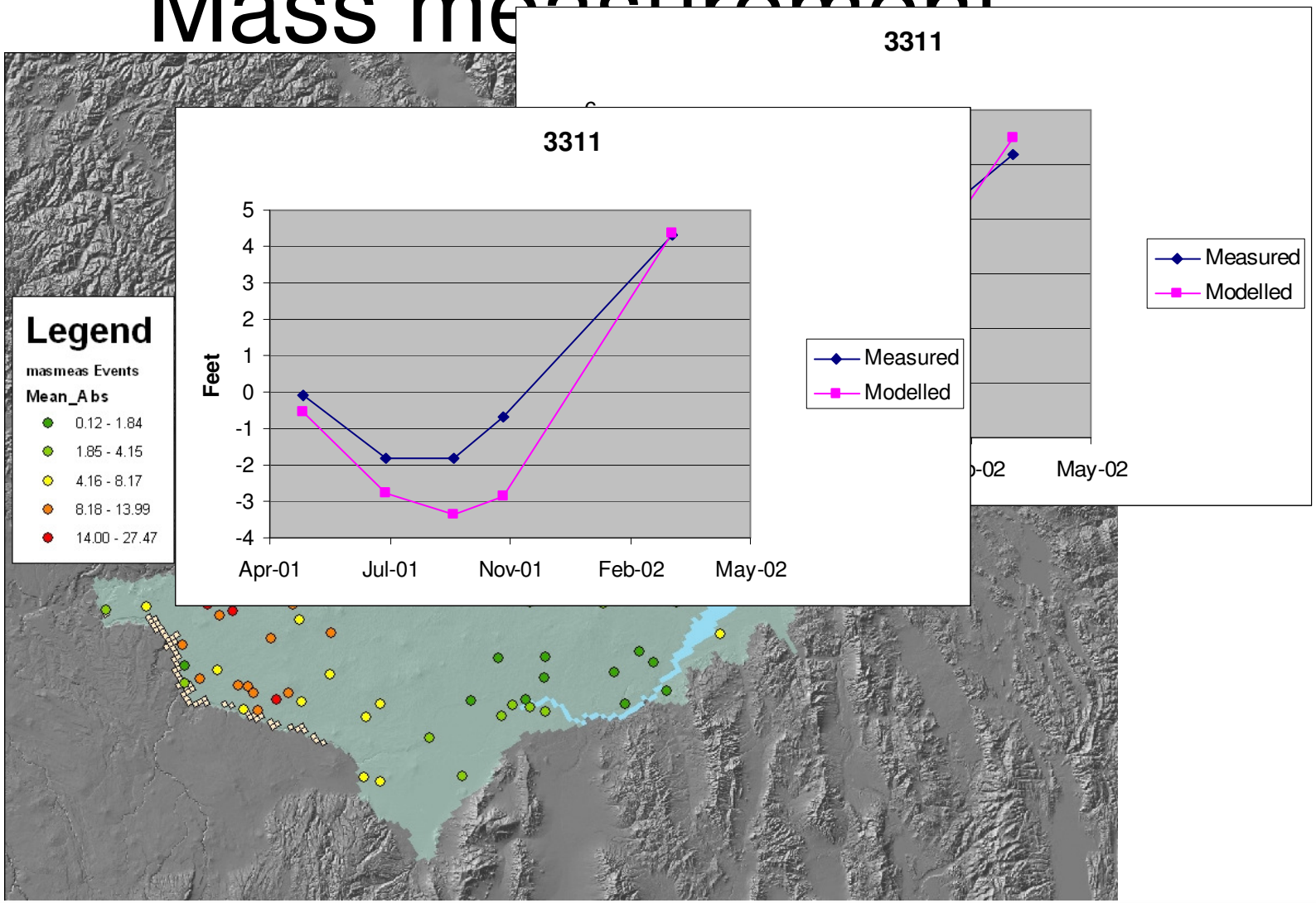
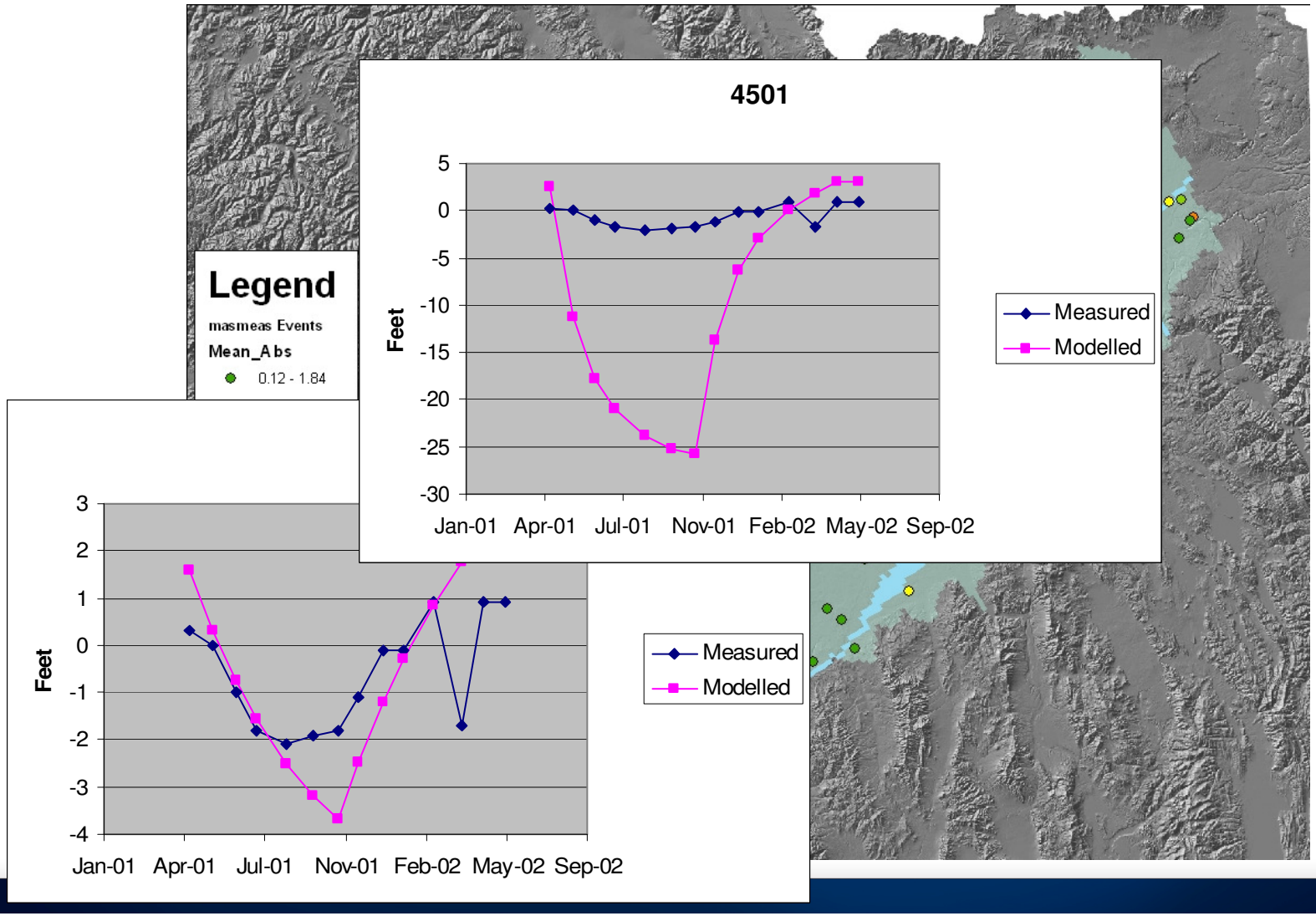
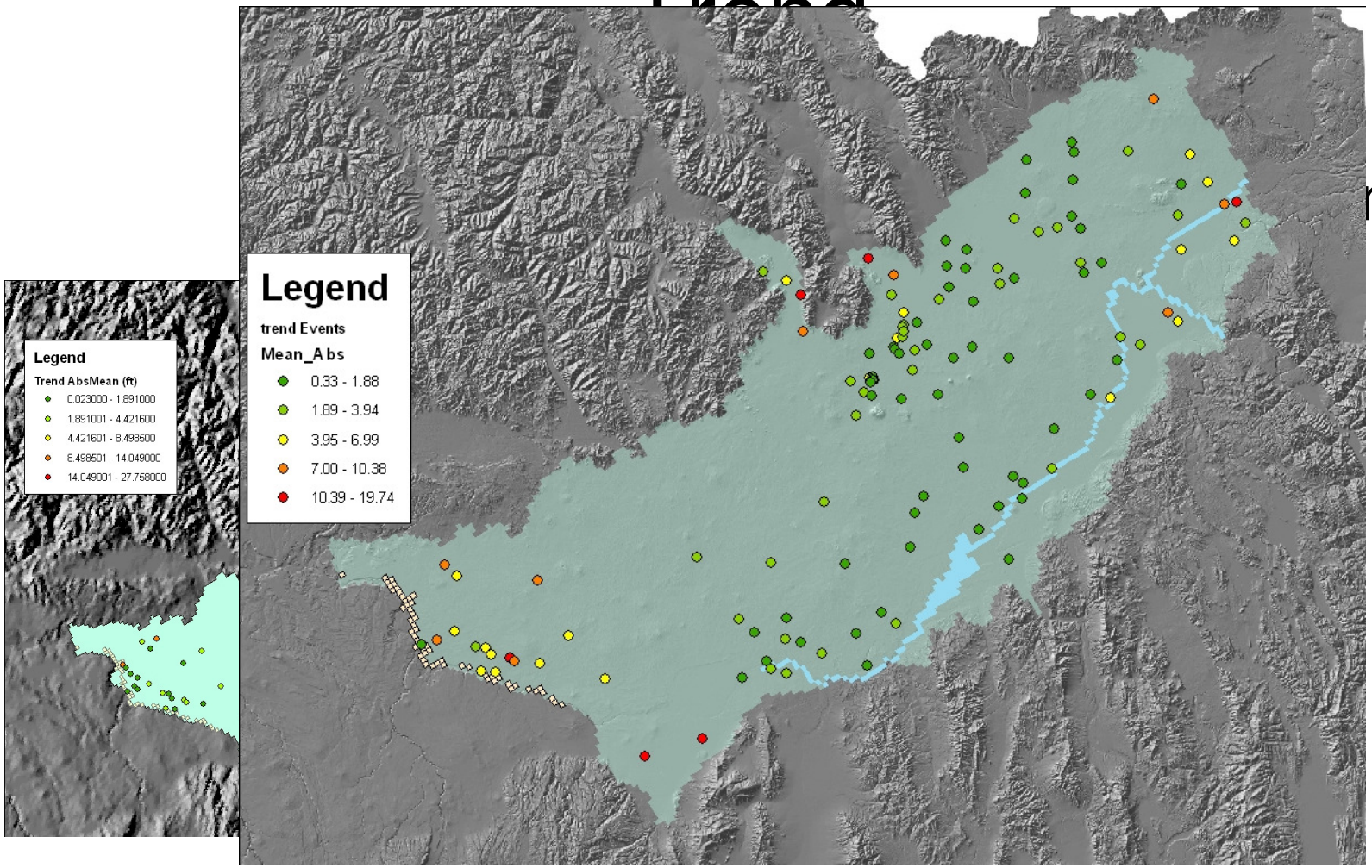
Mass measurement



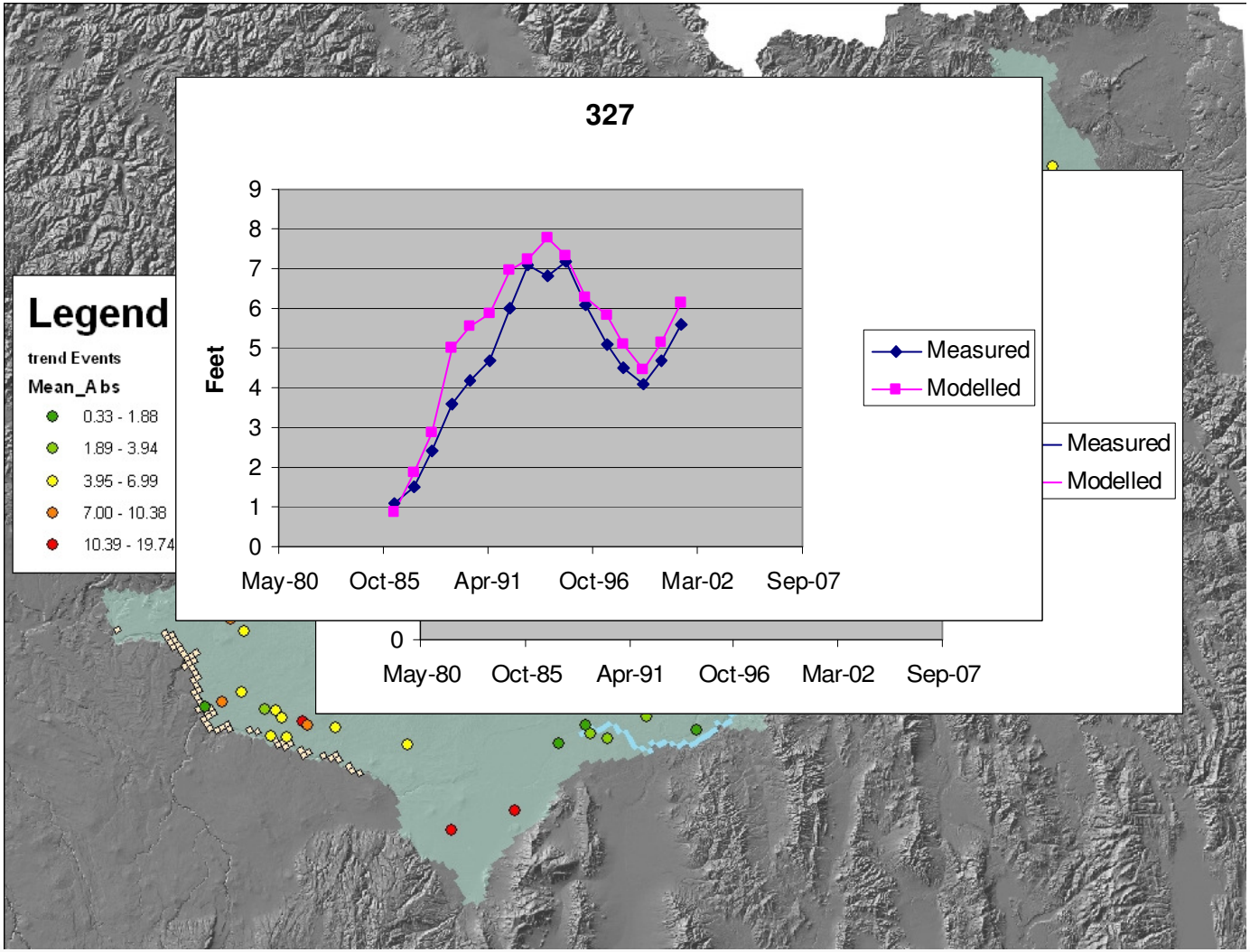
Mass measurement



Trend ns


Legend
Trend AbsMean (ft)
0.023000 - 1.891000
1.891001 - 4.421600
4.421601 - 8.498500
8.498501 - 14.049000
14.049001 - 27.758000
Legend
trend Events
Mean_Abs
0.33 - 1.88
1.89 - 3.94
3.95 - 6.99
7.00 - 10.38
10.39 - 19.74

Trend


Legend
trend Events
Mean_Abs
0.33 - 1.88
1.89 - 3.94
3.95 - 6.99
7.00 - 10.38
10.39 - 19.74
327
Feet
9
8
7
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2
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May-80
Oct-85
Apr-91
Oct-96
Mar-02
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Measured
Modelled
Measured
Modelled
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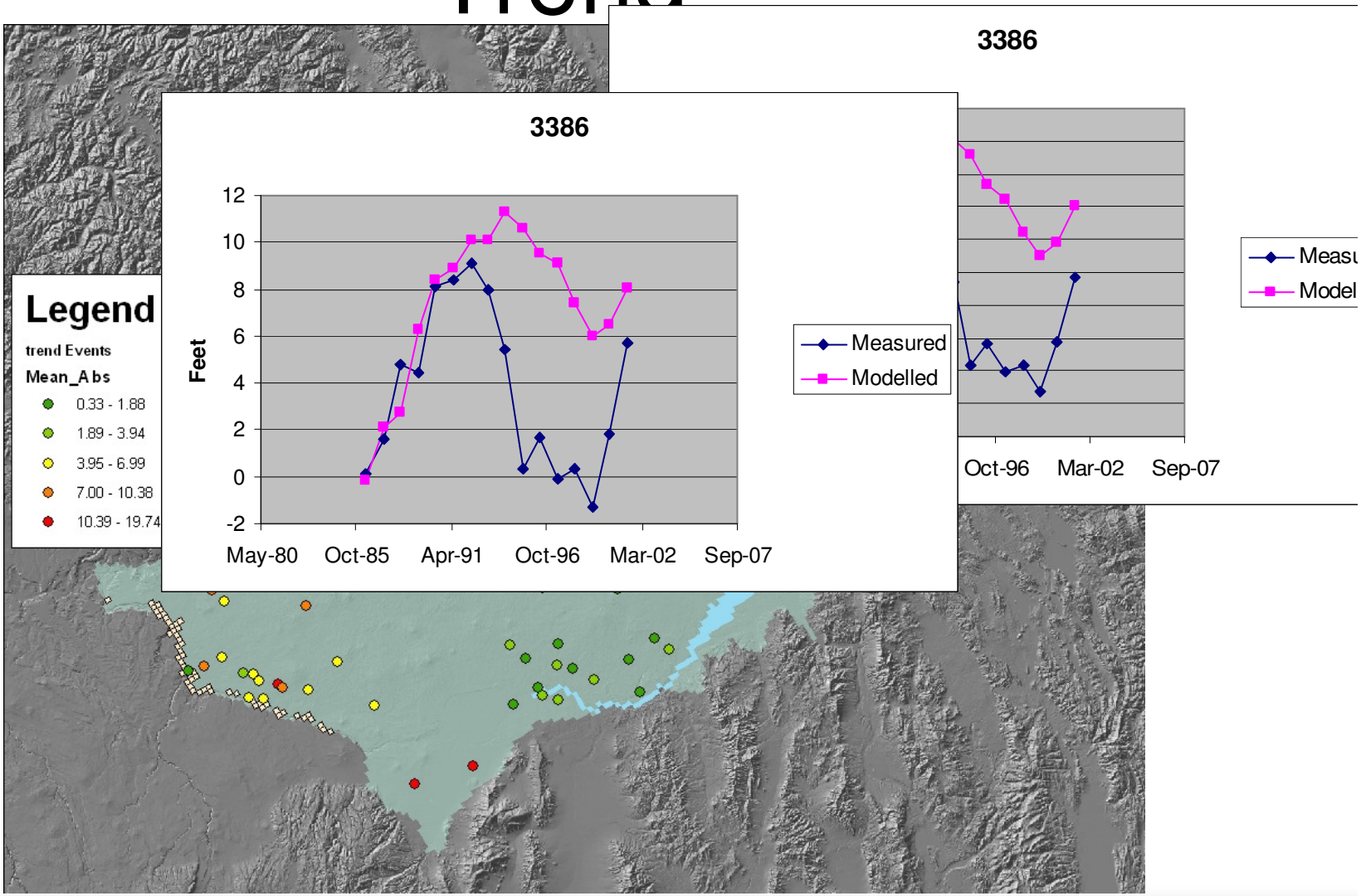
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07

Trend


Legend
trend Events
Mean_Abs
0.33 - 1.88
1.89 - 3.94
3.95 - 6.99
7.00 - 10.38
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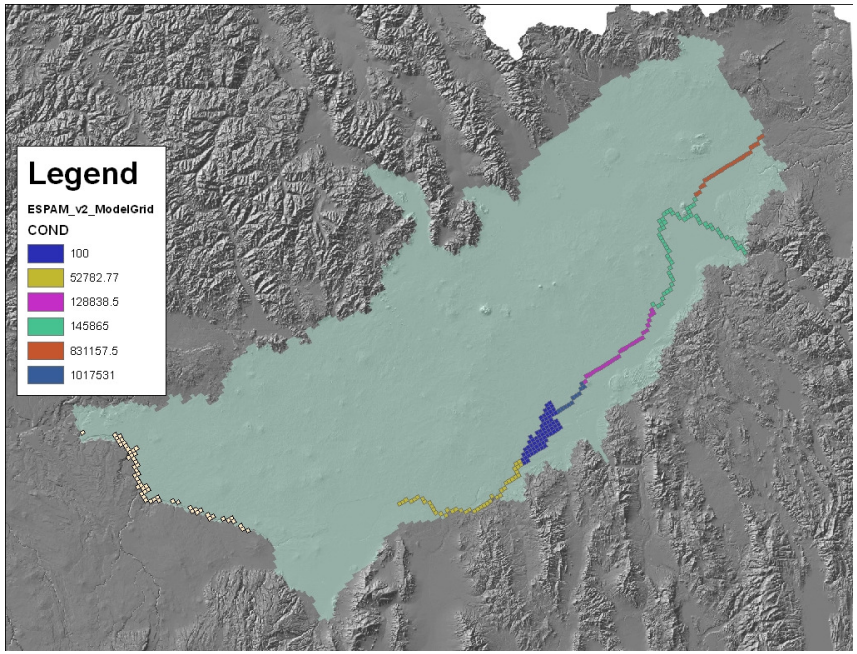
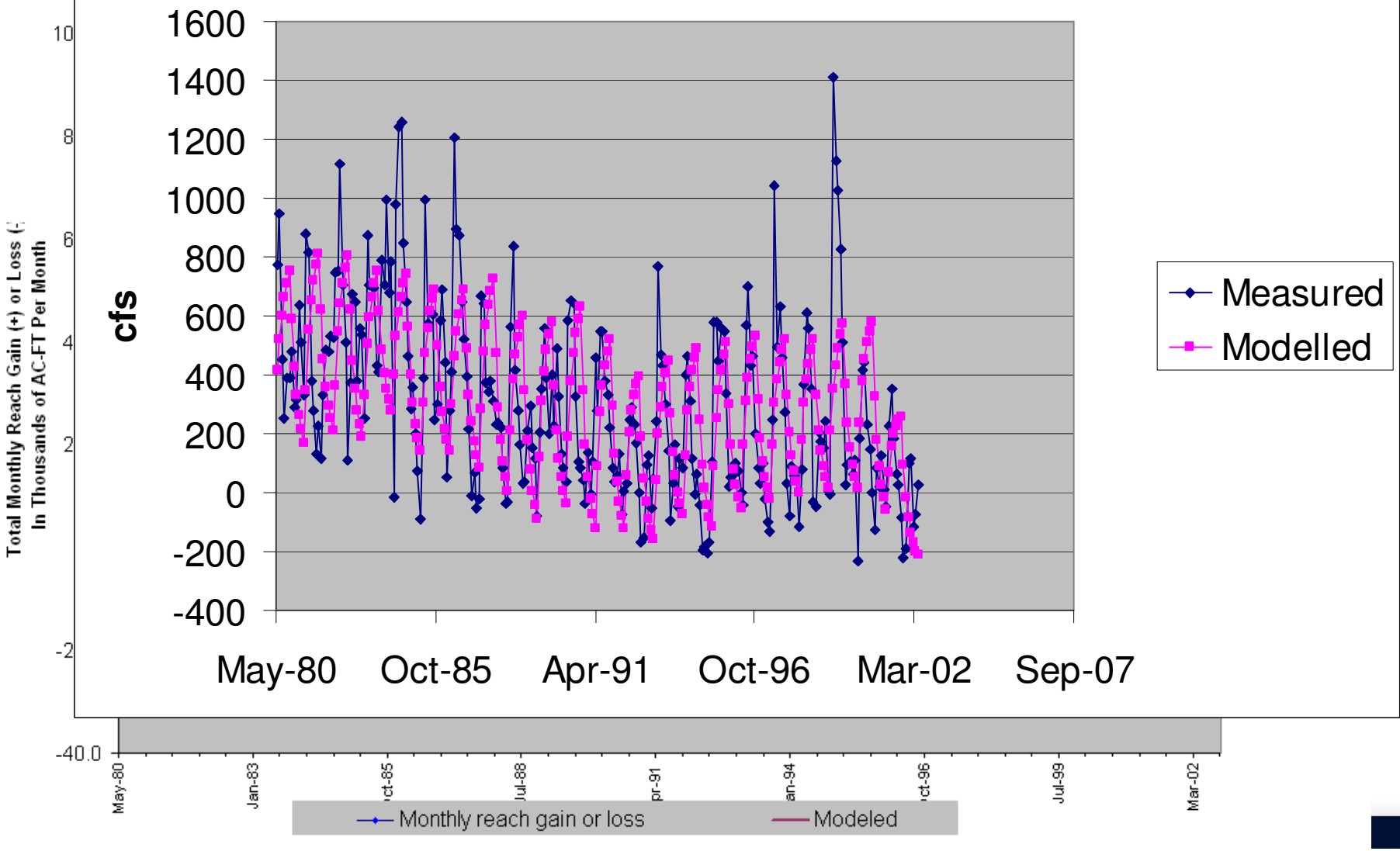
Snake River

- Snake River reaches



Ashton-Rexburg



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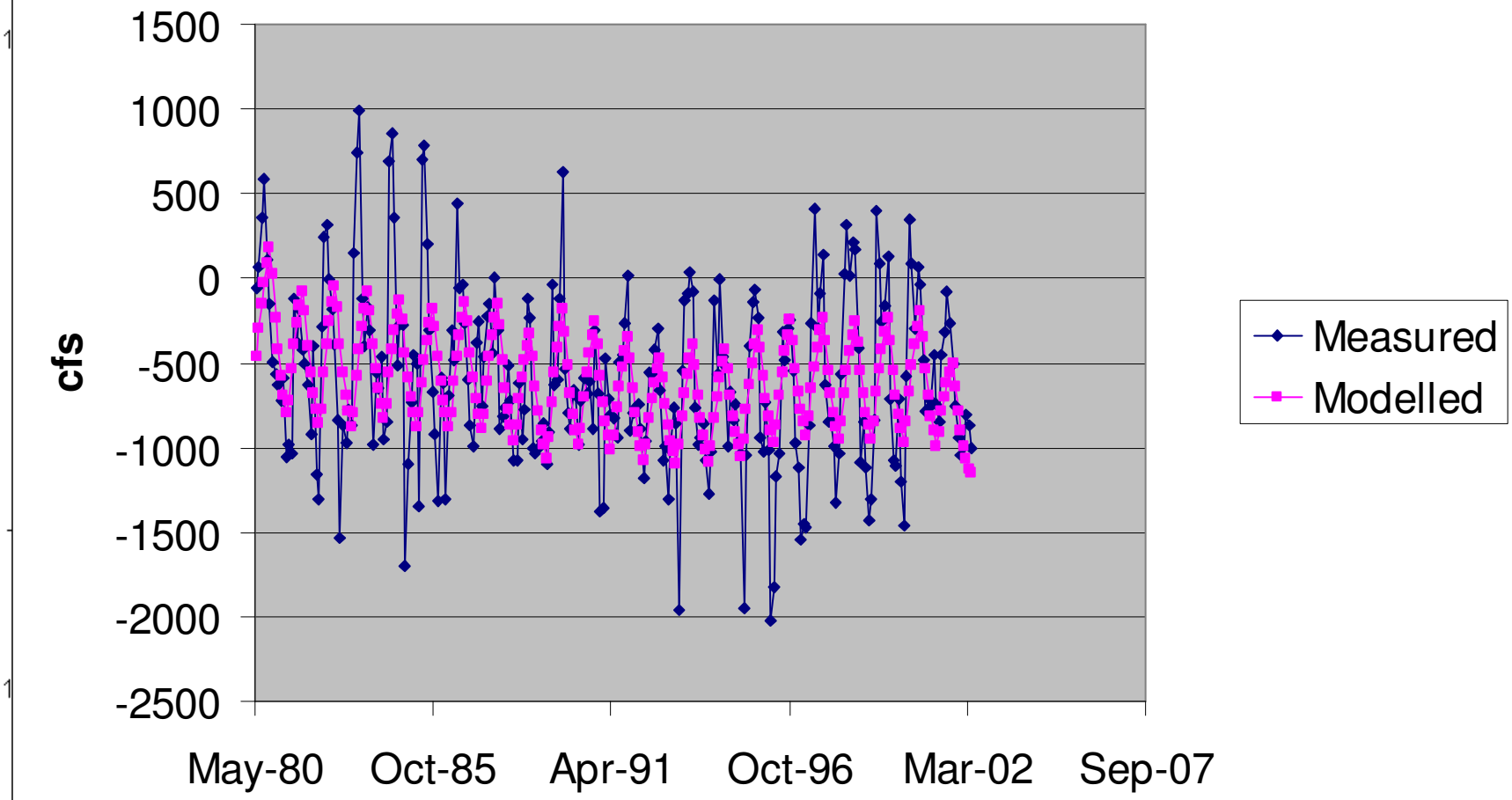
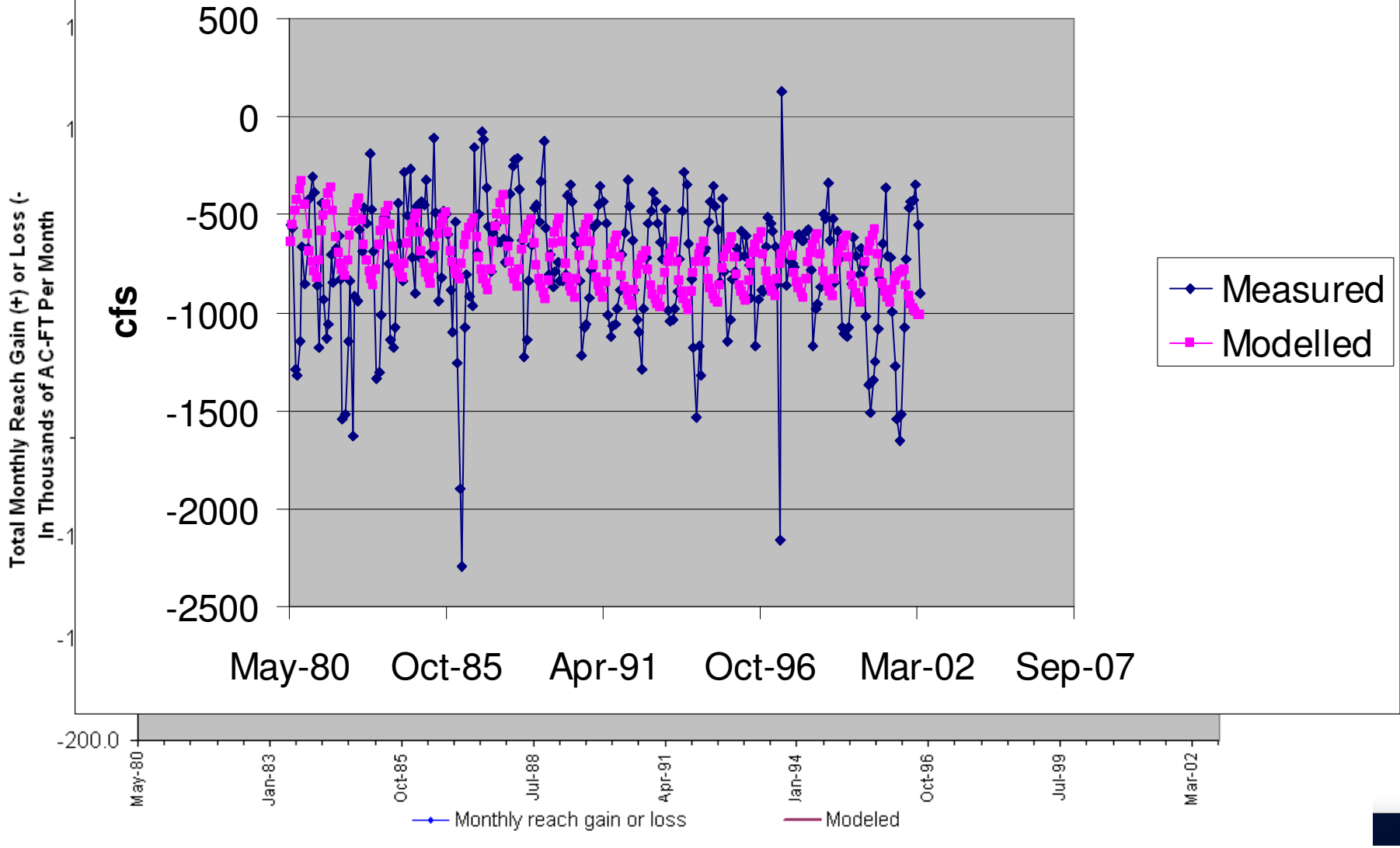
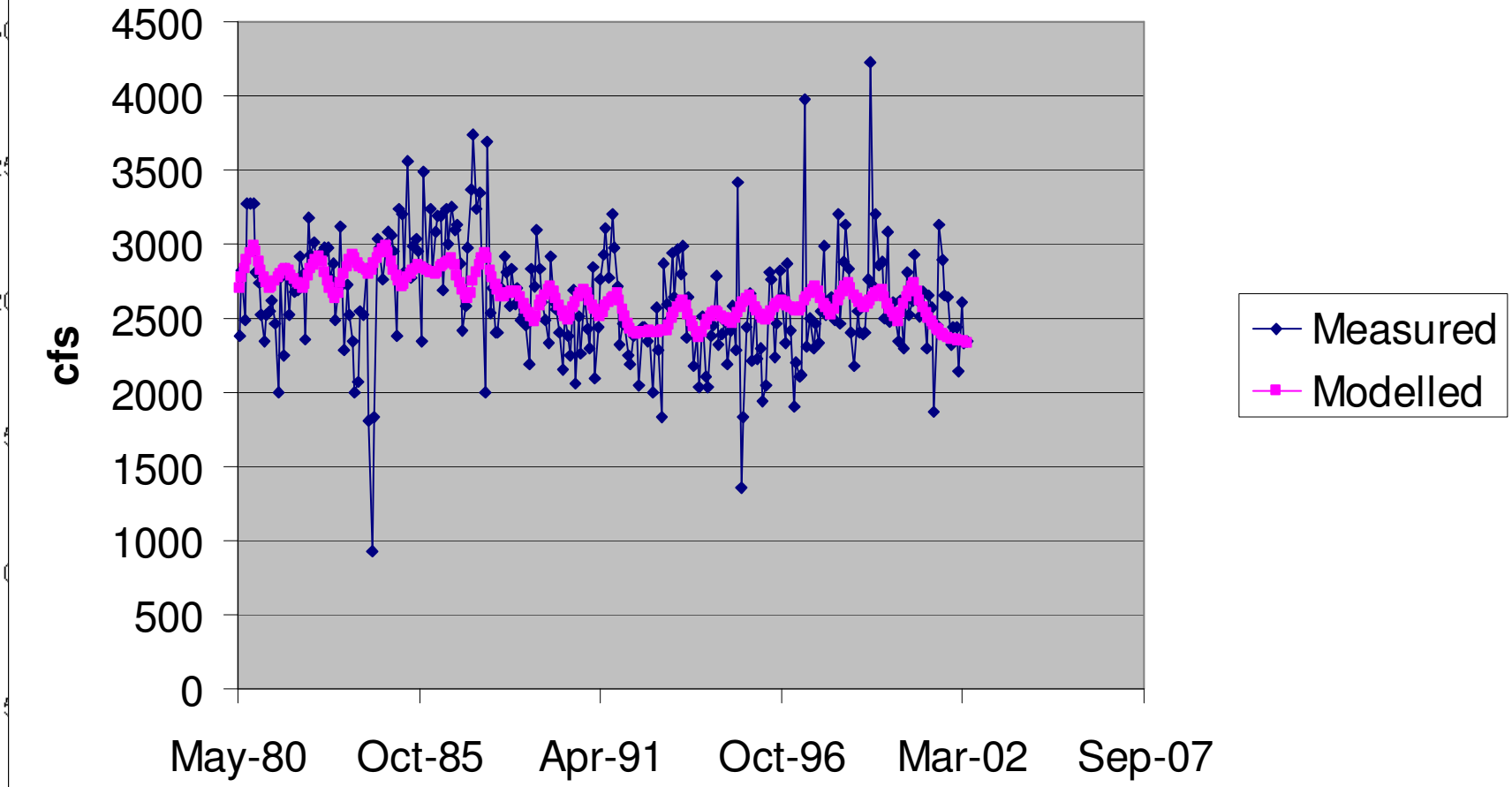
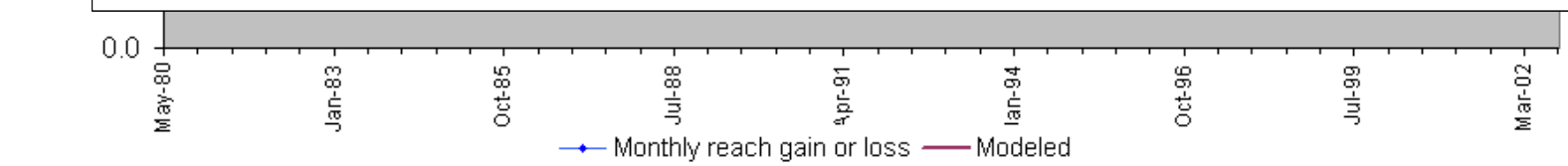


Shelley-nr Blackfoot

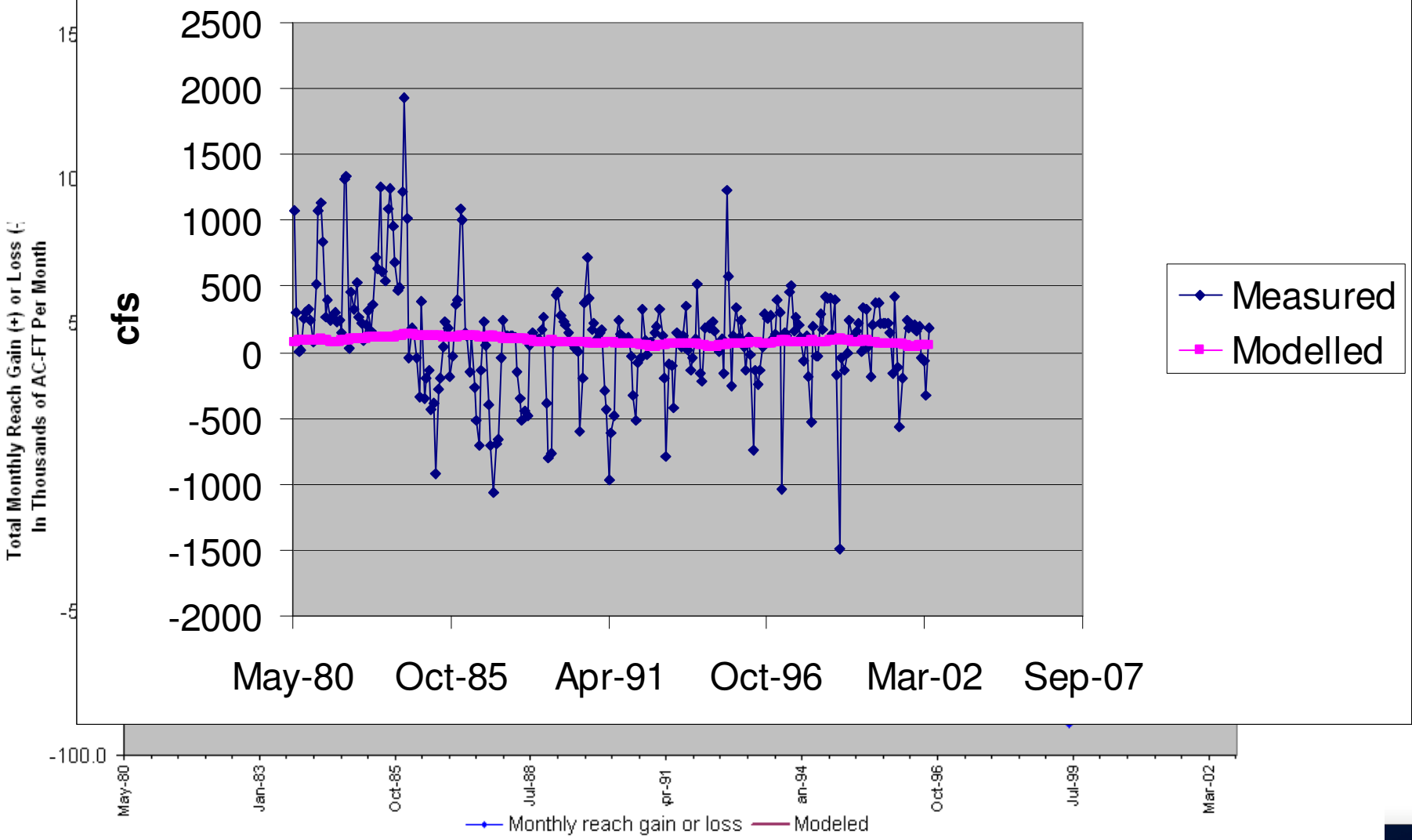


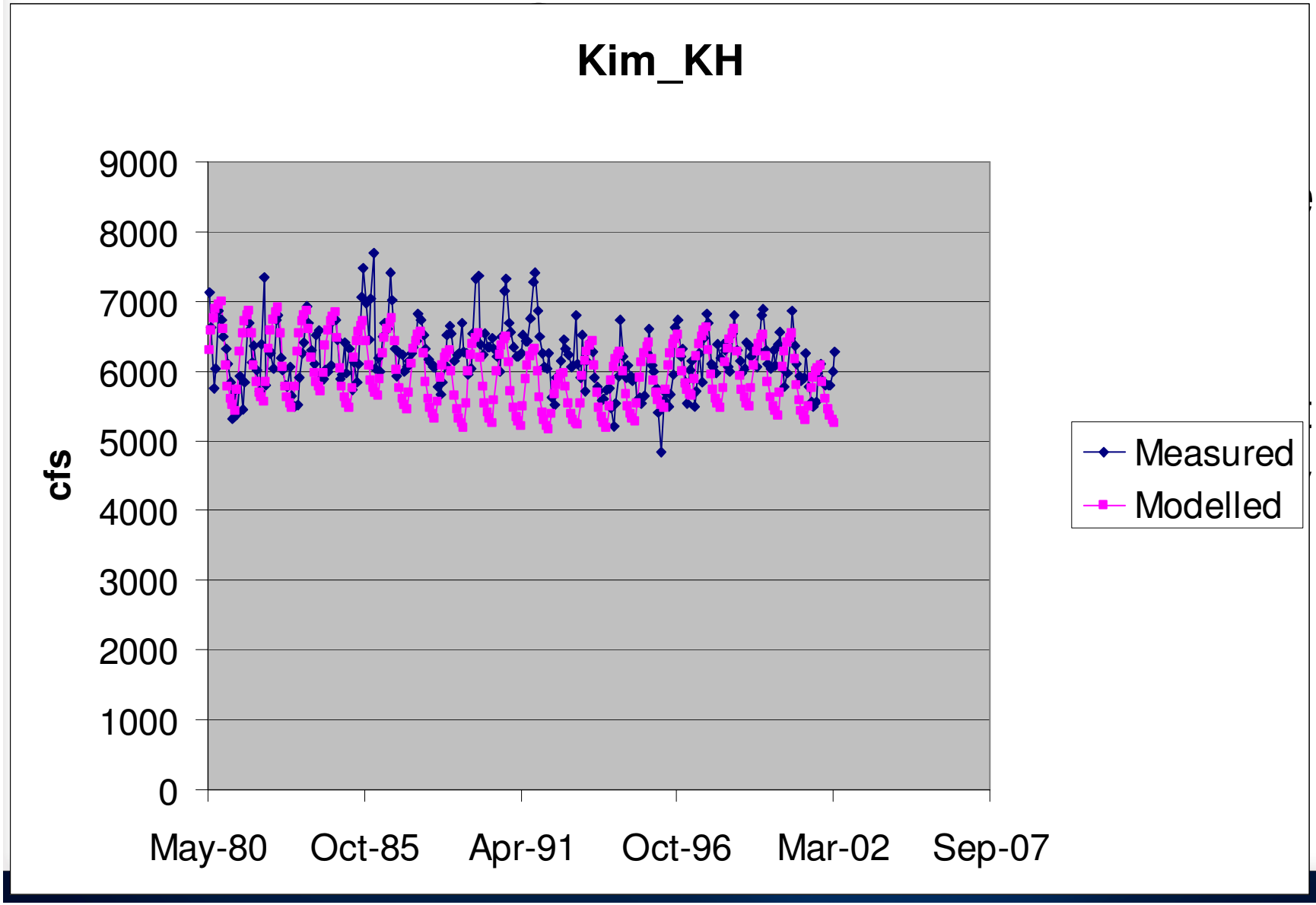
nr Blackfoot-Neeley





Neeley-Minidoka




Kim_KH
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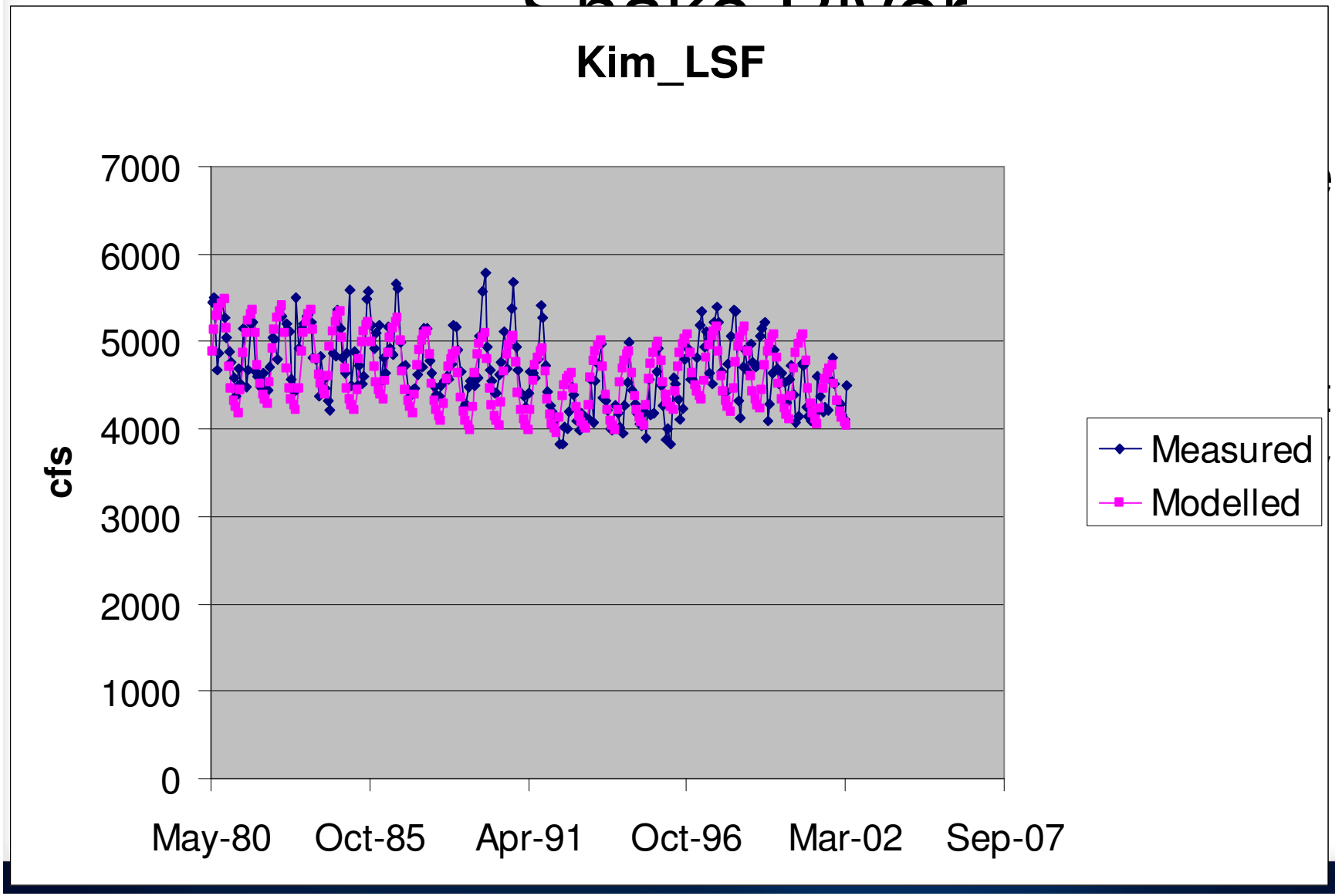
Sep-07
Measured
Modelled

Snake River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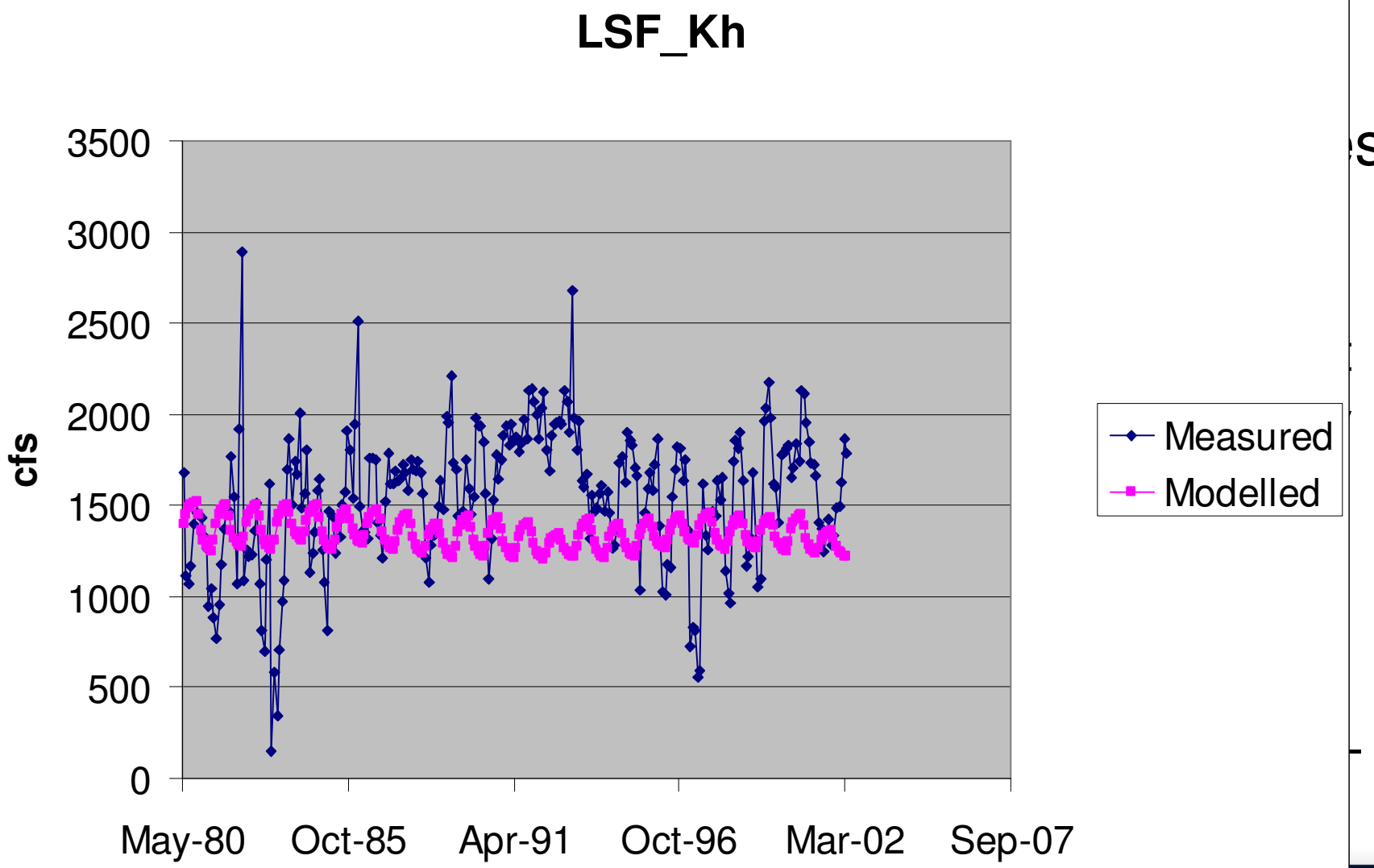
Modelled

Snake River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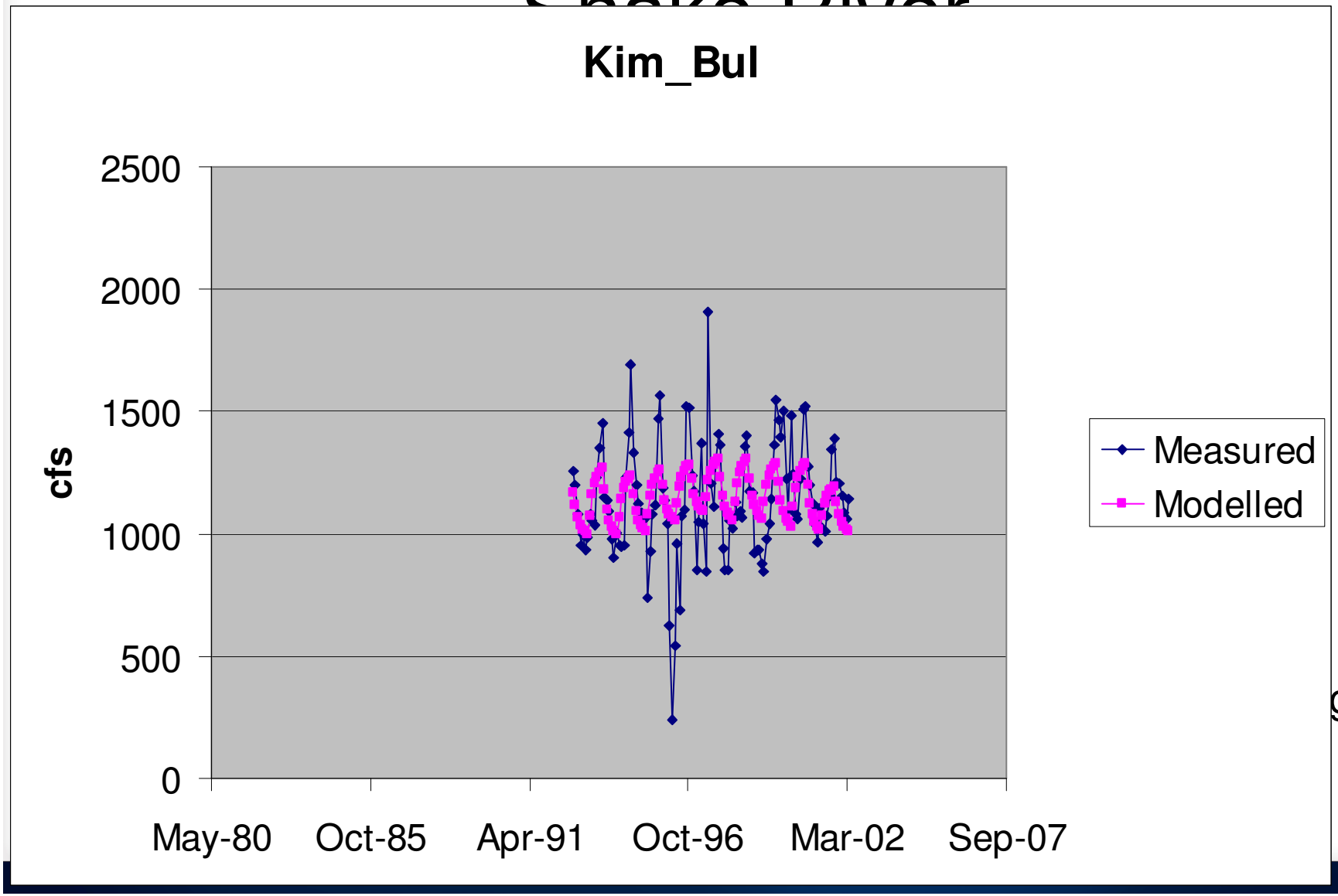
Modelled

Snake River



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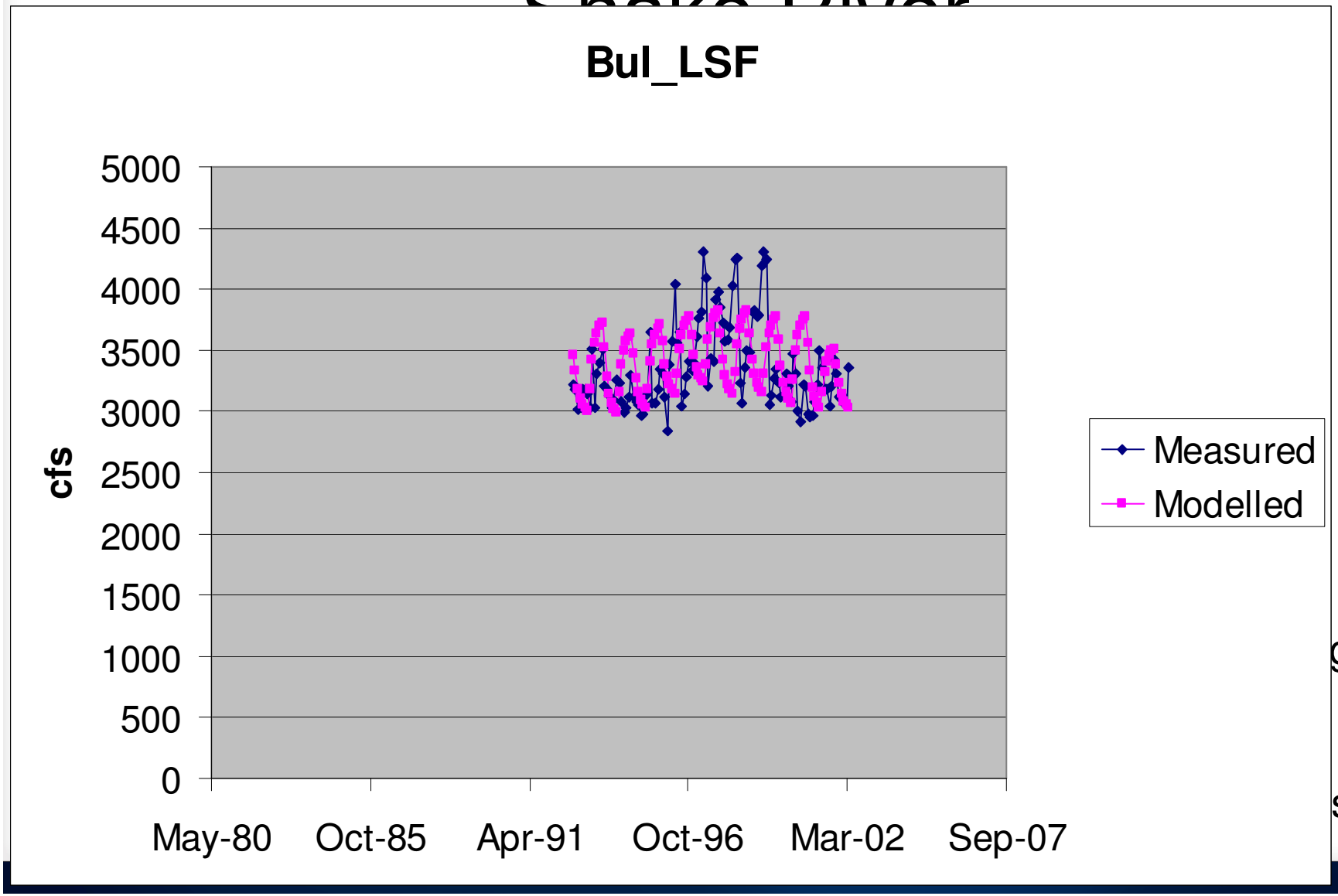
Snake River


Bul_LSF
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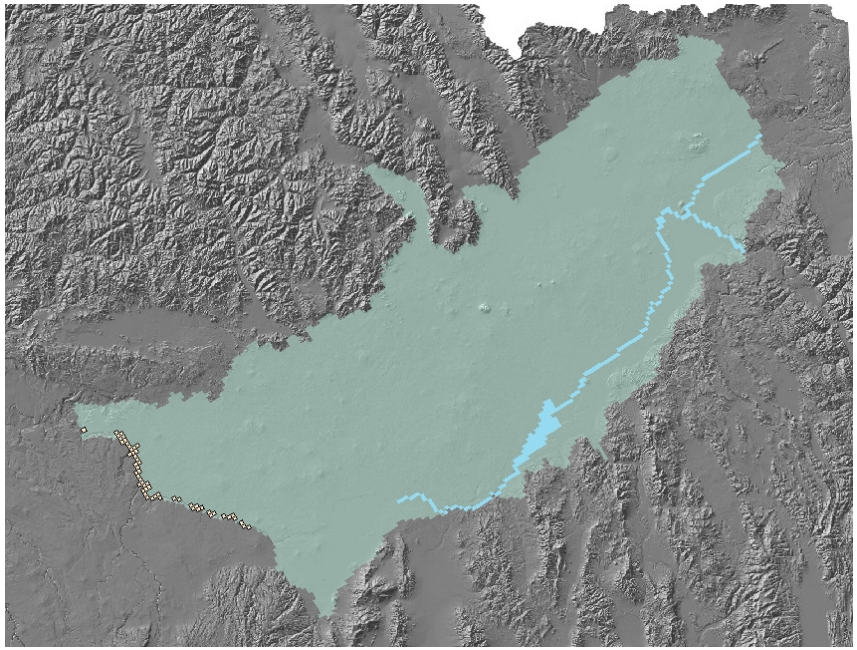
Springs

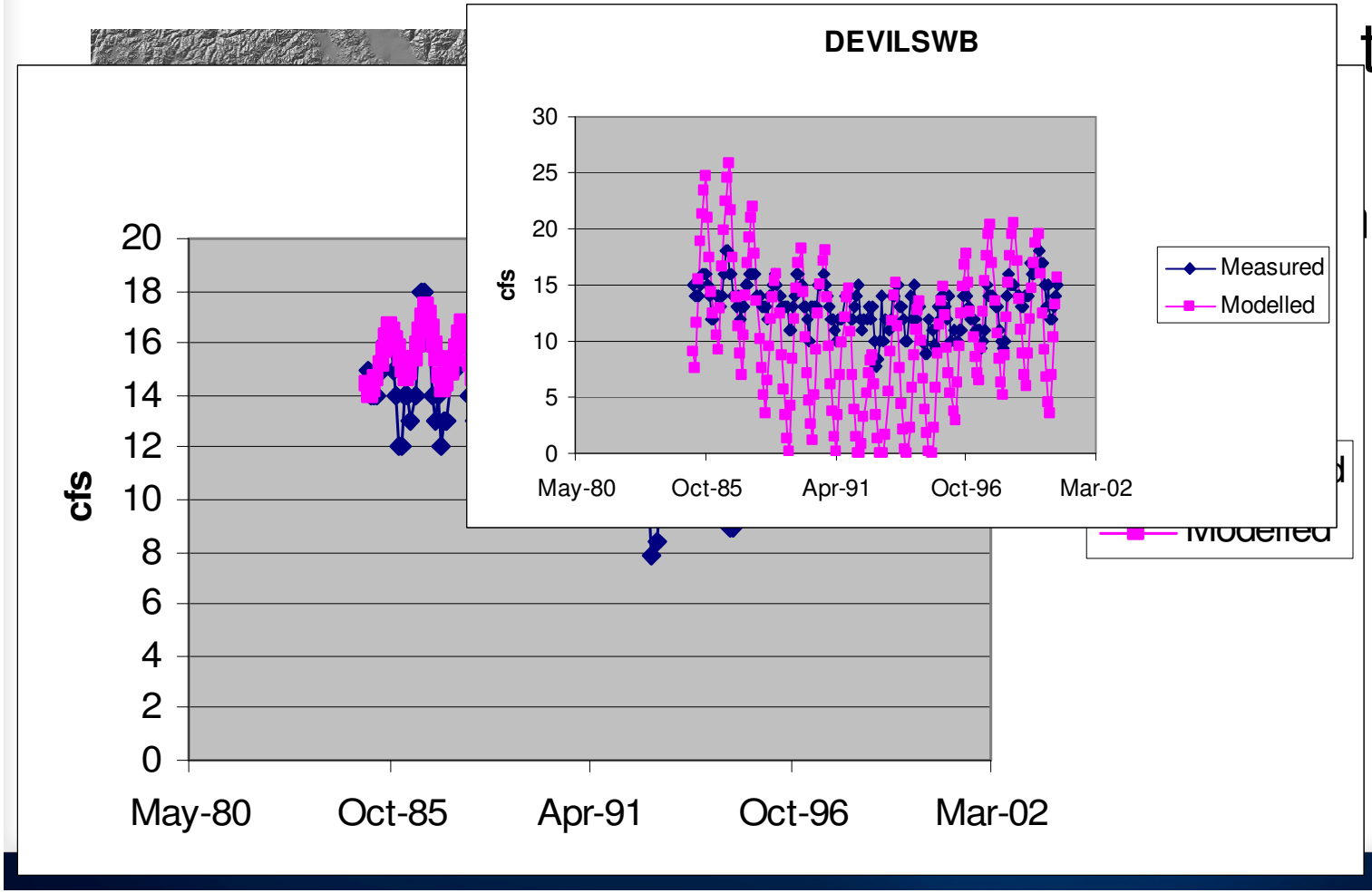


- Springs with transient targets

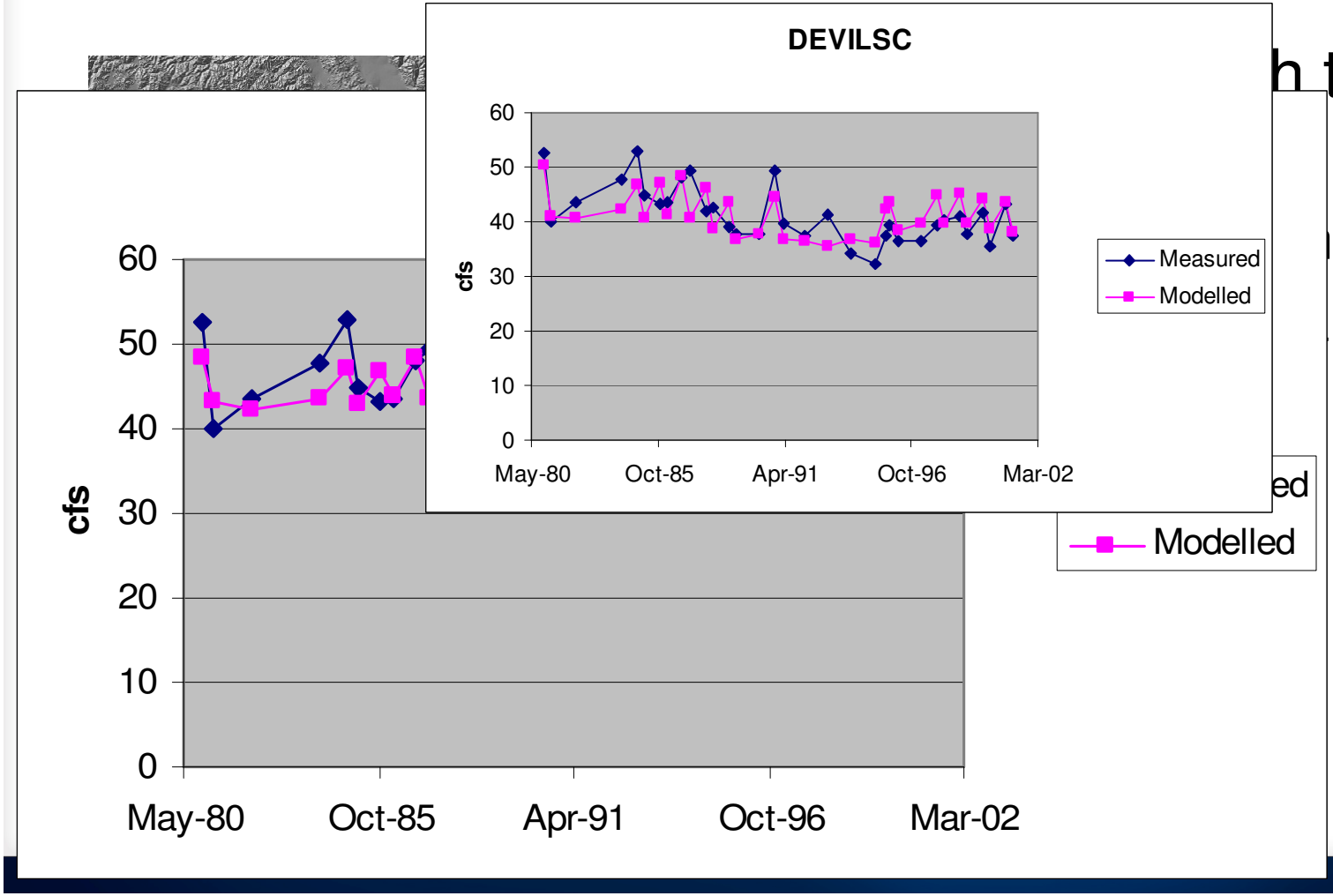
Springs

transient

bowl



Springs



h transient

bowl

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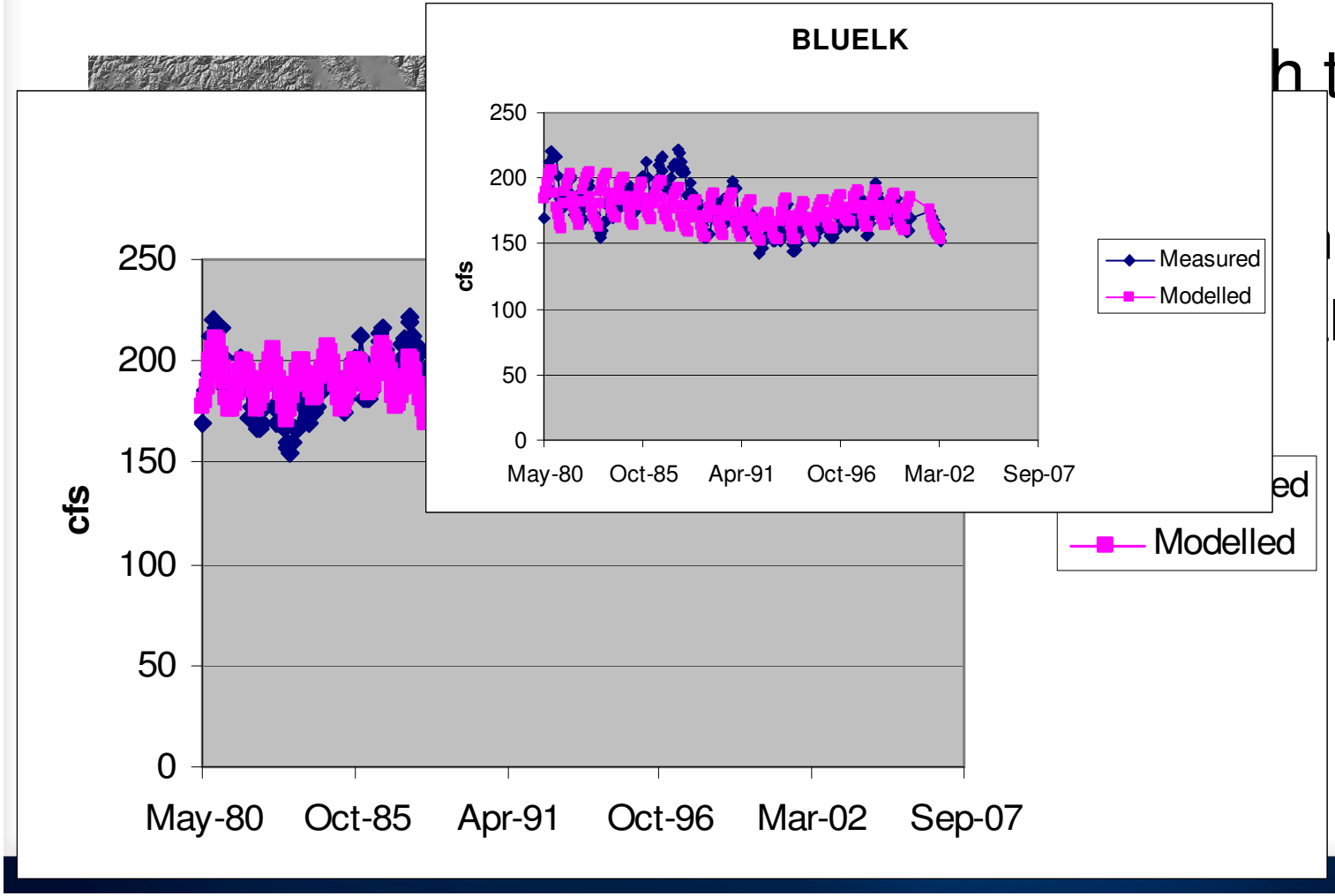
Springs



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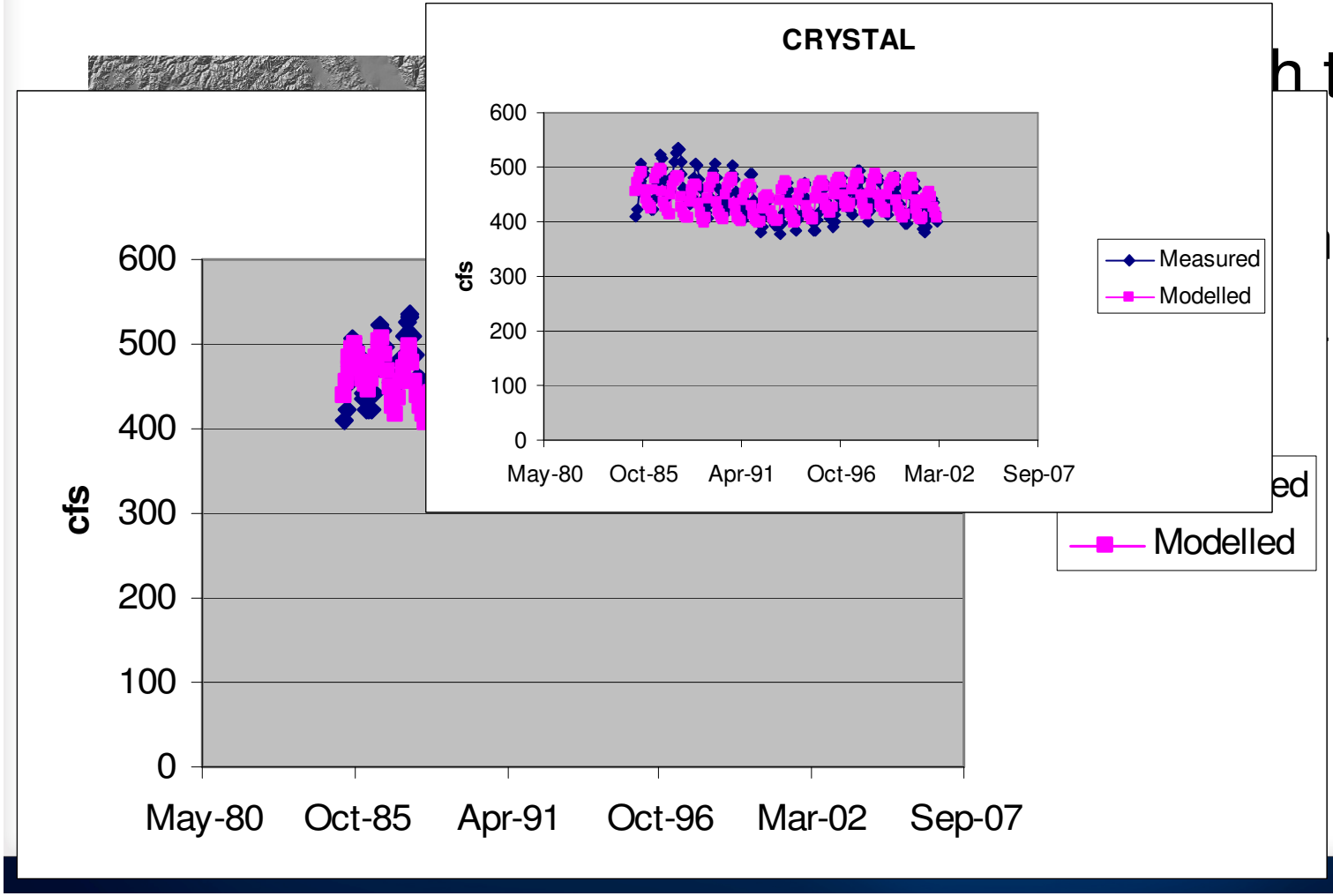
Springs



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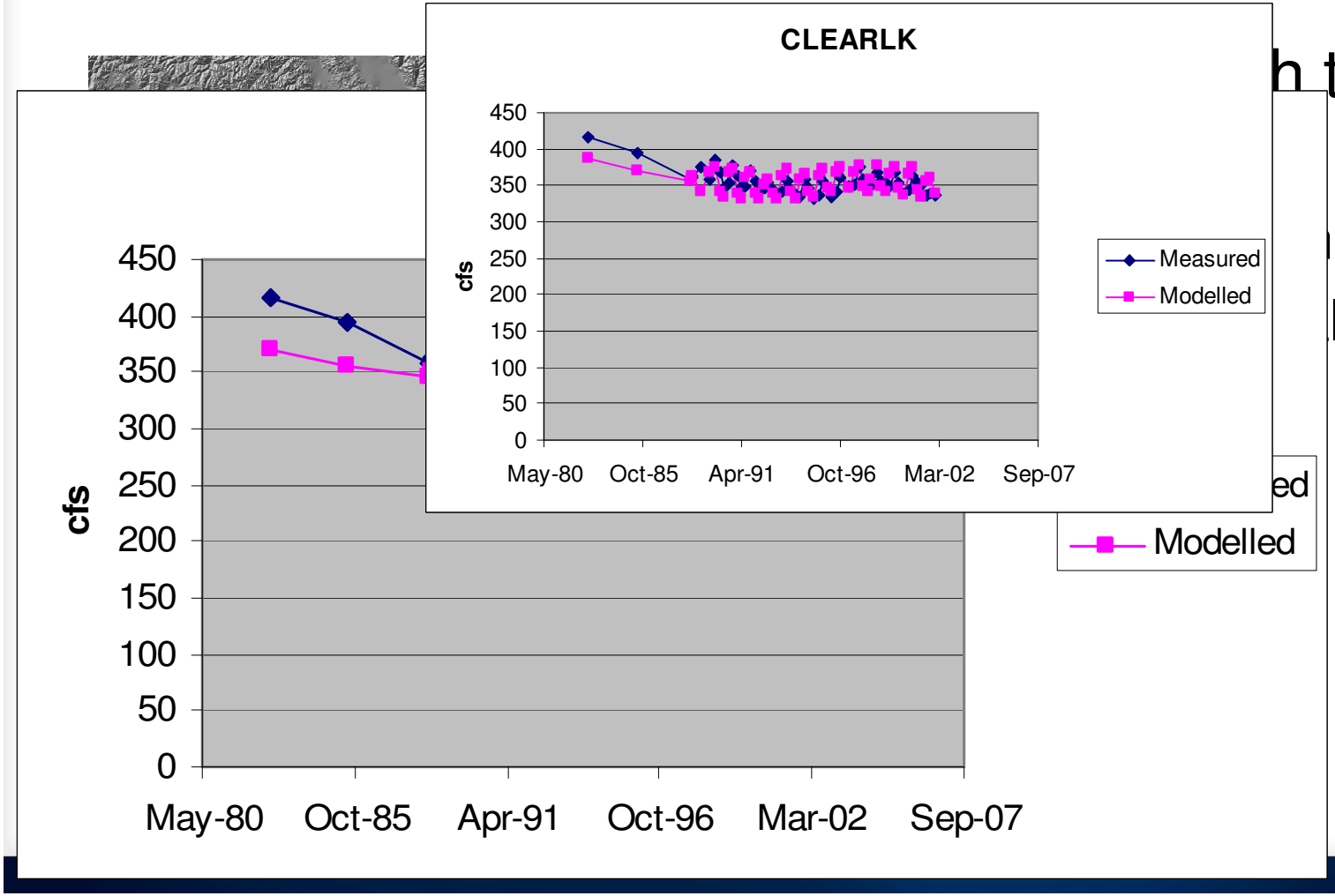
Springs



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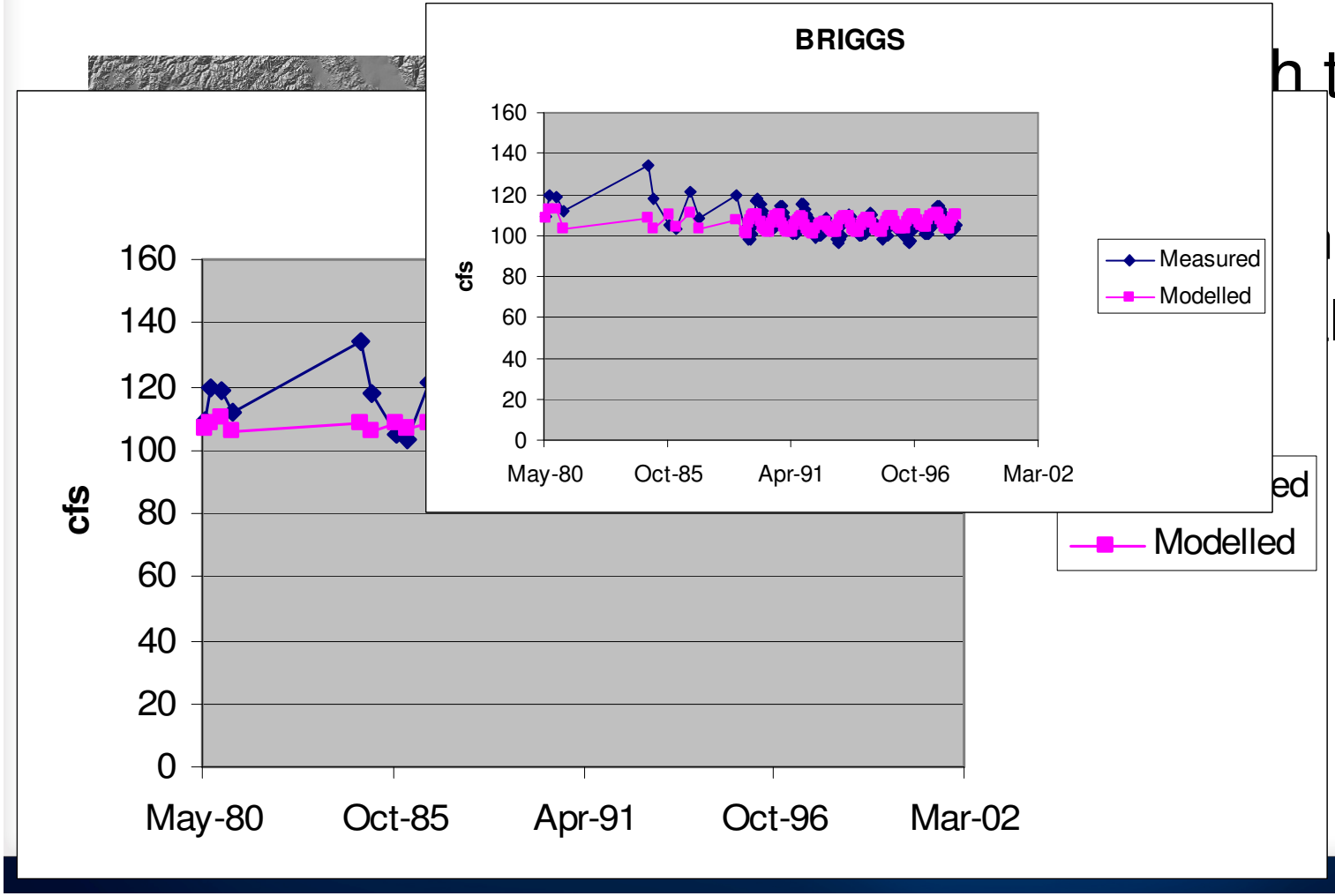
Springs



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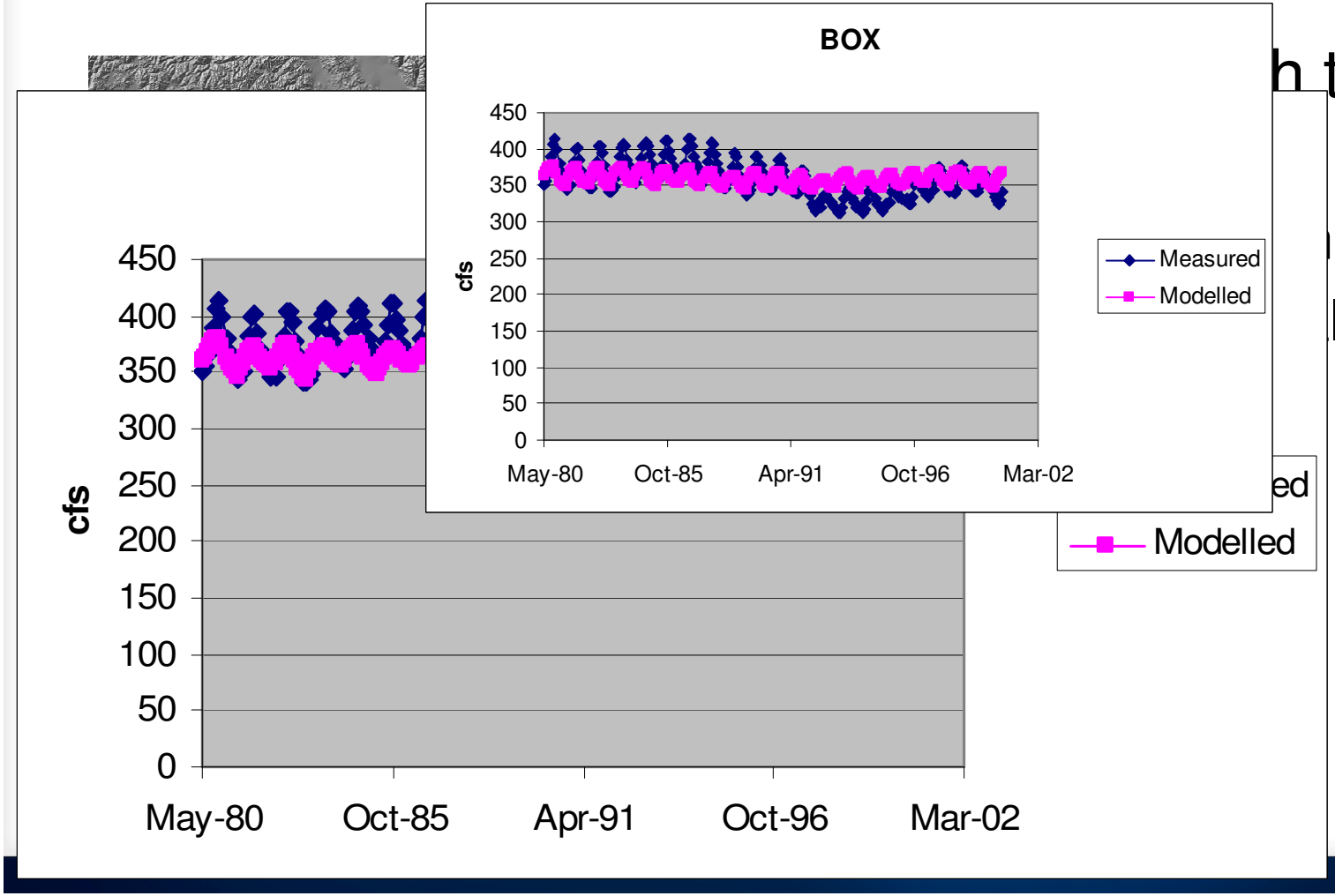
Springs



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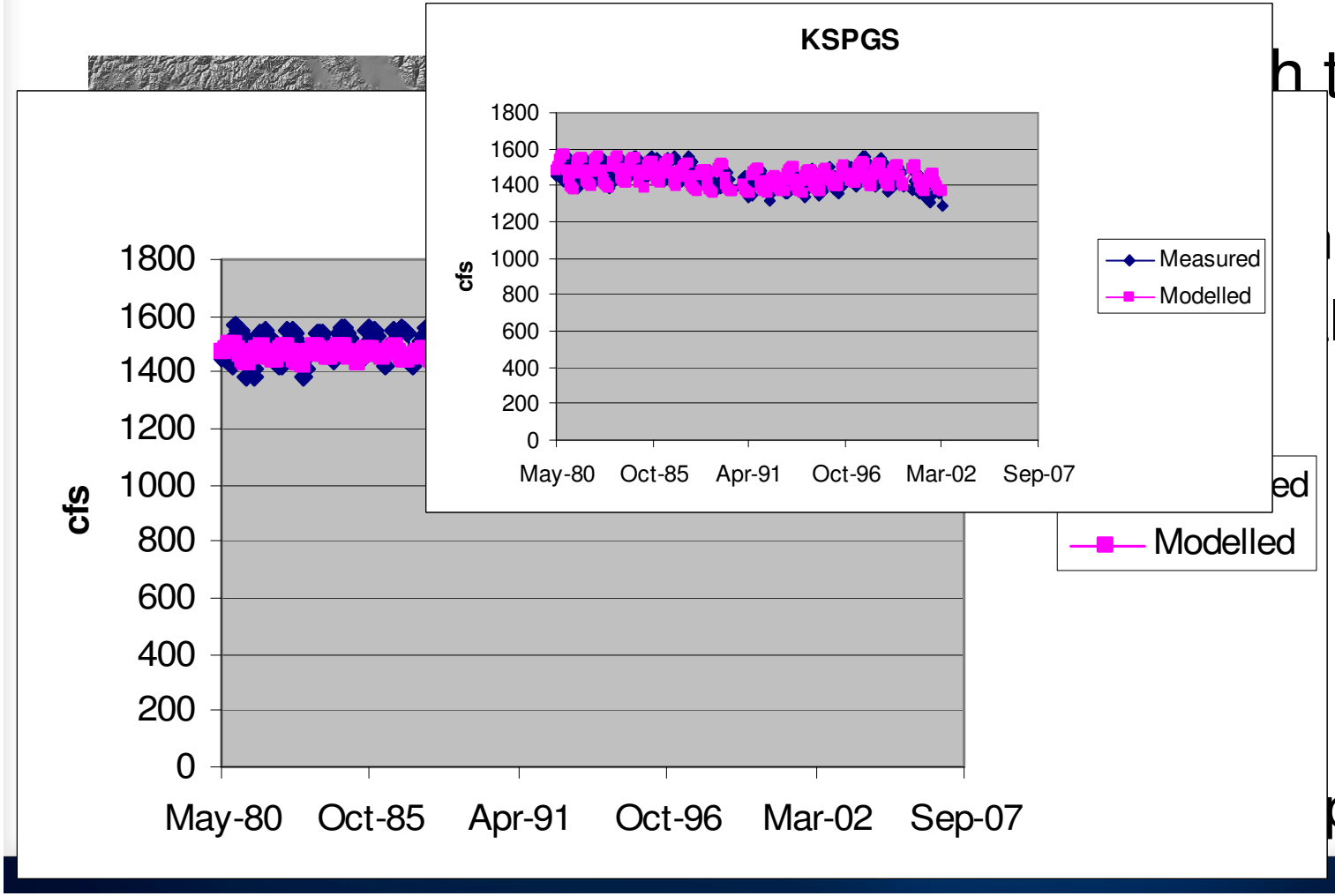
Springs



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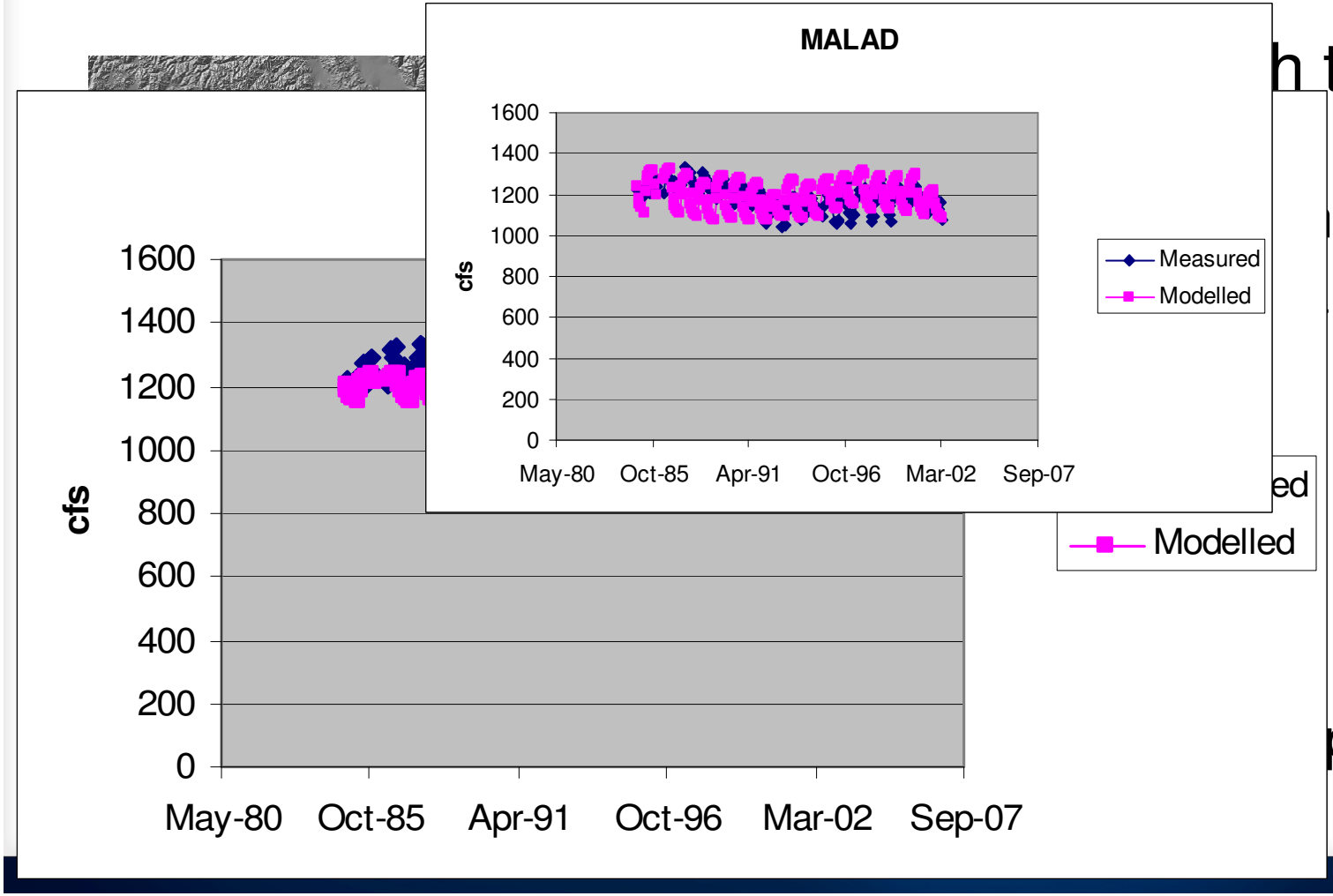
Springs



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END