



## Estimated Wetland Recharge

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Presented by Alex Moody

September 5<sup>th</sup>, 2019



$$\text{Recharge} = (P [L] - ET [L]) * A_{\text{wetland}} [L^2]$$



Net positive recharge – Flow into aquifer

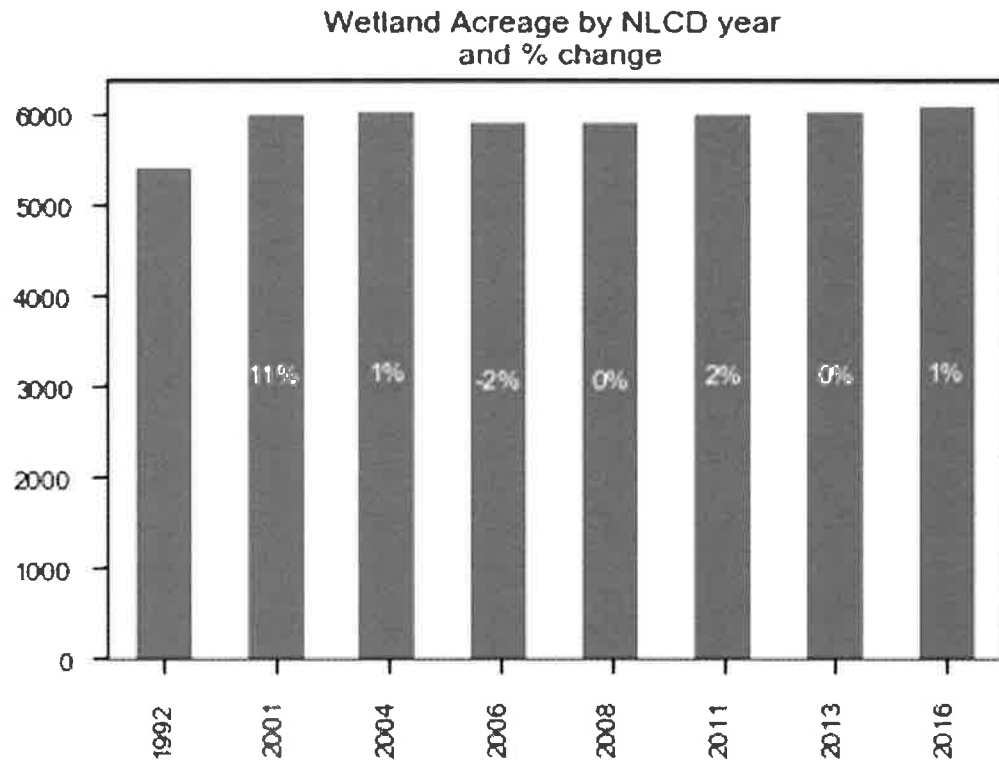
Net negative recharge – Flow out of aquifer

# Data Sources

- Precipitation
  - Monthly gridded precipitation from PRISM
- Evapotranspiration
  - ET Idaho, large wetland class
    - Narrow represents “cattails and bulrushes that can be found along canals or in road ditches” (Allen and Robison, 2007).
    - Basal ET 1.5x higher in narrow wetlands due to “clotheslining”
    - May not be applicable to Wetlands seen in NLCD
  - METRIC
- Wetland designation
  - 2016 National Land Cover Dataset
    - 2001, 2004, 2006, 2008, 2011, 2013, 2016
  - Emergent and woody herbaceous classes

# NLCD wetland acreage

- Area in model boundary
- ~ 2600 ac < Natl. Wetland Inventory on average
- Defer to irrigated lands in overlapping areas

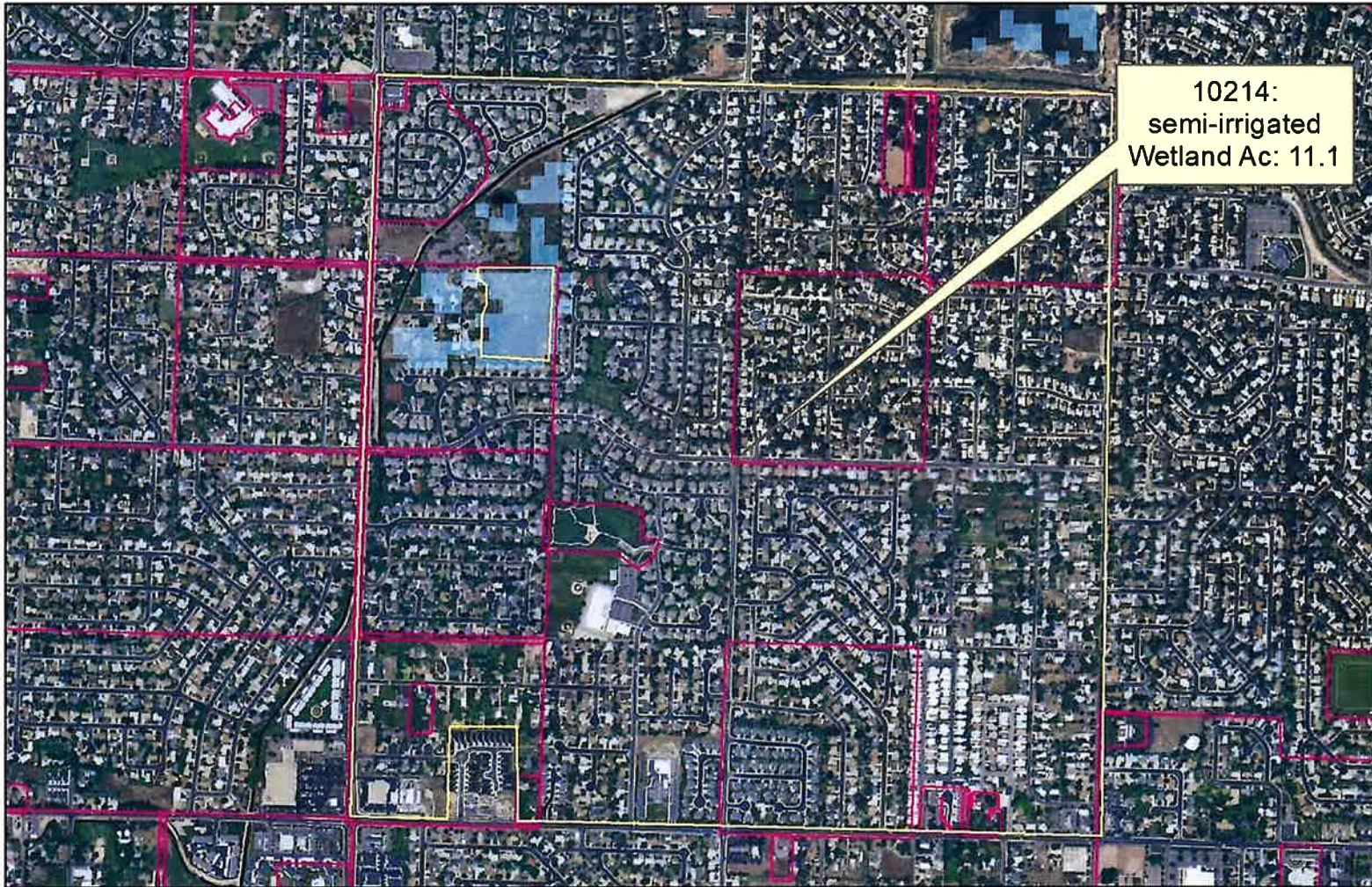




3472: semi-irrigated  
Wetland Ac: 10.0

0.2  
Miles

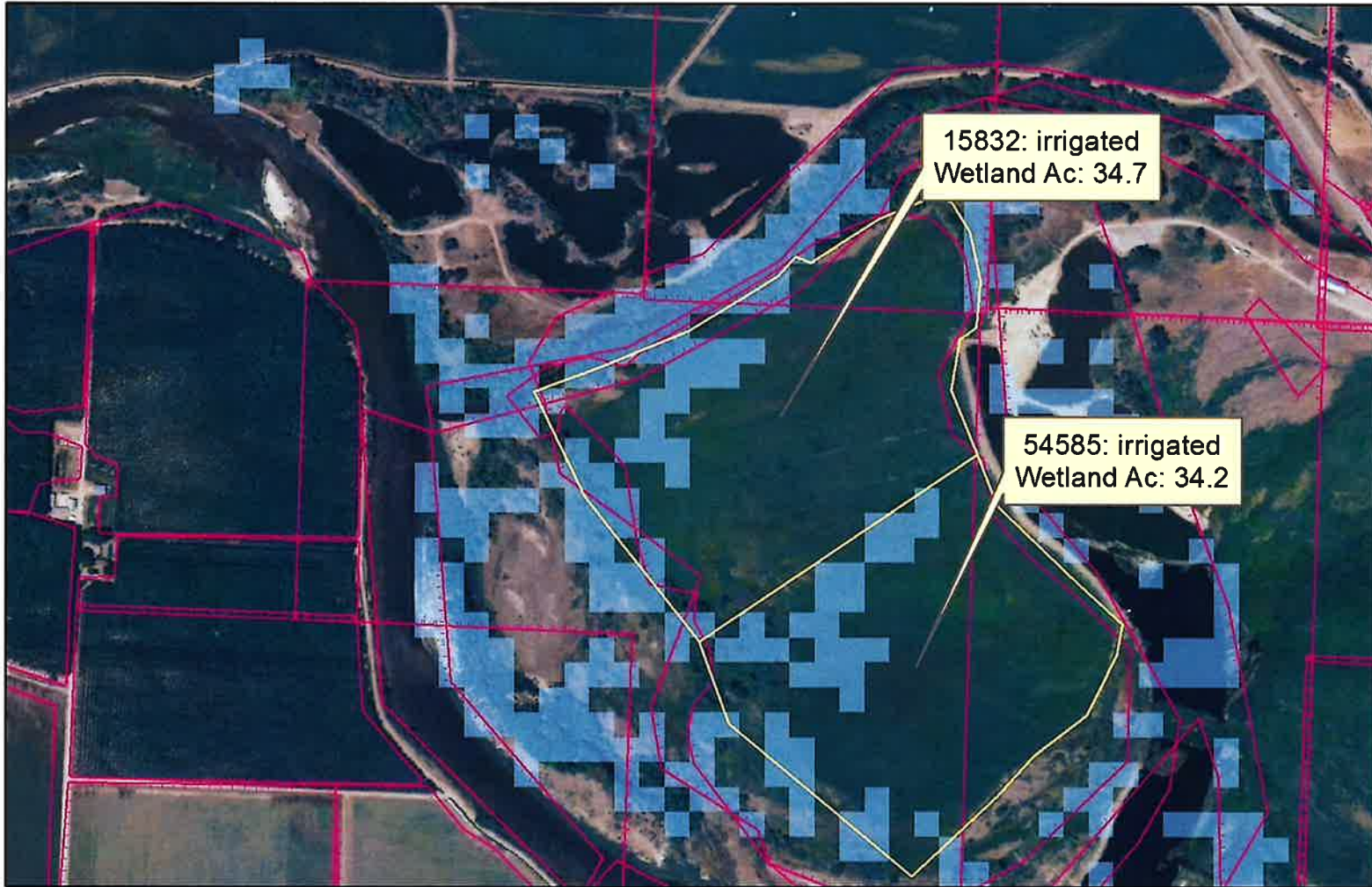
90 95 Irrigated Parcel Water Right POU



10214:  
semi-irrigated  
Wetland Ac: 11.1

0.5  
Miles

90 95 Irrigated Parcel Water Right POU



15832: irrigated  
Wetland Ac: 34.7

54585: irrigated  
Wetland Ac: 34.2

0.3

Miles

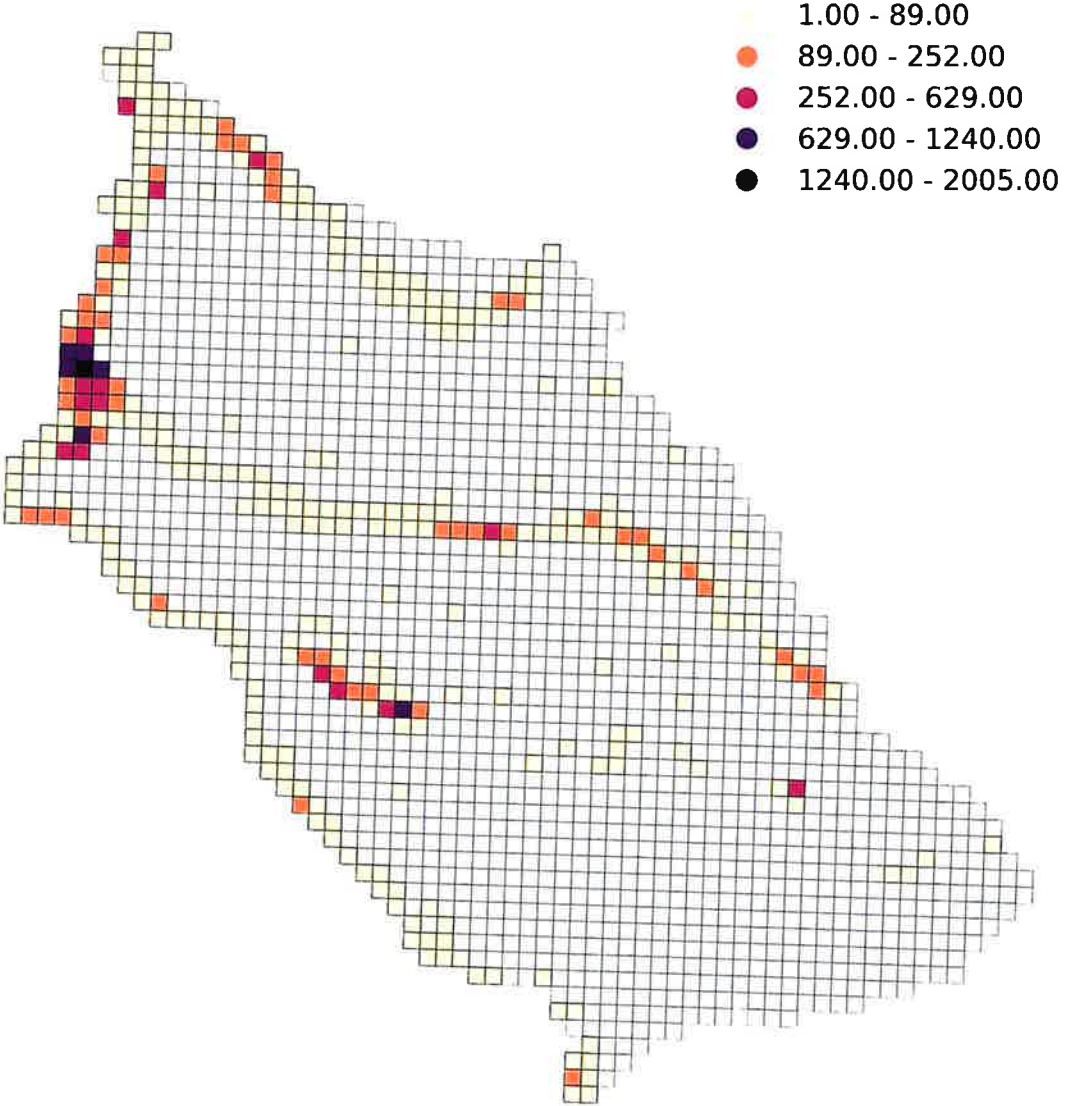
90

95

Irrigated Parcel

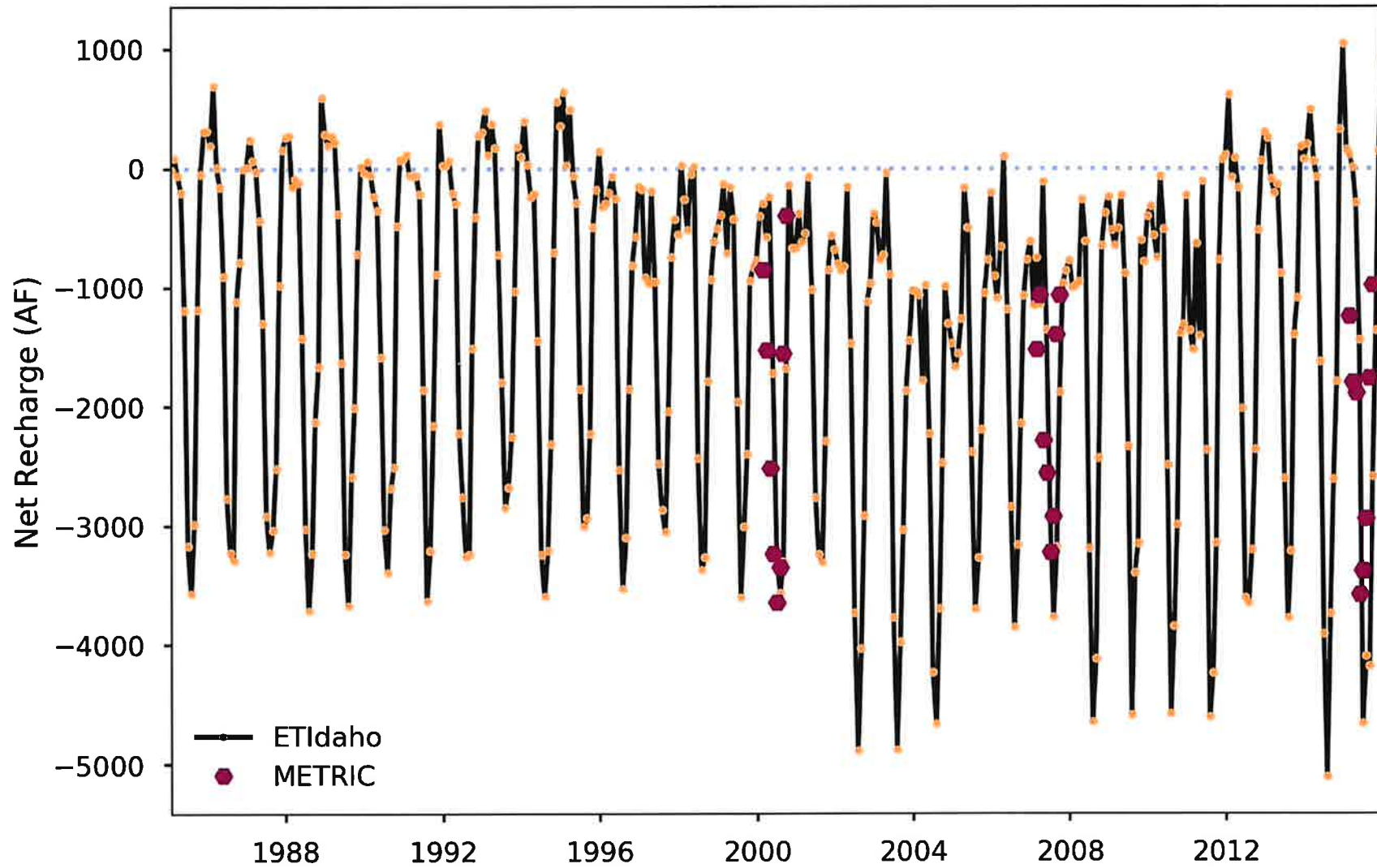
Water Right POU

# NLCD Wetland cell counts per grid cell

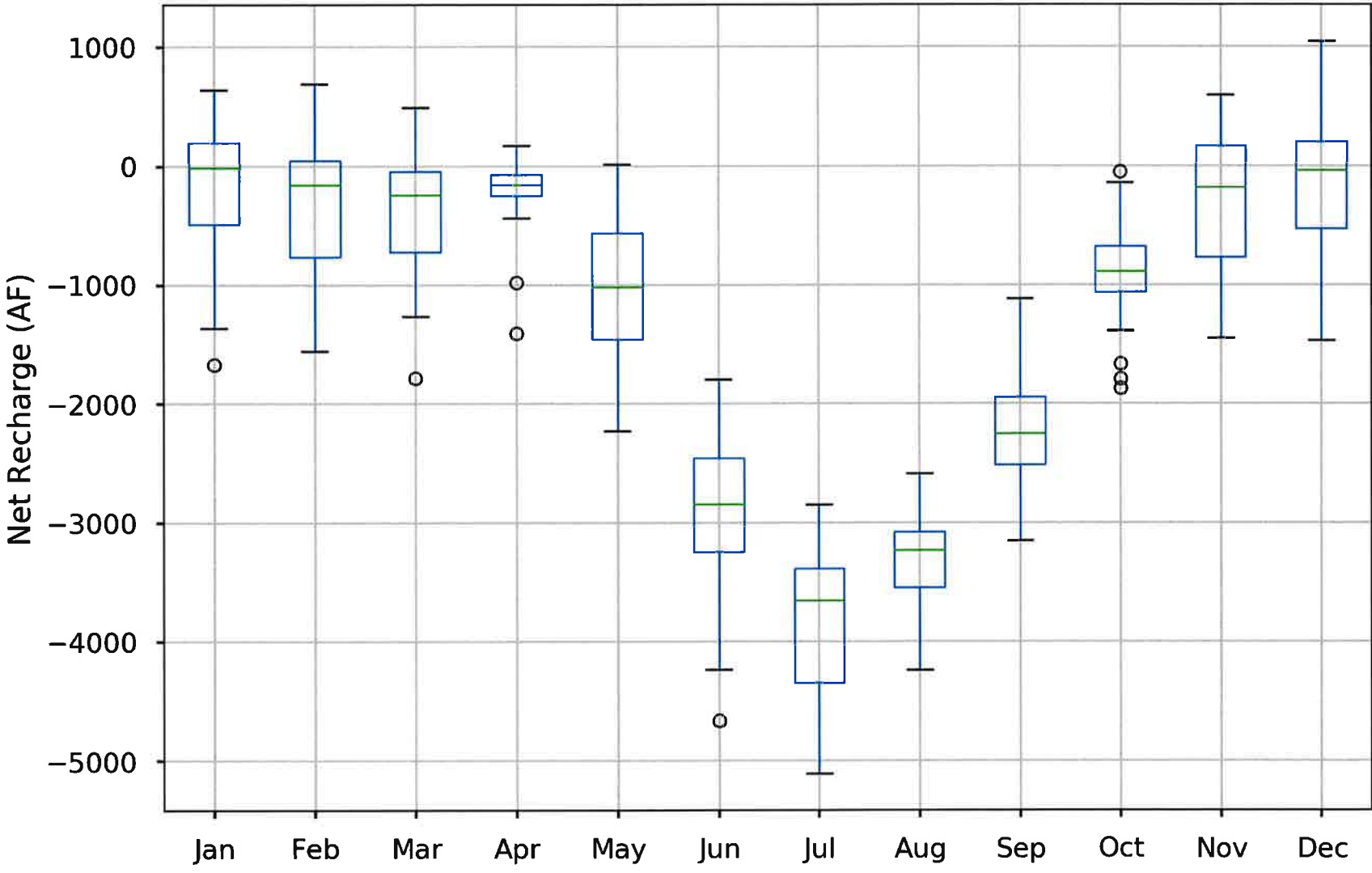


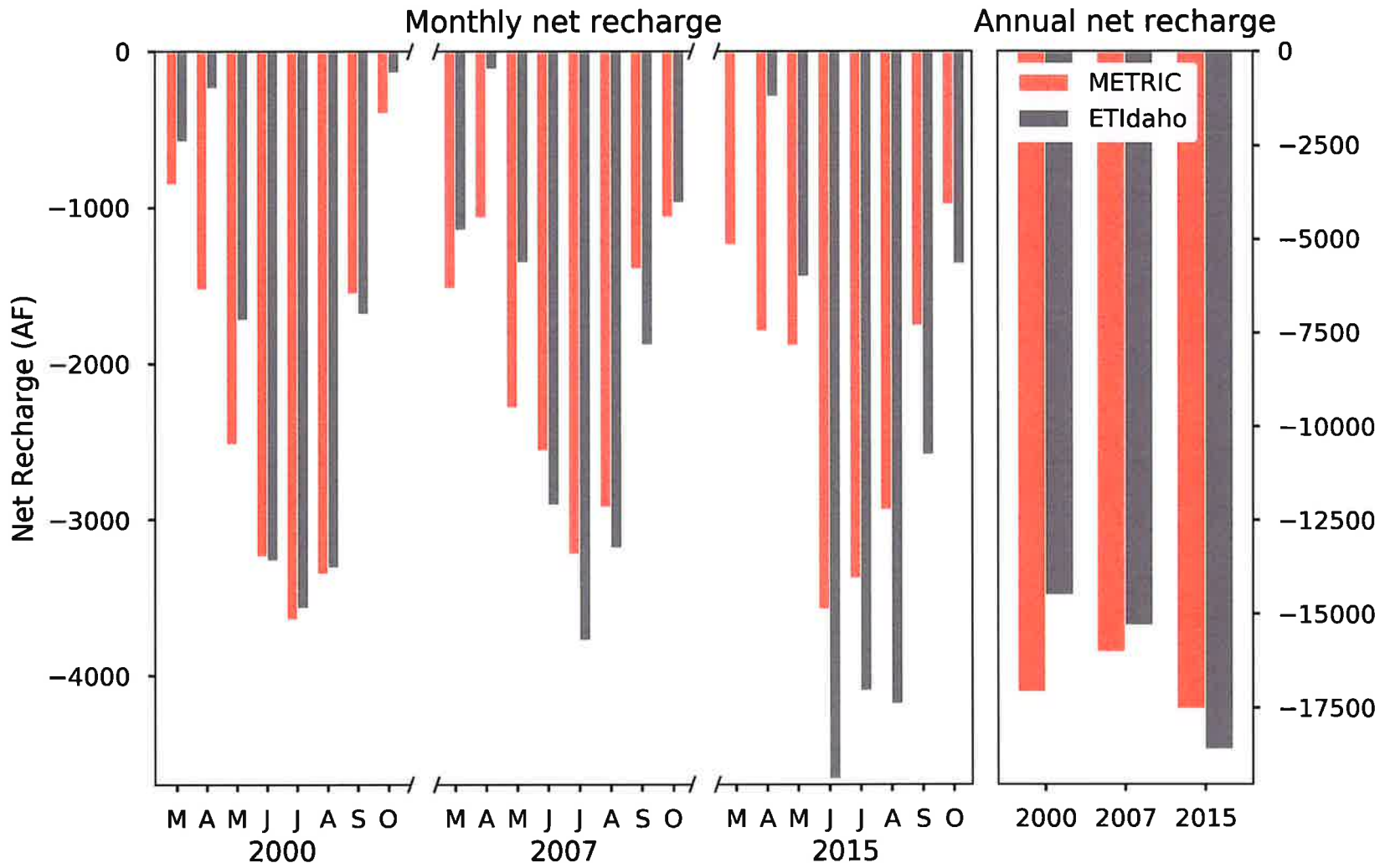


# Total wetland recharge

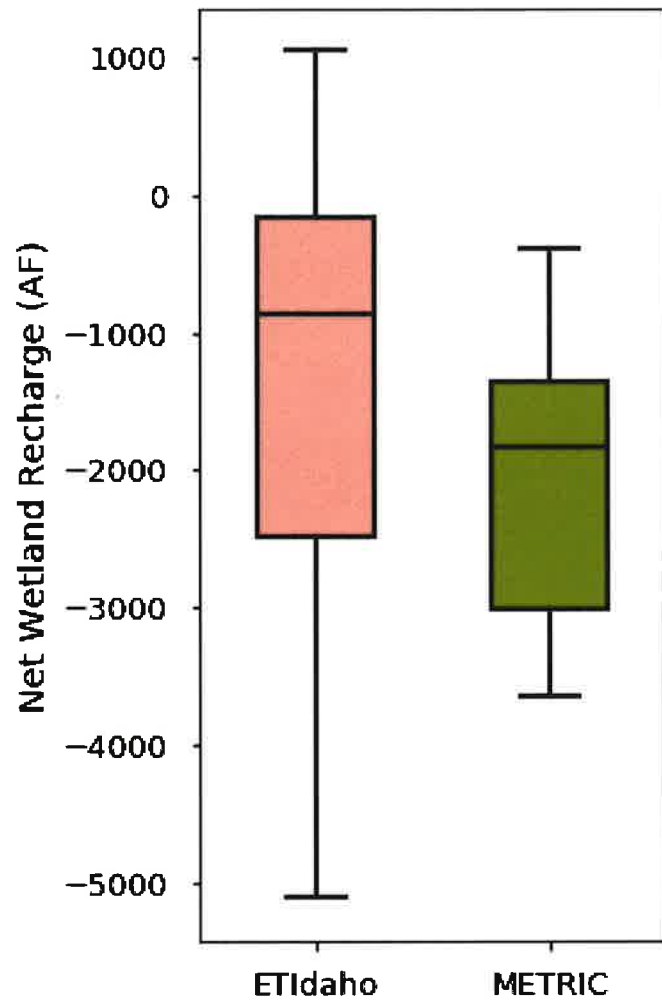


Monthly distributions of ETIdaho wetland recharge



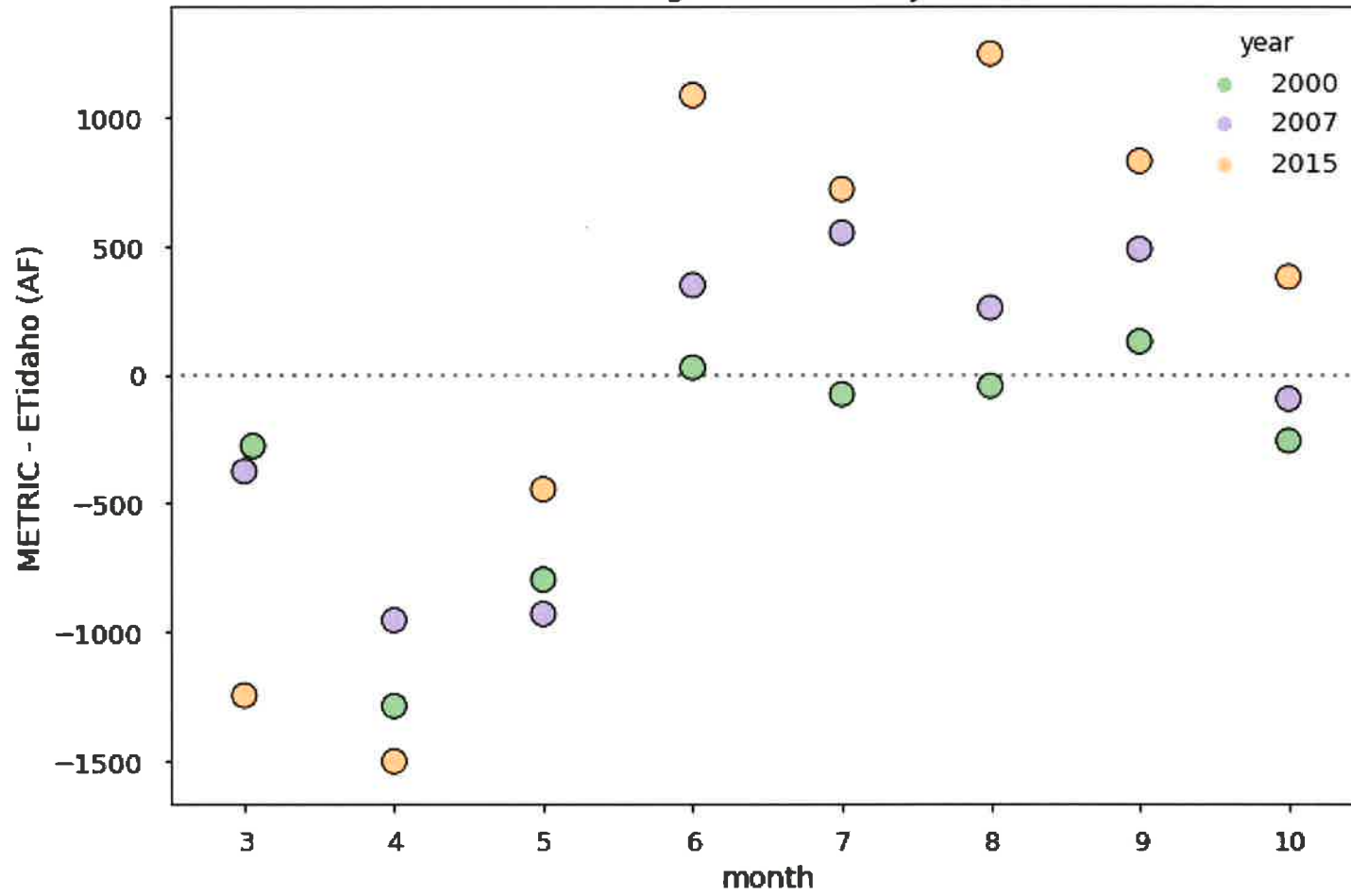


# Monthly Recharge Stats

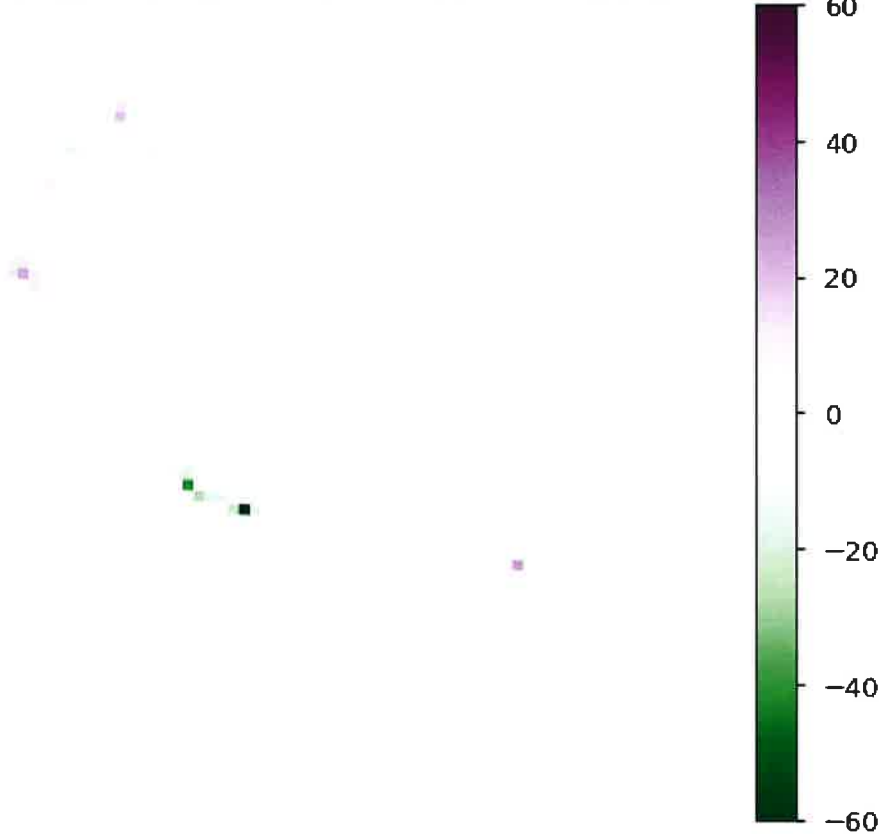


	All data		Overlapping
AF	METRIC	ETIdaho	ETIdaho
mean	-2110	-1323	-2018
std	988	1414	1474
min	-3645	-5109	-4662
25%	-3009	-2478	-3275
50%	-1839	-867	-1701
75%	-1354	-157	-869
max	-396	1049	7

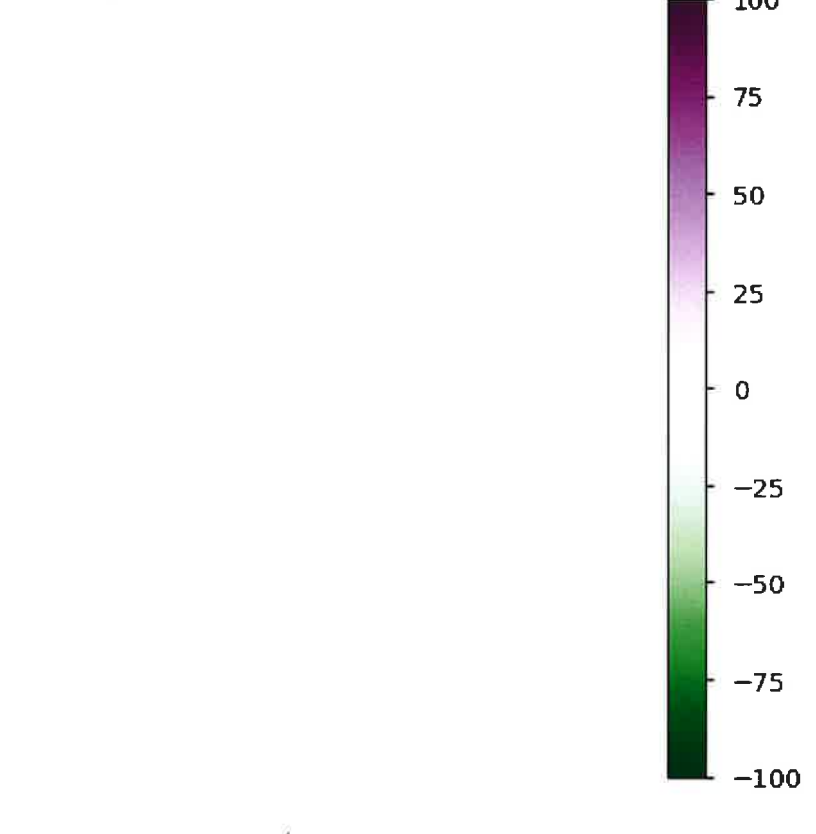
Net recharge difference by month



Mean difference: METRIC - ETIdaho recharge



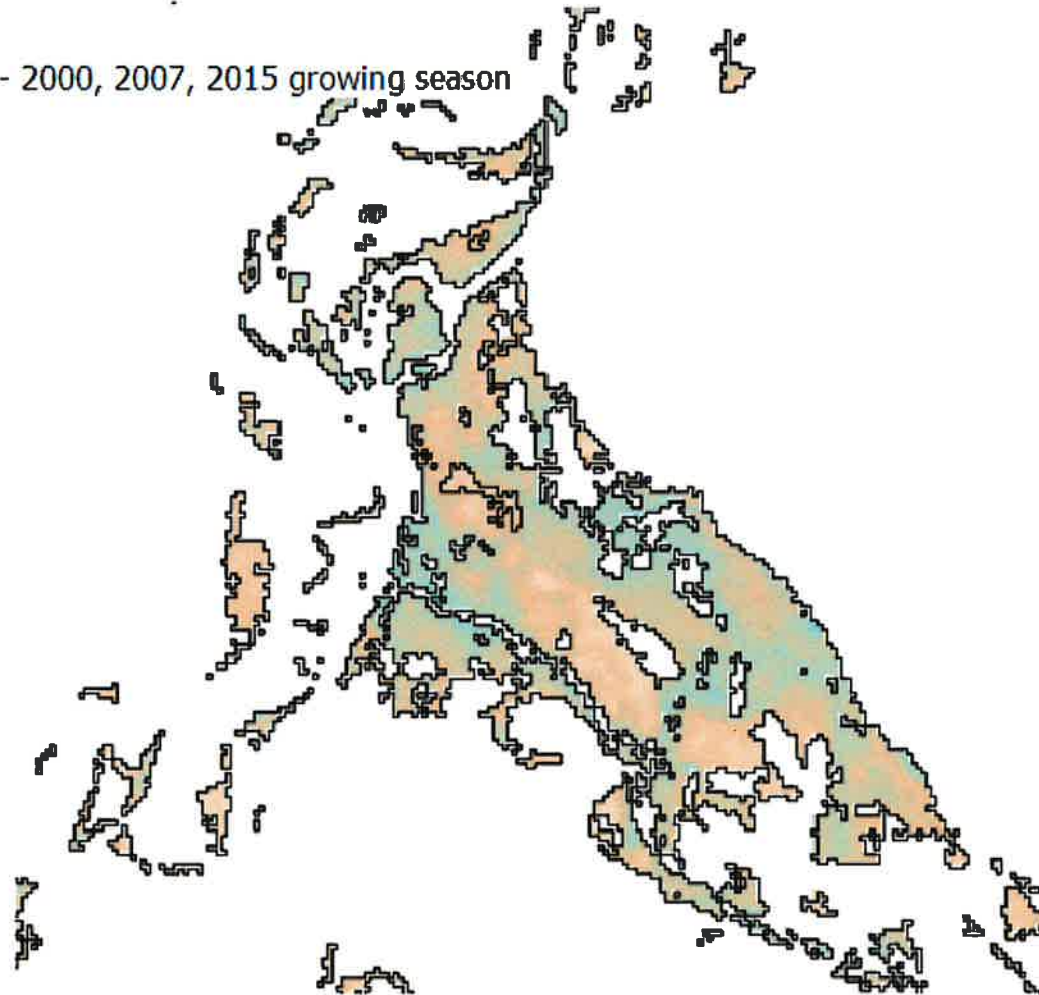
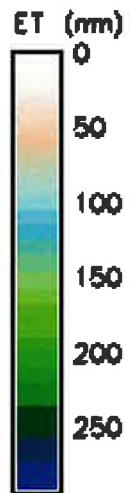
Recharge METRIC - ETIdaho 200003



- **Lake Lowell** – METRIC discharge higher on average. Maybe reclassify as narrow stands to increase ETIdaho.
- **Confluence** – METRIC discharge lower on average. Area of wetland effectively changes with METRIC.
- **Timing differences** – METRIC is near real time. ETIdaho simulates green-up with average of  $T_{30} = 11^{\circ}C$ , May 20 on average @ Kimberly (Allen and Robison, 2007)

# Snake-Boise Confluence Wetlands

METRIC ET - 2000, 2007, 2015 growing season



# Conclusions + Suggestions

- 15,875 AF annual average wetland discharge with ETIdaho over modeling period
- 16,500 AF growing season average in overlapping years (2000,2007,2015)
- 1.5% of Urban (2004) budget
- Use METRIC when available
- Scale ETIdaho growing season estimates by factor determined by relationship with METRIC