

Reach-Wide Geomorphology and Vegetation Monitoring

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PRRIP TAC

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Reach-Wide Monitoring Goals

- Document annual habitat changes
 - Channel hydraulics
 - In-channel vegetation
 - Sediment balance
 - Whooping crane roosting area
- Evaluate drivers of habitat change

Field Methods: 2010-2016

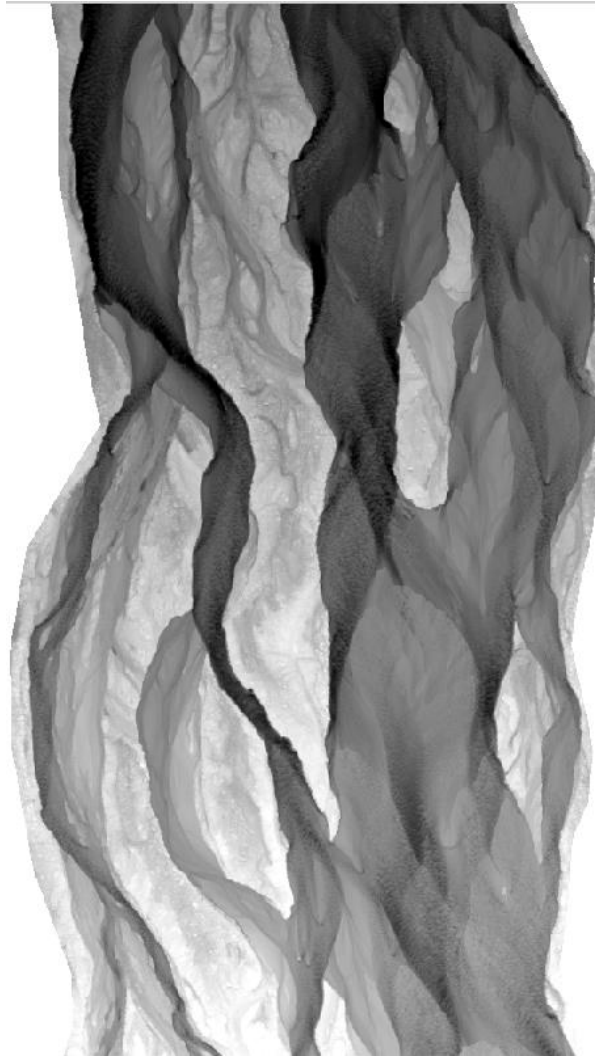


Remote Sensing Methods: 2017-

Aerial imagery



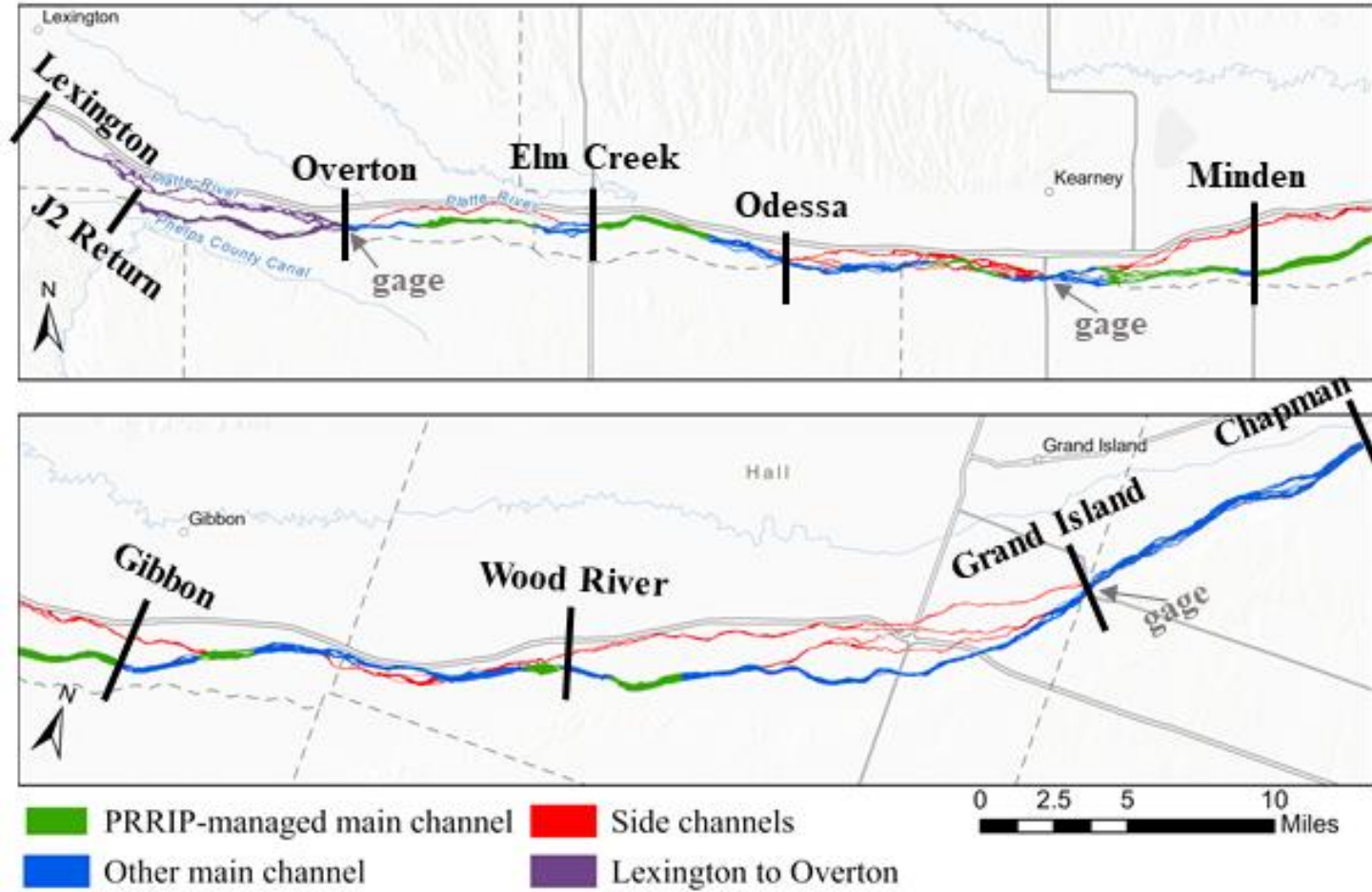
LiDAR – Bare Earth / Bathymetry



LiDAR – Vegetation Height



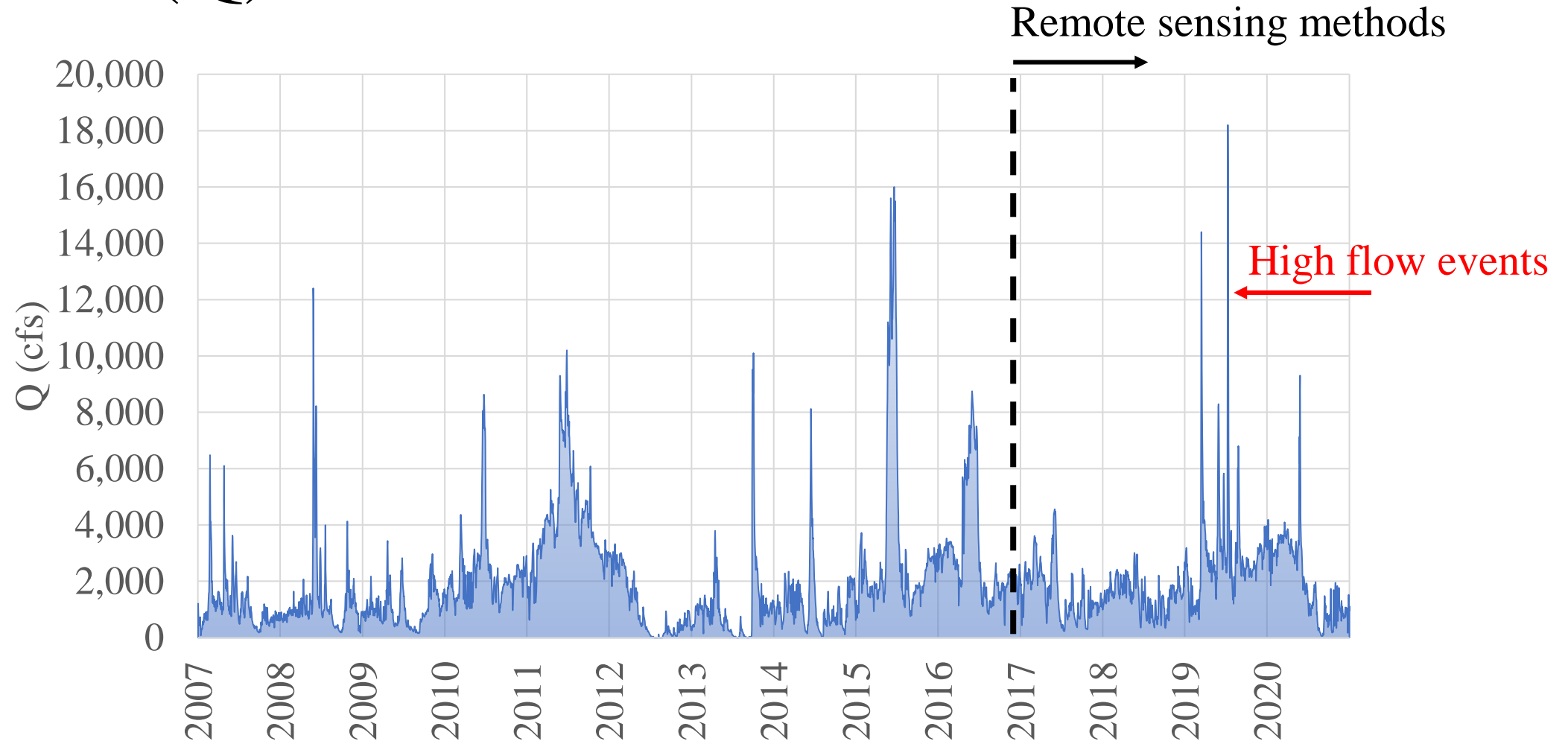
Analysis scale



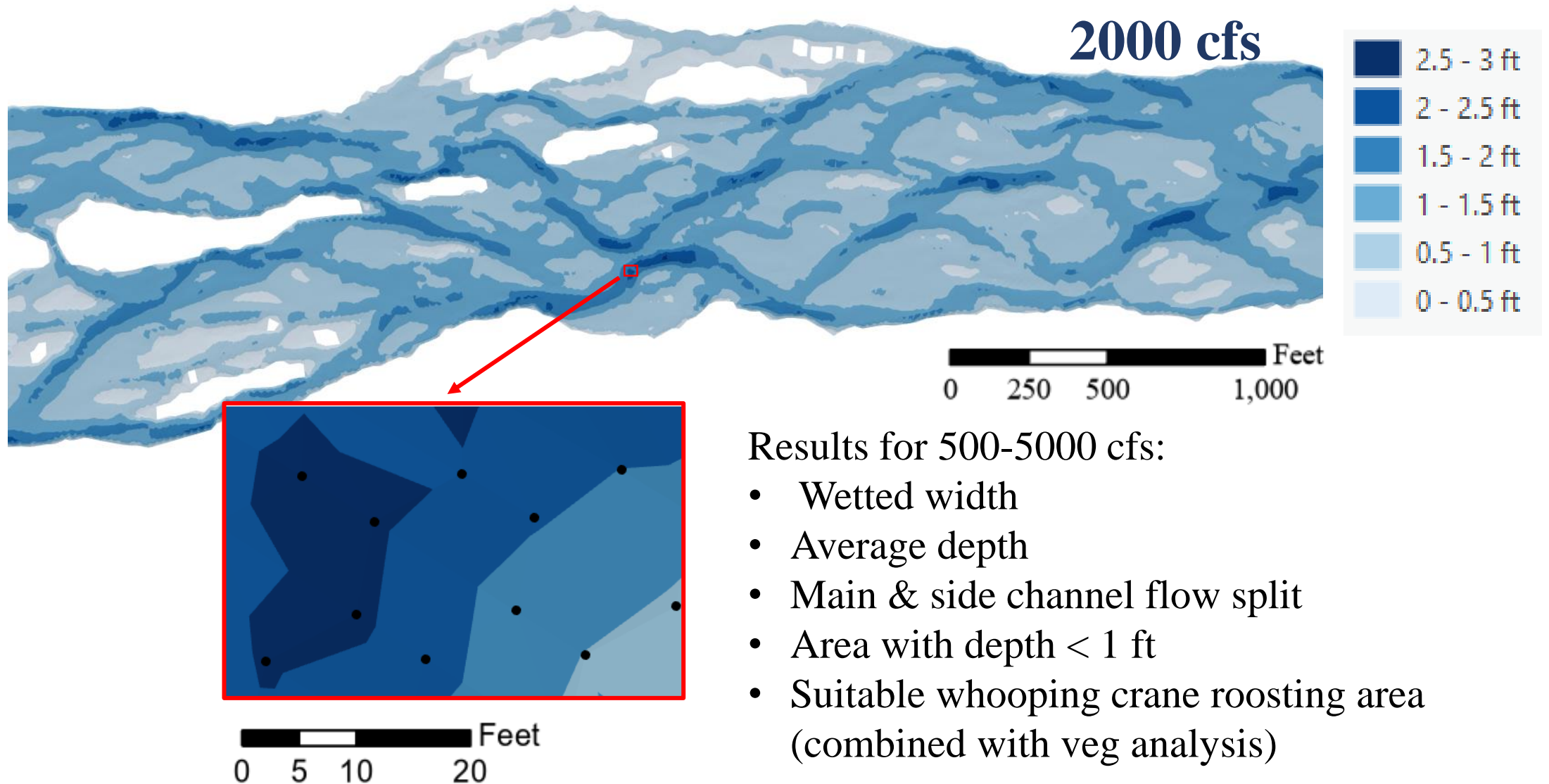
Nebraska Game & Parks Commission, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Esri, CGIAR, USGS



Flow (Q)



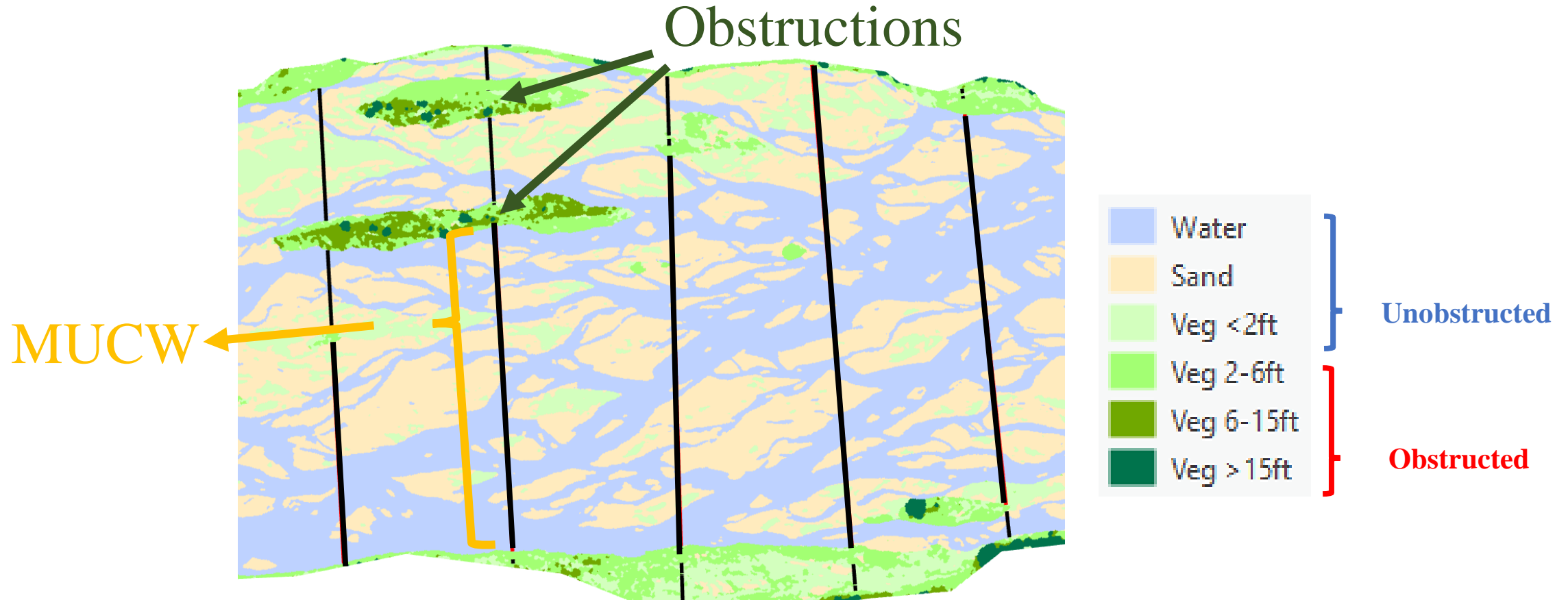
2D Hydraulic Modeling



Land Cover Classification Methods



Land Cover Classification Methods

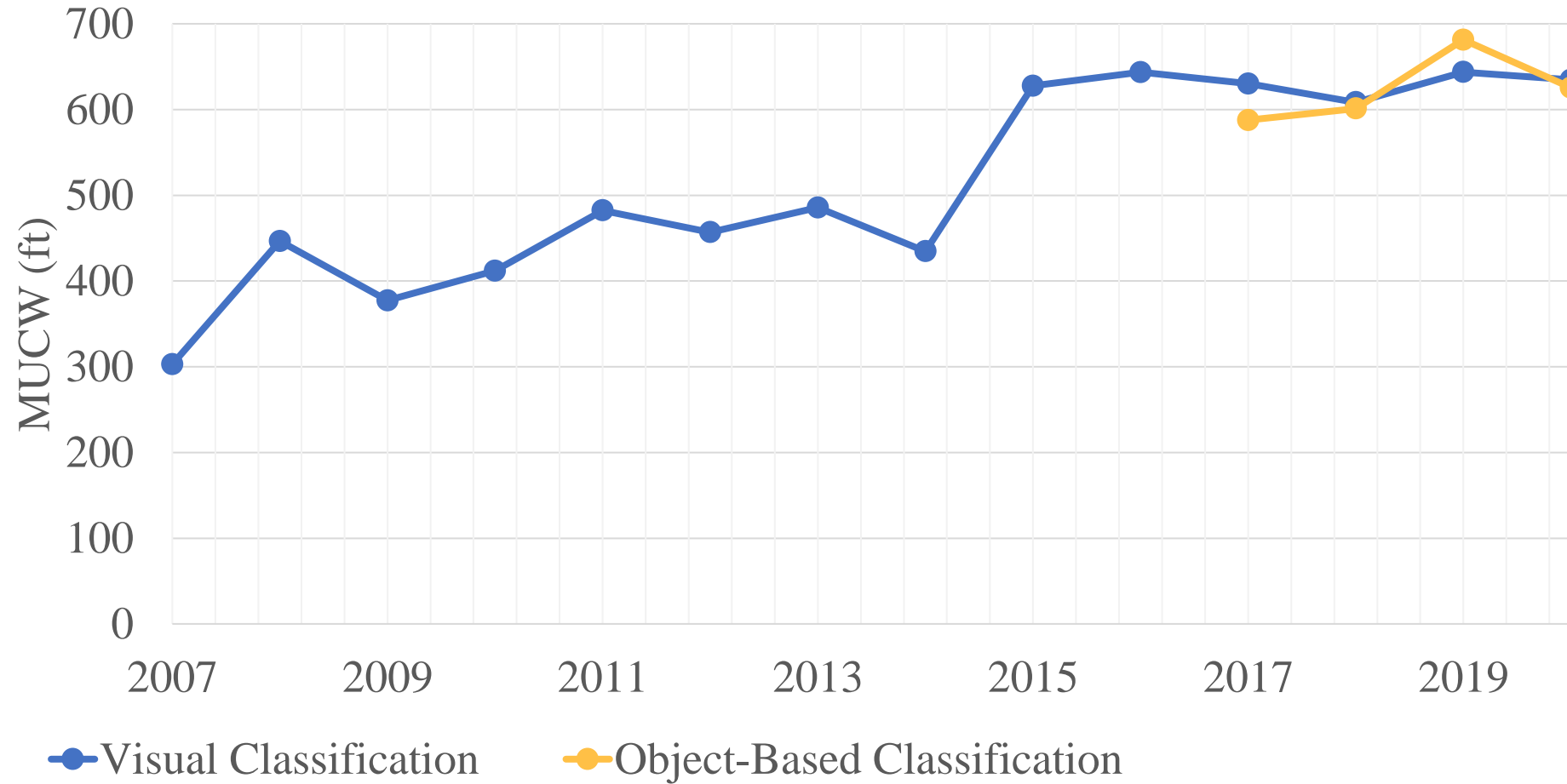


Methods Timeline

- 2010-2016: field-based
- 2007- : visual classification
- 2017- : object-based classification

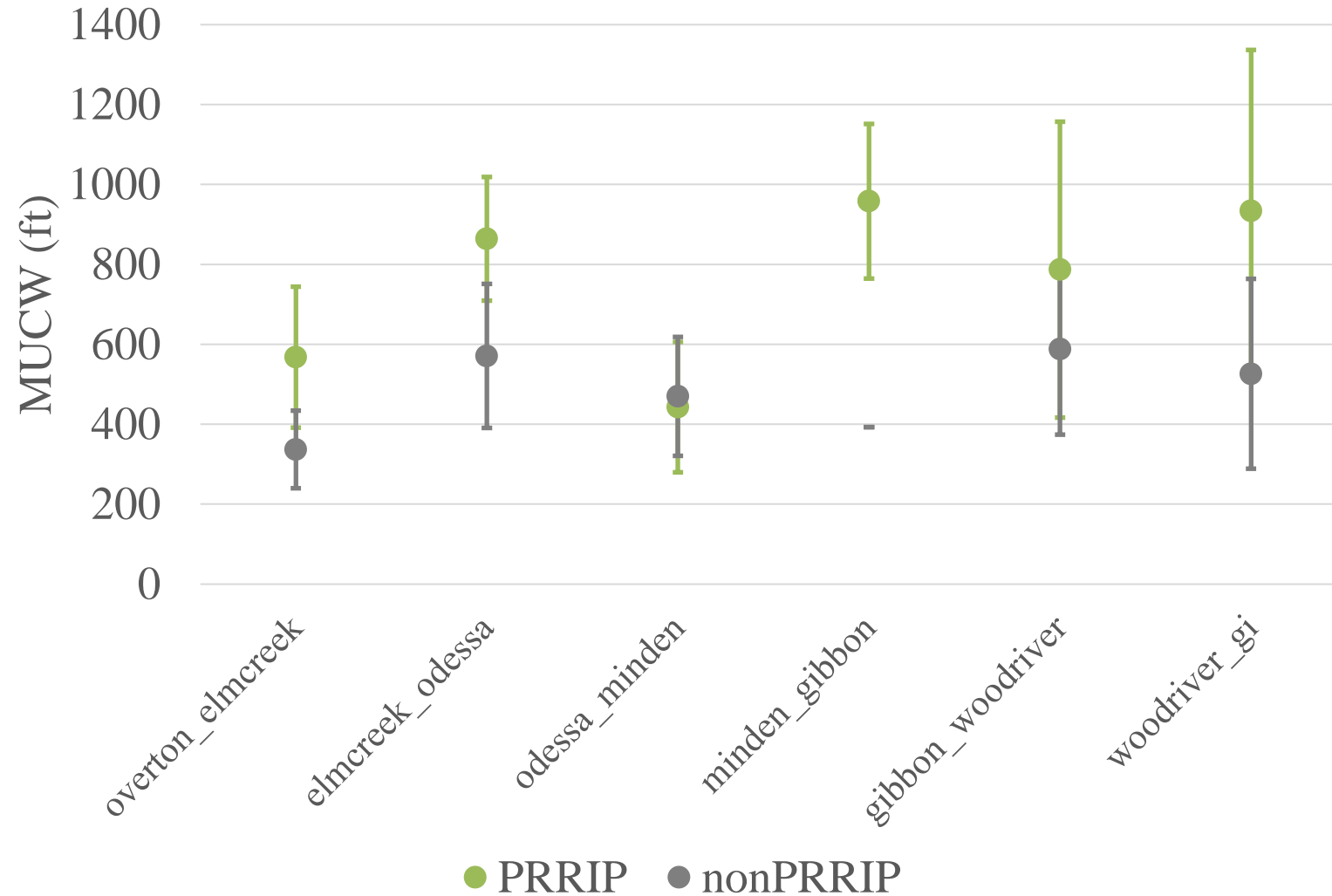
MUCW Over Time

Overton to Chapman, Main Channel



MUCW By Reach

2020, Main Channel



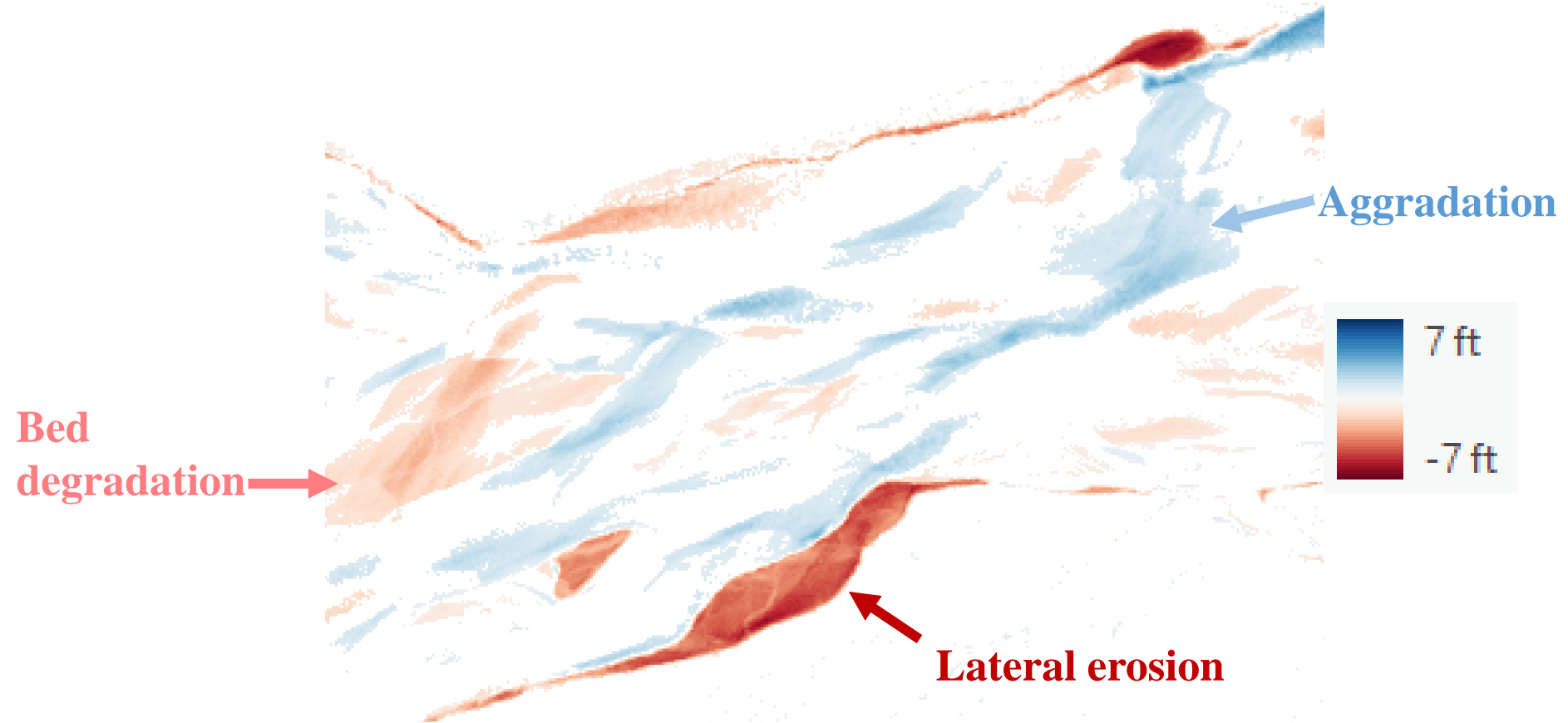
Volume Change Methods

2017

2018

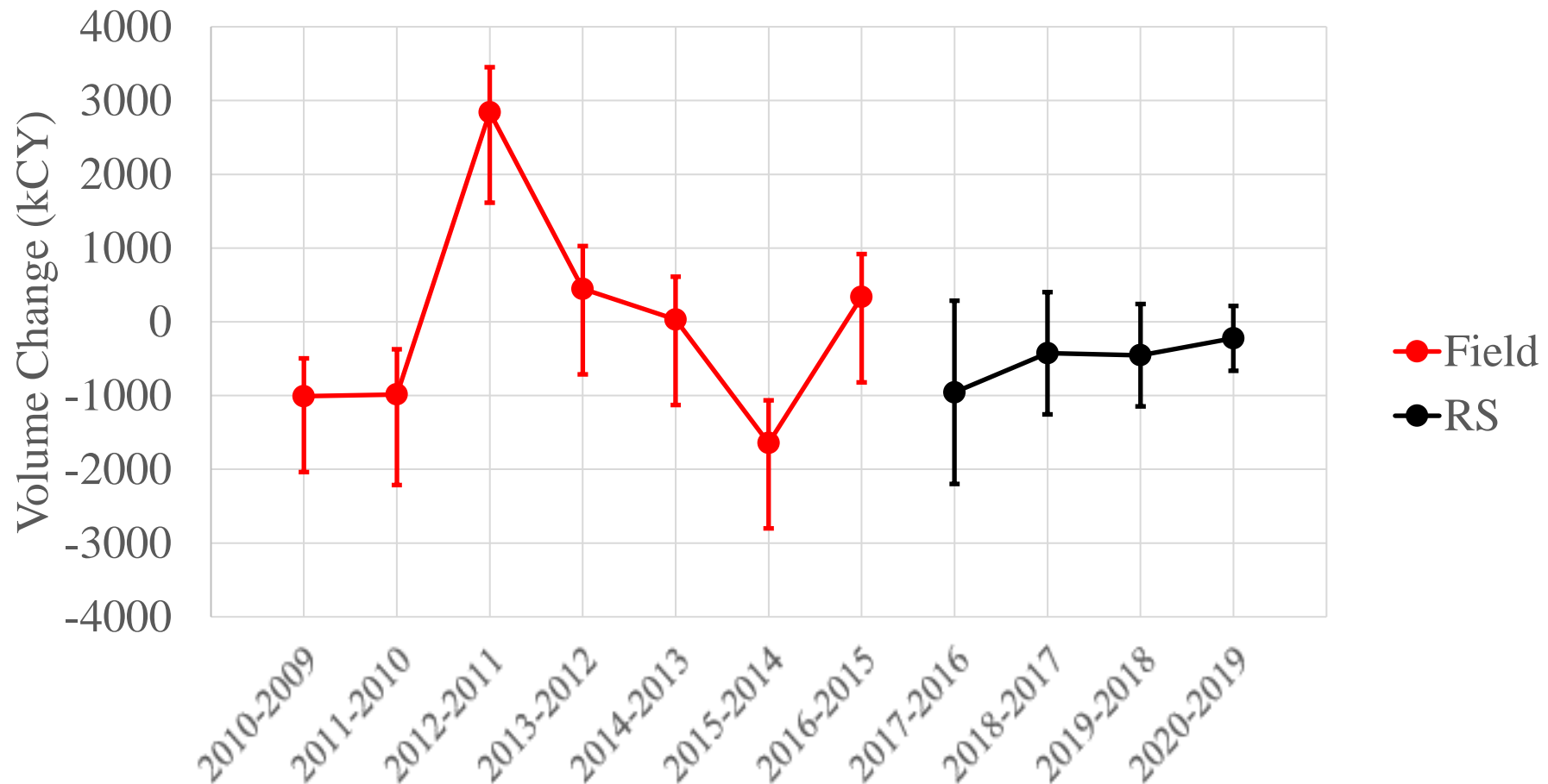


Volume Change Methods



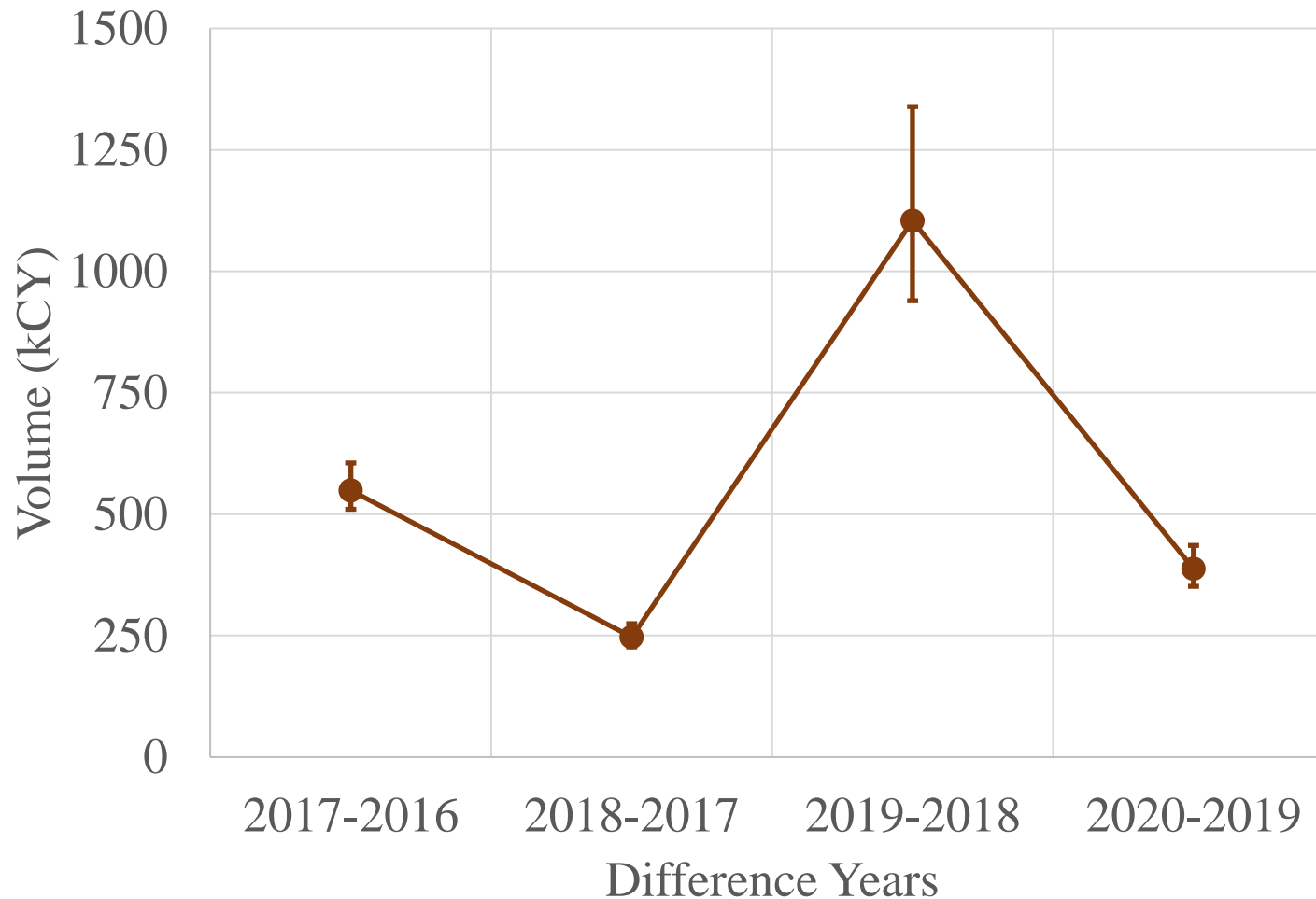
Net Volume Change Over Time

Overton to Grand Island, All Channels



Lateral Erosion Volume Over Time

Overton to Chapman, All Channels

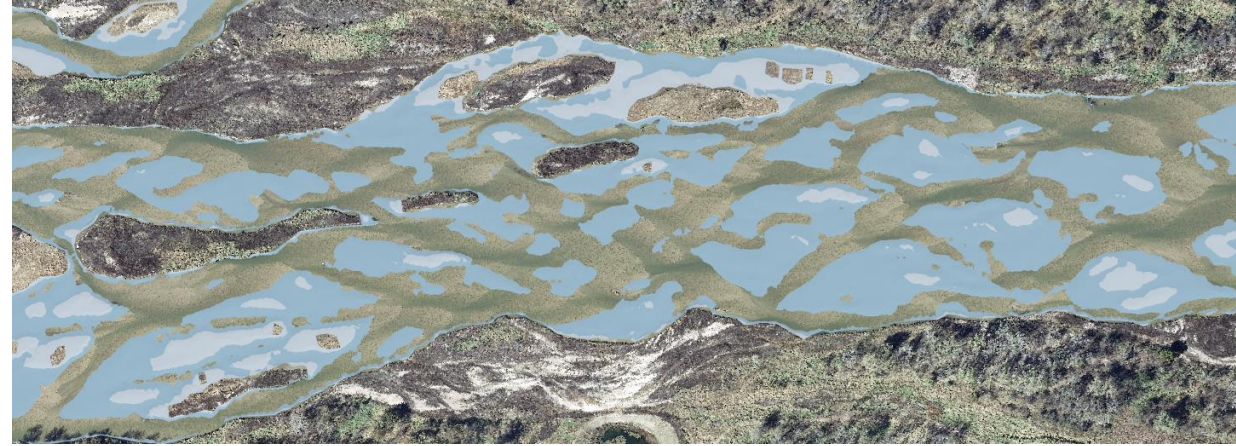


Suitable WC Roosting Area Methods

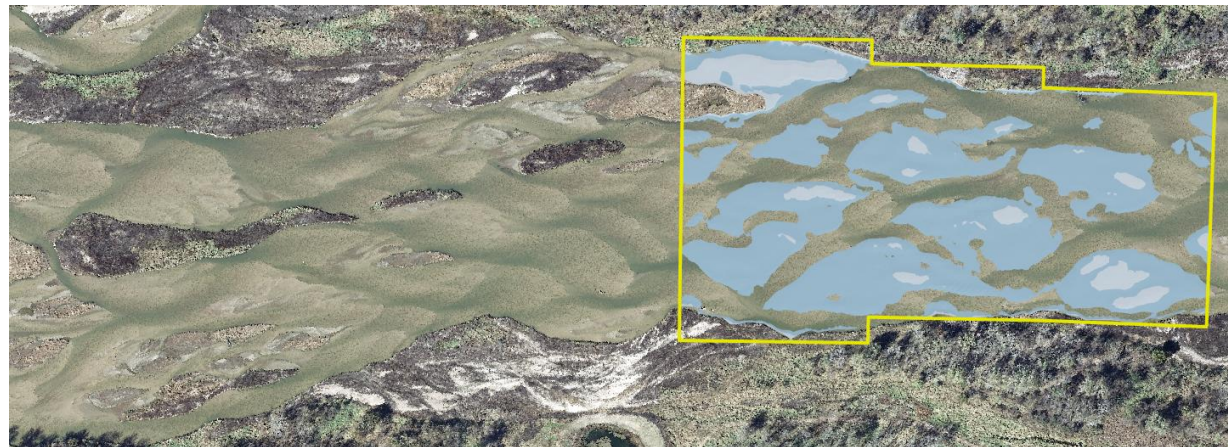
Unobstructed Width >650 ft



Depth < 1ft



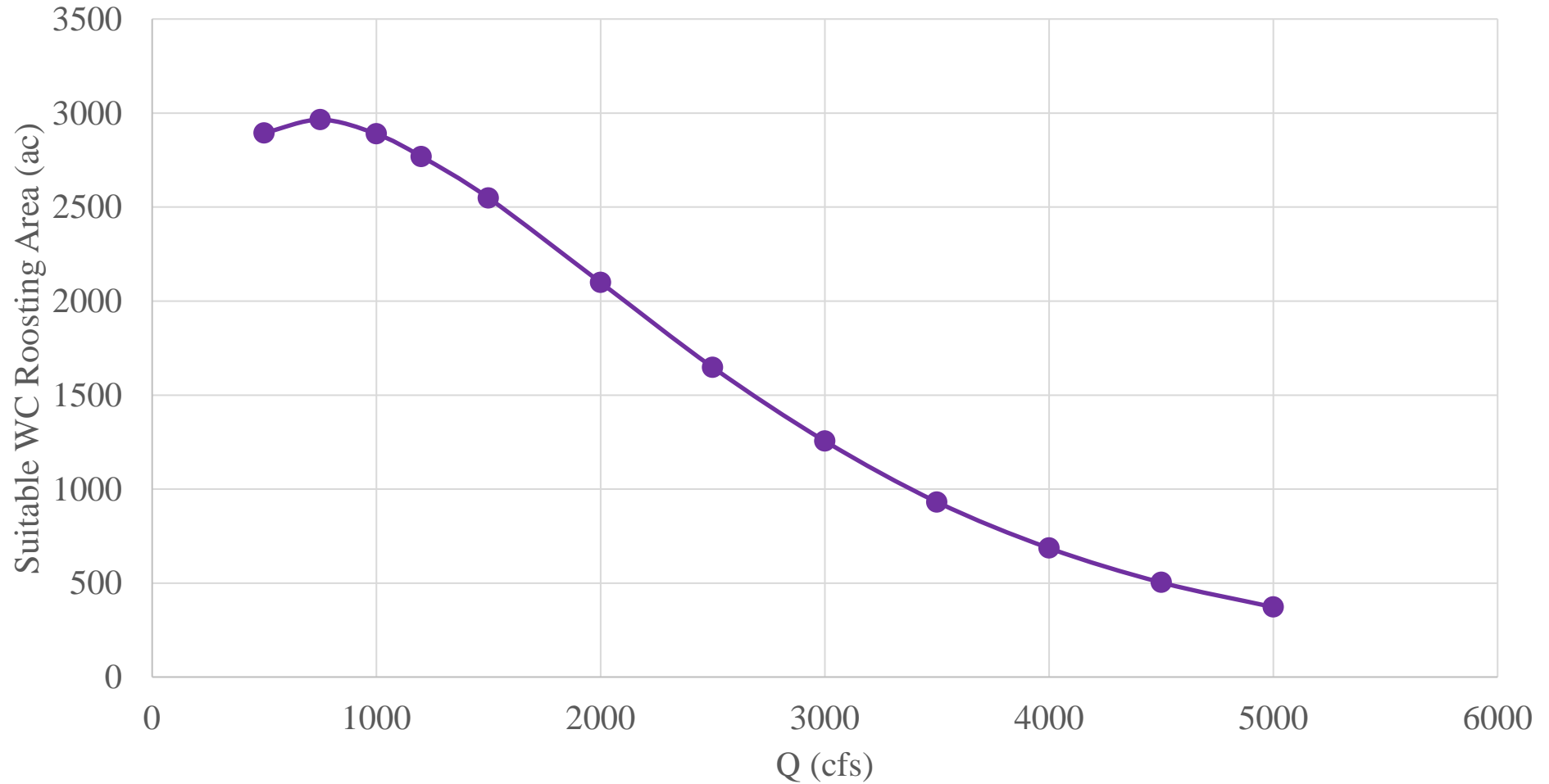
Suitable WC Roosting Area



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

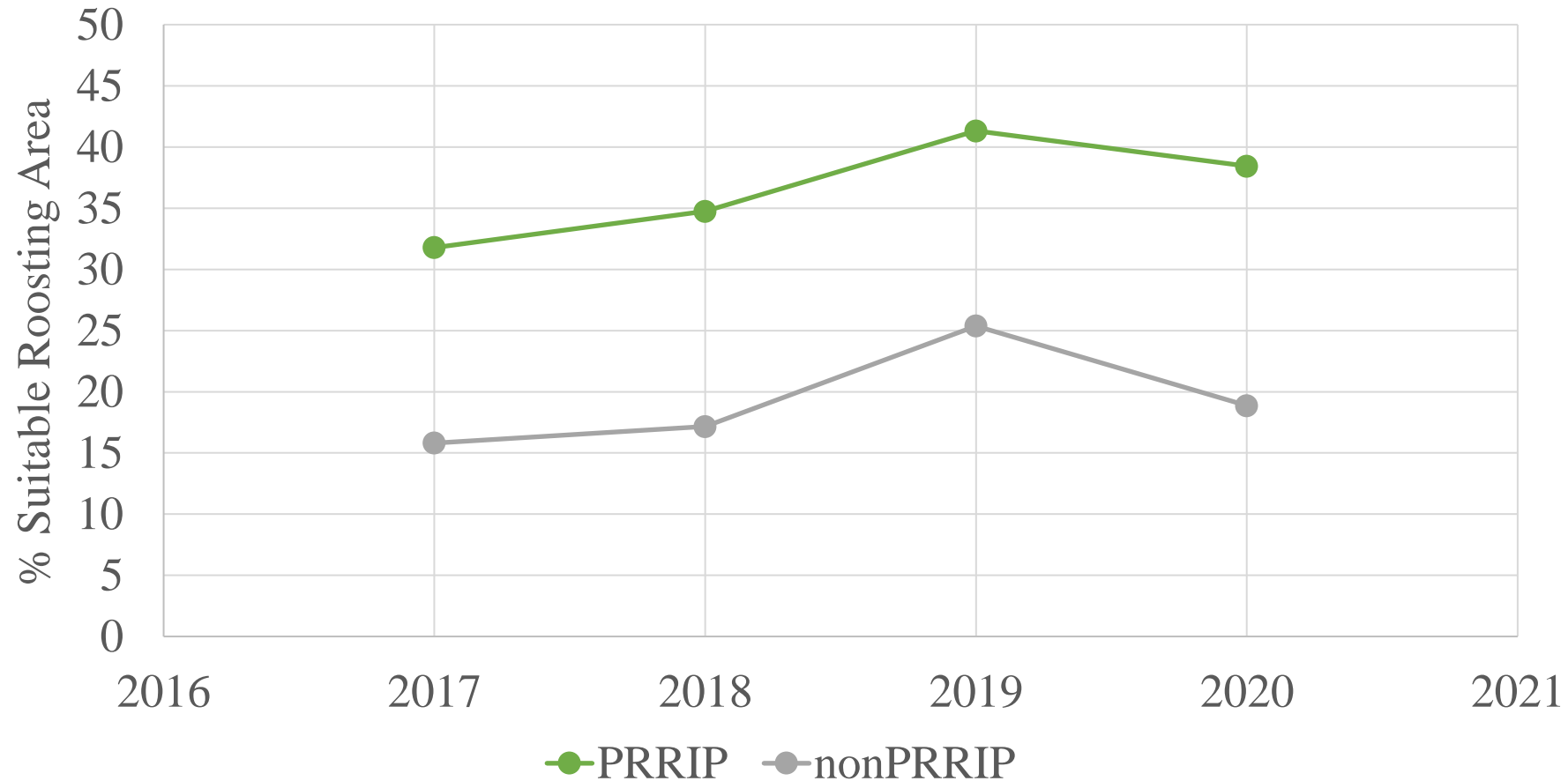
Suitable WC Roosting Area by Flow

2020, Overton to Chapman, All Channels



% Suitable WC Roosting Area Over Time

2000 cfs, Overton to Chapman, Main Channel



Conclusions

- Remote sensing methods are effective
- Habitat on the AHR relatively stable 2017-2020
- 2019 floods: minor habitat improvement
- 2020: return to pre-2019 levels
- Better habitat on PRRIP lands vs nonPRRIP

Next Steps

- Final report -- AMP Reporting Session
- Collaborating with Patrick Farrell
 - Machine-learning model to predict MUCW/TUCW
 - Exploring MUCW-TUCW relationship
- Support future management decision-making

Questions?

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