

# Shallow-Water Habitat in the LCRE A Highly Altered System

May 18, 2023

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# Why do we care and what to do?

1

Salmon matter

2

Salmon habitat is changing

3

We need to understand how salmon habitat is changing

# Path to Increased Understanding

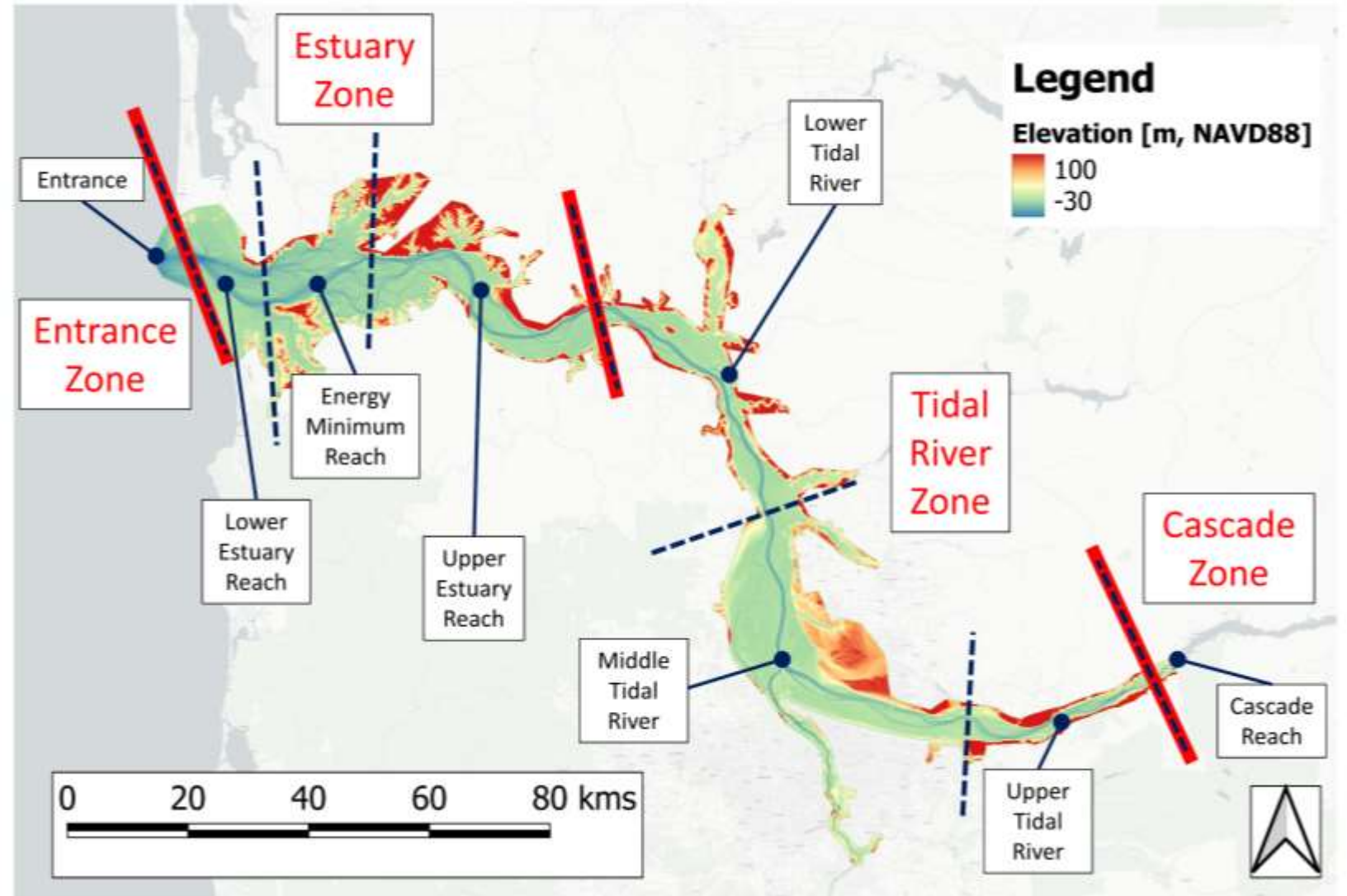
1

Investigate magnitude and causes of long-term changes in shallow water habitat area (SWHA) in the Lower Columbia River and Estuary (LCRE)

2

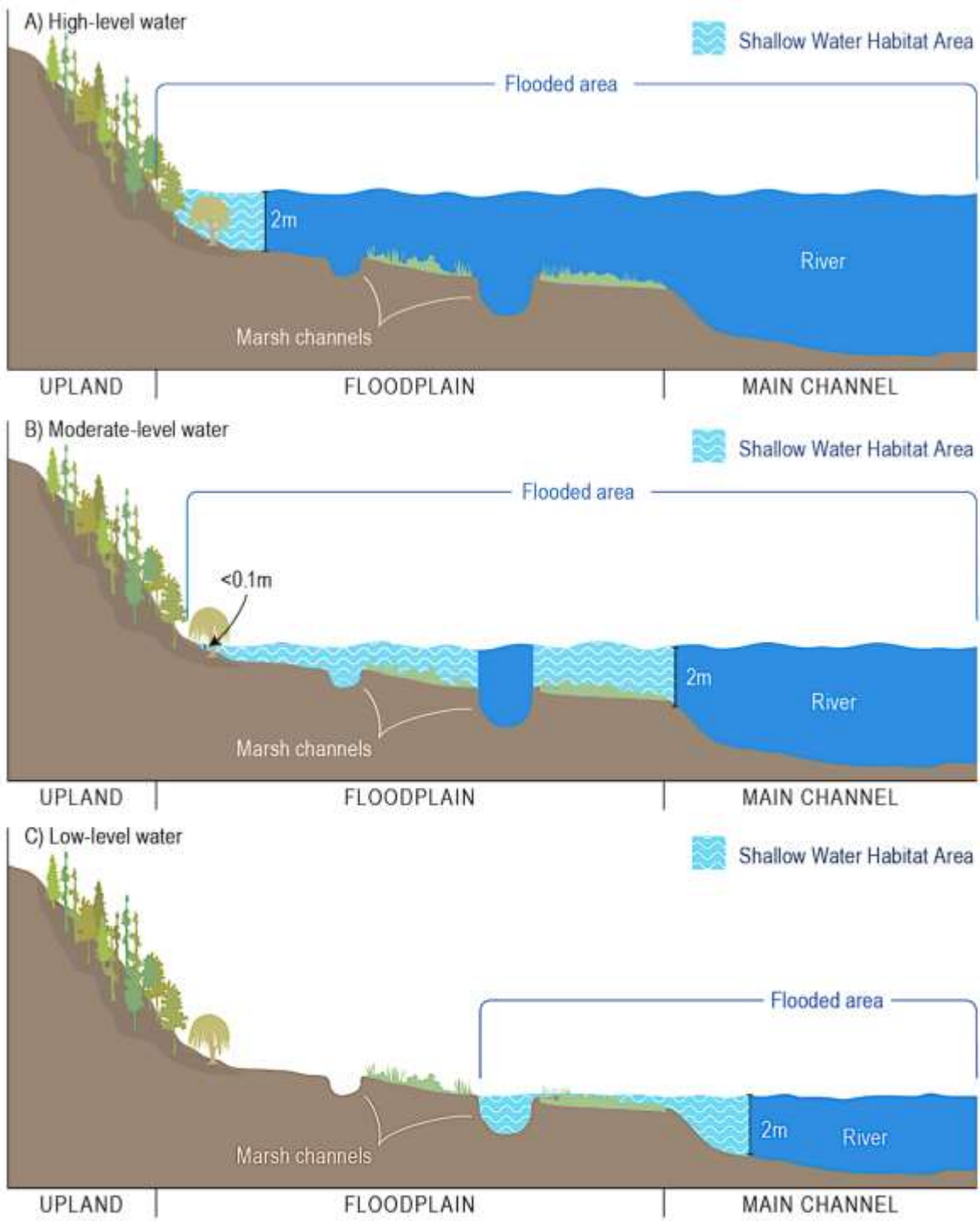
Evaluate influence of external stressors on SWHA in the LCRE

# Background



# Methods

- Hindcast Water Levels
- Hindcast SWHA
- Attribute Changes in SWHA to Stressors

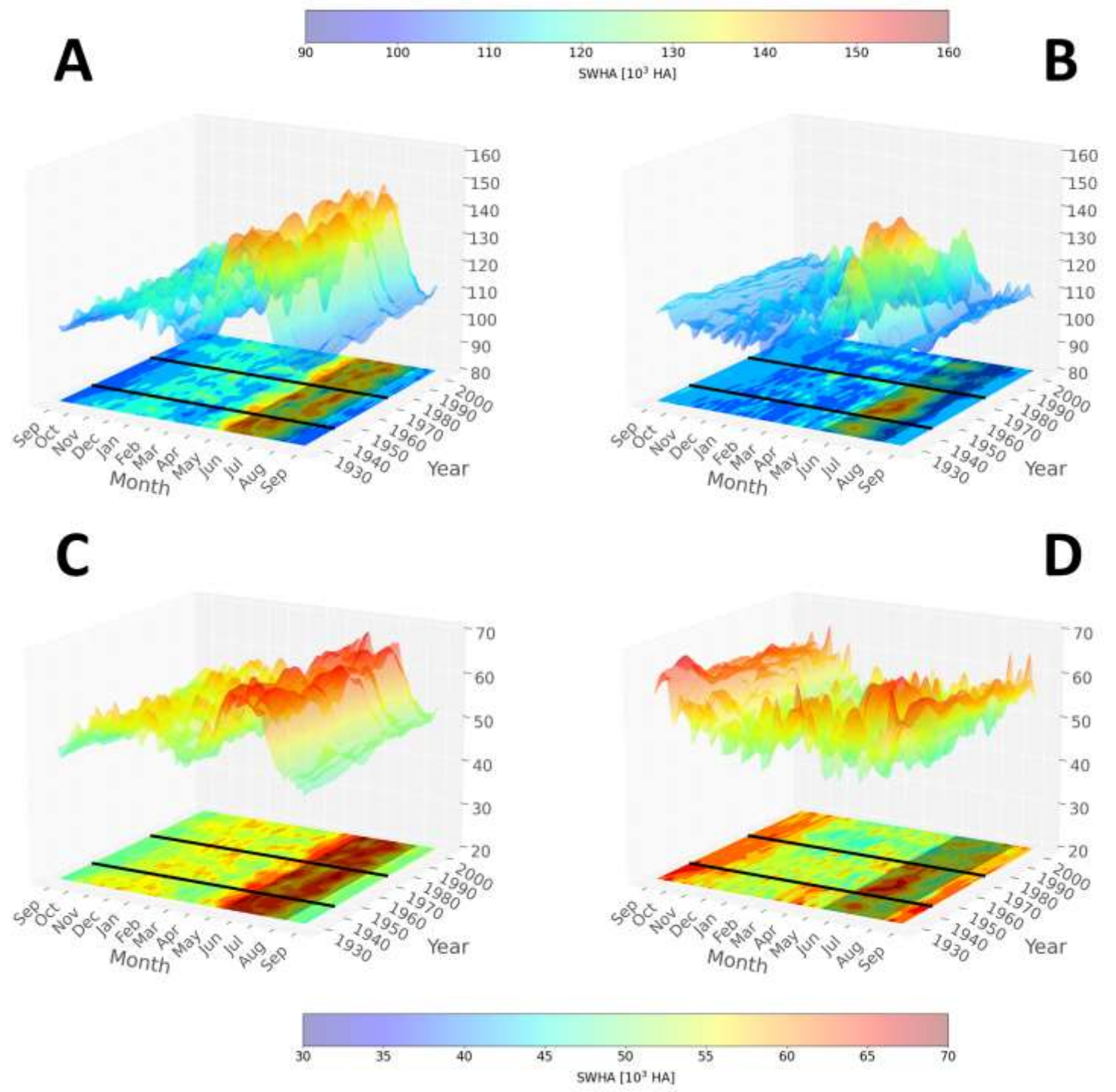


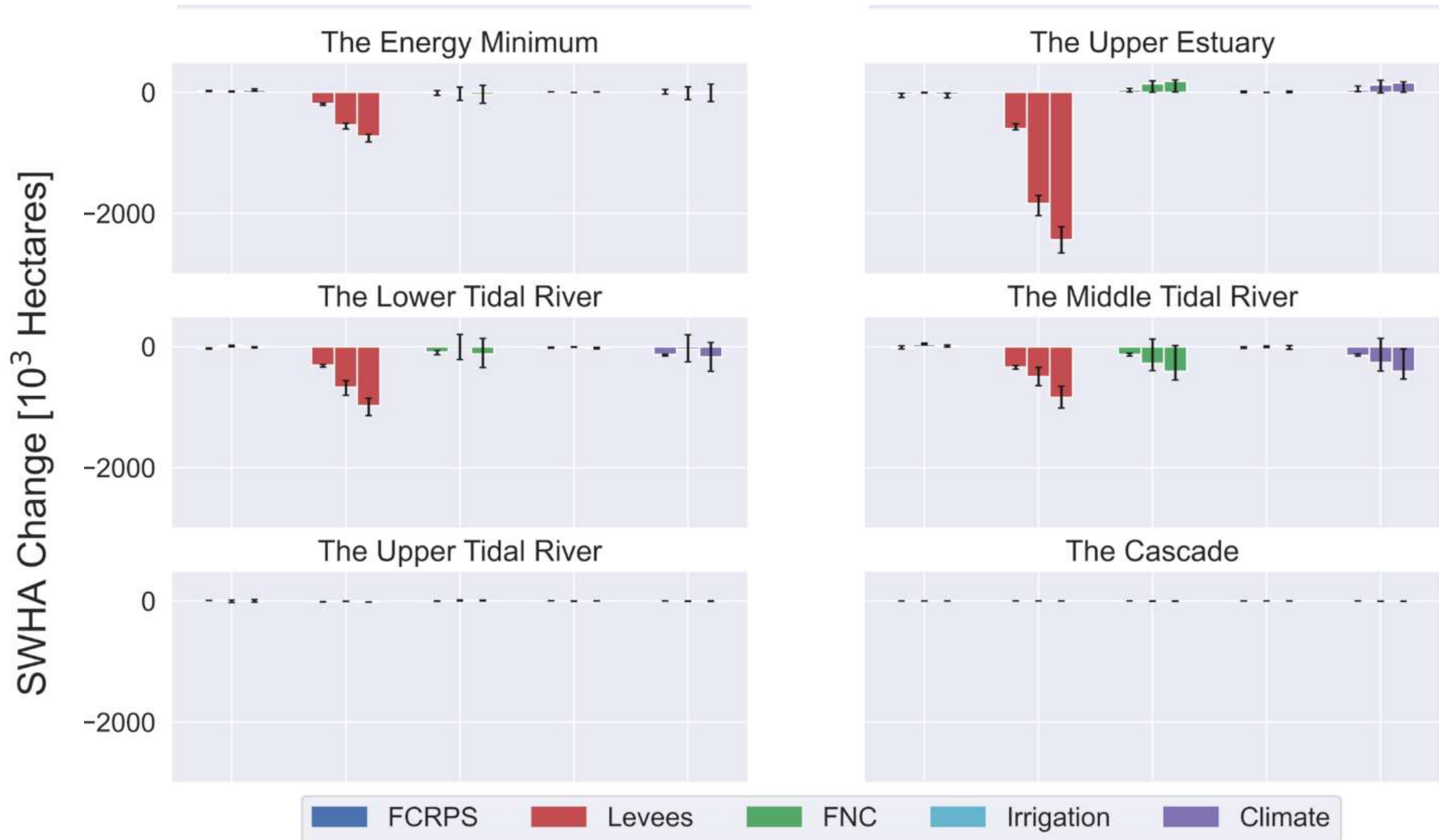
	Unaltered				Altered			
Factor	Model	Flows	Tides	Topo	Model	Flows	Tides	Topo
Levees	Per1	P1-n	P1	Con.	Per1	P1-n	P1	Iso.
FNC	Per1	P1-n	P1	Con.	Per3	P1-n	P3+P4	Con.
FCRPS	Per1	P3-a	P1	Con.	Per1	P3-o	P1	Con.
Irrigation	Per1	P3-n	P1	Con.	Per1	P3-a	P1	Con.
Climate Change	Per1	P0-n	P1	Con.	Per3	P3-n	P1	Con.
Total Loss	Per1	P1-n	P1	Con.	Per3	P3-o	P3	Iso.
Subsidence	Per1	P1-n	P1	Con.+Subs.	Per1	P1-n	P1	Con.



# SWHA

- Naturalized  $\rightarrow$  peak SWHA during freshet
- Observed  $\rightarrow$  SWHA more spread out
- Isolation results in substantially reduced SWHA





54%

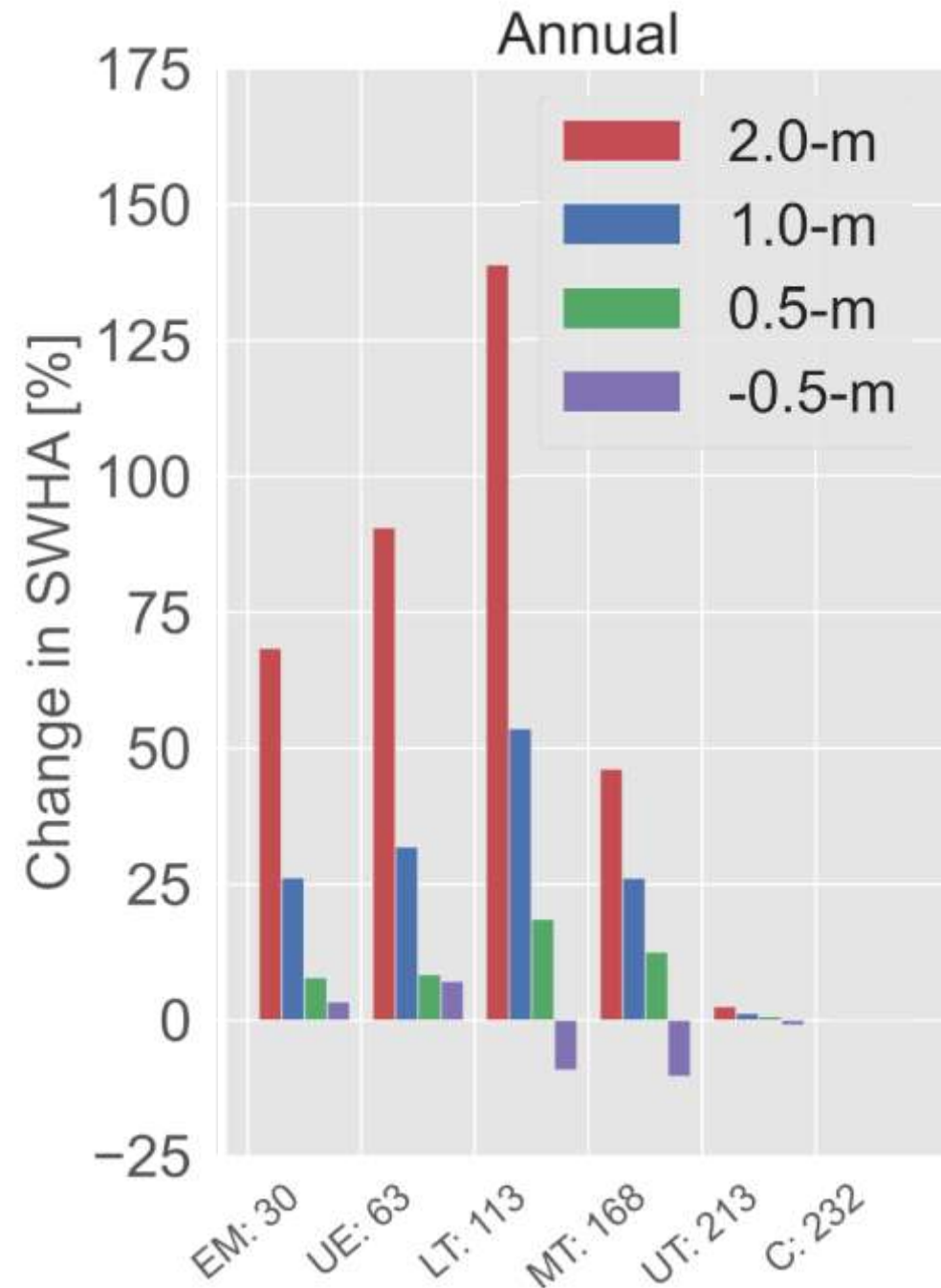
4%

5%



# Subsidence

- Greater assumed subsidence → more SWHA from historical to modern periods
- Subsidence Matters!



# Implications

1

Floodplain Isolation

2

Reconnection

3

Climate and Future Flows

4

Subsidence and Infill

# Acknowledgements

- BPA for funding the study
- PNNL for management and project resources
  - Amy Borde
  - Shon Zimmerman