

When and Where can Coastal Wetland Restoration Increase Carbon Sequestration as a Natural Climate Solution?

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Co-authors

*Cambridge Prisms: Coastal
Futures*

When and where can coastal wetland restoration increase carbon sequestration as a natural climate solution?

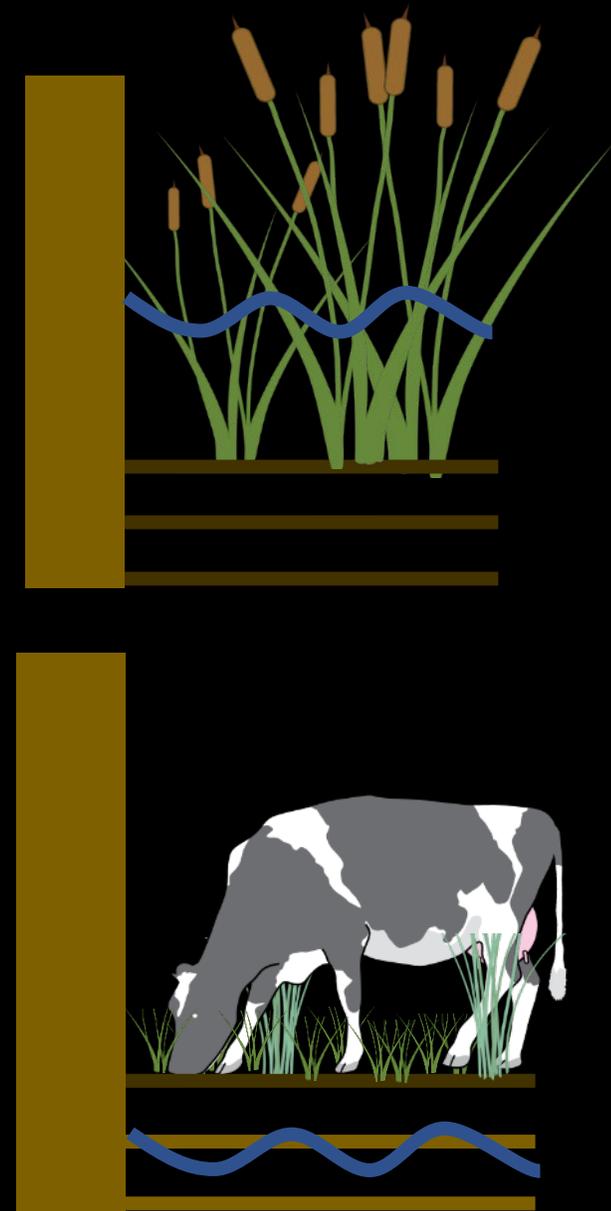
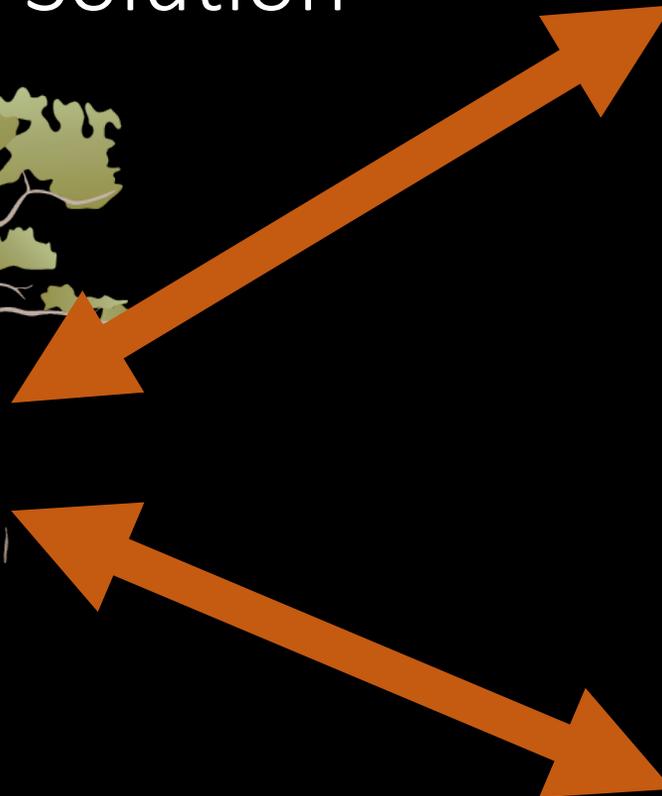
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When and where can coastal wetland restoration increase carbon sequestration as a natural climate solution?

Coastal Wetlands are Hotspots of C Sequestration

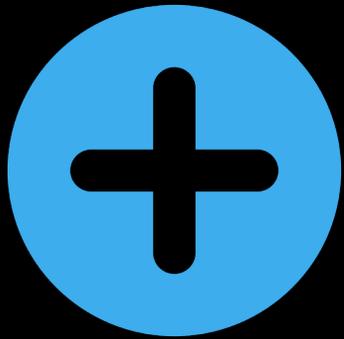


Coastal Wetland Restoration/Management can be a Natural Climate Solution



How can we maximize the effectiveness of restoration for climate benefits?

Maximize 3 Fundamental Criteria:



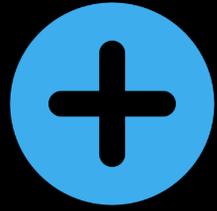
Additionality



Feasibility

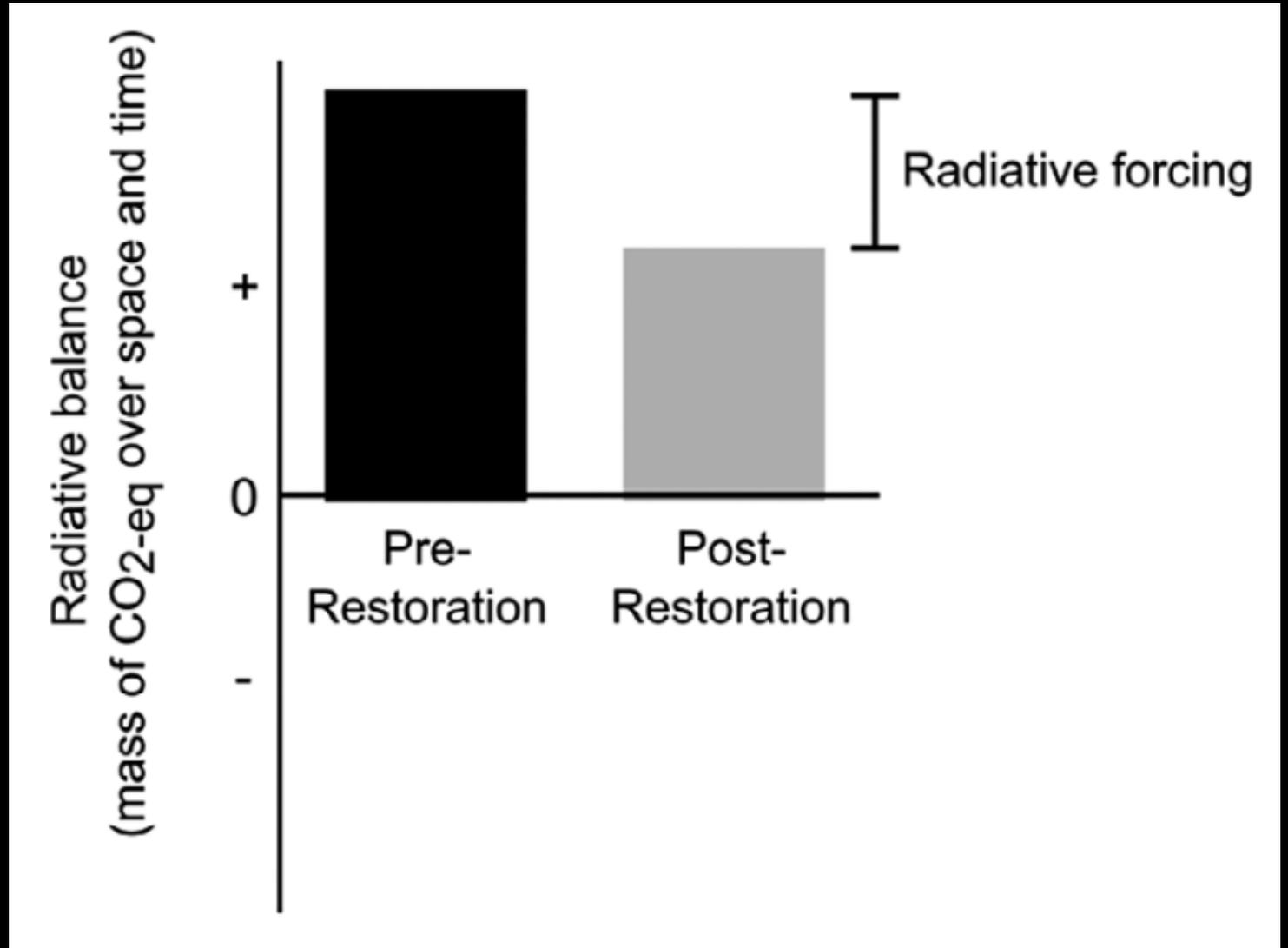


Permanence



Additionality

The climate cooling benefit (net negative radiative forcing) due to a specific management action





Feasibility

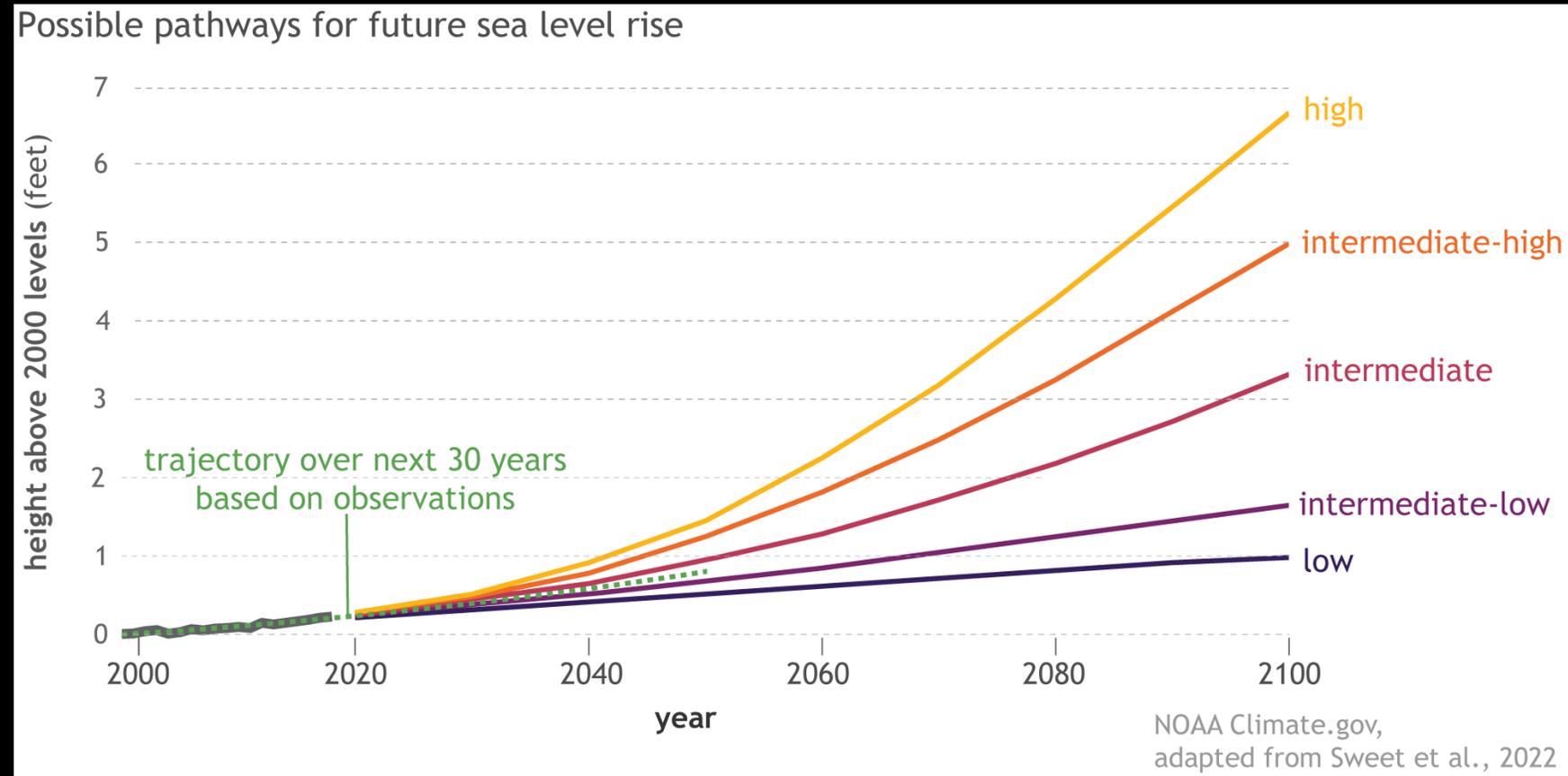
The capacity for a management action to be successfully carried out



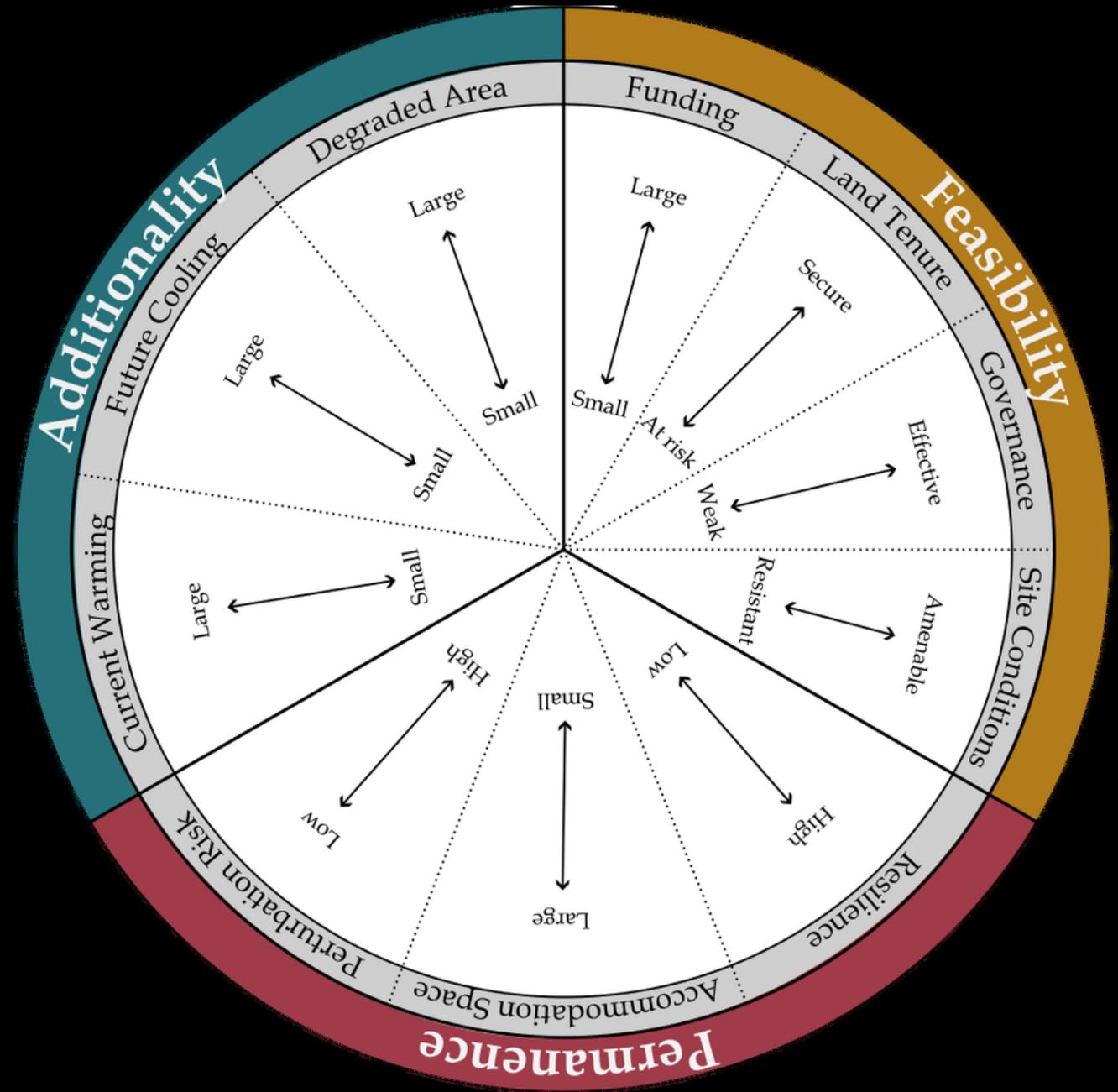


Permanence

The capacity for cooling benefits to persist over time



How do we maximize
Additionality,
Feasibility, and
Permanence?



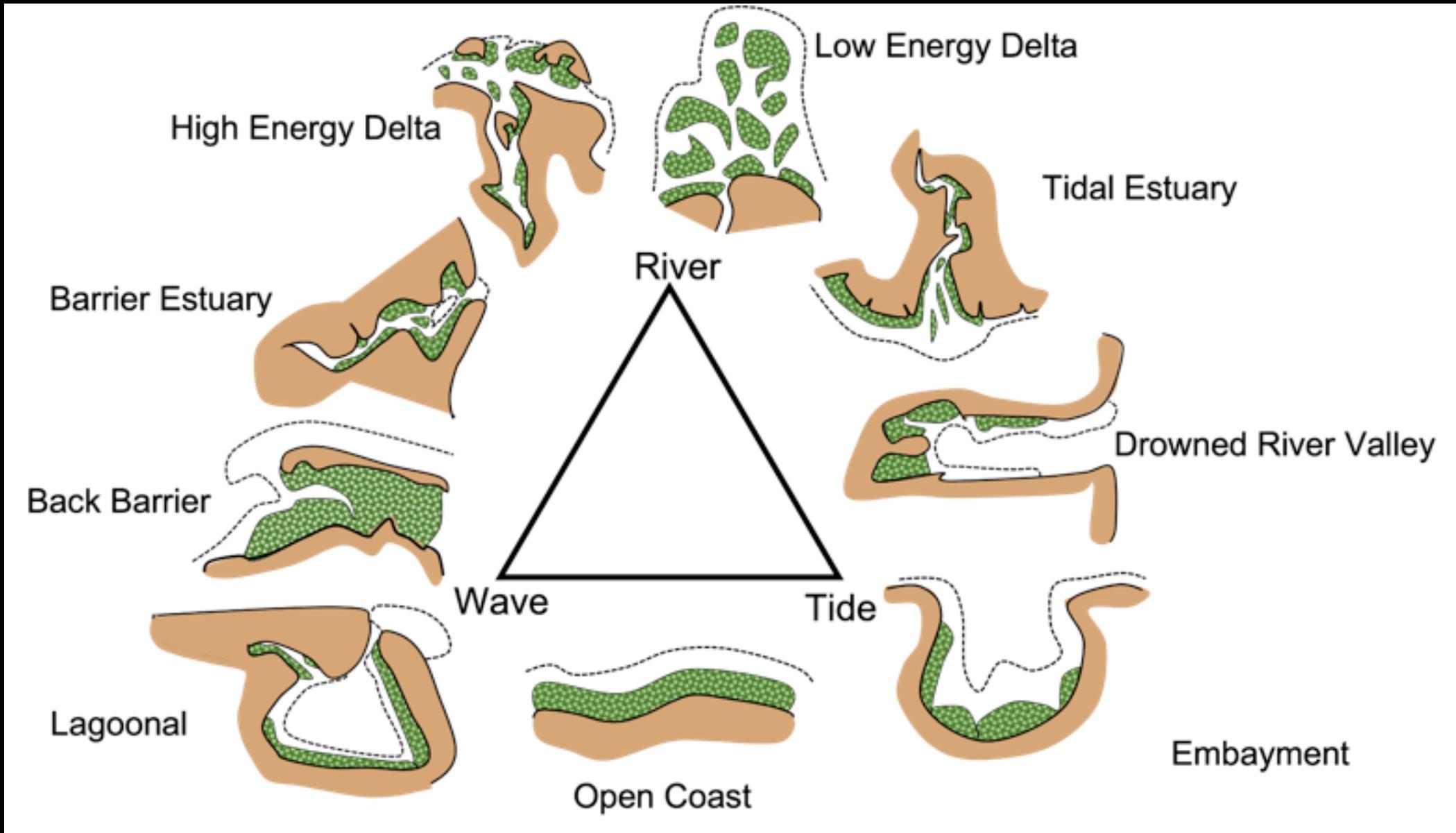
How do we maximize Additionality, Feasibility, and Permanence?

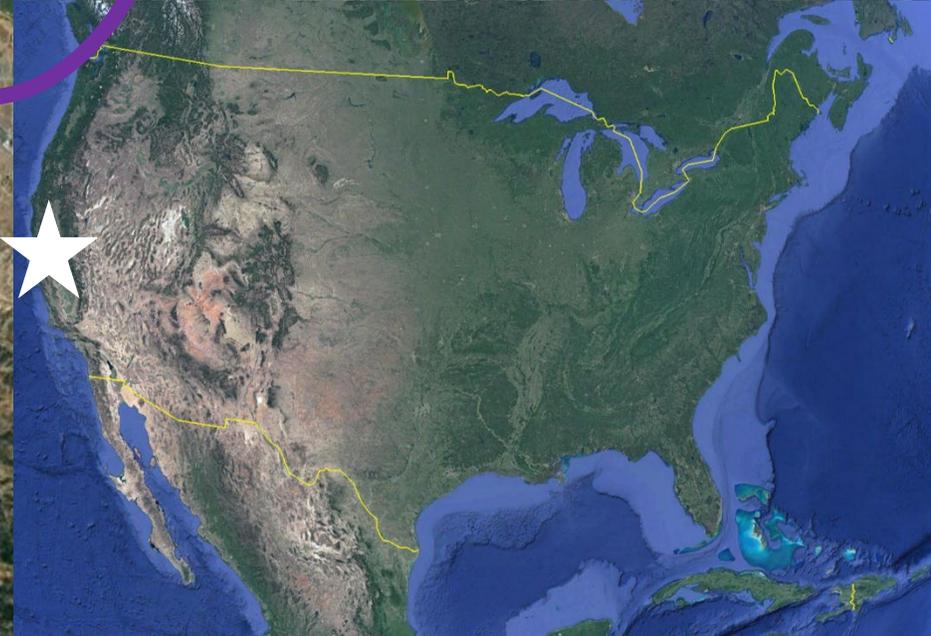
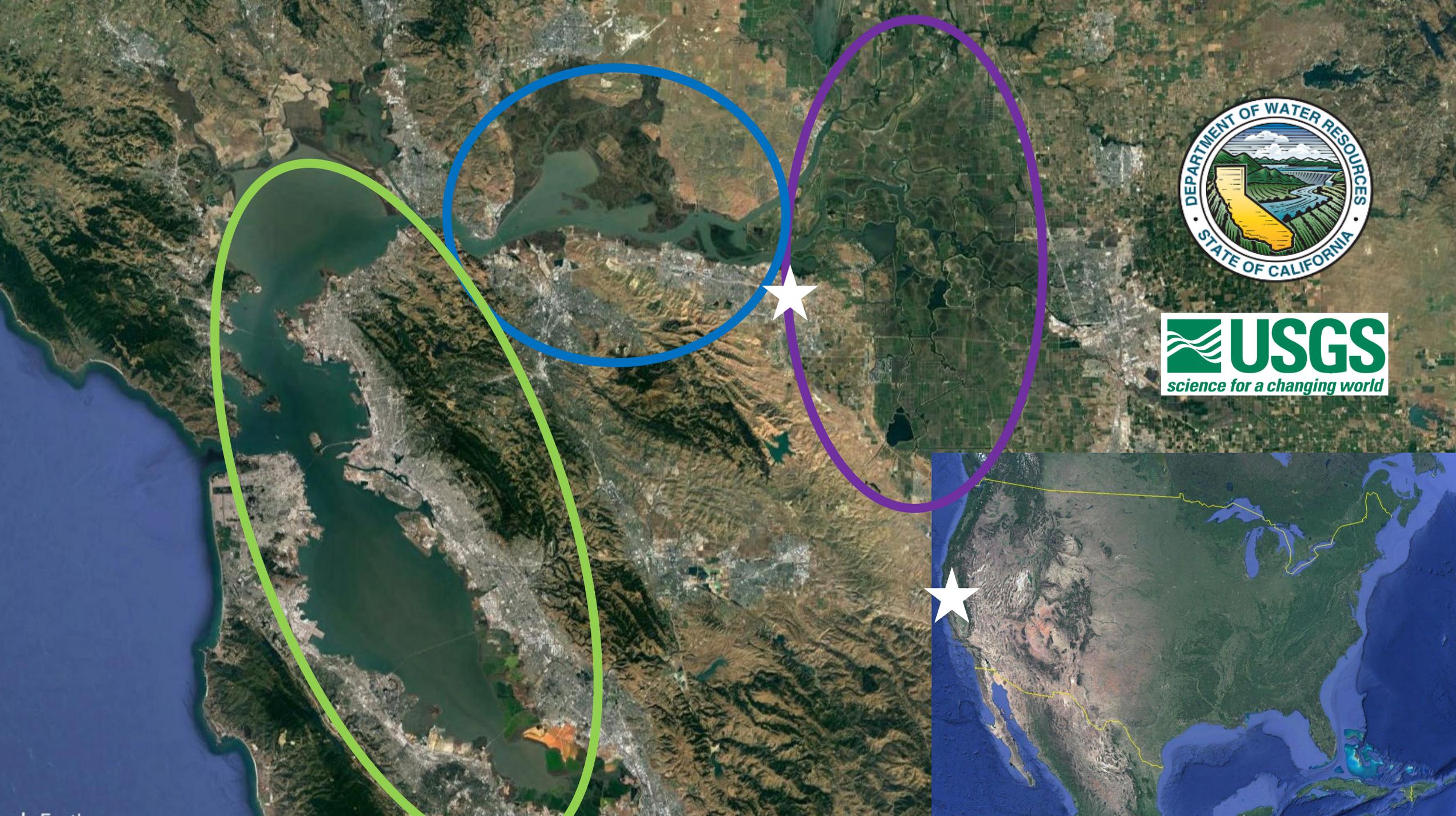
“All the [regional setting]'s a stage,
And all the [wetland scientists and
managers] merely players”

-(with apologies to) William Shakespeare

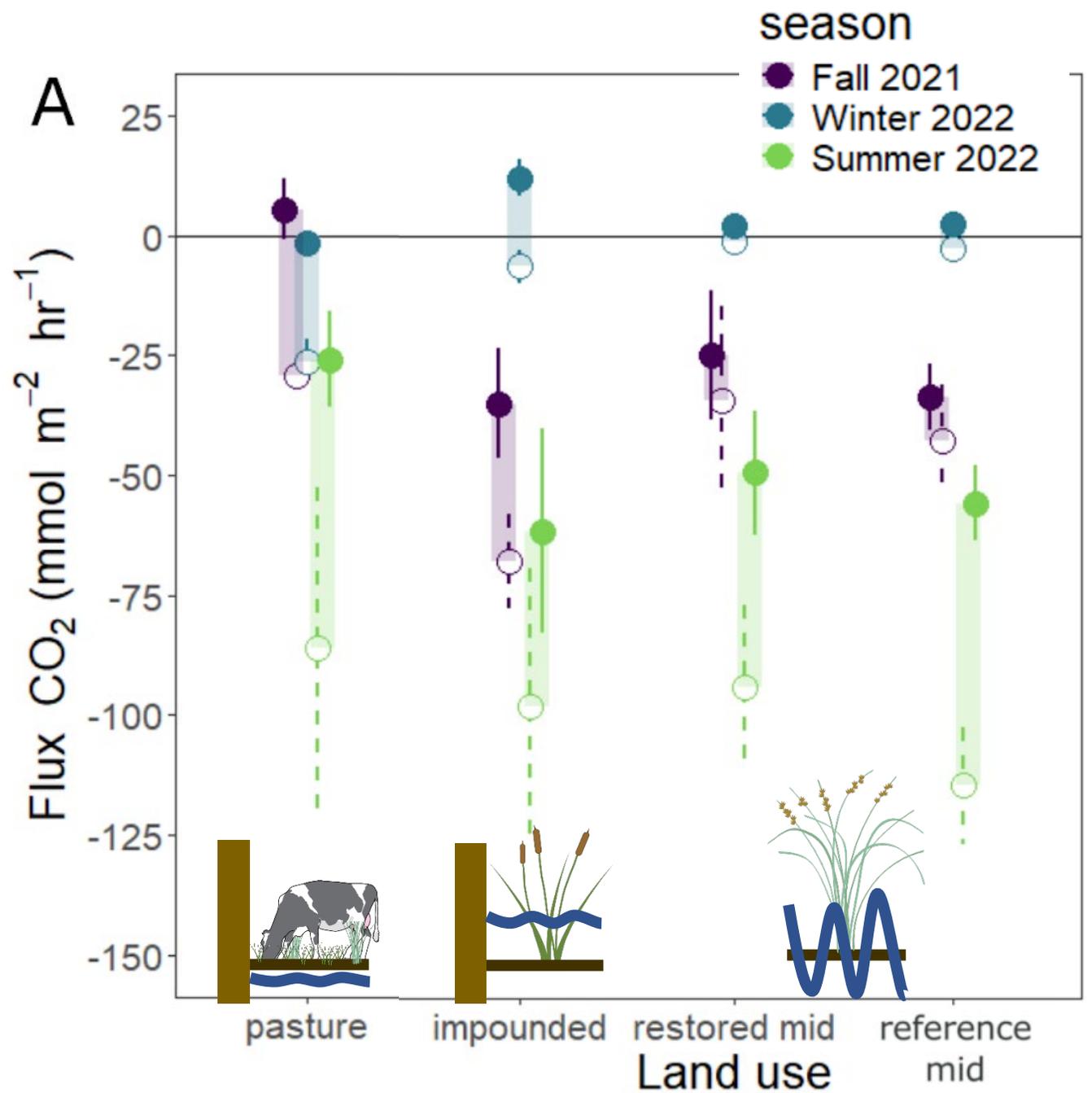
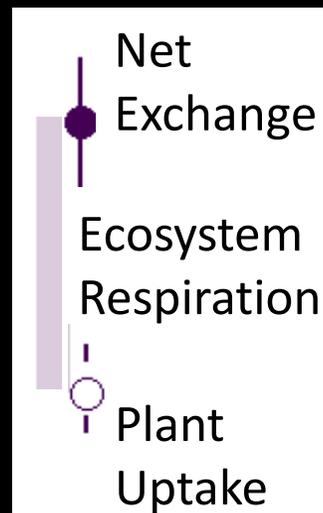




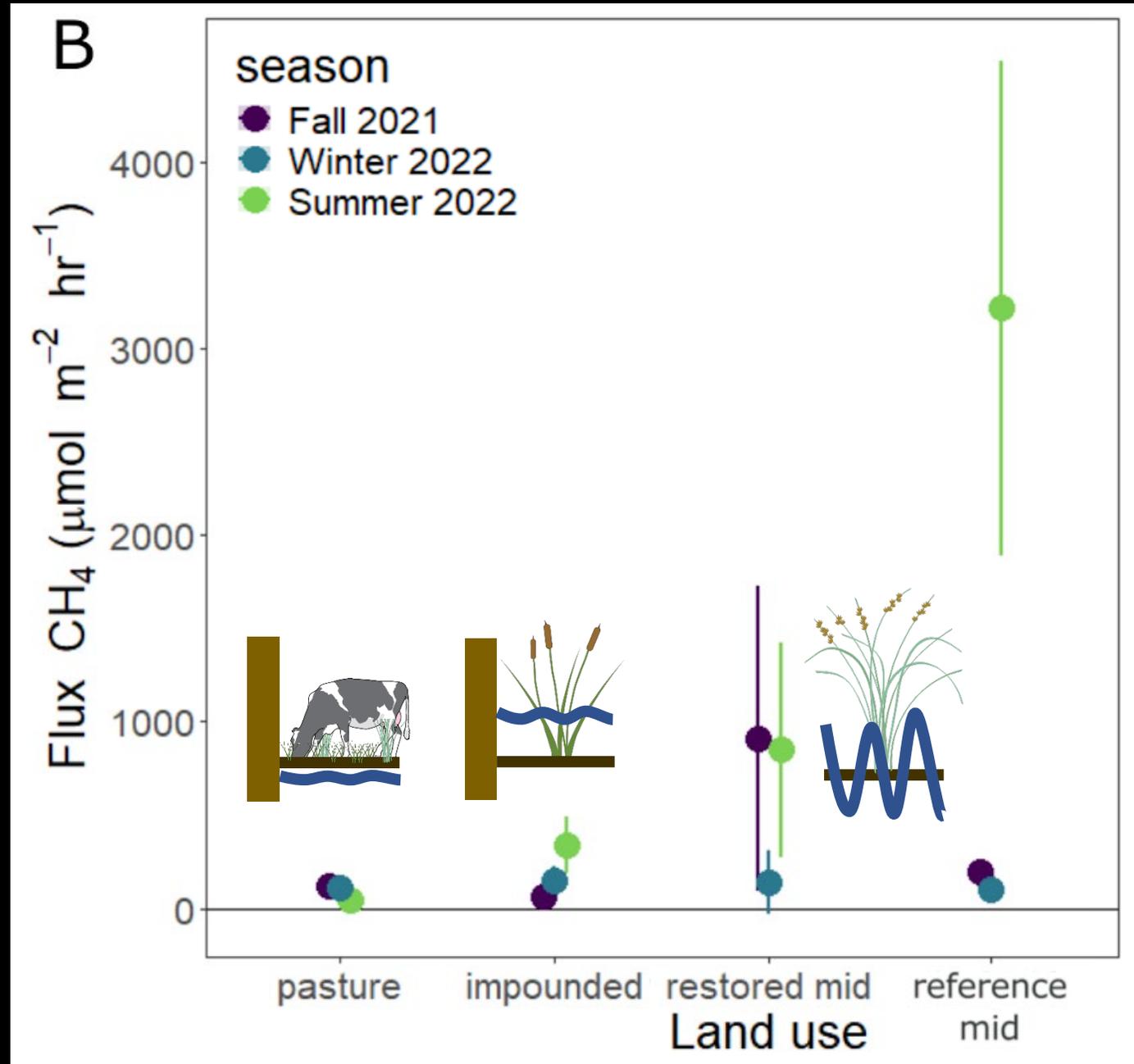


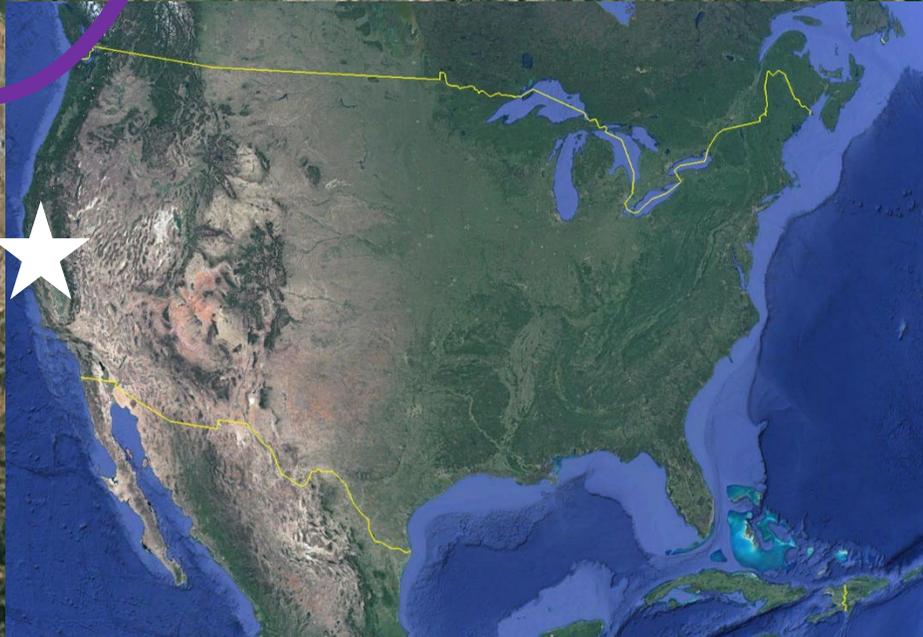
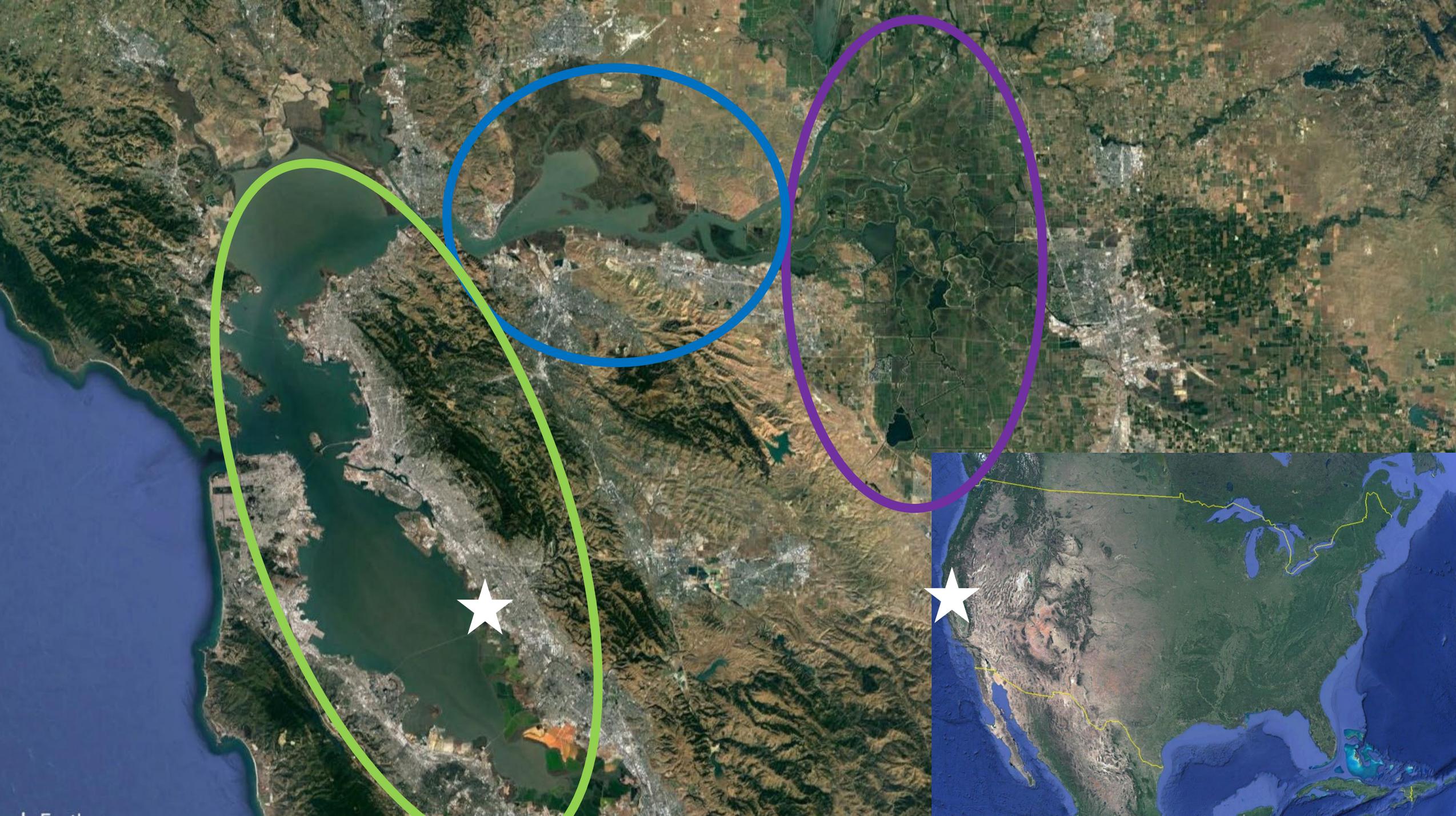


Restored fresh-
oligohaline marsh
has greater CO₂
uptake than
alternatives

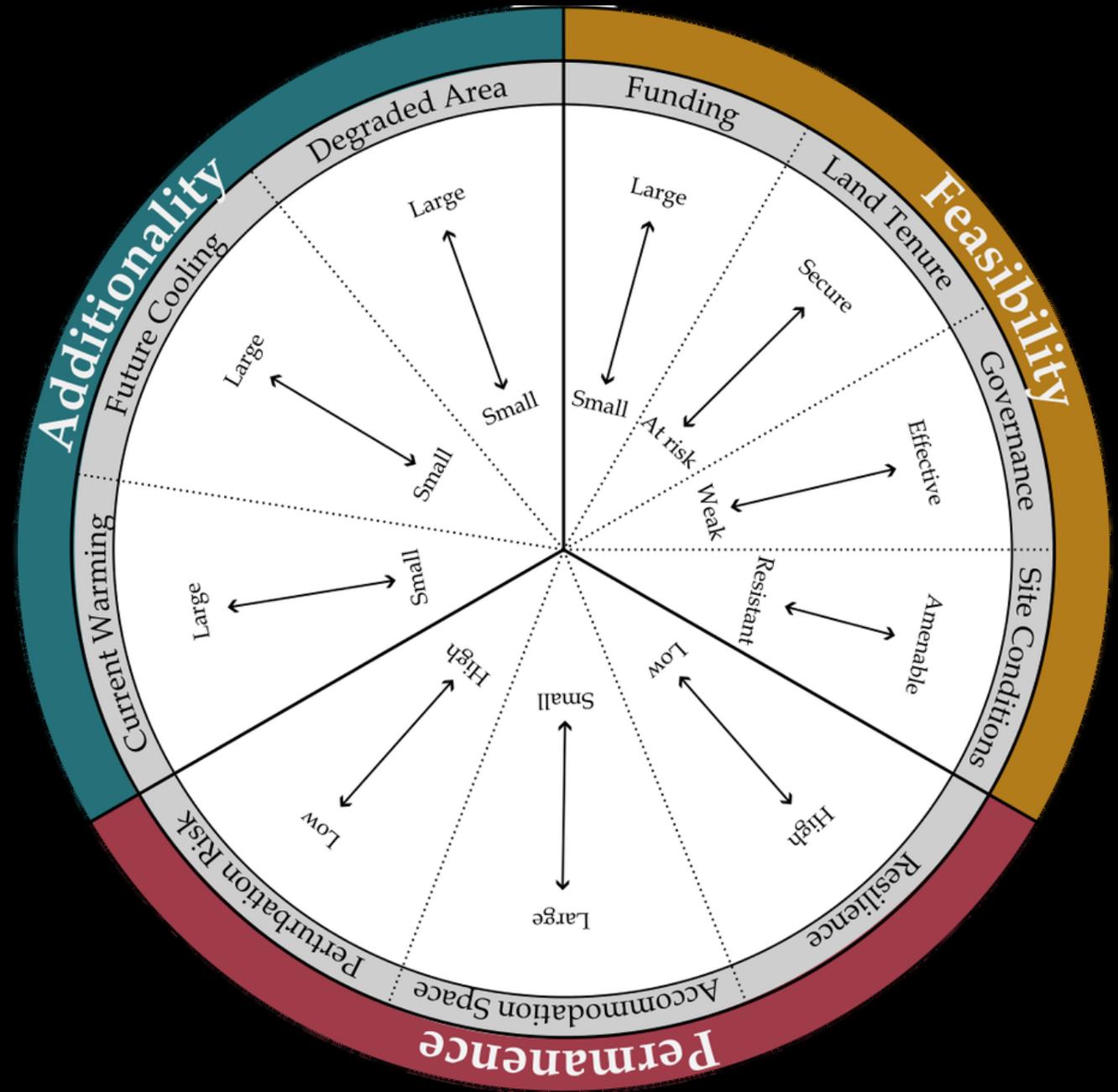


Restored fresh-
oligohaline marsh
has greater CH₄
emission than
alternatives (but less
than reference)





How do we maximize
Additionality,
Feasibility, and
Permanence?

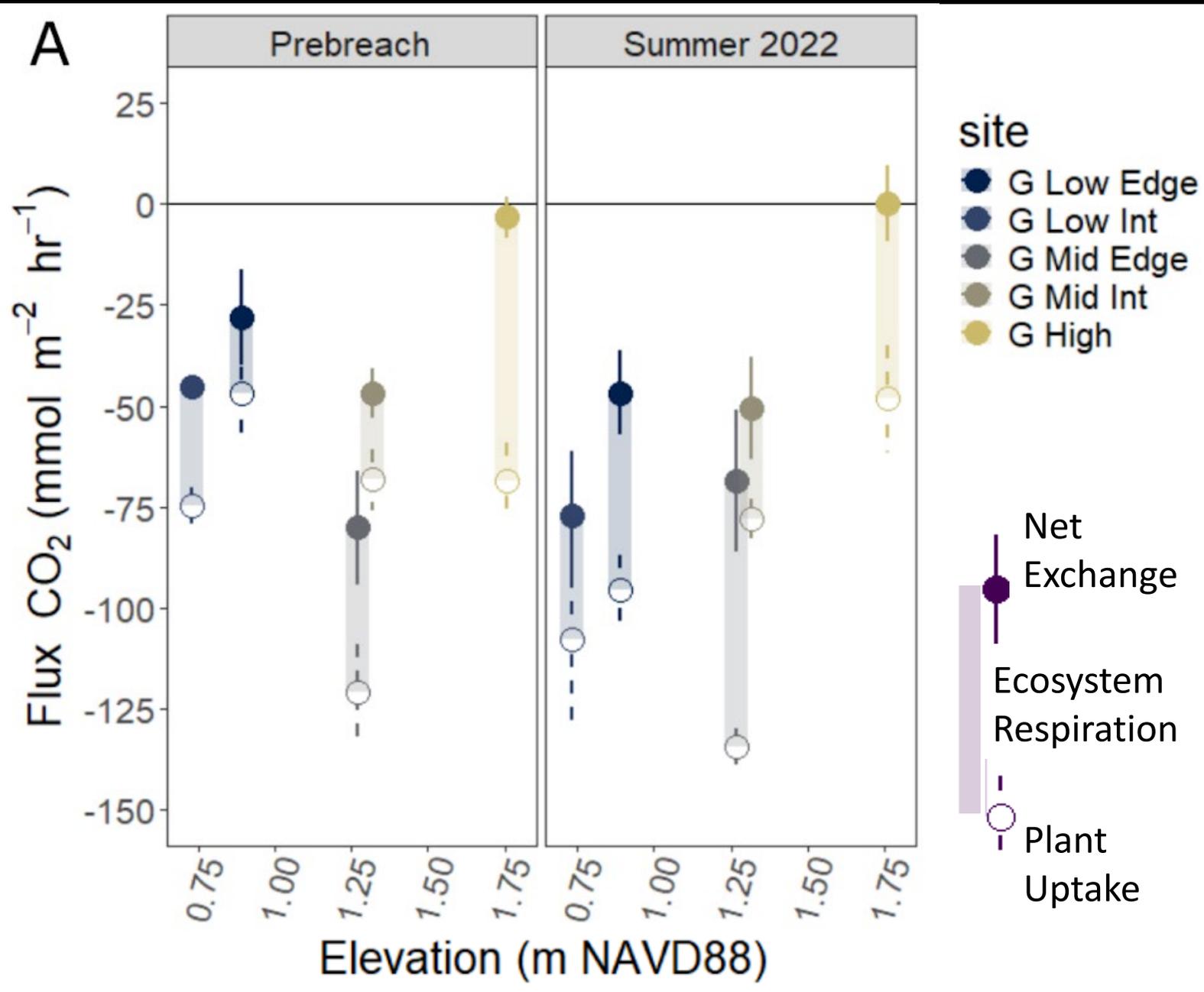


What leverage do practitioners actually have to fine-tune effectiveness within regional constraints?

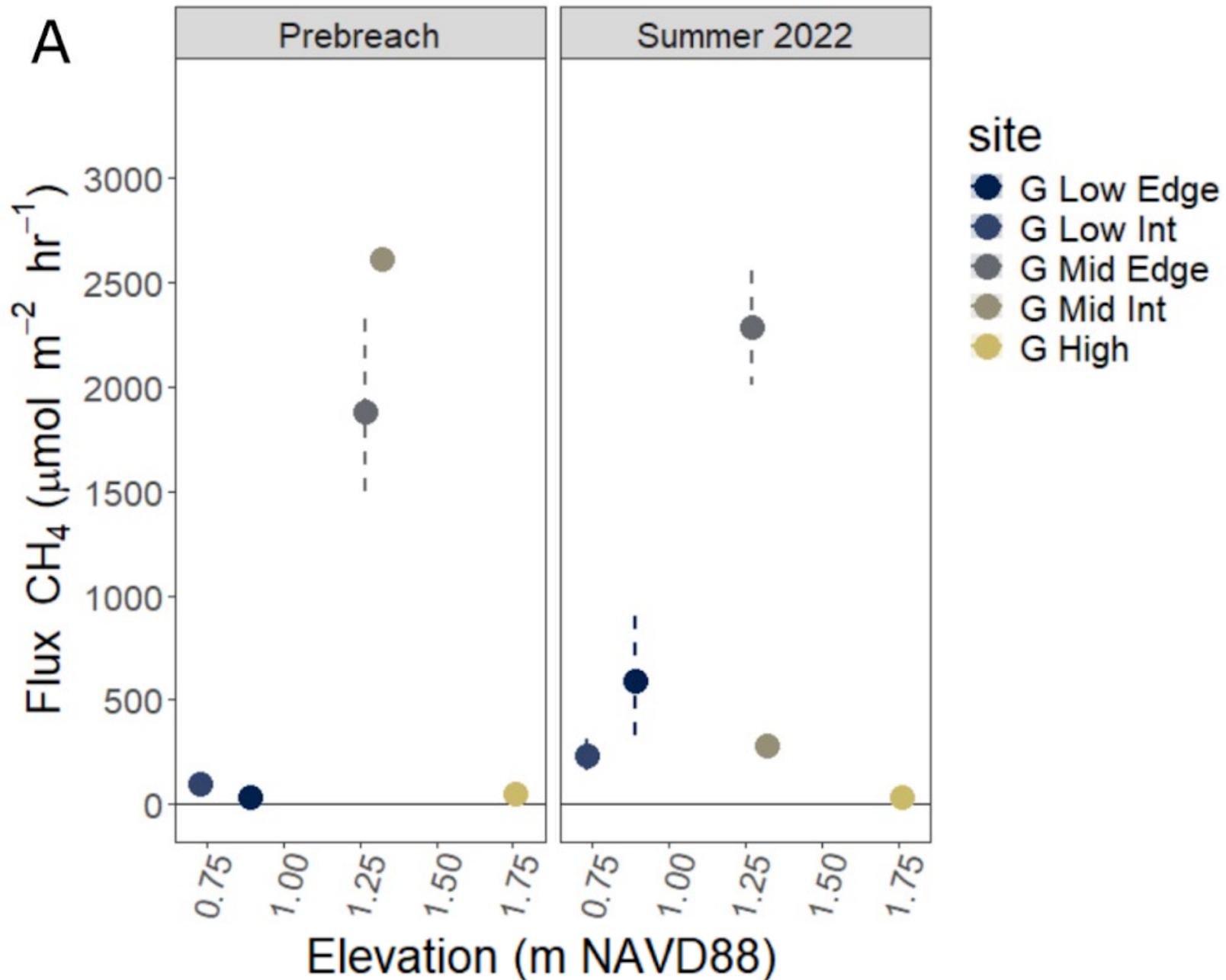
Design choices to maximize effectiveness



Design choices influenced CO₂ net exchange



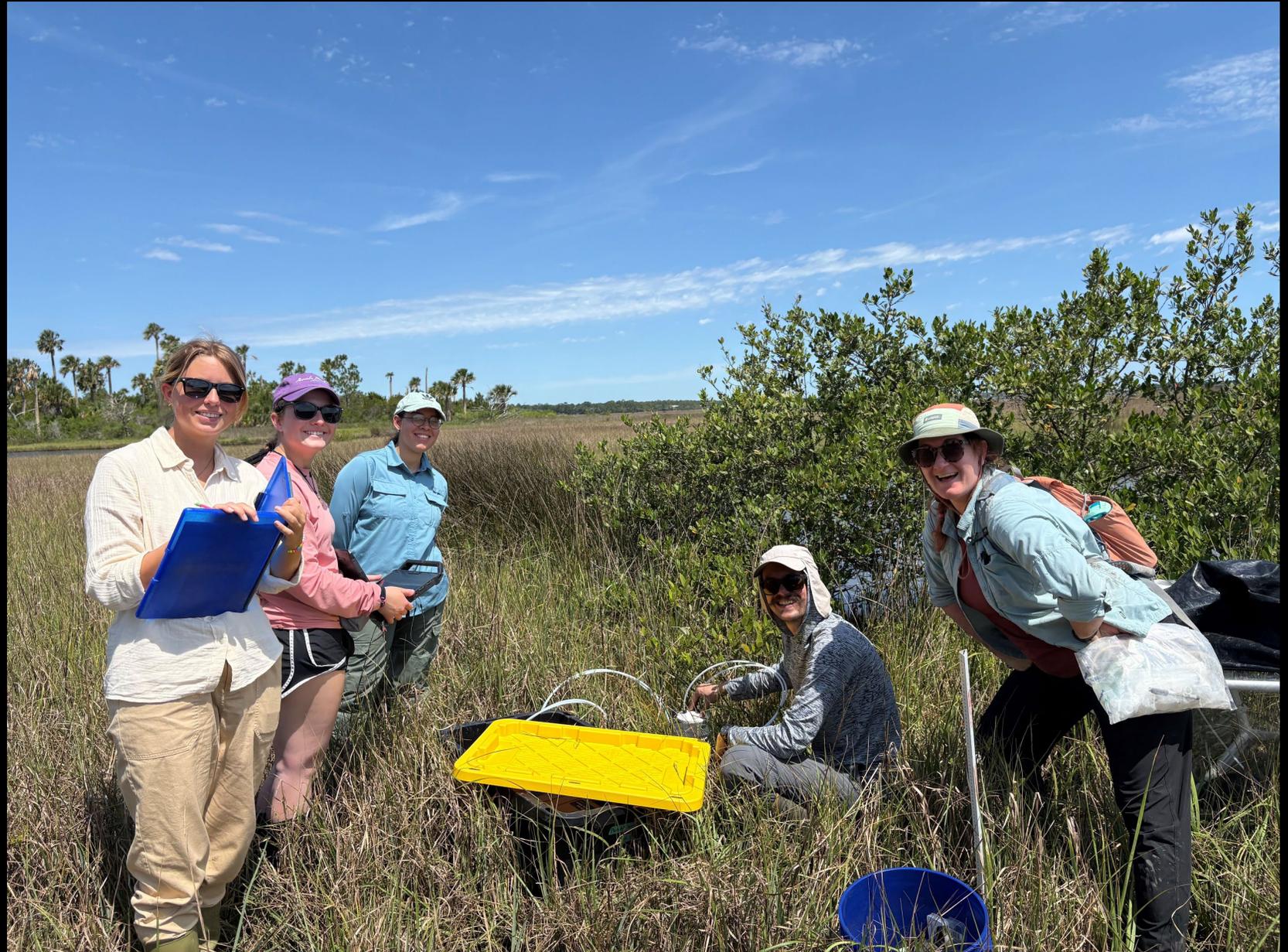
Design choices
influenced CH₄
emissions



Species selection to maximize effectiveness



Stay tuned!



How can we answer when and where?



Maximize Additionality, Feasibility, and Permanence...

By understanding the constraints set by regional drivers...

And fine-tuning site design choices

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