

Delta Restoration Hub Overview

Campbell Ingram

with

Jessica Davenport, Chris Enright,

Eric Ginney,

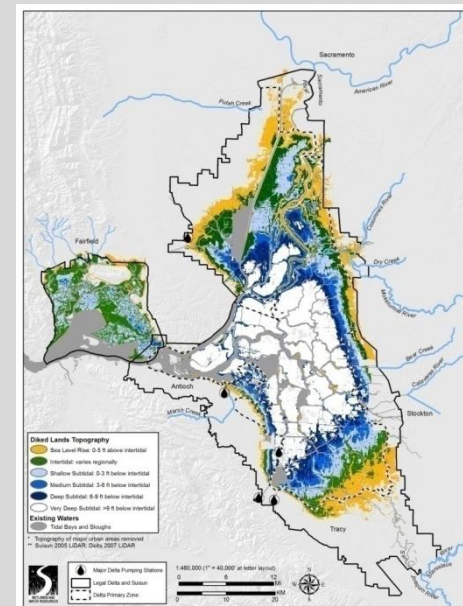
Robin Grossinger, Tony Hale,

Lauren Hastings,

Daniel Huang, Mark Tompkins,

Mike Urkov

10-29-14



Objectives of a 3-year Pilot Hub

- Bring together technology, people and process to ensure best available science, local input and adaptive management—cornerstones of an effective Delta restoration program.
- Address fundamental problems that currently delay projects moving from concept to construction.
- Help coordinate and integrate Delta restoration initiatives.

Who Developed the Hub

- Delta Restoration Network – 11 agencies (DWR, SFCWA, DFW, NMFS, USFWS, COE, SMRCDD, DSC, DSP, DPC, DC), NGO's (TNC, Audubon, American Rivers, SFEI), Consultants (ESA, Wetlands and Water Resources, MWH, NewFields), and Delta community (5 County Coalition)
- Small subset group developing the Hub proposal (DC, DSC, DSP, SFEI, ESA, NewFields)

Problem/Opportunity Statement

Delta restoration planning currently lacks:

- A broadly accepted landscape-scale restoration vision for the six recognized restoration opportunity areas supported by conceptual and mechanistic models
- Sufficient early engagement of the Delta community
- Modeling, data inventory, and synthesis tools to support analyses, information sharing, and adaptive management
- A standing expert restoration design team to
 - Support timely property-scale restoration project planning
 - Develop long-term restoration visions for restoration opportunity areas
 - Consider the Delta-wide effects and cumulative impacts of restoration projects

What is the Restoration Hub

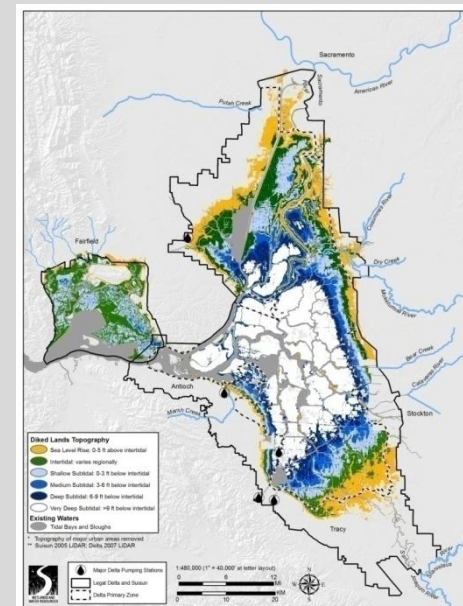
- Tools, Standing Panel, and Process (think smartphone and DRERIP)
- Ensures best available science, local input and AM in landscape visions and individual projects
- Intended to speed up the process and result in cost savings
- Not mandatory! (FRPA, FAST, BDCP)
- Free tools!!!

Punch line at the top

Stand up a expert hub team supported by models and data analysis for

- Regional landscape visions
- Restoration design alternatives
- Grasp the ecosystem cascade

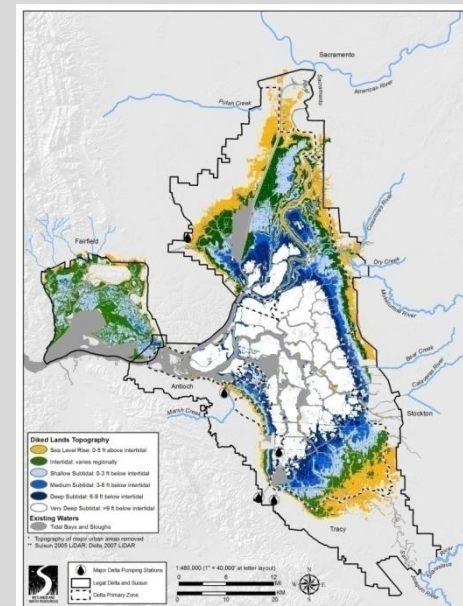
Credible, skillful, fast, voluntary



What the Hub **does**

Restoration is many steps:

- Acquisition
- Site evaluation
- Neighbor issues
- Permits
- Credit application
- CEQA
- Construction
- Levees/flood protection
- Land ownership and O&M
- Performance measurement
- Adaptive management over time

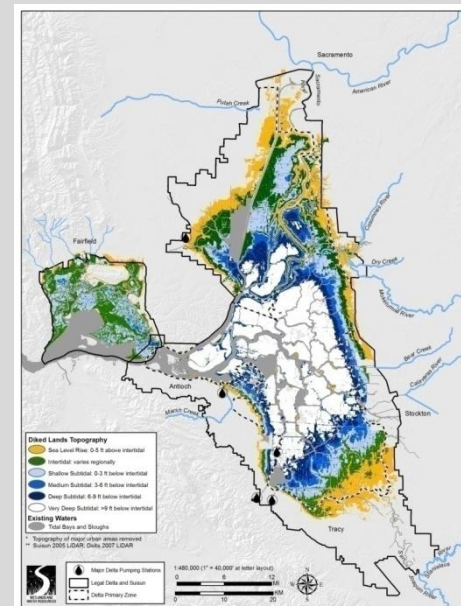


What the Hub ~~does~~ or not

Restoration is many steps:

- Acquisition
- Site evaluation
- Neighbor issues
- Many permits
- Credit application
- CEQA
- Construction
- Levees/flood protection
- Land ownership and O&M
- Performance measurement
- Adaptive management over time

Not Hub activities

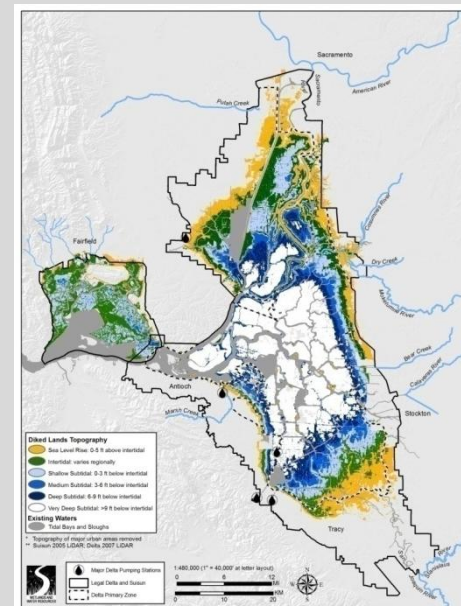


What the Hub ~~does~~ or not

Restoration is many steps:

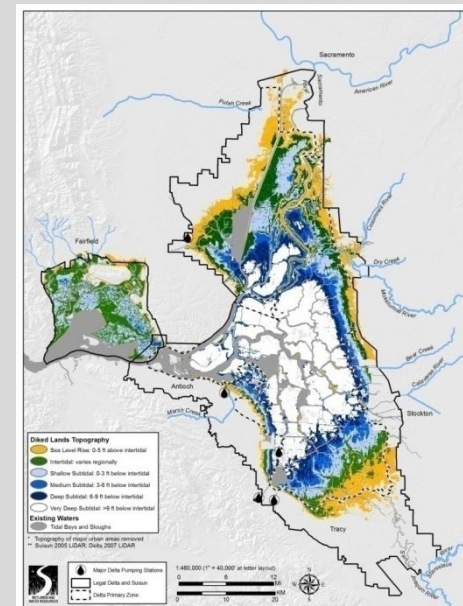
- Acquisition
- Site evaluation
- Neighbor issues
- Many permits
- Credit application
- CEQA
- Construction
- Levees/flood protection
- Land ownership and O&M
- Performance measurement
- Adaptive management over time

But it might help...



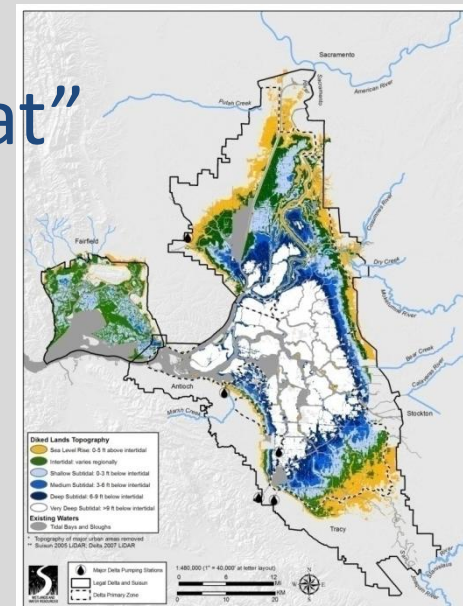
What the Hub **does**

- Regional landscape scale visions
- Restoration design alts (DRERIP)
- Cumulative impacts—ecosystem cascade
- Recommend science going forward



What the Hub **is**

- Recognized multi-disciplinary experts with key agency and stakeholder folks
- A data and modeling analysis center
- A center for decision support
- A place where “what if” and “so what” are THE questions



Why a restoration Hub?

At the scales envisioned:

*(Bumper stickers
will be issued)*

Changes change the changes

Effects affect the effects

Why a restoration Hub?

At the scales envisioned:

Restoration effects are

- *Non-linear*
- *Thresholds*
- *Feedbacks*
- *Eco-cascades*

➤ ***In a word: Complex***

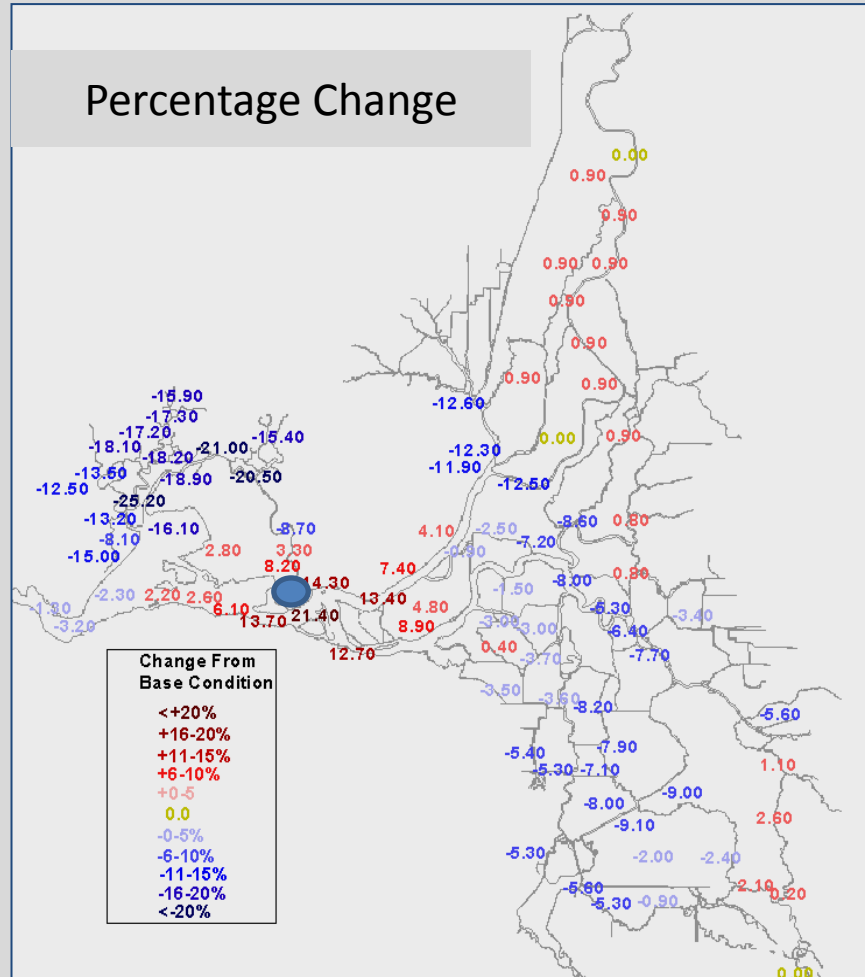
➤ ***Yet tractable if we set ourselves up well***

Changes change the changes

Effects affect the effects

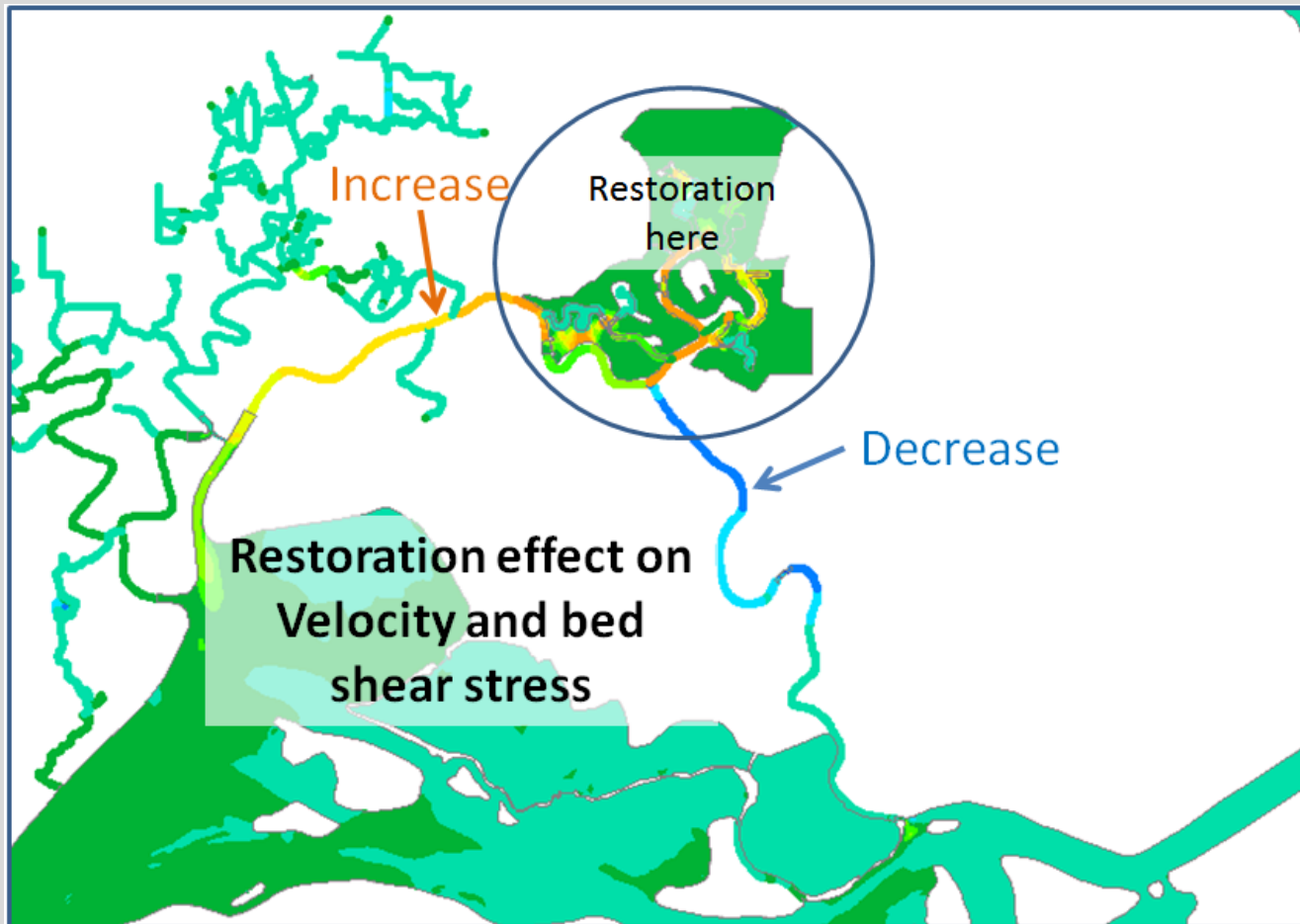
Why a restoration Hub?

Restoration will: Decrease *and* increase salinity



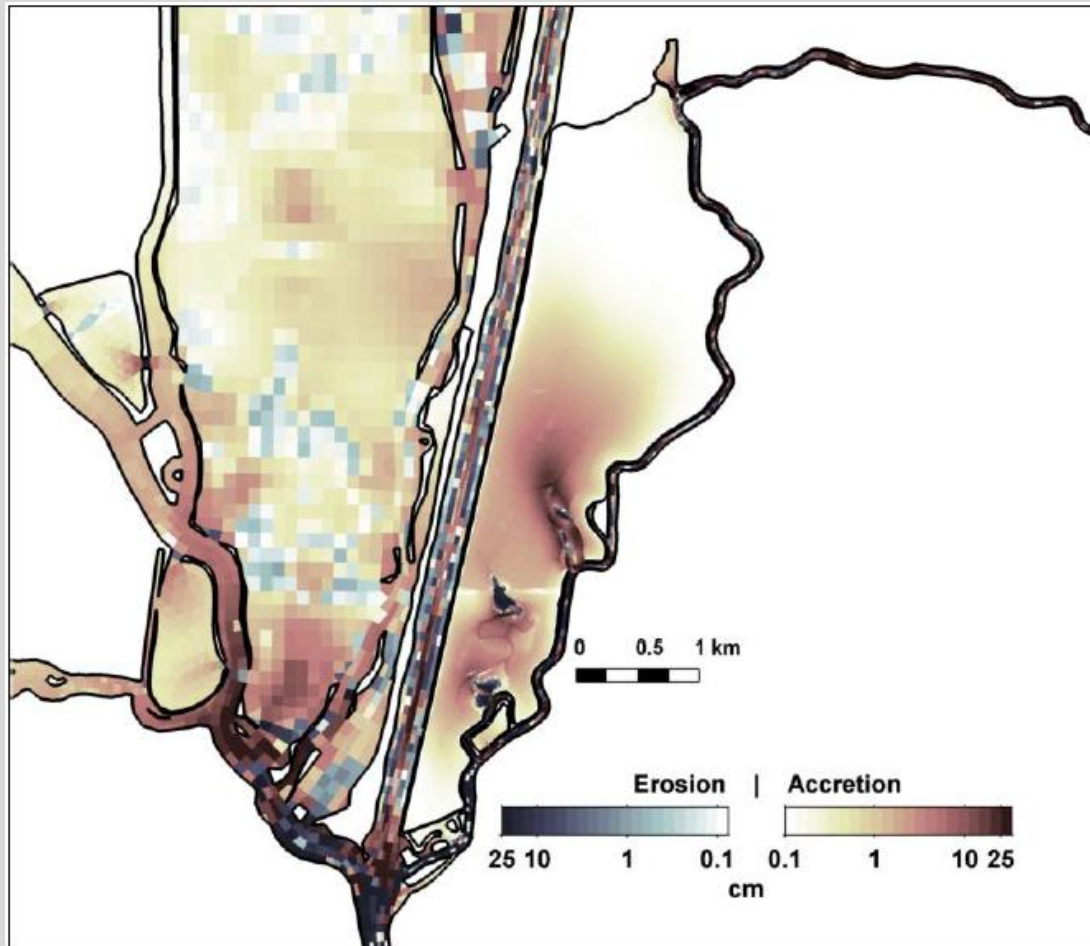
Why a restoration Hub?

Restoration will: Increase *and* decrease velocity



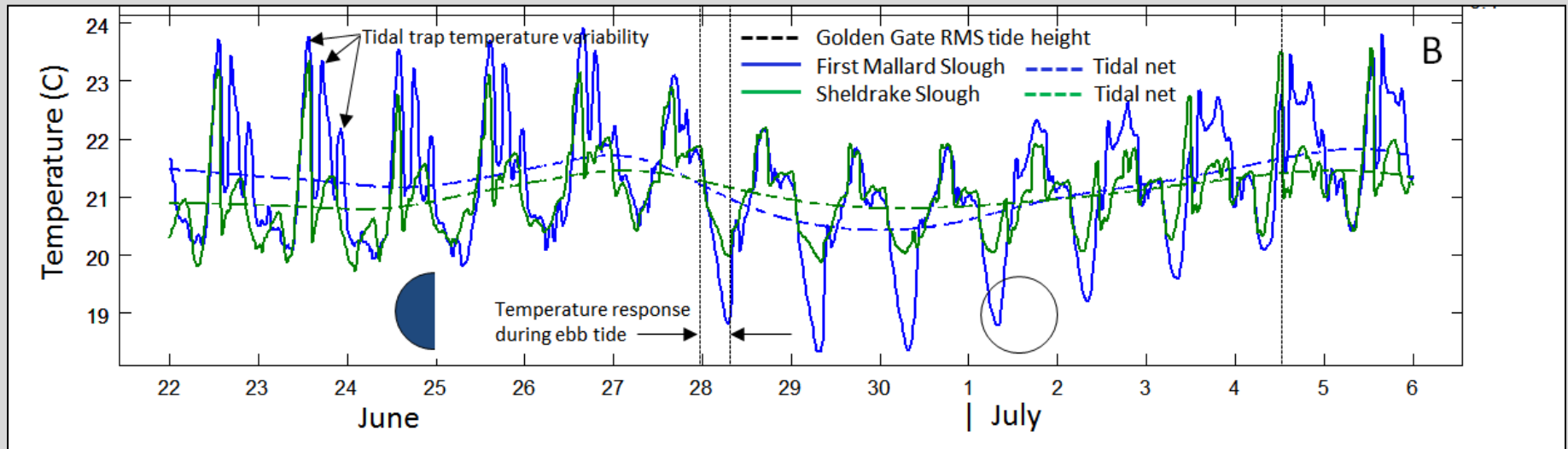
Why a restoration Hub?

Restoration will: Cause sedimentation *and* erosion



Why a restoration Hub?

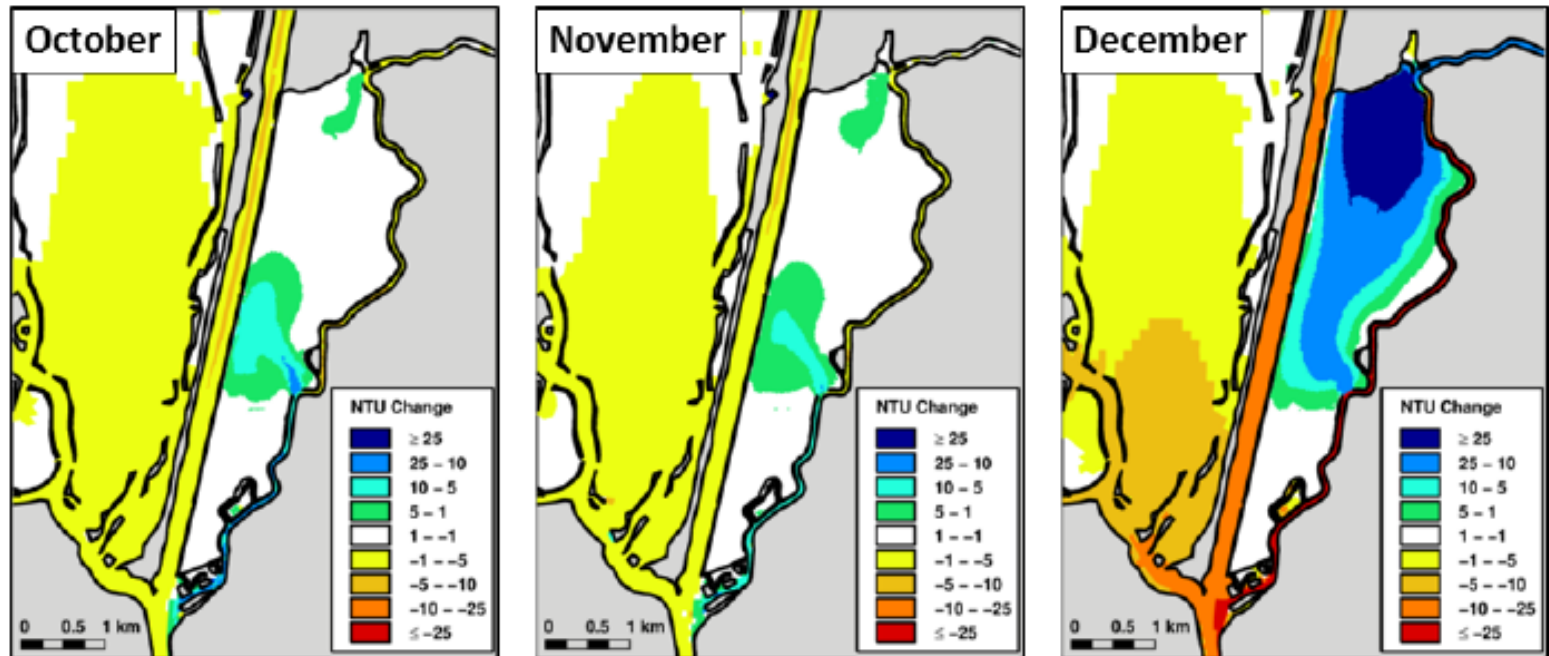
Restoration will: Make water warm *and* cold



Why a restoration Hub?

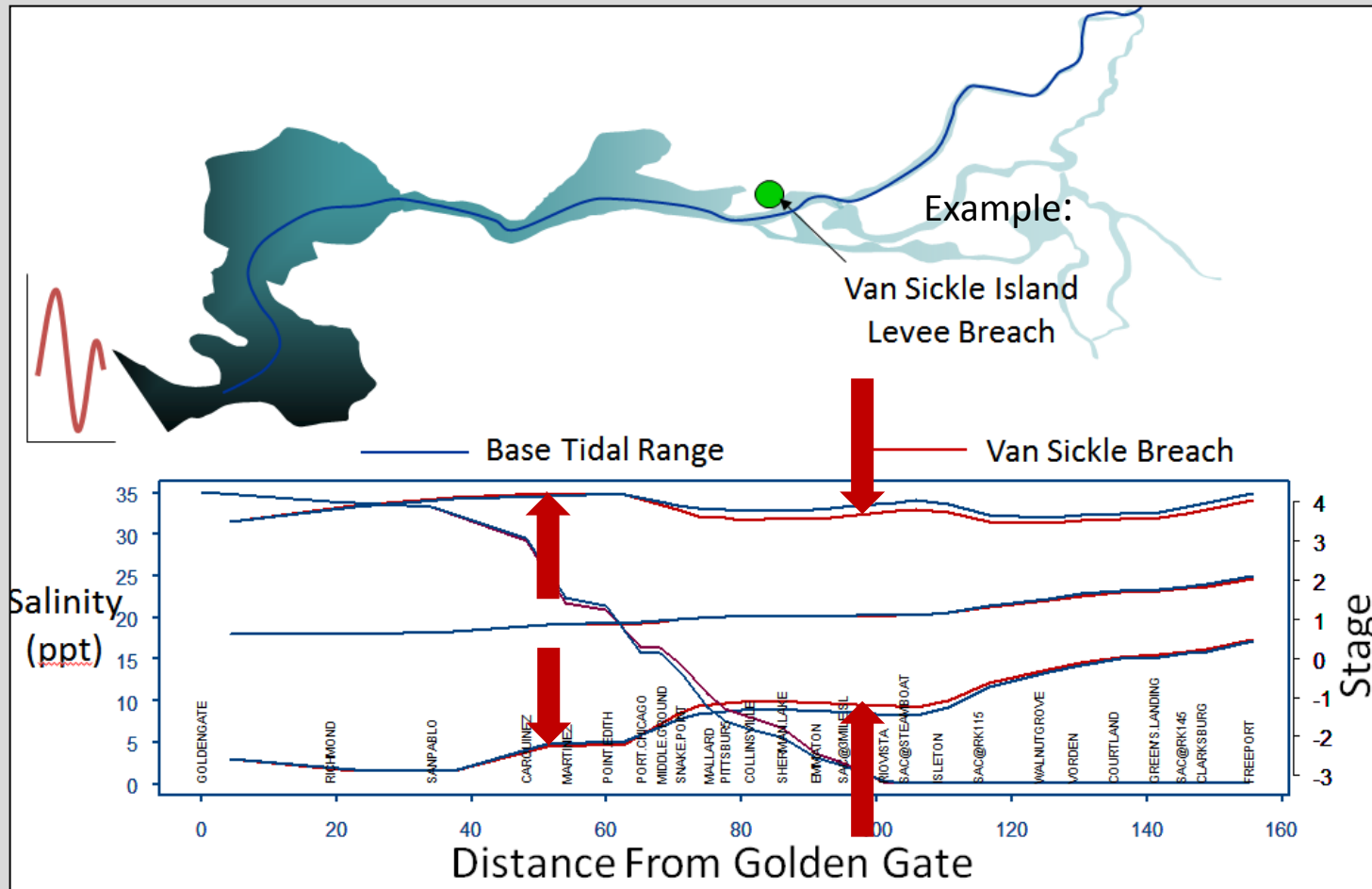
Restoration will: Increase *and* decrease turbidity

A. Turbidity Change in NTU



Why a restoration Hub?

Restoration will: Make tides bigger *and* smaller



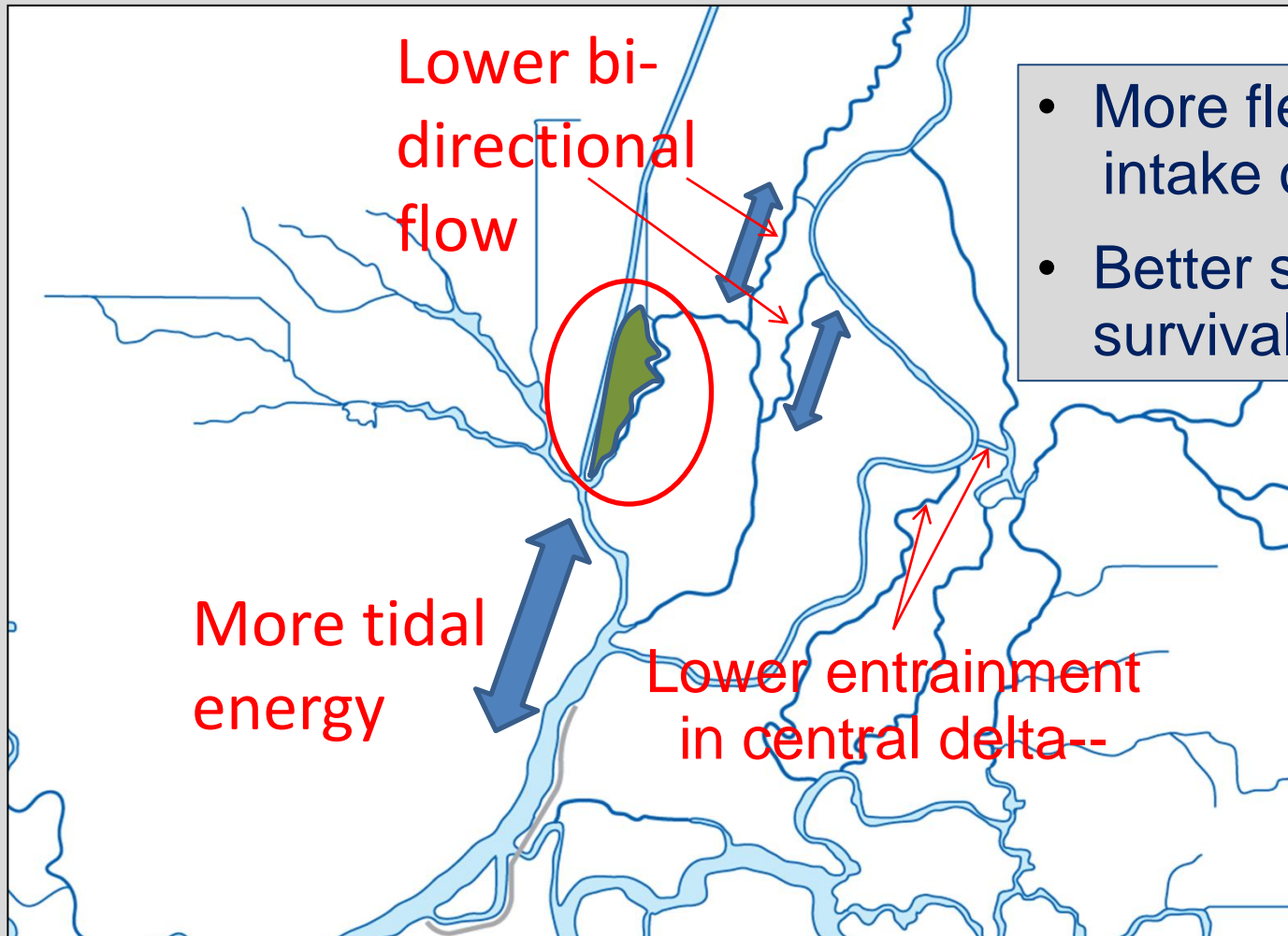
Why a restoration Hub?

Restoration will: Methylate *and* sequester Hg



Why a restoration Hub?

Restoration will: require systems consideration



- More flexible intake operations?
- Better salmon survival?

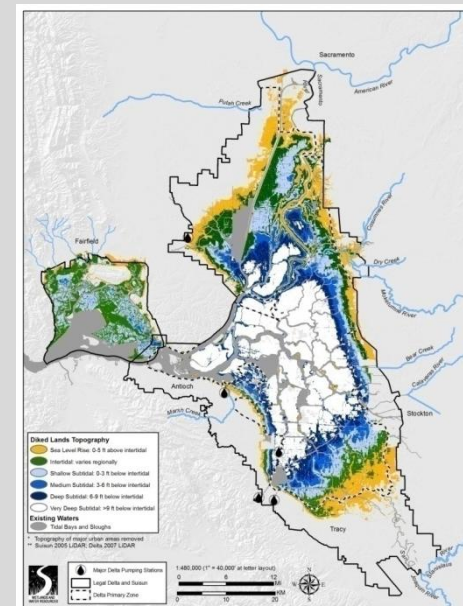
Why a restoration Hub?

- Best
Available =
Science
- The right people
 - Great tools
 - Routine collaborative environment

How the Hub functions

Projects comes to the Hub with:

- Specific objectives
- Site evaluation complete
- Constraints and opportunities



How the Hub functions

Routine Collaborative Environment:

- Expert contracts and agreements in place
- State of the art data tools and analysts on site
- Modeler contracts in place

How the Hub functions

Prior to first Hub meeting:

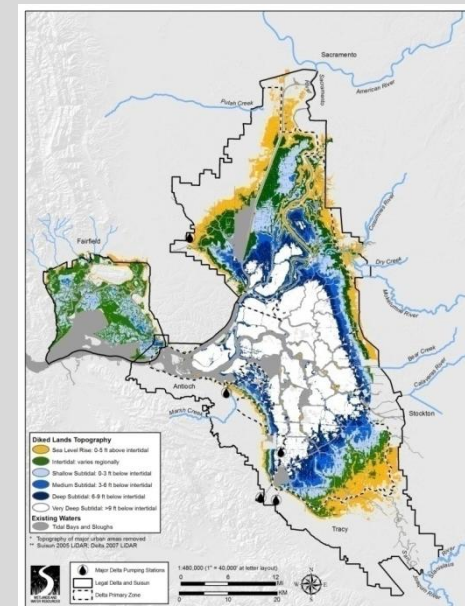
- Compile data (historical baseline, elevation, site evaluation, etc)

1st expert meeting (1-2 days):

- Common understanding
- Review regional landscape vision
- Baseline data informatics presentation
- Identify non-science constraints

Expected outcomes:

- Scope initial modeling and output metrics



How the Hub functions

2nd Hub meeting (1-2 days):

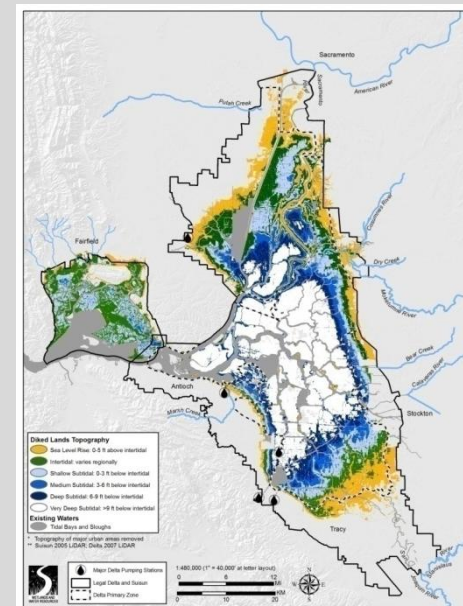
- Review modeling and data workflows
- Review expert assignments

Design Charrette

- Initial DRERIP evaluation of modeling
- Develop alternatives for further modeling
- Refine data and model output metrics (workflows)

Expected outcomes:

- ***Effective, acceptable, permissible alternatives***



How the Hub functions

3rd Hub meeting (1-2 days):

- Review modeling and data workflows
- Review expert assignments

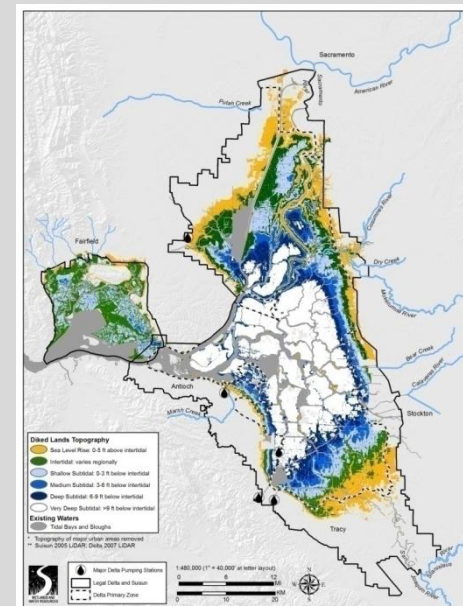
Design Charrette

- Refine alternatives using DRERIP evaluation
- Refine model and data output metrics

Expected outcomes:

- ***Fewer and better alternatives***

Iterate if needed

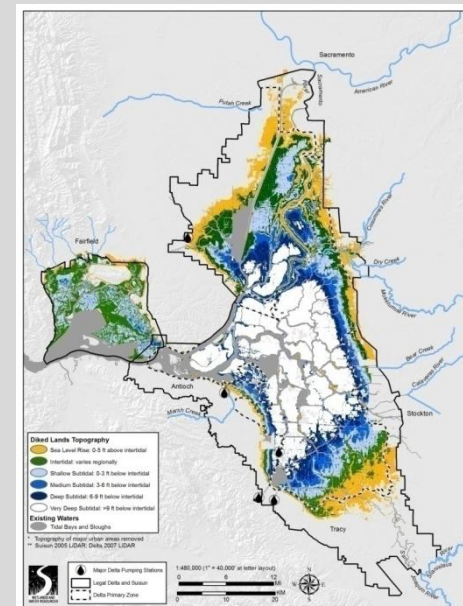


Next Steps

- Develop the Hub as a three year pilot project to test process and technology
- Request software and support from “big data” provider
- Developing 15/16 BCP
- Request bridge funding from foundations
- Beginning to implement components for real time projects

Concerns we've heard

- “Adds more steps”
- “Paralysis by analysis”
- “We’re already doing this”
- “Proponents decide designs”



Thank you

Jessica Davenport

Chris Enright

Eric Ginney

Robin Grossinger

Tony Hale

Lauren Hastings

Daniel Huang

Mark Tompkins

Mike Urkov