

SCHISM Bay-Delta modeling for Franks Tract Restoration Feasibility Study



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Acknowledgement

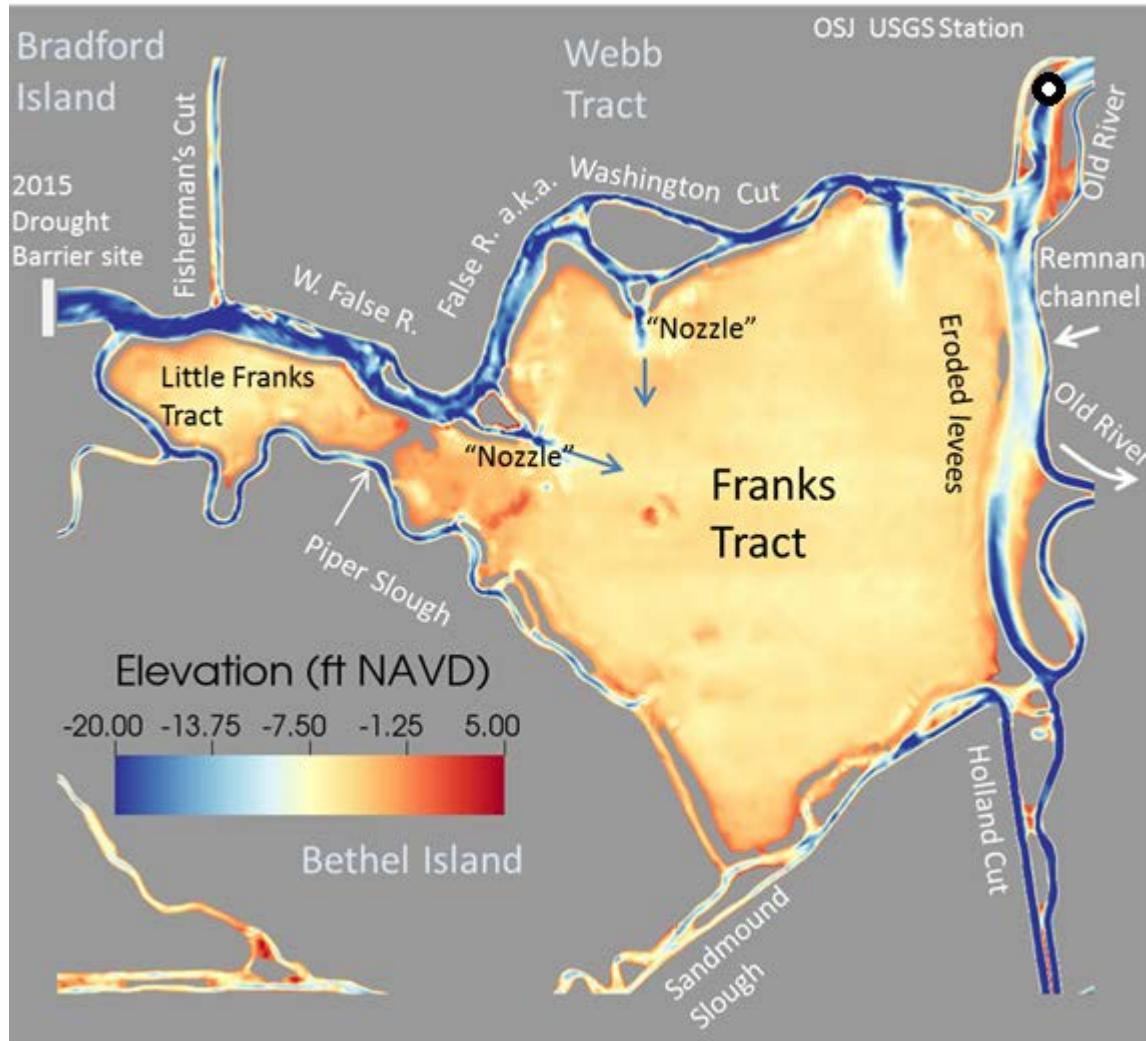
- Eli Ateljevich, Rueen-Fang Wang, Jon Shu (DWR)
- Joseph Y. Zhang (VIMS)
- All other contributors to SCHISM
- CDFW
- USGS

Report

Hydrodynamic Modeling in Support of Franks Tract Restoration Feasibility Study, Delta Resiliency Strategy



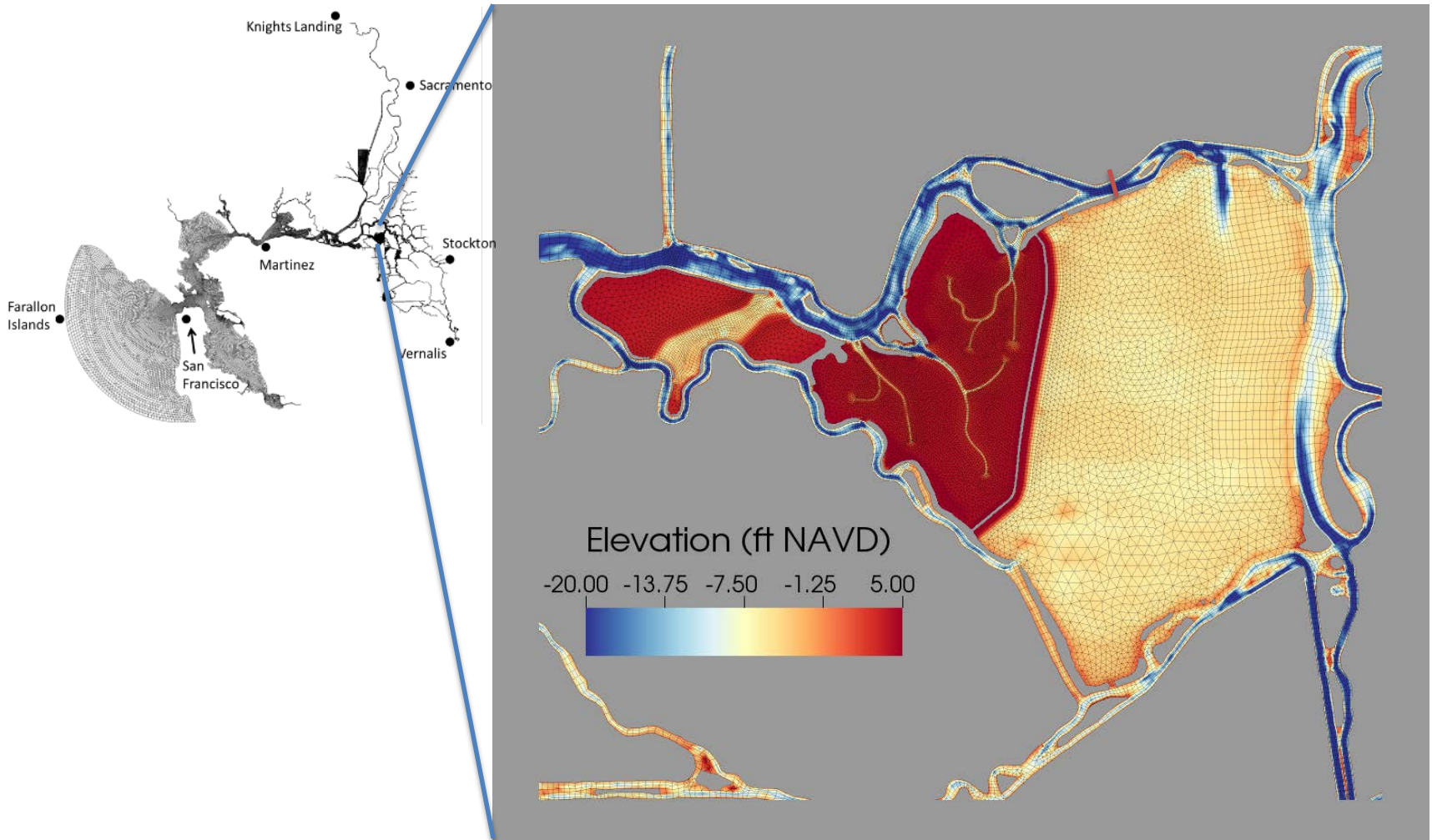
Franks Tract



Delta Smelt Resiliency Strategy Restoration Project

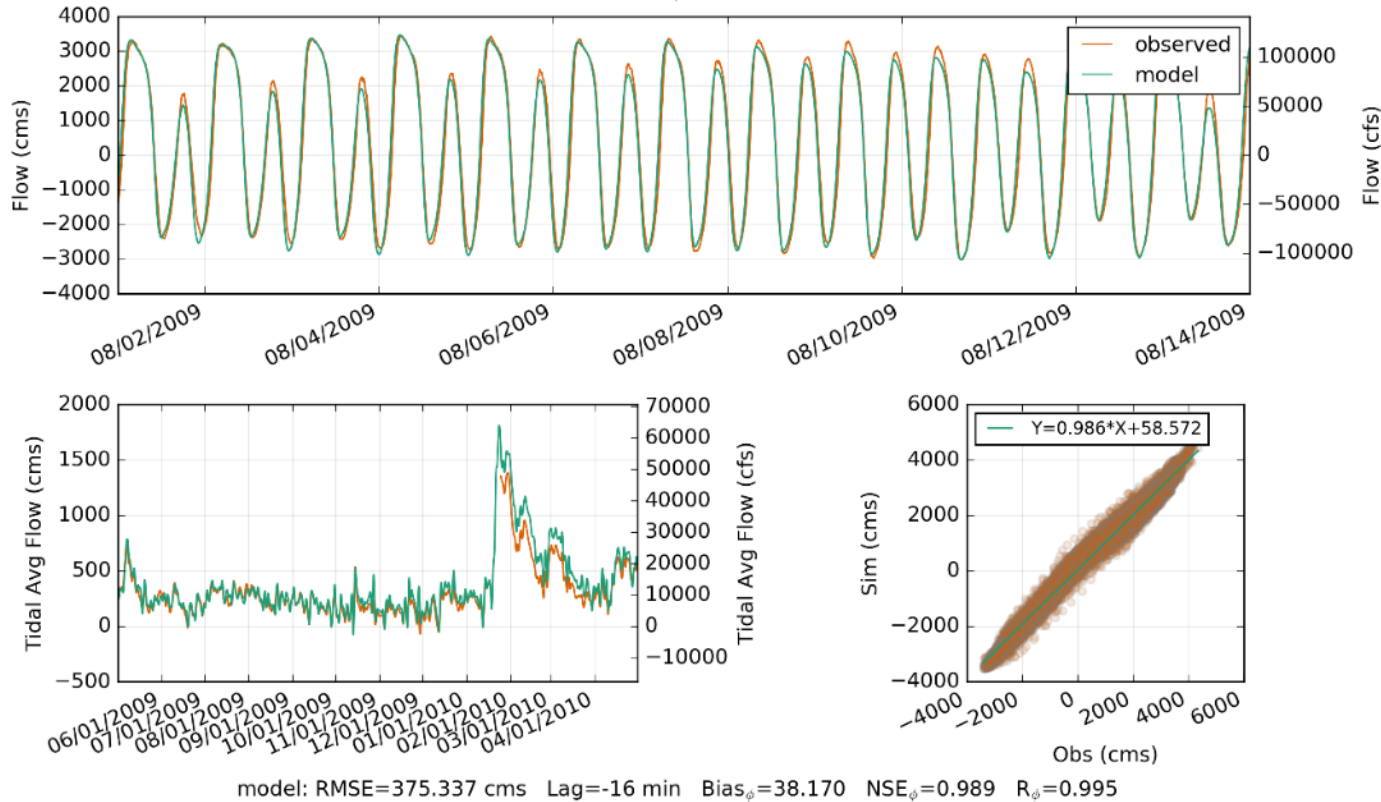


Franks Tract Model



Calibration – Base Case

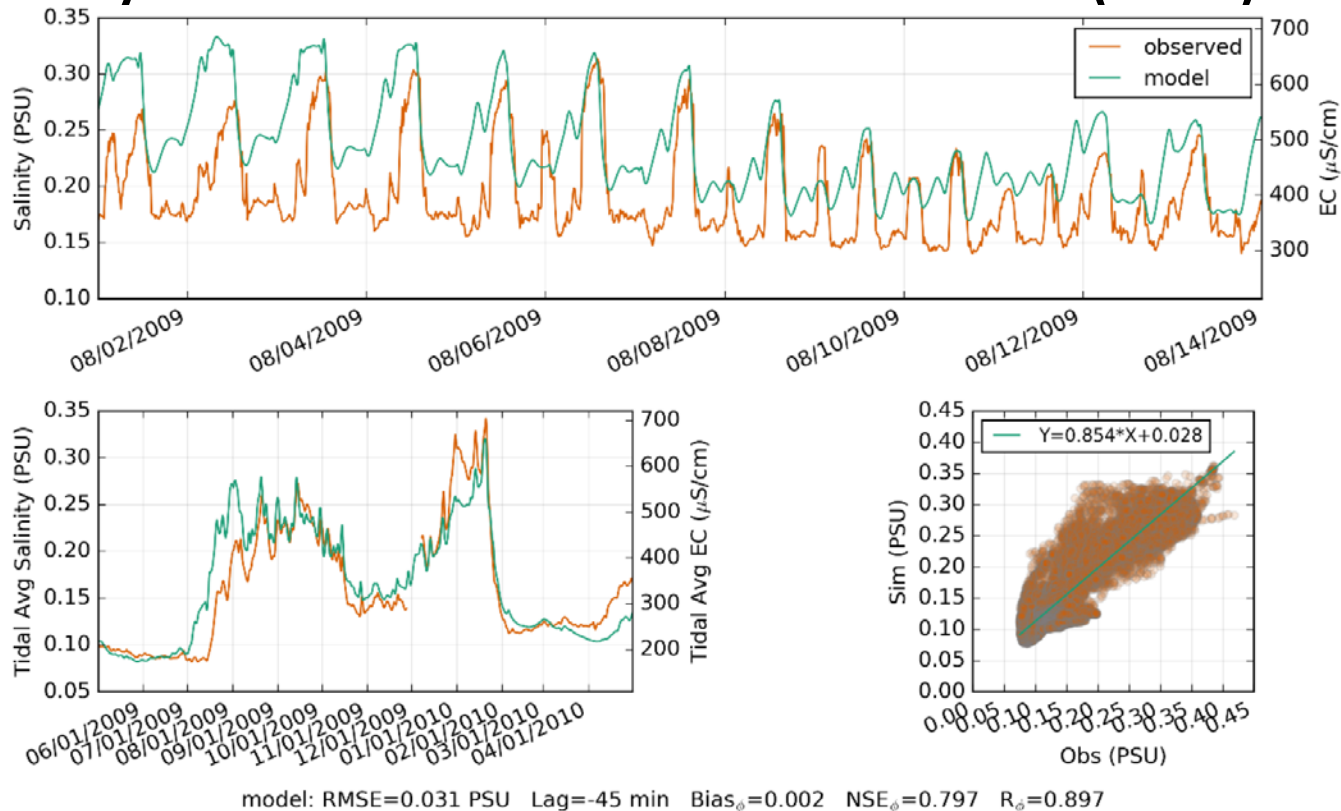
- Flow – Rio Vista (SRV)



DWR, Hydrodynamic Modeling in Support of Franks Tract Restoration Feasibility Study, Delta Resiliency Strategy

Calibration – Base Case

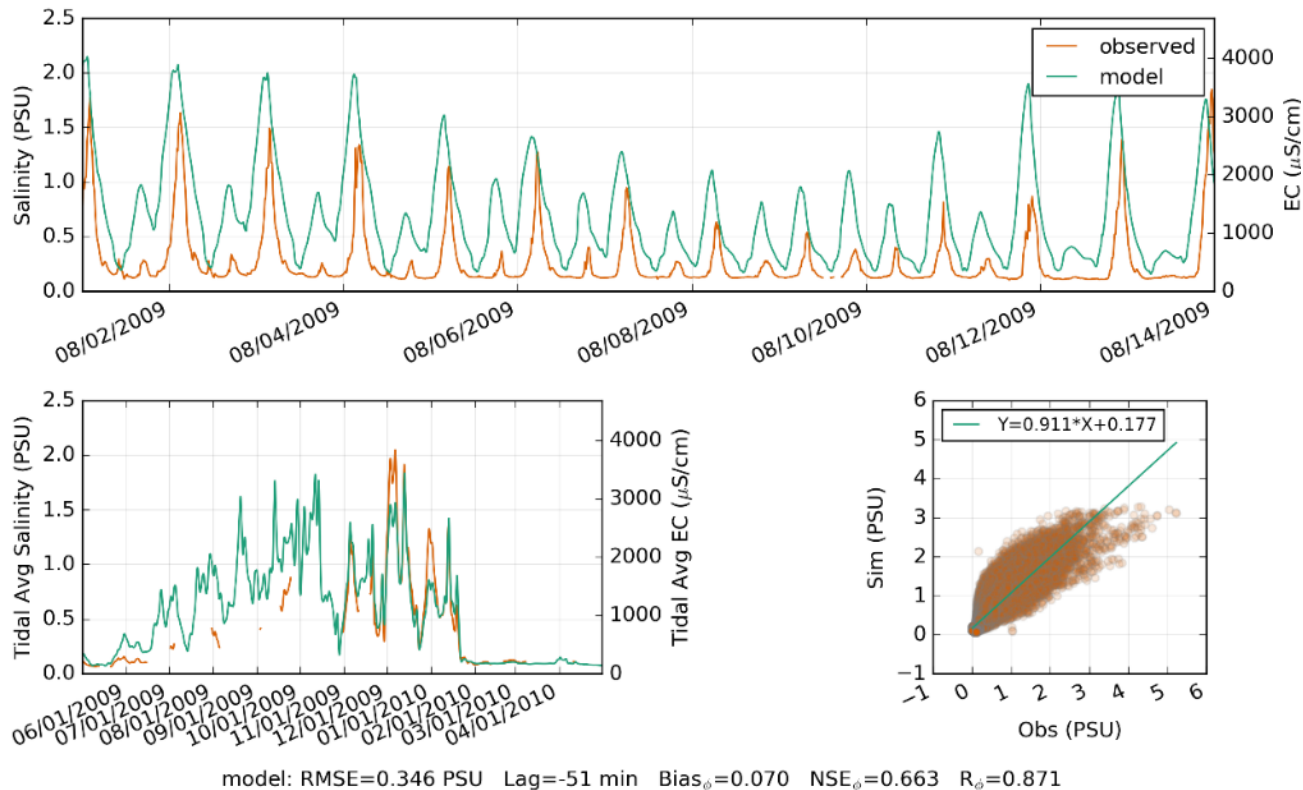
- Salinity – Old River at Franks Tract (OSJ)



DWR, Hydrodynamic Modeling in Support of Franks Tract Restoration Feasibility Study, Delta Resiliency Strategy

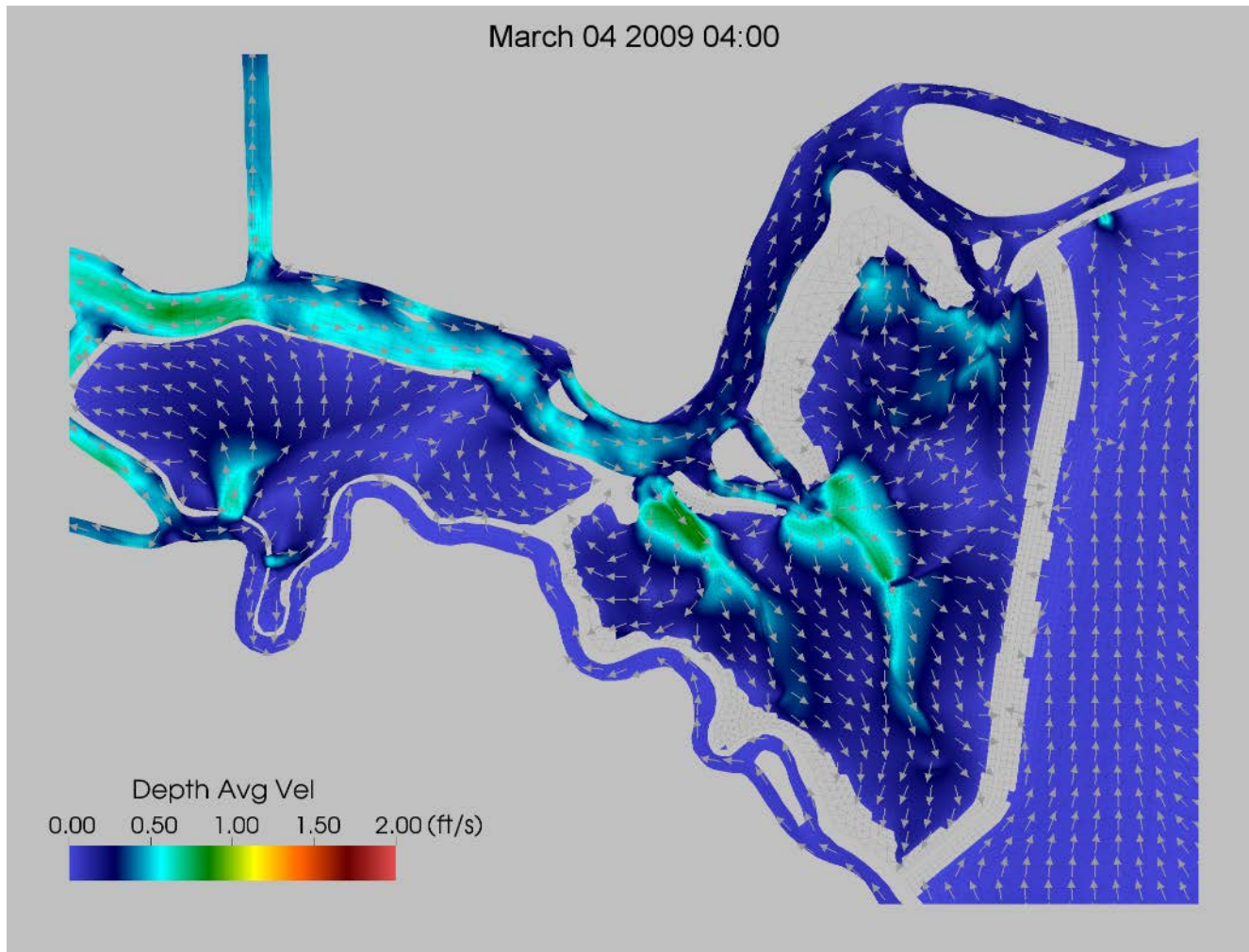
Calibration – Base Case

- Salinity – Emmaton (EMM)

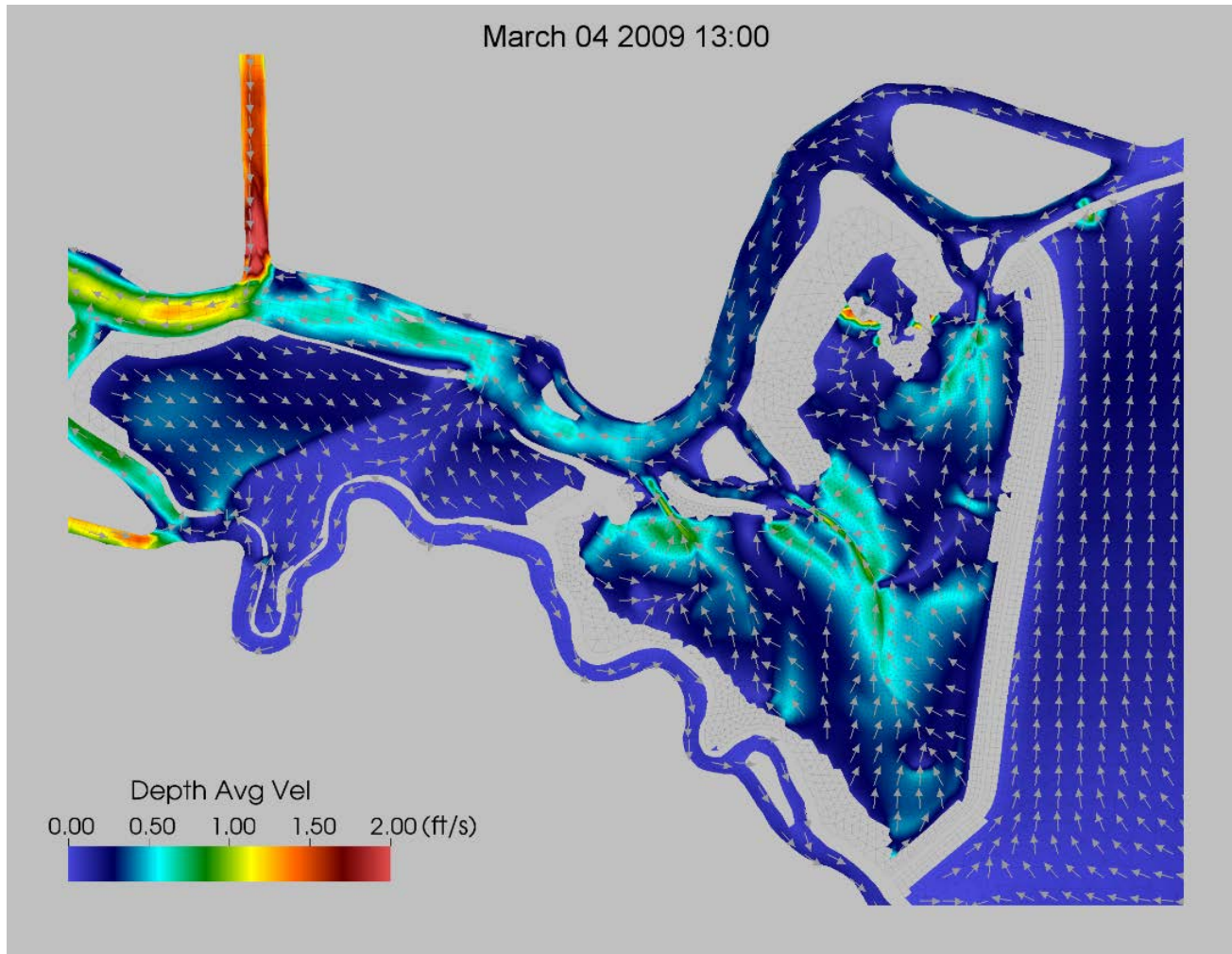


DWR, Hydrodynamic Modeling in Support of Franks Tract Restoration Feasibility Study, Delta Resiliency Strategy

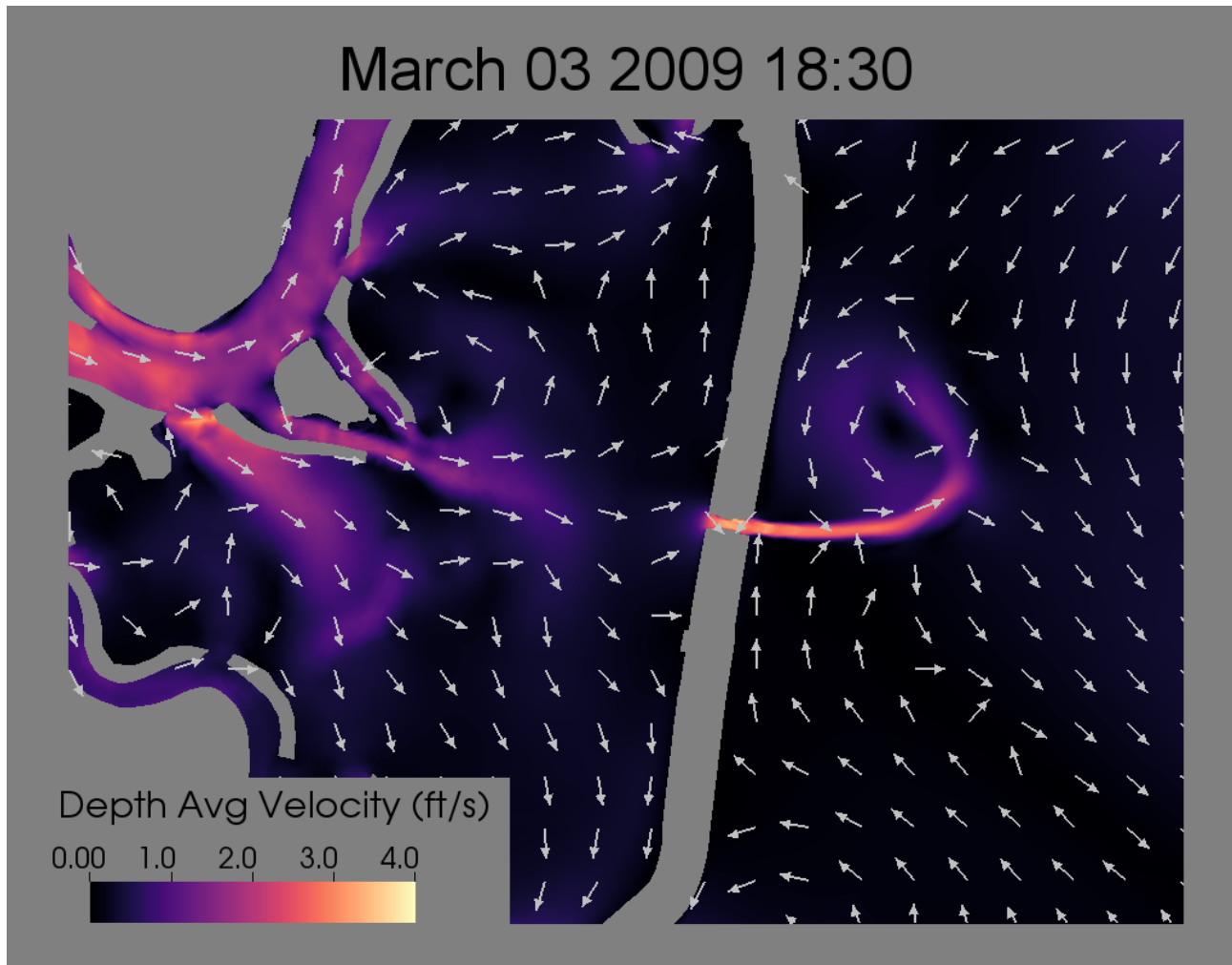
Local Velocity - Flooding



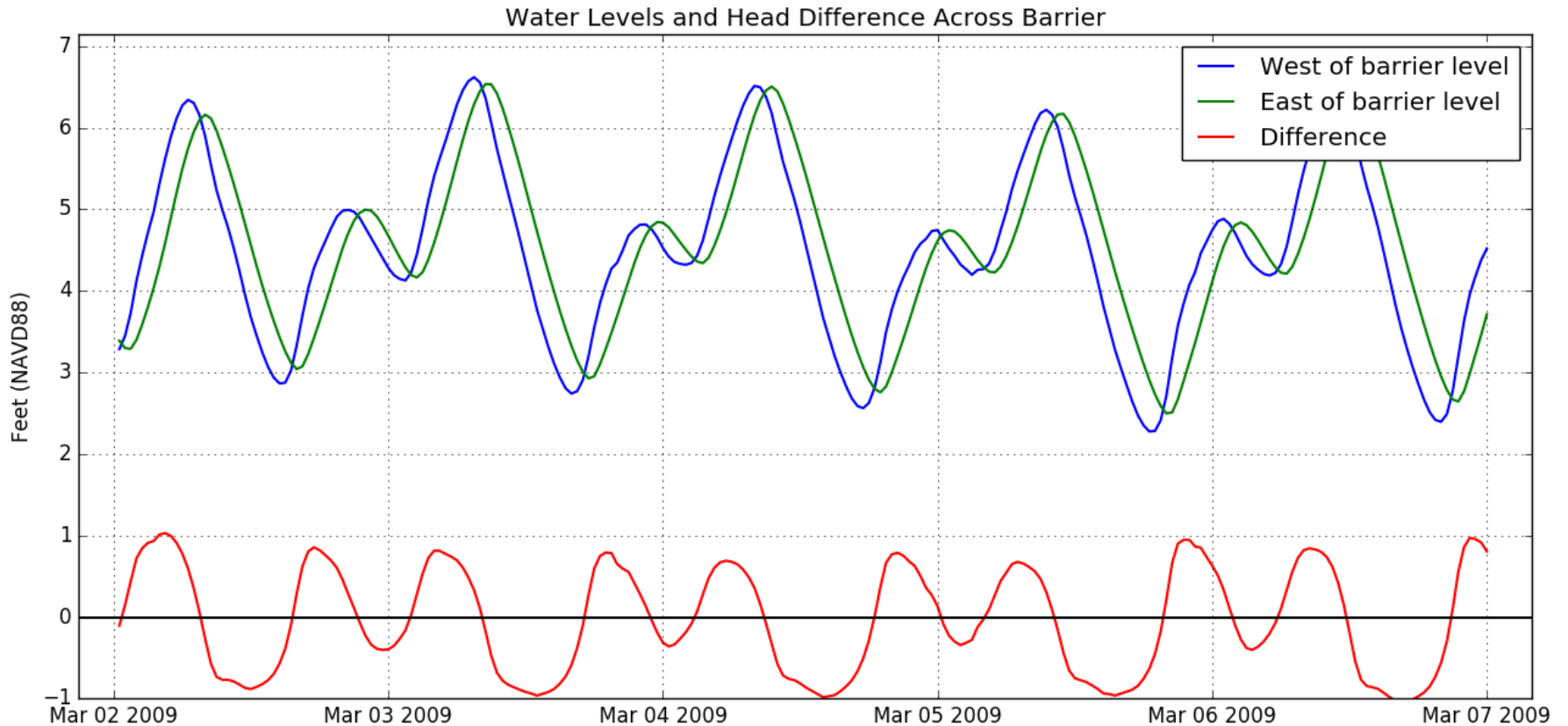
Local Velocity – Ebb



Velocity during Construction



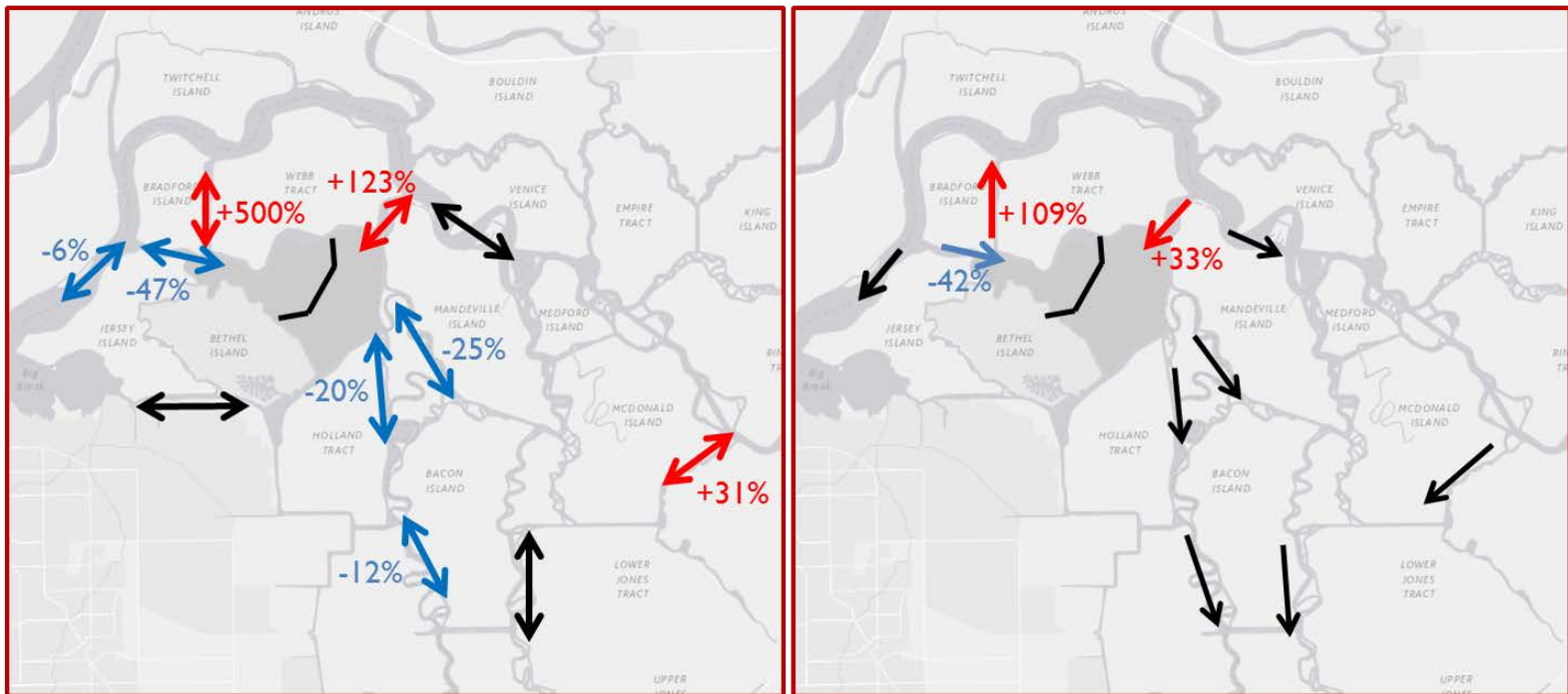
Tide Change - Phase



Flow Change

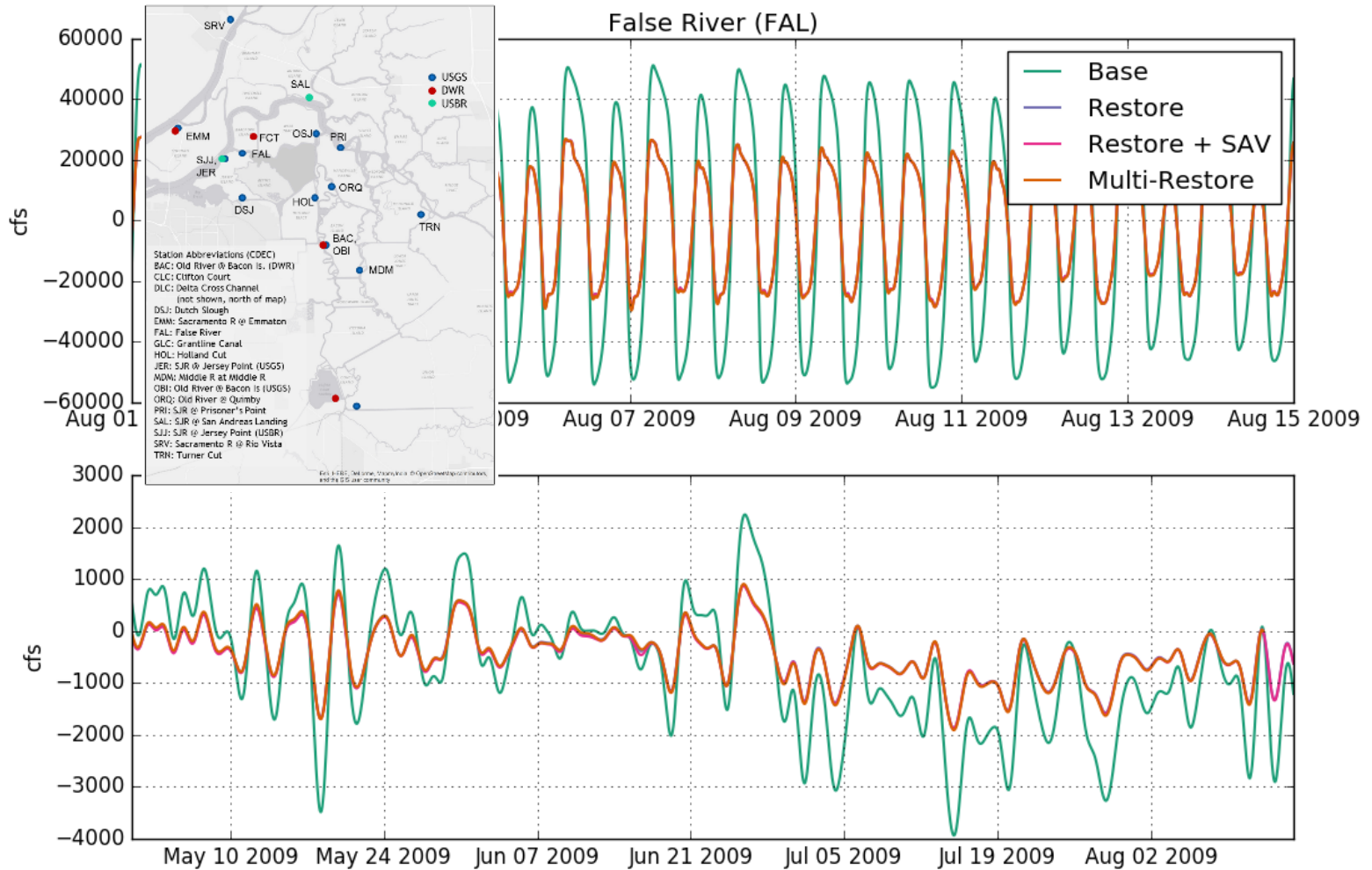
Tidal

Net

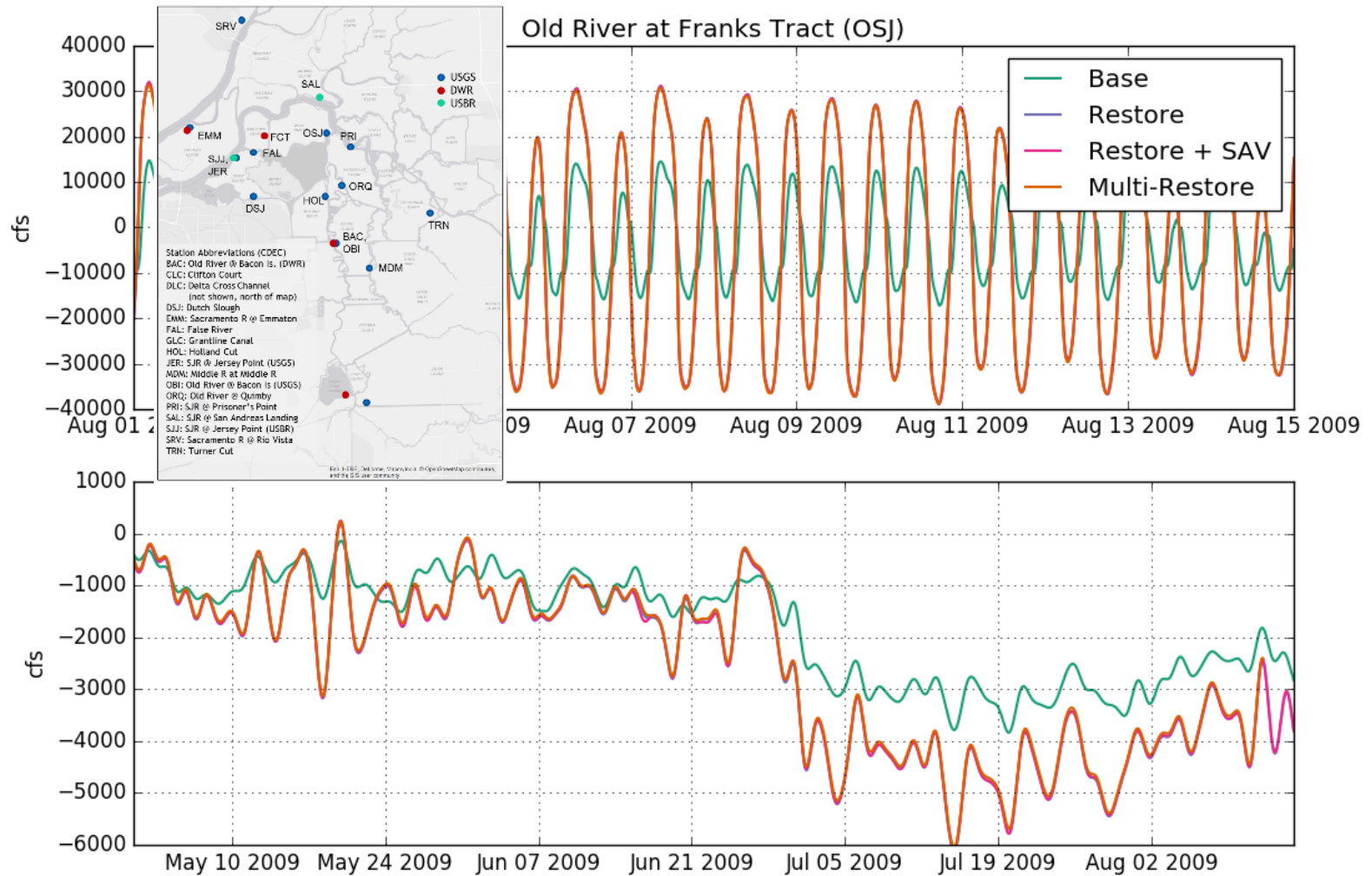


- ← Red = Increase
- ← Blue = Decrease
- ← Black = Small change (<5%)

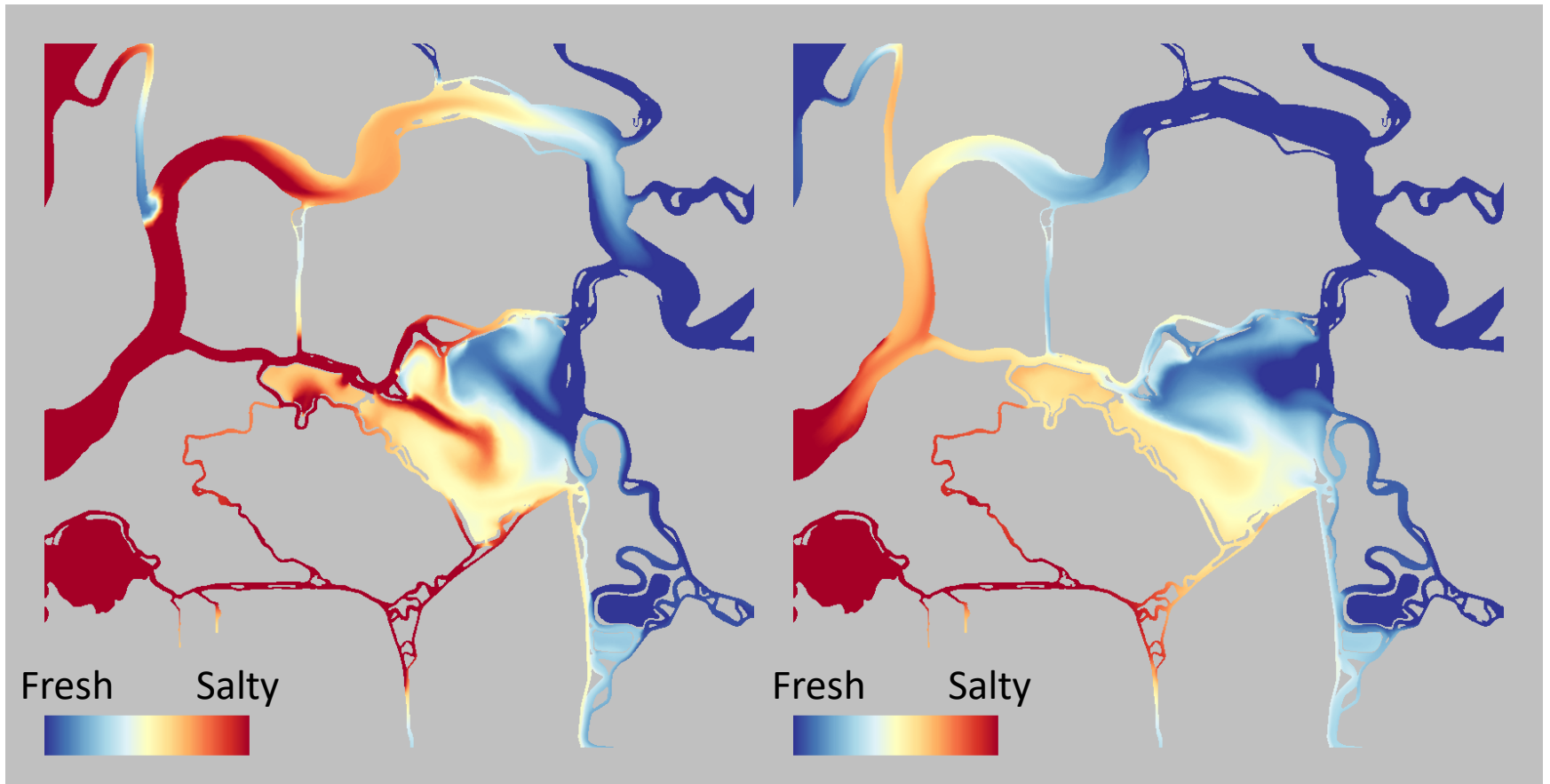
Flow Change – False River



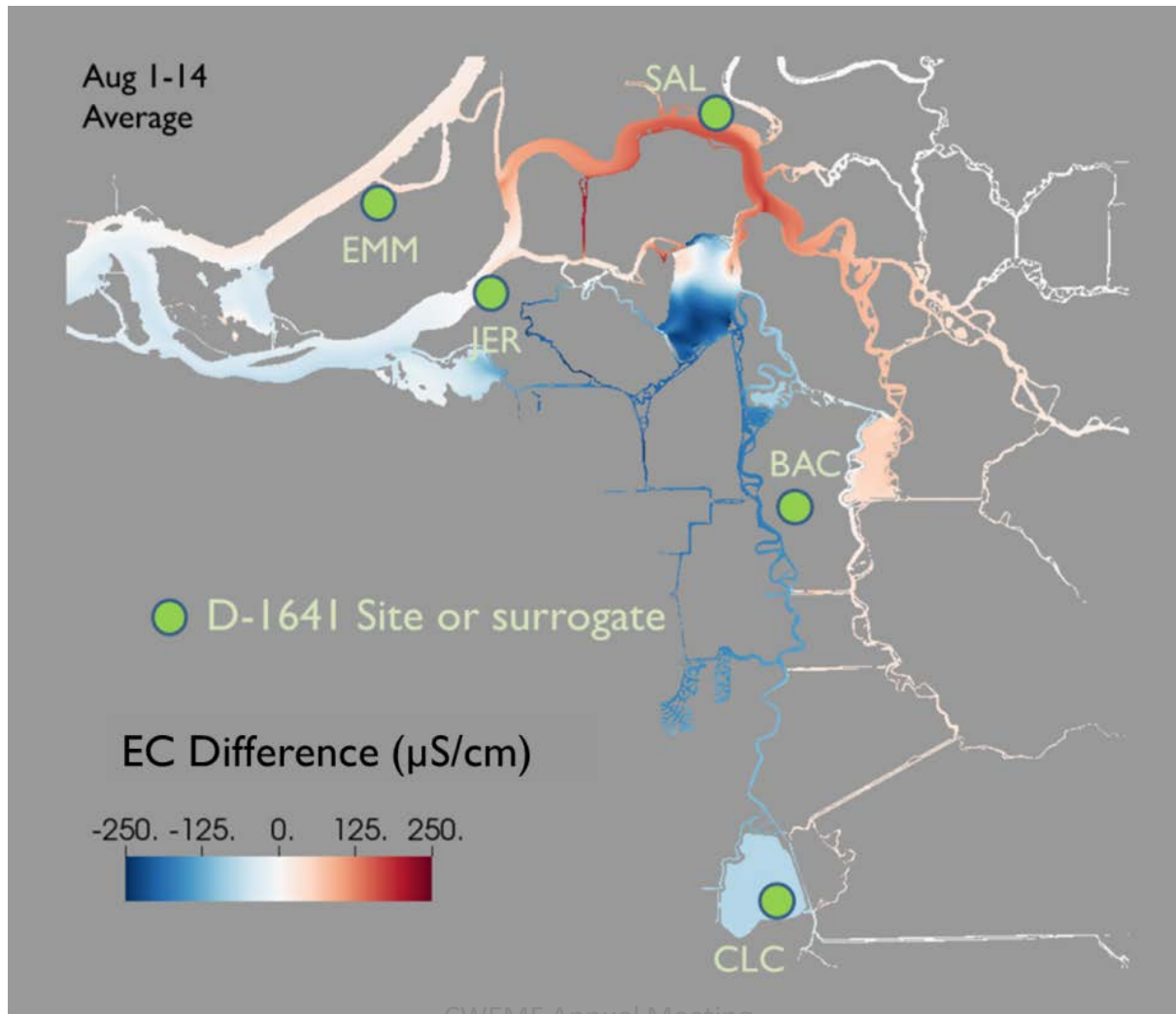
Flow Change – Old River



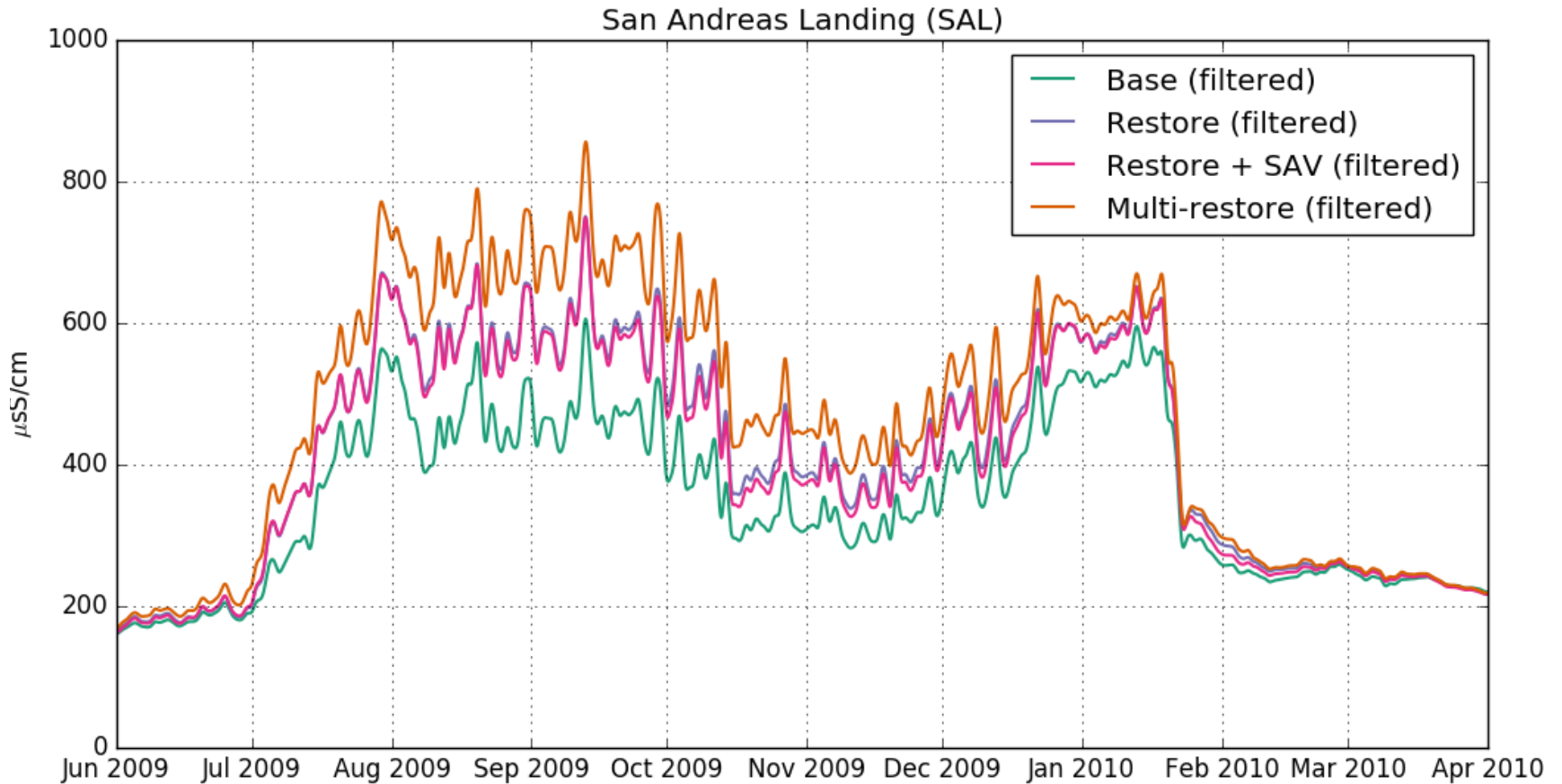
Tidal Pumping



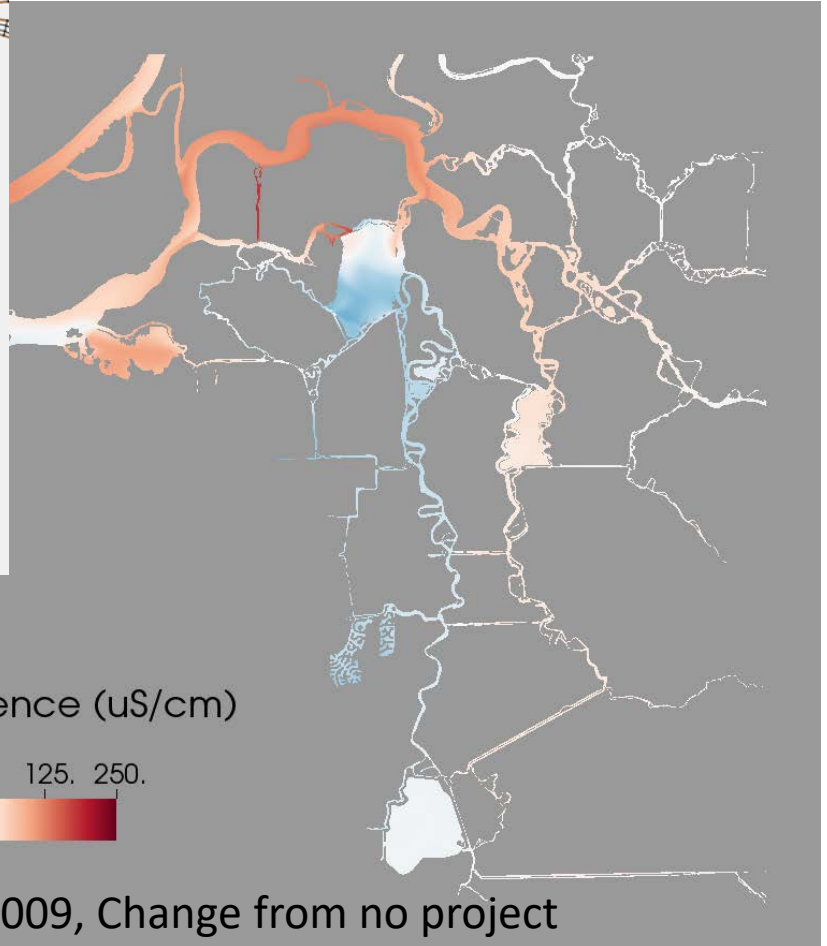
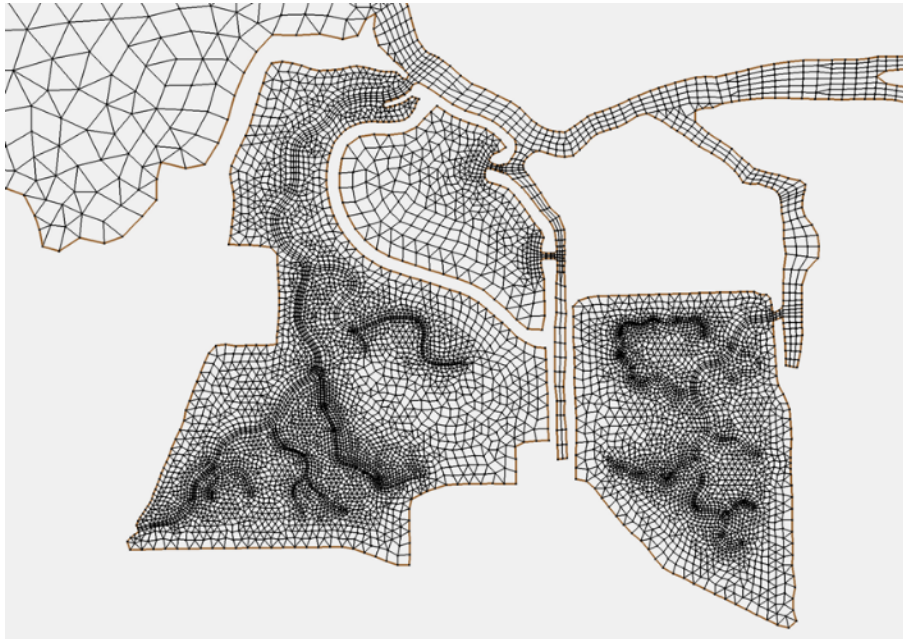
Salinity Change



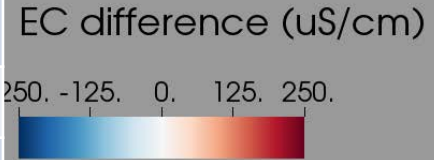
Salinity Change - SAL



Multiple Restorations

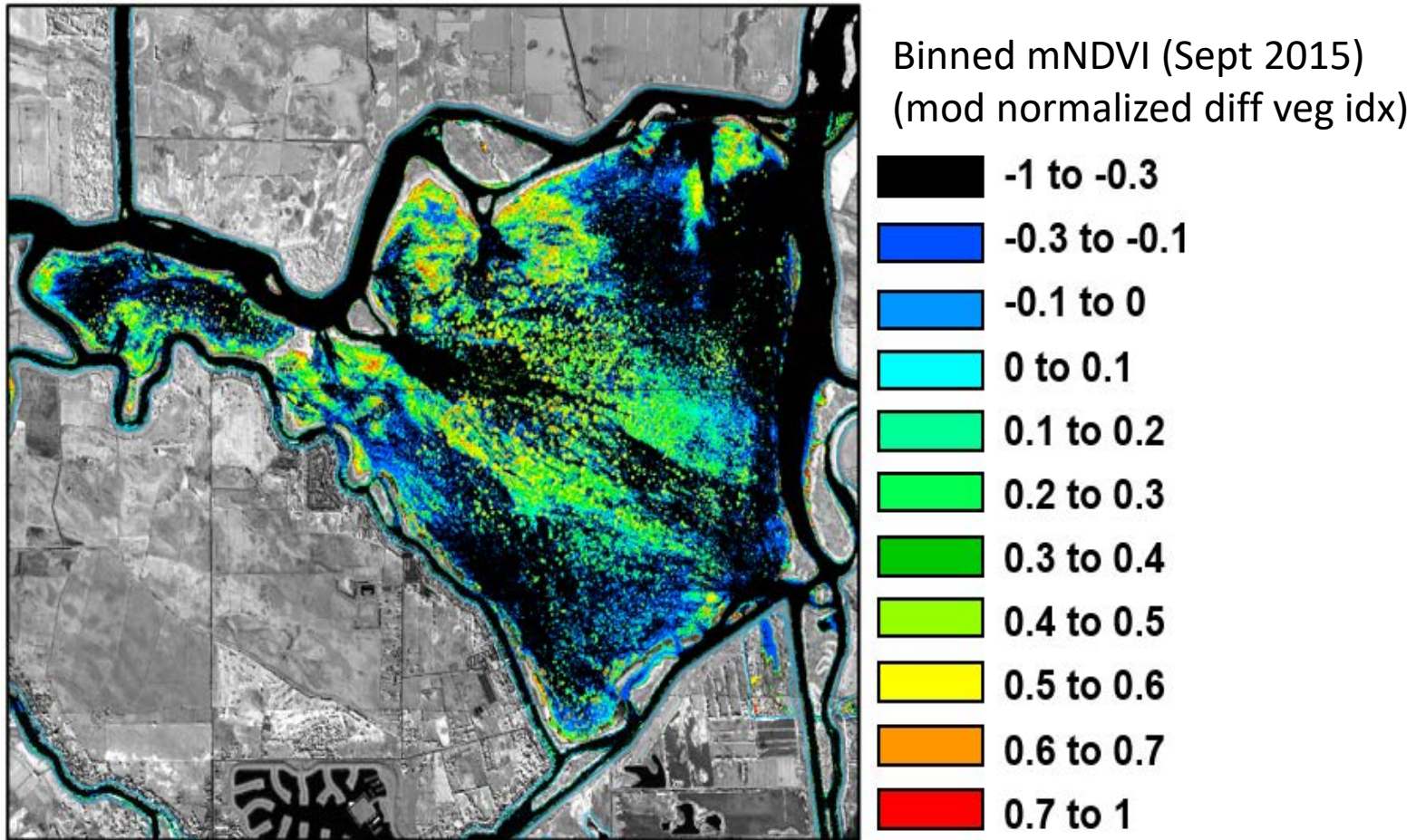


Project	Institution
Dutch Slough Tidal Restoration	DWR/RD 2137
Prospect Island	DWR/CDFW
McCormack-Williamson Floodplain and Tidal Restoration	DWR/ Nature Conservancy



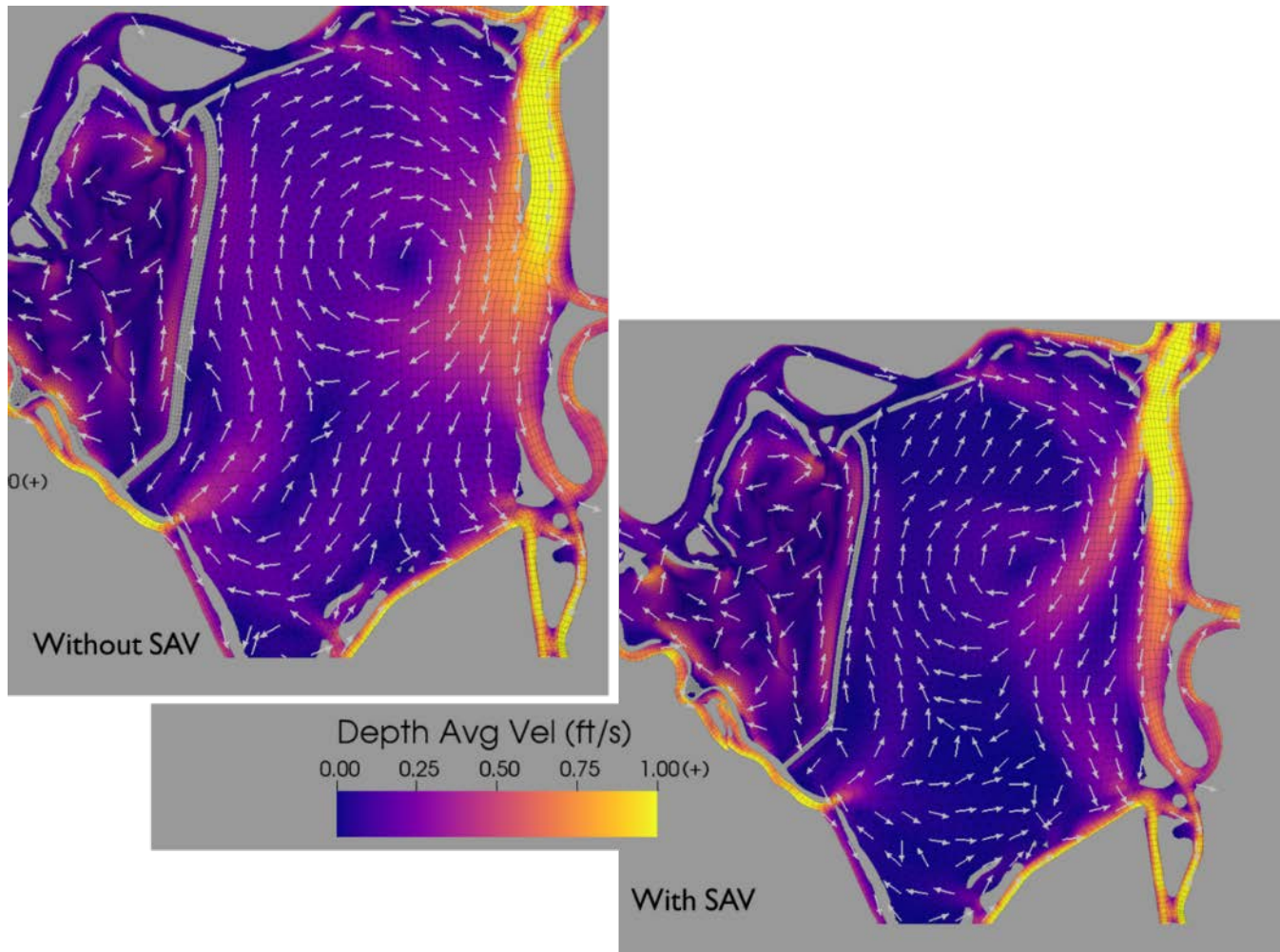
Nov 2009, Change from no project

Submerged Aquatic Vegetation



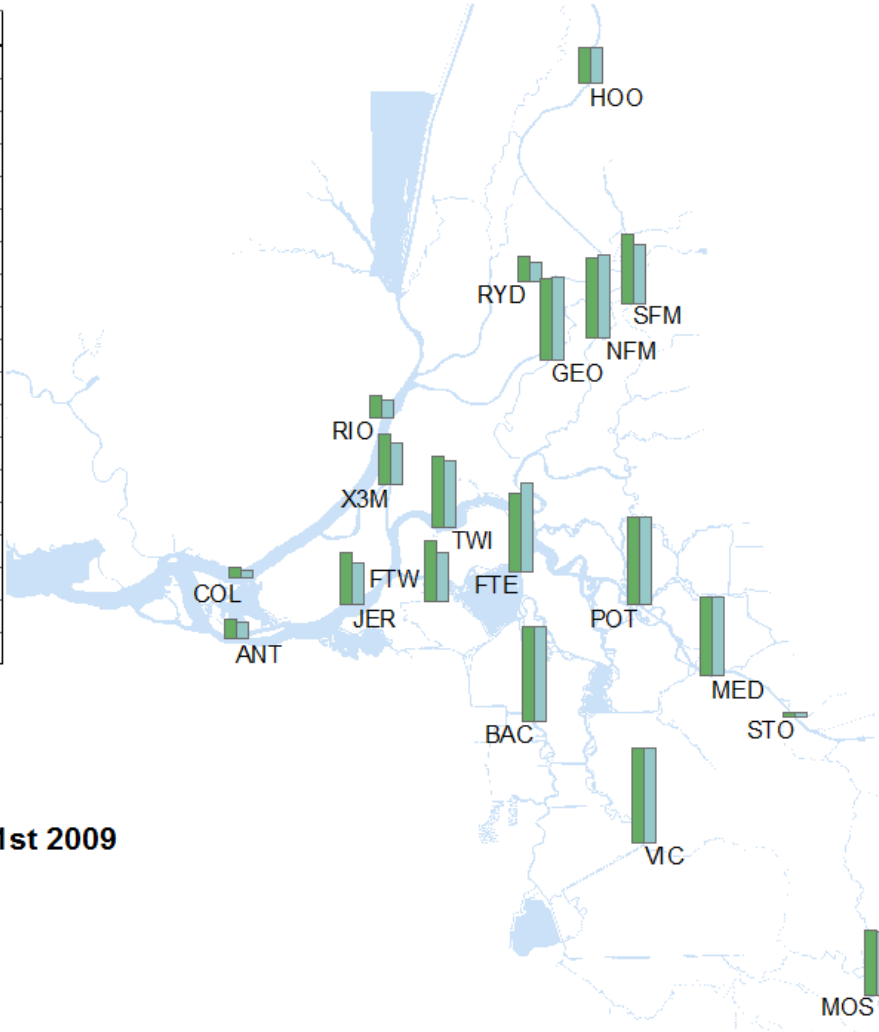
Ustin et al. 2016.

Effect of SAV



Particle Entrainment

Release	w/o project	w/ project
ANT	20.26	16.86
BAC	97.85	97.53
COL	10.98	8.90
FTE	82.33	91.72
FTW	64.21	51.90
GEO	83.63	86.63
HOO	38.42	37.56
JER	53.34	43.69
MED	82.31	82.41
MOS	66.45	64.94
NFM	84.22	87.14
POT	91.19	91.17
RIO	23.86	19.00
RYD	25.59	20.85
SFM	72.26	61.20
STO	4.70	5.36
TWI	74.40	69.61
VIC	98.81	98.64
X3M	52.64	44.02



Particle Tracking Heatmap



Conclusions

- The proposed project looks similar to 2015 EDB, but with lesser degree of impact.
 - The project separates east of Franks Tract from west.
 - Tides are re-routed through the SJR.
 - The south Delta gets fresher.
 - The SJR gets a bit saltier.
 - Multiple restorations reduce salinity benefit.
 - Entrainment from the west of Franks Tract decreases.