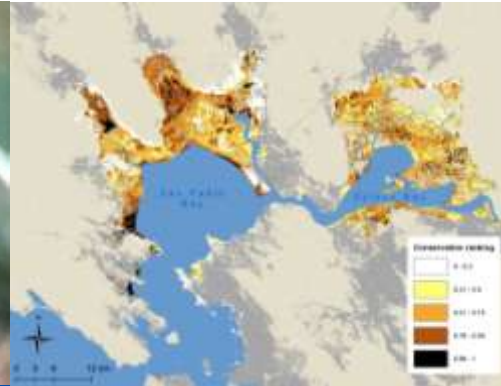


prbo

PRBO Conservation Science



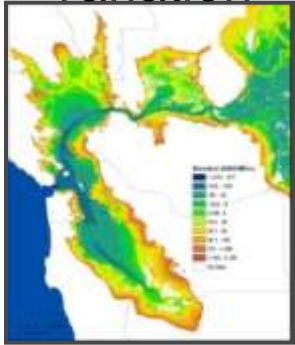
MARSH98:

A hybrid modeling approach applied to San Francisco Bay

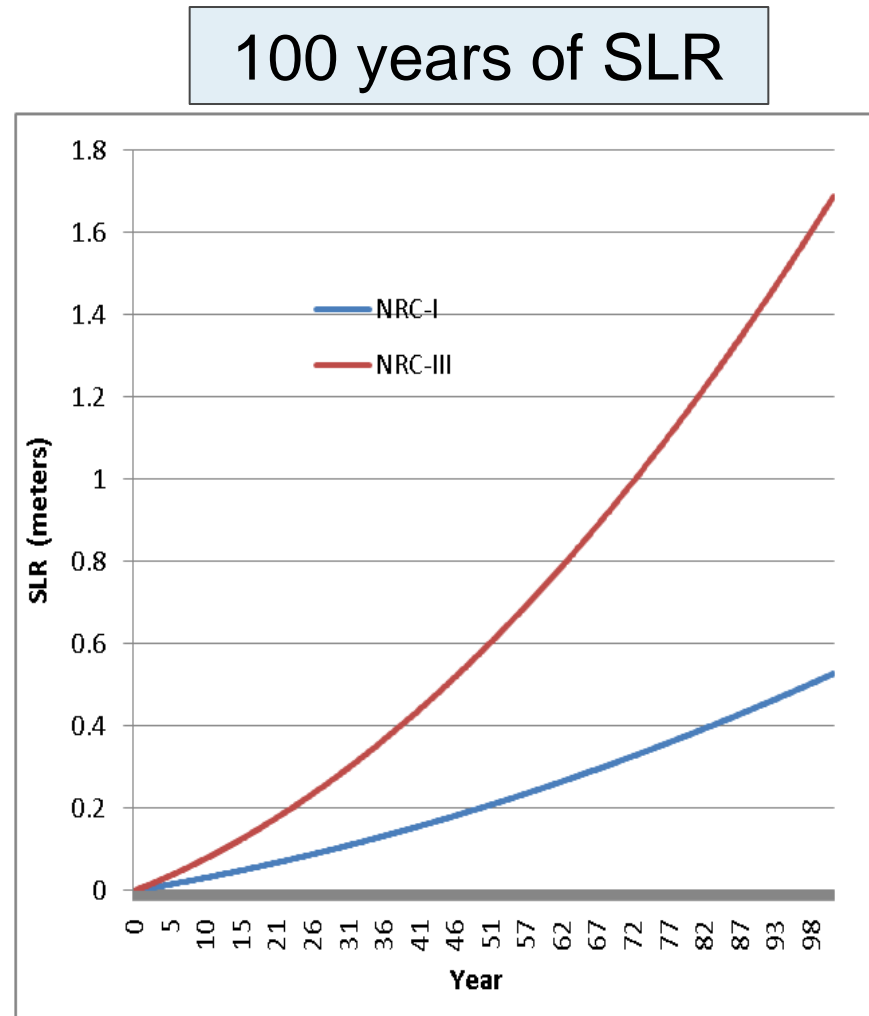
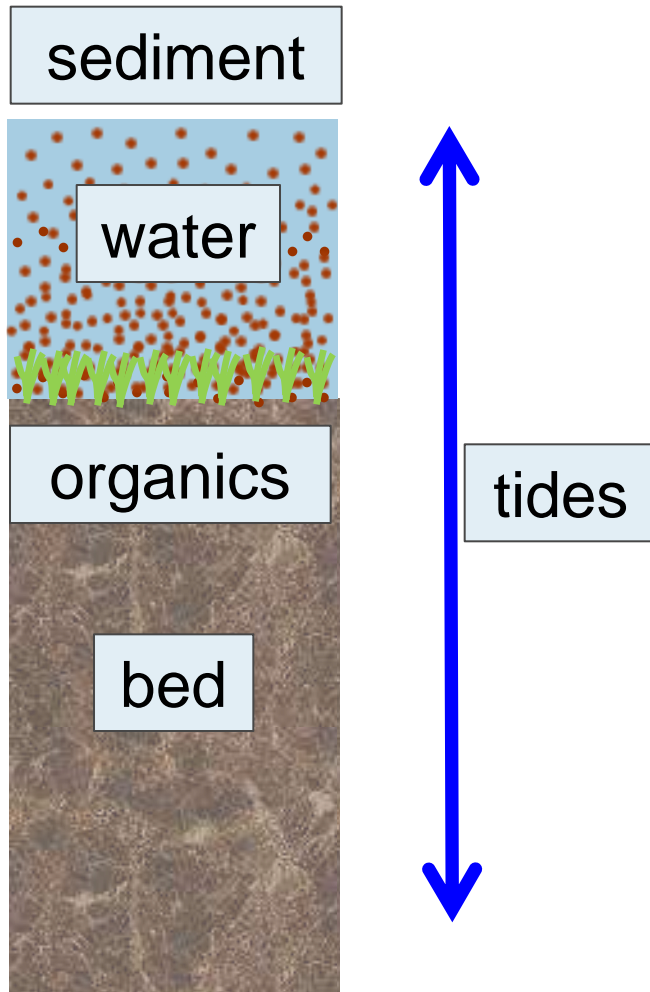
Sam Veloz, Diana Stralberg, Julian Wood, Dennis Jongsomjit, Grant Ballard PRBO Conservation Science;
Lisa Schile UCB; John Callaway USF; Tom Parker SFSU, Steve Crooks, Matt Brennan ESA PWA

Hybrid Model Development

Spatial variation

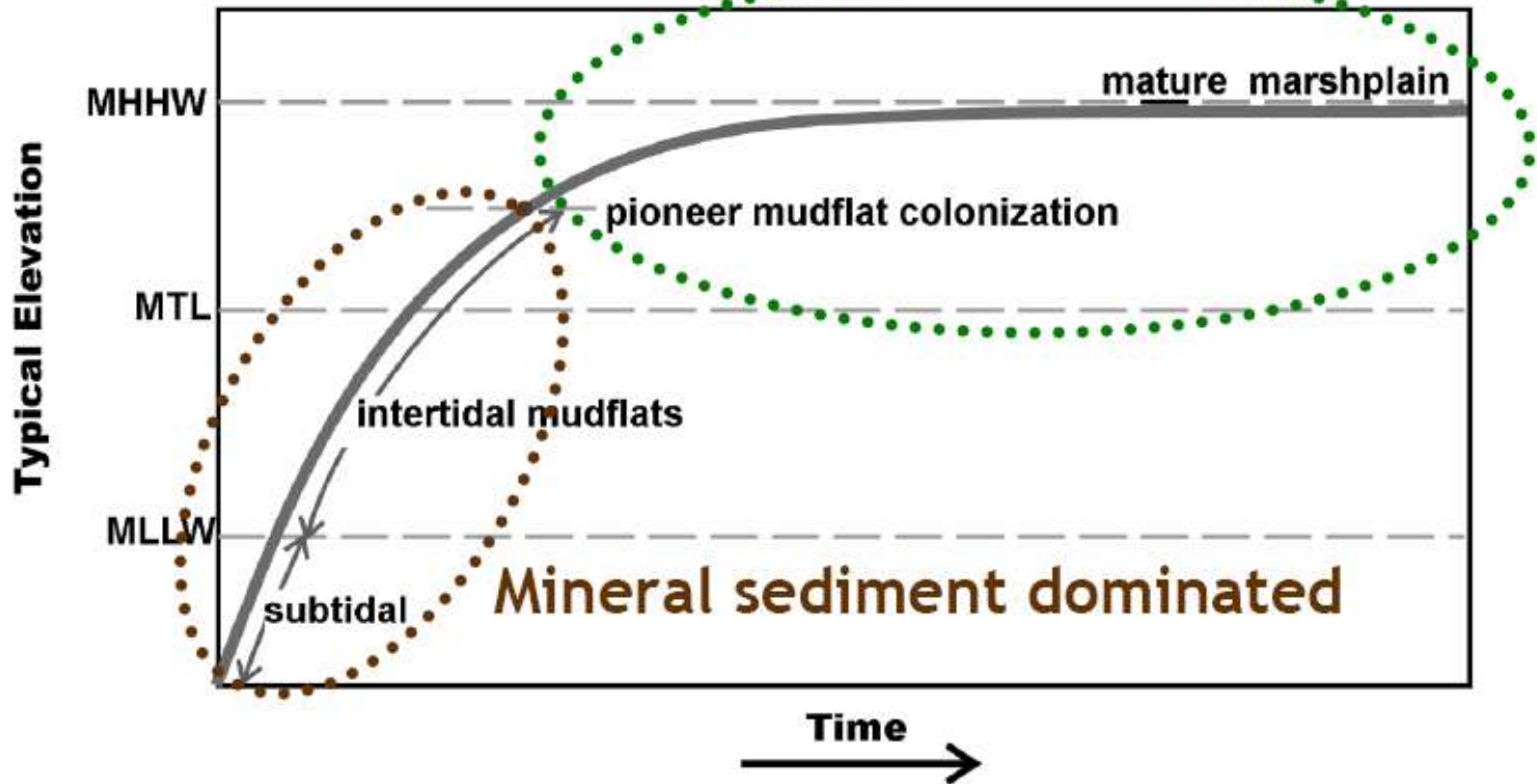


Marsh98 – Bed Accretion Model

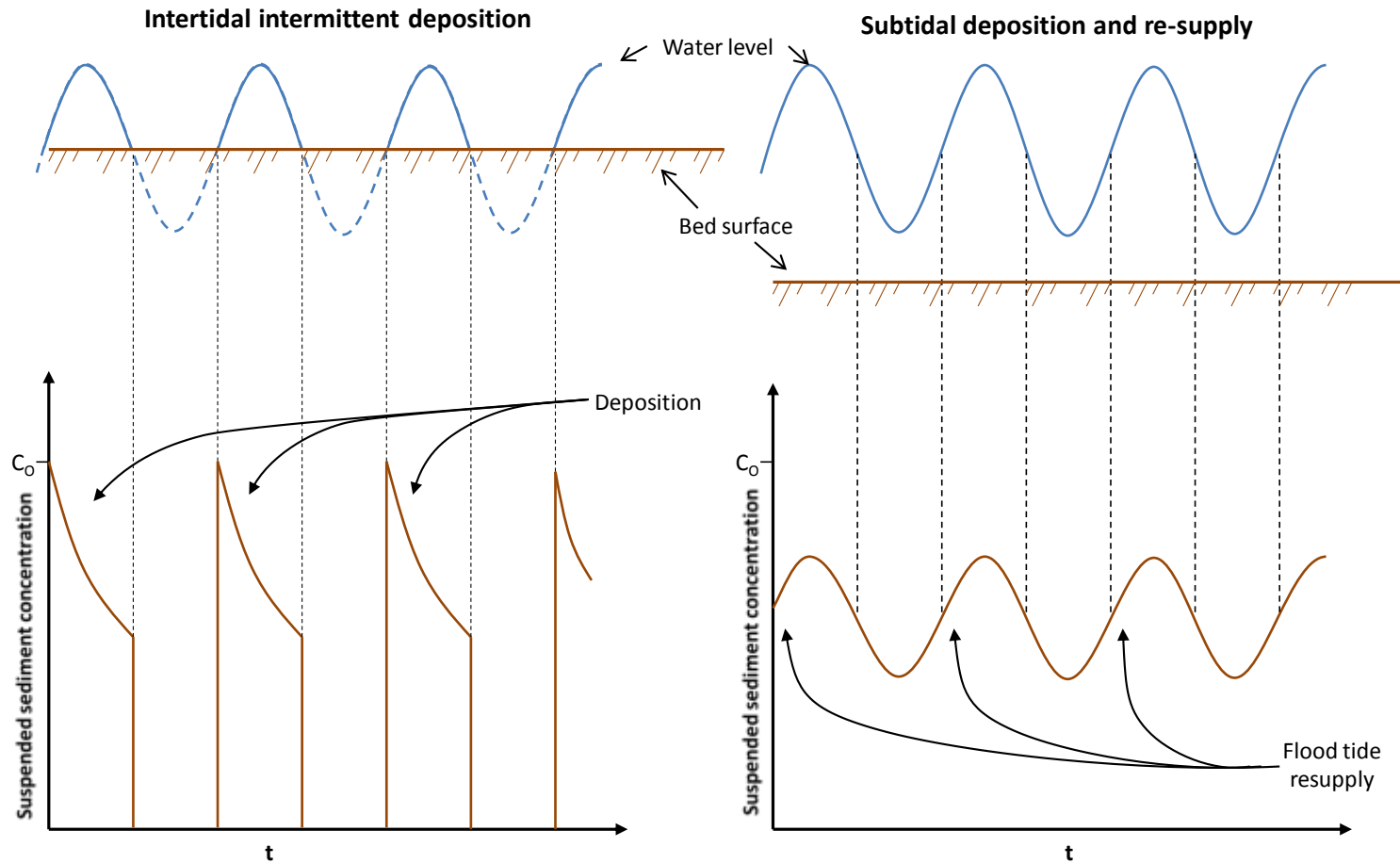


Modeled Bed Evolution

Vegetation & inundation duration dominated

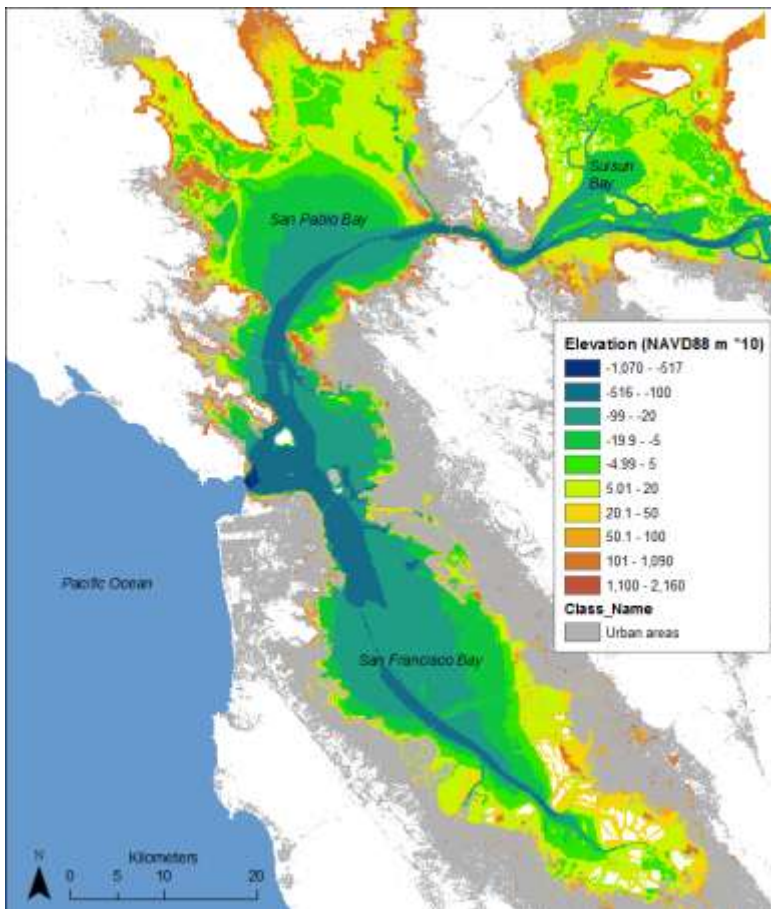


Marsh98 deposition algorithm for intertidal and subtidal bed elevations

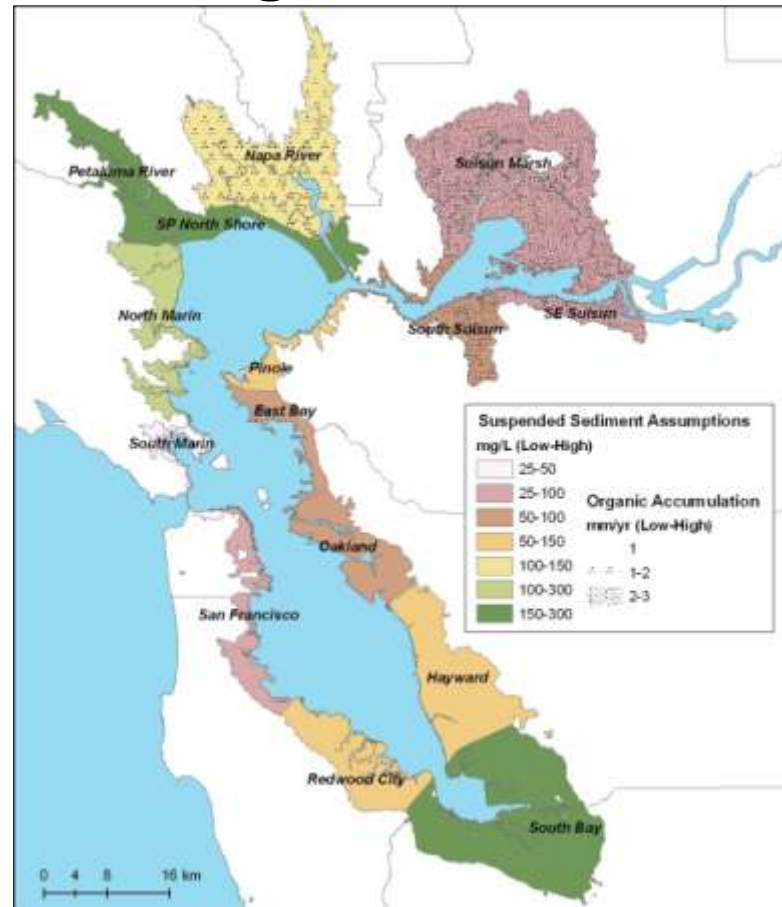


Our Hybrid Approach: Inputs

Base elevation



Sub-regional scenarios



Our Hybrid Approach: Inputs

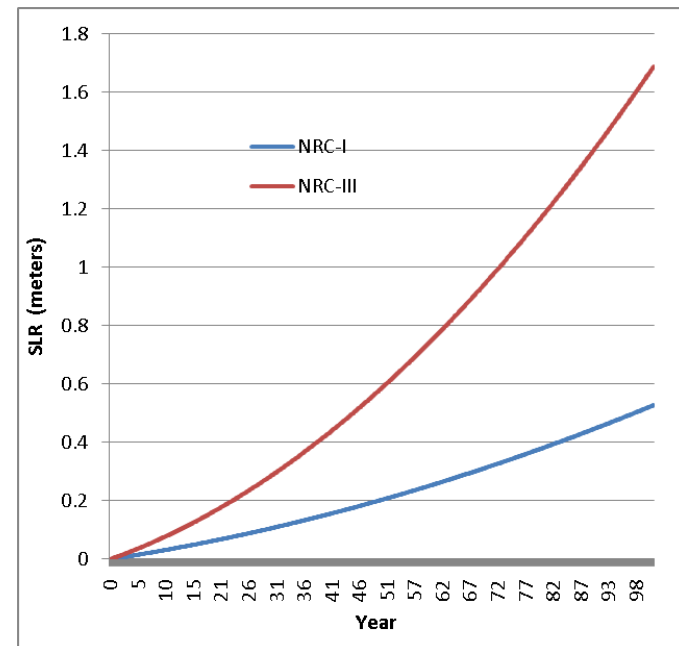
- **Initial bed elevations**

- Sub-tidal -2.4m MHHW
- Low marsh -0.5m MHHW
- Mid marsh 0 m MHHW

- **Two non-linear SLR scenarios**

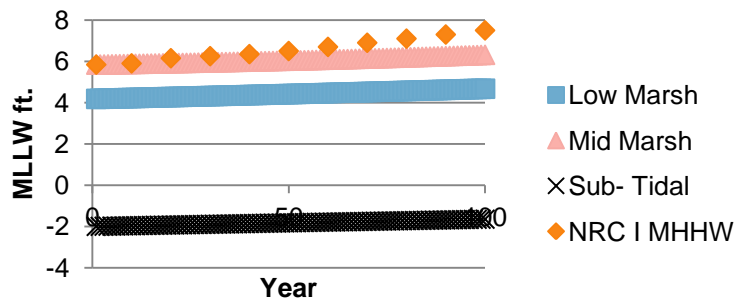
- Low = 0.52m/100 yrs
- High = 1.65m/100yrs

Results were interpolated to other initial elevations in 10 cm increments:

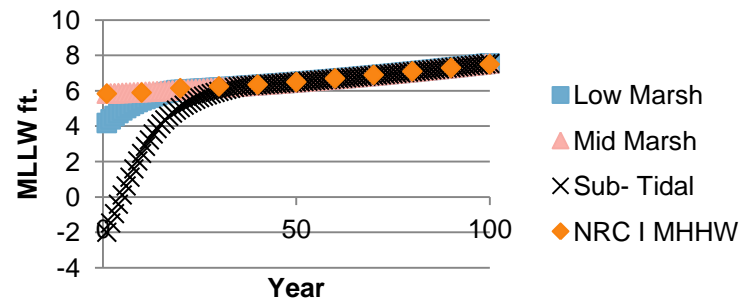


The model is very sensitive to suspended sediment concentrations

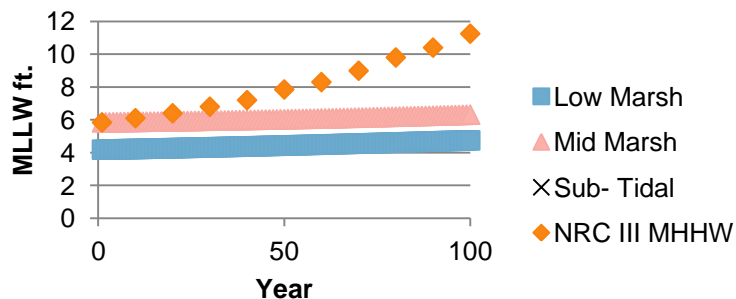
Sediment = 25 mg/L Low SLR



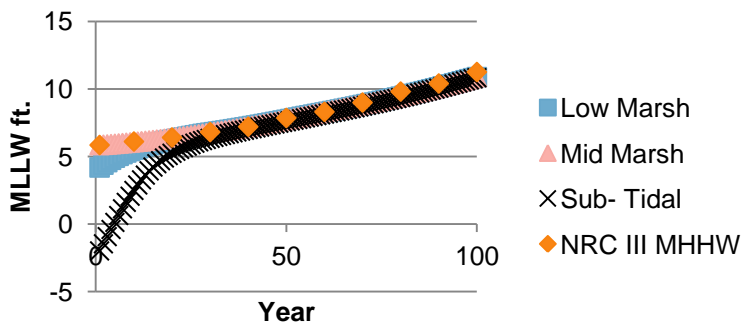
Sediment = 300 mg/L Low SLR



Sediment = 25 mg/L High SLR



Sediment = 300 mg/L High SLR

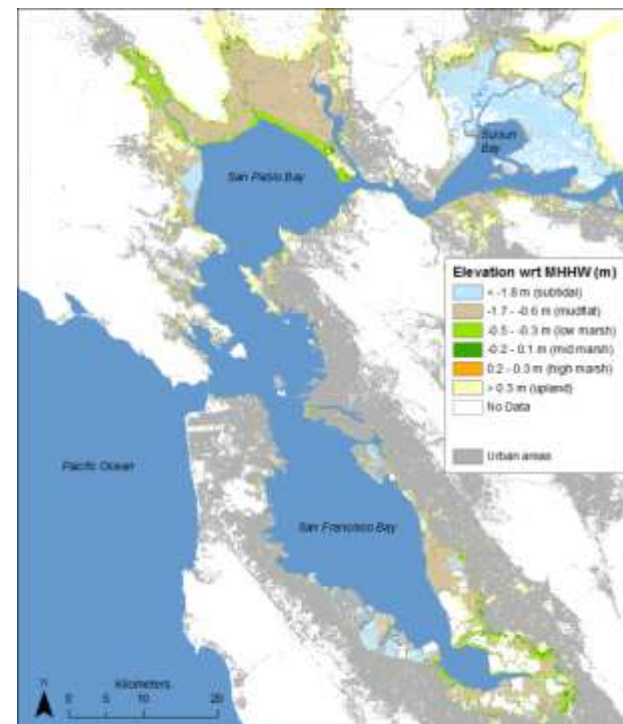
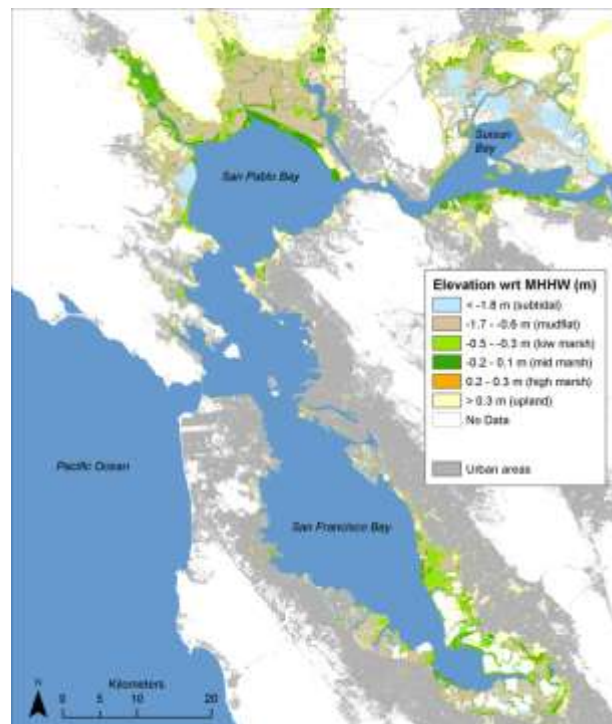
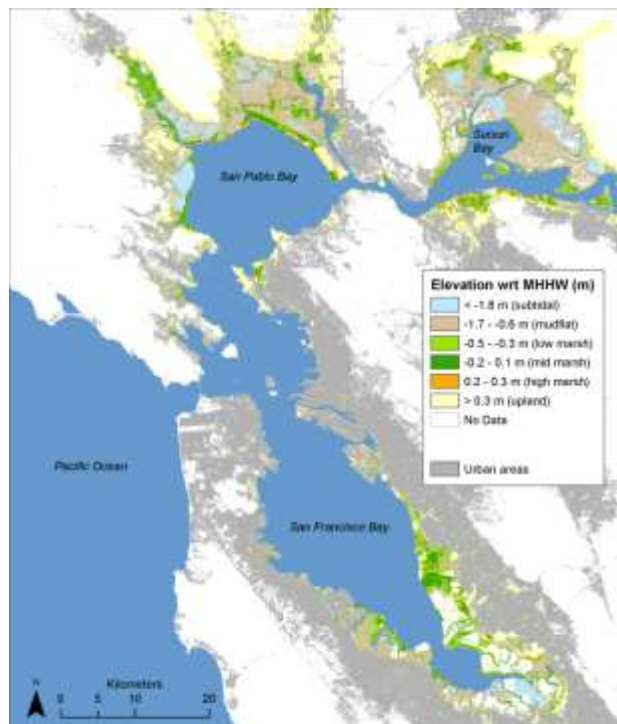


Hybrid results Low sediment/ Low Organic accumulation High SLR

2010

2060


2110



PRBO's Sea-level Rise Decision Support Tool

www.prbo.org/sfbayslr

Turn on levee layer- current reality



San Francisco Bay Sea Level Rise:
Climate Change Scenarios for Tidal Marsh Habitats

[About the Maps & Data](#) [Give Us Your Feedback](#)

Elevation
start over

Sea Level Rise: ?

0.52 meters

1.65 meters

Sediment: ?

Low availability

High availability

Organic Material Accumulation: ?

Low

High

Other layers:

Public lands ?


Diked areas ?

Study Area Subregions ?

Urbanization ?

Elevation data in 2010


Map | Satellite | Hybrid | **Terrain**



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Map data ©2010, Data - Terms of Use

● 2030 ● 2050 ● 2070 ● 2090 ● 2110



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Habitat Type (Elevation in meters)**

	Upland (above +0.3m)
	High Marsh (+0.2m to +0.3m)
	Mid Marsh (-0.2m to +0.1m)
	Low Marsh (-0.5m to -0.3m)
	Mudflat (-1.8m to -0.6m)
	Subtidal (below -1.8m)
	Bay water level

** Elevations are measured at mean higher high water.

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Scientific Input: Dave Schoellhamer (USGS), Neil Ganju (USGS), Stuart Siegel (WWR), Bruce Jaffe (USGS)

Elevation Data: Noah Knowles (USGS), FEMA, Joel Dudas (DWR), Stuart Siegel (WWR), Sonoma County

Rate of marsh accretion: Key assumptions

- **Accretion rates are dependent on:**
 - Availability of suspended sediment
 - Depth and periods of inundation by high tides