



HOW IMPORTANT ARE SEA LEVEL RISE AND FORESEEN ENGINEERING MEASURES ON THE FINE SEDIMENT DYNAMICS IN THE DELTA?

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CaSCADE II





To evaluate the relative impact of engineering works and sea level rise on sediment dynamics in the Delta.

- Trapping efficiency
- Turbidity levels

Delft3D Felxible Mesh and Delwaq















Suspended Sediment Concentration



Calibration (WY 2011)

Complex Model with simple input 1 mud fraction

Achete et al.,

2015, HESS

MOK

model

data



Scenarios

- Base case : WY 2011
- Water diversion works (shift pumping from Clifton Court to DCC)
- Island flooding
- 38% Drop in sediment supply from Sacramento River
- Sea level rise



Water Diversion





Flooded Islands



Flooded Islands





Sea Level Rise





Turbidity levels

- % of time that 35 mg/l is exceeded
- More exceedance is better for Delta Smelt
- Conclusions:
- Higher turbidity
 levels for sea level
 rise
- Drop in sediment
 supply from
 Sacramento River
 has largest effect



Discussion

- Work needs to be done on indicator definition (what is relevant for fish or clam habitats?) – ongoing projects in CASCADE
- Long term effects do not include bed level change (trapping efficiency is a maximum)
- Scenario evolve differently over time from 1 year (island flooding) to 100 years (sea level rise)

Achete et al., 2016 (submitted)

Summary

- We applied a complex, process-based model to assess the impact of water diversion, island flooding and sea level rise on sediment trapping in the Delta
- Model results indicate possible scenario impact on sediment trapping efficiency and turbidity levels based on WY 2011 forcing
- More analysis needed to cover diversity in river flows

Achete et al., 2016 (submitted)

Thank you!



