

Pacific Coast

NEEA update breakout group report

CA, OR, WA*

**does not include AK and HI*

Conceptual Diagrams

- Fjord
 - deep, stratified, sill/restricted flushed, steep-sided
- Coastal Lagoon (closed and open)
 - shallow, some bar dynamics regulated, limited FW, alternate extremes, wet/dry
- Embayments
 - ocean forcing, diffuse inputs, stormwater
- Drowned River Valley/River Mouth
 - watershed/ocean, horizontal stratification, wet/dry (& seasonal pulses), urban slobber

Conceptual Diagrams

- Fjord
 - deep, stratified, sill/restricted flushed, steep-sided, **low DO, SAV, Macro**
- Coastal Lagoon (closed and open)
 - shallow, some bar dynamics regulated, limited FW, alternate extremes, wet/dry, **Macro, SAV**
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 - watershed/ocean, horizontal stratification, wet/dry (& seasonal pulses), urban slobber, **all**

	Key features	Nutrient inputs	Indicator variables
Fjords	Deep, stratified, sill/retentive, steep	↑	DO, SAV, Macro
Coastal Lagoons	Shallow, bar dynamics, limited flow	Varies with population and climate	Macro, SAV
Embayments	Oceanic processes, deep, diffuse inputs	along N-S gradient	HABs
River Mouths	Watershed & oceanic, horizontal stratif., pulsed, wet/dry	↓	Macro, SAV, HABs, DO

West coast estuaries/bays

- Added some systems in all states
- Some do not have adequate data, but we feel it is important to list them as “?”s
 - prioritization based on susceptibility or where impending management need
- Re-classified (lumped) some systems
 - Will focus on representative system within category
- May need to nest assessments in bigger systems

Status

- S. CA: need to get data in order to input; data gaps; opportunity to incorporate NEEA indicators to Regional Monitoring Program
- C. CA: needs to happen
- OR: intends to add new data on 11 estuaries
- WA: Seagrass and macroalgae data ready to be input; WQ data there, but time to analyze needed

Case Studies

- Newport Bay: load reduction but no corresponding response improvement
- SFB: chl is increasing but unclear why; could be light limitation lifting. Does this increase in chl represent a problem?
- Yaquina Bay/Coos Bay: in development
- Hood Canal: DO problem increasing, but complicated as to why
- San Juan Is: significant seagrass loss and cause unknown

Problems

- Flushing is variable within estuary location and defines status...scaling issue, sub-basin scale
- Disconnect between pressure and state, not capturing that “bad not as bad” but “good not as good”...
- Temporal aliasing due to climate variation

Salinity zones

- Why do this???
 - N v P ?
 - Sense of flushing ?
 - Proximity to source, linear model ?
- Should this be re-visited??
 - We think so, especially for 3 of 4 West Coast systems
 - Need justification for this “baggage” for angst:payoff ratio

Revise eutrophication conc. model

- Nutrient loads
 - N:P ratios; nutrient form; micronutrient; C
- Transport and storage
 - groundwater role
 - pulses and hydrologic alteration:
 - flashy urban yet steady dams)
 - urban slobber (persistent anthrop. trickle)
- Complicating/synergistic factors
 - food-web alterations, exotic species; top predator alterations; pharmaceutical etc loads
 - i.e., SFB with Asian clams...less chl but big problems
 - climate change -- hardened shorelines

Human drivers changing

- Population vs. housing
- Urban more diffuse
 - septics in exurbs
- Ag more concentrated
- Sewage treatment upgrades
- Atmospheric loading & deposition
 - less NO_x more NH₃
- Ag/suburban land use
 - fragmentation and impervious surfaces

Recommendations

- Monitoring
 - Better loading estimates (#1)
 - Use of forecasting models for prioritization
 - Data collection over the year, assess multi-year avgs, evaluate on decadal scale
 - Tie-in to IOOS
 - Integrate sampling technologies
 - Assess variation within current indicators
 - Restoration effectiveness measures
 - Enhance and endorse web-based approach

Recommendations

- Research
 - Refine our understanding of issues in “revised eutrophication conceptual model” slide and the mechanisms involved (#1)
 - Development of operational forecasting models (#1)
 - Better techniques for load estimates
 - Better technologies for flushing estimates
 - Refine/define a susceptibility index

Recommendations

- Management

- Evaluate impacts in “changing human drivers” slide & determine management responses
- Integration of EPA (regulatory) and NOAA & USGS (assessment) approaches
 - e.g., 305(b) vs. NEEA
- Utilize State v. Pressure analysis

