Ecosystem Changes and the Low Salinity Zone: In-Delta Water Interests Comments on Science/Policy Intersection

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With thanks to Senn & Sutula, SFEI/SCCWRP

State Board Actions

- Improve geographic and agency collaboration on environmental management of the Bay and Delta
  - Bay/Delta NNE process
  - Monitoring coordination (IEP, RMP, Delta)
  - Integrated Modeling strategies
- Balance scientific uncertainty with management consequences thru nurturing joint fact finding

Bay Processes not matched by governance silos

- Upper Bay productivity environmental drivers
  - Flows
  - Nutrient inputs
  - Light penetration (turbidity)
  - Microbial processes and transformations
  - Primary producers
  - Grazing clams and plankton
  - Food chain transfers
- Drivers have different managers & scientists

Joint Fact Finding Process Crucial

- Research/Monitoring efforts in place working well
  - Interagency Ecological Program
  - Bay Delta Science Program
  - RMP & stormwater monitoring
  - SF Bay Numeric Nutrients Endpoints
- Gaps
  - Upstream nutrients (agriculture)
  - Modeling synthesis
  - Permit-required studies
  - Public participation

Need integrated models/ framework to explain good long-term monitoring data

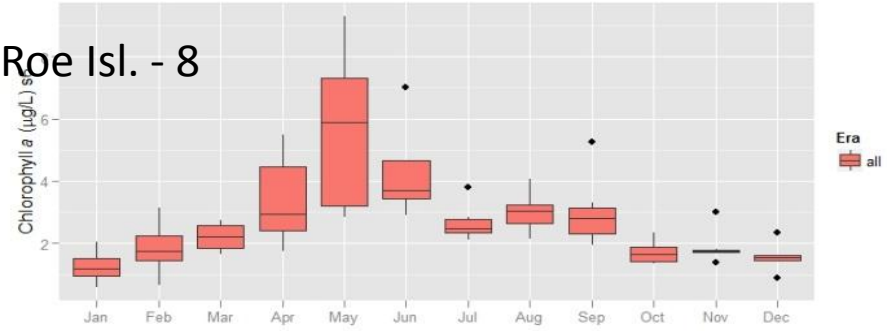
- Spatial Trends
- Temporal Trends
- “Natural” Experiments

Mobilizing long-term, regional data sets crucial for perspective

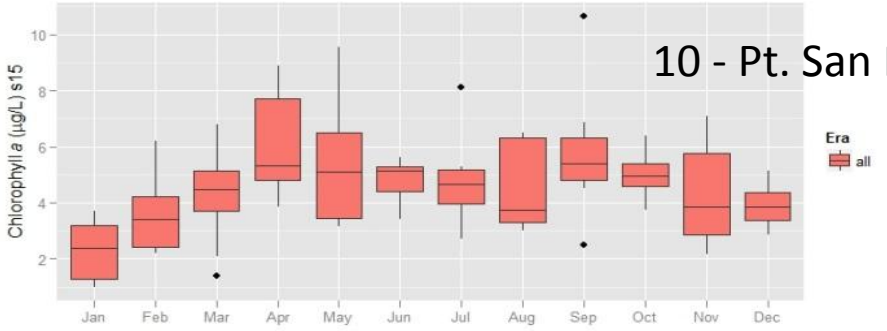
Segment	(NOx) – N (mg/L) 1958- 64 Recent		Ammonium-N (mg/L) 1958-64	Recent
Suisun	0.31	0.38	0.13	0.11
San Pablo	0.35	0.32	0.15	0.09
Central	0.24	0.26	0.15	0.09
South	0.34	0.35	0.12	0.08
Lower South	0.35	0.70	3	0.09

Conceptual models of water quality must explain Baywide response gradient to nutrients from Suisun to San Jose

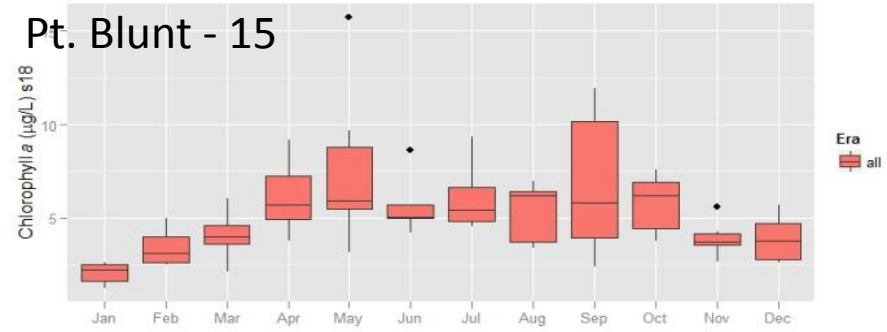
Roe Isl. - 8



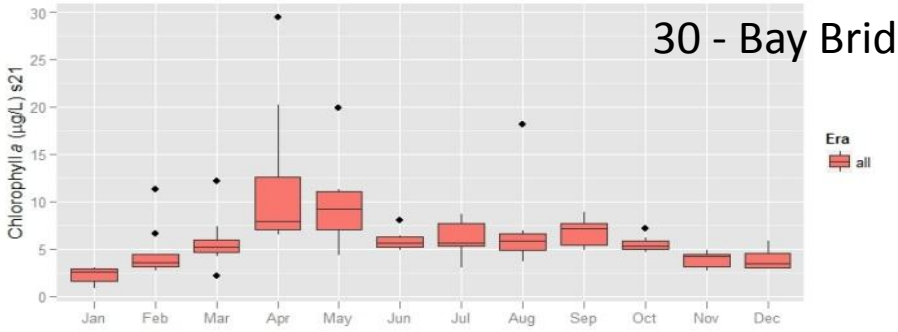
10 - Pt. San Pabl



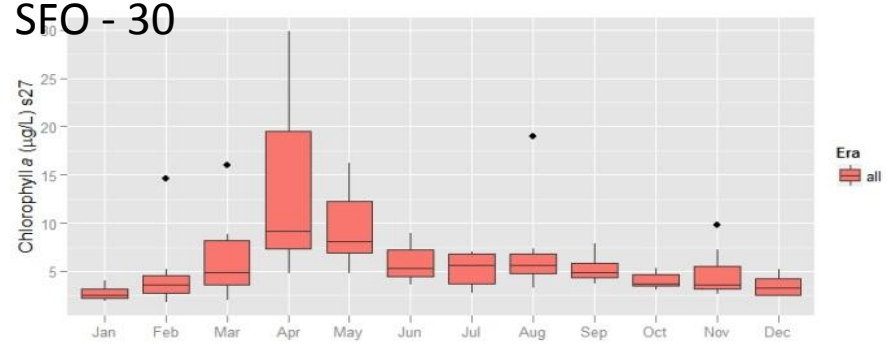
Pt. Blunt - 15



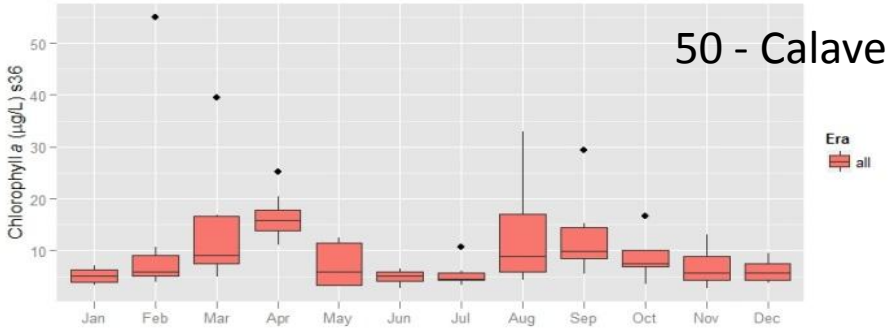
30 - Bay Bridge



SFO - 30

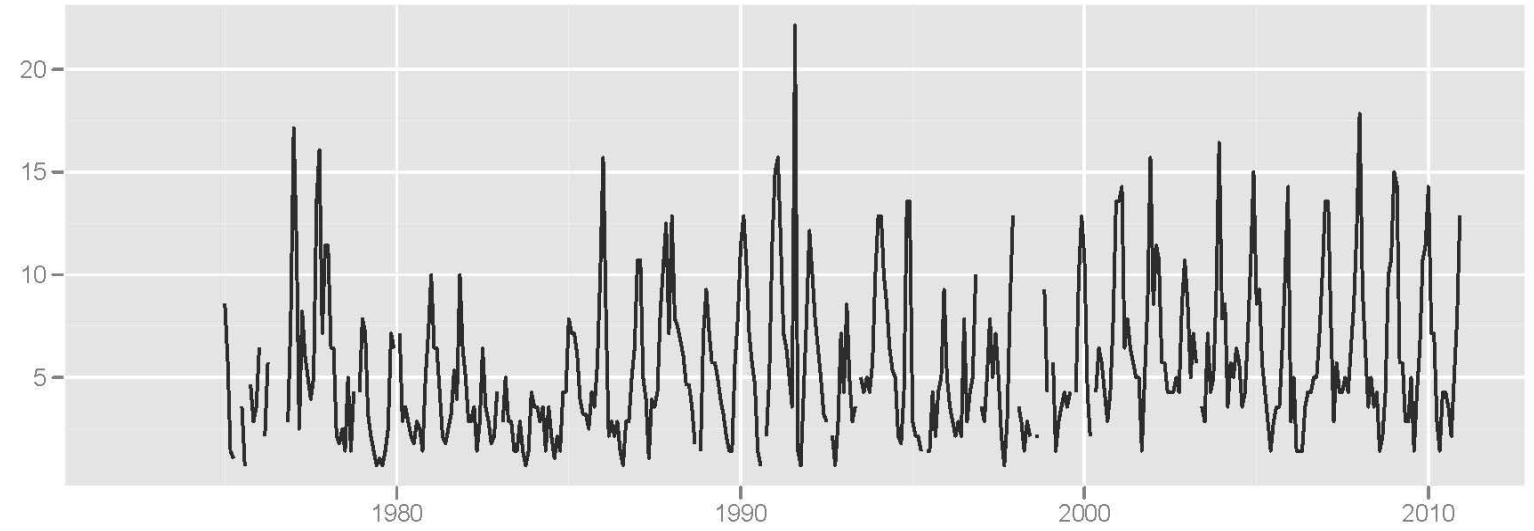


50 - Calaveras

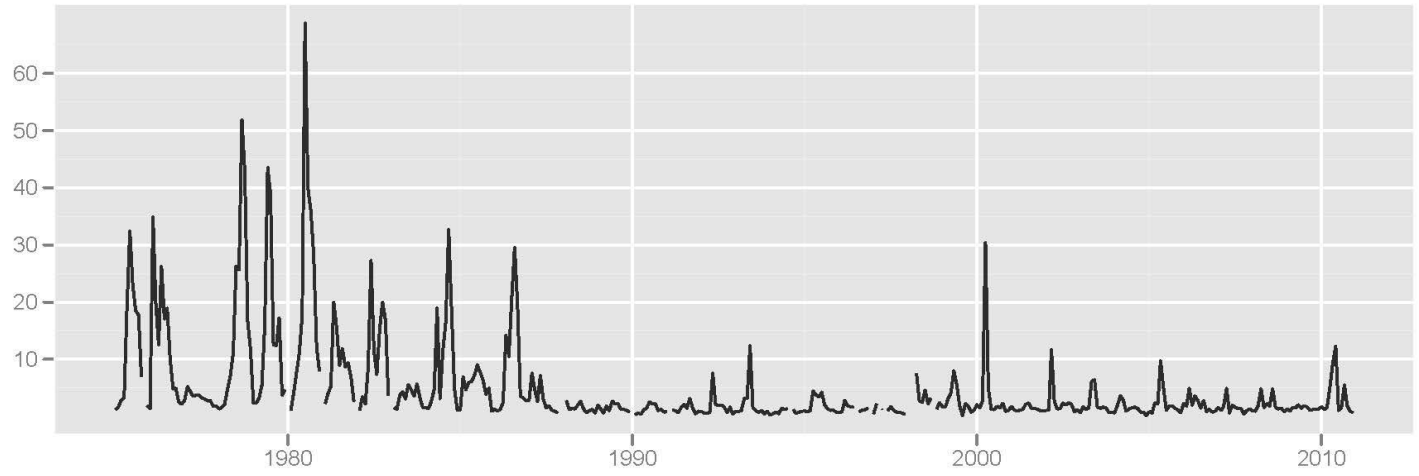


Long-term data sets important in building conceptual models

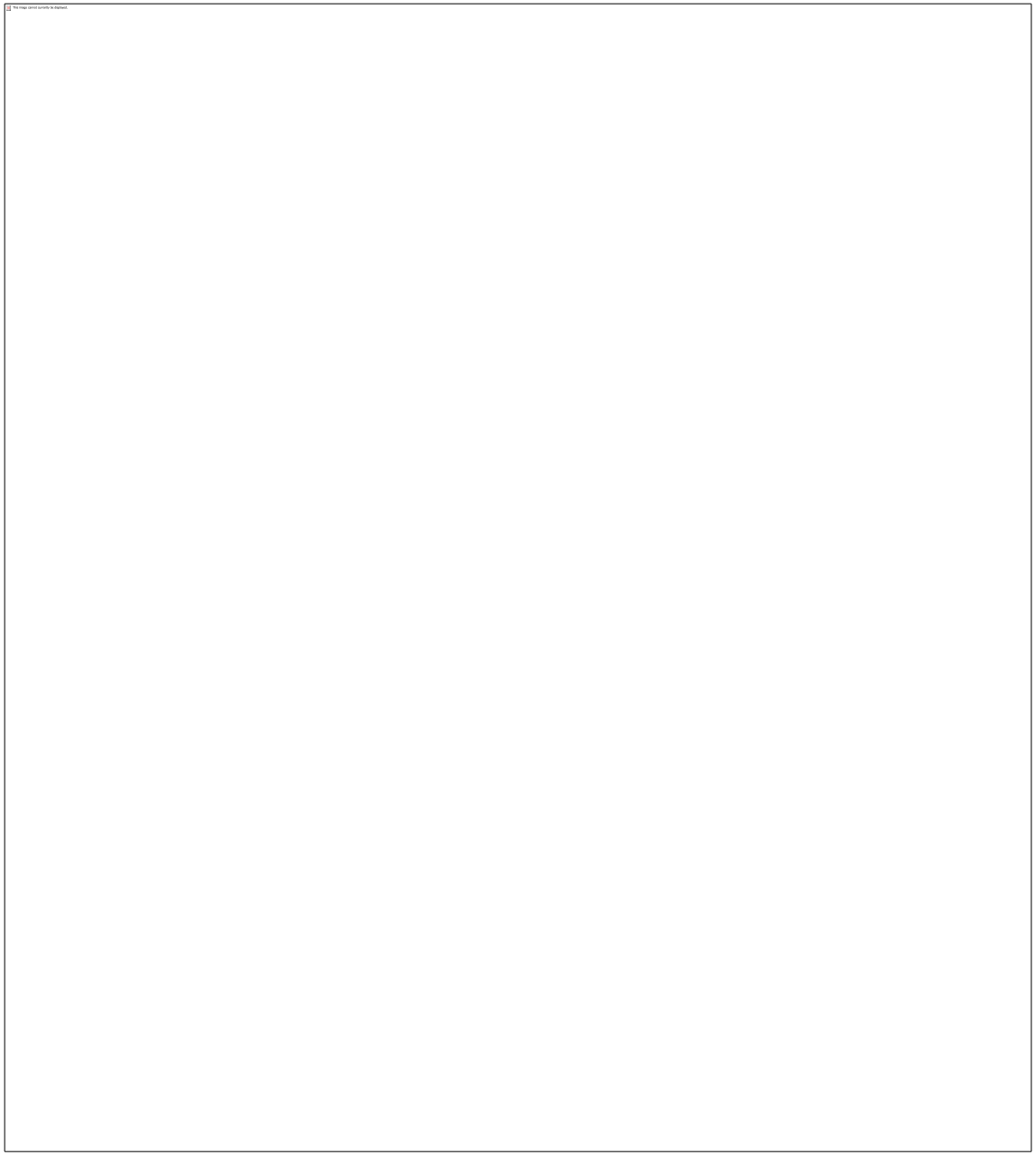
Suisun Bay Ammonium (uM)



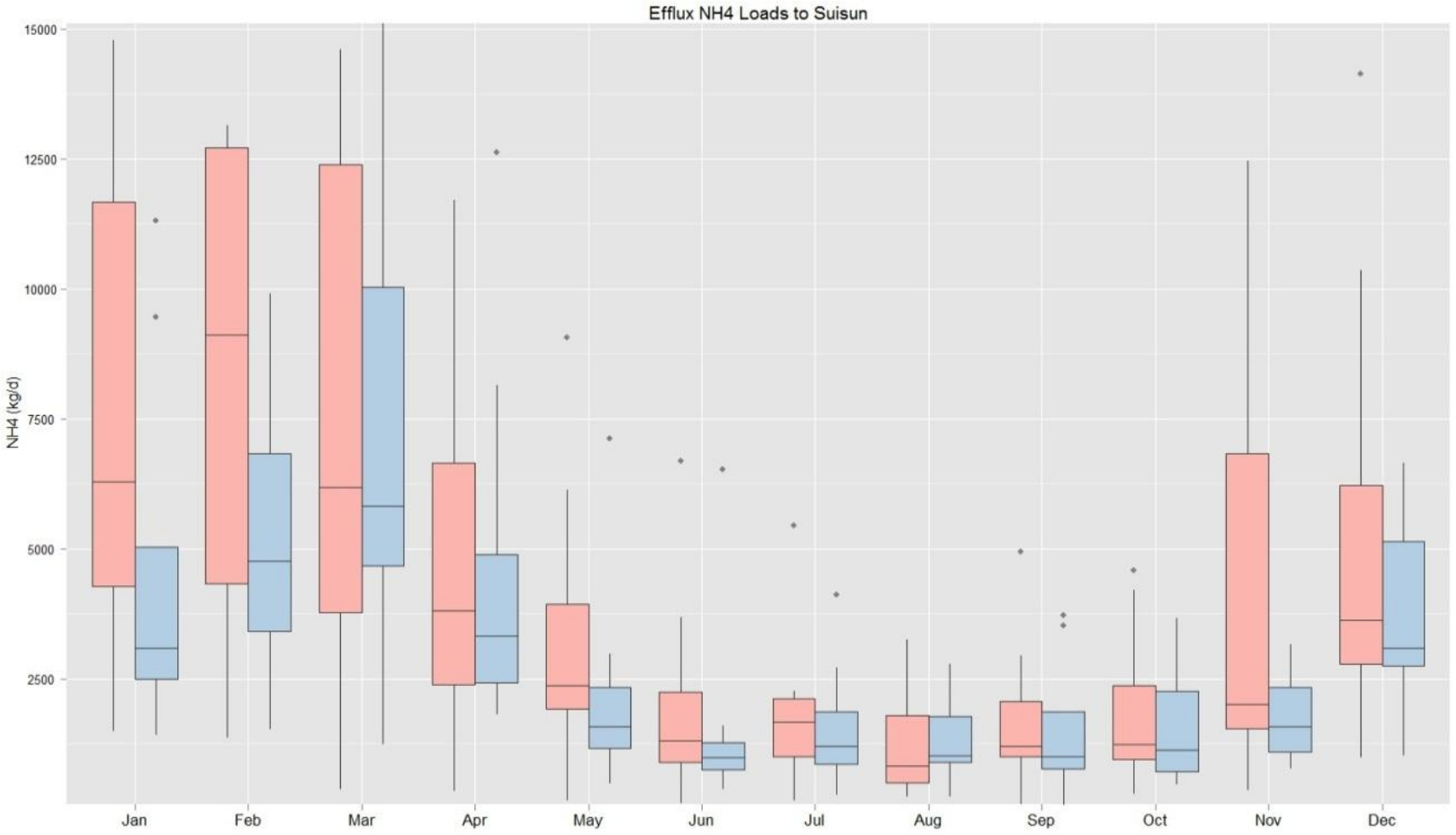
Chlorophyll (ug/L)



“Natural” experiments improve our predictive capability for management choices



Seasonal trends (ammonia loading to Suisun from rivers) demonstrate seasonal policy strategies



75-86

87-95

Setting Policy Amidst Large Scientific Uncertainties

- Balancing joint multiple uses requires large societal resources among the citizens we jointly represent
- Wastewater costs similar to water (10s $B)
- Costs are regressive
- Balance recycling, energy, N & P removal
- Nurture joint fact finding with permitting
- “No regrets” actions

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Comments on Earlier Presentations

- Adaptive Management & Predictive Triggers
- New Resources?
- Multiple stressors – science vs. policy
- Match science goals with policy timeline