



DO in shallow habitats: initial data analysis and next steps

...and, time permitting,
CY2013/FY2014 project updates

David Senn and Emily Novick

davids@sfei.org



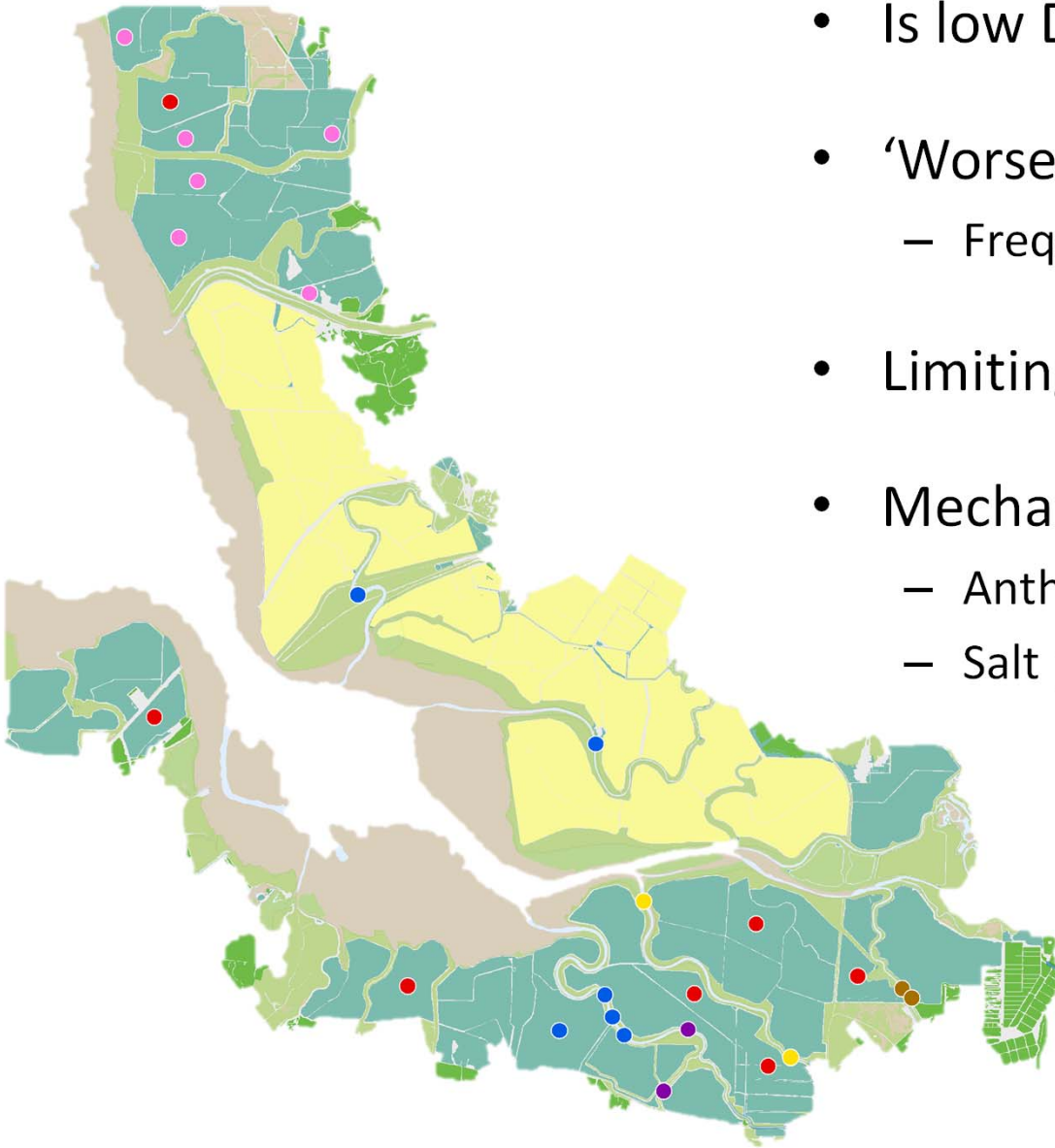
Highest Priority Issues – CM report

- Determine whether increasing biomass signals future impairment
- Characterize/quantify factors that adversely affect phytoplankton composition, including harmful algal blooms
- Determine if low DO in shallow habitats causes impairment
 - Quantify role of nutrients
- Test future scenarios that may lead to worsening conditions
- Quantify nutrient contributions to different areas of the Bay
- Test mitigation/prevention scenarios

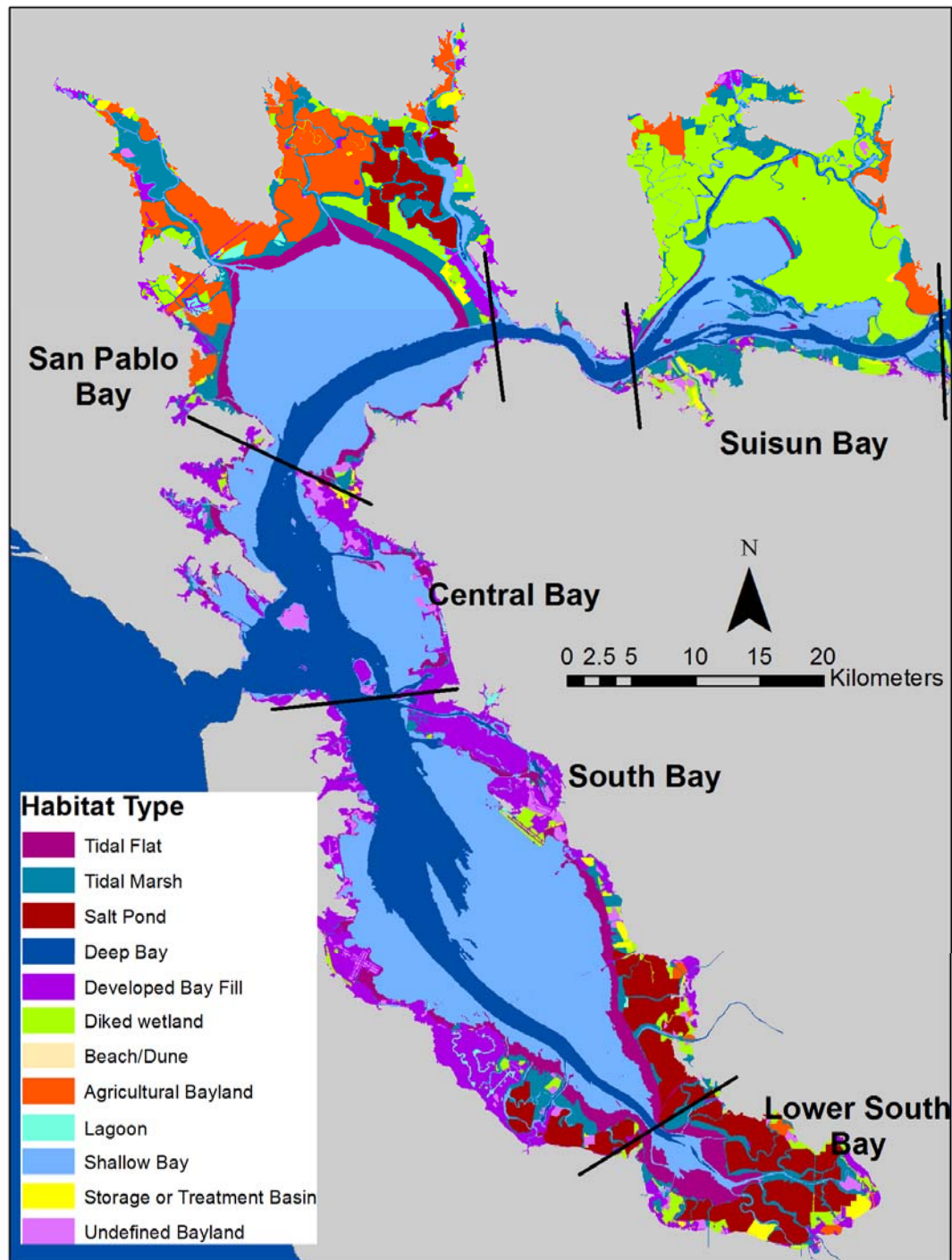
DO in Sloughs and Former Salt Ponds of LSB

Key Questions

- Is low DO occurring?
- 'Worse' than natural conditions?
 - Frequency, duration, severity
- Limiting habitat for fish and benthos?
- Mechanisms...?
 - Anthropogenic nutrients?
 - Salt ponds?

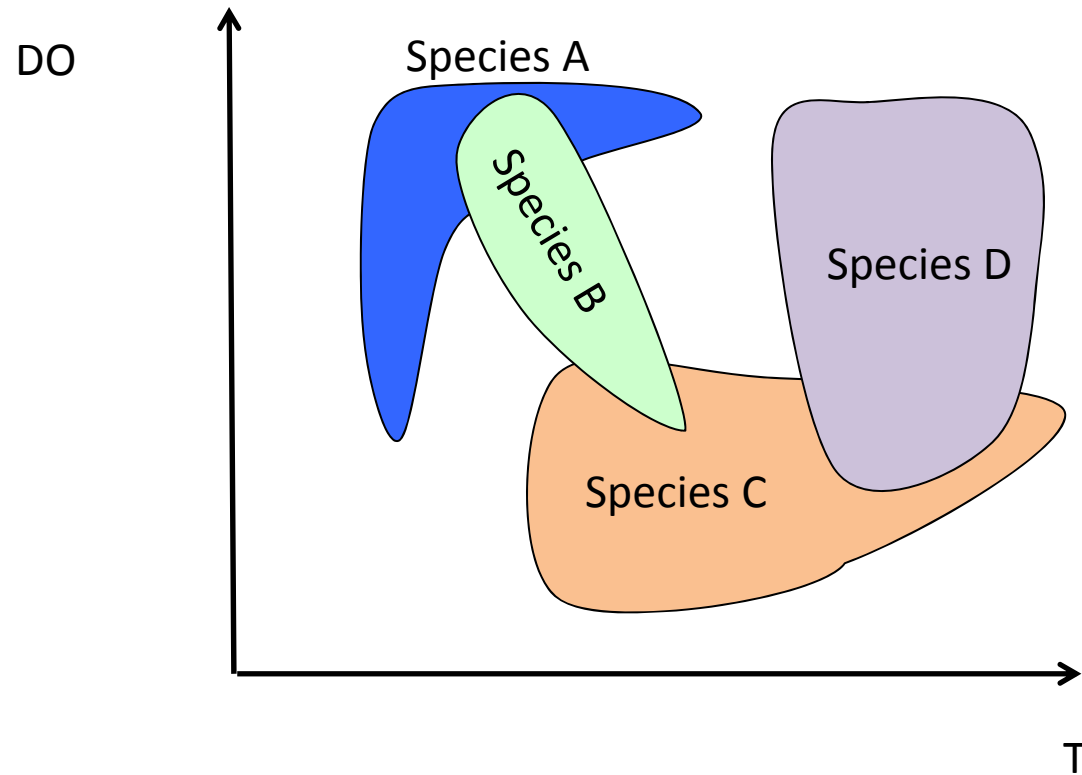


Why do we care?



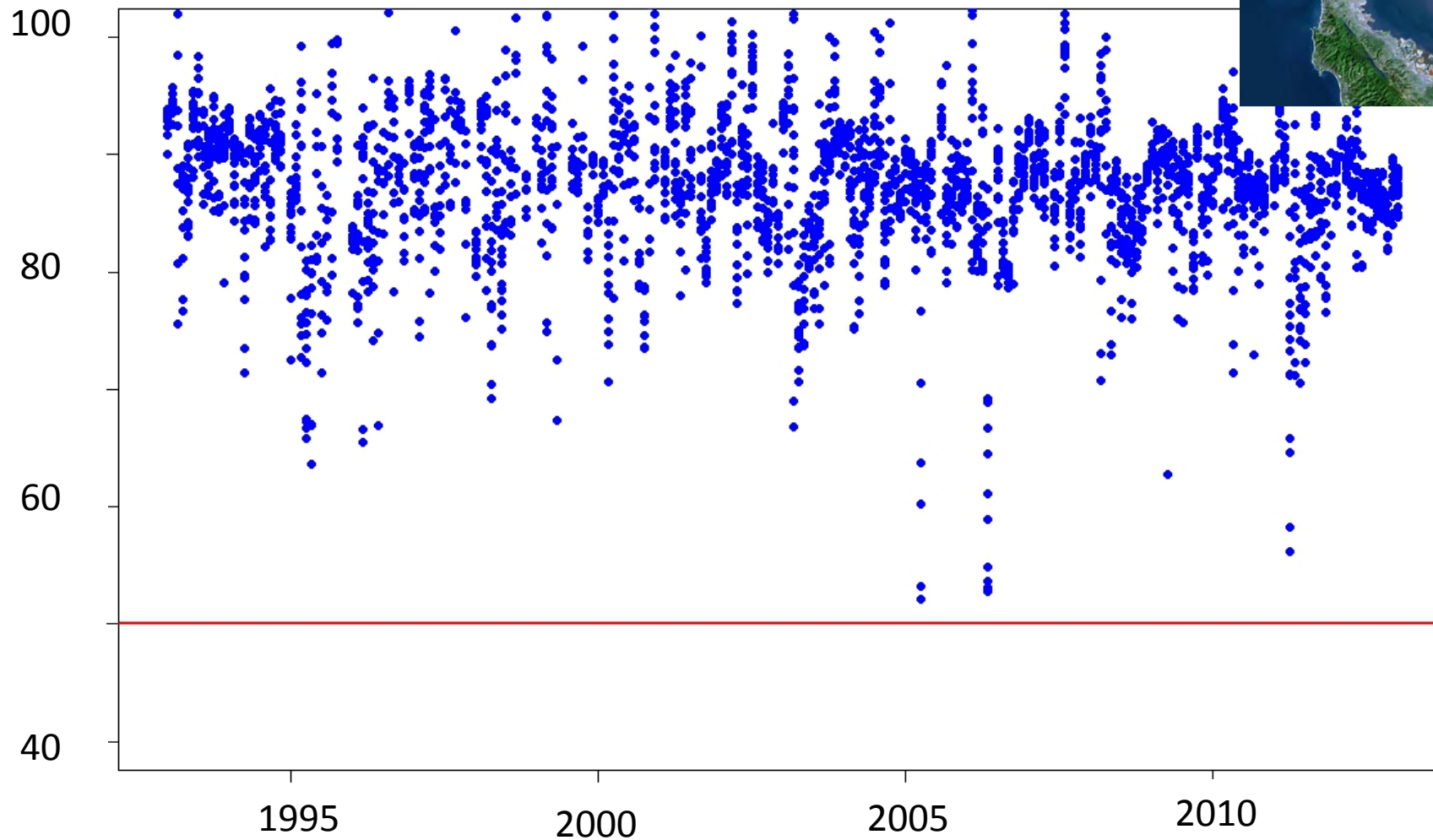
Why do we care?

...Fish like O₂, and some need more than others



Dissolved Oxygen (%sat) in Lower South Bay

****Deep subtidal****

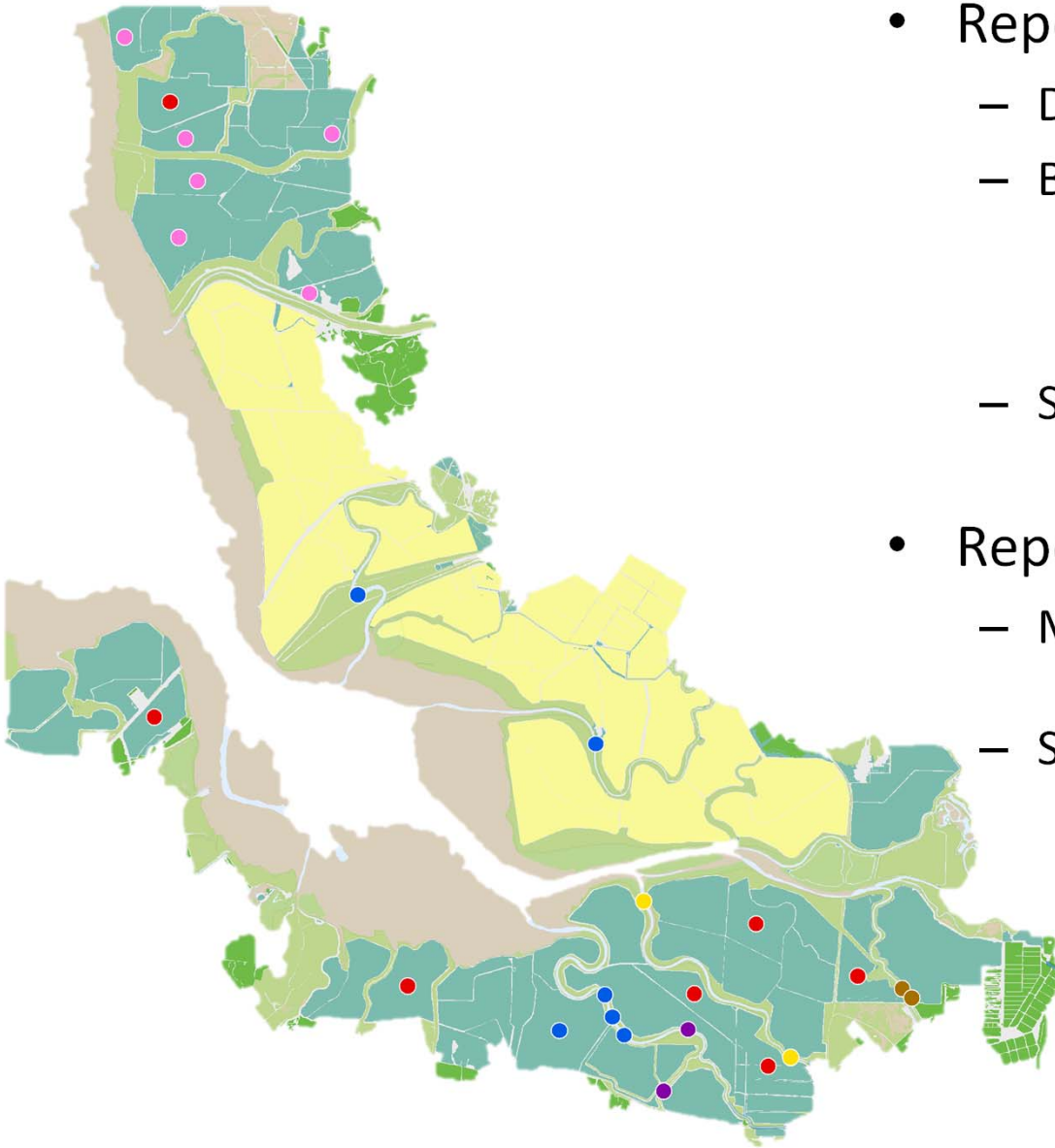


Pulse of the Bay (2013)
Data: USGS

DO in Sloughs and Former Salt Ponds of LSB

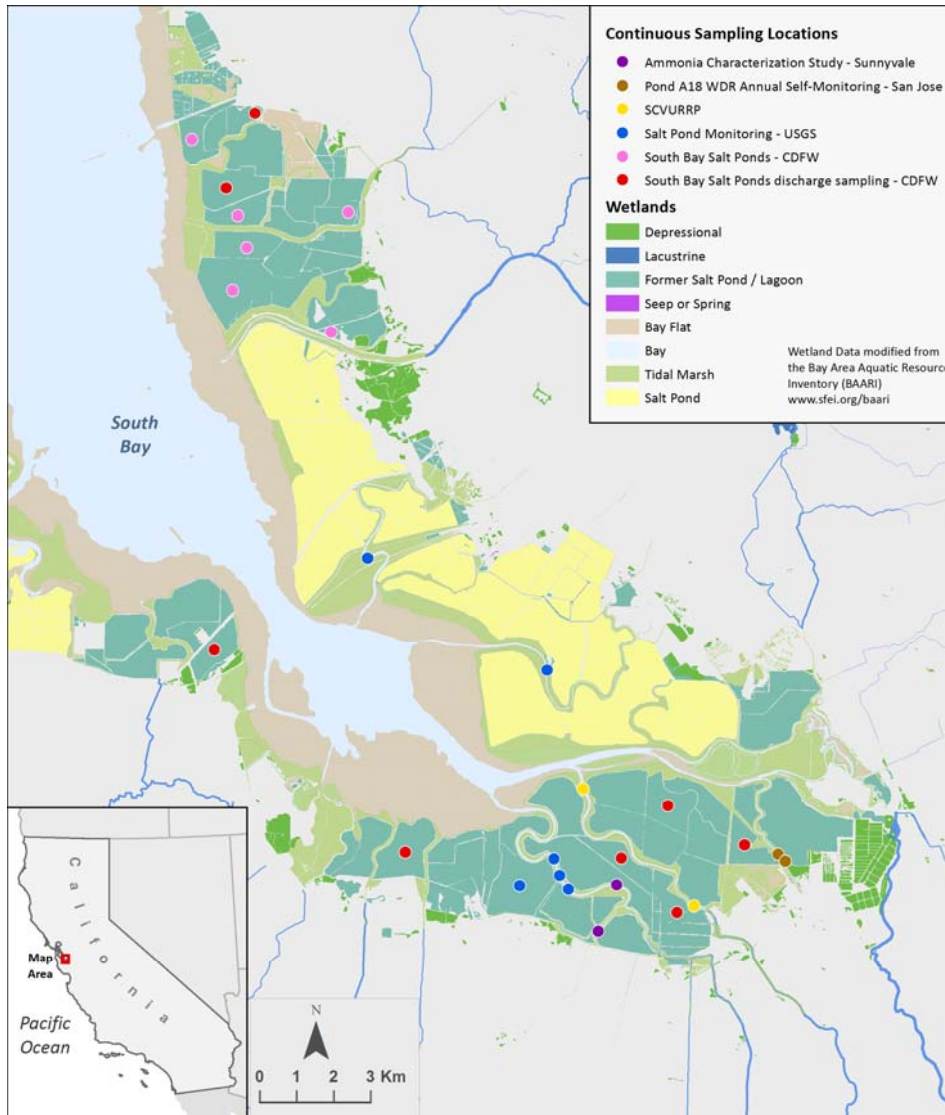
Approach

- Report #1
 - Data gathering, cleaning
 - Basic data analysis...
 - $<5\text{mg L}^{-1}$
 - $<2.8\text{ mg L}^{-1}$
 - SFEI (Jabusch et al.)
- Report #2
 - Mechanistic analysis
 - SFEI + USGS (Downing-Kunz, Senn...)

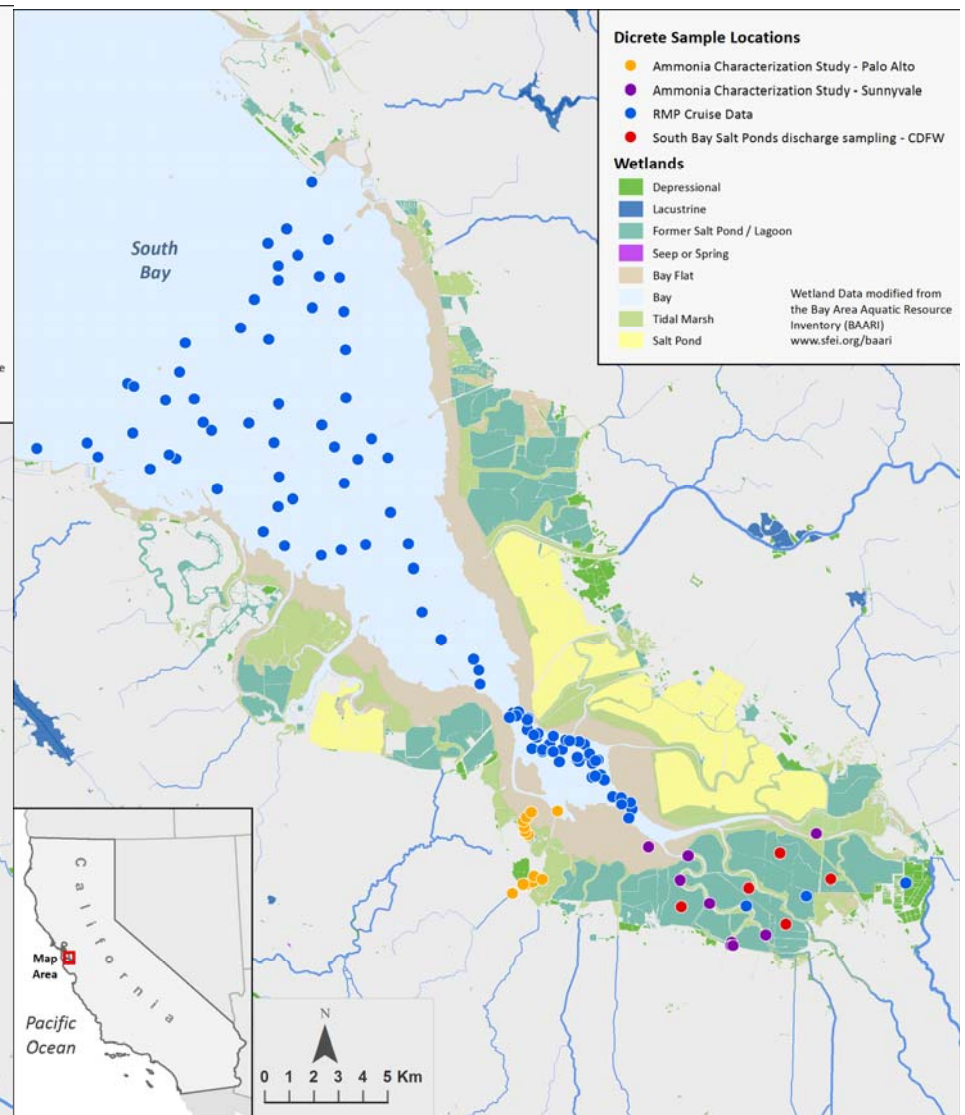


Dissolved oxygen data in LSB and South Bay margins

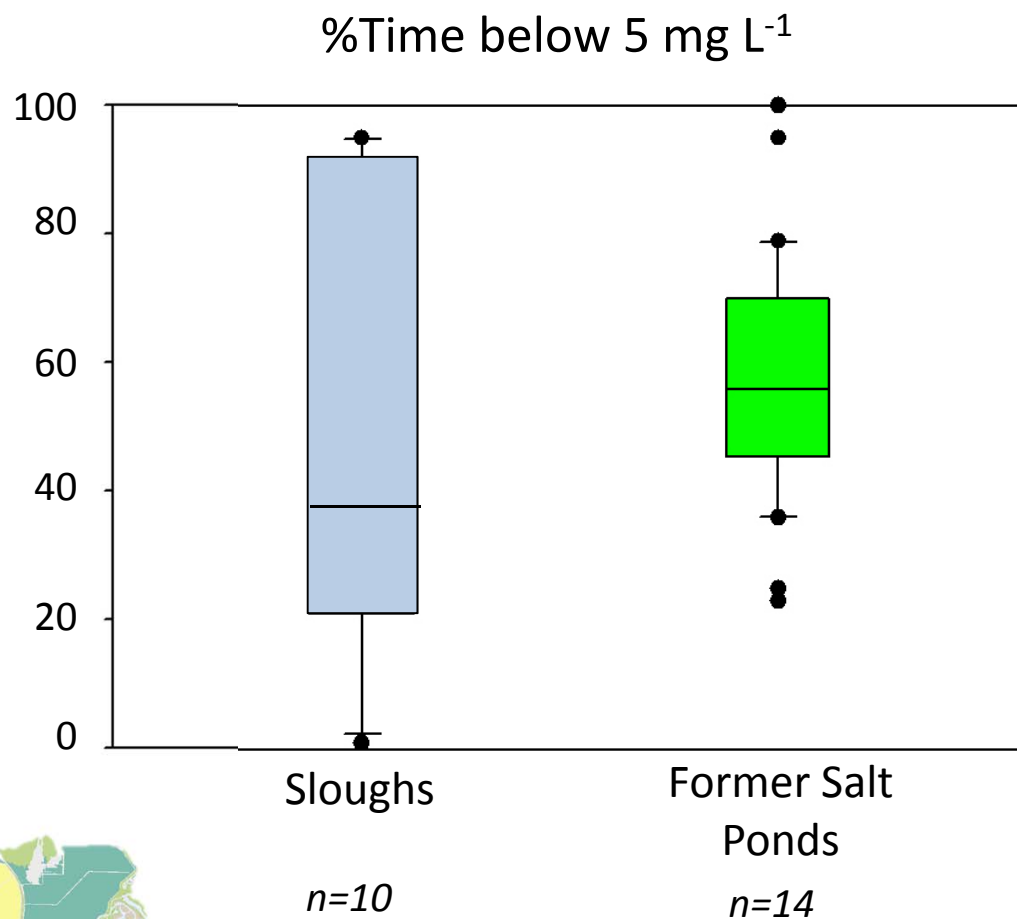
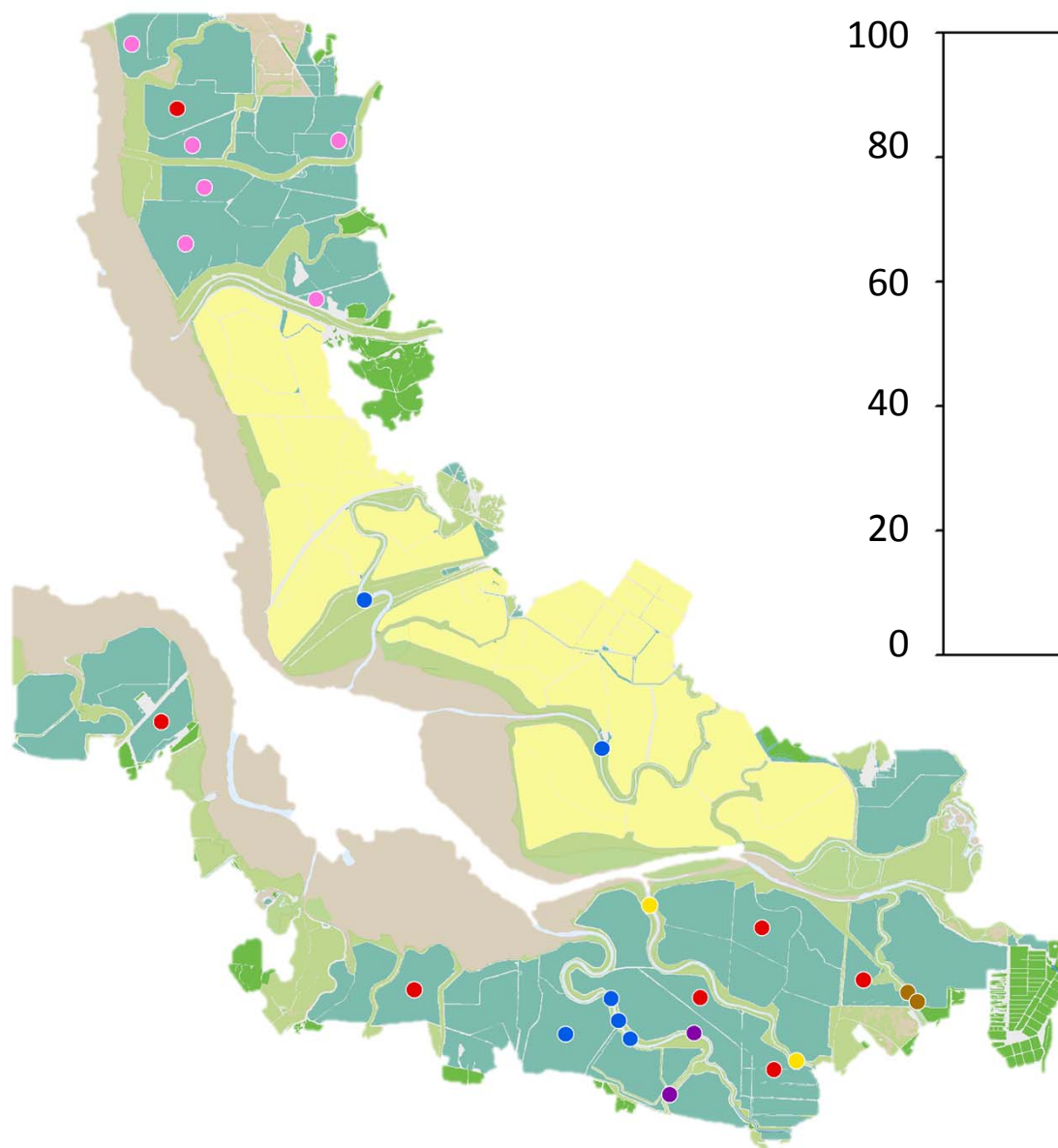
Continuous



Discrete

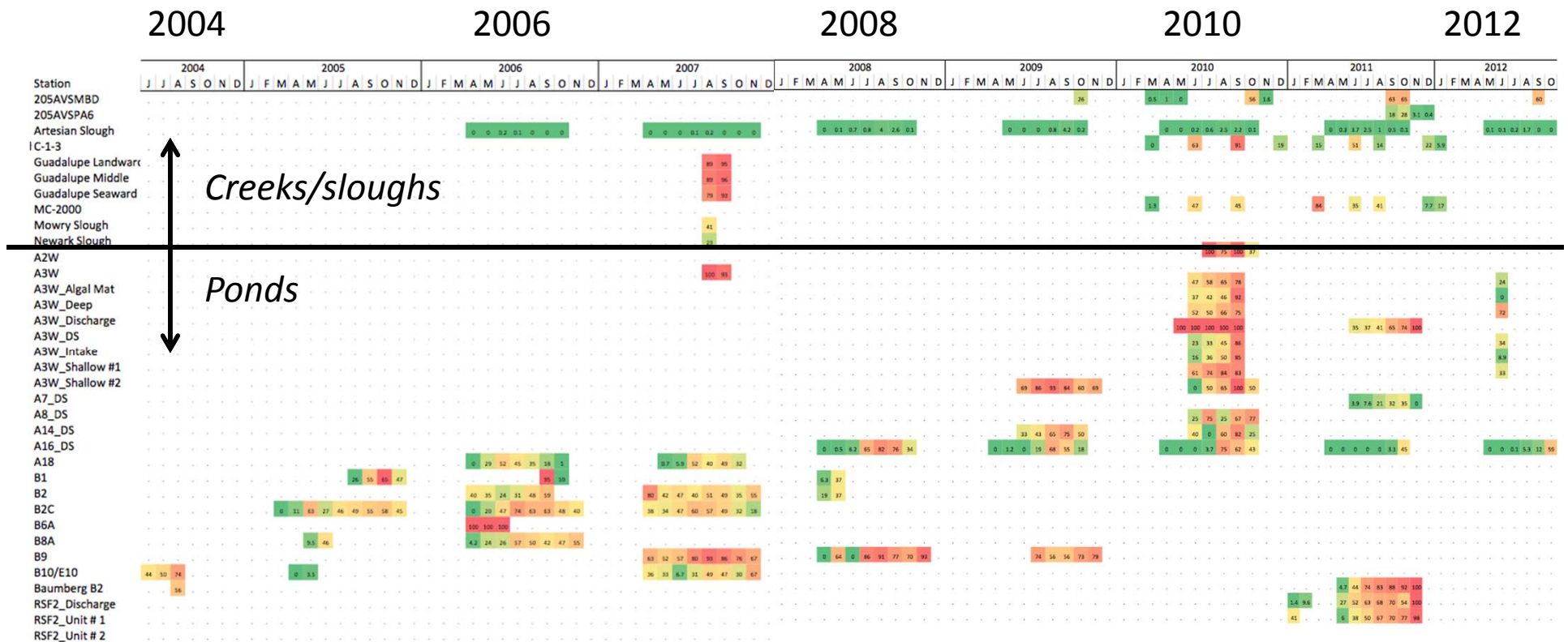


DO in Sloughs and Former Salt Ponds (data = 2004-2012)

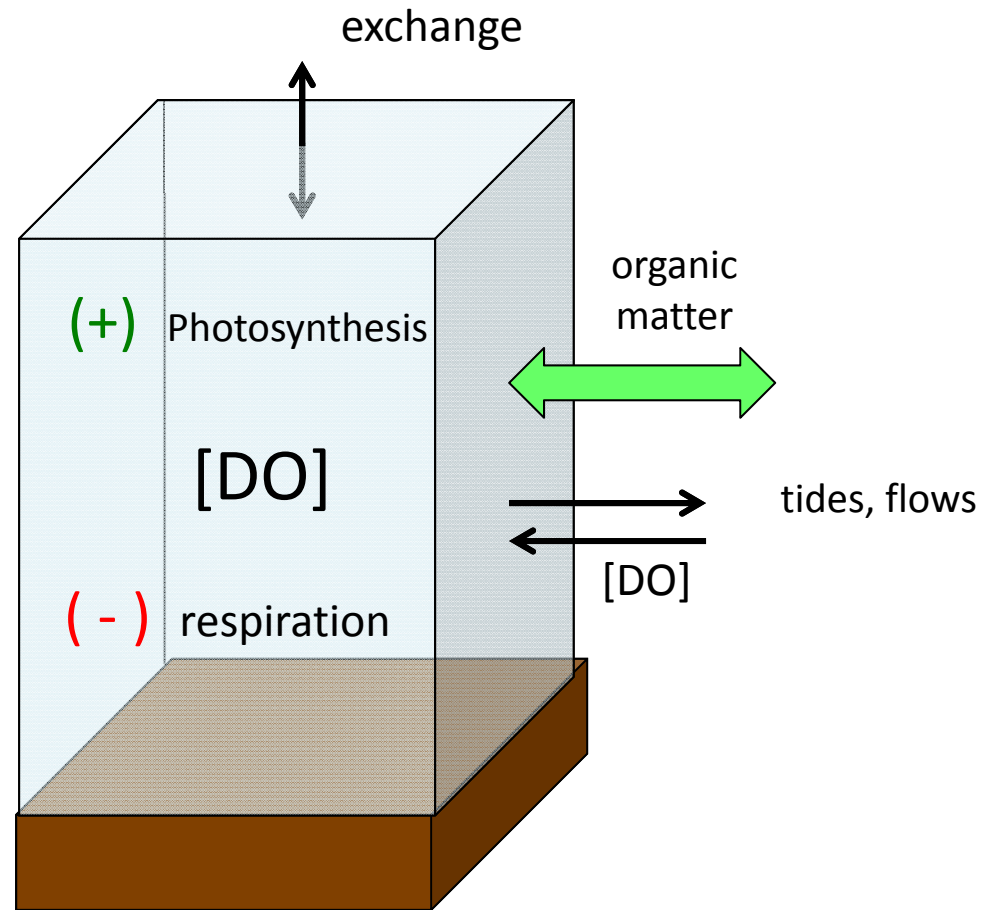
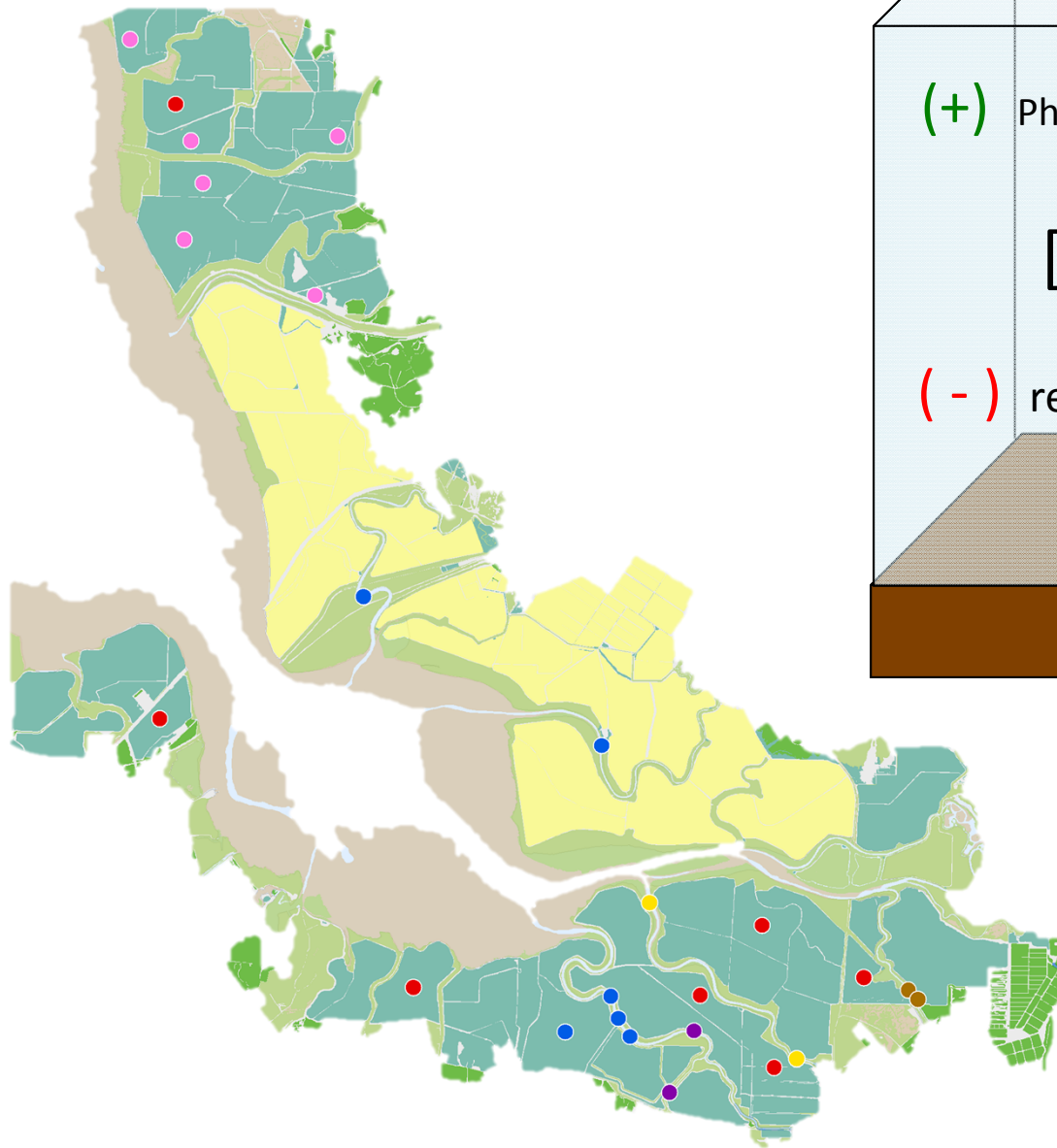


SFEI (2013)

Data Availability: color = frequency < 5 mg L⁻¹



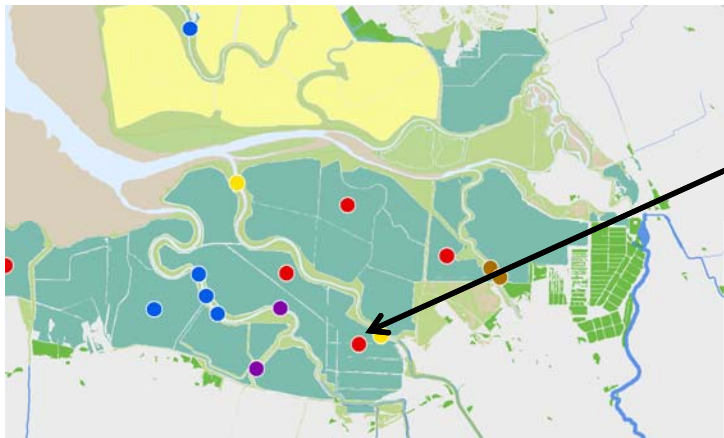
Major factors influencing DO



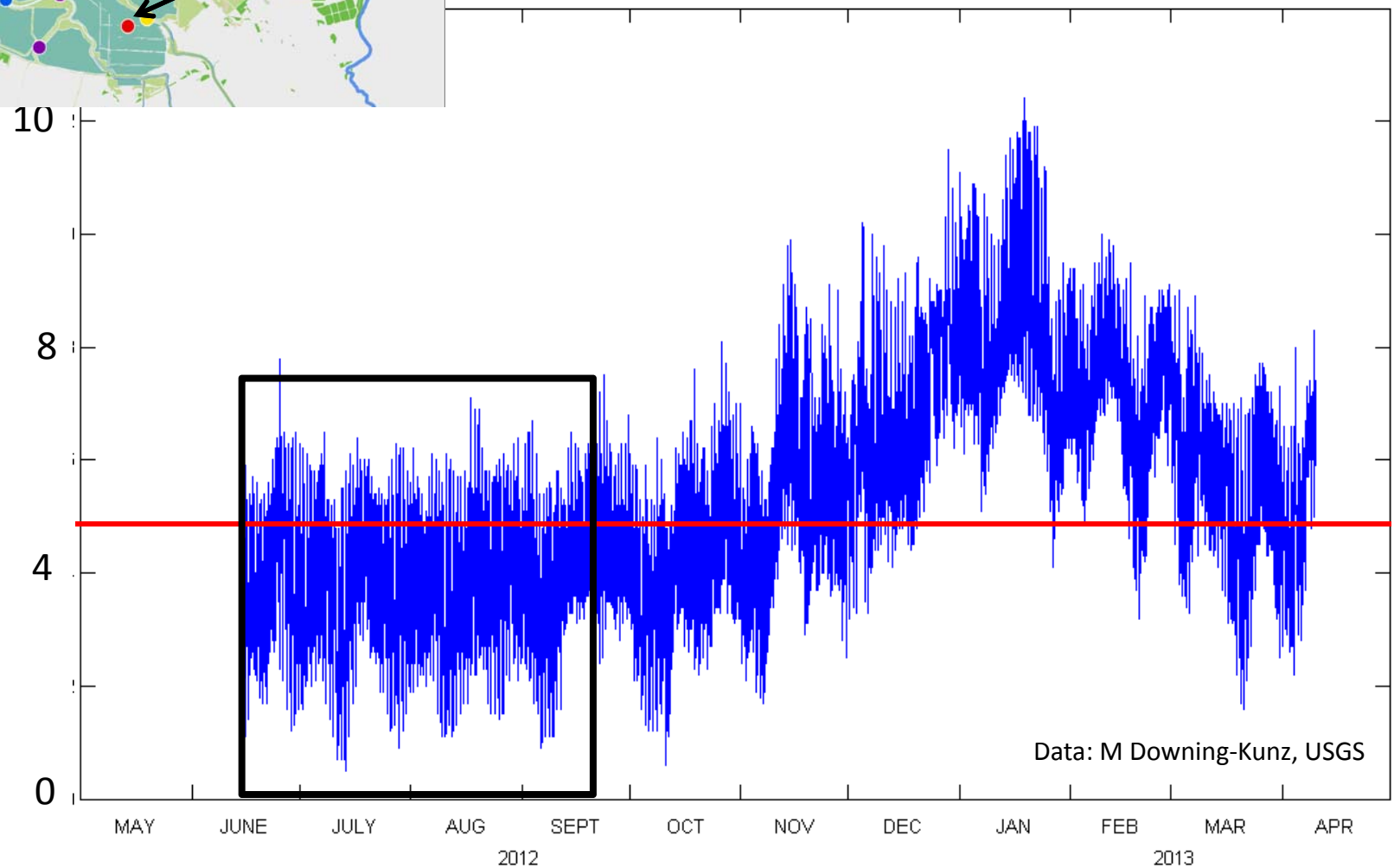
Photosynthesis: mid-day max

Respiration: ~constant

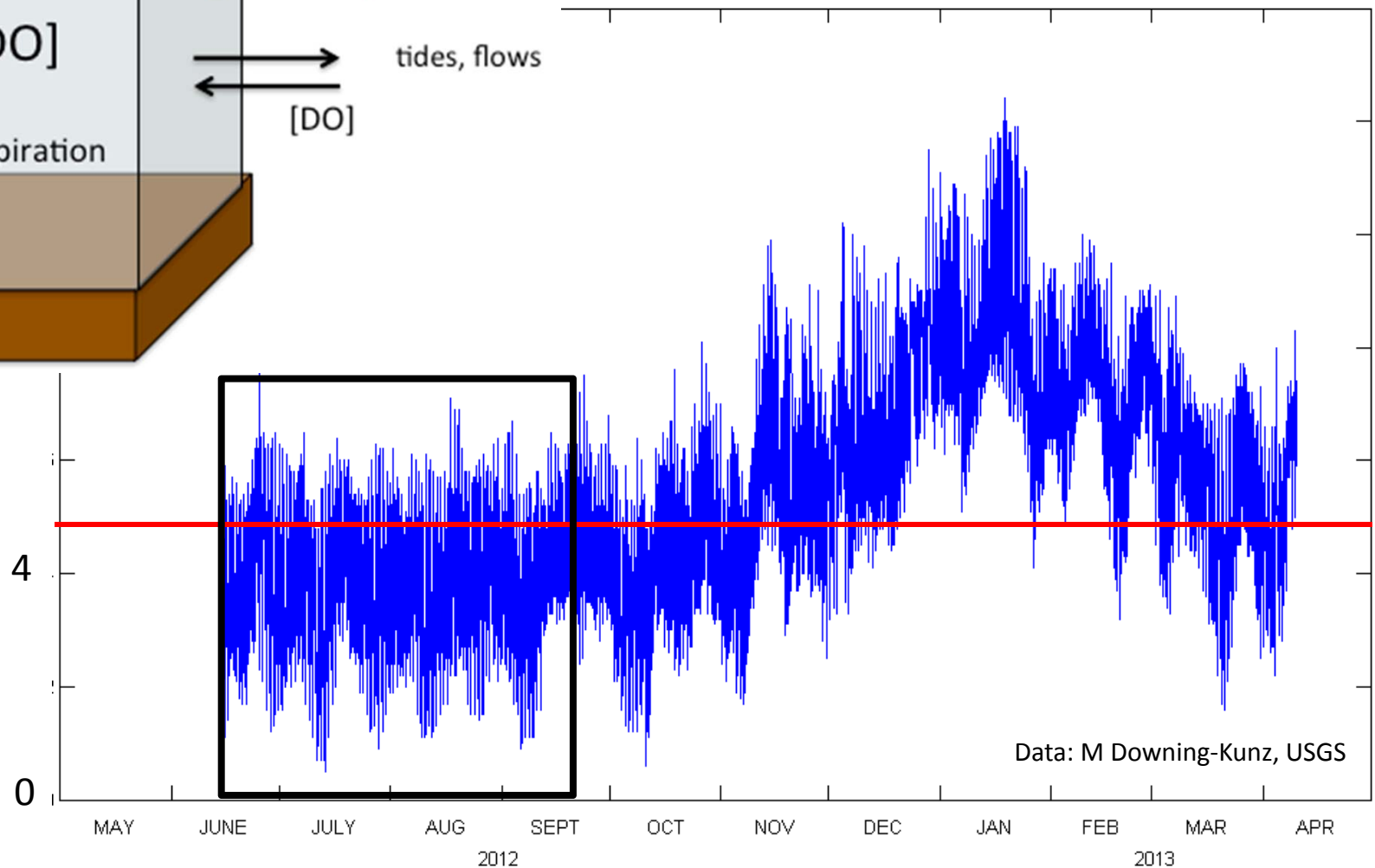
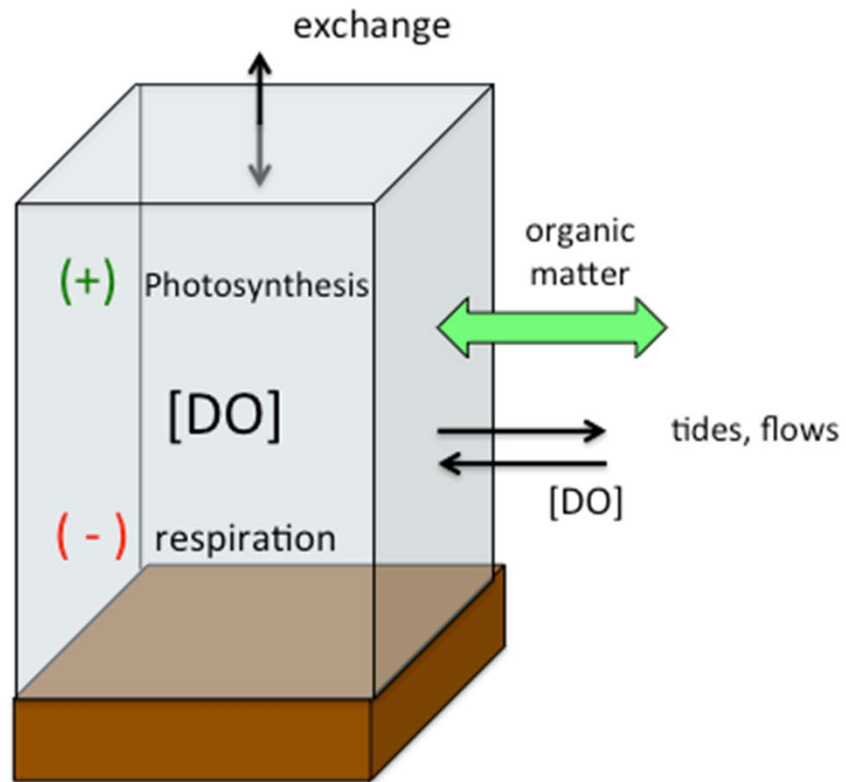
Tides: semi-diurnal,
spring/neap



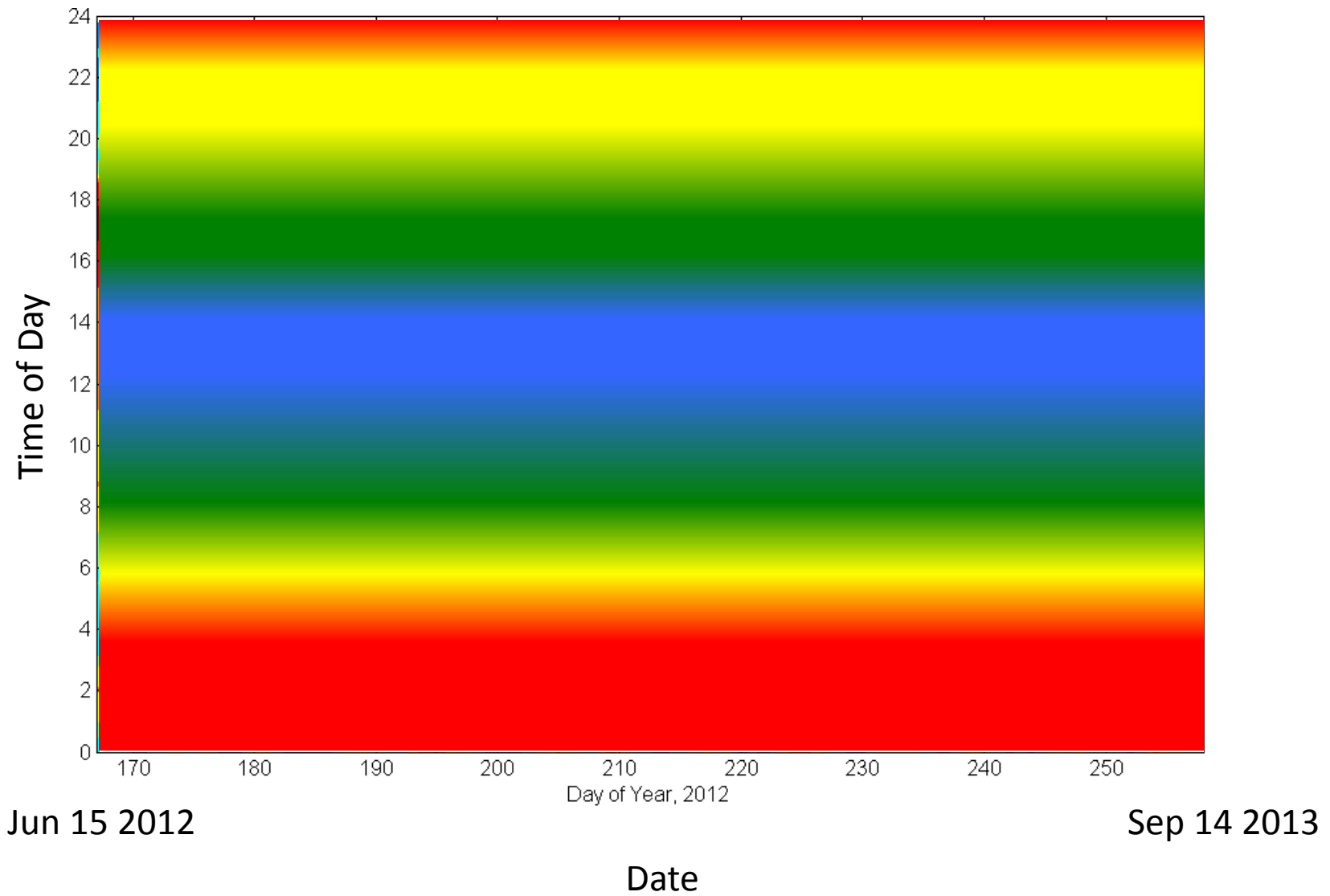
Alviso Slough: June 2012 – April 2013



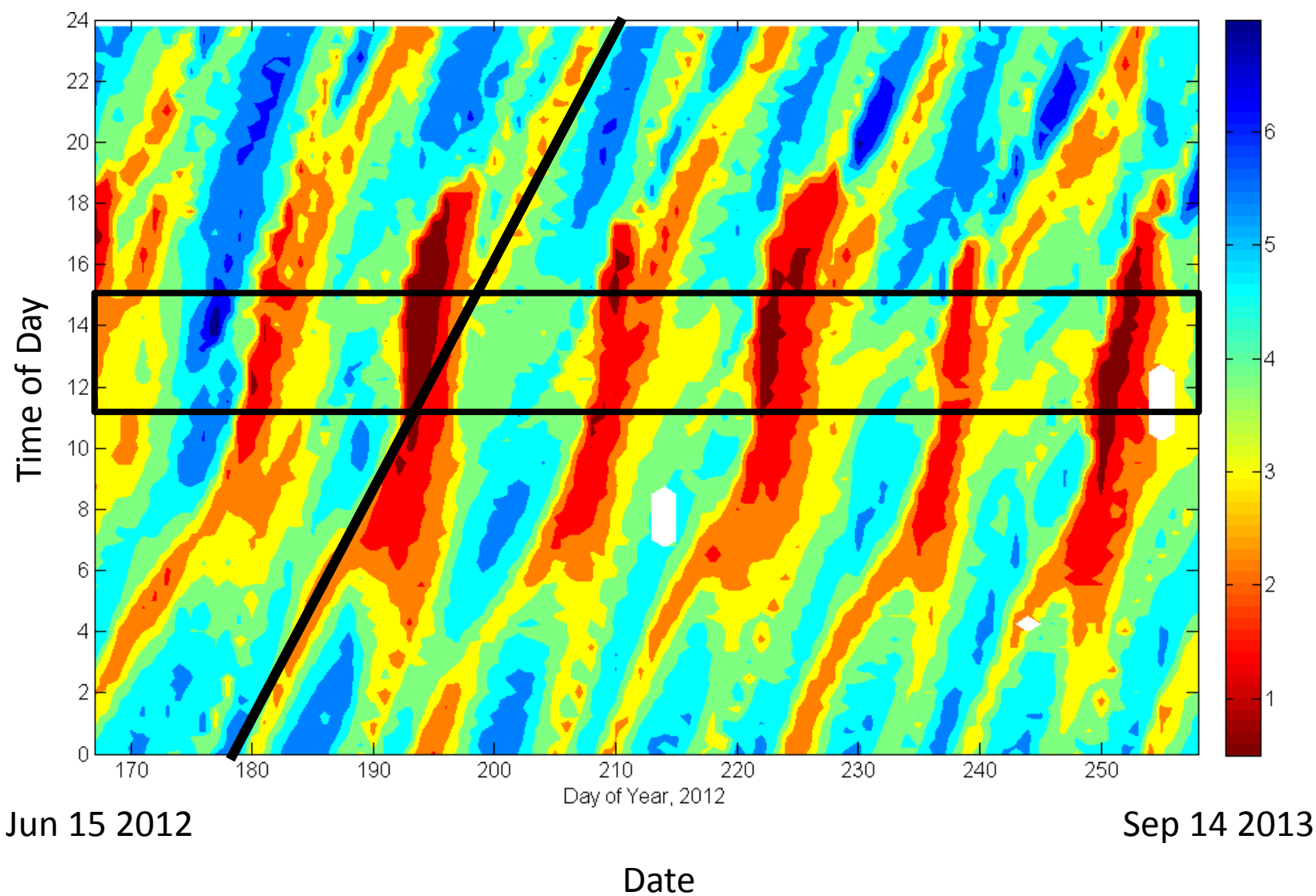
Alviso Slough: June 2012 – April 2013



Tides vs. DO production vs. DO consumption.....Who wins?



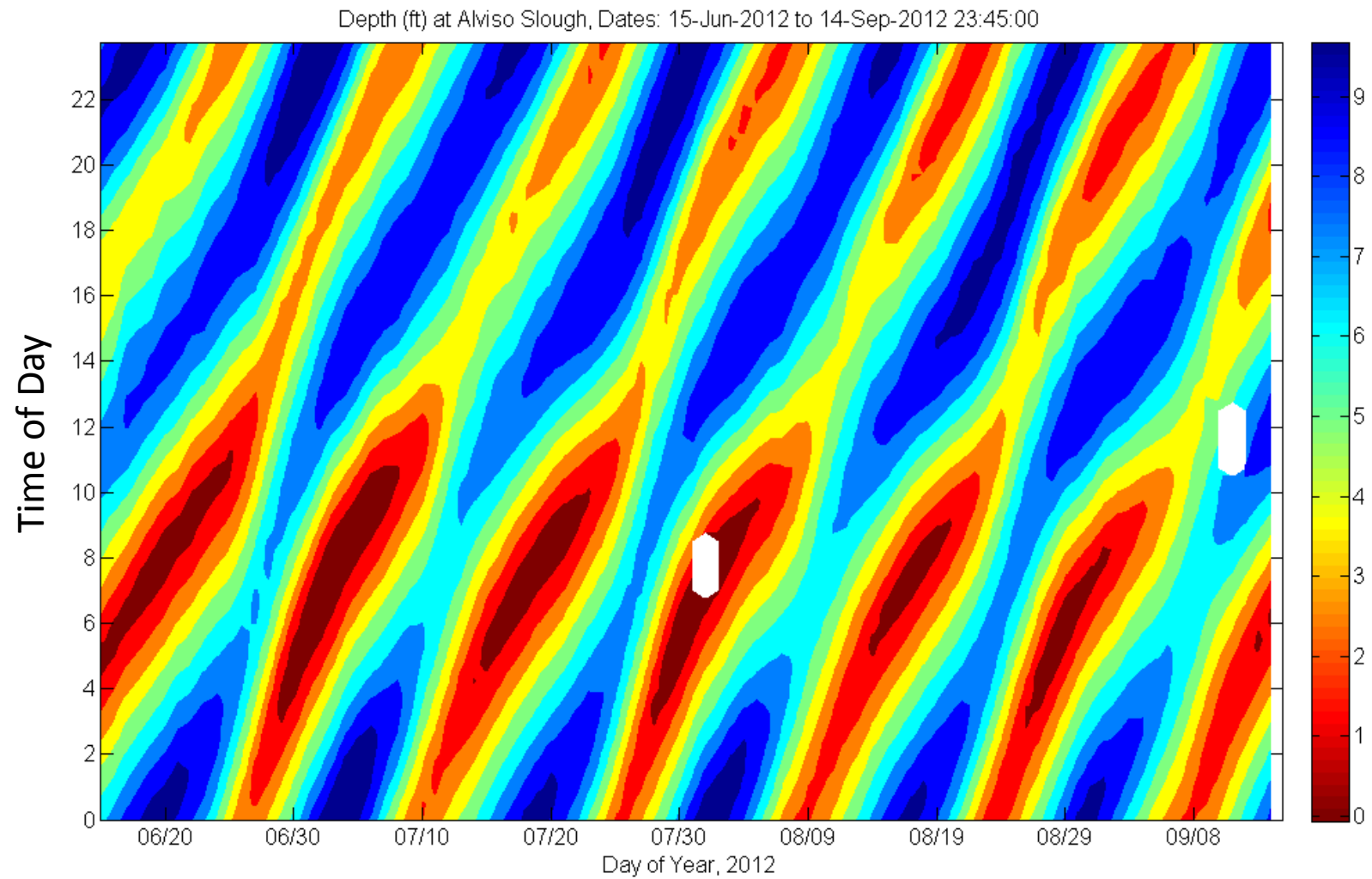
Tides vs. DO production vs. DO consumption.....Who wins?



Data: M Downing-Kunz, USGS

Mean = 3.9 mg L^{-1}

Depth



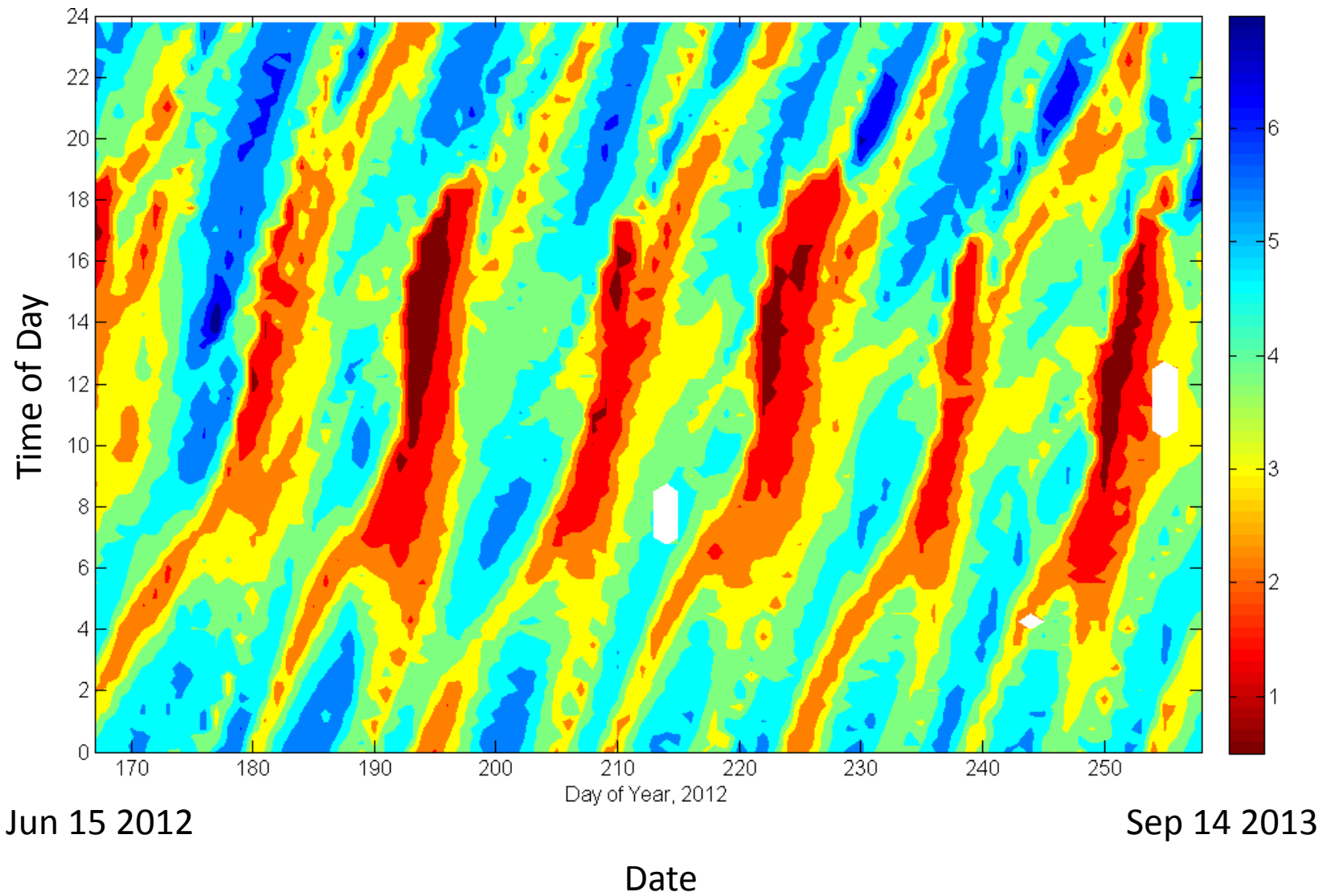
Jun 15 2012

Sep 14 2013

Data: M Downing-Kunz, USGS

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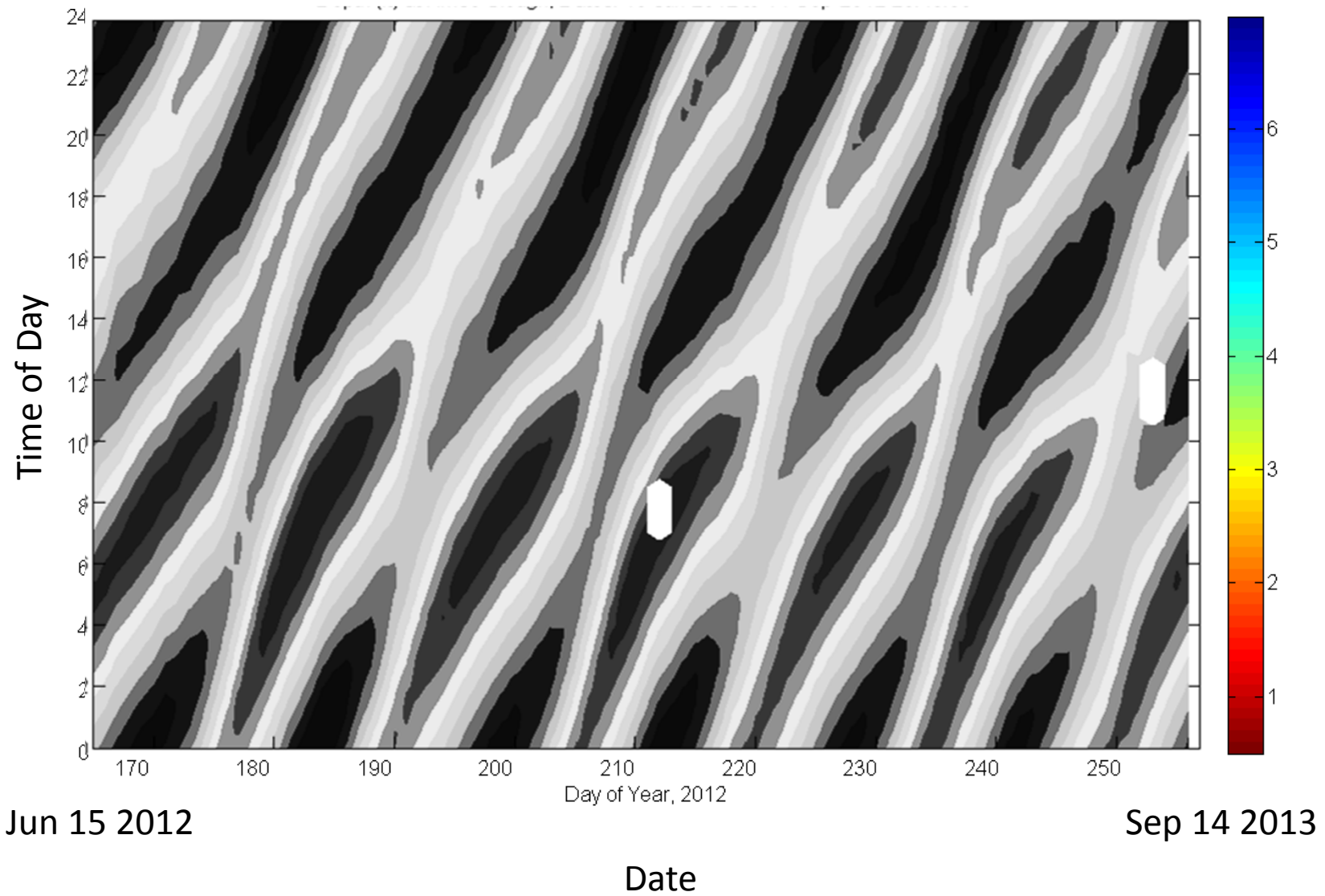
DO with Depth Overlay



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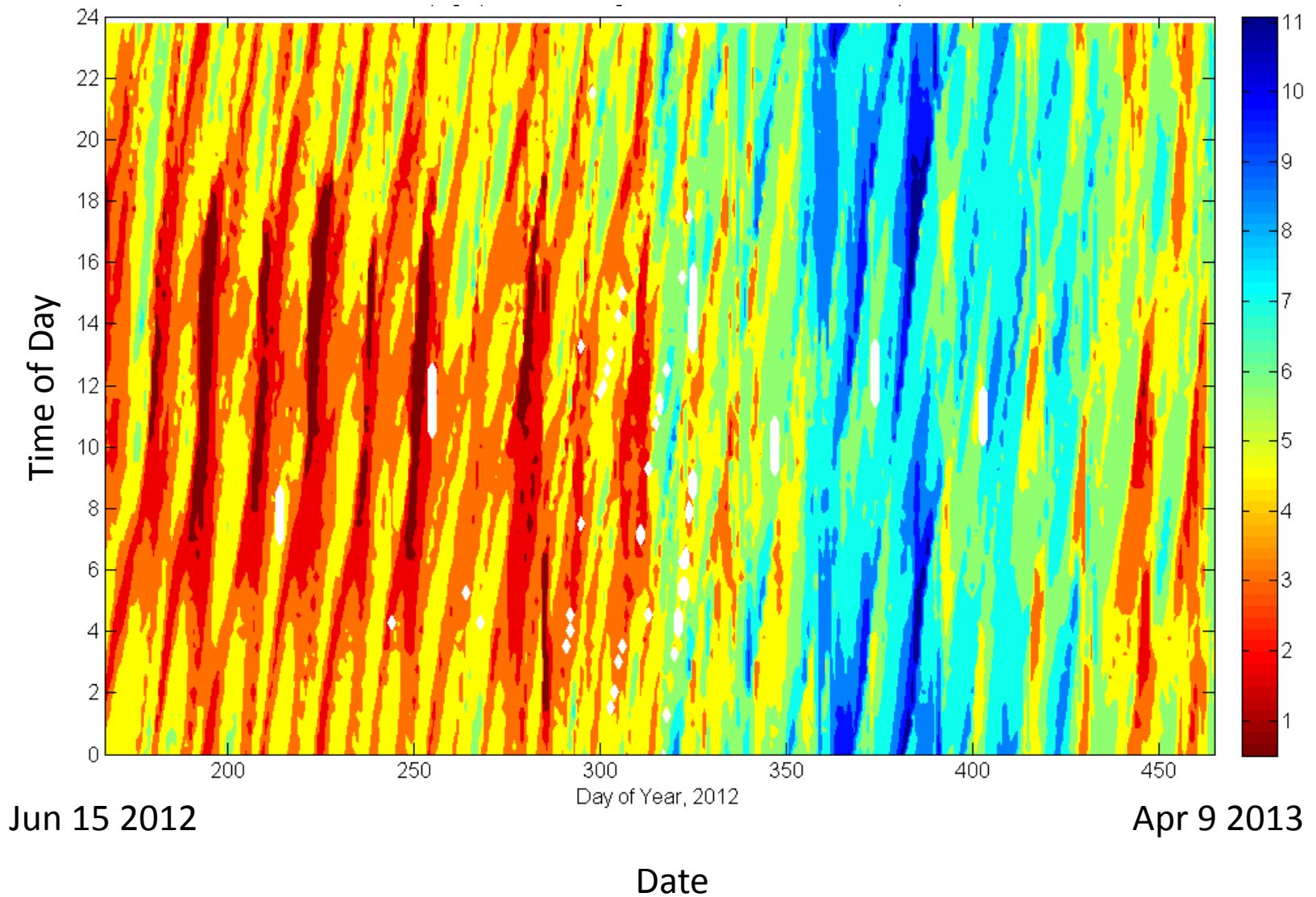
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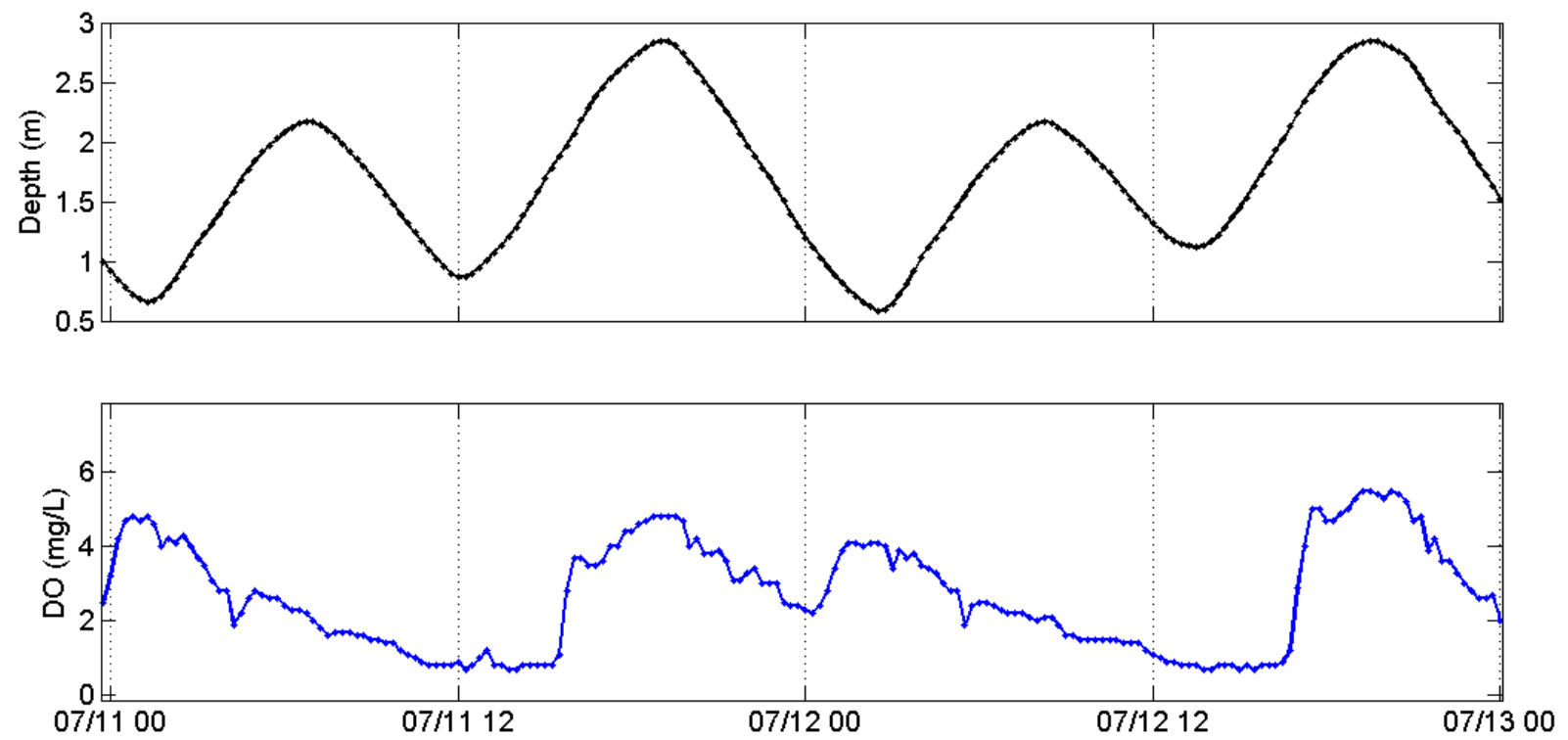


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