

CANON Fall Experiment

Draft questions and plans

Science Questions/Objectives

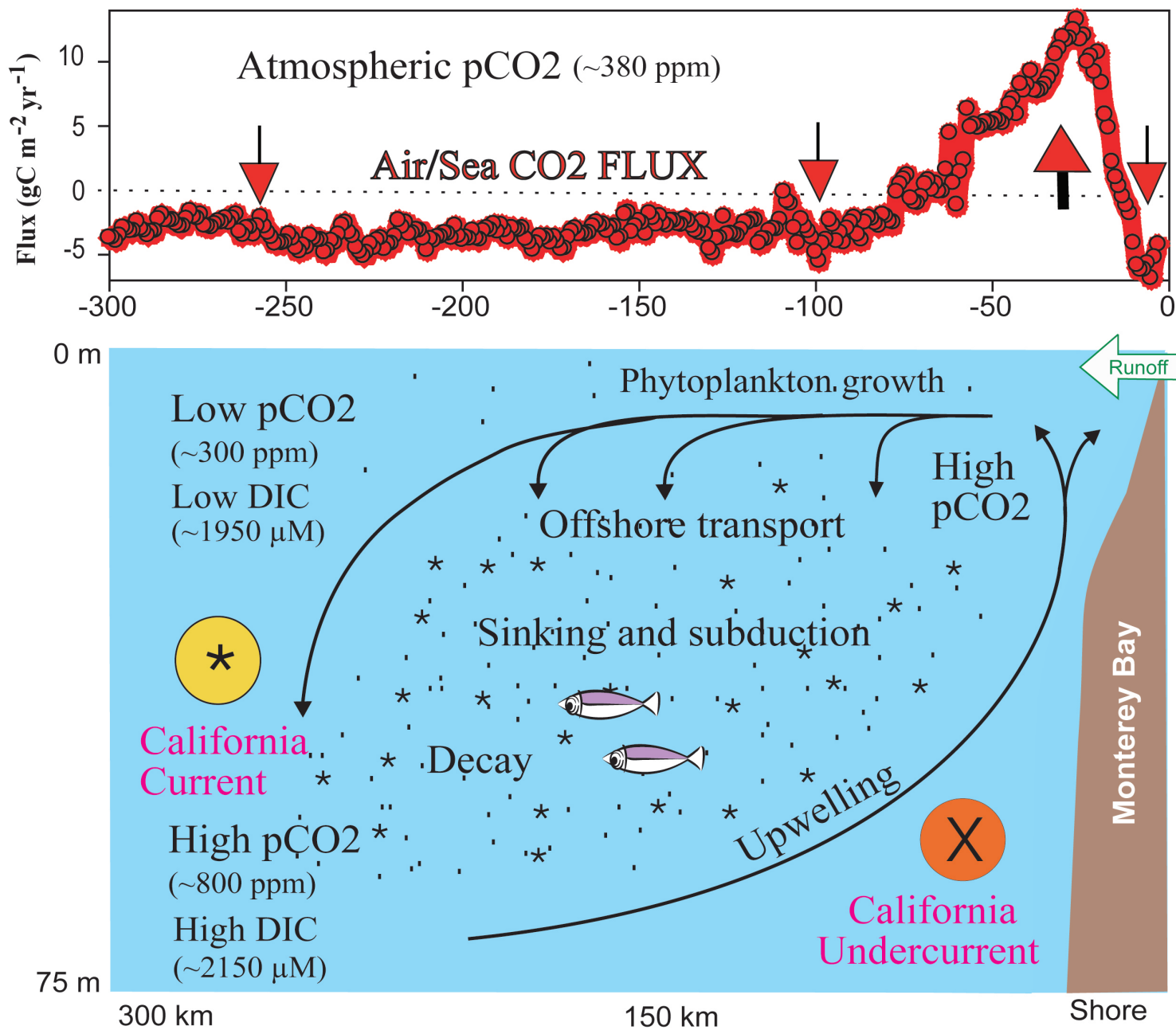
- What are the source waters and seed populations for phytoplankton blooms in and out of Monterey Bay?
- What are the processes responsible for phytoplankton blooms or lack thereof in and outside of Monterey Bay?
- What are the biogeochemical consequences (particulate flux, nutrient regeneration) of phytoplankton blooms or lack thereof in and outside of Monterey Bay?

Technical questions/objectives

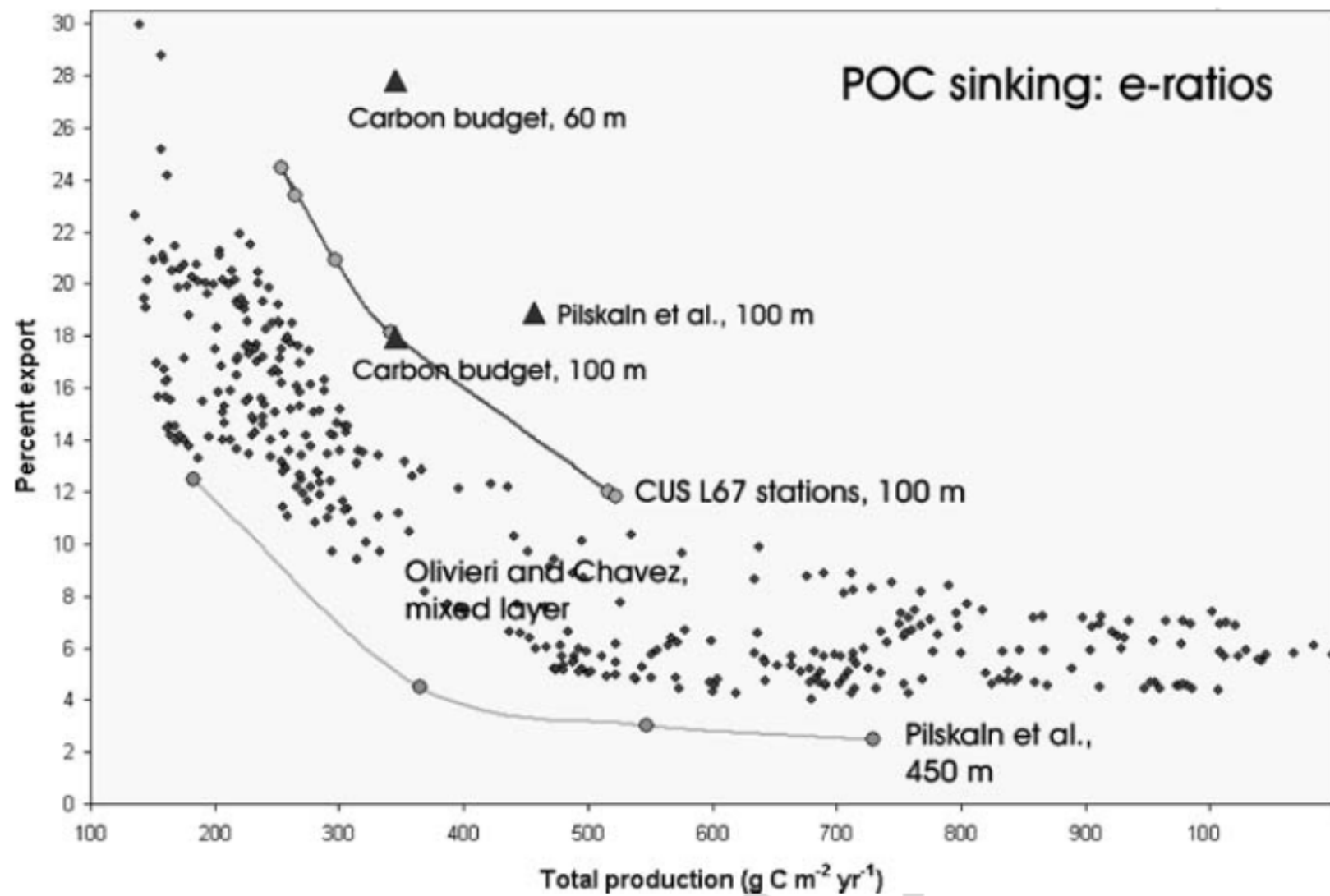
- Can we identify and trace source water and seed populations for phytoplankton blooms in and out of Monterey Bay?
- Can we develop environmental indices that can be used to predict the location and timing of blooms with enough accuracy and speed to be used to trigger autonomous sampling?
- Can we develop an information processing and display system that can be used in real time to improve decision making and publication preparation in delayed mode?

Operational Plan

- Repeatedly (10 or more times during the course of the month?) deploy drifters and LST along Line B or equivalent. The offshore pair would be occasionally in high chl offshore, the middle in high flow, low chl, the inshore (drifter only, too shallow for LST) in low flow, high chl in association with the ESPs. The drifters would have water collected at the site of deployment and changes in the bottles will be monitored over 1-3 days. The AUVs and ships would follow the drifters and LSTs collecting information in situ for comparison with those contained in bottles on the drifters. Gliders would run fixed grids except for Tex that would follow LSTs to provide location information to shore for navigating the ships and AUVs.



Chavez et al.
2006



Pennington et al. (2009)

Ships

- Western Flyer – PCTD, UCTD, profiling pump, optics
- Rachel Carson - PCTD, UCTD, profiling pump, optics
- Paragon – LST, Glider, drifter support
- Martin – ECOHAB, PCTD, UCTD, optics
- Fulmar (?) - PCTD, UCTD, optics

AUVs

- Dorado
- Tethys
- Daphne
- U of Porto ?
- Other ?

Gliders

- Spray Line 67
- Spray NPS
- Spray NPS
- Slocum Teledyne
- Slocum UCSC
- Slocum UCSC
- WG OA
- WG Tex

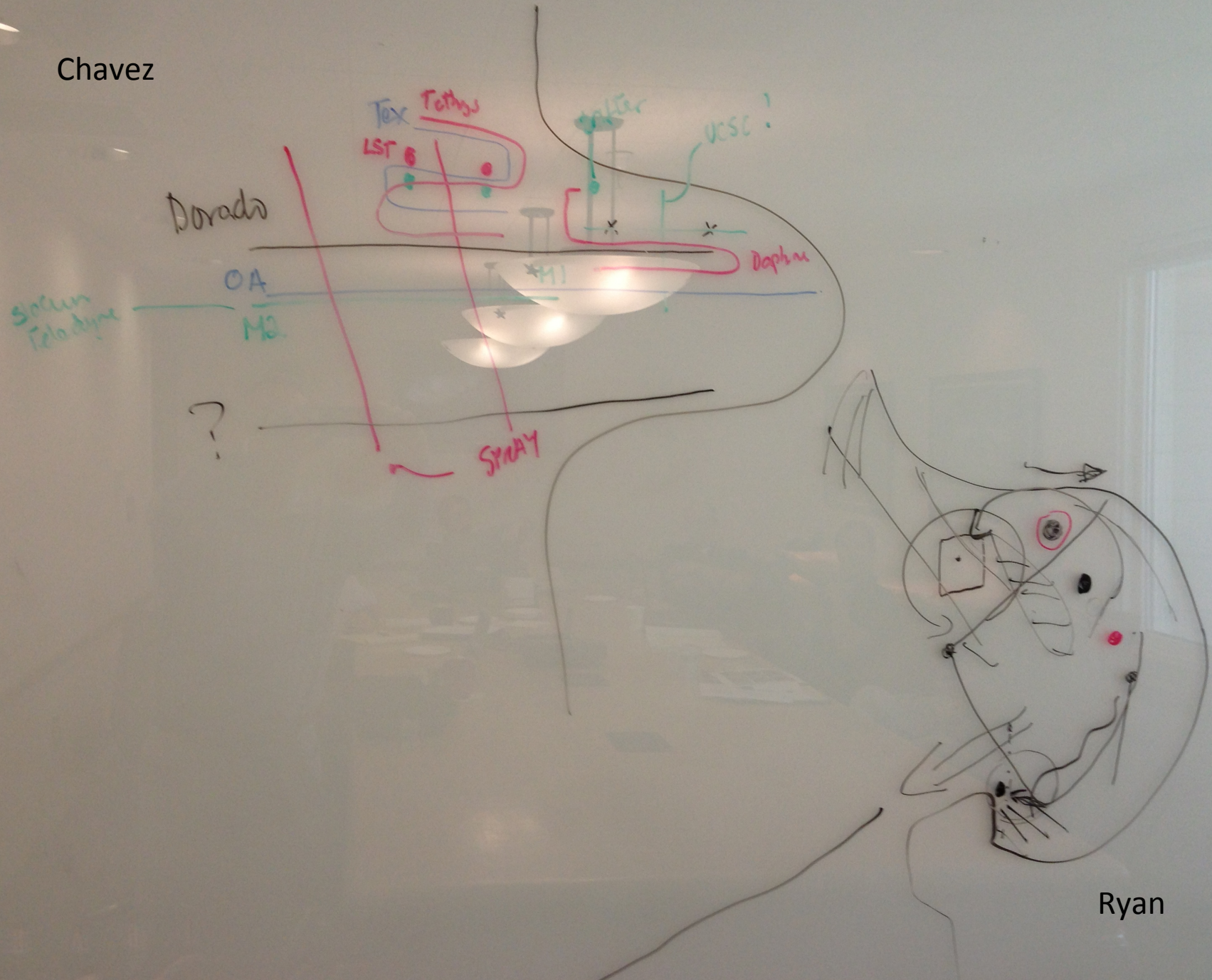
Moorings

- M1
- M2H
- OA1
- OA2
- ESP 1
- ESP 2
- Other ?

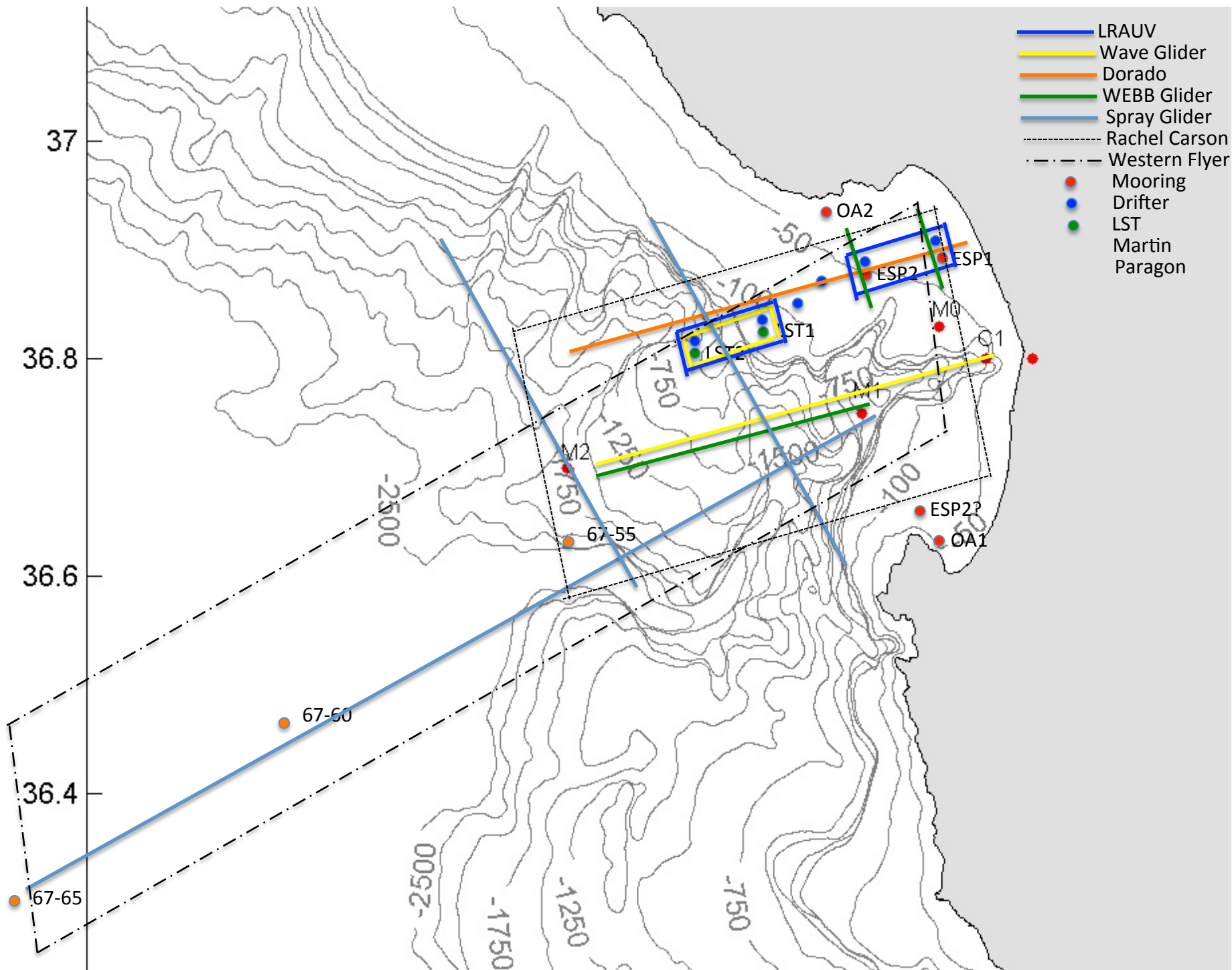
LST, drifter, other

- LST (= Lagrangian sediment trap) 1
- LST 2
- Stella 1-n (what is n?)
- Android 1-n
- Floats ?
- ROMS-NPZD 3 km
- Remote sensing (standard, Hyspiri, drone?)
- Cowen zoo system ?
- Flocam?
- ADCPs?
- Geostrophy?

Chavez



Ryan



Working groups and leads (members in parentheses)

- Science planning – Ryan (Bellingham, Chavez, Scholin, etc.)
- Logistics – Maughan (Edgington, Rajan, Chavez, etc.) - timeline
- Autonomous mobile platforms – Bellingham (Wahl, Ryan, Zhang etc.) – can/should we use Dorado in between Carson cruises
- Autonomous drifting platforms – Smith (Sherman, Chavez, Wahl, etc.) – what are the issues with LSTs
- Data analysis – Messie (Ryan, McCann, Bellingham, Chavez, etc.) – standard products, user interfaces, models, etc.
- Samples – Pennington (Blum, Smith³, Kudela, Preston, Zhang, etc.) – inventory, gaps, etc.
- Data management – Gomes/Michisaki – what is it?
- Responsibility of lead to develop a list (questions, platforms, products, data, samples), a means to answer/produce/distribute, analysis, organize team, etc.

SAMPLES WORKING GROUP

1. Operational definition of sample: A physically-collected sample, as distinct from an electronically-collected datum.

2. Purpose:

Provide some coordination for the taking of samples by the different platforms and research groups --- goal of insuring complete datasets are obtained

Budget water and effort

Document responsibilities

Document sample collection, processing and data flow

Interface with Data Management and Analysis

3. Platforms and routine samples:

CTD rosette Niskin bottles:

-**Depths:** 0, 0, 5, 10, 20, 30, 40, 60, 80, 100, 150, 200m

-**Profiles:** Macronutrients, ammonium, chl, C14-PP, ?triplepoint-PP

-**Surface:** POC, HPLC, FCM, A*, QP, 5&1um Chl and C14-PP

-**Additional:** Winkler oxygen, salt, DIC/TCO₂, ALK, NO₃&NH₄-PP

Profiling pumped CTD -???

AUV Gulpers -???

ESP -???

Drifting sediment traps -???

Drifting productivity arrays -0, 5, 10, 20, 30, 40m

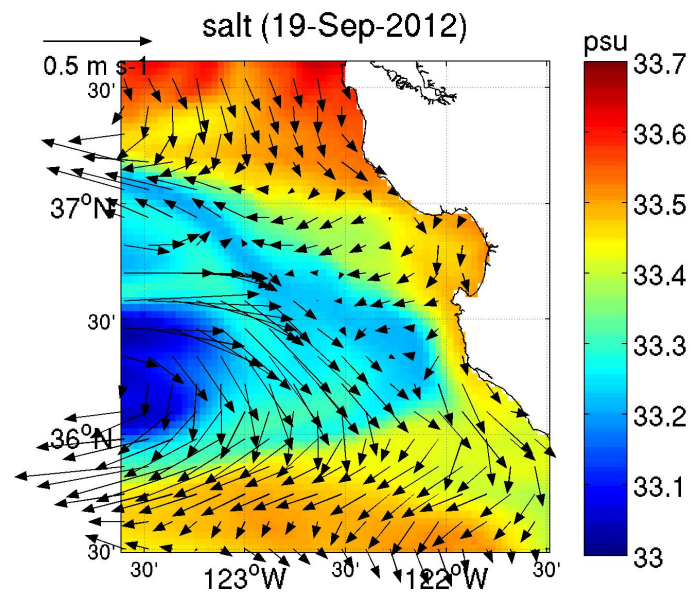
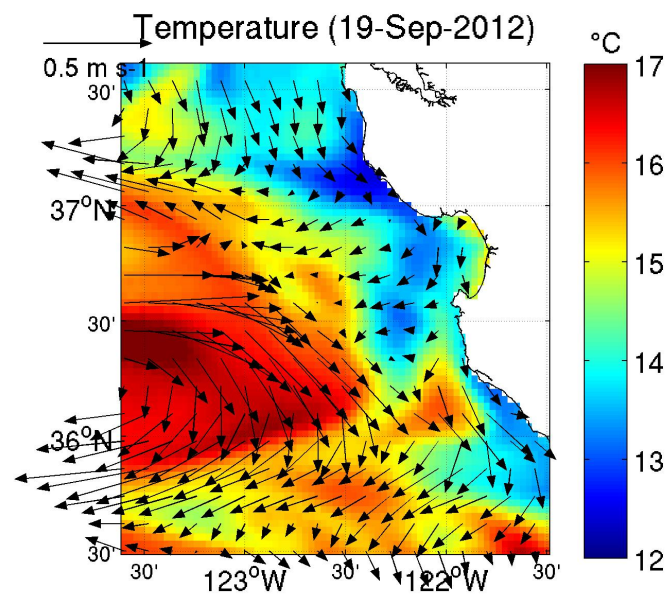
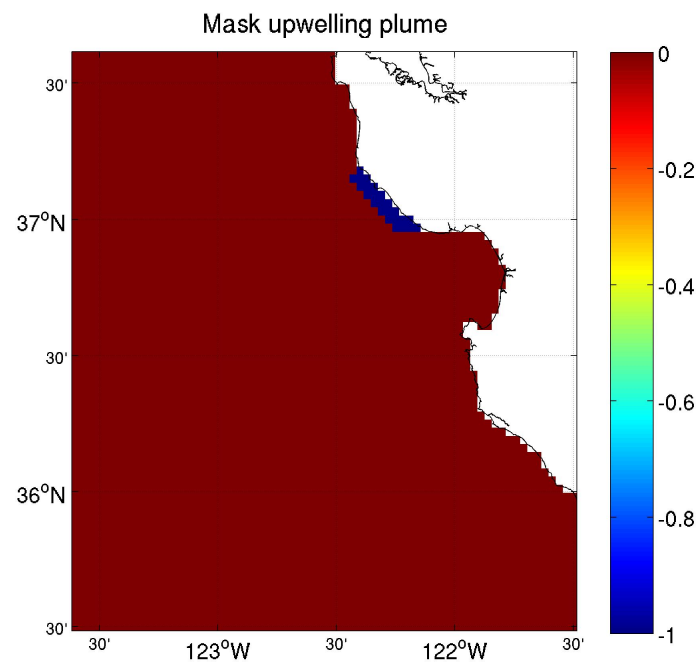
-C14-PP, NO₃&NH₄PP, O₂-PP, final macronutrients and NH₄, POC, QP

Practice makes perfect

- WG go through the September 2012 ESP tracking experiment
- Out the other end a series of papers!
- Exploring a Special Issue
- The canon@mbari.org mailing list has been culled for the present experiment, need to make sure those involved are on the list, other means of communication being explored

Preparatory analysis

- Remote sensing, models, in situ data from September and domain



ODSS

