



MURI - ASAP

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1. Summary: Work and Results

- ❖ A Master's thesis (Heubel, 2008) for automated skill evaluations, model tuning and parameter estimation with ensemble of simulations. Results: selected "best" tide estimates and mixing parameters
- ❖ New tidal estimates and MB06 re-analysis available from <http://mseas.mit.edu/Research/ASAP/index.html>
- ❖ Heat and Salt Balances, and Term-by-Term Balances, for succession of upwelling and relaxation events
- ❖ Other dynamical studies underway

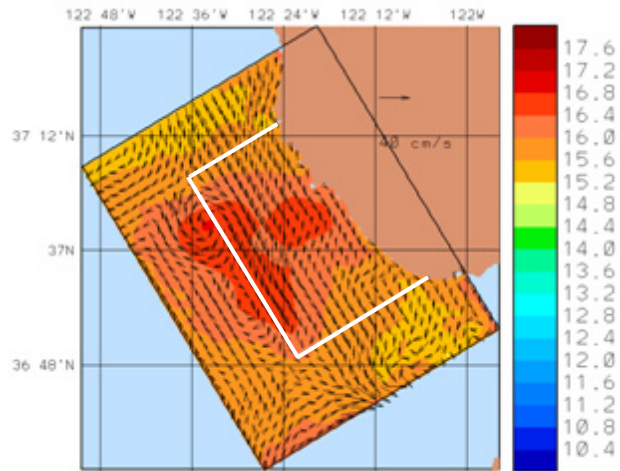
2. Some of the manuscripts in Prep:

- ❖ Multi-model comparisons: The importance of ICs and forcing on model fields
- ❖ Adaptive Sampling (with Sharan Majumdar)

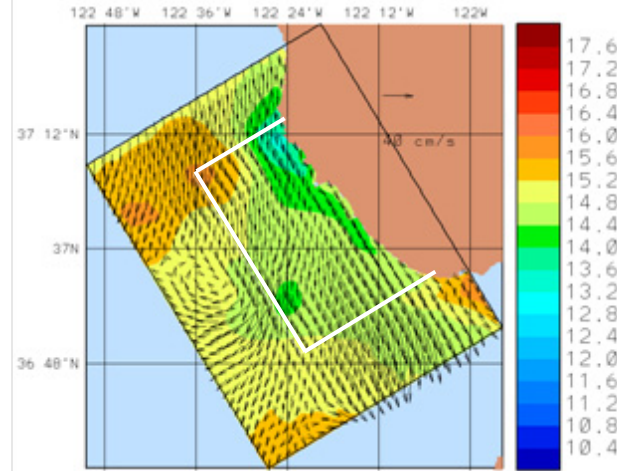


MB06 - First Upwelling Event

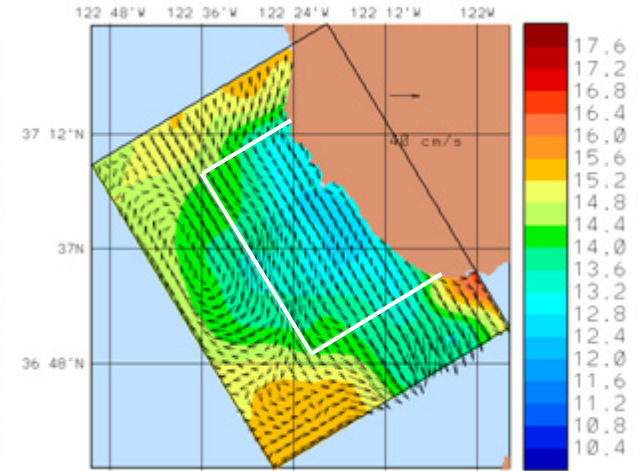
00Z Sea Surface Temperature Re-analysis



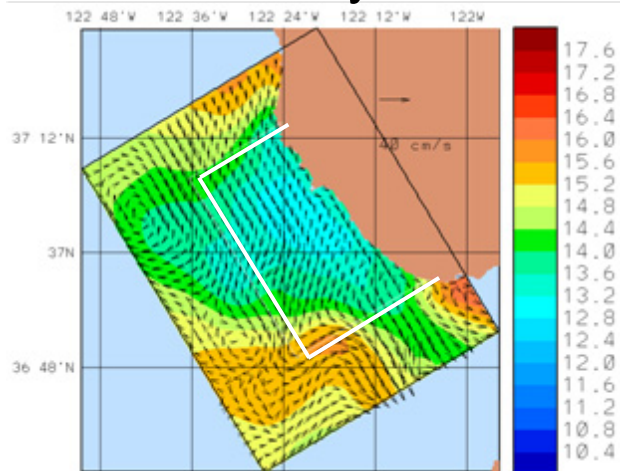
31 July



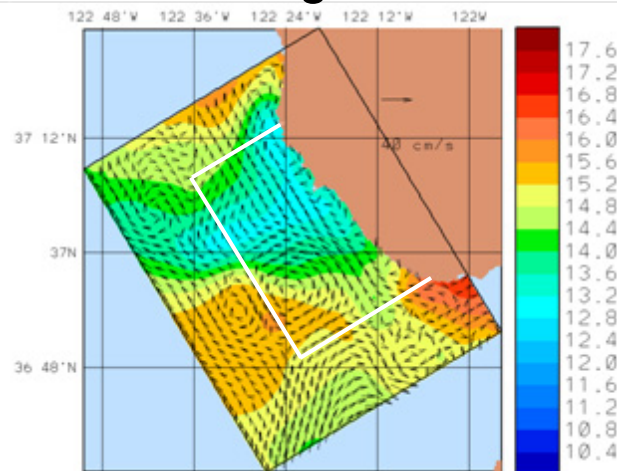
1 August



2 August



3 August

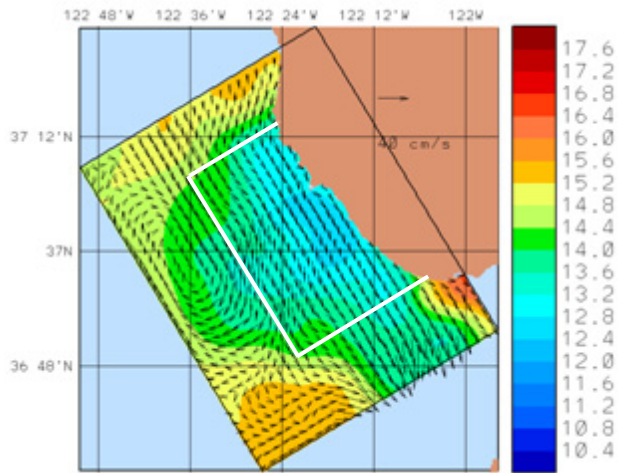


4 August

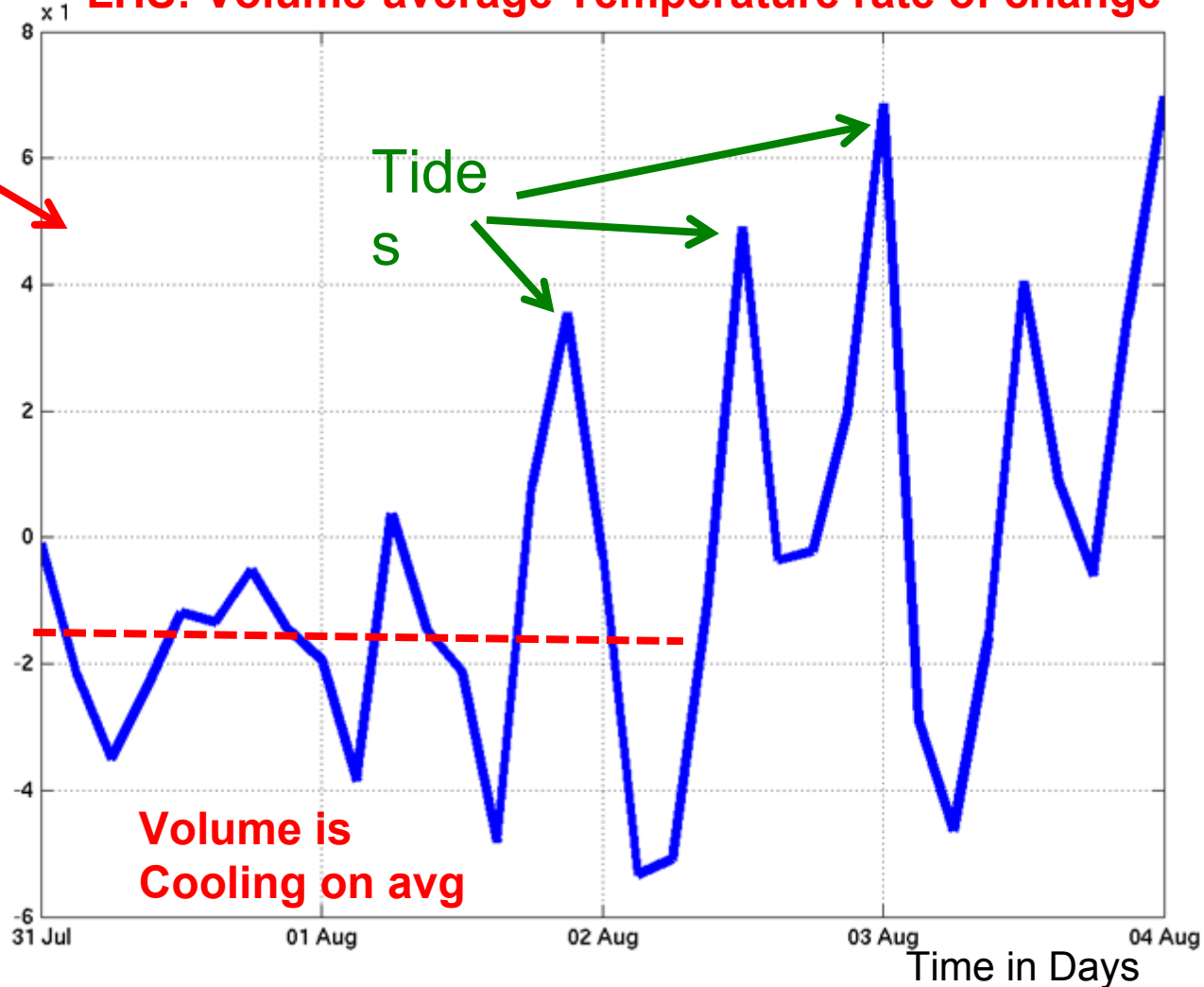
Thermal Energy Balances and Term-by-term Balances

$$\underbrace{\frac{\partial}{\partial t} \int_V T dV}_{\text{Time Rate of Change in the volume}} = \underbrace{\int_{\text{Top}} \vec{q} \cdot d\vec{A}}_{\text{Diffusive flux at the ocean surface}} + \underbrace{\int_{\text{North}} T \vec{v} \cdot d\vec{A} + \int_{\text{South}} T \vec{v} \cdot d\vec{A} + \int_{\text{West}} T \vec{v} \cdot d\vec{A}}_{\text{Horizontal advective flux through each open boundary}}$$

LHS: Volume-average Temperature rate of change



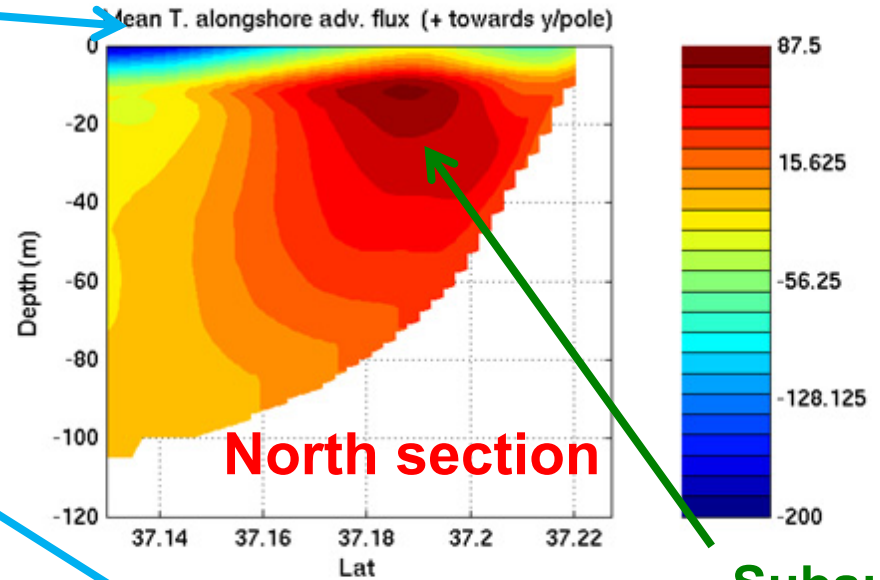
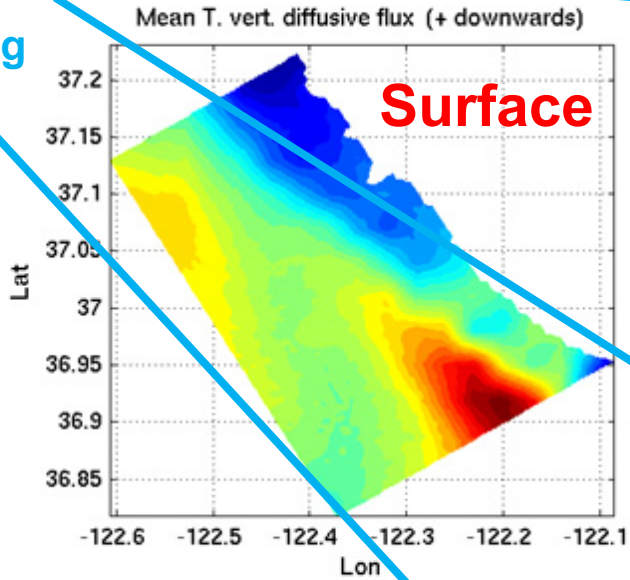
2 August



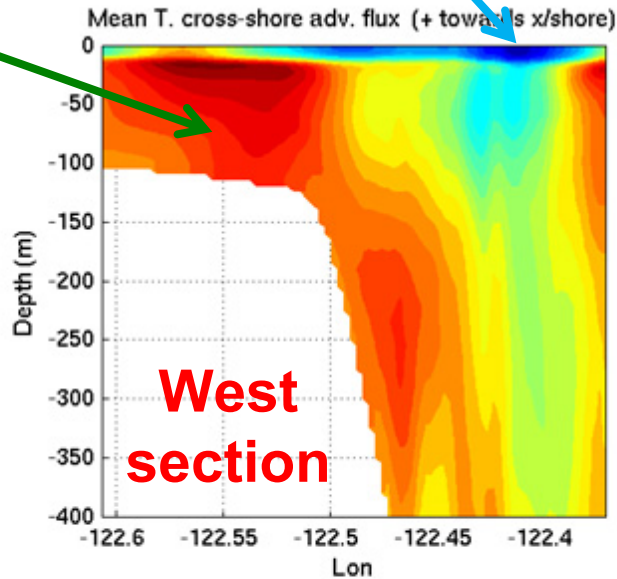
Thermal Energy Balances (Fluxes integrated over 4 days)

Mean Fluxes (C m/s) over: 31-Jul-2006 00:00:00 -> 04-Aug-2006 00:00:00 GMT

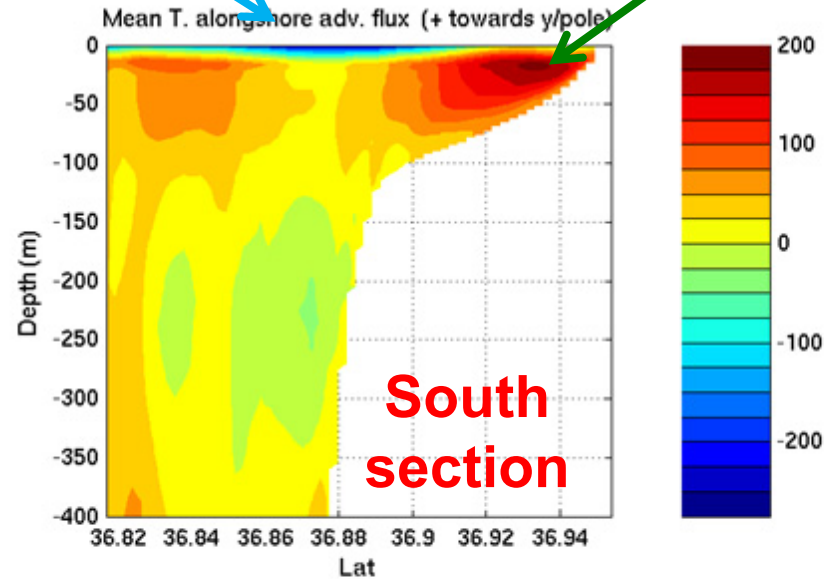
Southwest
ward
Upwelling



Shoreward
Source



Subsurface
Northward



Shows: Source of upwelling + coastal subsurface northward flow