



Field Observations of Coastal Air-Sea Interaction

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Project Description & Aims

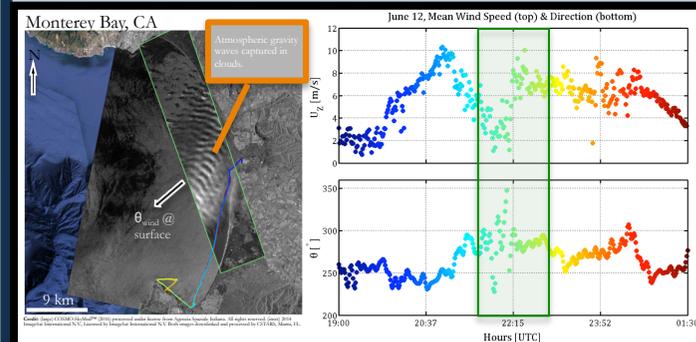
Recent studies, e.g. *Shabani et al. 2014 & Ortiz-Suslow et al. 2015*, suggest that the air-sea fluxes over shallow water can be remarkably different from the open ocean domain. The **Coastal Land-Air-Sea Interaction (CLASI)** project was initiated to further investigate the variance scales of the physical air-sea interactions in the nearshore zone. The field observation of this multi-faceted study took place in **Monterey Bay (MB)**, CA and had these specific aims:

1. Directly observe air-sea fluxes in the nearshore zone
2. Characterize the relevant spatio-temporal scales of variability
3. Validate models and satellite remote sensing

To highlight these aims, a case study from the field observation campaign is presented here.

Case Study: the Southern Surge

21:30 UTC June 12, 2016: An atmospheric system travelled from off-shore of Santa Barbara, CA northward to MB and was forecast to surge into the bay, up-and-over the Monterey Peninsula. The goal was to sample the land-air-sea transition zone in the south part of MB.



(Left) Vessel track overlaid 2 nearly coincident satellite images (large > CSK, SAR; inset > EROSB, optical) and (Right) 1-minute mean wind observations (not motion corrected). On both L/R, color represents time: **BLUE** marks start of sampling, **RED** end of sampling. **Shaded box: detailed analysis period.**

Field Log Observations

A 22:11 UTC

B of MB. Flux package

C Notice sharp wind line half-way along coast. Rougher surface

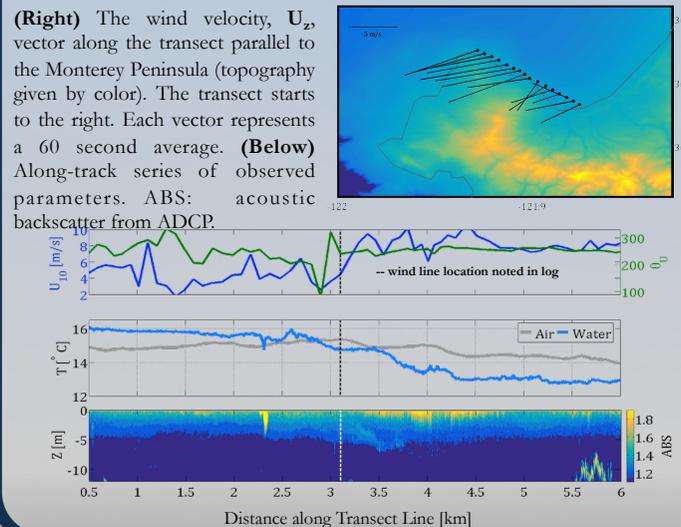
D 22:39 UTC

strong frontal action.

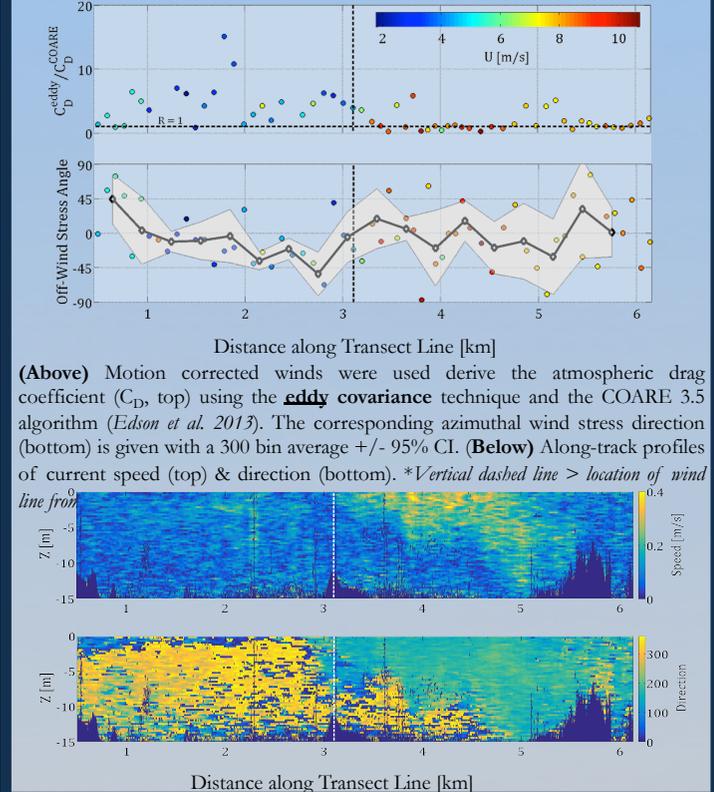
Noticeable shift in wind direction

We come under cloud cover and notice thick well-defined scum lines radiating from the point generally moving in ESE direction. The seas continue to steepen and increase in size as we approach our line at the NW edge of the Monterey Peninsula.

Results: Along-Track Wind Field



Results: Along-Track Stress Field



Conclusions & Future Work

1. A complex, land-air-sea interaction zone was sampled with both air- & water-side sensors
2. Observed strong spatial variance at surface & at depth
3. Combine shipboard, land-based, and satellite observations to investigate development of coastal boundary layer
4. Directly link satellite observations with polarimetric imagery of short surface waves.

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