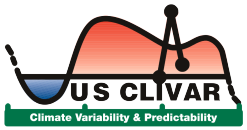
Quick report on Ocean Synthesis and Air-Sea flux evaluation Workshop

WHOI, Nov 27-30th 2012

Global Synthesis and Observations Panel (GSOP)

Organized by Lisan Yu, Keith Haines, Tony Lee



Motivation

- Surface fluxes cross-cutting theme (e.g. linking CLIVAR and GEWEX).

- WCRP WOAP report recommended evaluation of model-based surface fluxes and observation-based estimates.

- GSOP: bring together the observational, assimilation/synthesis communities, for joint product evaluation.

Objectives

- Review current state of surface fluxes (heat, freshwater, & momentum) obtained from synthesis & observation-based products;

- Discuss gaps and limitations in products with particular reference to balancing global budgets;

- Develop requirements for future global/regional synthesis activities;

Workshop Findings

The advent of the complete **Argo** program is allowing upper ocean heat and salinity content to be monitored both regionally and globally (excluding polar and shallow shelf areas). This monitoring should be regarded as a ***means of providing direct estimates of the total integrated air-sea fluxes of heat and against which, in future, parameterised air-sea flux products may be calibrated***. Thus ocean data should have the capability of providing ***regional references for calibration of air-sea flux estimates in the same way that flux buoy and ship measurements have previously provided point- wise calibration information in such calibrated products as OAFlux.***

Extending the calibration of air-sea flux products using regional scale constraints provided by ocean data should greatly help to resolve the issues of regional variability and global imbalance which currently affect products such as OAFlux.

Workshop Main Recommendations

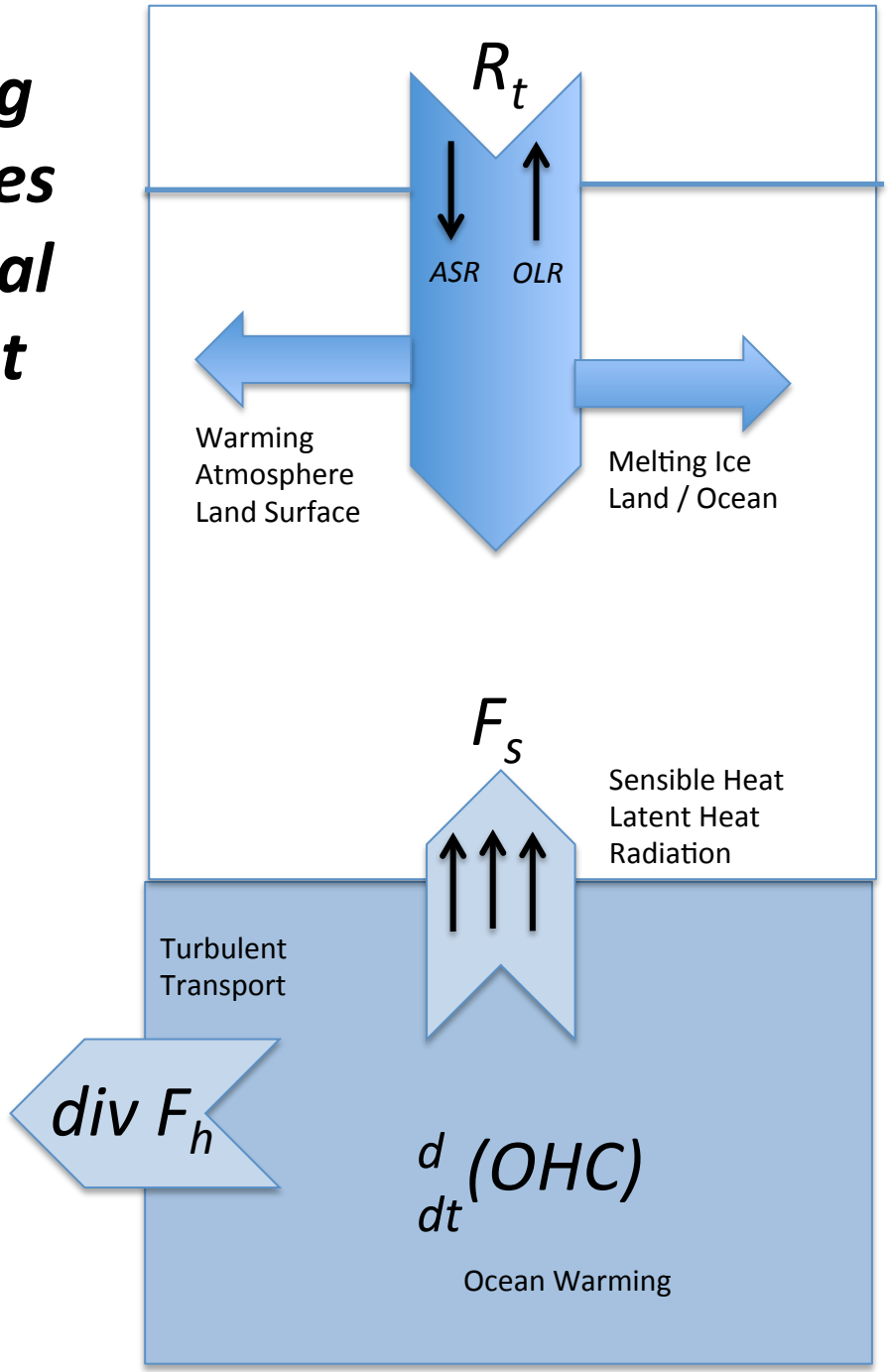
- Working group to develop strategy for regional heat/salt budget analysis and regional flux assessment using flux buoys and upper ocean heat content from Argo or ocean syntheses.

- Continue evaluation of surface fluxes and ocean transports from ocean syntheses and identify regions suitable for regional heat/salt budget studies.

- Further pointwise comparisons of ocean synthesis and atmospheric reanalysis products with flux buoy and OceanSITES measurements, including scaling analysis to estimate uncertainties from spatial/temporal variability.

- Ocean synthesis and reanalyses should archive components of the air-sea heat flux i.e. Short and Longwave radiation, and sensible and latent heat fluxes, to enable evaluation.

Constraining Air-sea fluxes with regional Heat budget constraints



Data Input for Estimate

EO: e.g. CERES, ERBE

EO: GRACE, IASI
Model: e.g. ERA-Clim, NCEP

EO: e.g. AATSR, Alt, SAR, Scat
In-situ:
Model: ERA-Clim

In-situ: e.g. Argo, XBT
Model: Ocean synthesis,
e.g. ECCO, Mercator