E-Flux Observations
March, 2004
Regional Modelling
The Hawaiian Experience

Yanli Jia
Kelvin Richards
Paulo Calil
University of Hawaii
**Goal:** To build a high-resolution regional nowcast system for the waters surrounding the Hawaii Islands.

- **Lateral boundaries:** to make use of GODAE (HYCOM) products, that is, the output from basin or global ocean forecast systems.
- **Surface boundary:** to apply high-resolution atmospheric surface forcing fields, e.g. output from regional atmospheric forecast models.
- **Bottom bathymetry:** to represent in detail the coastline and other bathymetric features around the islands.
- **Data assimilation:** to include as much local ocean observations as possible.
Wind Stress Curl

ECMWF

MM5

QuikSCAT

QuikSCAT inter
Model SST (1/24 degree)

Dec. 30, 2001
With ECMWF winds

Oct. 1, 2001
With QSCAT winds
Model T and U along 158.8W

With ECMWF winds

With QSCAT winds
Sea Surface Height
Sea Surface Height Variability (rms)

ECMWF  

QSCAT
GEBCO Bathymetry on Model Grid

GEBCO: From 1/60 to 1/25 degree

GEBCO – ETOPO5
Range: -2081 to 1624 m
Mean mixed layer velocity

mix.lyr. velocity mean: 100.00-101.50 [01.6H]
SSH Jan 02, 2001

ETOP05

GEBCO
Surface Flow from Drifters

(b) mean flow field from drifter data $\rightarrow 0.2 \text{ m/s}$

Taken from Firing et al. (1999), which is adapted from Qiu et al. (1997).
Mean Model Mixed Layer Flow

ECMWF 6 hourly winds, 1.125 °  
QSCAT daily winds, 0.25 °