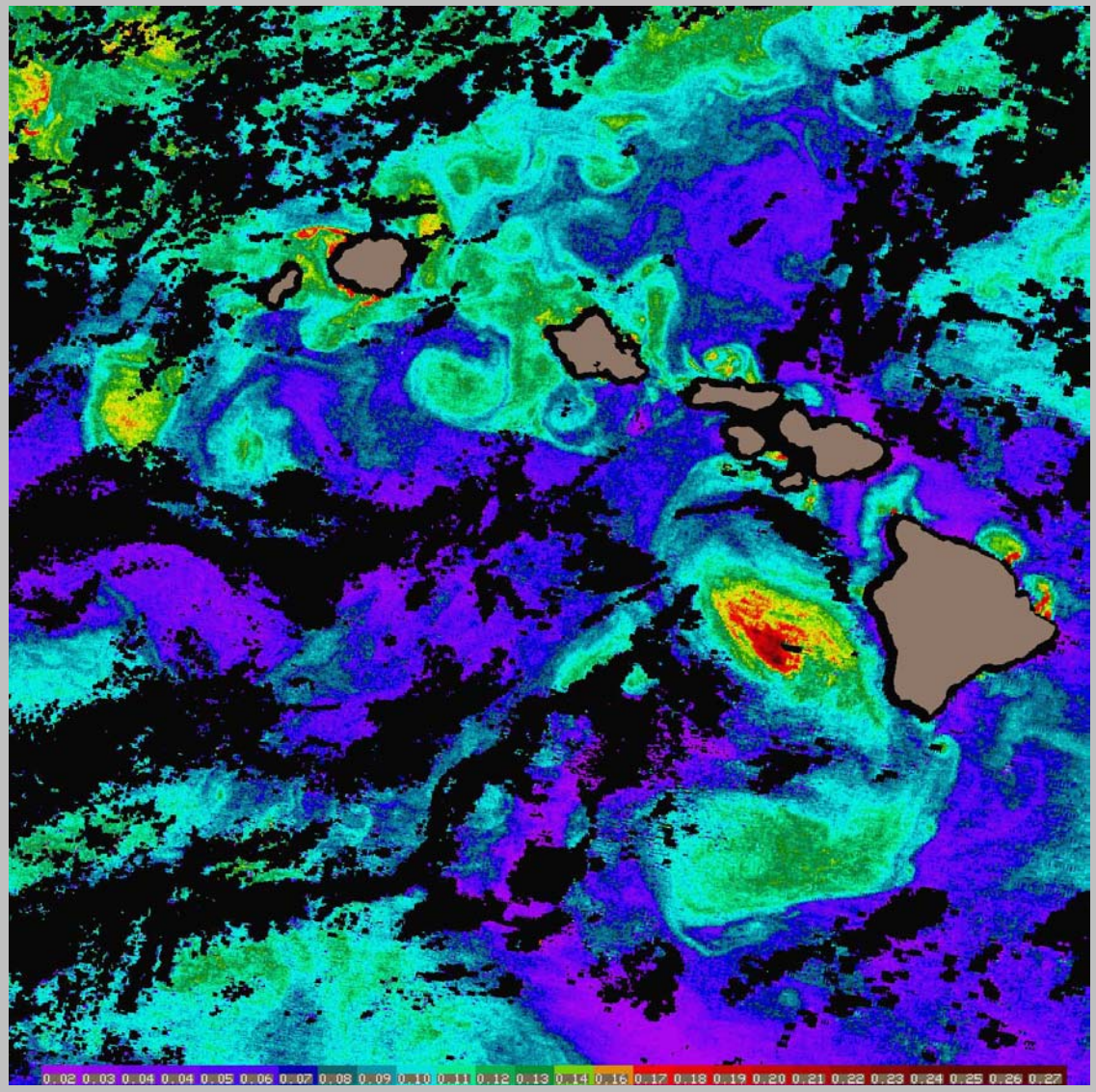
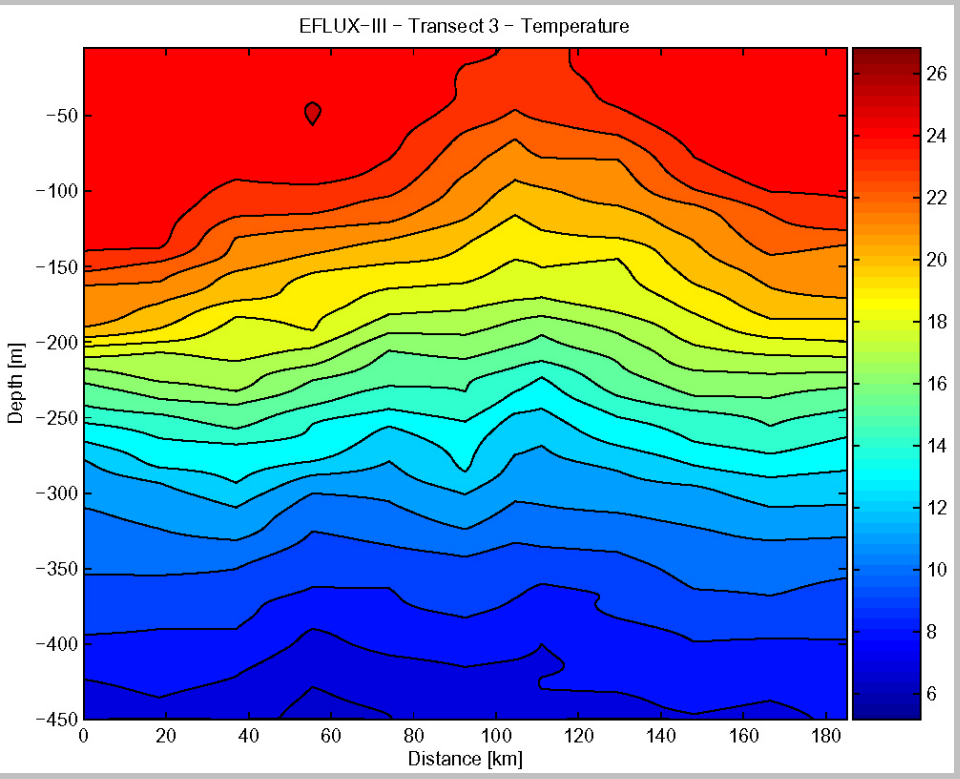
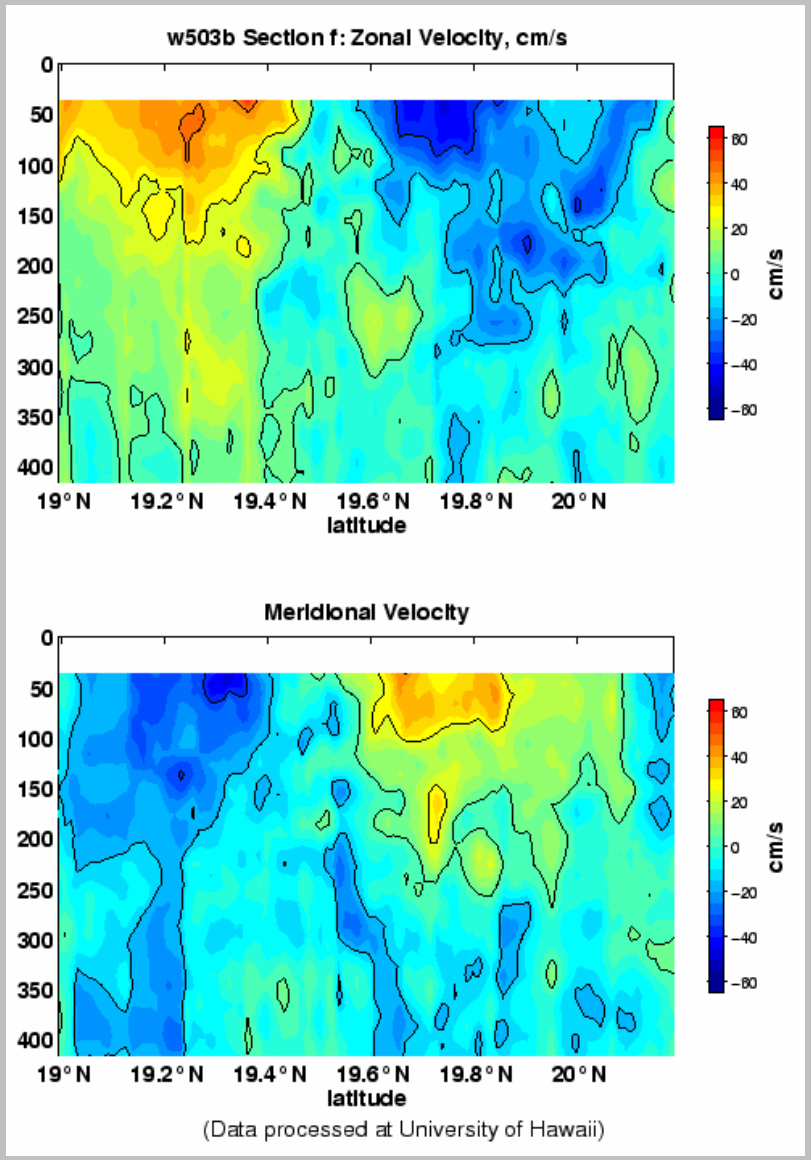


Chlorophyll, December 2001

E-Flux Observations March, 2004





Regional Modelling
The Hawaiian Experience

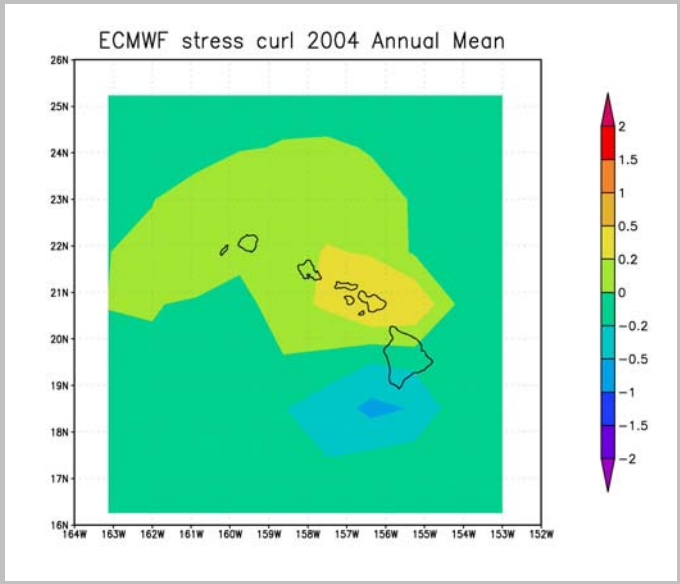
Yanli Jia
Kelvin Richards
Paulo Calil
Univeristy of Hawaii

Goal: To build a high-resolution regional nowcast system for the waters surrounding the Hawaii Islands.

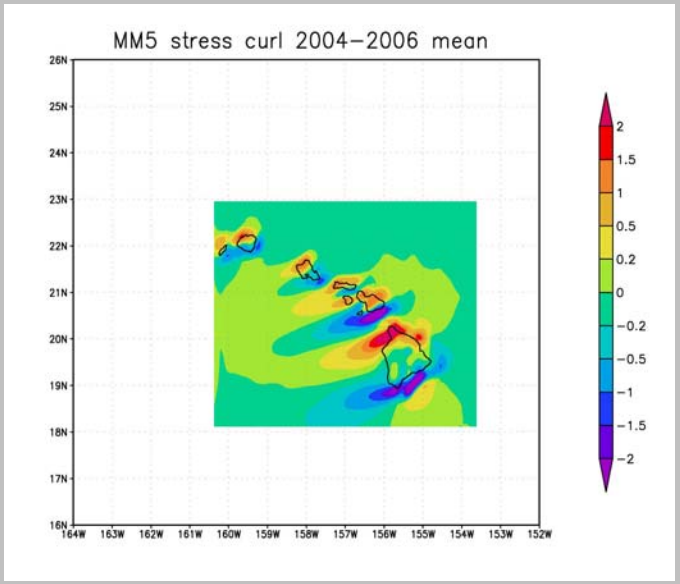
- ***Lateral boundaries***: to make use of GODAE (HYCOM) products, that is, the output from basin or global ocean forecast systems.
- ***Surface boundary***: to apply high-resolution atmospheric surface forcing fields, e.g. output from regional atmospheric forecast models.
- ***Bottom bathymetry***: 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

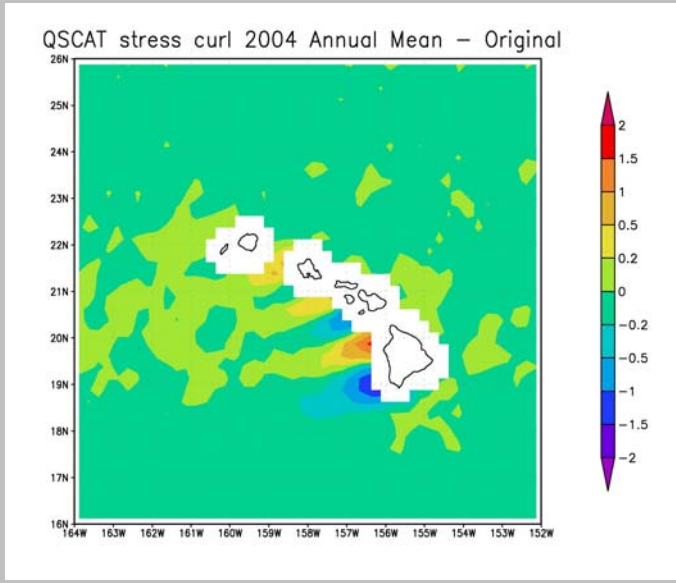
ECMWF



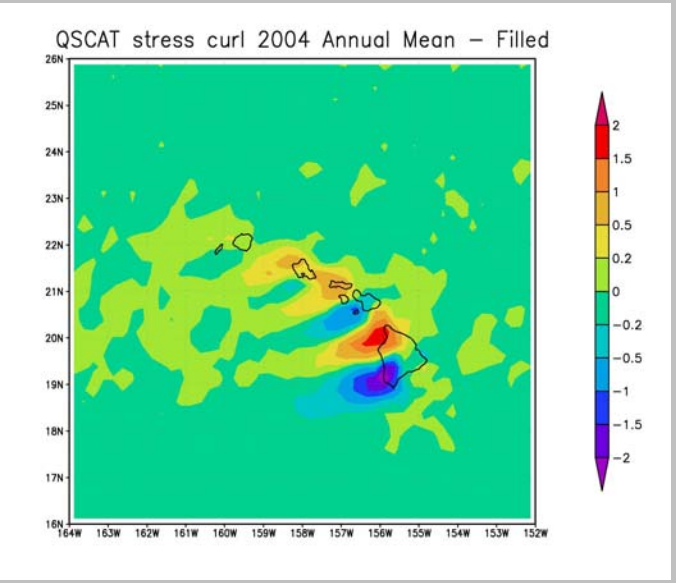
MM5



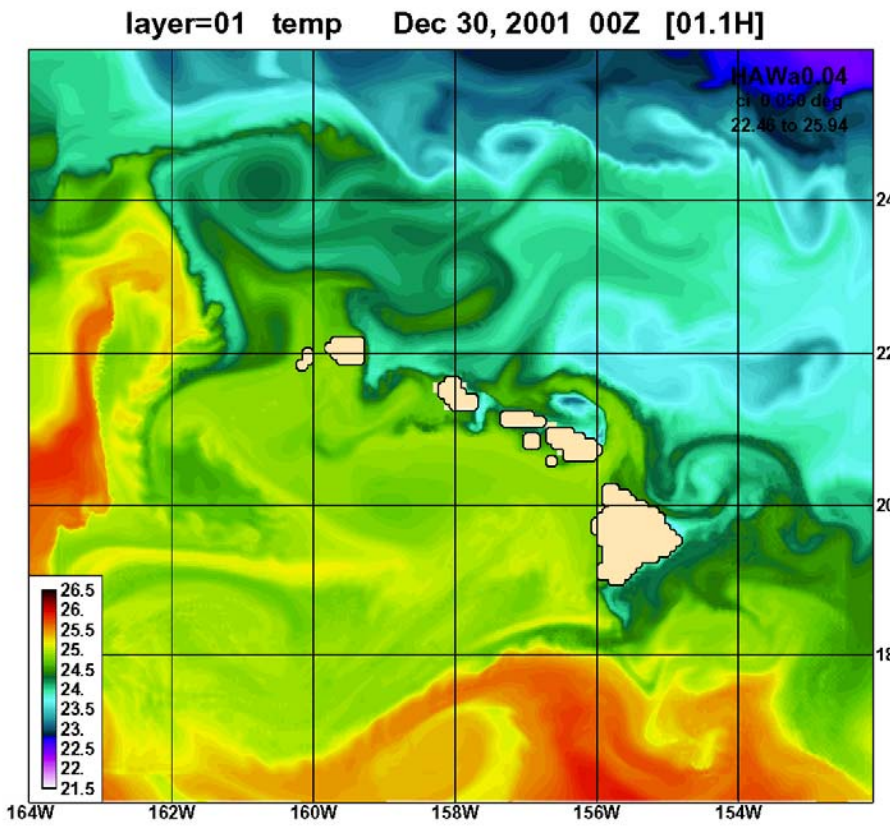
QuikSCAT

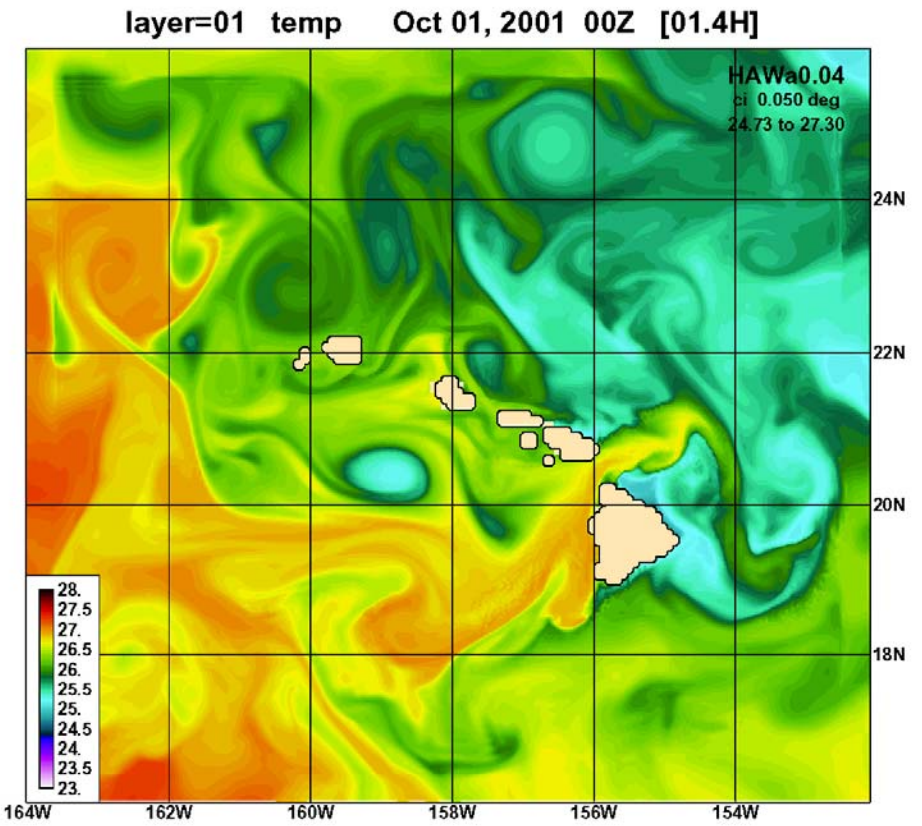


QuikSCAT inter



Model SST (1/24 degree)

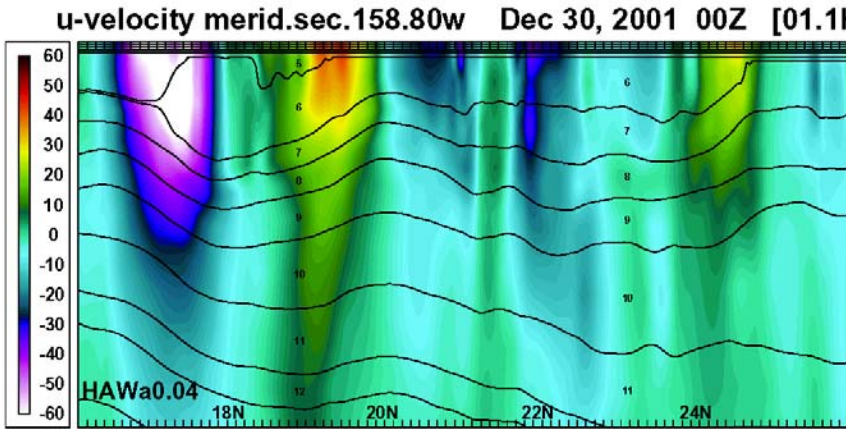


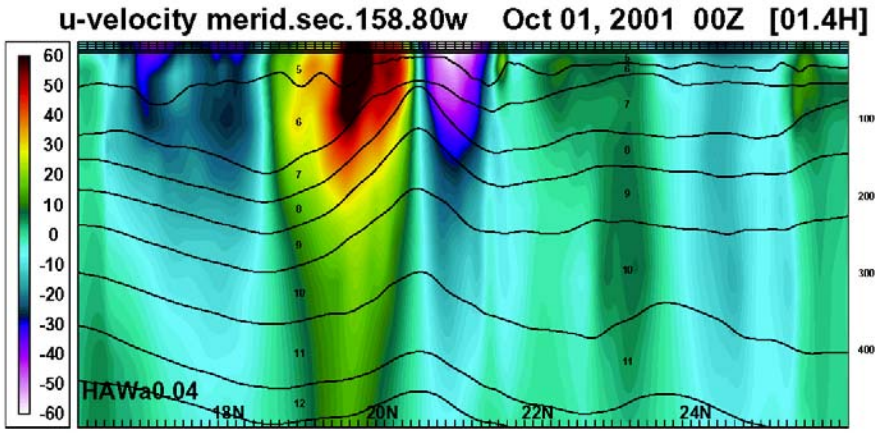


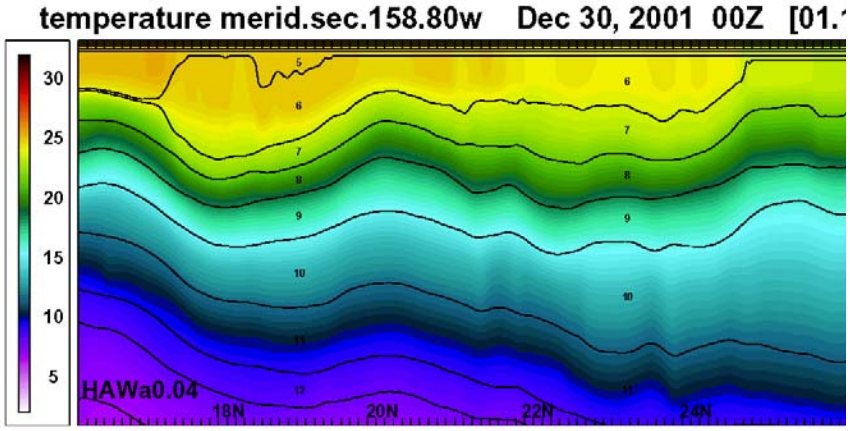
Dec. 30, 2001
With ECMWF winds

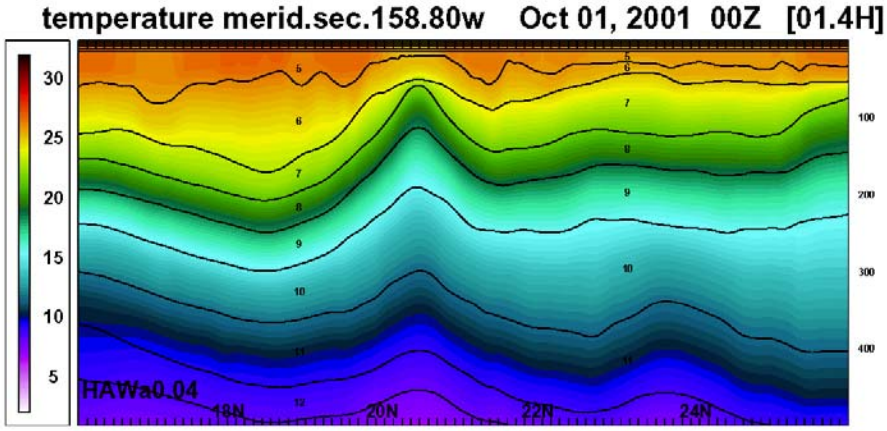
Oct. 1, 2001
With QSCAT winds

Model T and U along 158.8W





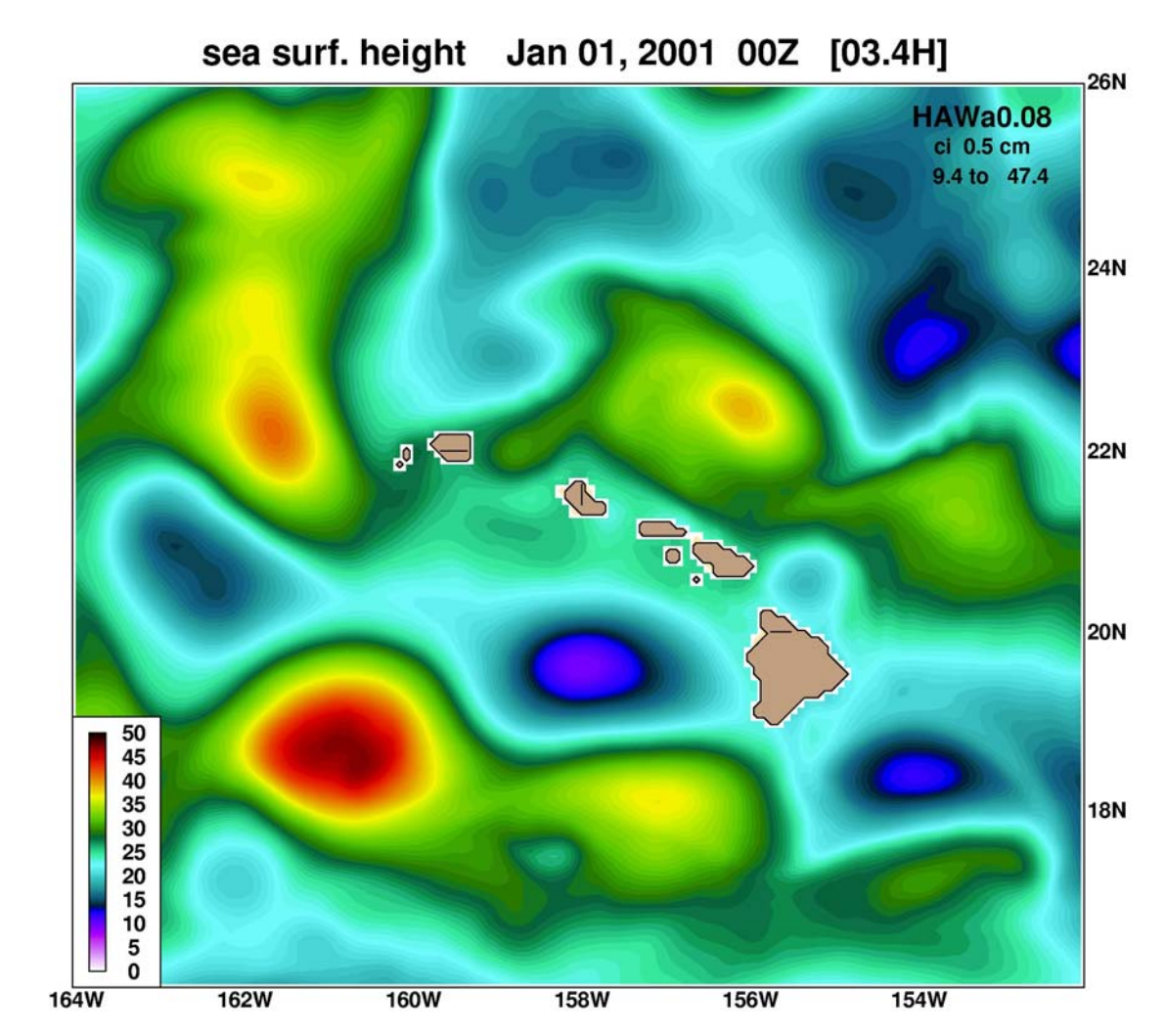


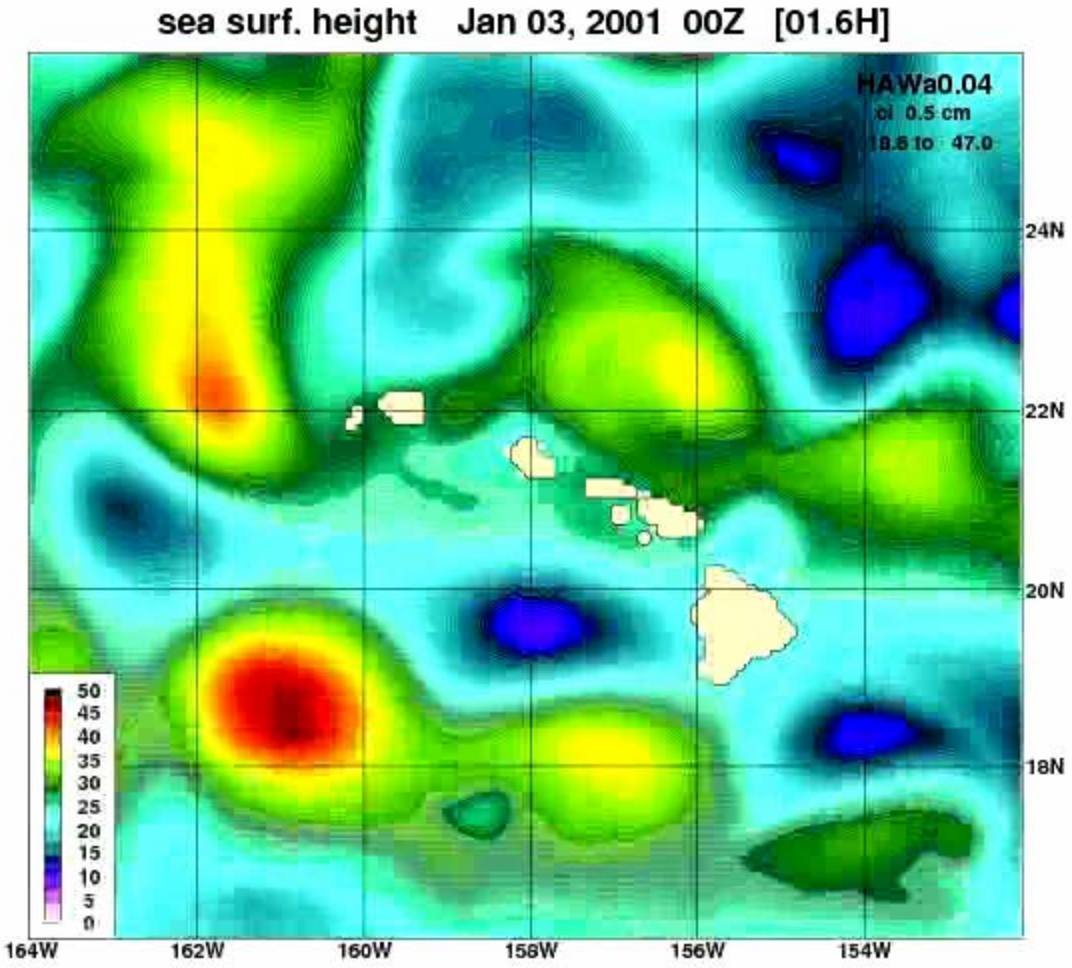


With ECMWF winds

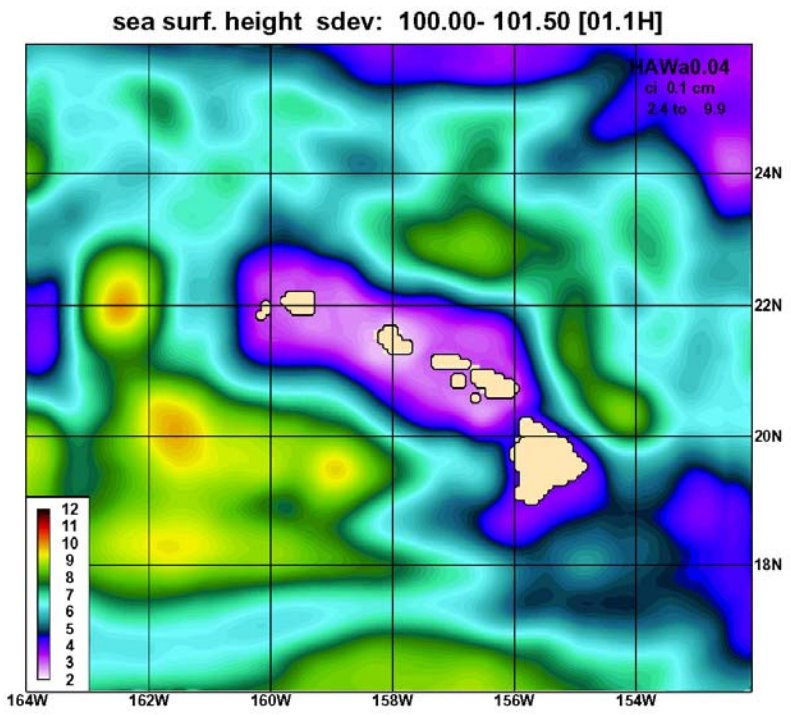
With QSCAT winds

Sea Surface Height

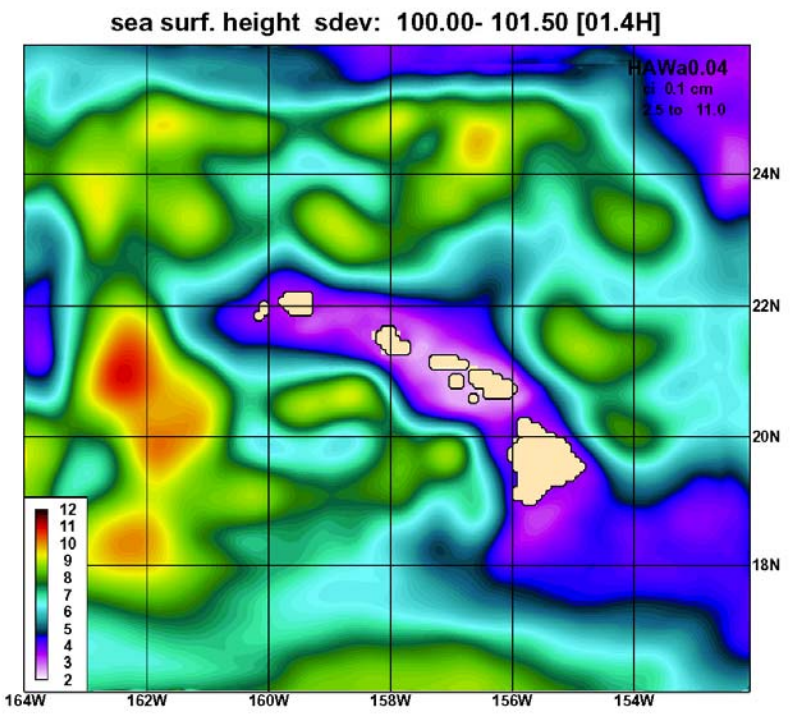



sea surf. height Jan 03, 2001 00Z [01.6H]
HAWa0.04
ci 0.5 cm
18.6 to 47.0
24N
22N
20N
18N
50
45
40
35
30
25
20
15
10
5
0
164W
162W
160W
158W
156W
154W

Sea Surface Height Variability (rms)

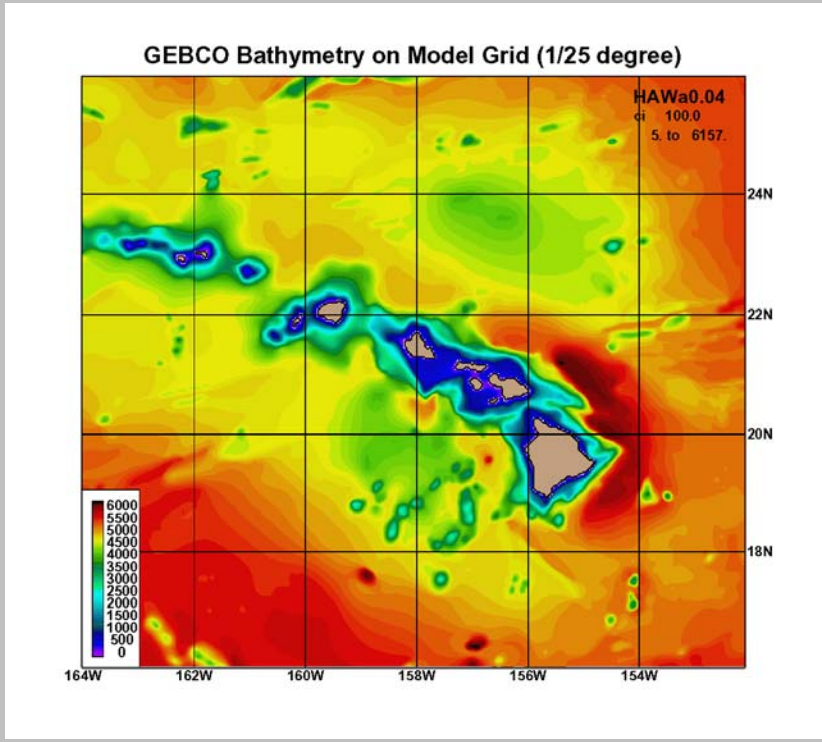


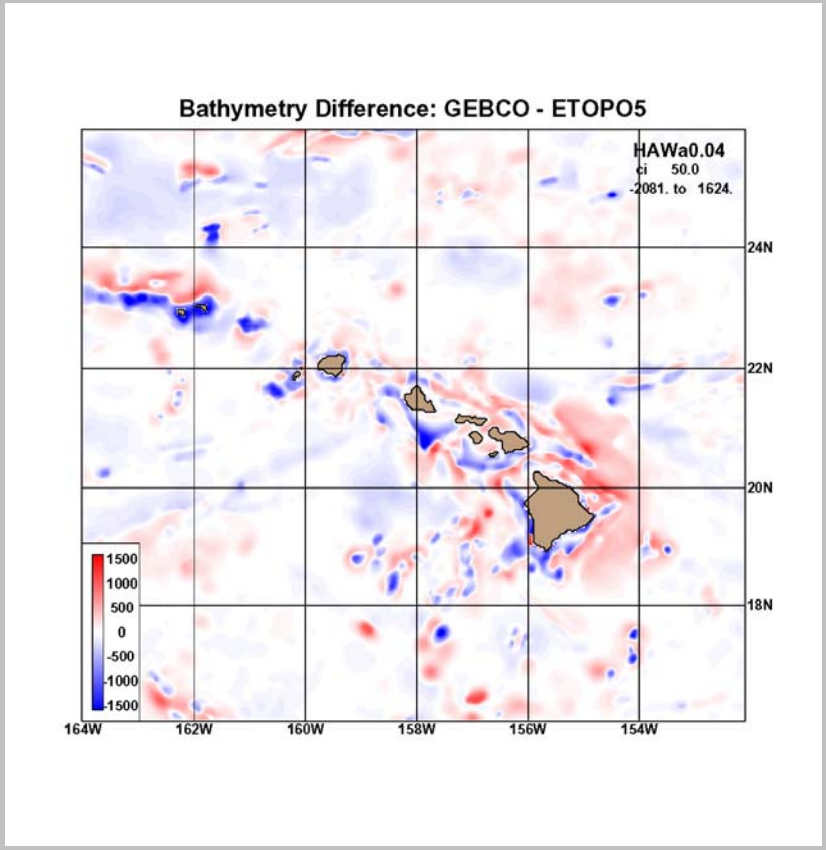
ECMWF



QSCAT

GEBCO Bathymetry on Model Grid

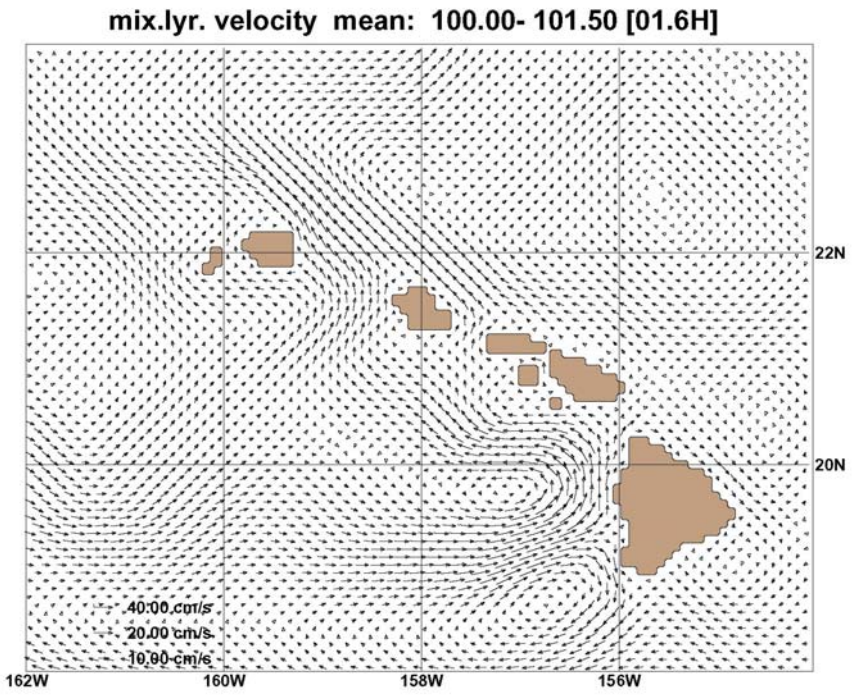


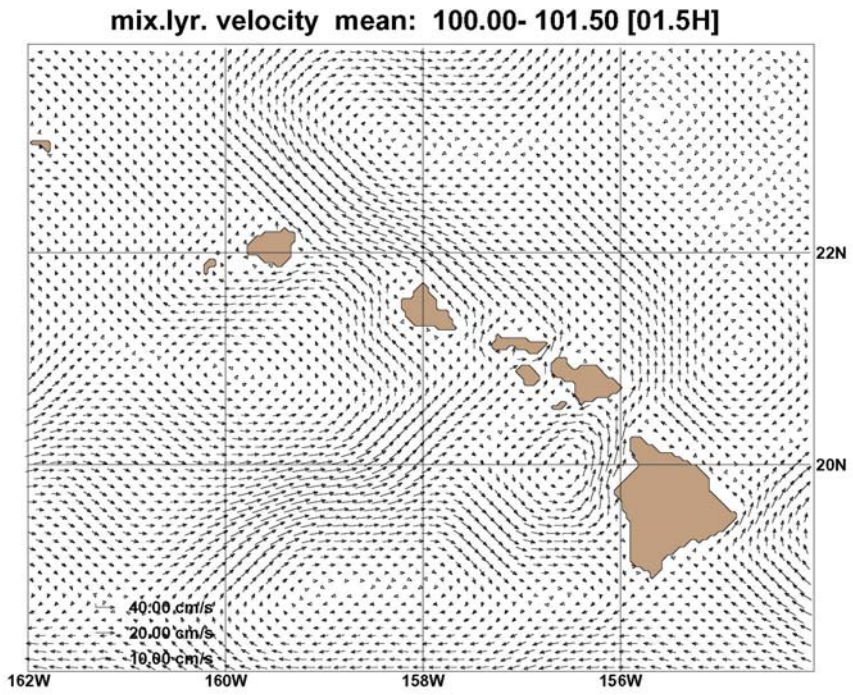


GEBCO: From 1/60 to 1/25 degree

GEBCO – ETOPO5
Range: -2081 to 1624 m

Mean mixed layer velocity

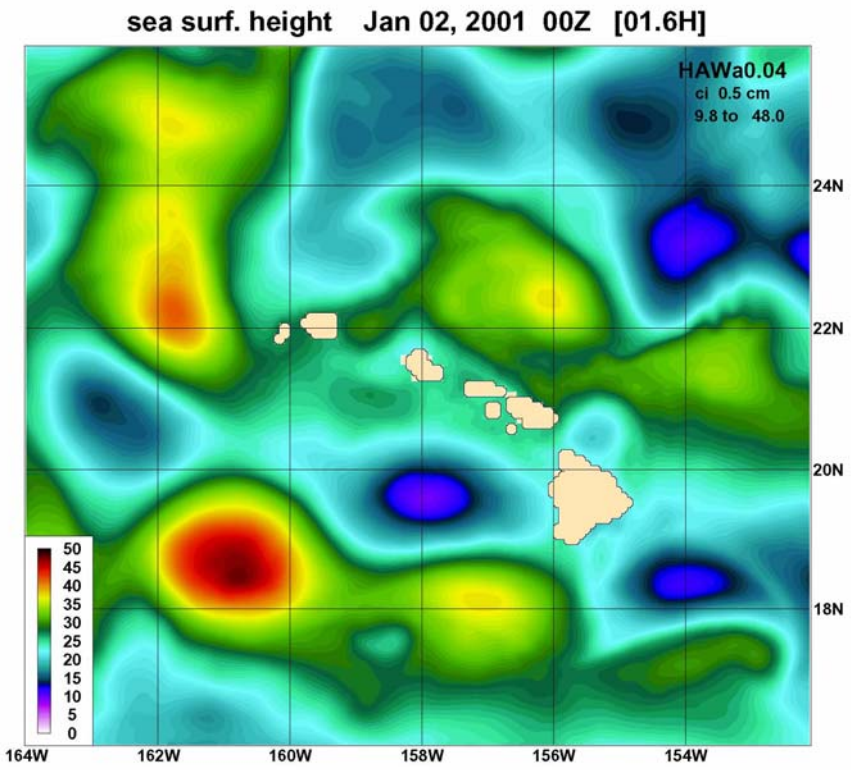


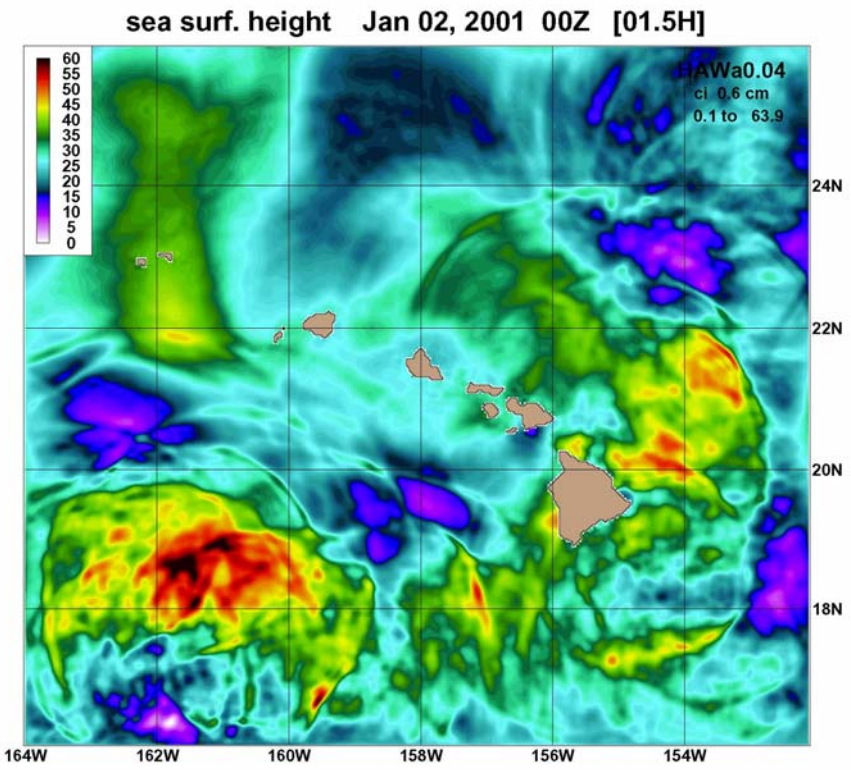


ETOPO5

GEBCO

SSH Jan 02, 2001

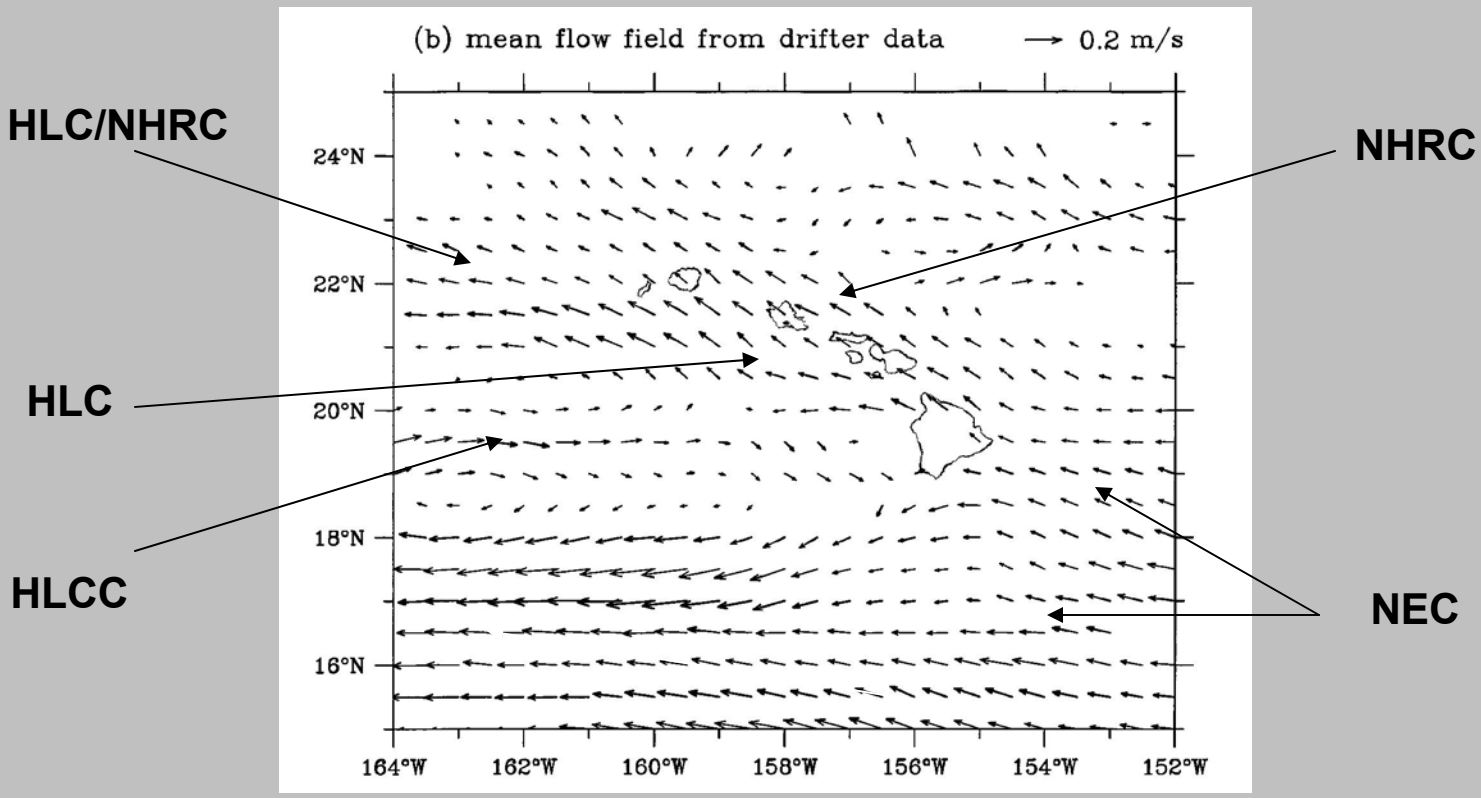




ETOPO5

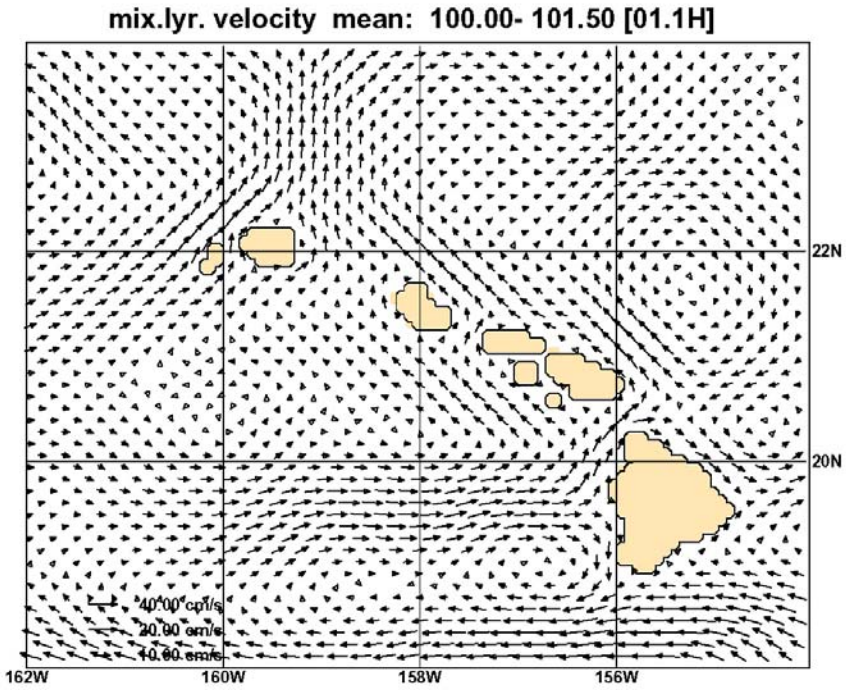
GEBCO

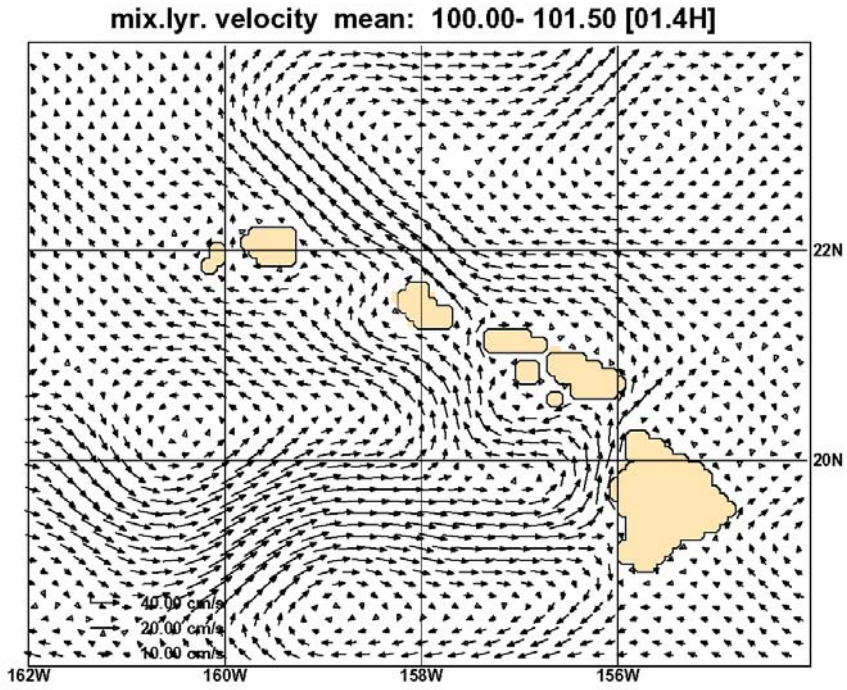
Surface Flow from Drifters



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 °