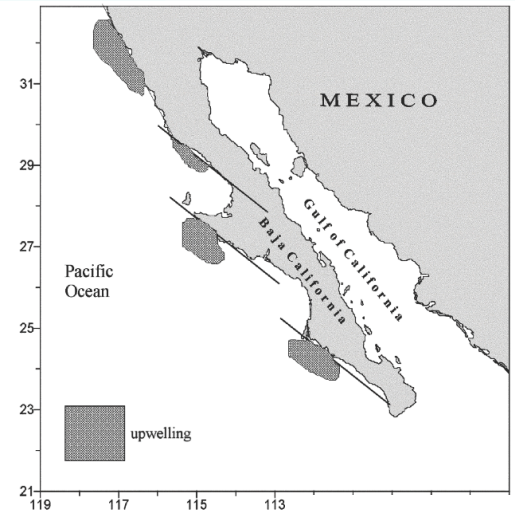
Poleward circulation off the Pacific coast of Southern Baja California, Mexico.

Armando Trasviña & Eduardo González
CICESE, La Paz, B.C.S, México

Gilberto Gaxiola
CICESE, Ensenada, B.C., México

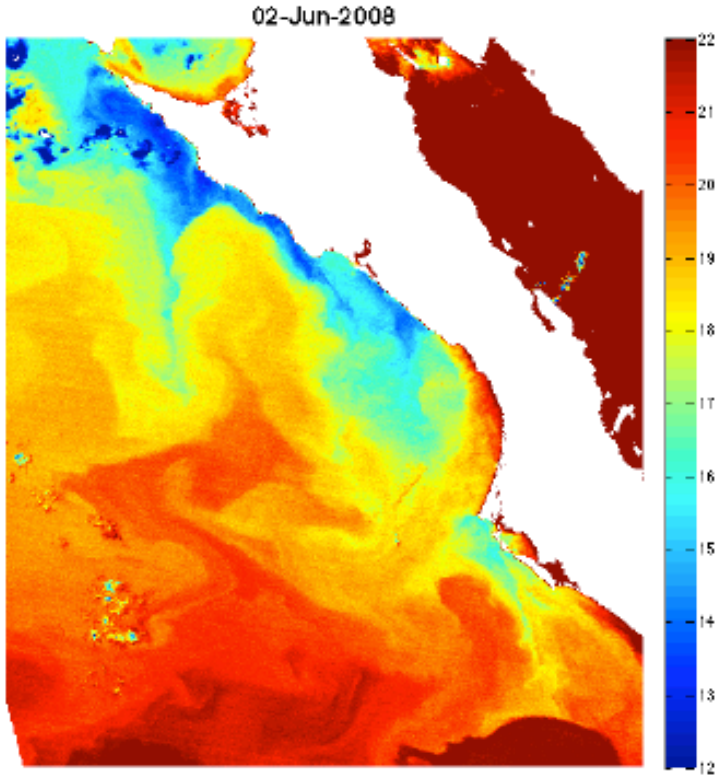
Oleg Zaitsev
CICIMAR-IPN, La Paz, B.C.S., México

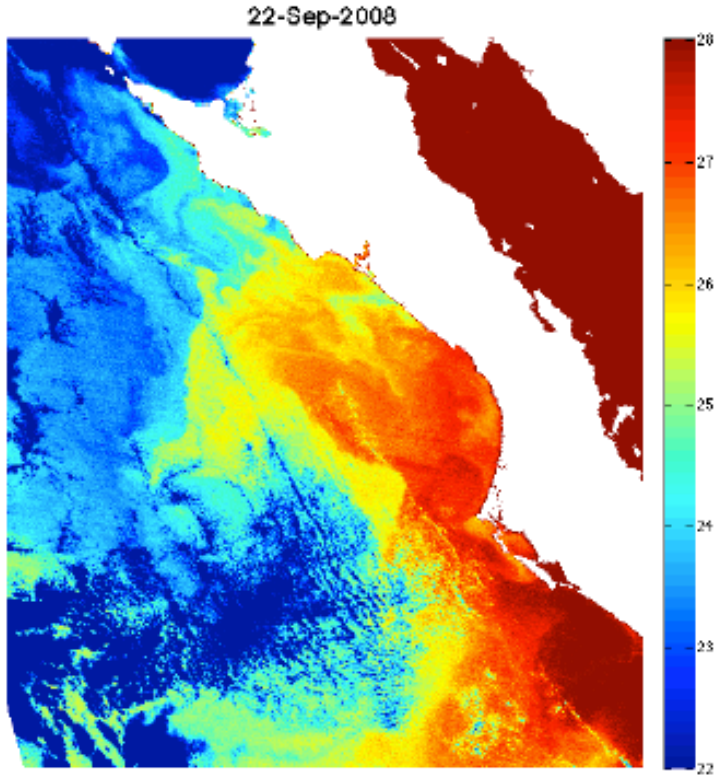
Jushiro Cepeda
Universidad Autonoma de Nayarit, México



Motivation: satellite observations of an upwelling region show a warm intrussion invading the coastal region from the south. It overlaps an important upwelling region (Zaytsev et al., 2003)

Zaytsev, O., Cervantes-Duarte, R., Montante, O., and Gallegos-Garcia, A.: Coastal Upwelling Activity on the Pacific Shelf of the Baja California Peninsula,Journal of Oceanography, 59, 489–502





González-Rodríguez E., Armando Trasviña-Castro, Rafael Cervantes-Duarte, Gilberto Gaxiola-Castro, Luis Zamudio. Net primary productivity, upwelling and coastal currents in the Gulf of Ulloa, Baja California, México. Ocean Sci., 8, 703–711, 2012, doi:10.5194/os-8-703-2012

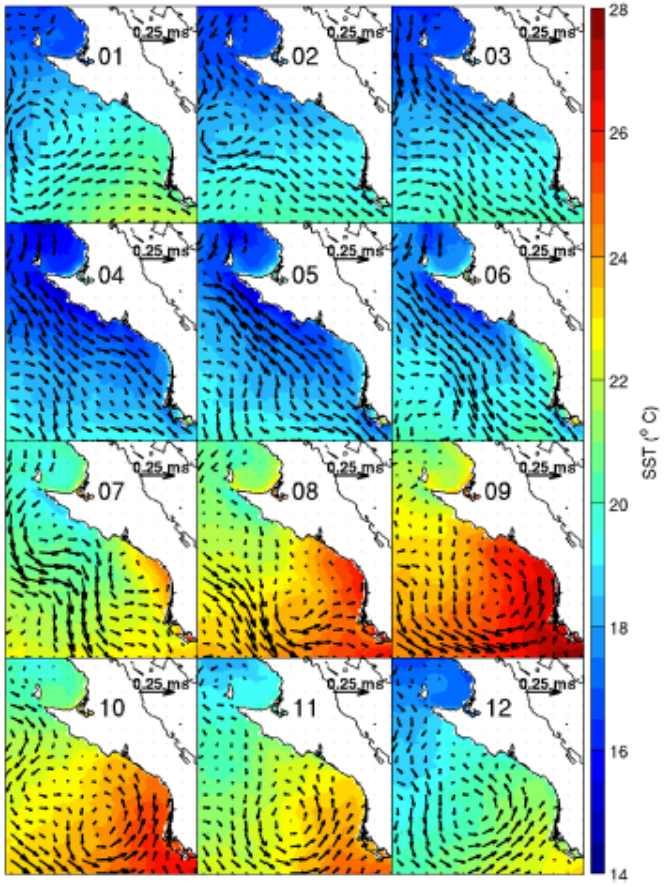


Fig. 4. Maps of monthly mean sea surface temperature (SST) and geostrophic currents for the period 2003-2007. Numbers in each panel indicate the month of the year.

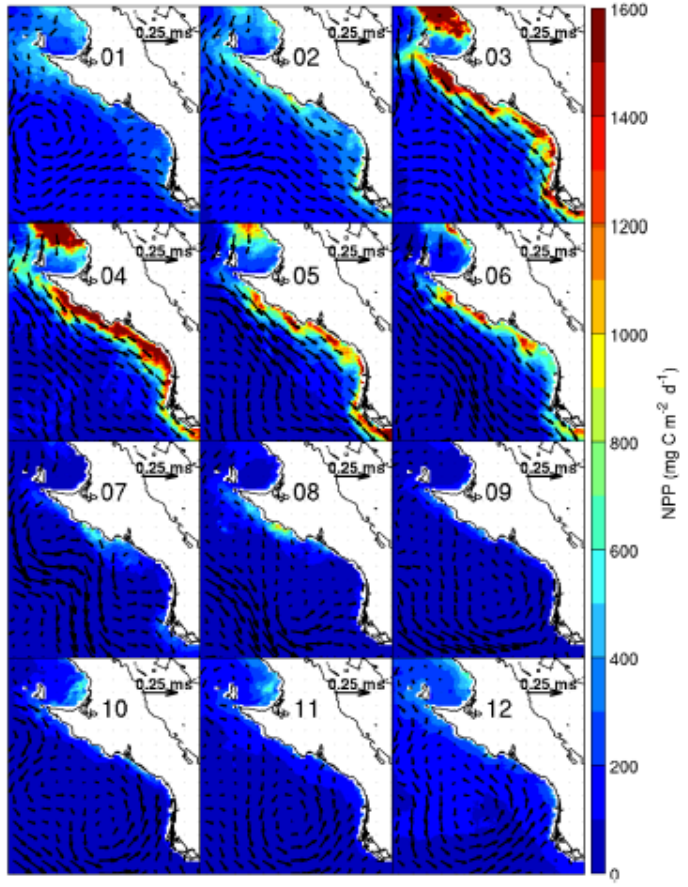
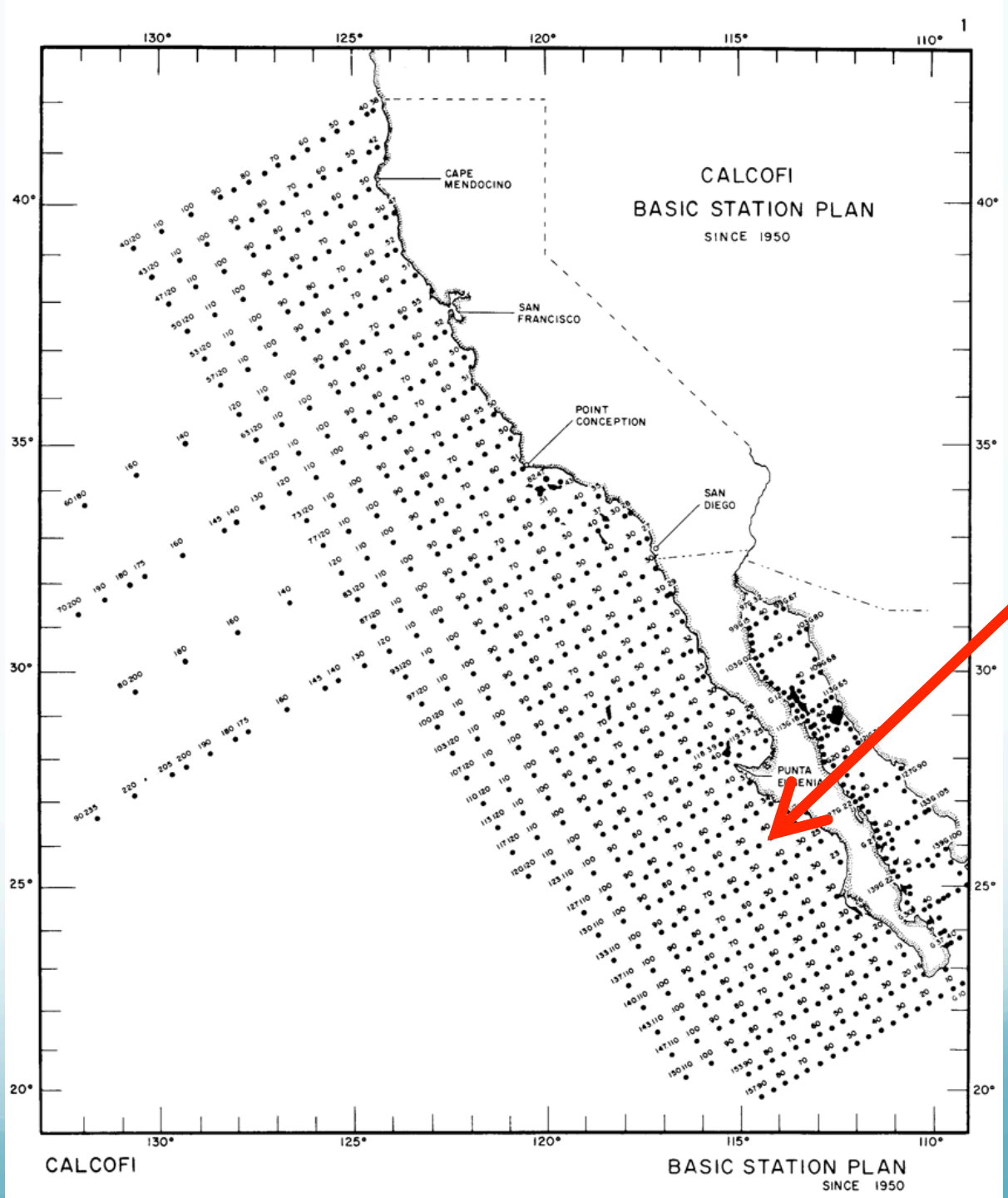
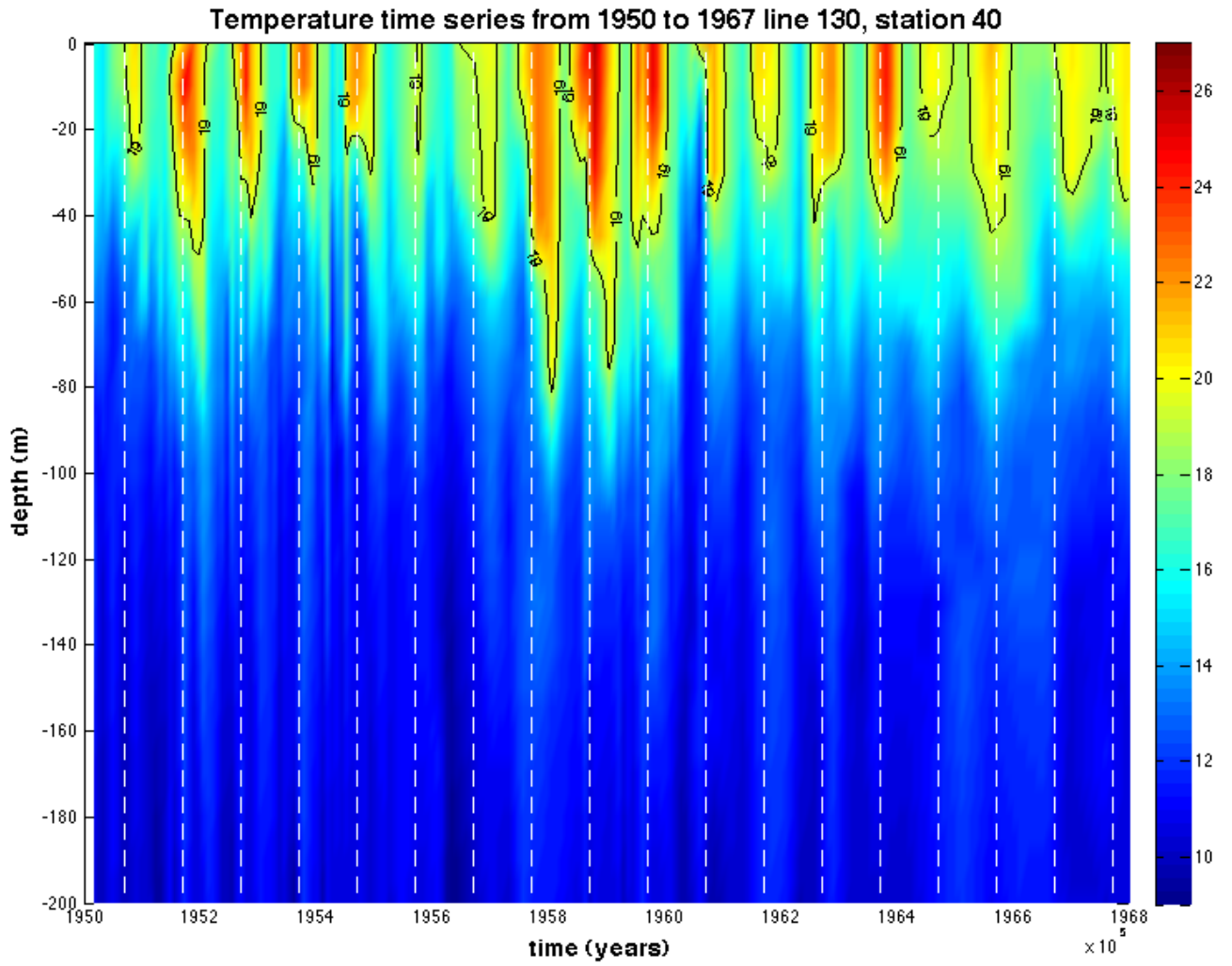


Fig. 5. Maps of monthly net primary productivity (NPP) and geostrophic currents for period 2003-2007. Numbers in each panel indicate the month of the year.

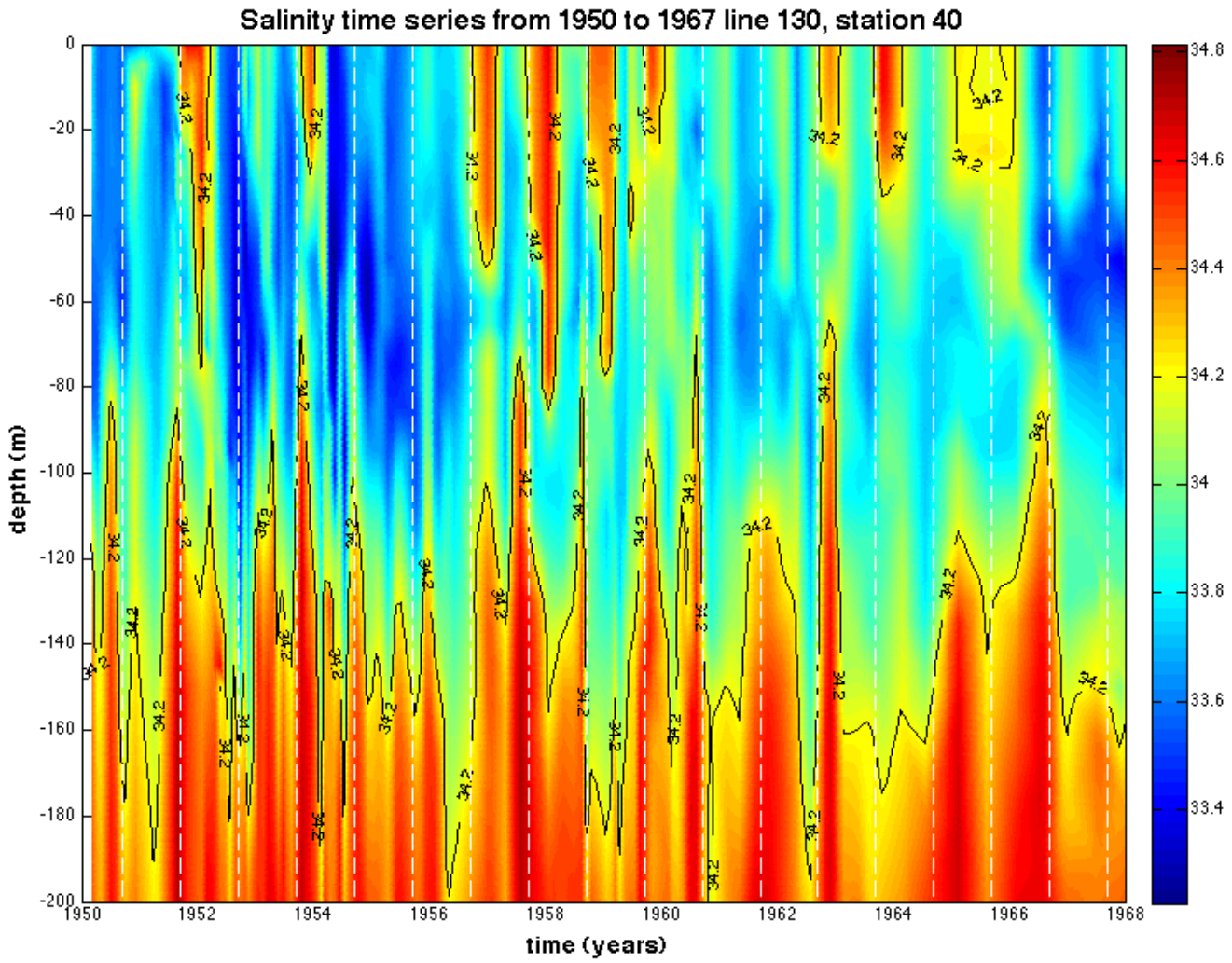
Historical data from the CALCOFI program



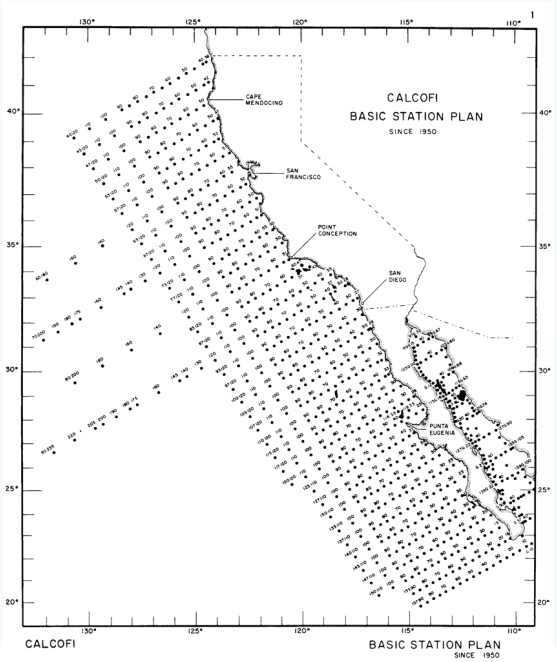
Temperature profile time series at station 40 line 130

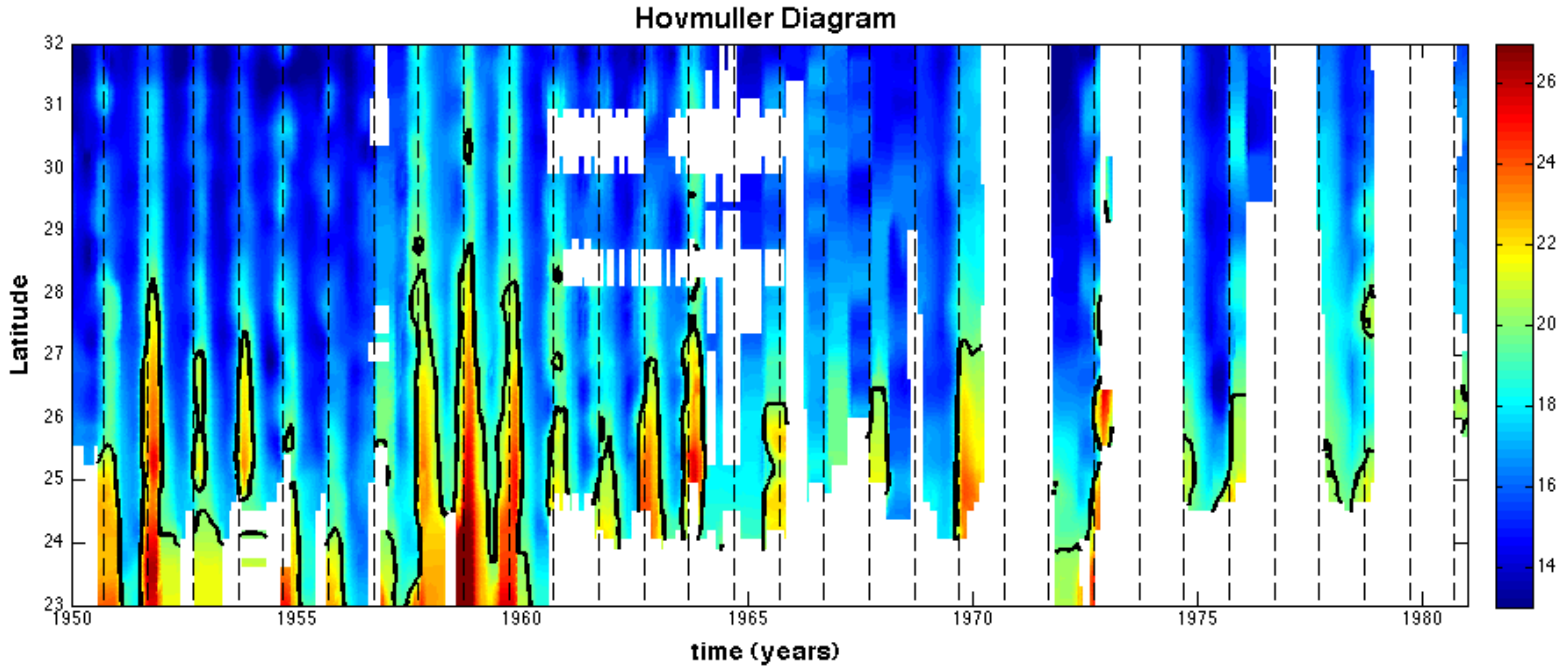


Salinity profile time series at station 40 line 130



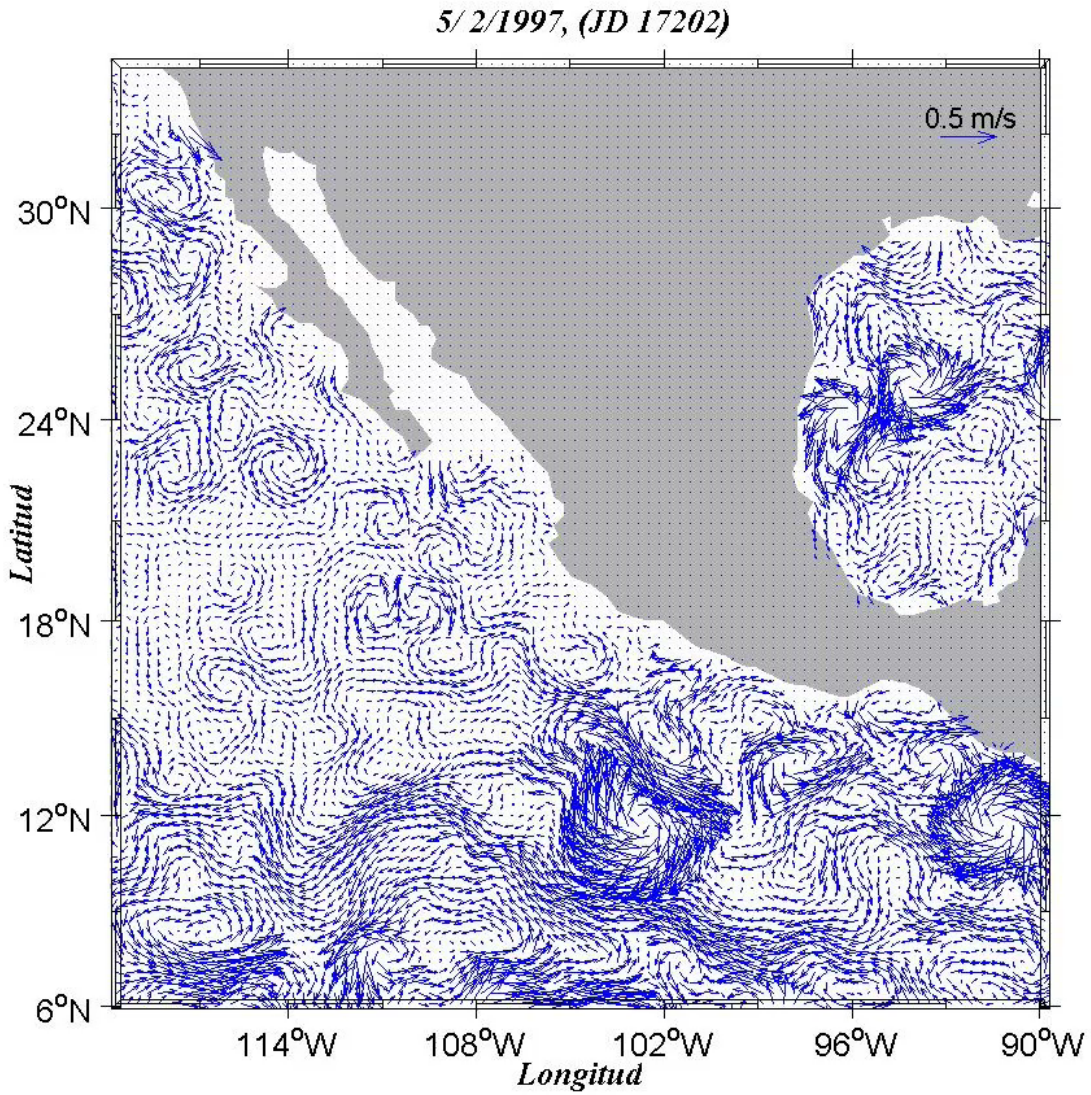
Propagation diagram

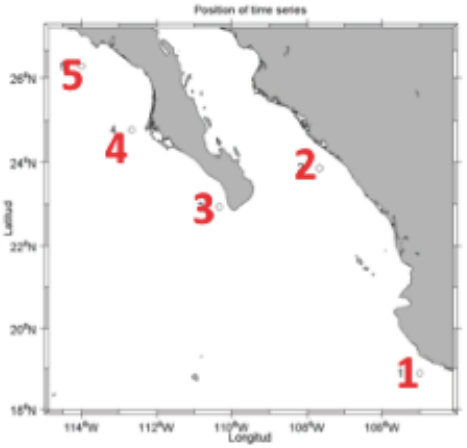




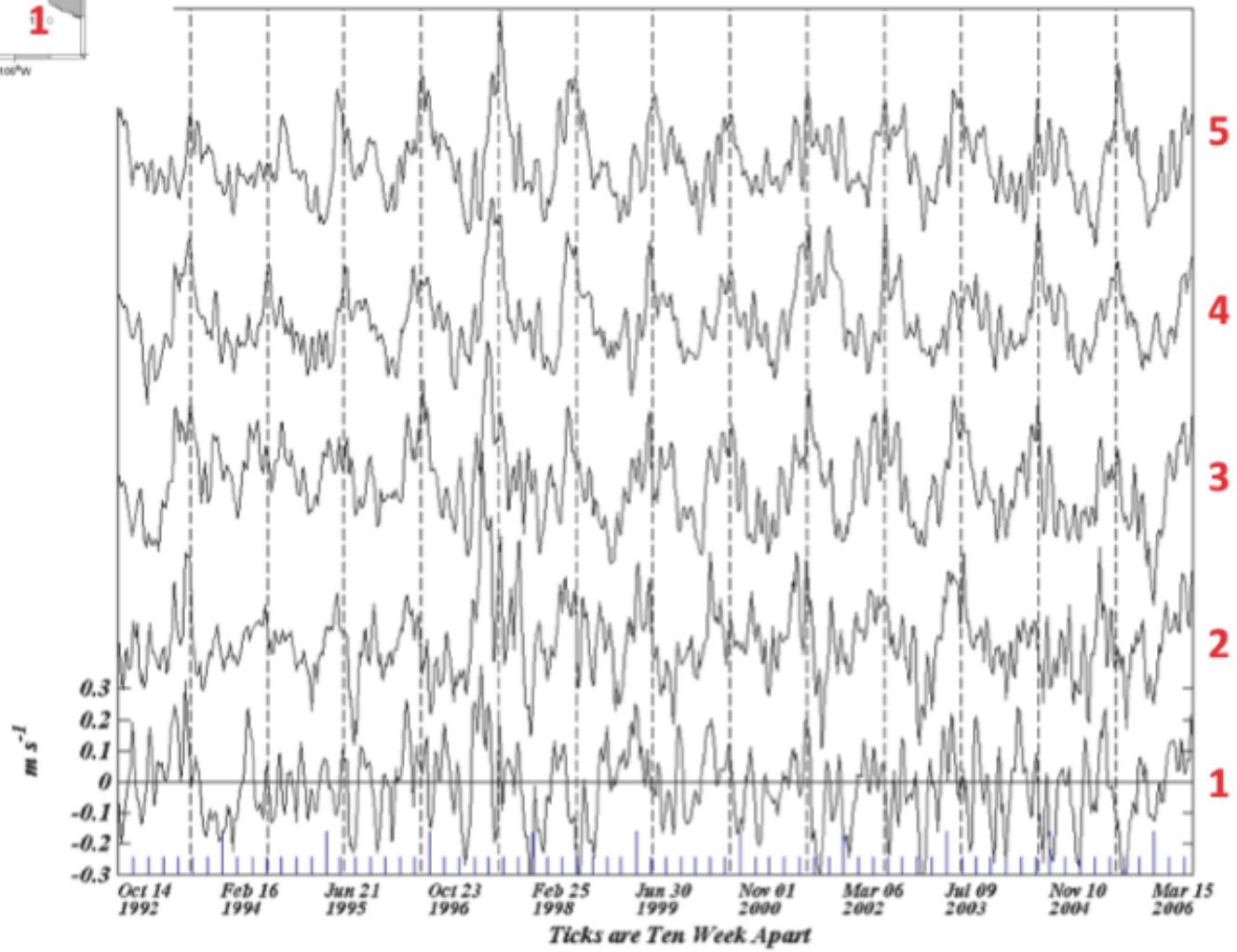
The coastal signal during El Niño 1997-1998 from AVISO gridded data

See movie

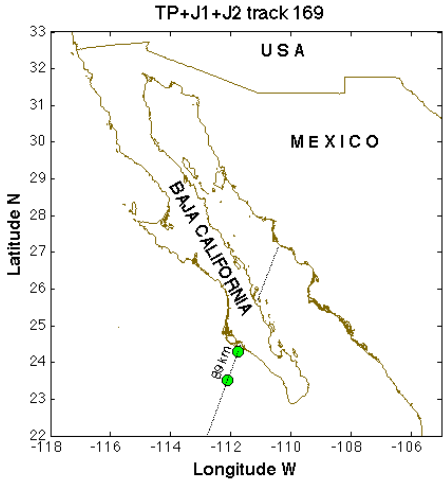




Time series of the geostrophic component of the flow along the coast (from AVISO gridded SLAs) show a seasonal signal consistent with the arrival of warm water



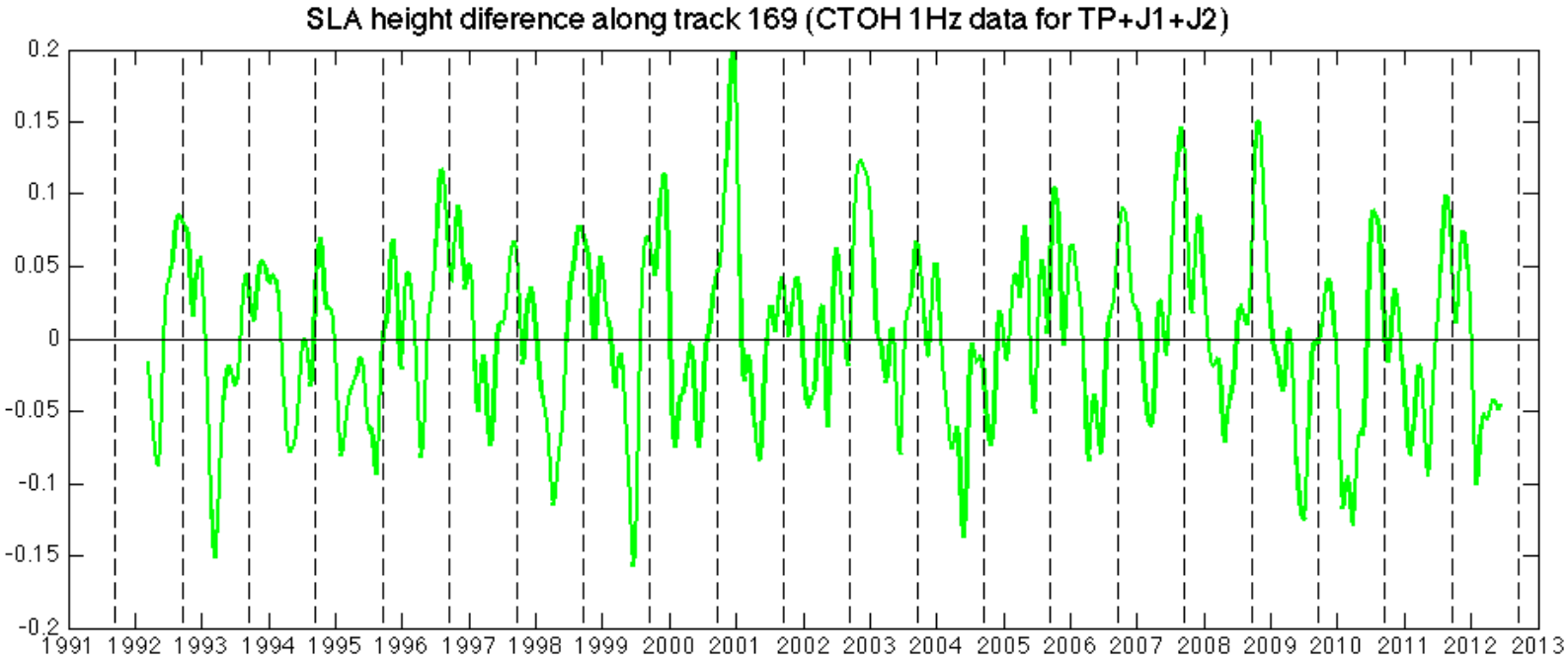
With the help of Stefano Vignudelli (CNR, Pisa) and Paolo Cipollini (NOC, Southampton) I´ve started to play with coastal altimetry data

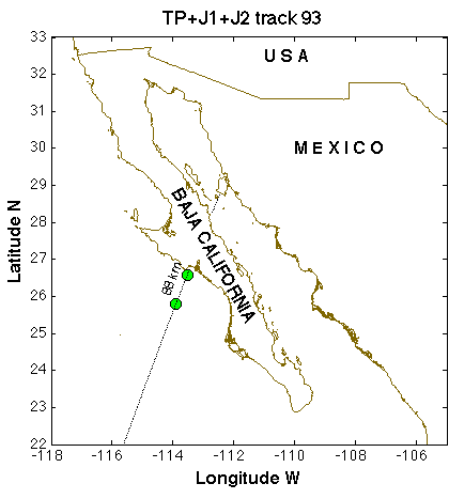


TRACK 169

Promising preliminary results from coastal altimetry: POSITIVE (+) SLOPE INDICATE POLEWARD FLOW

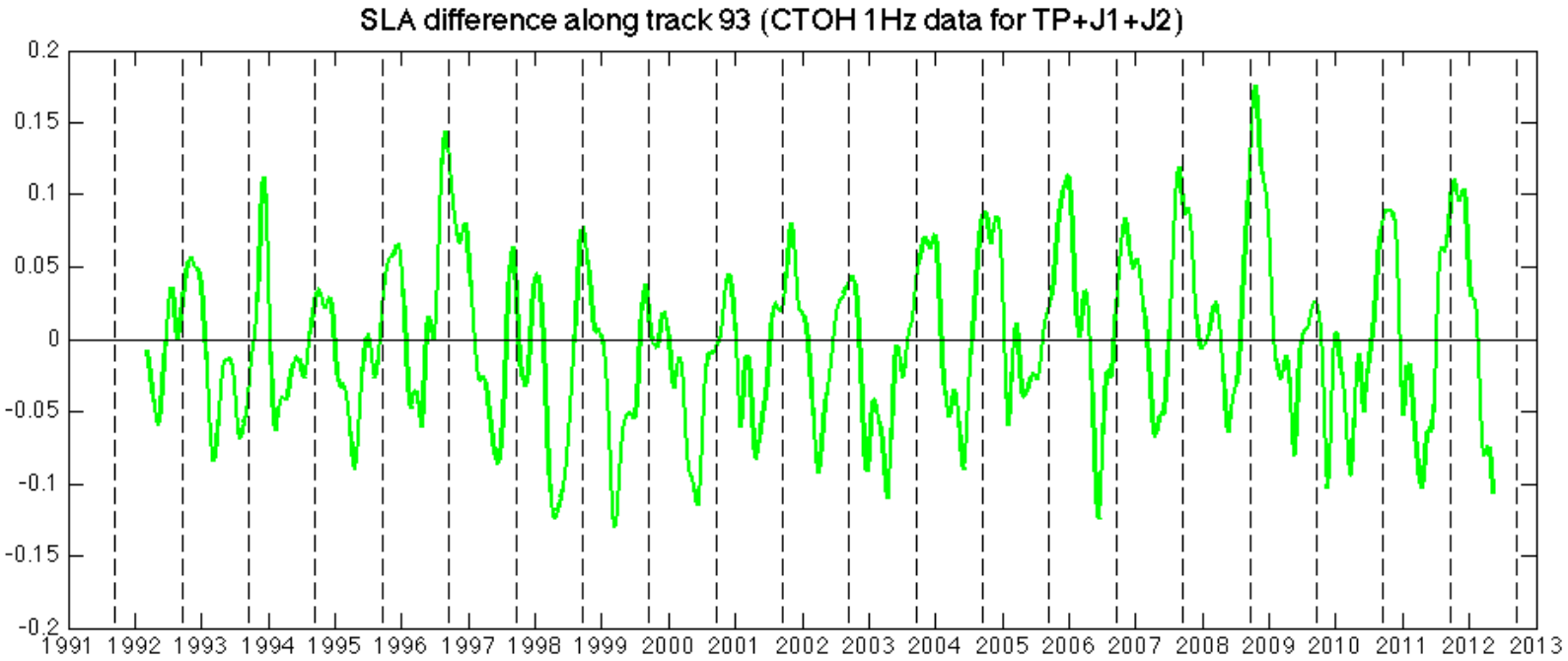
Altimetry data used in this study were developed, validated, and distributed by the Coastal data from the Center for Topographic studies of the Ocean and Hydrosphere (CTOH)/LEGOS, France

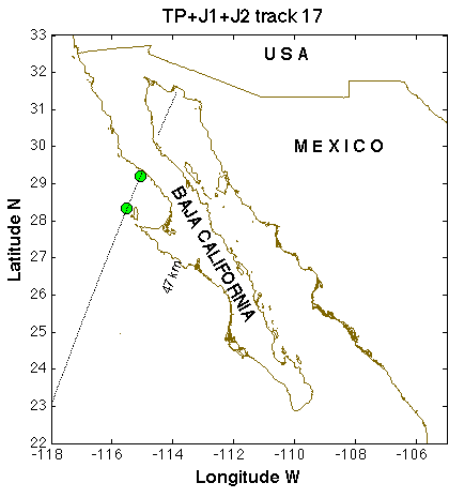




TRACK 93

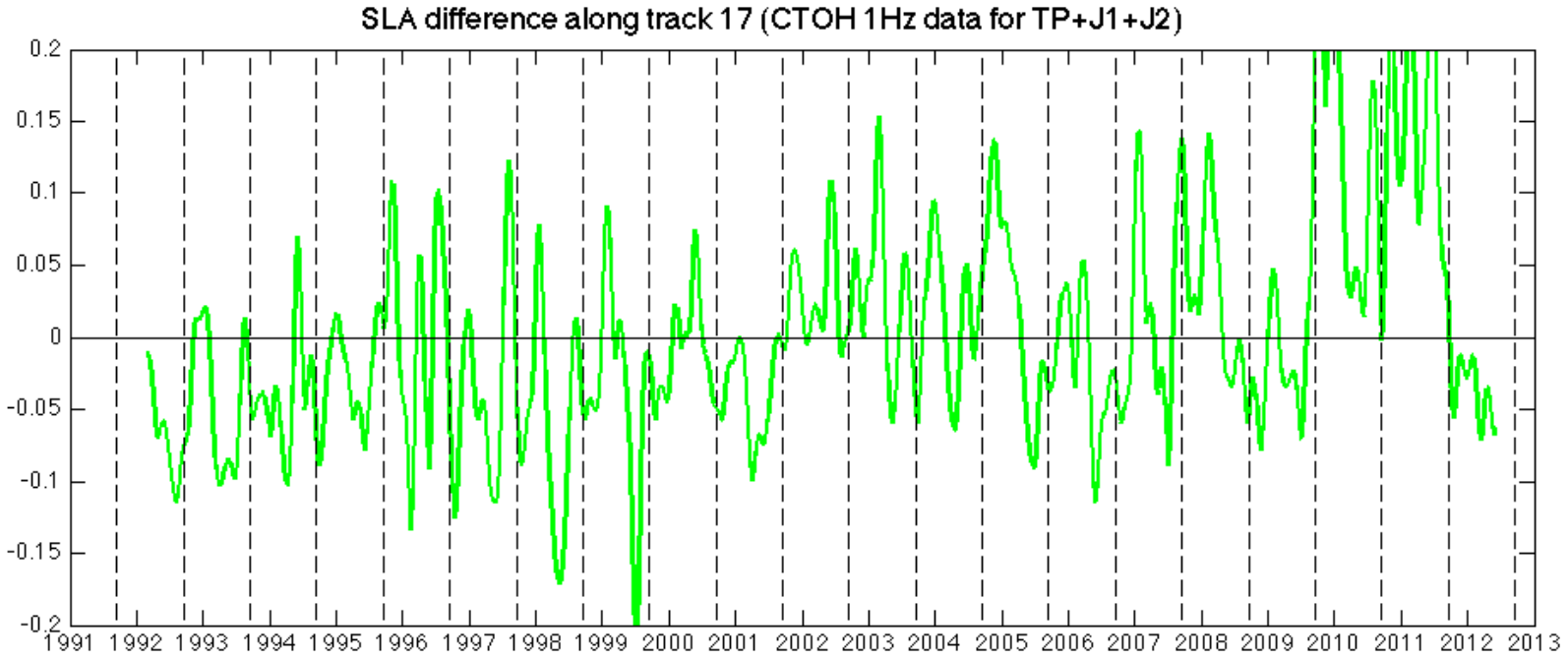
POSITIVE (+) SLOPE INDICATE POLEWARD FLOW

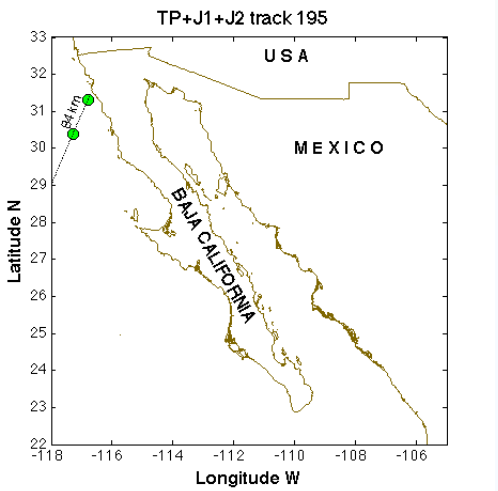




TRACK 17 (NOT SO GOOD)

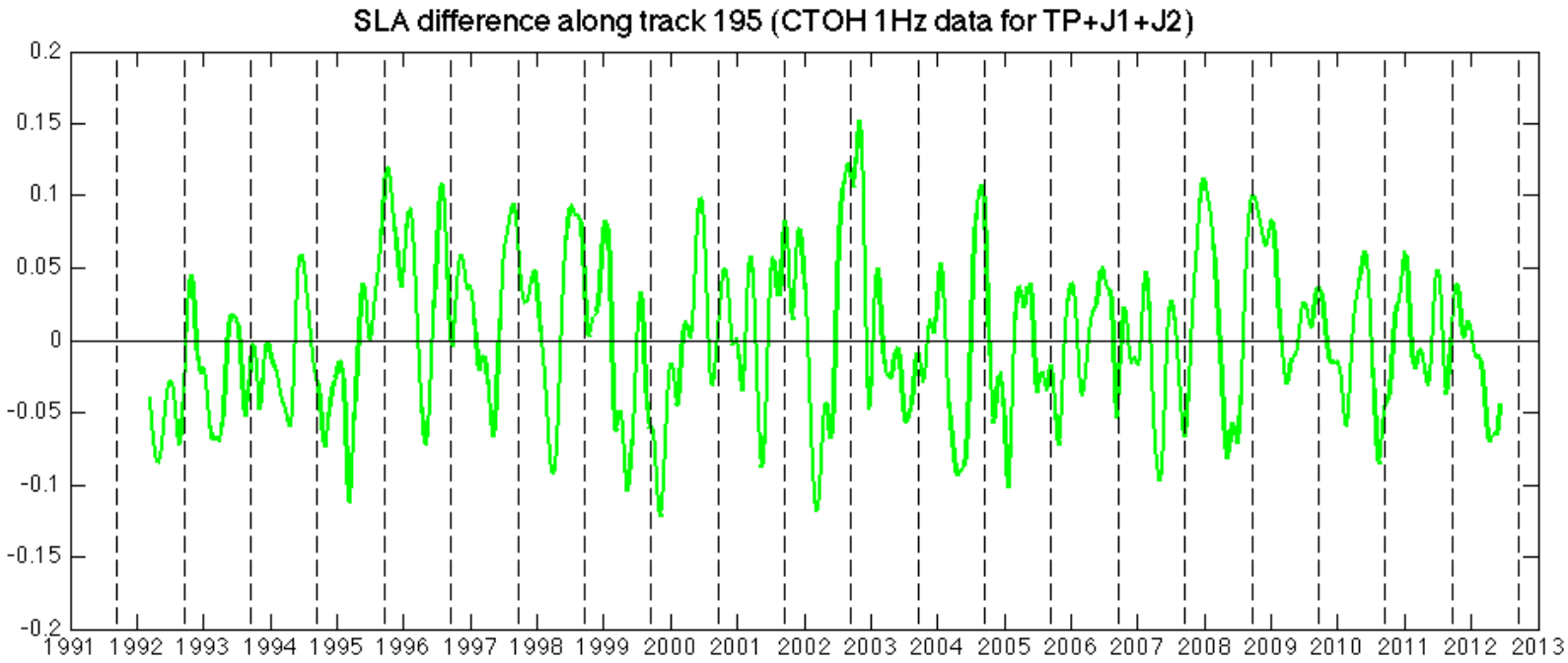
POSITIVE (+) SLOPE INDICATE POLEWARD FLOW



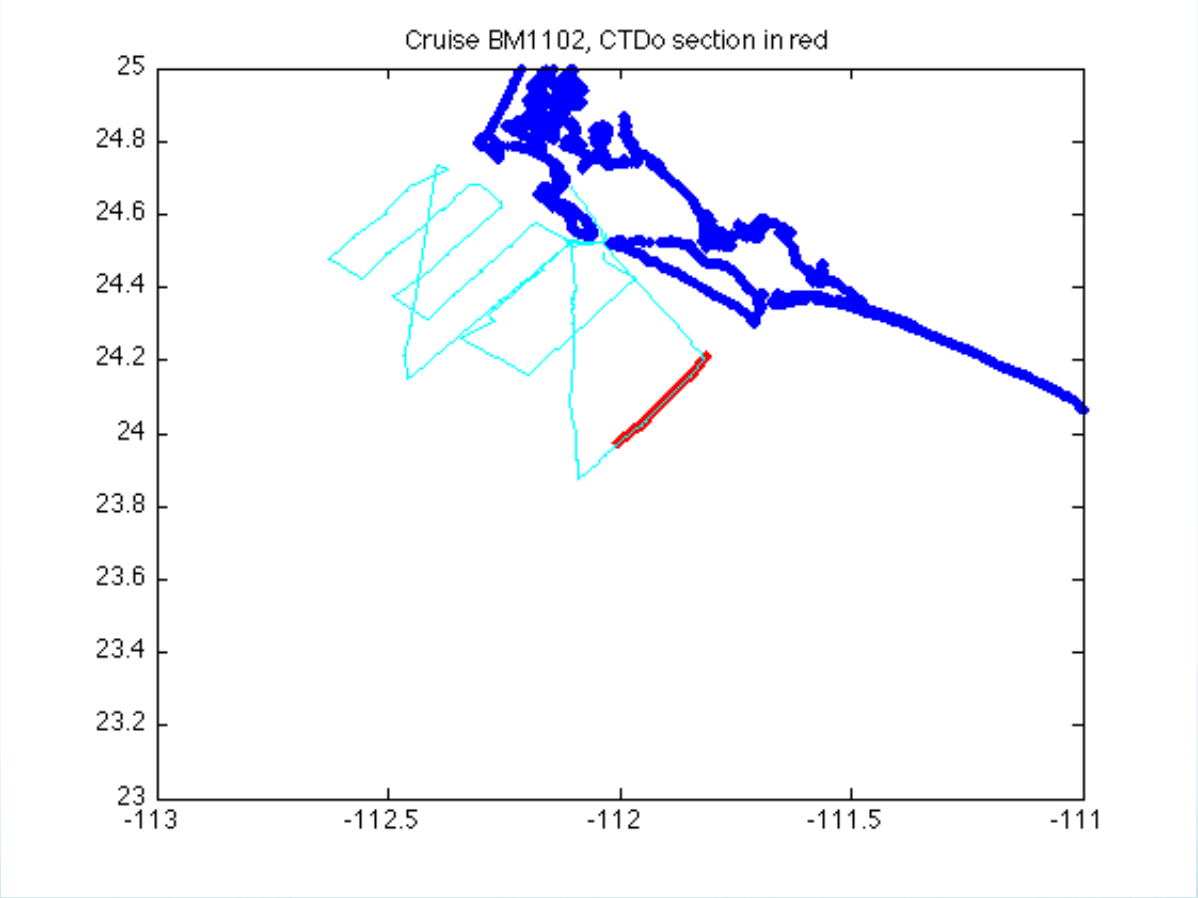


TRACK 195

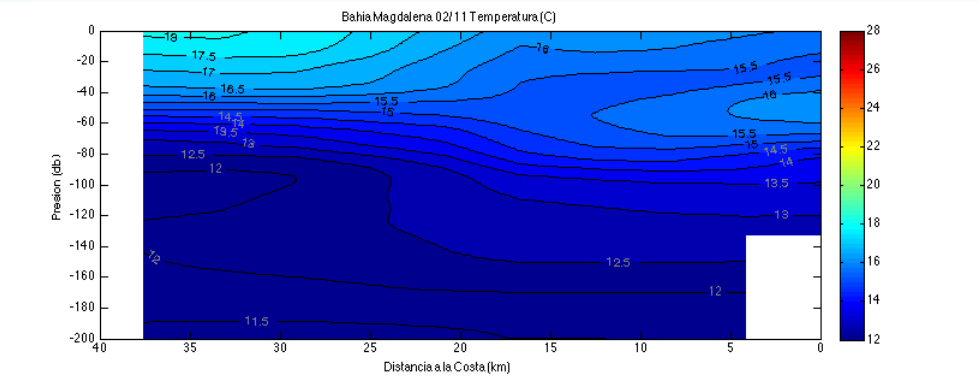
POSITIVE (+) SLOPE INDICATE POLEWARD FLOW

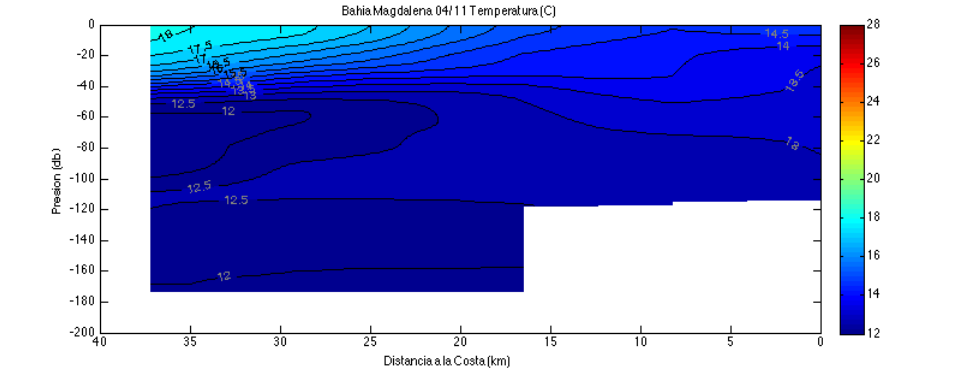


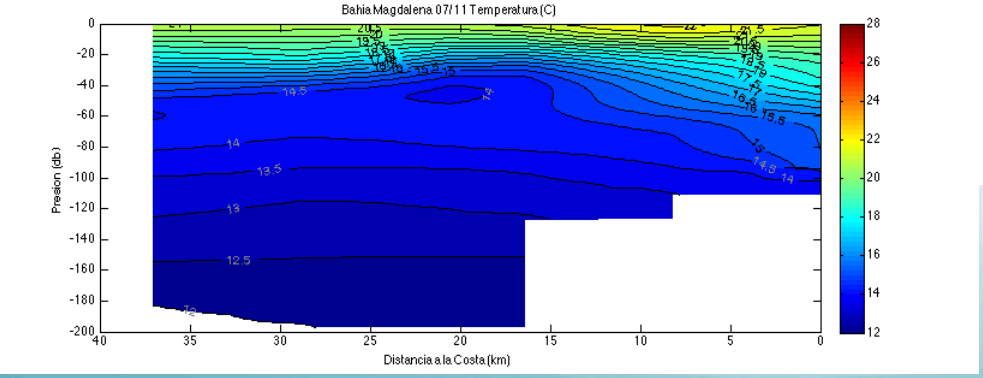
And we participated in several oceanographic cruises aimed at characterizing this coastal region

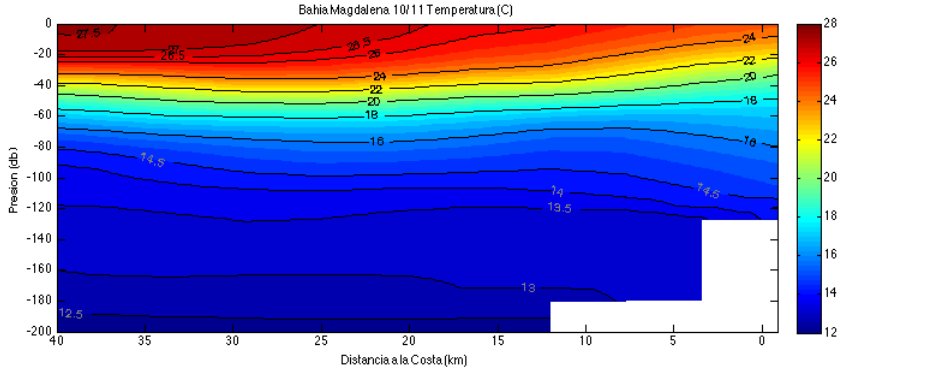


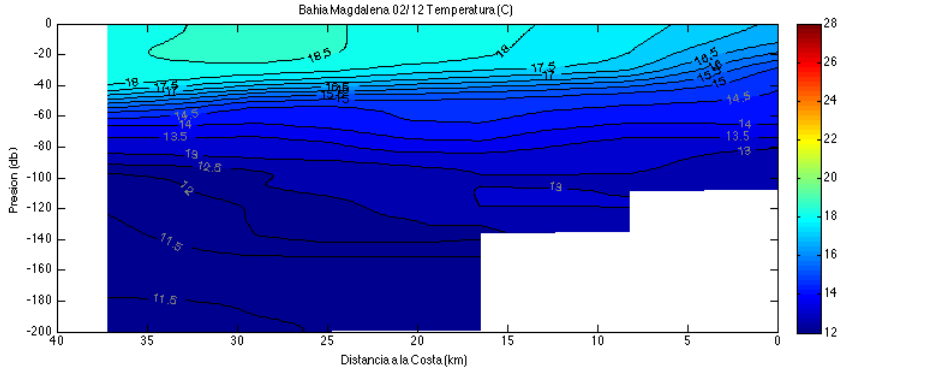
Temperature section visited every season (2011 and 2012)



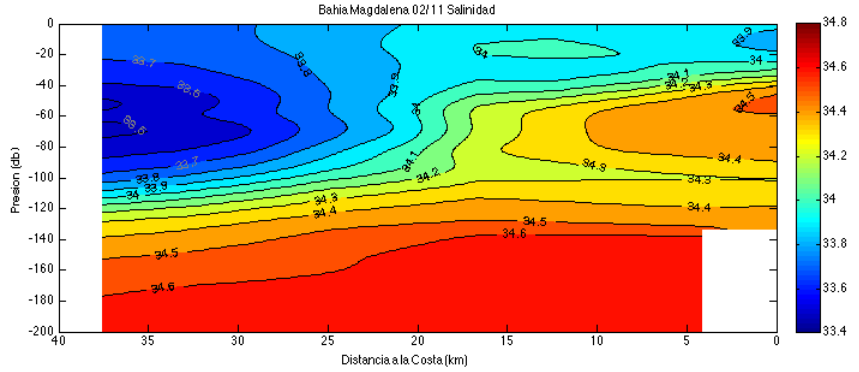


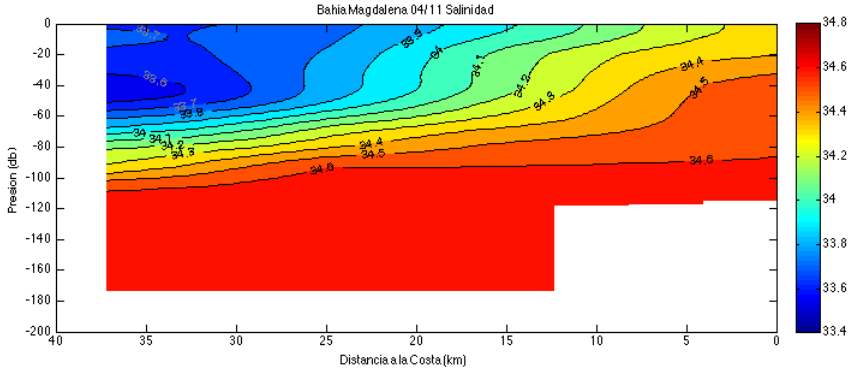


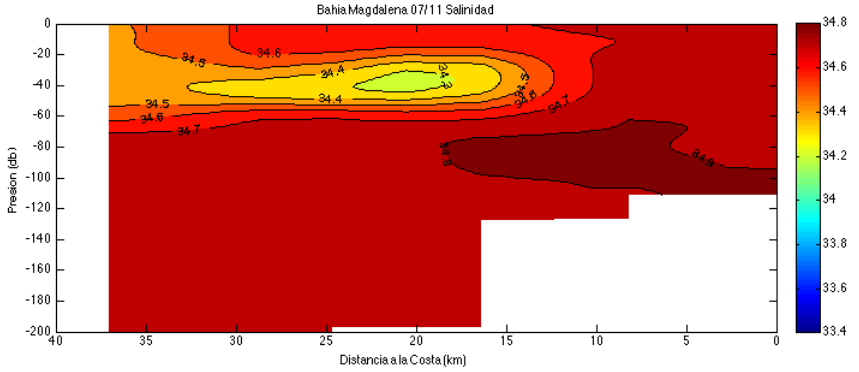


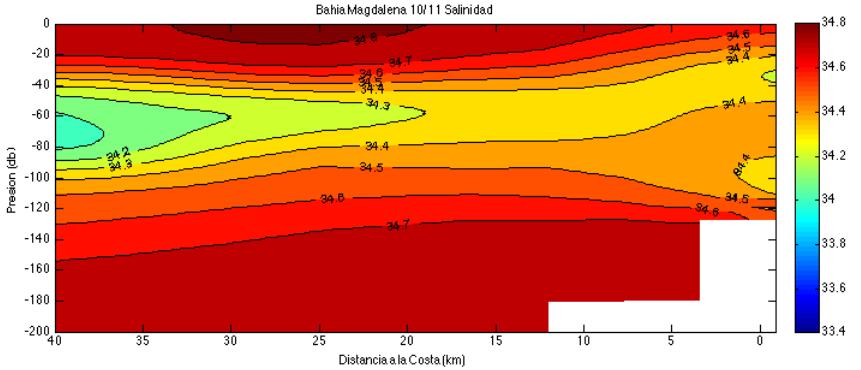


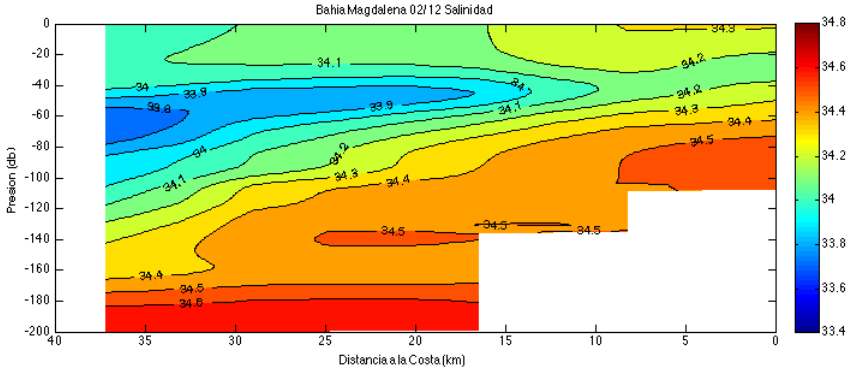
Salinity section visited every season (2011 and 2012)

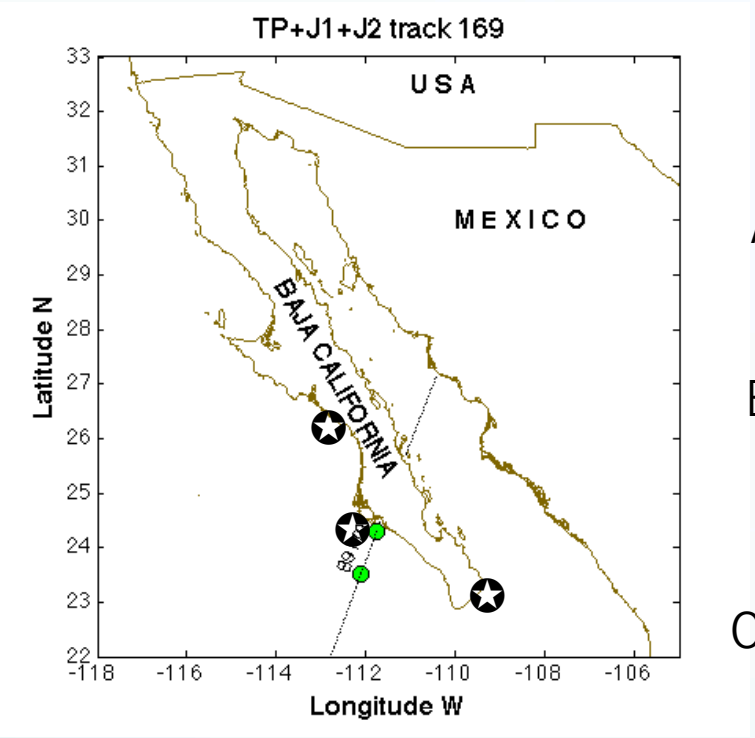












THESE ARE ENCOURAGING RESULTS BUT THIS IS WORK IN PROGRESS

THE NEXT STEPS:

A) VALIDATE 1HZ ALTIMETRY USING PRESSURE SENSOR DATA

B) COMPUTE GEOSTROPHIC CURRENTS WITH 1 HZ DATA AND COMPARE WITH CURRENT METER DATA

C) COMPUTE GEOSTROPHIC CURRENTS WITH 20 HZ DATA AND COMPARE WITH CURRENT METER DATA.

D) TO INTRODUCE STUDENTS TO SAR ALTIMETRY

...