

## Sea surface height and currents



# On the monthly variability in the Gulf of California

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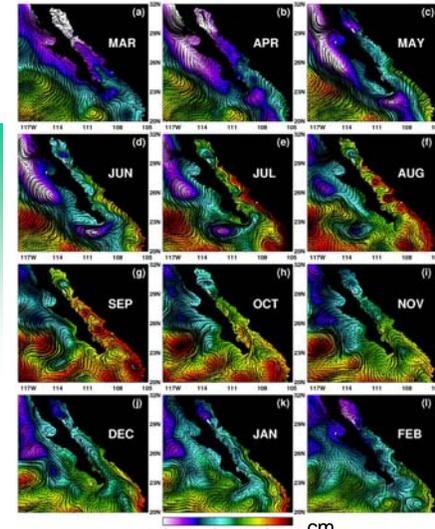


Figure 2. SSH from simulation forced with monthly winds

### Hybrid Coordinate Ocean Model (HYCOM)

- 20 vertical coordinate layers.
- Pacific HYCOM extends from 20°S to 62°N and from 109.125°E to 77.203°W.
- Pacific HYCOM does not include ocean data assimilation

**Abstract.** The Hybrid Coordinate Ocean Model (HYCOM) is used to study the monthly circulation in the Gulf of California (GOC). The eddy-resolving (1/12° equatorial resolution) Pacific Ocean model domain extends from 20°S to 65.8°N, but here the focus is on the GOC region. The latitudinal extent of the model domain allows direct examination of the connectivity of the GOC with the Pacific Ocean. Model results indicate that the variability of sea surface height, surface salinity, and surface currents is strongly influenced by an annual poleward-traveling downwelling coastally trapped wave that transports low salinity water, which originated outside the GOC. This coastally trapped wave also generates a series of eddies along the axis of the Gulf. Model sensitivity experiments show significant differences, in surface currents and sea surface height, between the simulations forced with six hourly (Figure 1) and monthly (Figure 2) European Centre for Medium-Range Weather Forecasts winds, suggesting a main role of intraseasonal downwelling coastally trapped waves, which originated at the equator, in the GOC monthly variability.

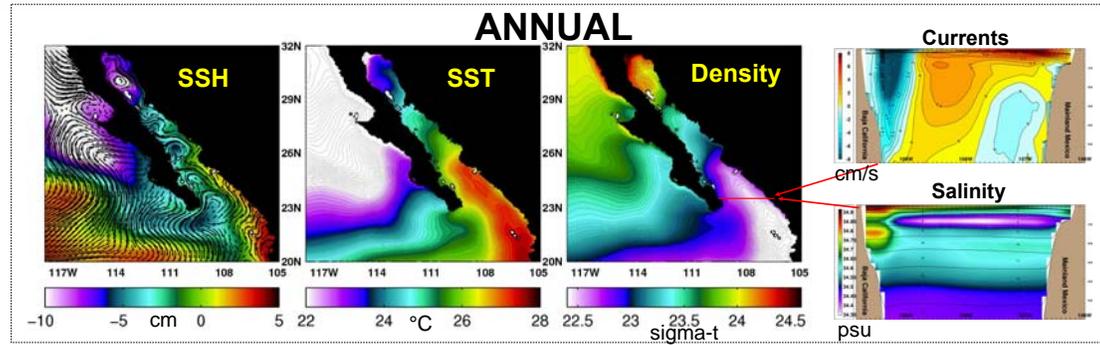


Figure 1. SSH from simulation forced with six-hourly winds

### Hybrid Coordinate Ocean Model (HYCOM)

- HYCOM is a hybrid vertical coordinate ocean model. It is isopycnal in open stratified ocean, terrain-following in shallow coastal regions, and Z-level in mixed layer.
- Forced with six-hourly winds (or monthly winds), daily averaged heat fluxes (or monthly heat fluxes), monthly rivers, and monthly turbidity.

## Sea surface temperature

## Sea surface salinity

## Sea surface density

## Mixed layer thickness

## Sea surface height differences (Figure 1 minus Figure 2)

