

# LEGI Activities and SWOT

équipe MEOM / LEGI

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- Data assimilation of high resolution data
- From process studies to a high resolution regional modeling

Data assimilation of high resolution data:  
high resolution data seen as "images"

- Reformulating the data assimilation problem
- Data seen as images and sequence of images rather than point data associated with model variables
  - Structures and dynamics of structures more important than data per se (Titaud et al, 2010, Tellus)

Data assimilation of high resolution data:  
Mixing high resolution altimetry and ocean

- HR altimeter and ocean color data and mesoscales/submesoscales
  - The dynamical role of submesoscales
- HR data treated in the data assimilation process through image proxies such as Lyapunov exponent (FSLE)
  - FSLE invertible to the ocean large scales (Verron et al., 2010, submitted)
  - Submesoscale tracer data invertible to the ocean large scales via FSLE (Titaud et al., 2010, in preparation)
- Ocean color high resolution (image) data "talking" to high resolution altimeter data (seen as image or not)
  - Verron et al., 2010, submitted

## Towards a high resolution simulation of the Solomon Sea

### ■ Background

- First consistent scheme of the Sol Sea circulation (Melet et al., JPO, 2010a)
- Altimetry (reprocessed T/P data) and Sol Sea circulation (Melet et al., 2010b, submitted)
- Water mass transformations and mixing/dissipation processes (Melet et al., 2010c, in preparation)

### ■ Project (waiting for possible CNES support)

- Very high resolution simulation of the Sol Sea (NEMO model)
- SOSMOD project submitted to CNES/TOSCA in 2009
- If approved by CNES should be coordinated/intercompared with US ROMS simulations

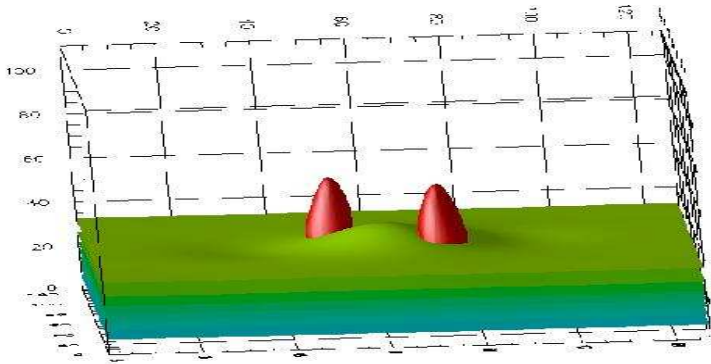
### ■ Fast sampling SWOT period

- Might be valuable in the Solomon sea (glider/mooring monitoring during SPICE, SOLWARA, ?)

## Surface signature of very high resolution processes (non QG)

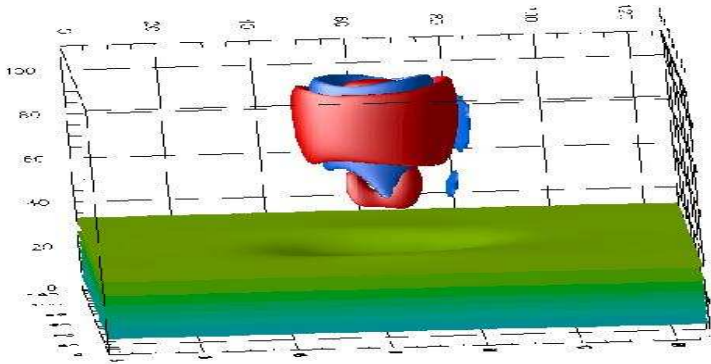
- Convection
- Dense gravity currents
- Inertial instability

## Cyclone



$$W = + - 10^{-3} \text{m/s}$$

## Anti-Cyclone



$$W = + - 10^{-3} \text{m/s}$$

