

VOCALS regional modeling challenges

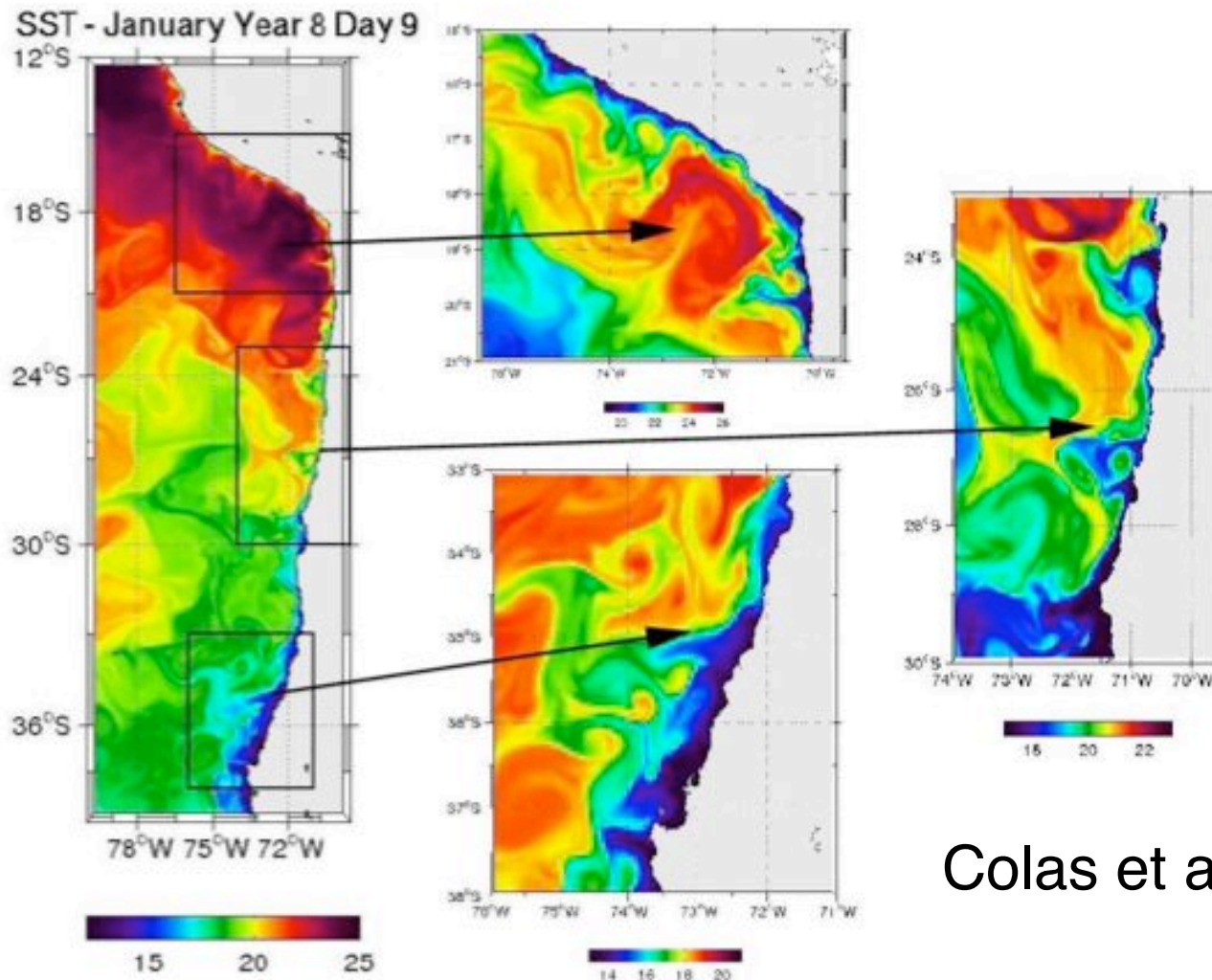
oceanic eddy heat flux

SST coupling (regional/frontal)

topographically and thermally driven winds

cloud/aerosol/PBL processes

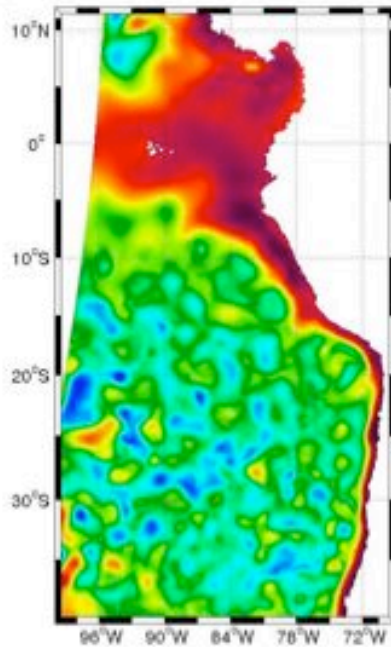
Downscaling experiments for the South American West Coast using ROMS: Eddies Role and Interannual Variability.



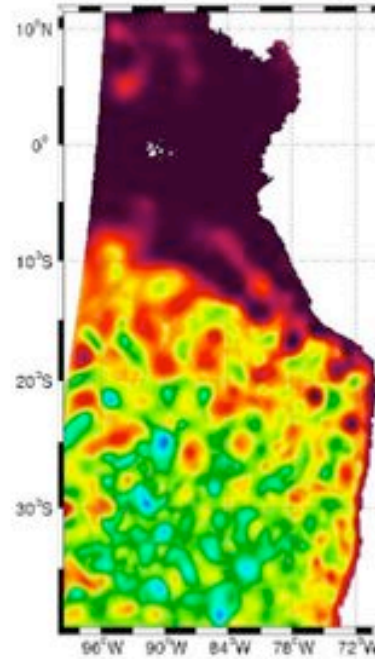
Colas et al. 2007

The 97-98 El Nino (SLA validation)

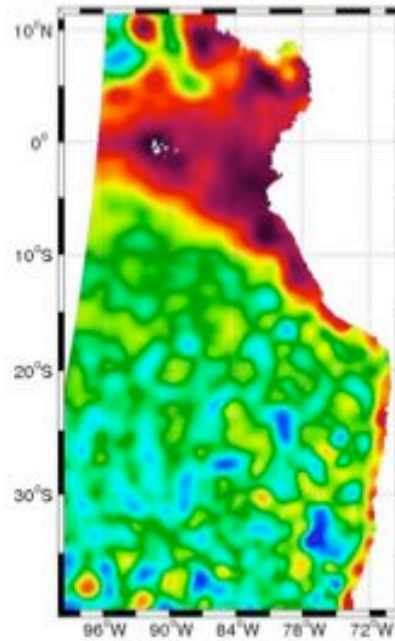
ROMS - POP/ERS/COADS - Month 5 Year 1997



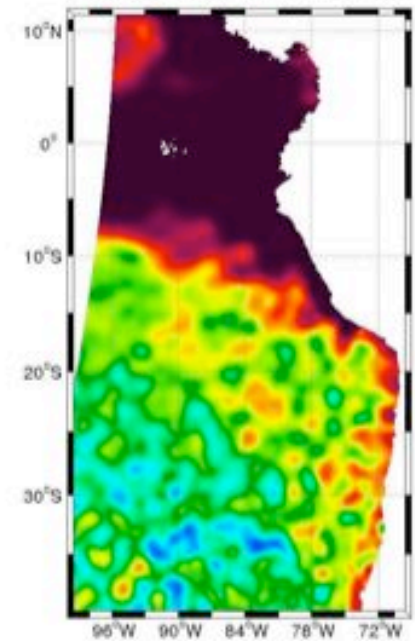
ROMS - POP/ERS/COADS - Month 12 Year 1997



DUACS - Month 5 Year 1997

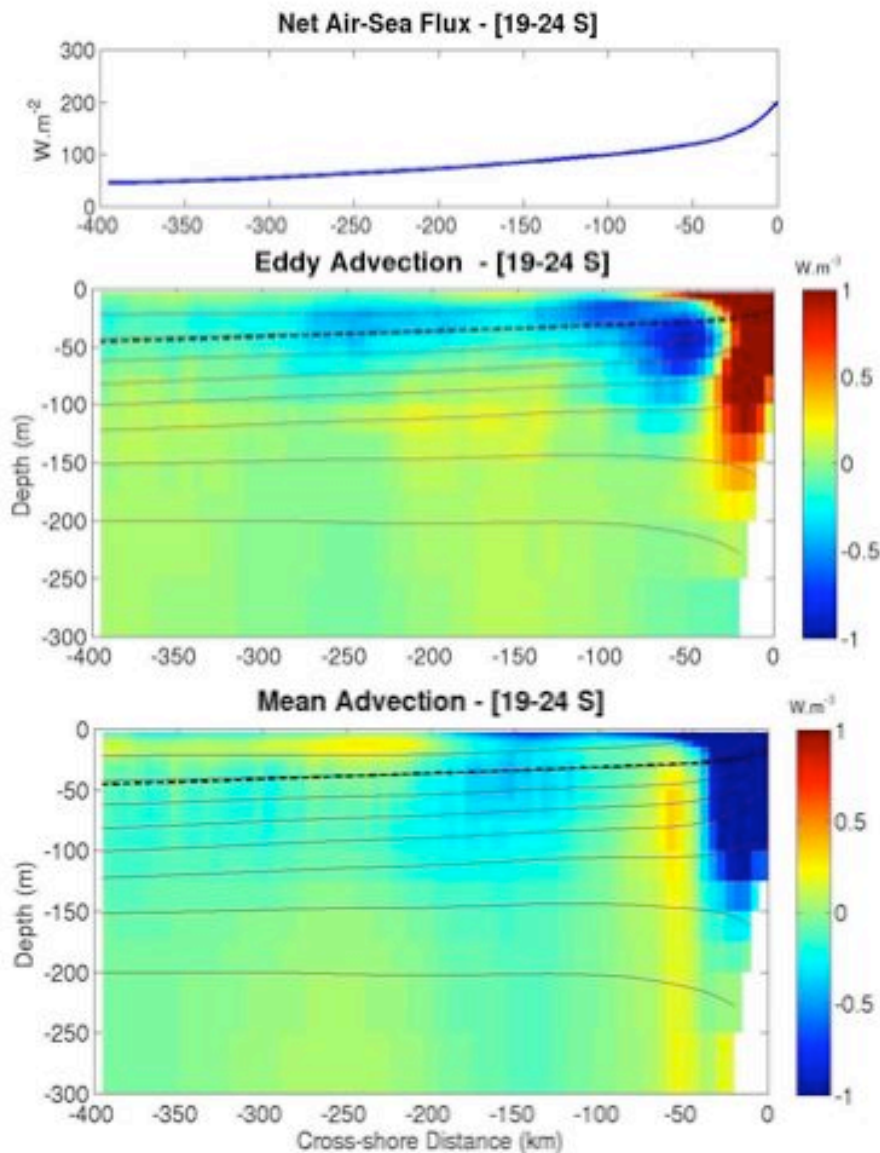


DUACS - Month 12 Year 1997



Oceanic Heat Balance in the South-East Pacific

ROMS, 5 km x 5 km, 30 levels, QUIKSCAT winds, COADS F & Q



Heat Budget:

$$-\text{adv}_{\text{mean}} - \text{adv}_{\text{eddy}} - \text{diff}_{\text{vert}} = \text{airsea}$$

- Net heating by air-sea fluxes over the year
- Cooling needed to balance the airsea heating is provided by:

Nearshore: Mean Advection (upwelling)

Offshore : Eddy Advection

- Strong role played by eddies everywhere

(Capet, Colas & McWilliams, 2007)

Current regional modeling efforts

institution(s)	people	models	science focus
UCLA/NCAR	Hall, Large, McWilliams	ROMS+WRF	Peru-Chile regional climate
IPRC	Wang, Xie	iROAM: iRAM+MOM2	SEP regional climate
SIO	Miller	SCOAR: RSM+ROMS	ocean data assimilation / downscaling in SEP
NRL	Wang, Pullen	COAMPS + NCOM	prediction in SEP
U of Chile	Garreaud	MM5/WRF [+ROMS?]	SEP simulations

IPRC Regional Ocean-Atmosphere Model (**iROAM**) on Earth Simulator

Core Members

Yuqing Wang (IPRC)
Shang-Ping Xie (IPRC)
Toru Miyama (JAMSTEC)
Simon de Szoeke (NOAA)

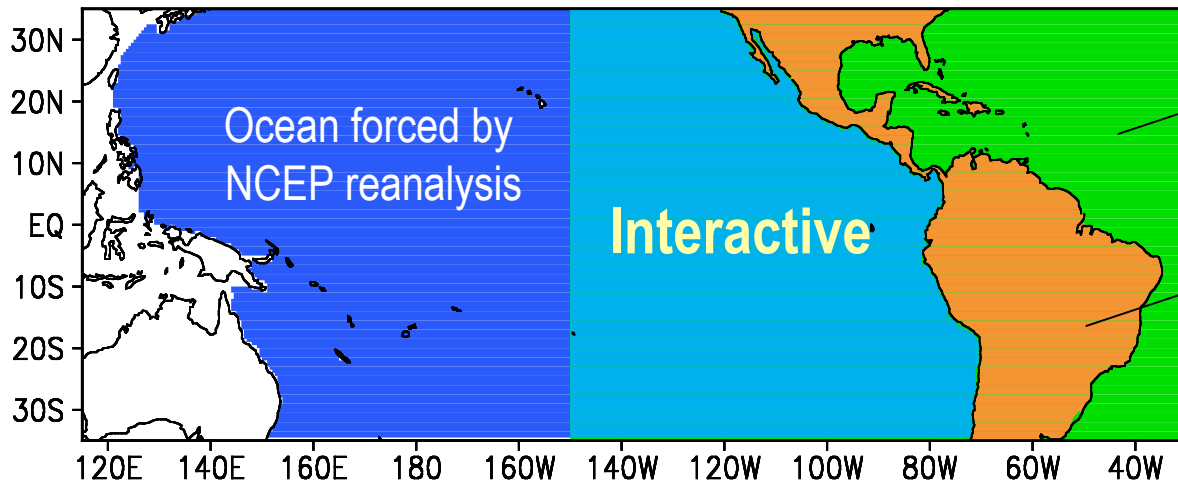
Atmosphere: IPRC-RAM

0.5°_0.5°, L 28



GFDL Modular Ocean Model 2

0.5°_0.5°, L 35



schema of embedded coupled models

