abundance at 1850, followed by an increase of anchovy abundance at 1860, may reflect a decrease of SST reaching colder conditions around 1860. A short period with moderately enhanced SDR also took place just before the secular shift, from ca. 1830 to 1850.

Since 1860 the anchovy SDR followed a multidecadal pattern of variation, with periods around 30 years until the present, and the highest SDR were reached in the late nineteenth century, overlapping partially with the period of highest anchovy SDR. Low SDR values followed this period until 1975, and then SDR values increased again up to the present.

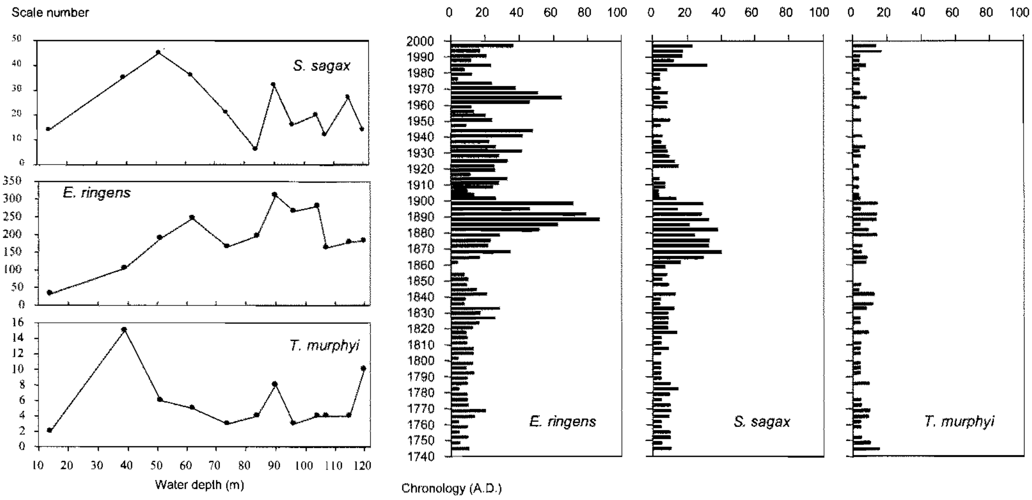


Fig. 1: Abundance of scale in surface sediment (left) and SDR in core sediment (right), in Mejillones bay.

Acknowledgement: This study was supported by IAI (Inter American Institute for Global Change) and JEAI (Jeune Equipe Associee à l'ÍRD). The authors acknowledge the logistical support provided by the Antofagasta University.

References

Gonzalez, H., Daneri, G., Figueroa, D., Iriarte, J., Lefevre, N., Pizarro, G., Quiñones, R., Sobarzo, M., Troncoso, A. (1998). Producción Primaria y su destino en la trama trófica pelágica y océano profundo e intercambio océano-atmósfera de CO2 en la zona norte de la corriente de Humboldt (23° S), posibles efectos del evento El Niño, 1997-98 en Chile. *Revista Chilena de Historia Natural* 71, 429-458.

Ortlieb, L., Escribano, R., Follegati, R., Zuñiga, O., Kong, I., Rodriguez, L., Valdes, J. Guzmán, N. Iratchet, P. (2000) Ocean-climatic changes during the last 2,000 years in a hypoxic marine environment of Northern Chile (23°S). *Revista Chilena de Historia Natural* 73, 221-242.

Valdés, J., Ortlieb, L. (2001); Paleoxigenación subsuperficial de la columna de agua en la bahía Mejillones del Sur (23° S), Indicadores geoquímicos en testigos de sedimento marino. *Investigaciones Marinas* 29(1), 25-35.

HCS162 - Regional atmospheric circulation simulations in Chile during October 2000: upwelling impact of mesoscale wind variability forcing a regional ocean model

Lionel Renault[1], Mark Falvey[2], Boris Dewitte[1,3], Vincent Echevin[3], Jose Rutllant[2], Rene Garreaud[2]

[1] *Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS). 14 Avenue Edouard Belin. Toulouse, France*

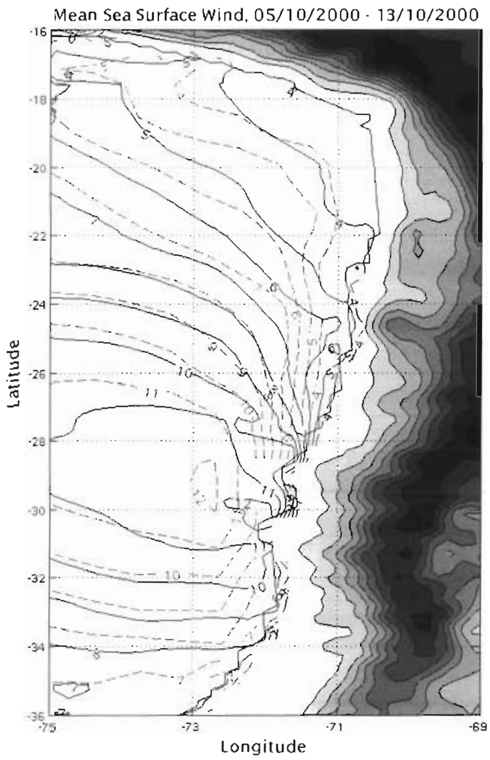
[2] *Departamento de Geofísica, Blanco Encalada 2002, Santiago CHILE*

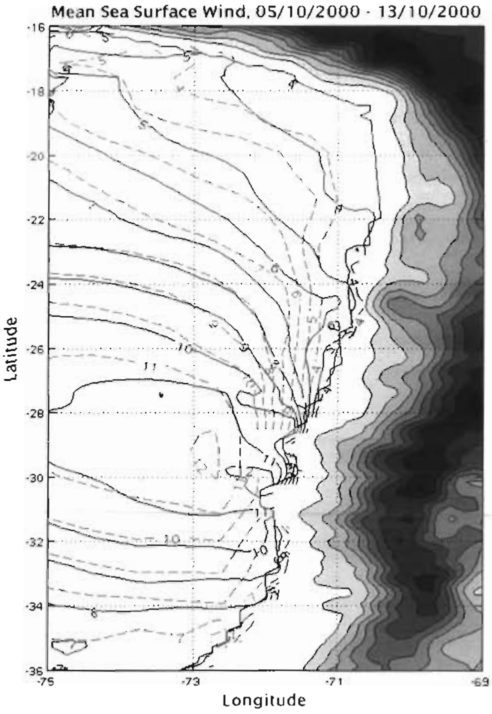
[3] *IRD- LOCEAN, 4 place Jussieu. Paris, France*

Keywords: Atmospheric circulation, Coastal Jet, Mesoscale, Regional Models, Upwelling

The study of regional oceanographic processes has undergone considerable development in recent years due to the expansion of in-situ observation networks, the increasing availability of satellite data, and the development of high resolution numerical models. Coastal zones are of special interest in regional applications as they are often the place of intense ocean mesoscale circulations which play a key role in coastal and deep-ocean exchange. In the case of the South American (SA) coastline, the regional wind-driven upwelling is modulated by ocean disturbances originally in the equatorial Pacific. Thus, an accurate representation of the atmosphere is likely to be important in studies seeking to evaluate coastal to deep-ocean transfer and to clarify the mechanisms associated with coastal wind variability.

In this study we use the WRF (Weather Research and Forecasting) regional atmospheric model to simulate the near surface atmospheric circulations along the SA coast between 15°S - 40°S using a multiple nested domain with grid spacing as low as 6 km. Simulations were performed for a sustained coastal jet event in October 2000 during which there was significant atmosphere-ocean interaction. A comprehensive validation of the model against in-situ meteorological and QuikScat satellite observations show that WRF was able to adequately simulate the low level winds in the vicinity of the coastline. However, while the model was capable of producing a well developed marine boundary layer (MBL), the altitude of the MBL was significantly underestimated, as has been noted on prior studies using the MM5 model (Muñoz and Garreaud, 2005 ,Garreaud and Muñoz, 2005). The spatial and vertical resolution was found to have a significant impact on the accuracy of the simulations, with higher resolutions generally giving superior results. We also present the results of preliminary experiments in which atmospheric fields produced by WRF at various resolutions were used to force the ROMS (Regional Oceanic Modelling System) ocean model in simulating coastal upwelling processes.





Mean Sear Surface Wind during the period 05/10/00 – 13/10/00. In red dashed-line, WRF with a 56 km resolution, in black solid line, WRF with a 18 km resolution

References

Muñoz R. C., Garreaud, R.D. Dynamics of the Low-Level Jet off the West coast of Subtropical South America. Mon. Wea. Res.3661-3677. December 2005.

Garreaud, R., R. Muñoz: The low-level jet off the subtropical west coast of South America: Structure and variability. Mon. Wea. Rev., 133, 2246-2261, 2005.

HCS165 - Introducing a 3-D Visualization tool for Oceanographic and Marine data

Rune Vabø [1] and Geir Huse [1]

[1] *Institute of Marine Research, P.O. Box 1870, 5817 Bergen, Norway.*

Keywords: 3-D visualisation, oceanographic data,

Marine ecosystems represent a complex network of numerous interconnected physical and biological components. Results from different field investigations and modelling studies provide us with a special challenge when several components are to be understood and seen in relation to each other. Visualising the interplay between different aspects of an ecosystem more holistically adds a complementary perspective to the more specialised, detailed and quantified knowledge scientist possess. Even with only three components like plankton distribution, temperature and ocean currents the understanding of how these components link up in tree dimensional space is not trivial. Statistical analysis can provide quantitative knowledge of correlations and interconnections but managers and scientists working multidisciplinary would often benefit from a more intuitive and synthesised representation of data. The use of visualization tools can help scientists and managers better achieved this and thereby improving the overall understanding of the ecosystem.

We present here such a visualisation tool (MareMaid3D) utilizing the Silicon Graphics Open Graphics Library (OpenGL) to display various oceanographic and marine data sets in tree dimensional space. The software can run on an ordinary modern laptop computer and requires no expert user level. MareMaid3D is interactive and enables the user to move around and close into the various data sets, changing the camera view and perspective. The camera can be set to fly along survey lines or user defined paths. The main purpose of MareMaid3D is to visualise various oceanographic and marine data sets within a common 3-D geographical framework based on latitude, longitude and depth in order to directly and intuitively view spatial and temporal relationships. MareMaid3D is able to animate data sets through time, synchronised in

Renault L., Falvey M., Dewitte Boris, Echevin Vincent, Rutllant J., Garreaud R. (2006)

Regional atmospheric circulation simulations in Chile during october 2000 : upwelling impact of mesoscale wind variability forcing a regional ocean model

In : *Climate ocean dynamics, ecosystem processes and fisheries : the Humbolt current system : book of extended abstracts*

La Paz (BOL) ; La Paz : IMARPE ; IRD, p. 100-101

International Conference on The Humboldt Current System : Climate, Ocean Dynamics, Ecosystem Processes and Fisheries, Lima (PER), 27/11/2006-01/12/2006.