the two regions is explored with the aid of Figure 2. As it was mentioned before, positive values of SASS index are related to enhanced (inhibited) convection over SESA (SACZ). In general, Figure 2 shows that the temporal evolution of the three time series seems to be associated mainly with intraseasonal time scales. It should be pointed out that while SASS index was derived from filtered OLR anomalies, no further filtering has been applied to daily SM anomalies. Therefore, that behavior confirms the results of previous studies, which show that SM variability is slower than atmospheric variability.

It is evident that SASS index provides an "integrated view" of the general behavior of the OLR-anomaly dipole-like pattern. However, SASS evolution seems to be more closely related to SM anomalies over "SESA" than to those over "SACZ" (Fig. 2). In general, SASS leads SM anomaly changes over "SESA", except from December 28 to January 4 when SM anomalies slightly lead SASS, and between January 17 and January 28, when they seem to vary almost simultaneously. An analysis of the synoptic evolution associated with those particular periods is currently being done in order to improve understanding of such differences.

An autocorrelation analysis has been performed, in order to document SM memory over SACZ and SESA (Figure 3). In agreement with previous results (Dirmeyer *et al*., 2009), it was found that SM memory is relatively short, being below a week for "SACZ" and slightly longer for "SESA". Significant anti-correlated signatures have been found between 13 and 18 days in SACZ region and after 23 days in both regions. However, such correlation values should be considered with caution, since the period under study is short (only 61 days).

4. Concluding Remarks

Soil moisture, precipitation and SASS evolution have been explored during the 2002-2003 warm season. The aim has been to establish if there is a relationship between soil conditions and precipitation occurrence and ultimately, if land surface processes exert some control on the regional circulation. This preliminary analysis suggests that SESA region may be more clearly affected and modulated by soil moisture changes than SACZ region. On the other hand, it seems that remote scale forcing (i.e. that driving the SASS) was the most effective control on the precipitation variability over the area of interest, during that particular warm season. Further analyses of the role of surface processes should be done in order to understand particular responses under different large-scale conditions. Also, it would be of interest to analyze a longer period in order to detect if SM variability exhibits significant signals at lower frequencies, and to quantify their strength compared with those detected at synoptic time-scales. This could be relevant to assess if SM can provide enhanced predictability at longer time scales over this region.

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References

Dirmeyer, P.A., C.A. Schlosser, and K.L. Brubaker, 2009: Precipitation, Recycling, and Land Memory: An Integrated Analysis. *J. Hydrometeor.*, **10**, 278–288.

González , P., C. S. Vera, B. Liebmann and G. Kiladis, 2008: Intraseasonal variability in subtropical South America as depicted by precipitation data. *Clim. Dyn*., **30**,727–744.

Liebmann, B., and D. Allured, 2005: Daily Precipitation Grids for South America. *Bull. Amer. Meteor. Soc.*, **86**, 1567–1570.

Nogués-Paegle, J., and K. C. Mo, 1997: Alternating wet and dry conditions over South America during summer. *Mon. Wea. Rev.*, **125**, 279-291.

Saulo, C., L. Ferreira, J. Nogués-Paegle, M. Seluchi and J. Ruiz, 2009: Land-atmosphere interactions during a Northwestern Argentina Low event. Submitted to *Mon. Wea. Rev*, 39 pp.

Vera, C.; J. Baez; M. Douglas; C. B. Emmanuel; J. Marengo; J. Meitin; M. Nicolini; J. Nogues-Paegle; J. Paegle; O. Penalba; P. Salio; C. Saulo; M. A. Silva Dias; P. L. Silva Dias; and E. Zipser, 2006: The South American Low-Level Jet Experiment (SALLJEX). *Bull. Am. Met. Soc* , **87**, 63–77.

CLIVAR Pacific Panel Observational Programs

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There are many significant, multi-national, multi-institutional, and multi-investor observational programs in the Pacific on-going or about to commence. These include Origins of Kuroshio and Mindanao Current (OKMC), the Southwest Pacific Ocean circulation and Climate Experiment (SPICE), the Northwest Pacific Ocean Circulation and Climate Experiment (NPOCE), Korean (Topical Western Pacific Climate Experiment (GAIA)) and Japanese activities in the western boundary currents. There are also activities of an inter-basin nature such as measurements of the Indonesian Throughflow. As a whole, these programmes cover the entire tropical to midlatitude western Pacific (Figure 1, page 8).

The CLIVAR Pacific Panel has been promoting and coordinating these efforts to maximise the synergy and value, and to achieve a greater scientific outcome. Together with the tropical array, these observations provide the necessary inputs to seasonal and decadal prediction and detection of long-term climate change. In addition, these activities will help address important scientific issues of tropical-extratropical linkages, the role of western boundary currents in heat and freshwater transports and in ENSO discharge/recharge processes, and the inter-basin oceanic teleconnection.

At the recent OceanObs'09 in Venice, principal investigators (PIs) of these projects met to show case the

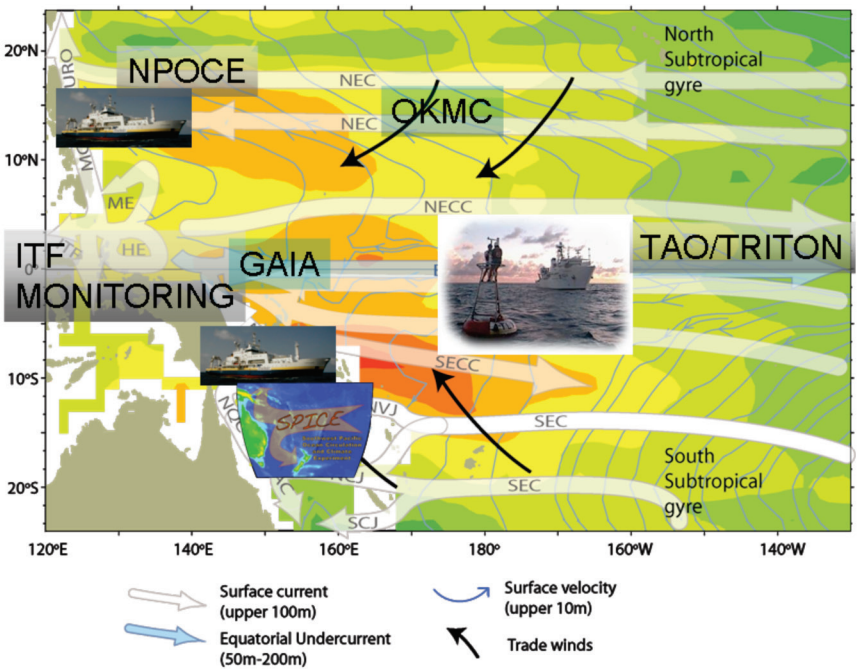

Figure 1: Schematic indicating major observational programs in the western Pacific (see text for details).

latest progress, exchange science and implementation plans, and foster linkages. This note presents a brief summary.

Progress of SPICE

Endorsed by CLIVAR in 2008, the Southwest Pacific Ocean Circulation and Climate Experiment (SPICE) provides a coordination platform to national and international projects in the Southwest Pacific region. It consists of a comprehensive observational program (Figure 2, front cover). The numerous projects that contribute to SPICE objectives have made significant progress.

A number of modeling groups have focused on the Coral, Solomon and Tasman Sea, providing improved realistic simulations in this difficult region with highly energetic currents and labyrinthine topography.

The field and modeling experiments, whose preliminaries started in 2004, have reached their intensive phase, which is expected to continue until 2012, and beyond for specific monitoring. A field experiment was designed to monitor the entrance of the large, easterly South Equatorial Currents into the Coral Sea, along with its outflows toward the equator and to the Southern Ocean. Using repeated XBTs and Argo profiles, an experimental monitoring system is ongoing. Near the Australian shelf, the expanding IMOS mooring network measures the coastal boundary current flows. This is completed with glider surveys across the boundary currents (currently starting). Surface drifters are released repeatedly across the East Australian Current to calibrate the ocean simulations and forecast from the Bluelink operational system (BMRC). In the Solomon Sea, intensive glider monitoring is ongoing and, after an exploratory hydrographic survey in 2007, a major cruise has been funded (2010-2011). During this cruise, mooring deployments are planned in key places of the Solomon Sea to monitor the transports toward the equator.

Using remote sensing or numerical simulation/assimilations, several studies have been started on the nature and physics of the SPCZ-the major dynamical driver of the southwest Pacific Ocean. A SPCZ workshop will be organized in mid-2010.

Most of the experiments are following the initial science plan; those are indexed on www.ird.nc/UR65/SPICE/spice.html. The emergence of experiments from NPOCE and GAIA, in the equatorial, the ITF region, and the tropical North Pacific will provide grounds for coordination to optimize the monitoring of the warm pool water supply and the fieldwork in remote areas that are difficult to access with research vessels.

NPOCE, OKMC, and GAIA

The Northwestern Pacific (NWP) features a complicated ocean circulation system with intensive multi-scale air-sea interactions. Under the leadership of Chinese scientists, NPOCE is designed to observe, simulate, and understand the dynamics of the NWP ocean circulation and its role in low-frequency modulations of regional and global climate.

NWP is a crossroad and major pathway whereby different water masses from mid- and high-latitudes and the southern hemisphere enter the equatorial thermocline. As the origin of several major currents including the northward Kuroshio, the eastward North Equatorial countercurrent, the Indonesian Throughflow (ITF), as well as the recently identified the South China Sea Throughflow, the NWP strongly interacts with the ambient oceans and marginal seas, and participates in the

recharge-discharge process of the western Pacific warm pool. The changes in the NWP water properties and NWP ocean circulation can influence the heat and freshwater budget and hence the atmospheric deep convection over the Indo-Pacific warm pool, thereby playing a role in modulating El Niño-Southern Oscillation (ENSO) cycles and Asian-Australian Monsoon variations, as well as in the development and evolution of the NWP cyclones.

The coordinated NPOCE observational program and modeling analysis will provide a more complete description of the structure and variability of the ocean circulation in the NWP, and help improve prediction of the climate drivers discussed above, and projection of local/regional ocean and climate conditions.

An implementation workshop is being organized to further calibrate the observational plan. This provisionally includes a series of multi-array moorings for examination of the bifurcation dynamics of the North Equatorial Current, heat and mass balance of the "confluence region" of the lower latitude Northwest Pacific linking the ITF and the Marginal Seas, and along a section extending into the warm pool (Figure 3).

Complementing NPOCE is the effort of the OKMC project, initiated by a group of investigators from several US institutions/universities. The goal of OKMC is to investigate the horizontal structure and temporal variability of the westward-flowing North Equatorial Current and its bifurcation into the Kuroshio and Mindanao Currents in the Philippine Sea. Planned in-situ measurements will include glider surveys across the Mindanao Current along 8°N and the Kuroshio along 18°N, mooring arrays along the Philippine coast, profiling float deployments along 135°E (north of Palau), and surface drifter deployments in the domain of NPOCE (Figure 3).

The effort in the area of the tropical-extratropical and Indo-Pacific linkage will be enhanced by GAIA. Like NPOCE, there is a modeling component as well as a substantial observational effort, which includes moorings in the western boundary current and the equatorial region. A focus is on equatorial thermocline mixing over the upper 500 m depth. GAIA will deploy CTD, LADCP, MSP, and Gliders. Some of the measurements will be along a TAO/TRITON line to increase resolution of measurements. The main experiments will commence in 2011.

An upcoming galvanizing workshop

At OceanObs'09, the PIs expressed the need for scientific and logistical coordination of these activities, in terms of experiment design and timing of deployments, taking into account other upcoming projects. One such project is a possible INSTANT2, hopefully an enhanced continuation of the successful INSTANT1, which measured and monitored the ITF over the past few years. A detailed NPOCE implementation plan will be constructed at the NPOCE Implementation workshop in Xiamen, China, January 2010.

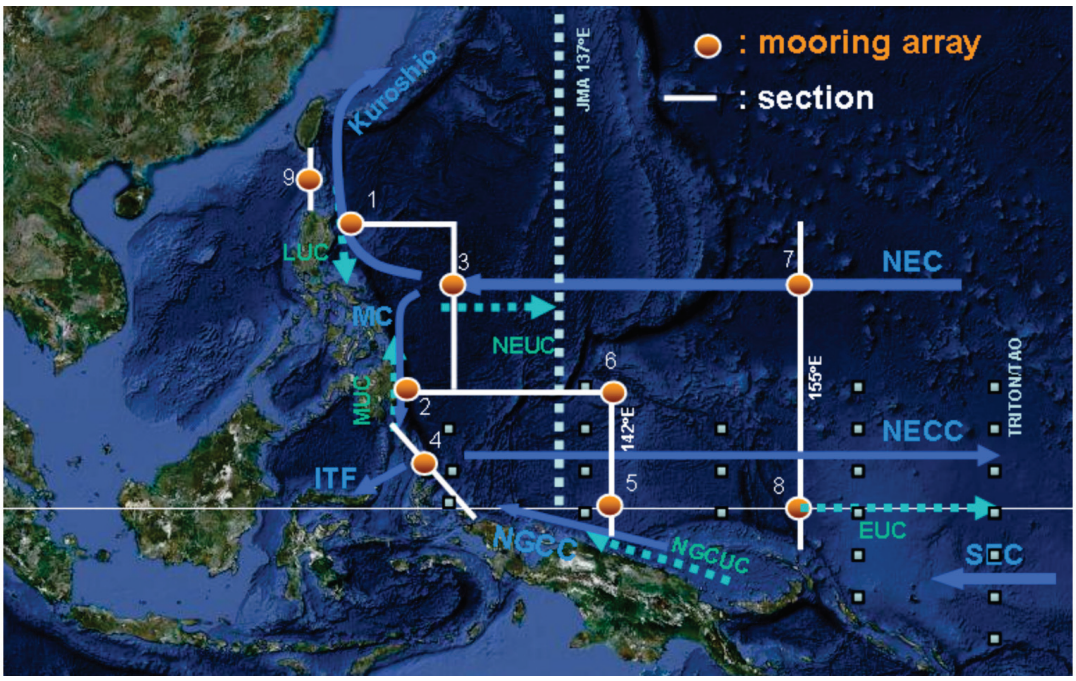

Figure 3. Design of NPOCE field experiments, indicating positions of mooring array and sections.

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