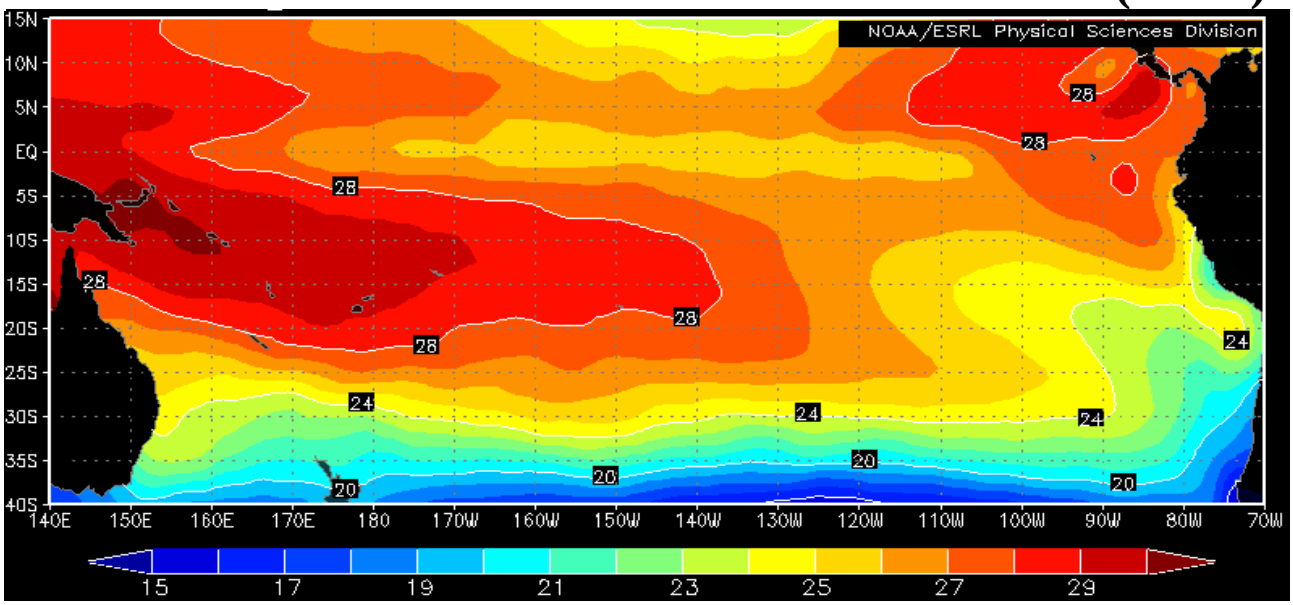
COMISIÓN PERMANENTE DEL PACÍFICO SUR (CPPS)



Sea Surface Temperature, April 2008, NOAA-CIRES/Climate Diagnostic Center

APRIL 2008 BAC N° 211

ERFEN

(Estudio Regional del Fenómeno El Niño)

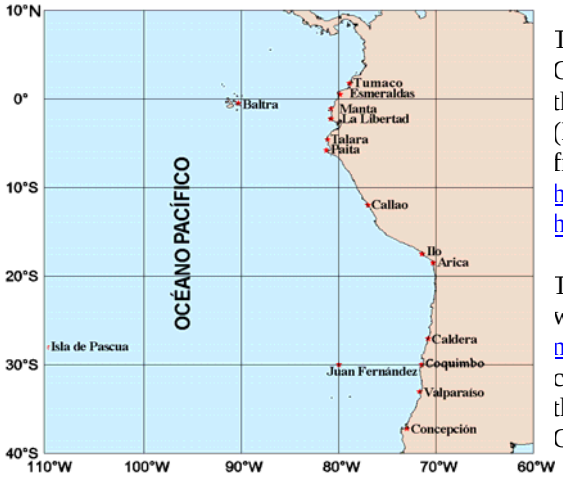
BOLETÍN DE ALERTA CLIMÁTICO

CLIMATE ALERT BULLETIN

OMM **CPPS** **COI**

COLOMBIA	ECUADOR	PERÚ	CHILE
CCCP	INOCAR	DHN	SHOA

COMISIÓN PERMANENTE DEL PACÍFICO SUR
SECRETARIA GENERAL
GUAYAQUIL, ECUADOR



The Boletín de Alerta Climático (BAC) is a monthly publication of the CPPS in which the oceanic and atmospheric conditions of the region of the Southeastern Pacific within the Regional Study of El Niño (ERFEN) are analyzed. The digital version of the BAC is available from the 15 of every month in the pages Web of the CPPS: http://www.cpps-int.org and of the INOCAR: http://www.inocar.mil.ec

The suggestions, commentaries or scientific information will be welcome to the electronic mails: dircient@cpps-int.org; nino@inocar.mil.ec, (Group BAC ECUADOR), or by means of written communication directed to the seat of the Permanent Commission for the South Pacific, General Secretariat, Complex Albán Borja, Building CLASSIC, 2nd floor, Guayaquil-Ecuador, FAX: (593)4-2221201.

Figure 1.- Shore stations locations in the Southeast Pacific region.

EXECUTIVE SUMMARY

In April a significant reduction of the Sea Surface Temperature takes place in front of the South America coast, happening the anomalies of 1.3ºC to -0.3ºC; what it would be marking the return neutral conditions in this sector of the Eastern Pacific Ocean; on the other hand the region of the Central Equatorial Pacific presented like average of the month negative anomalies of -0.8ºC, continuing with the reduction of the area of negative anomalies in comparison with the previous month (-1.1°C). In the last week of April the temperature of the sea presented anomalies of -0,8ºC in the Western Pacific, -0.6ºC for the Central Pacific and -0,3ºC in the Eastern Pacific, maintaining the tendency of one maintained reduction of the negative anomalies in the Equatorial Pacific, process that gradually comes giving from last February.

As far as surface winds, in the region of the Southeastern Pacific, like the previous month, with predominance of the South and Southeastern appeared; the speeds in general were slightly on the normal rank for the date.

The Index of Oscillation of the South, by ninth consecutive month presents/displays positive values, although in this month I diminish to 0,6. In April the Mean sea level in the Southeastern Pacific fluctuated near its normal patterns. As opposed to the coasts of Ecuador it was slightly over the average; in the Peruvian coast it continued presenting/displaying positive anomalies, with the exception of Chimbote. In front of Chile the Level of the Sea was characterized to present/display a tendency of diminution with negative values of anomalies in the stations of Arica and Antofagasta.

Taking into account the present thermal behaviour from the Equatorial Pacific Ocean, as well as the exits of several models of numerical simulation, are anticipated that during the next month in the Eastern sector of the Pacific Ocean the Sea Surface Temperature will remain slightly under the normal one; whereas the Central Pacific Ocean continues showing tendency to the reduction of the negative anomalies.

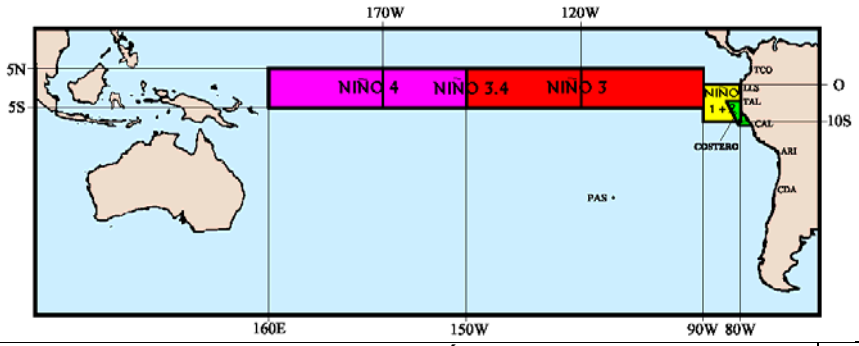


Figure 2.- Map indicating locations and codes of series. Rectangles show the average area of Sea Surface Temperature (SST °C)

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Permanent Commission
for the South Pacific (CPPS)

CLIMATE ALERT BULLETIN
BAC Nº 211, APRIL 2008

I. GLOBAL AND REGIONAL IMAGE

In April the Central Equatorial Pacific Ocean continued presenting the Sea Surface Temperature (TSM - SST) below its climatologic value, including the region of the Southeastern Pacific where the previous month was positive. In the "El Niño" regions the monthly anomaly of the SST for April maintained the tendency to reduce its values thus; in the region of the Western Pacific ("El Niño" Region 4) it happened of -1.3 to -1.0ºC, in the Central Pacific ("El Niño" Region 3,4) the anomaly happened of -1.1 to -0.8ºC, whereas in the region of the Eastern Pacific ("El Niño" Region 1+2) the increase of the positive anomalies observed the previous month stopped, experiencing in this occasion a reduction of his values, happening of 0.8 to 0.4ºC.

The subsurface thermal structure in the Equatorial Pacific presents a water cloak located between 130ºW and 160ºE with anomalies of -1.0ºC for the first 100; below this superficial layer in the level of the 200 ms continuous it presents a warm nucleus with positive anomalies of until 4.0ºC, that reaches the Eastern edge of the Equatorial Pacific, arriving at the surface in front of South America with anomaly of 2.0ºC.

A remarkable structure that it arose from the second fortnight of the previous month was the presence at surface level (the first 50 ms) of a thin water cloak with positive anomalies of 2.0ºC next to the Eastern edge of the Equatorial Pacific.

In April the Mean Sea Level (MSL) in the Southeastern Pacific fluctuated near its normal patterns. In front of the coasts of Ecuador it was 4.0 cm by on the average; in the Peruvian coast it continued presenting positive anomalies, with the exception of Chimbote where the anomalies fluctuated between 8.0 cm (Talara) y -1.0 cm (Chimbote). In front of Chile the MSL was characterized to present a tendency of diminution with negative values of anomalies in the stations of Arica (-1.7 cm) and Antofagasta (-3.4 cm).

The Index of Oscillation of the South stayed in the positive phase, although in this occasion it was inferior to the previous month, being of 0.6. This anomaly was regulated by the observed positive anomaly in Tahiti of 1.4 and smaller magnitude in Darwin with 0.5.

The Intertropical Convergence Zone (ZCIT - ITCZ) appeared in the Eastern sector of the Pacific with regulating convective activity, being located its central axis between 6º and 8º of North latitude.

As soon as rains in the coasts of Ecuador, unlike the previous month, were deficit in a 50% under the climatologic value of the month. In the North coast of Peru during the first fortnight and the last week of the month, drizzles appeared; registering themselves accumulated precipitations of 20 mm in Paita, 9 mm in Lobos de Afuera and 10 mm in Chimbote. In Chile occurred precipitations of low intensity and a smaller number of days with rain, specially in the zone South Center, between Concepción and Osorno; the South and austral zone, between Port Montt and Punta Arenas, was characterized by precipitations that slightly surpassed the normal values of April.

II. NATIONAL IMAGE

A. CONDITIONS IN THE COLOMBIAN COAST

The Center for the Pollution Control of the Pacific (CCCP) and the Hydrology, Meteorology and Environmental Studies Institute (IDEAM) inform that during April, in the Colombian territory did not appear long intervals of rainy days, as commonly it appears during this month; short intervals of unstable days were most characteristic, which caused some strong heavy showers and of short duration. The Intertropical convergence zone was positioned between 6º and 8º of North latitude and the greater cloudiness associated to this system appeared by the interaction with some cold fronts of the North Atlantic and/or belts of low pressure by the Caribbean Sea, which generated inverted "vaguadas" and low pressures on the national territory. Nevertheless, especially to half of the month the circulation of winds aloft did not favour the divergence in high layers so that convective processes in levels near the surface occurred on Colombia. The rainiest days appeared between the 23 and the 27 of April when a belt of low pressures in the Caribbean Sea generated an inverted "vaguada" on Colombia and Venezuela. The present systems in average and high layers of the atmosphere favoured a dense cloudiness associated with happened precipitations. Of another part, the cloudy systems coming from Brazil were little active, which was an influential factor so that the totals of rain in most of the Amazonia were deficit in relation to the average values.

During the monitoring of April of 2008 made by the Area of Operational Oceanography of the CCCP to the fixed station coastal Nº 5 located to 10 miles of the bay of Tumaco in the coordinates 78.51ºW and 2ºN, it was possible to be observed that the registry of the SST was of 28.15º and 28.44 ºC for the first and second fortnight respectively, throwing a monthly average of 28.3 ºC. A positive anomaly at superficial level of 1.13°C appears with respect to the historical average (March 2000 - April 2008) which is of 27.16 ºC.

In April, the termocline for the first fortnight stayed in the same depth with respect to the last registry of March, being located on the 12 meters and for the second fortnight it was located approximately on the 27 meters. The isotherm of 15ºC becomes visible for this month to a depth of 100 meters; the isotherm of 27ºC stays on the 5 meters.

As far as the behaviour of the salinity, a value of 31.07 and 33.44 UPS was registered at superficial level for the first and second fortnight of April respectively, throwing a monthly average of 32.25, that represents a negative anomaly of -0.1 at superficial level with respect to the historical average, that for April is of 32.37. The maximum value of salinity appeared in the first fortnight of the month, with a value of 34. 93 to a depth of 30 meters approximately.

The halocline was located for the first and second fortnight between the 13 and 28 meters respectively. The halocline of the 34 UPS became visible for this month to a depth of 44 meters, the one of the 32 UPS was located on the 5 meters, having been able to observe that the behaviour of the salinity between years 2004 and 2007 has been enough similar.

As additional information the CCCP presents the results found of the ocean-atmospheric conditions in the Colombian Pacific Basin during the Oceanographic Cruise made in March of 2008 and its relation with the conditions presented in March of 2006 and February of 2008.

The oceanographic cruise that took place on board of oceanographic ship "ARC Providence" during March of 2008 had duration of 19 days of sampling, crossing itself a total of 2593 nautical miles. 76 oceanographic stations took place; of which 44 correspond to areas of Colombian Pacific Basin (CPC), 12 stations of Island Malpelo areas, 19 stations of Island Gorgona areas and 01 sampling in station 5 of the bay of Tumaco.

During years 2006 and 2007 Colombian Maritime Directorate (Dirección General Marítima – DIMAR) made four oceanographic cruises with the purpose of studying the dynamics of the currents and the seasonal and interannual variability of the main variables of study from which the results of the cruise of March of 2006 and February of 2007 were taken to relate them to the results of the oceanographic cruise of March of 2008 (the text of the report is in the page of the CPPS like annexed of BAC 211)

B. CONDITIONS IN THE ECUADORIAN COAST

The Oceanographic Institute of the Navy of Ecuador (INOCAR) reports that during April of 2008 the temperature of the air throughout the Ecuadorian coast fluctuated between 26.1 and 27.7ºC giving anomalies between -0.2 and 1.3ºC. With respect to Sea Surface Temperature in average presented a value of 26.1ºC that meant an anomaly of -0.4ºC.

In April, the Ecuadorian Coast experienced a considerable reduction of rains reaching a deficit of 50% in most of the coastal populations, which would practically mean the conclusion of the humid time for the region.

Considering the present behaviour of the ocean-atmospheric conditions in front of Ecuador and that May is the beginning of the dry time for the Ecuadorian coast, it is expected an appreciable reduction in the amount and intensity of rains.

As far as the temperature of the sea and the air in the Ecuadorian coast will maintain values around the normal values for May.

C. CONDITIONS IN THE PERUVIAN COAST

The Direction of Hydrography and Navigation of Peru (DHN) informs that in the Peruvian coast a reduction of the values of the SST has been observed respect to the previous month where the negative anomalies have prevailed with the exception of Talara and Paita, with positive anomalies around 1.0ºC. The anomalies of the SST fluctuated between 1.4ºC (Paita) and -2.2ºC (San Juan).

As far as the Mean Sea Level (MSL) throughout the Peruvian coast, it continued presenting positive anomalies with the exception of Chimbote that presented a slight negative anomaly and the station of San Juan with a value similar to its pattern of the month. The anomalies of the MSL fluctuated between 8.0 cm (Talara) y -1.0 cm (Chimbote).

Throughout the Peruvian coast the temperature of the air (AT) has diminished around 1.0°C, below the monthly average, with respect to the previous month prevailing the negative anomalies. The anomalies of the AT fluctuated between -0.4ºC (Paita) and -1.5ºC (Callao).

In the North coast, during the first two weeks and the last week of the month drizzles appeared, registering accumulated precipitations of 20 mm in Paita, 9 mm in Lobos de Afuera and 10 mm in Chimbote, respectively, whereas in San Juan only plans were registered during the first day of the month.

The winds of South direction predominated throughout the Peruvian coast, nevertheless, also presented components of the West and Southeastern in the stations of Chimbote and Mollendo, respectively. In relation to the wind speed the positive anomalies predominated that fluctuated between 0.2 to 1.6 m/s, with the exception of Paita and Callao which presented anomalies of -0.9 and -0.1 m/s respectively.

D. CONDITIONS IN THE CHILEAN COAST

The Hydrographic and Oceanographic Service of the Navy of Chile (SHOA) maintains throughout the coast a network of stations of level of the sea to monitor a serie of oceanic and atmospheric variables. In the next paragraph, a description of the Sea Surface Temperature and the level of the sea between Arica (18º29'S) and Talcahuano (36º41'S) for April of 2008:

The cold condition of the SST observed during the last months (mainly) in the North coast between Arica and Antofagasta stayed with values of anomalies of -1.7°C. In the meantime the center-south zone (Valparaiso - Talcahuano) maintained anomalies of the order of -1.0°C.

The level of the sea was characterized to present a diminution tendency that implied negative values of anomalies in the stations of Arica (-1.7cm) and Antofagasta (-3.4.cm); whereas, the station of Caldera

presented a neutral condition and the station of Coquimbo registered a value near the historical average. The center-south zone (Valparaiso - Talcahuano) still maintains negative anomalies of the order of -7.0 cm.

The Meteorological Direction of Chile (DMCh) shows that during April the average temperature of the air characterized by the presence of negative anomalies below 1.0ºC in the coastal zone of the north and center of the country, with maximum anomalies of -1.4°C in Arica and -1.2°C in Antofagasta. A slight increase of the average temperatures was observed in the inner sector of the central zone of the country between Santiago and Chillán, with anomalies of 0.4 to 0.6°C.

The Maxima temperature of the air presented a change respect to the previous month, showing to a large extent of the country negative anomalies, with its maximum values in Arica (-1.5°C), Antofagasta (-1.5°C) and Valparaiso (-1.2°C). The south and austral zone, between Temuco and Punta Arenas, was dominated by slight negative anomalies around -0.5°C.

The minimum temperature of the air reached maximum cooling in Arica and Antofagasta, with anomalies of -1.4 and -0.9°C respectively. Contrary, the interior of the central zone between Santiago and Chillán appeared with positive anomalies between 0.6 and 1.2°C. The south and austral zone was around its normal values.

The anticyclonal circulation in the average and low troposphere originated the presence of positive anomalies in the South Pacific, in 50°S and 110°W, with anomalies of the pressure at level of the sea of 9 hPa and geopotential height in 500 hPa of 110 meters. The coastal stations of the north of Chile as well as those located in the south and austral region presented negative anomalies. The high frequency of ridges of great scale in the average troposphere, with high pressures in surface, maintained a smaller presence of frontal systems favouring one reduced precipitation in the south center zone of the country.

The atmospheric pattern associated to anticyclonal circulation and highs pressures originated precipitations of low intensity and a smaller number of days with rain, specially the south center zone between Concepción and Osorno. The irruption of a frontal system in the central zone during day 27 produced precipitations between Santiago and Temuco with daily values between 7 and 17 mm. The south and austral zone between Port Montt and Punta Arenas was characterized by precipitations that slightly surpassed the normal values of April.

III. PERSPECTIVE

A. GLOBAL

Taking into account the present predictions from several numerical and statistical models as well as the behaviour of the main oceanic and atmospheric indicators esteem that during the next month the Central Equatorial Pacific will maintain negative anomalies of the SST, conserving the tendency to reduce so much the area as the value of the same.

B. REGIONAL

In agreement with the pursuit of the ocean-atmospheric conditions in the Southeastern Pacific Ocean executed by Program ERFEN (integrated by National Committees ERFEN of Chile, Colombia, Ecuador and Peru) and coordinated by the CPPS, it is anticipated that during the next month the SST in the Eastern and coastal Equatorial Pacific will present slightly values below the normal one of the month; whereas the temperature of the air will be fluctuating around its average value

As far as the level of the sea, one hopes that it continues fluctuating around its average value. With respect to rains, the tendency for the coasts of Ecuador and Peru and north and center of Chile is to register values below the monthly accumulated one waited for, whereas to the south of Chile the condition will fluctuate between normal and deficit.

TABLE 1

LARGE SCALE DATA: From left to right, monthly median for the last three months of the zonal wind component at lower levels (U3, U2, U1 in the Equatorial Pacific central western, central and central eastern, respectively in m/s with positive values from East to West). SST (T4,T3.4,T3,T1+2,Tc corresponding to the Equatorial Pacific central western, central and central eastern, close to the coast and the coastal area, Talara-Callao, respectively: in °C), atmospheric pressures in Tahiti (Tht) and Darwin (Dwn), expressed in an excess over 1000 Hpa and South Oscillation Index (SOI).

	ZONAL WIND			NIÑO REGION SST					ATMOSPHERIC PRESSURE		
MONTH	**WEST.**	**CENT.**	**EAST.**	**T4**	**T3.4**	**T3**	**T1+2**	**Tc**	**Tht**	**Dwn**	**IOS**
FEB 08	6.5	12.2	8.9	26.4	24.8	25.0	26.2	25.1	13.8	4.7	2.7
MAR 08	6.8	10.3	6.3	26.8	26.0	26.5	27.3	25.9	14.3	8.4	1.1
APR 08	6.0	9.5	5.4	27.4	26.8	27.2	25.9	23.0	13.1	9.9	0.6

Source: NCEP/NWS/NOAA/USA.

TABLE 2

COASTAL OCEAN DATA OF THE ERFEN REGION: Monthly medians of the last three Months for Sea Surface Temperatures (SST) in degrees °C. Stations: Tumaco (TCO), La Libertad-Salinas (LLS), Callao (CAL), Arica (ARI), Antofagasta (ANT), Caldera (CDA), Coquimbo (COQ) and Valparaíso (VAL).

Sea Surface Temperature (SST)								
MONTH	**TCO**	**LLS**	**CAL**	**ARI**	**ANT**	**CDA**	**COQ**	**VAL**
FEB 08	26.5	27.3	16.2	19.3	19.5	15.8	18.6	16.0
MAR 08	27.3	27.4	19.8	19.3	17.4	16.0	18.1	14.6
APR 08	28.3	25.8	16.3	17.2	16.5	15.3	15.5	12.9

Source: CCCP (Colombia), INOCAR (Ecuador), DHN (Perú), SHOA (Chile).

TABLE 3

COASTAL OCEAN DATA OF THE ERFEN REGION: Monthly medians of the last three Months for the Mean Sea Level (MSL) in mm. Stations: Tumaco (TCO), La Libertad-Salinas (LLS), Callao (CAL), Arica (ARI), Caldera (CDA), Coquimbo (COQ) and Valparaíso (VAL).

Mean Sea Level (MSL)								
MONTH	**TCO**	**LLS**	**CAL**	**ARI**	**ANT**	**CDA**	**COQ**	**VAL**
FEB 08	***	2630	1070	1587	675	1245	906	693
MAR 08	***	2669	1160	1644	706	1305	932	697
APR 08	***	2645	1130	1603	686	1270	922	671

Source: CCCP (Colombia), INOCAR (Ecuador), DHN (Perú), SHOA (Chile).

TABLE 4

COAST OCEANIC DATA OF THE ERFEN REGION: Five–day averages (Pentads) of SST (ºC) and MSL (mm)

		Sea Ssurface Temperature (SST)			Mean Sea Level (MSL)		
PENTADS		**BALTRA**	**TALARA**	**CALLAO**	**BALTRA**	**LLS (INOCAR)**	**CALLAO**
MAR	04	***	25.4	20.0	***	271.6	118.60
	09	***	25.4	20.5	***	***	119.90
	14	***	26.3	21.9	***	268.8	115.40
	19	***	24.7	20.9	***	268.1	117.50
	24	***	21.1	18.9	***	268.3	114.00
	29	***	22.3	17.3	***	260.3	108.00
ABR	03	***	***	***	***	253.9	***
	08	***	***	***	***	258.5	***
	13	***	***	***	***	263.4	***
	18	***	***	***	***	273.3	***
	23	***	***	***	***	269.9	***
	28	***	***	***	***	266.7	***

Source: NOAA/Atlantic Oceanographic and Meteorological Laboratory – Miami.

Note.

* Values revised

***. Information not received

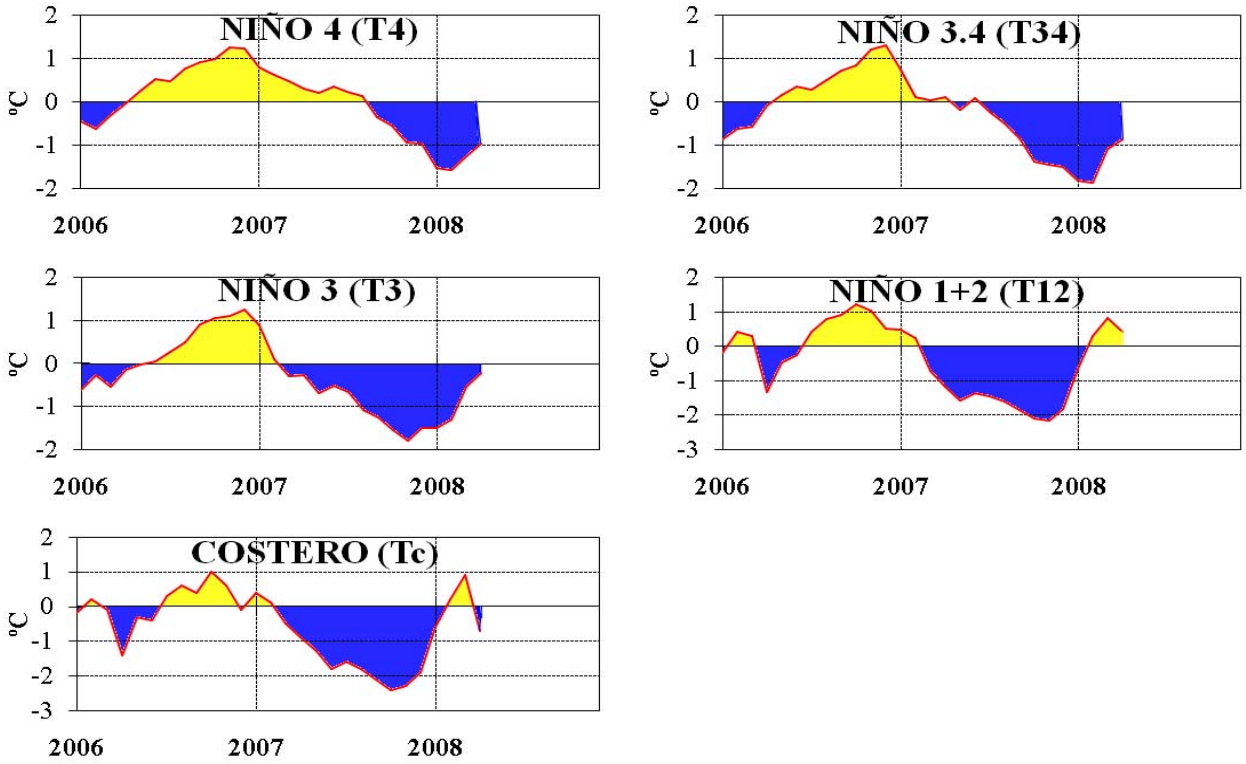

Figure 3.- Oceanic anomalies indices (Niño 4, Niño 3.4, Niño 3, Niño 1+2 and Tc). The location of the oceanic indices appears in figure 2.
(Source: NCEP/NWS/NOAA/USA).

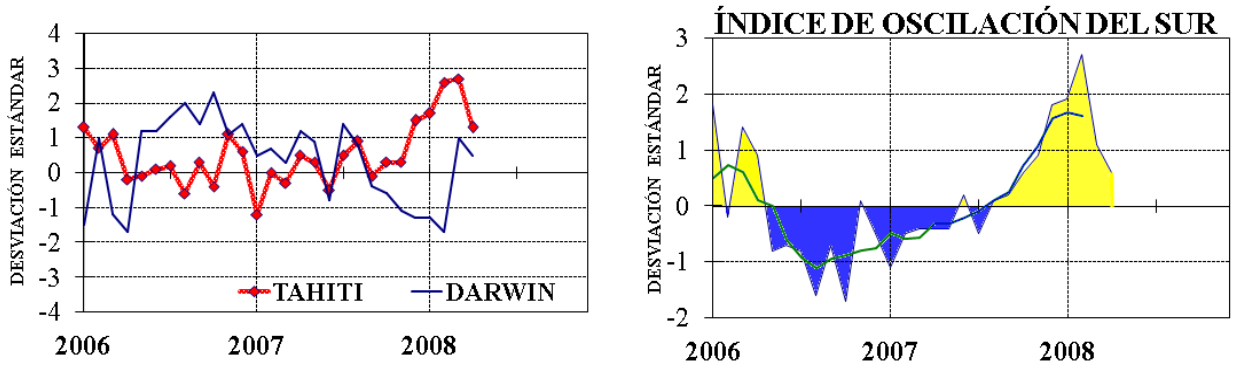

Figure 4.- Left Panel: Five-months running mean for atmospheric pressure anomalies in Tahiti and Darwin (mb). Right Panel: Southern Oscillation Index. (SOI) with monthly values and five-months running mean graphed as a green line. The SOI is based on the difference between standardized pressure values: Tahiti minus Darwin. The differences are also standardized for standard deviation of yearly values.
(Source: NCEP/NWS/NOAA/USA).

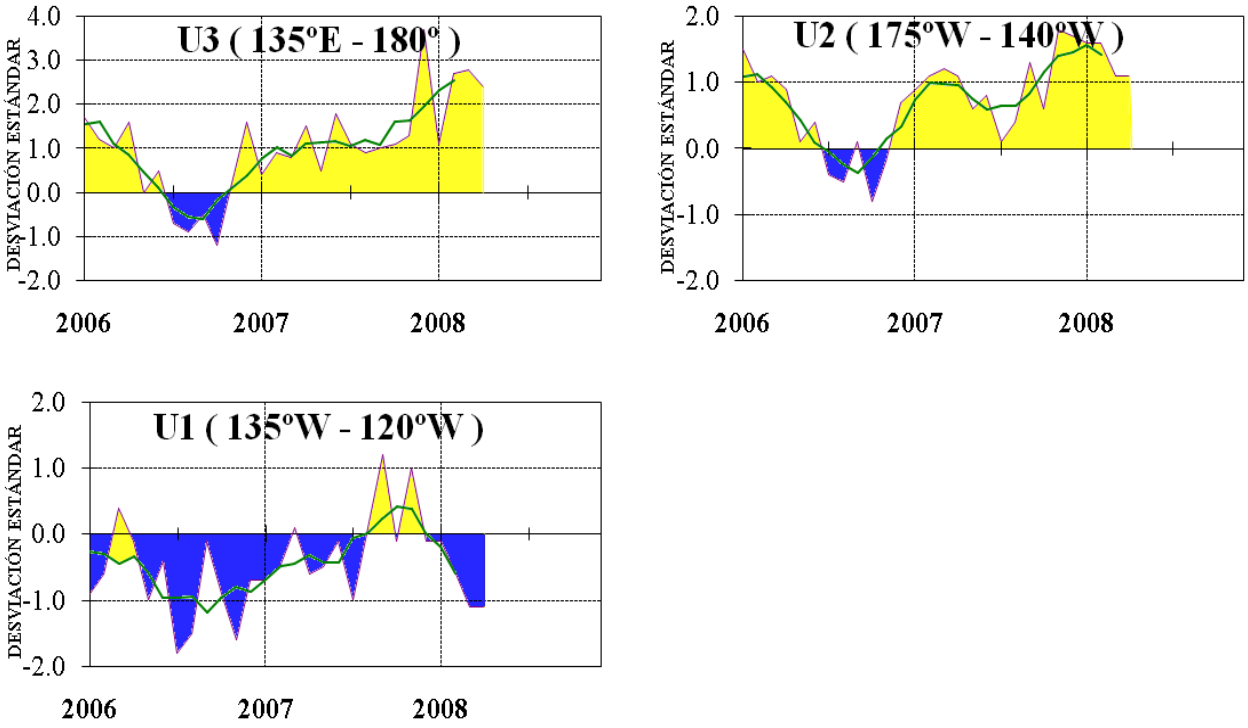

Figure 5.- Series and moving averages of five months of zonal wind standardized anomalies (m/s) averaged between 5°N and 5°S for three Equatorial zones: western (U3), central (U2) and eastern (U1). (Source: NCEP/NWS/NOAA/USA).

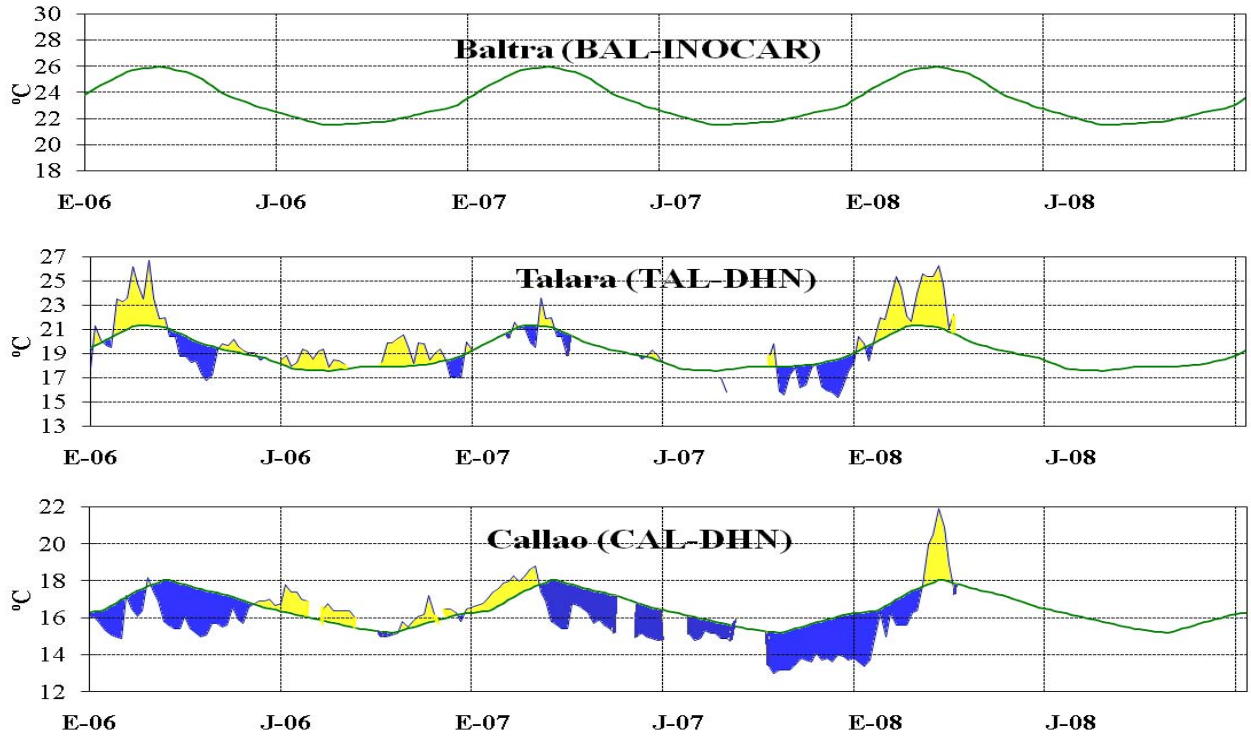

Figure 6.- Five day averages (pentads) of SST (°C) in Ports of Peru and Ecuador. The green curve indicates climatology. The location of oceanic indices appears in figure 1.
(Source: NOAA/Atlantic Oceanographic and Meteorological Laboratory – Miami.)

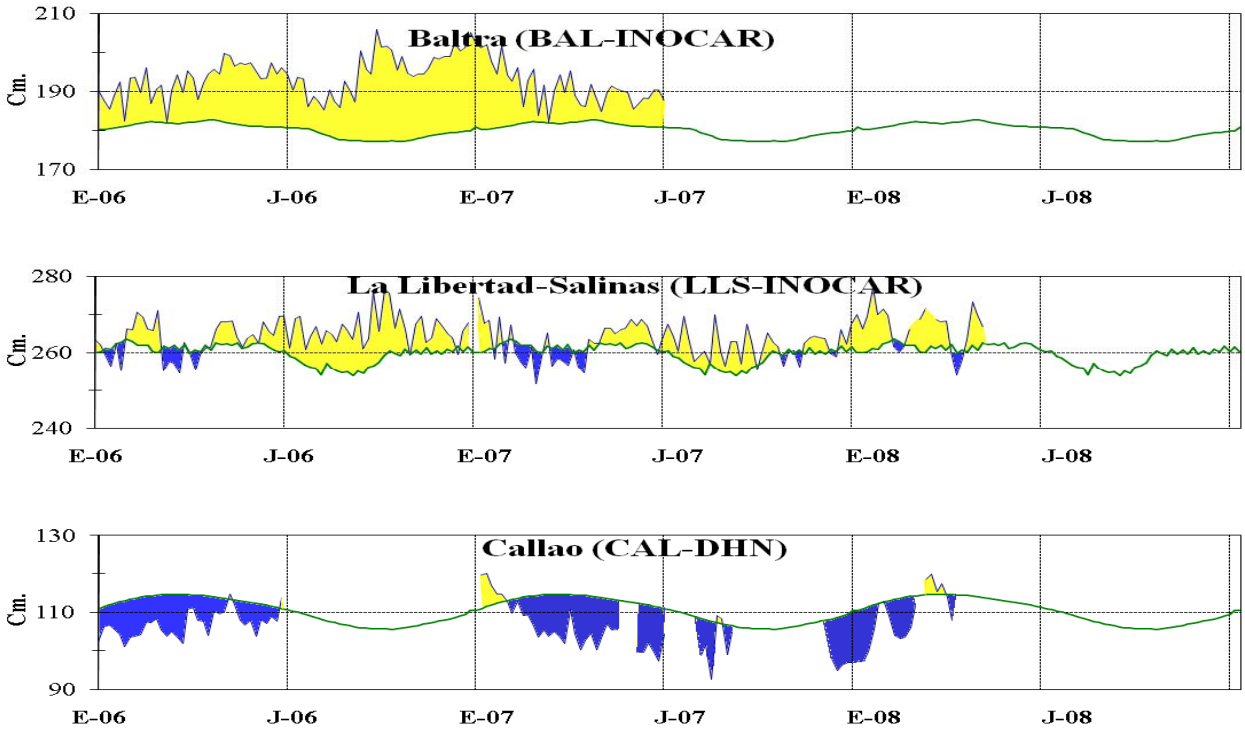

Figure 7.- Five-day running mean (pentads) of MSL (cm) in Ports of Peru and Ecuador. The green curve indicates climatology. The location of oceanic indices appears in figure 1.
(Sources: NOAA/Atlantic Oceanographic and Meteorological Laboratory – Miami, e INOCAR).

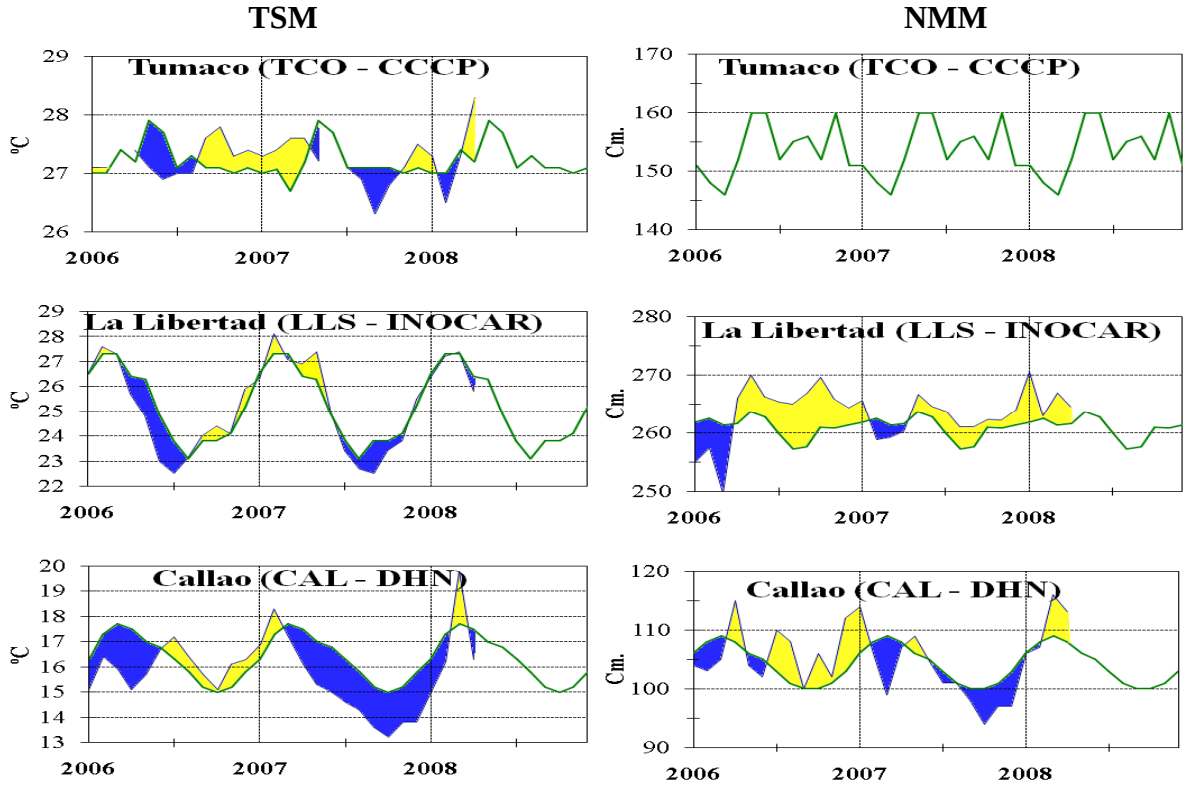

Figure 8a.- Monthly means of the SST (ºC) and MSL (cm) in five stations of the ERFEN region. Green curve indicates historic monthly mean. The location of the stations appears in Figure 1.
(Sources: CCCP, INOCAR y DHN).

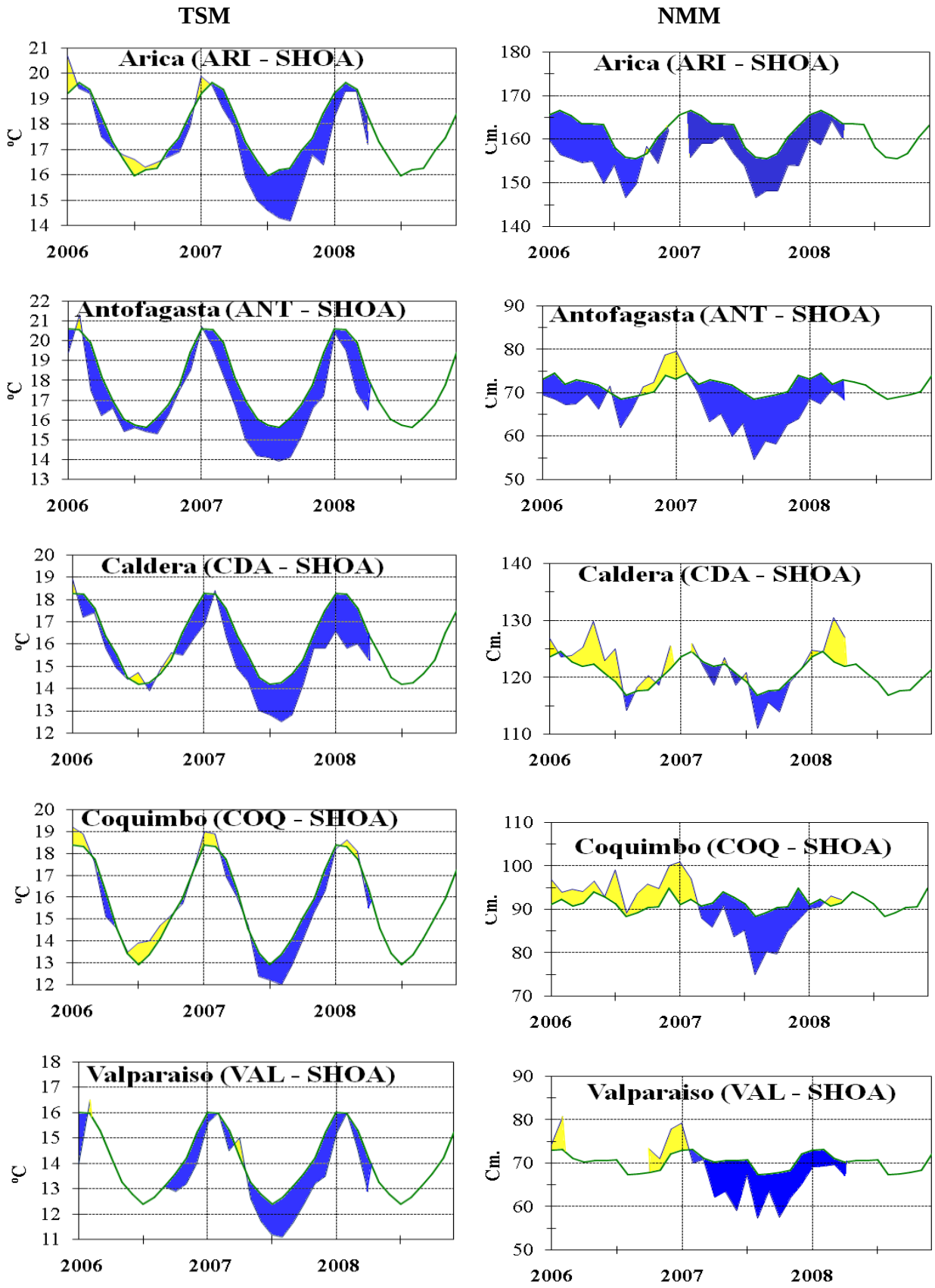

Figure 8b.- Monthly means of the SST (ºC) and MSL (cm) in five stations of the ERFEN region. Green curve indicates historic monthly mean. The location of the stations appears in Figure 1. (Source: SHOA).

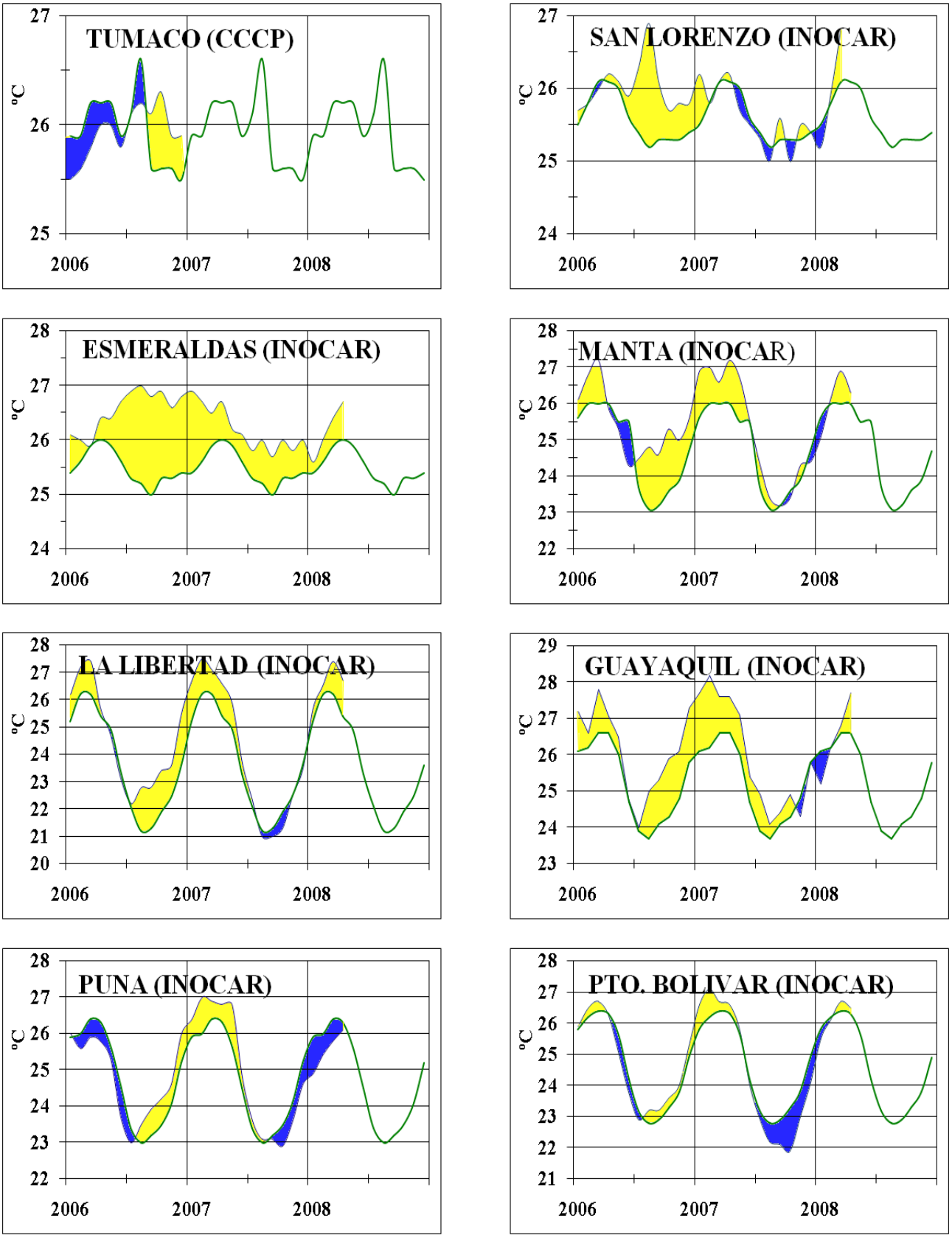

Figure 9a.- Monthly means of the air temperature (ºC) in 8 stations of the ERFEN region. Green curve indicates historic monthly mean. The location of the stations appears in Figure 1. (Sources: CCCP & INOCAR).

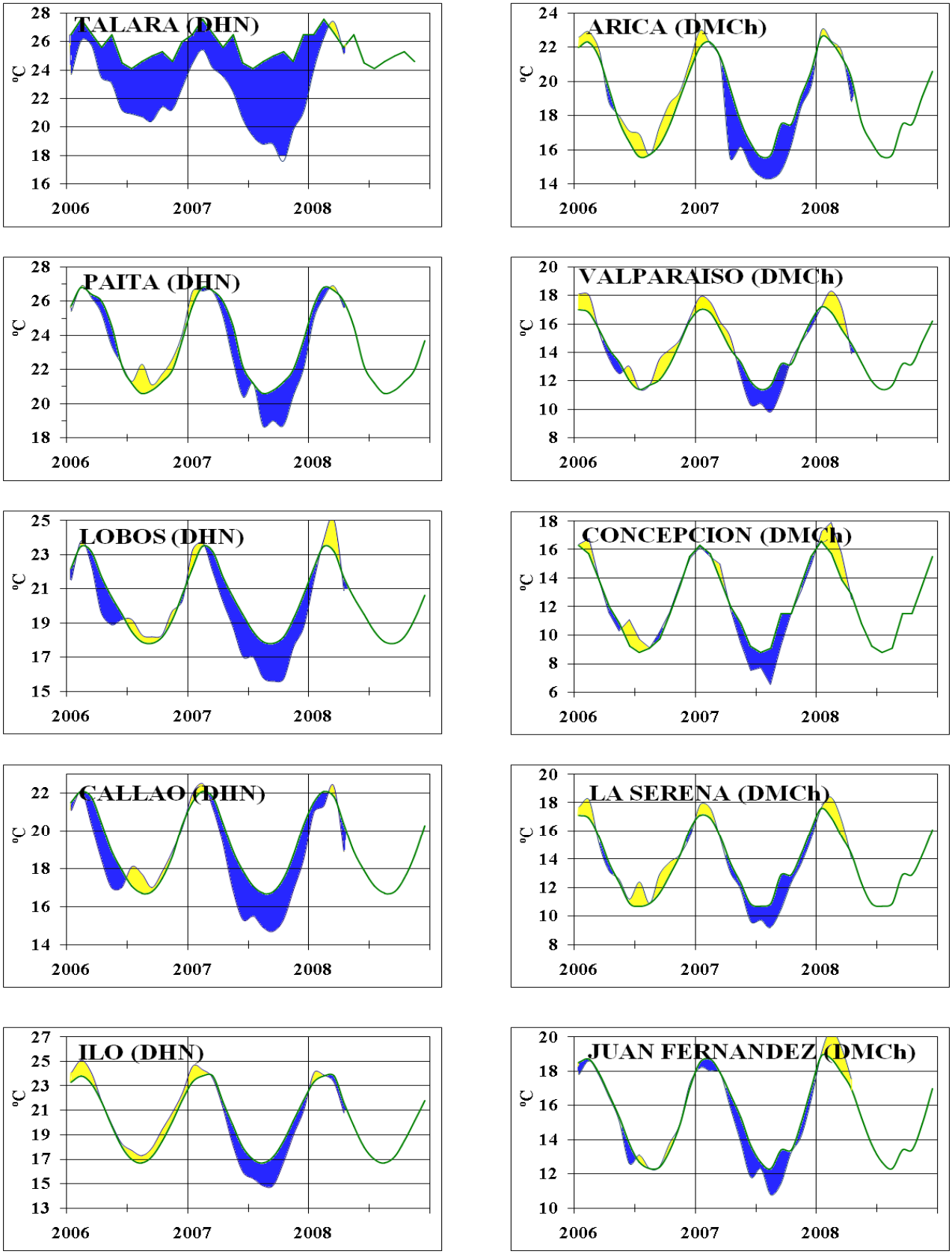

Figure 9b.- Monthly means of the AT (ºC) in 10 stations of the ERFEN region. Green curve indicates historic monthly mean. The location of the stations appears in Figure 1. (Sources: DHN & DMCh).

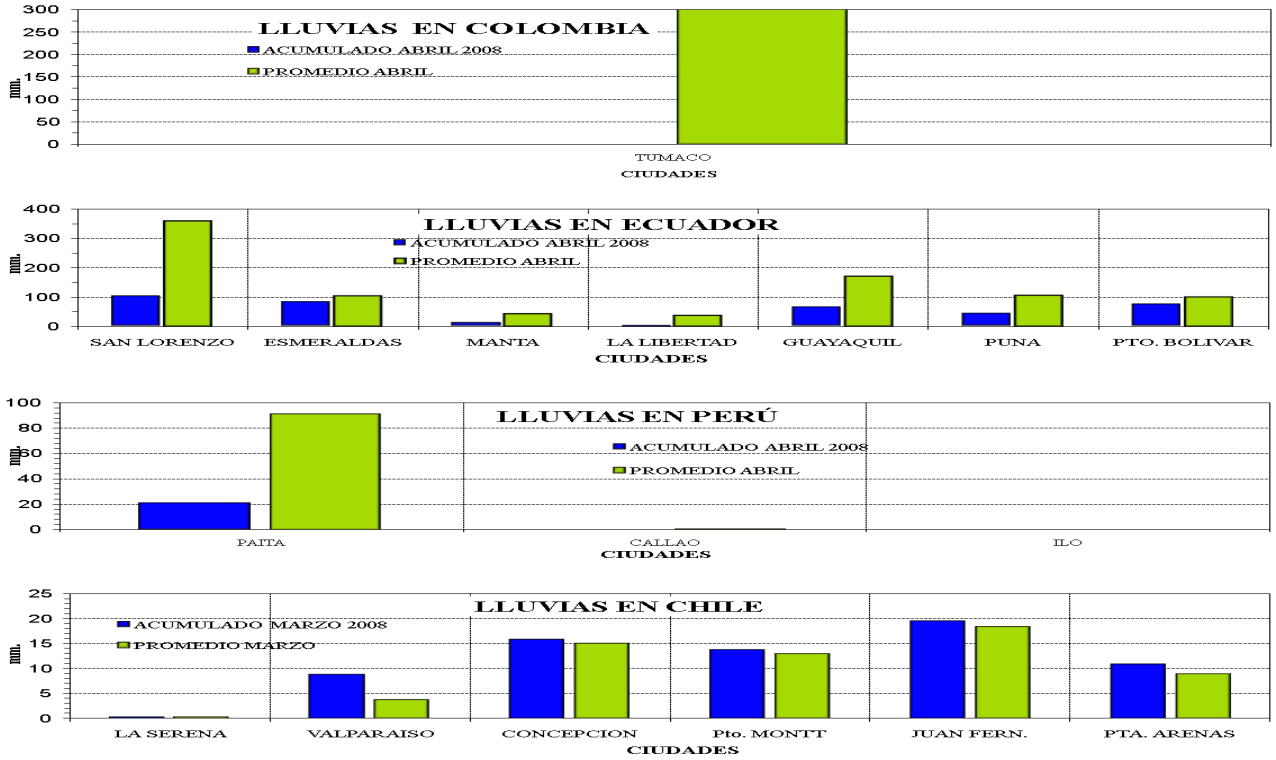

Figure 10.- Rains during April in the coastal stations of Colombia, Ecuador, Peru and Chile. Location of the stations appears in Figure 1.
(Sources: CCCP, INOCAR, DHN & DMCh).

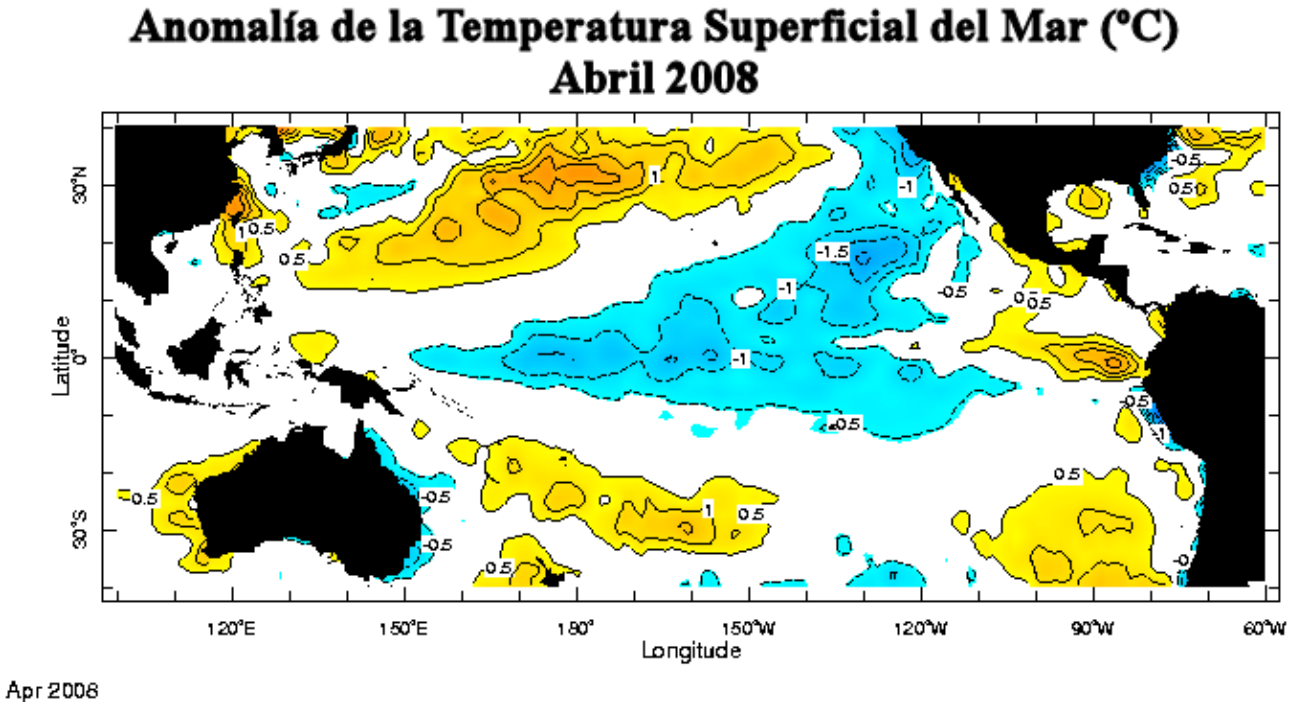

Figure 11.- Sea Surface Temperature Anomalies (ºC) April 2008.
(Source: International Research Institute for Climate and Society)

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CONDICIONES OCEANO ATMOSFÉRICAS ENCONTRADAS EN LA CUENCA PACÍFICA COLOMBIANA DURANTE EL CRUCERO OCEANOGRÁFICO REALIZADO DURANTE MARZO DE 2008 Y SU RELACIÓN CON LAS CONDICIONES PRESENTADAS EN MARZO DE 2006 Y FEBRERO DE 2008.

RESUMEN

El crucero oceanográfico que se llevó acabo abordo del buque oceanográfico ARC Providencia durante el mes de marzo de 2008, tuvo una duración de 19 días de muestreo, recorriéndose un total de 2593 millas náuticas. Se efectuaron 76 estaciones oceanográficas, de las cuales 44 corresponden a la grilla Cuenca Pacífica Colombiana (CPC), 12 estaciones de la grilla Isla Malpelo, 19 estaciones de la grilla Isla Gorgona y 01 muestreo en la estación 5 de la bahía de Tumaco.

Durante los años 2006 y 2007 se realizaron por parte de la Dirección General Marítima, cuatro cruceros oceanográficos con el fin de estudiar la dinámica de las corrientes y la variabilidad estacional e interanual de las principales variables de estudio, de los cuales se tomaron los resultados del crucero de marzo de 2006 y febrero de 2007 para relacionarlos con los resultados del crucero oceanográfico de marzo de 2008.

Conclusiones.

La Cuenca Pacífica Colombiana (CPC) presenta en el transepto 2ºN un enfriamiento de las aguas, identificado por el ascenso de la termoclina en la región, a diferencia del transepto 5ºN, el cual denota un calentamiento superficial de las aguas evidenciadas por el descenso de la zona de gradiente de temperatura.

Durante el primer trimestre del año en la Cuenca Pacífica Colombiana, la acción del chorro de viento de Panamá genera zonas de surgencias en la CPC, disminuyendo las temperaturas superficiales de la región.

Durante el fenómeno El Niño de 2006, el chorro de viento de Panamá presentó un retardo en su manifestación con anomalías en magnitud positivas, lo cual permitió anomalías negativas en la TSM de la CPC. En el caso del fenómeno La Niña 2008, el chorro de viento de Panamá registró valores de velocidad de viento inferiores respecto a los dos años anteriores, por lo cual no se desarrollaron procesos de surgencia significativos que pudiesen disminuir las temperaturas superficiales

La corriente del Sur (Humboldt) se intensificó durante la Niña del presente año, incursionando en la zona sur de la CPC. Lo anterior permitió la disminución de las temperaturas superficiales de la zona, evidenciado en los transeptos realizados durante el mes de marzo de 2008 en el transepto 2ºN, en el cual registró un ascenso de la termoclina con respecto a los dos años anteriores.

Finalmente se puede concluir que la Cuenca Pacífica Colombiana durante el fenómeno El Niño 2006-2007 y La Niña 2007-2008, presentó condiciones muy diferentes con respecto al comportamiento océano atmosférico monitoreado en el Pacífico Sudeste, el cual durante este evento la Niña 2007-2008, la CPC registró un aumento en las temperaturas superficiales del mar.