Condiciones meteorológicas, oceanográficas, biológico-pesqueras e hidrológicas

1 – 15 de abril 2017

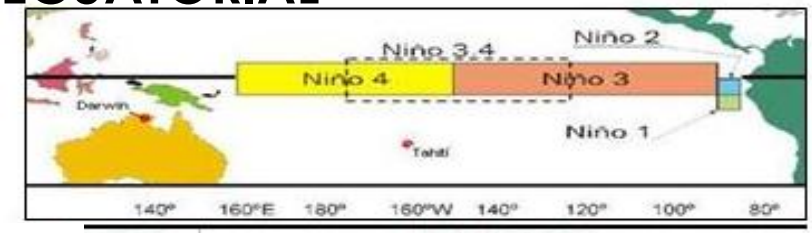
Grinia Avalos Roldán
Coordinación Técnica ENFEN

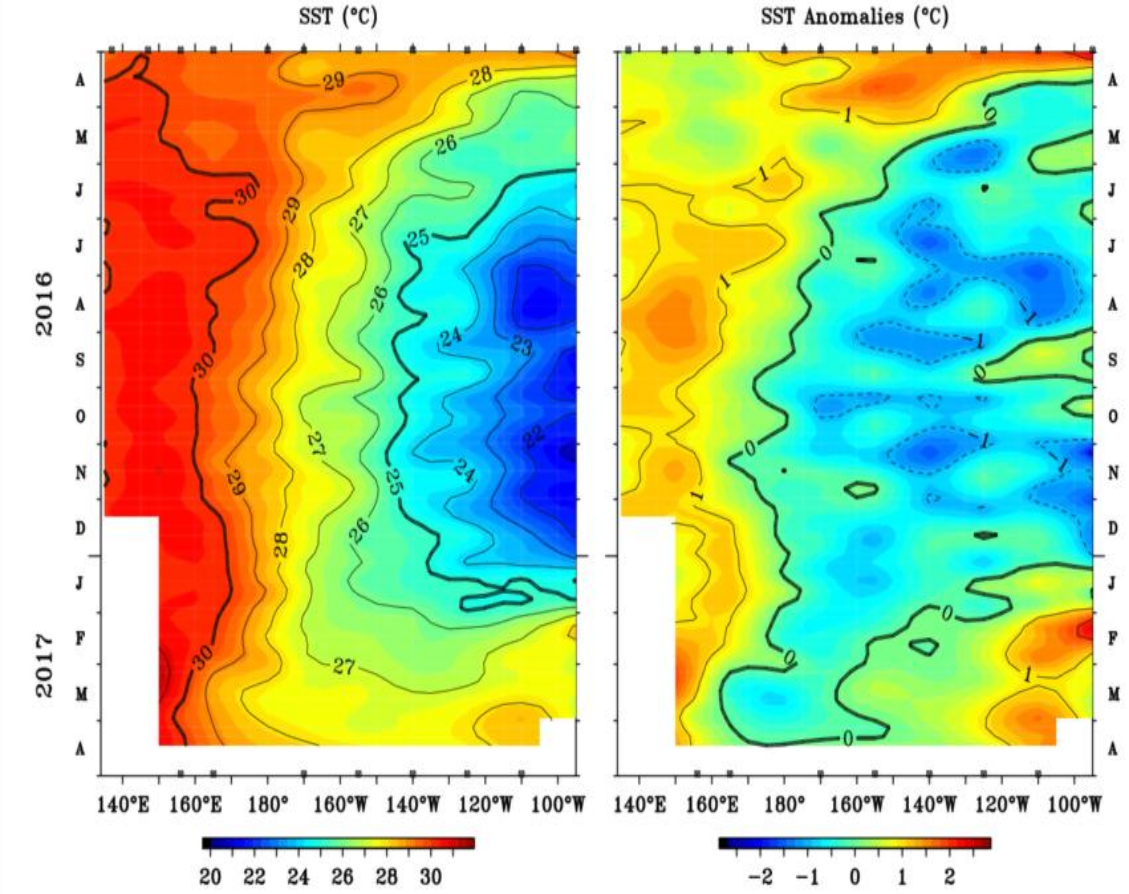
20 de abril de 2017

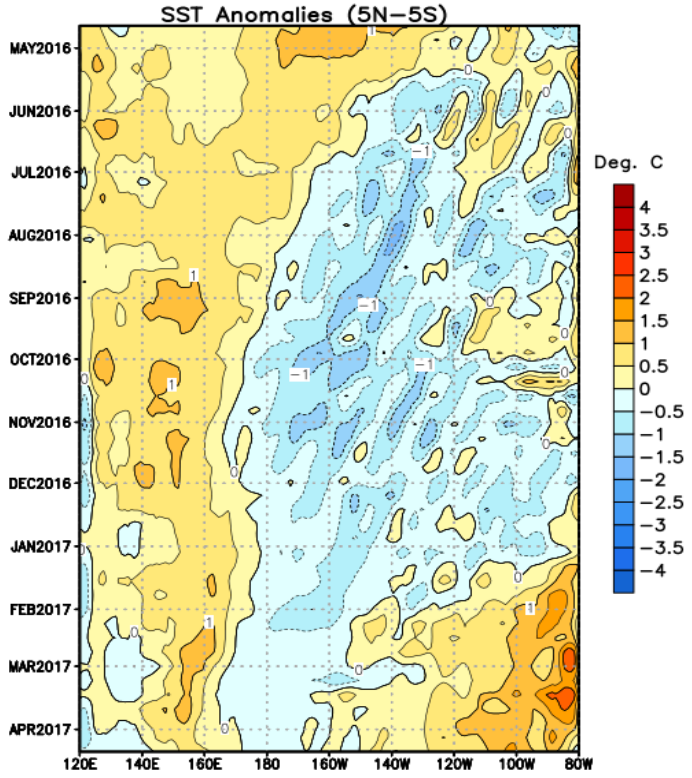
EN EL PACÍFICO TROPICAL

COMPONENTE OCÉANICA

ANOMALÍAS DE LA TEMPERATURA SUPERFICIAL EN EL PACÍFICO ECUATORIAL





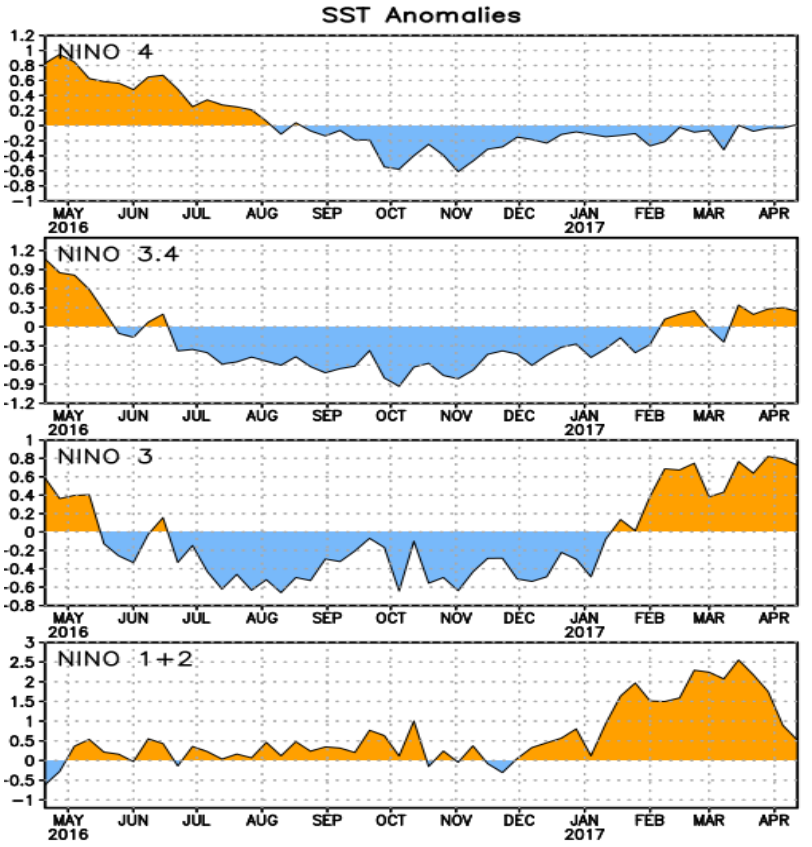


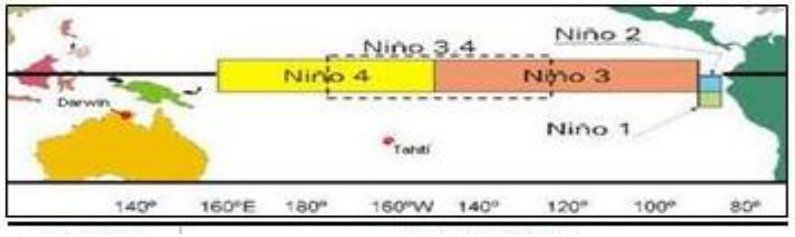
ANOMALÍAS DE LA TEMPERATURA SUPERFICIAL DEL MAR POR REGIONES NIÑO EN EL PACÍFICO ECUATORIAL

Regiones Niño	ATSM (Semanales)			
	Niño 1+2	Niño 3	Niño 3.4	Niño 4
15MAR17	29.1 2.6	27.9 0.8	27.5 0.3	28.2 0.0
22MAR17	28.5 2.2	27.8 0.6	27.5 0.2	28.2-0.1
29MAR17	27.8 1.8	28.1 0.8	27.7 0.3	28.3 0.0
05APR17	26.7 0.9	28.2 0.8	27.9 0.3	28.3 0.0
12APR17	26.1 0.5	28.2 0.7	28.0 0.2	28.5 0.0
P.T	0.7	0.8	0.3	

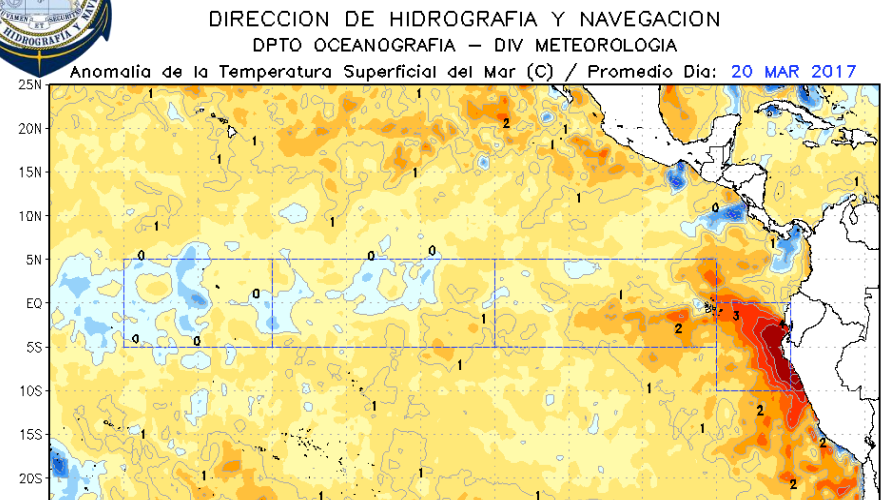
Promedios mensuales 2015

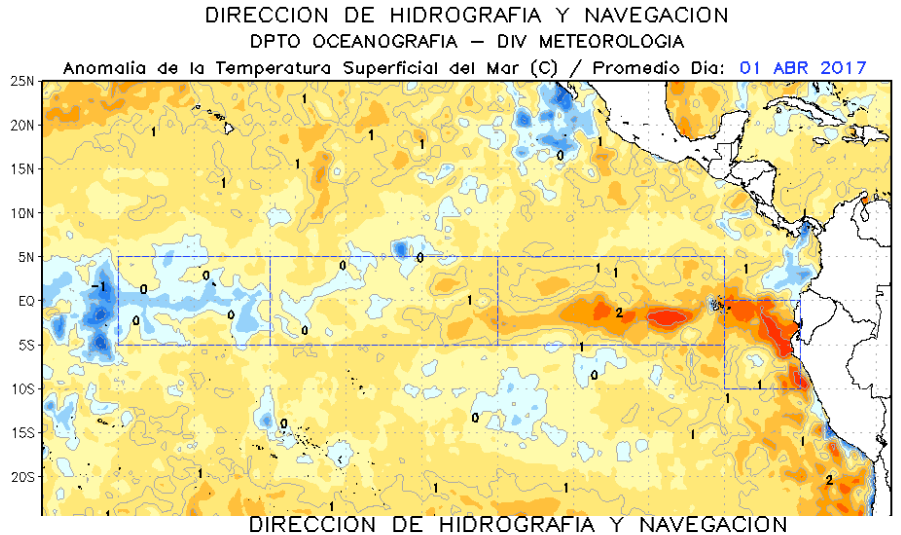
Regiones Niño	ATSM			
	Niño 1+2	Niño 3	Niño 3.4	Niño 4
Mar.2017	2.0 28.6	0.5 27.7	0.1 27.3	-0.1 28.1
Feb.2017	1.6 27.8	0.0 27.0	0.14 26.9	-0.1 28.0
Ene.2017	1.2 25.8	0.0 25.6	-0.3 26.3	-0.1 28.2
Dic.2016	0.4 23.3	-0.4 24.8	-0.4 26.2	-0.1 28.4
Nov.2016	0.1 21.7	-0.4 24.5	-0.6 26.1	-0.4 28.3
Oct.2016	0.4 21.2	-0.4 24.5	-0.7 26.0	-0.4 28.3
Set.2016	0.5 20.9	-0.2 24.7	-0.6 26.1	-0.2 28.5
Ago.2016	0.4 21.0	-0.5 24.5	-0.5 26.3	0.0 28.7
Jul.2016	0.2 21.8	-0.5 25.1	-0.5 26.7	0.3 29.1
Jun.2016	0.3 23.2	-0.1 26.3	-0.1 27.5	0.5 29.4
May.2016	0.3 24.6	0.0 27.1	0.3 28.2	0.6 29.4
Abr.2016	0.2 25.8	0.8 28.3	1.1 28.8	0.9 29.4
Mar.2016	0.9 27.6	1.6 28.7	1.7 28.9	1.3 29.5
Feb.2016	0.7 26.8	1.9 28.4	2.4 29.1	1.5 29.6
Ene.2016	1.4 25.9	2.6 28.2	2.6 29.2	1.4 29.7

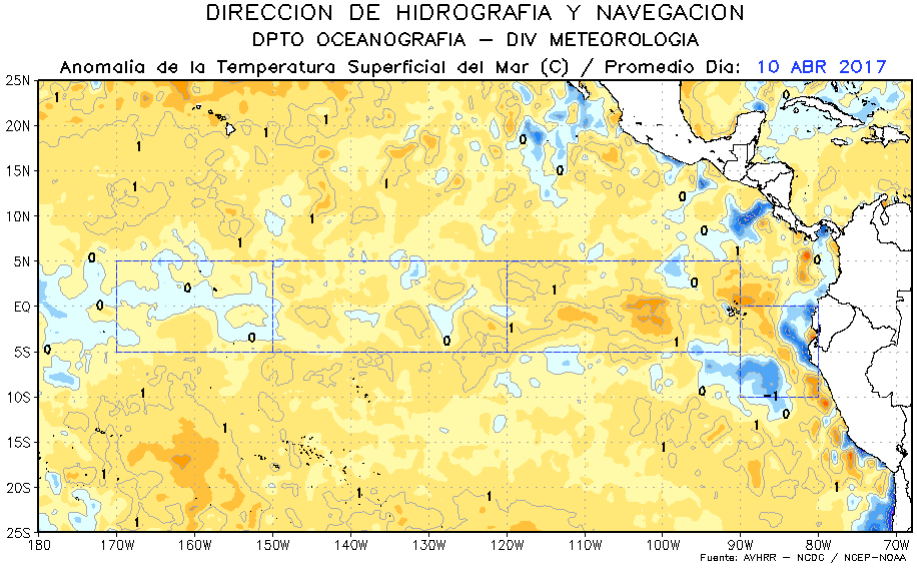


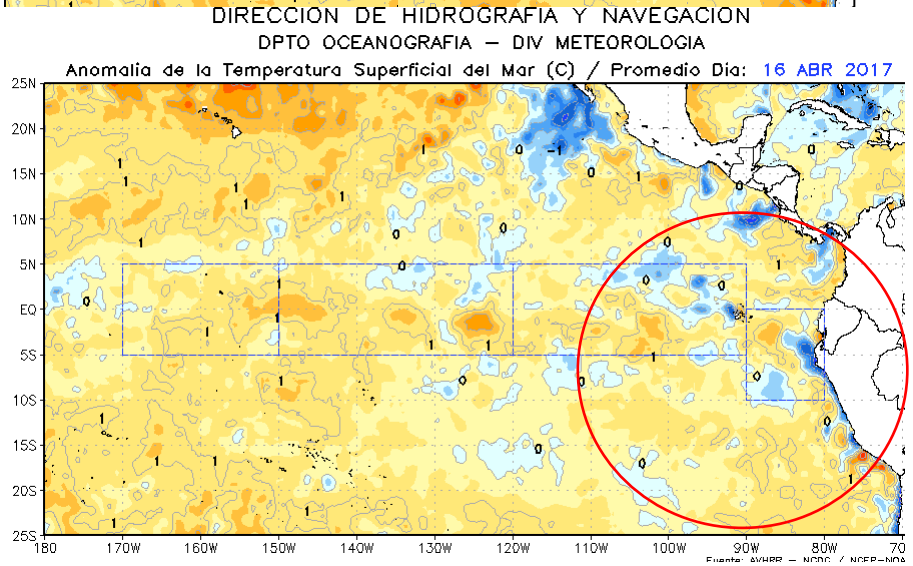


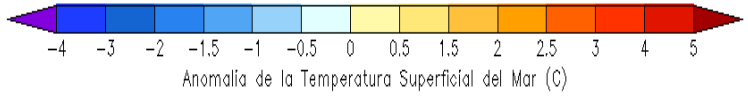
ANOMALÍAS DE LA TEMPERATURA DEL MAR EN EL PACÍFICO TROPICAL



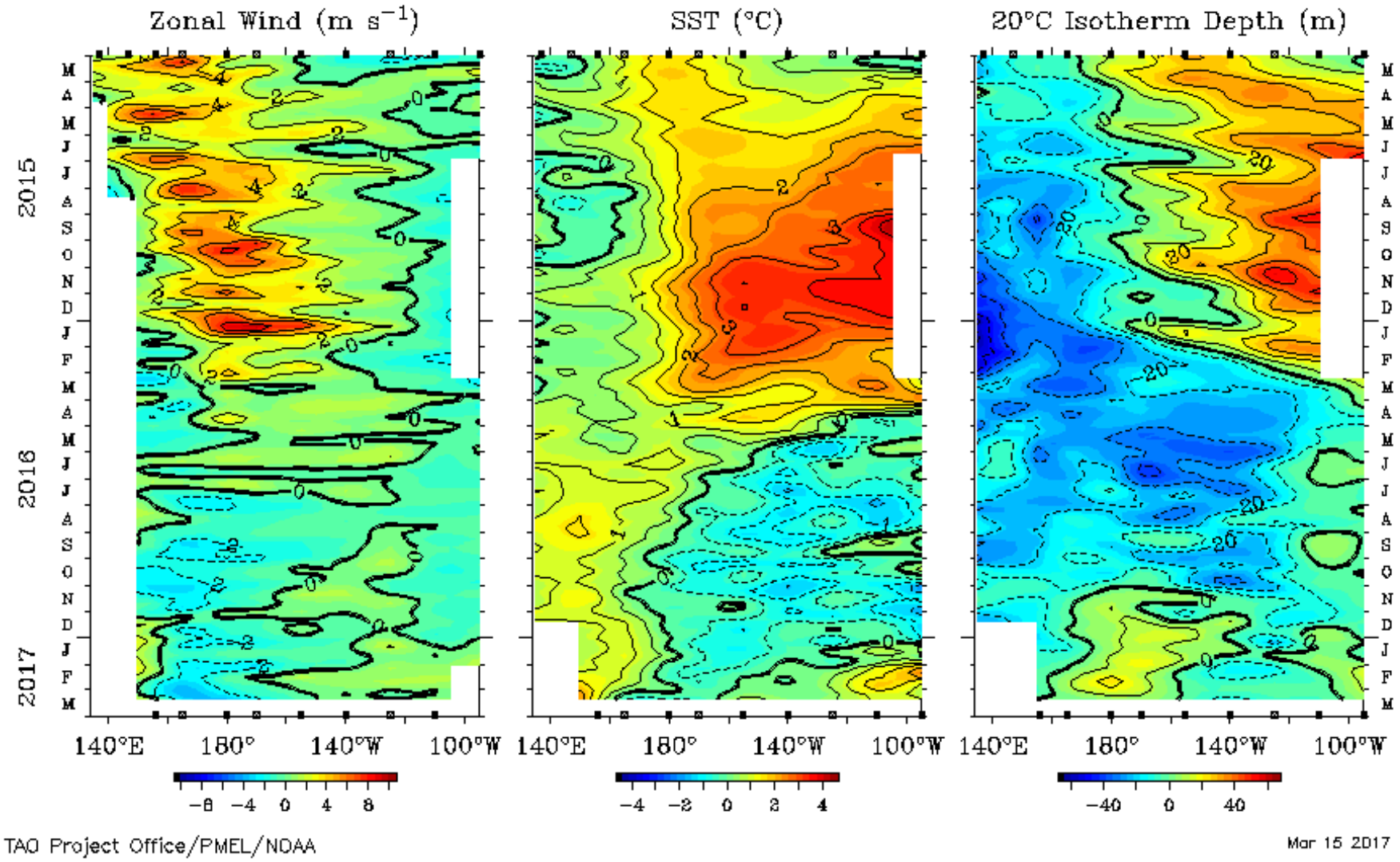




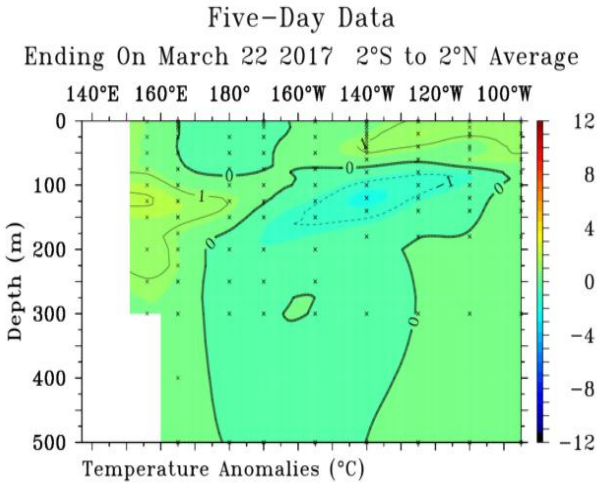


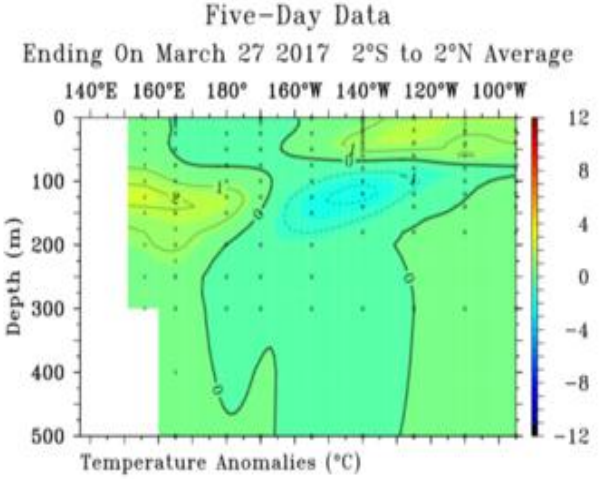


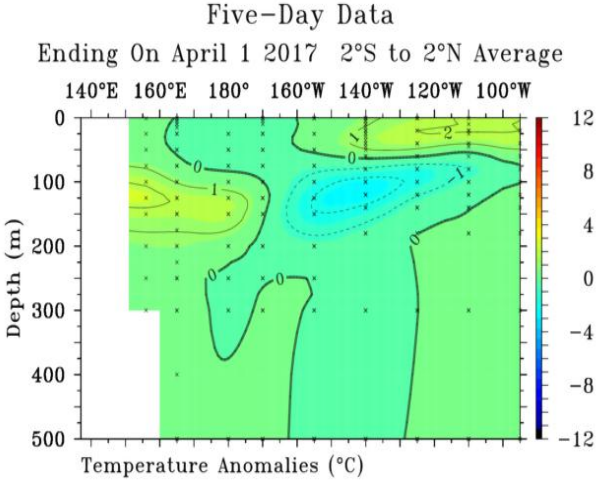
TAO a lo largo de la línea ecuatorial

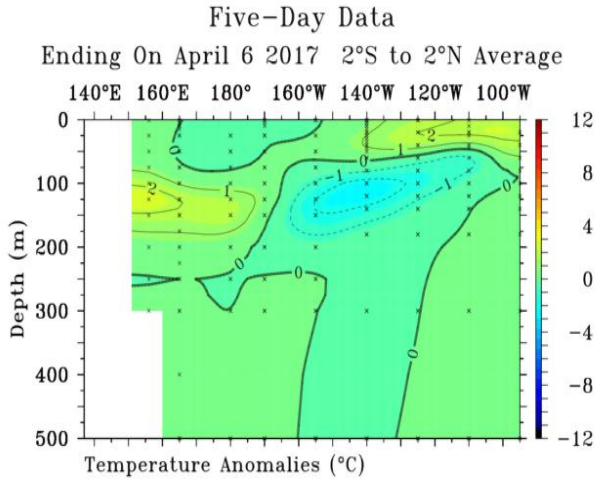


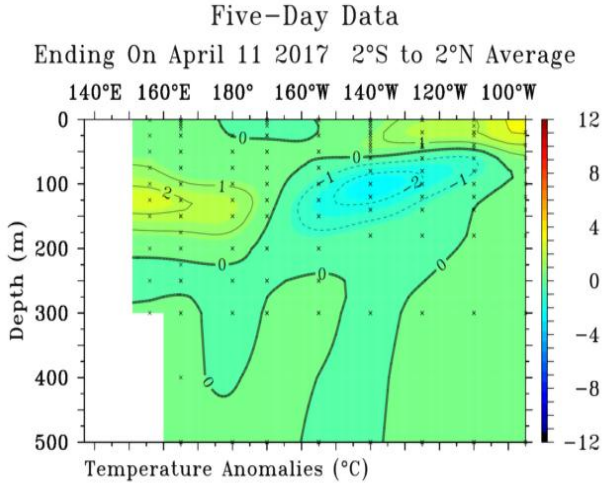
ANOMALÍAS DE LA TEMPERATURA SUBSUPERFICIAL EN EL PACÍFICO ECUATORIAL

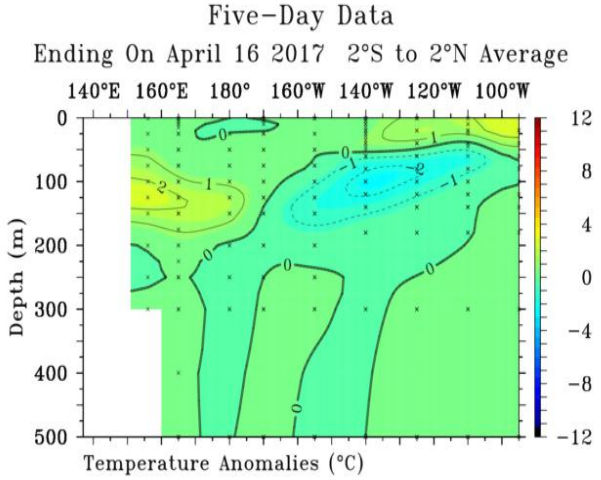












Valores del Índice Costero El Niño

Mes	ICEN	Categoría
06/2016	0.43	Cálida Débil
07/2016	0.29	Neutra
08/2016	0.17	Neutra
09/2016	0.14	Neutra
10/2016	0.22	Neutra
11/2016	0.37	Neutra
12/2016	0.43	Cálida Débil
01/2017	0.60	Cálida Débil
02/2017	0.93	Cálida Débil

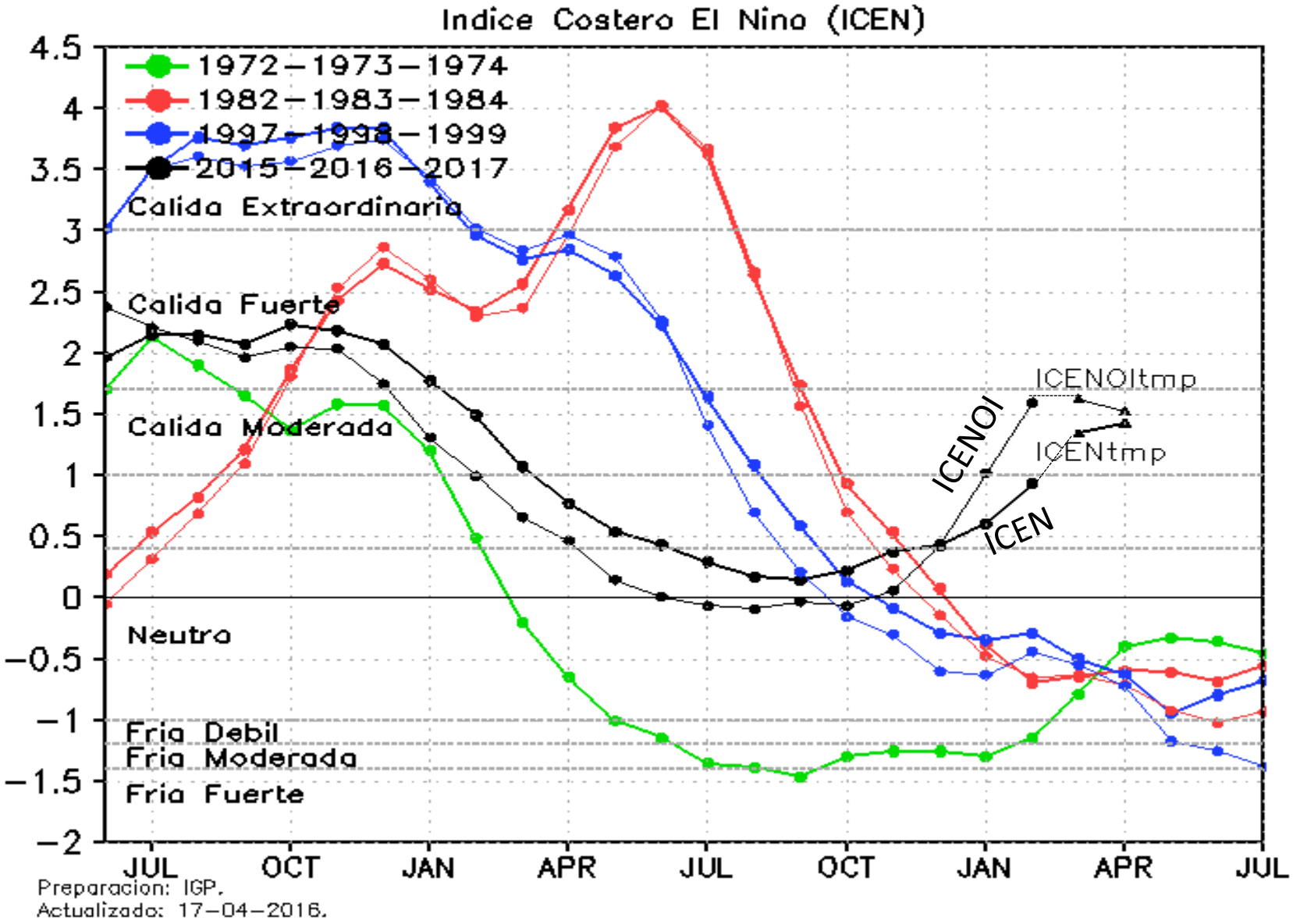
Bajos porque el ERSST de enero y febrero fueron dudosamente bajos

Mes	ICENtmp	Categoría
03/2017	1.34* /1.18 (OIwk)	Cálida Moderada
04/2017	1.42** /1.27(OIwk)	Cálida Moderada

* Se usaron los datos de Feb. y Mar. (ERSST3v), Abr. NMME

** Se usaron los datos de Mar. 2017 (ERSSTv3), Abr. y May. 2017 (NMME)

NMME CI 2017 04



La líneas delgadas representan el ICEN con datos de OISST

Valores del Oceanic Niño Index (ONI)

La Niña en el Pacífico Central duró hasta diciembre →

Mes	ONI	Categoría
06/2016	0.10	Neutra
07/2016	-0.32	Neutra
08/2016	-0.58	Fría Débil
09/2016	-0.75	Fría Débil
10/2016	-0.84	Fría Débil
11/2016	-0.84	Fría Débil
12/2016	-0.73	Fría Débil
01/2017	-0.41	Neutra
02/2017	-0.18	Neutra

http://www.cpc.ncep.noaa.gov/data/indices/oni.ascii.txt

Mes	ONItmp	Categoría
03/2017	0.07*	Neutra
04/2017	0.34**	Neutra

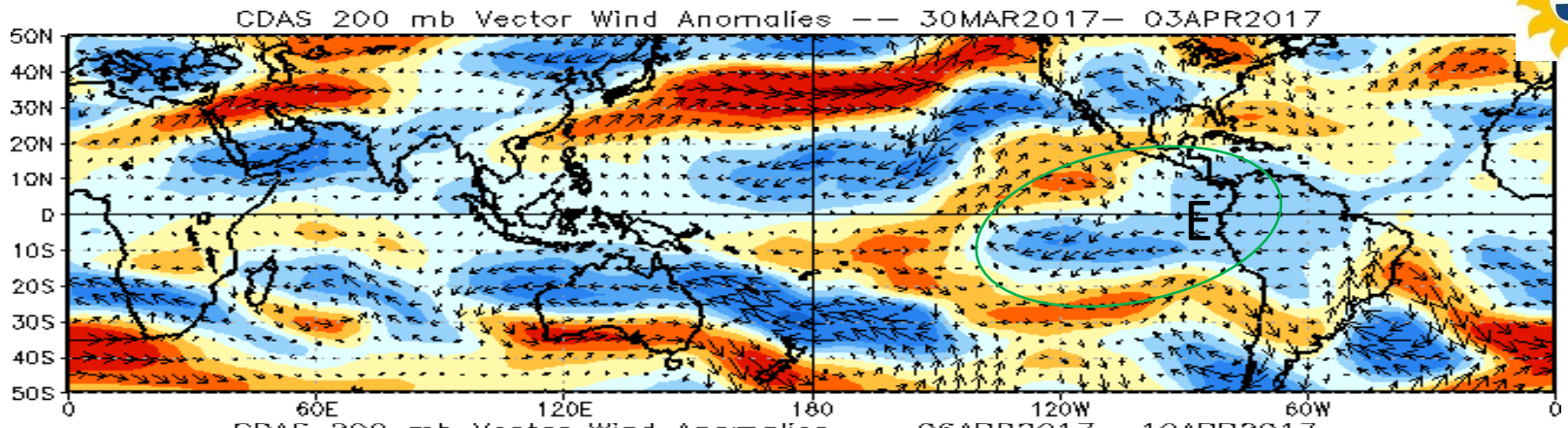
* Se usaron los datos de Feb y Mar. 2017 (ERSST4) y Abr 2017 (NMME) .

** Se usaron los datos de Mar. 2017 (ERSST4), y Abr. y May. 2017 (NMME)

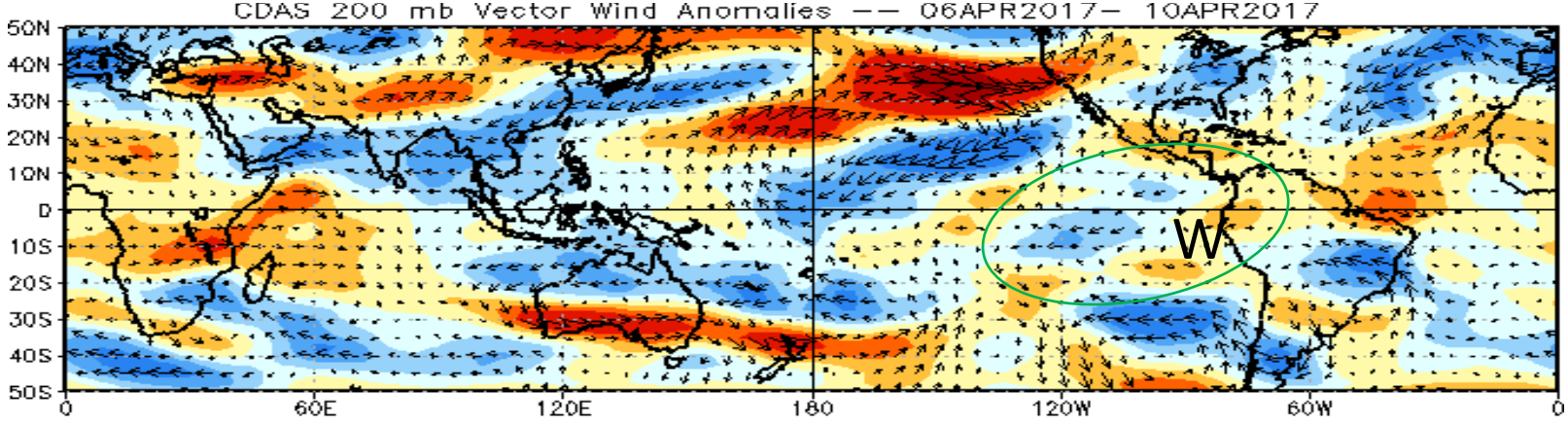
EN EL PACÍFICO TROPICAL

COMPONENTE ATMOSFÉRICA

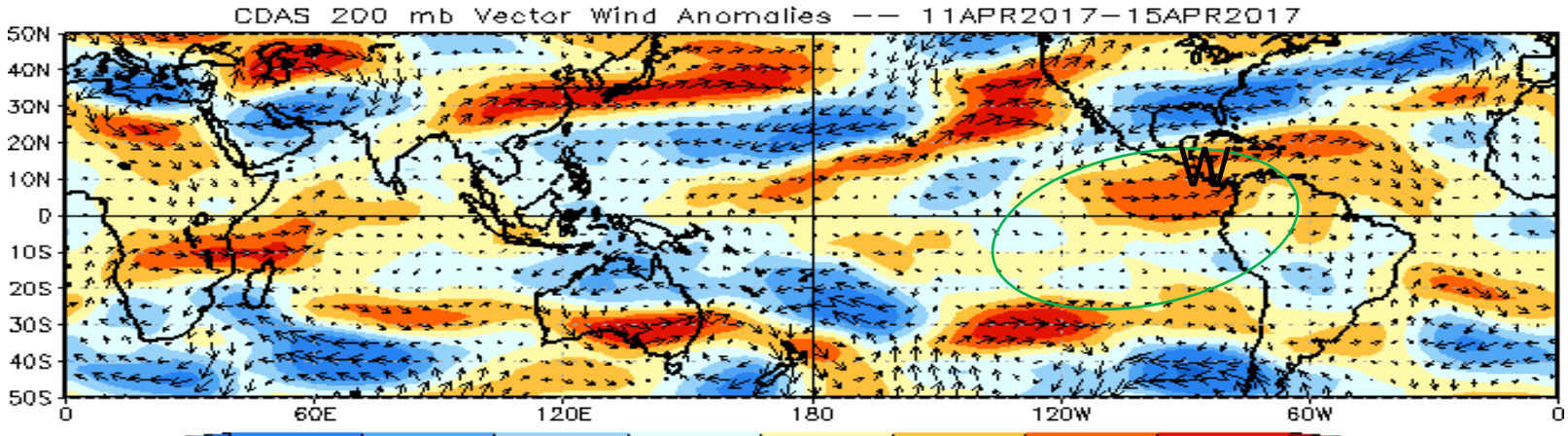
VIENTO EN TROPOSFERA ALTA - 200 hPa



30MAR – 03ABR

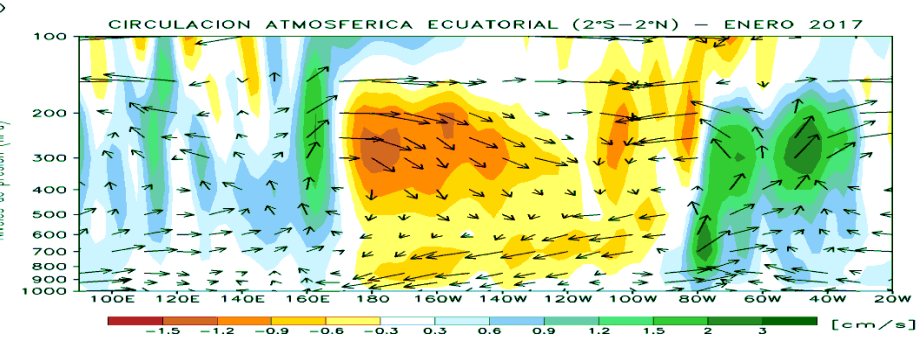


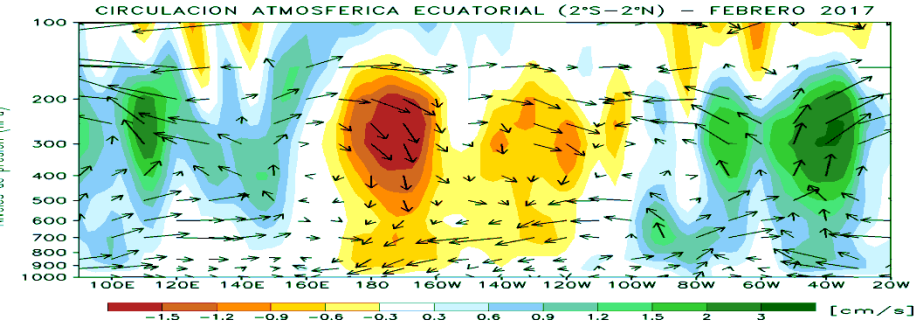
06 – 10ABR

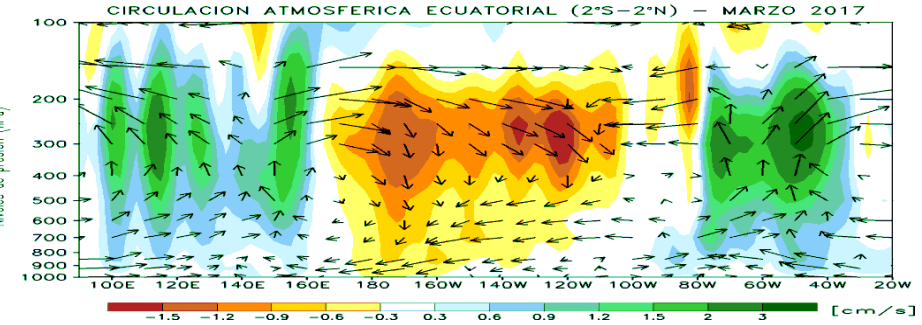


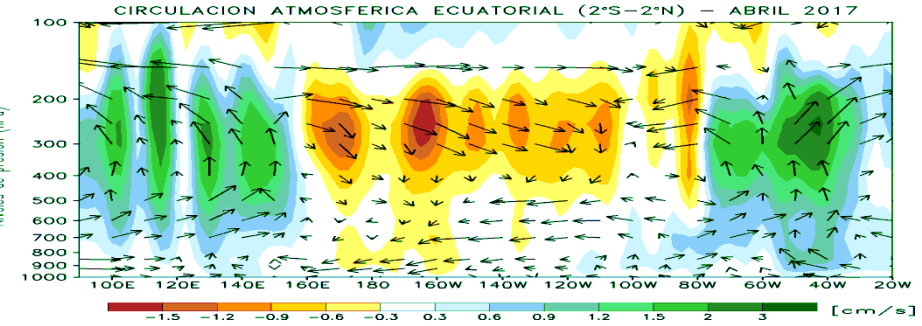
11 – 15ABR

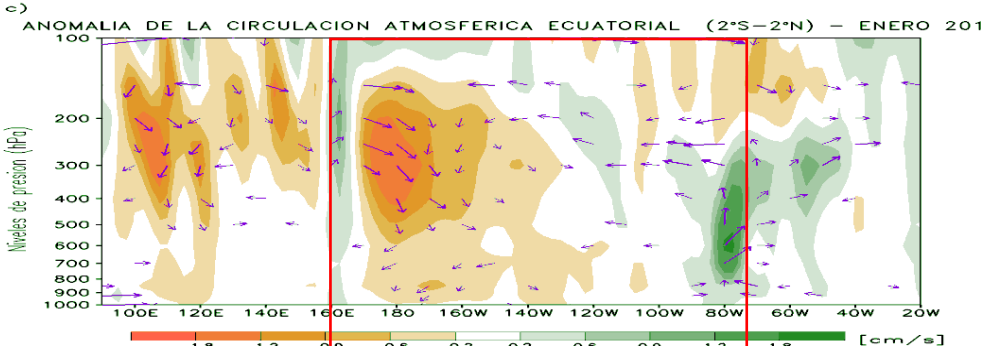
MONITOREO DE LA CIRCULACION ECUATORIAL ATMOSF. EC. 5ºN-5ºS

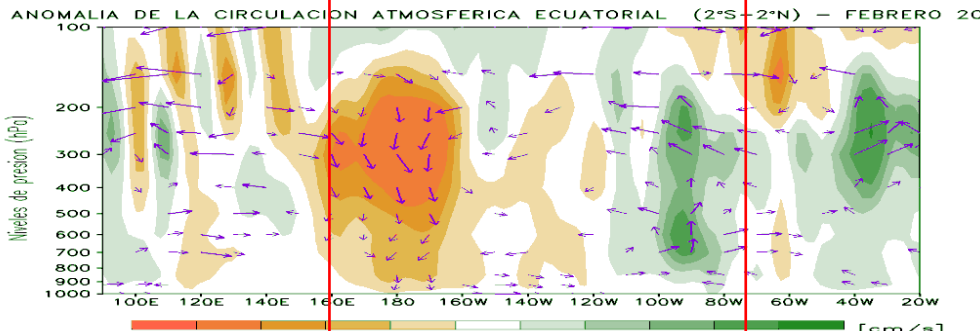


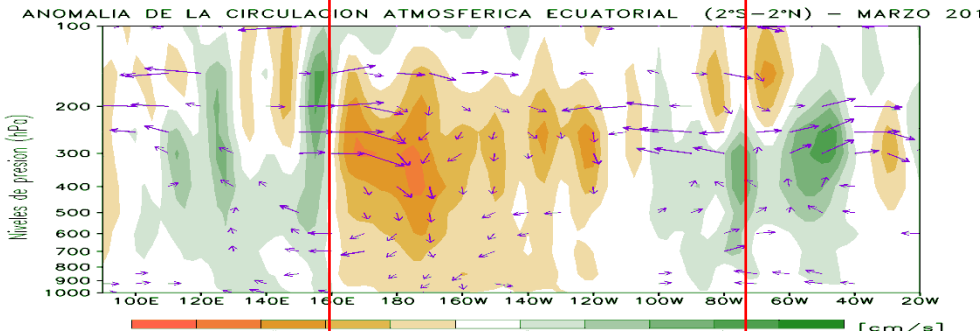


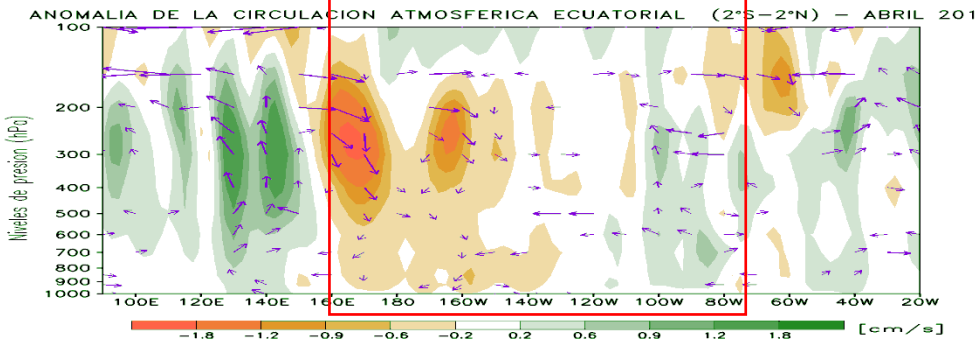




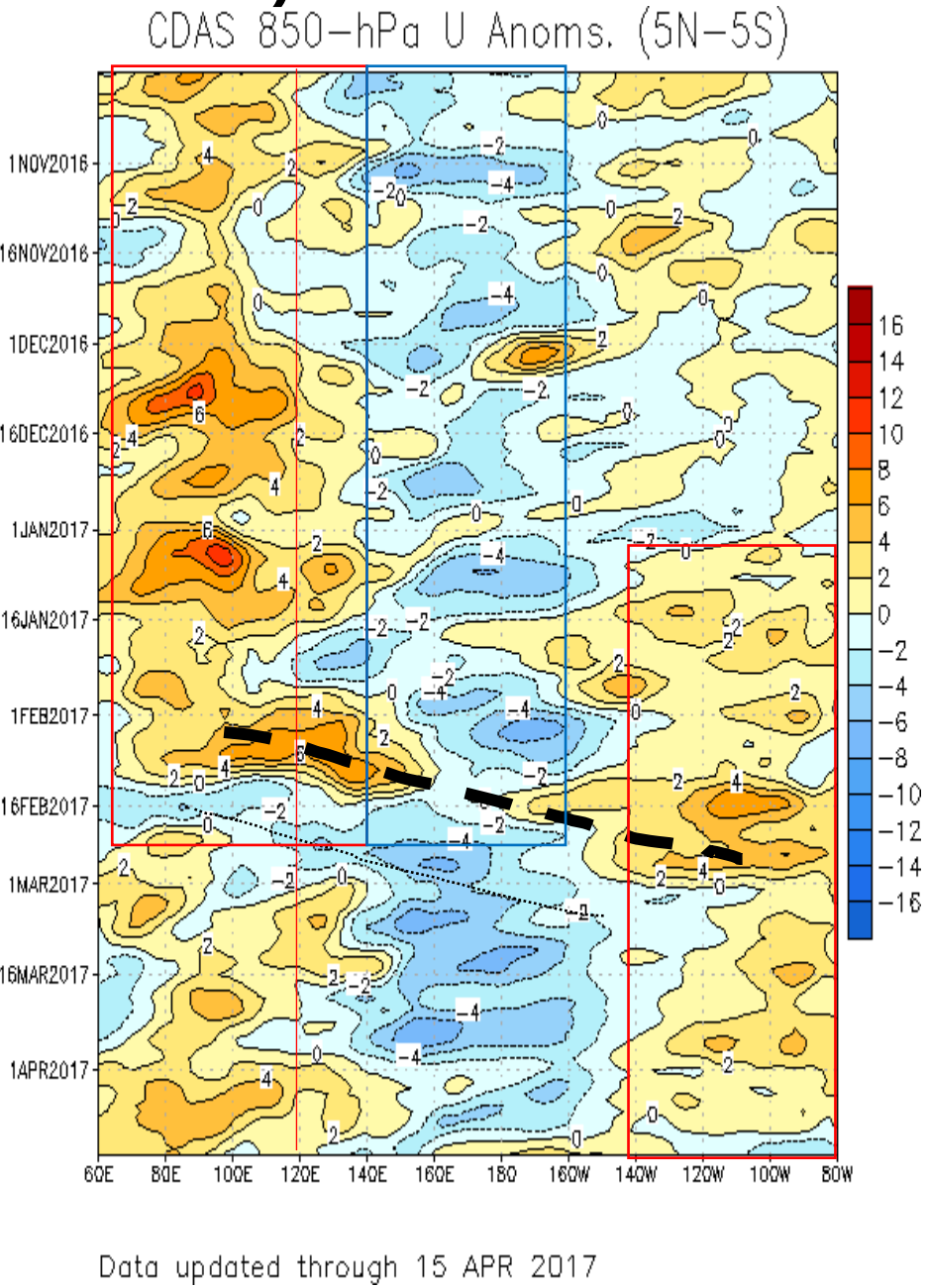








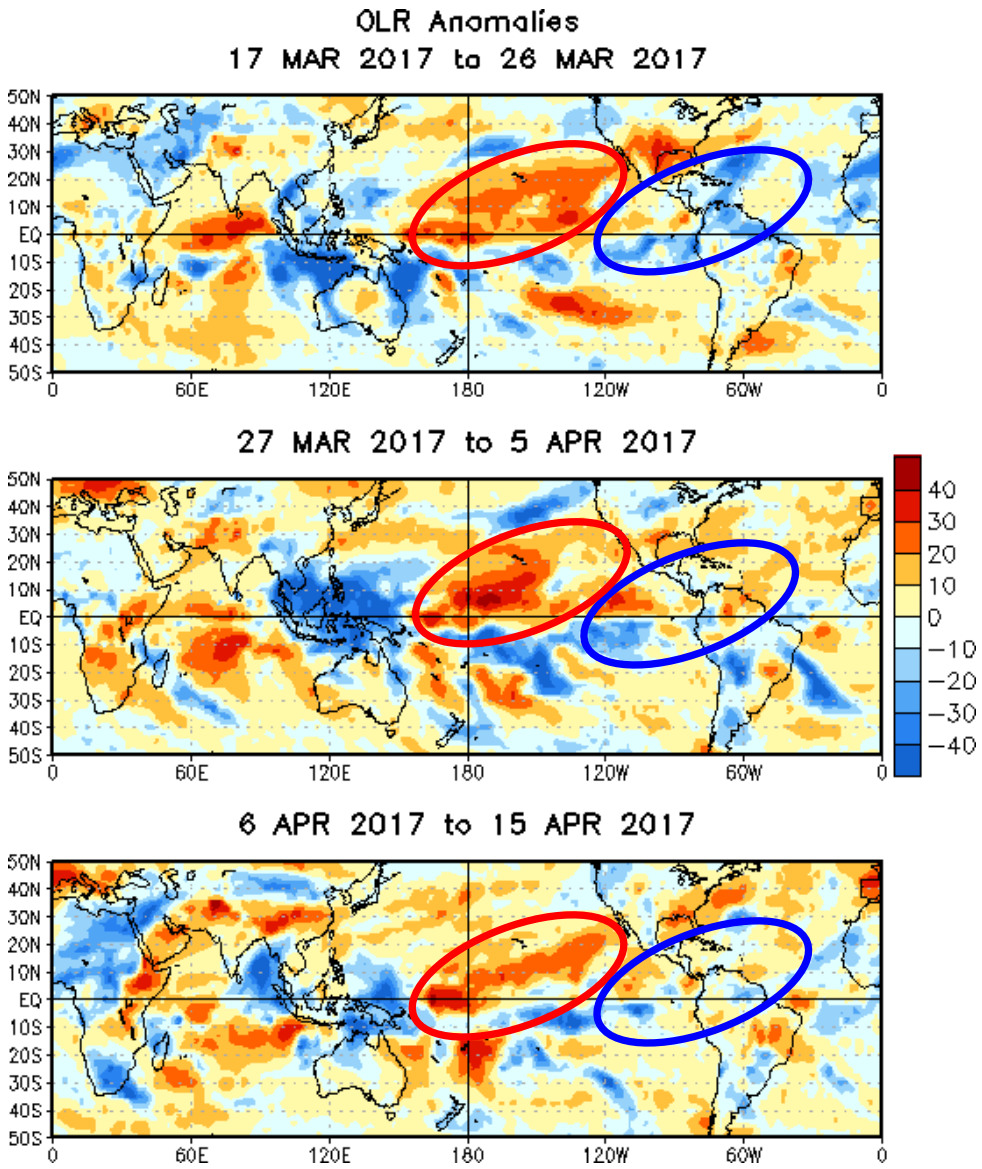
HOVMULLER DE ANOMALIA DE VIENTOS EN 850 hPa (1500 msnm)



Las anomalías de vientos zonales del oeste en el flanco oriental del Pacífico Ecuatorial han persistido desde finales de Diciembre del año 2016; sin embargo, la primera quincena de abril, se ha observado un debilitamiento paulatino de estas anomalías, predominando vientos anómalos del este recientemente.

Por otro lado, hacia entre la región central y occidental han predominado anomalías del oeste espacialmente.

CONVECCIÓN & PRECIPITACIÓN



Las anomalías de OLR persisten con un patrón estacionario en el Pacífico ecuatorial, aunque en menor intensidad a marzo.

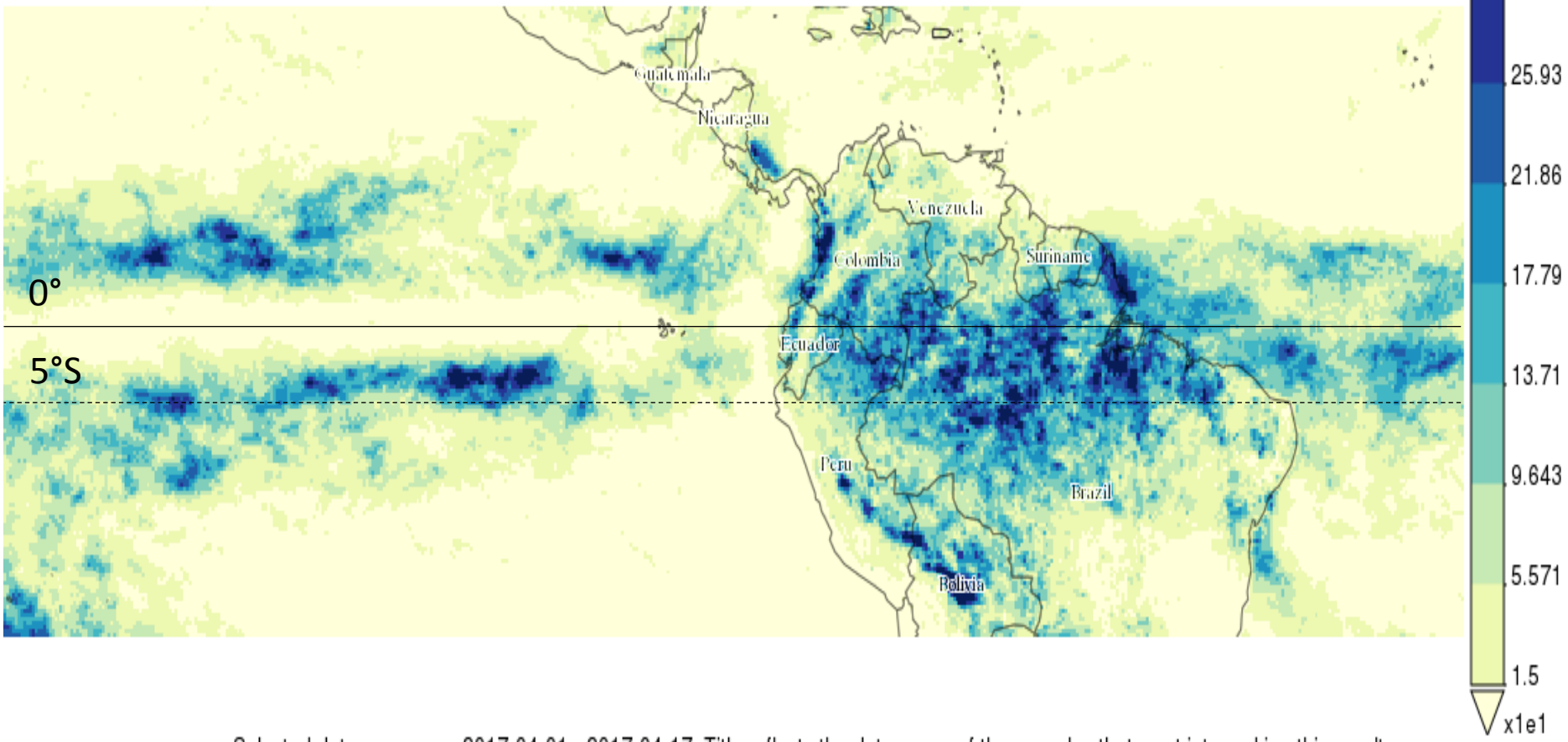
La convección frente a la costa noroccidental de Sudamérica y se ha debilitado y reducido hacia el Pacífico central.

Por otro lado, la sequedad aun se mantiene intensa a lo largo dela línea de cambio de fecha.

CONVECCIÓN & PRECIPITACIÓN

Map, Accumulated of Near-Real-Time Precipitation Total daily 0.25 deg. [TRMM TRMM_3B42RT_Daily v7] mm
over 2017-04-01 01:30Z - 2017-04-17 01:29Z, Region 150W, 20S, 20W, 20N

01 – 17 APR

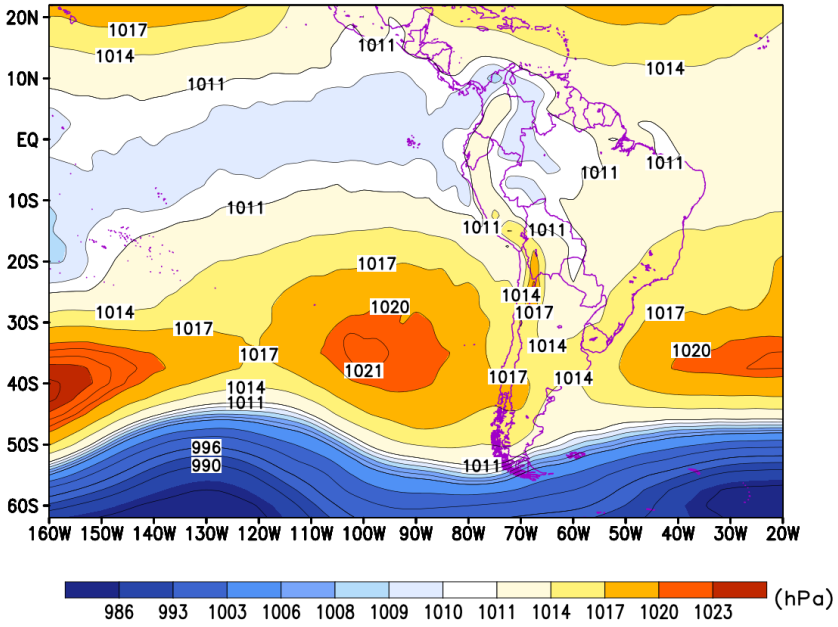


- Selected date range was 2017-04-01 - 2017-04-17. Title reflects the date range of the granules that went into making this result.

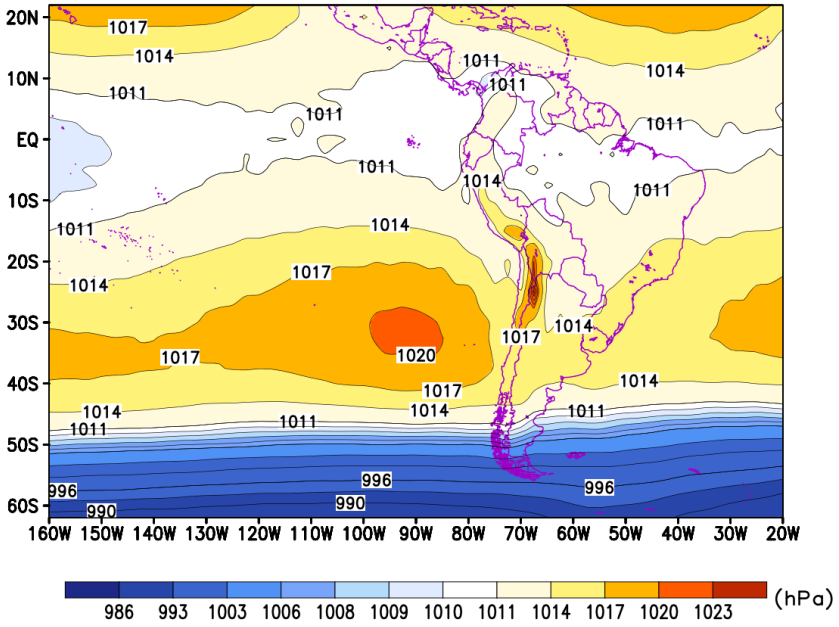
1 2 3

CAMPOS DE PRESIONES

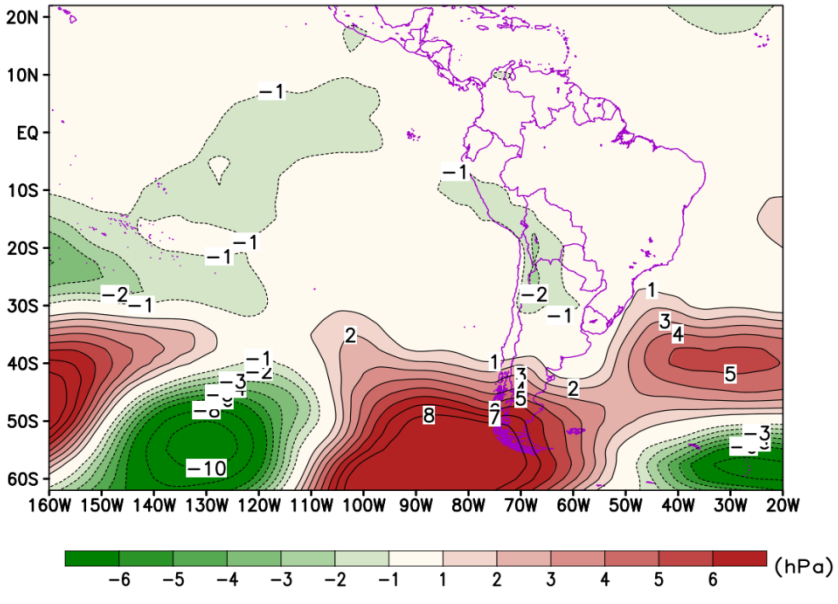
PRESION A NIVEL DEL MAR – 2017 ABRIL



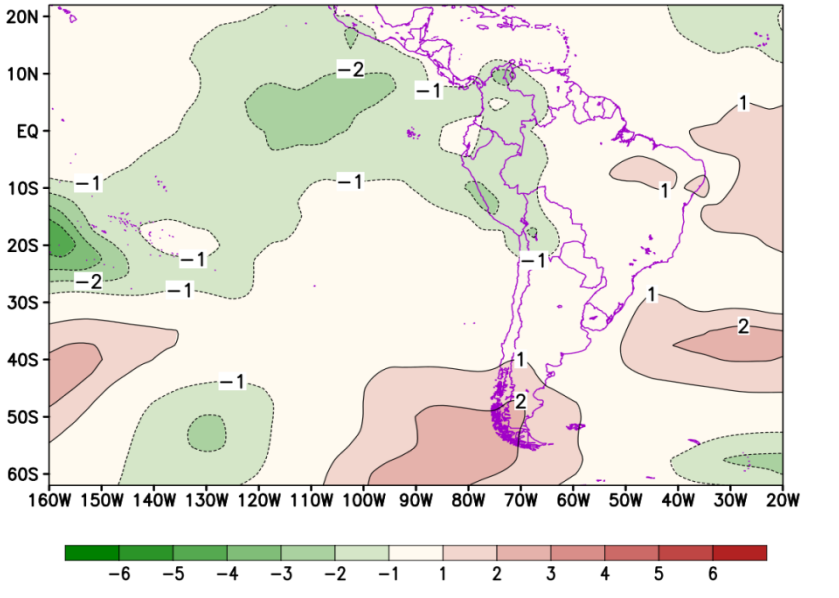
CLIMATOLOGIA DE LA PRESION A NIVEL DEL MAR – ABRIL



ANOMALIA DE LA PRESION A NIVEL DEL MAR – 2017 ABRIL



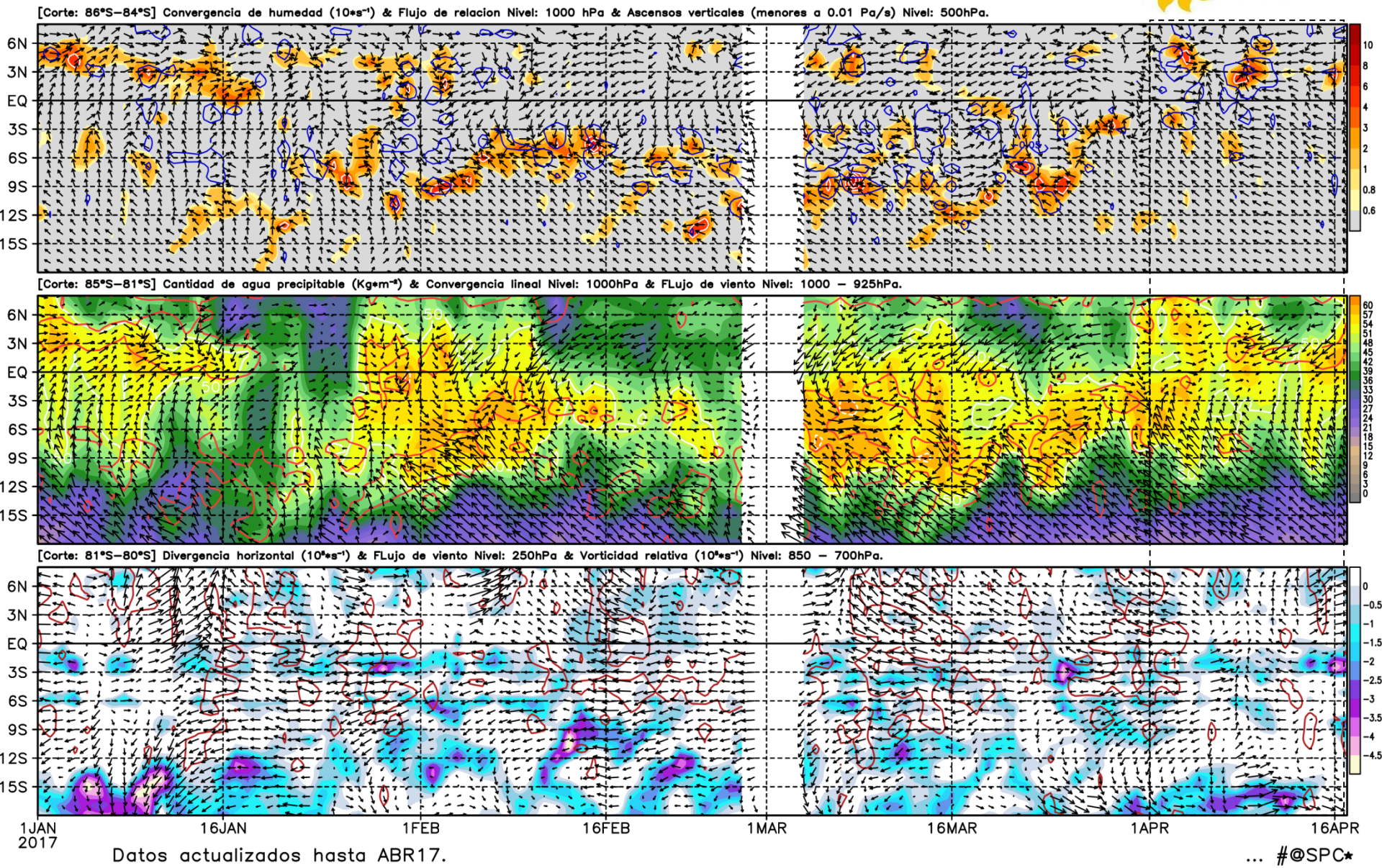
ANOMALIA ESTANDARIZADA DE LA PRESION A NIVEL DEL MAR – 2017 ABRIL



EN EL LITORAL PERUANO

OCÉANO - ATMÓSFERA

CONVECCIÓN & PRECIPITACIÓN

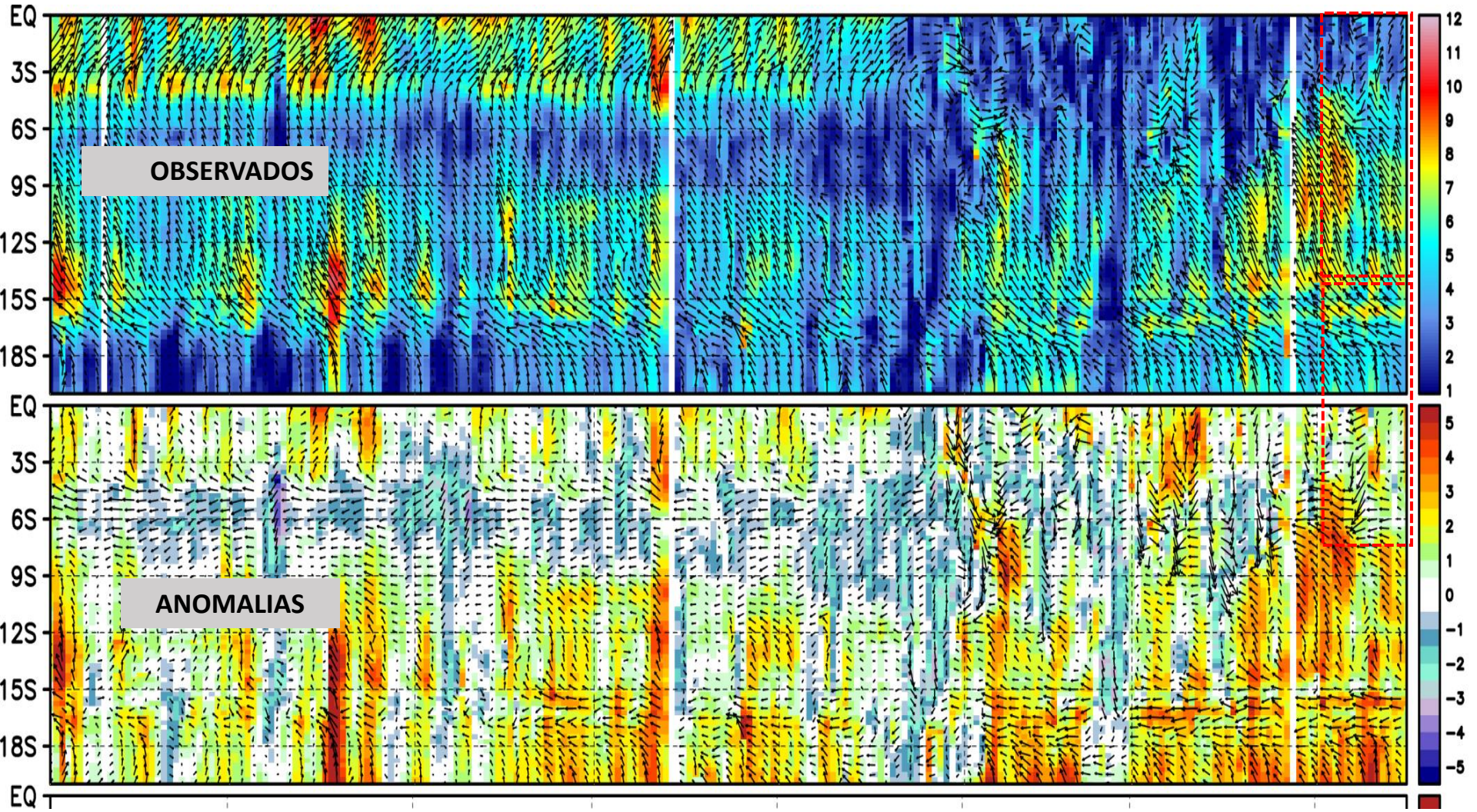


Datos actualizados hasta ABR17.

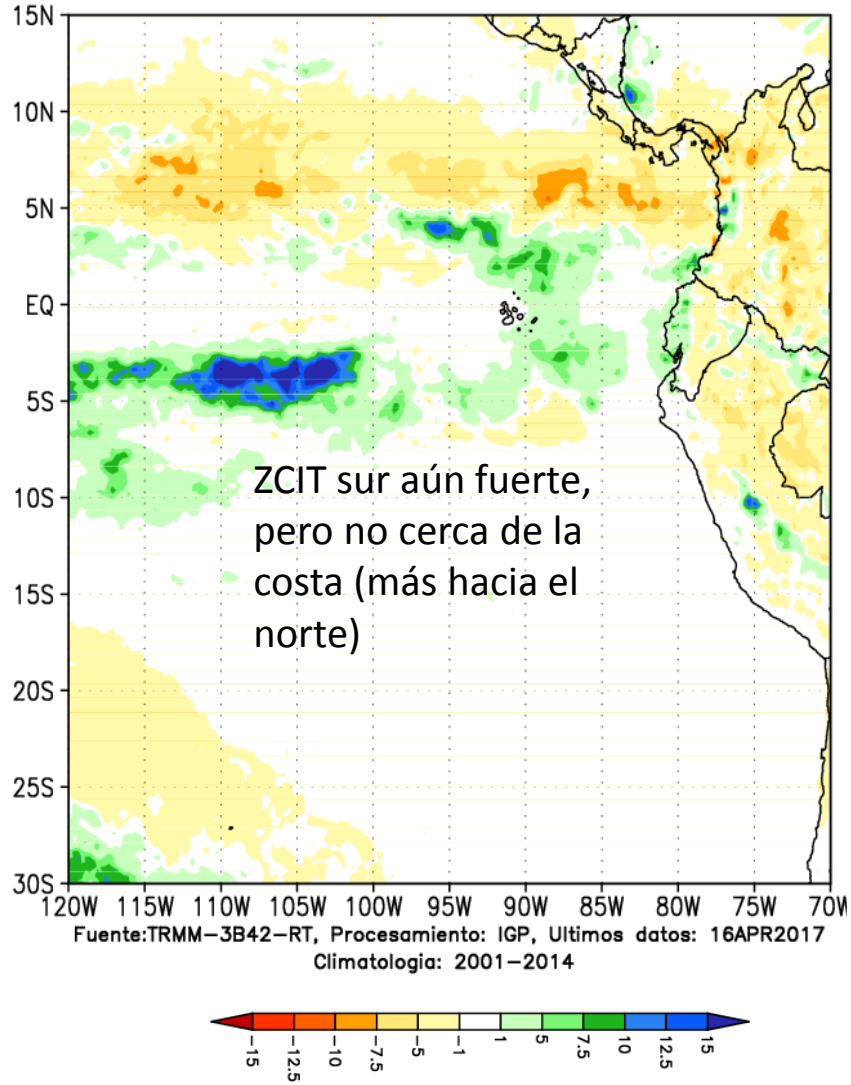
... #@SPC★

Diagrama Hovmöller de la Velocidad y Anomalías del Viento Satelital a 100 km de la costa (últimos 180 días)

Hasta: 16/04

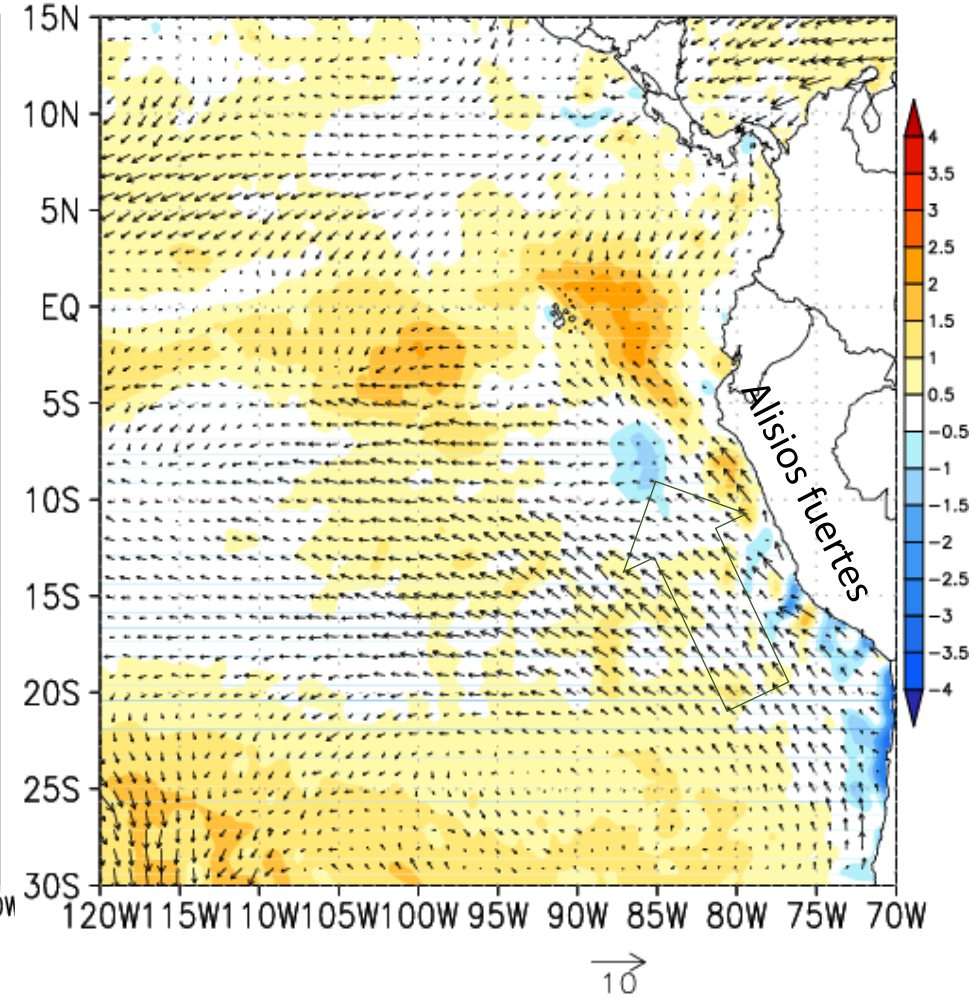


Anomalia de precipitacion (mm/dia)
ultimos 15 dias



Fuente:TRMM-3B42-RT, Procesamiento: IGP, Ultimos datos: 16APR2017
Climatologia: 2001-2014

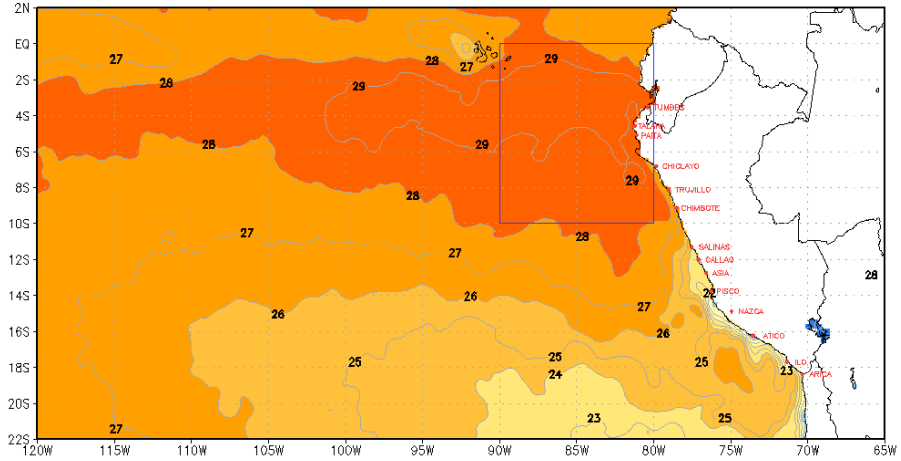
Anomalia de temperatura superficial del mar (C)
Anomalia del esfuerzo de viento (N^m-2*10^-2)
promedio de los ultimos 15 dias



TEMPERATURA SUPERFICIAL DEL MAR EN EL PACÍFICO SUDORIENTAL

DIRECCION DE HIDROGRAFIA Y NAVEGACION
DPTO OCEANOGRAFIA – DIV METEOROLOGIA

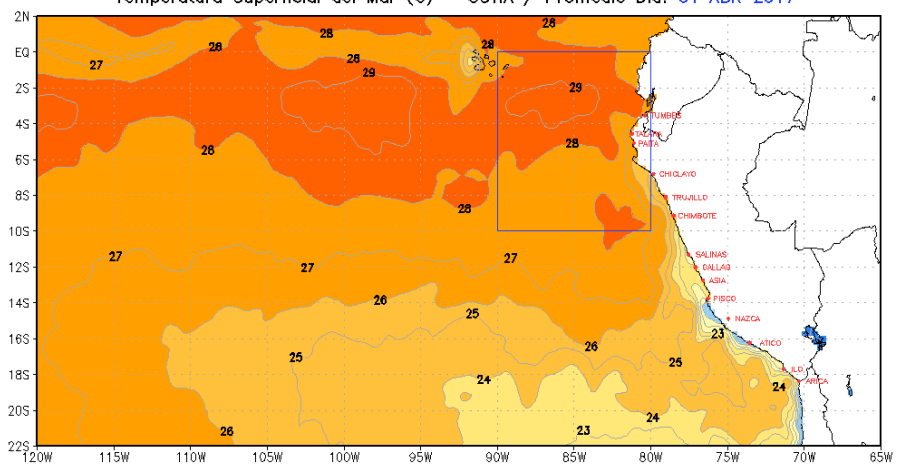
Temperatura Superficial del Mar (C) – OSTIA / Promedio Dia: 20 MAR 2017



Fuente: MARINE.COPERNICUS – UNION EUROPEA

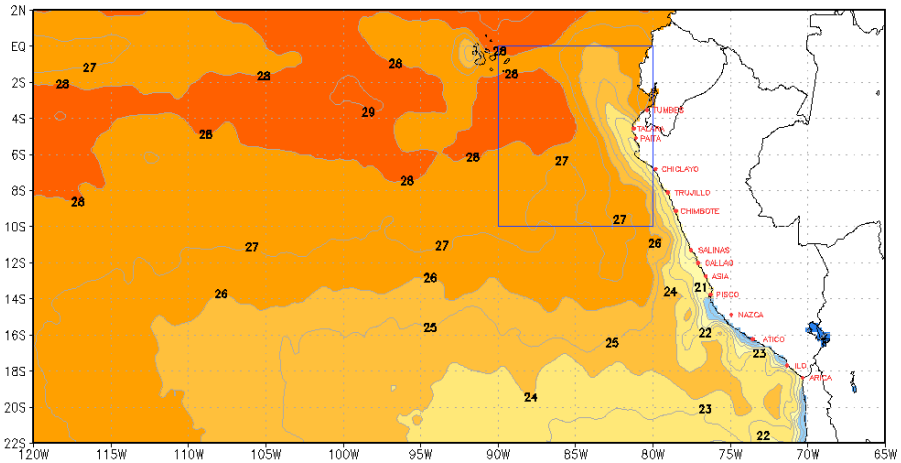
DIRECCION DE HIDROGRAFIA Y NAVEGACION
DPTO OCEANOGRAFIA – DIV METEOROLOGIA

Temperatura Superficial del Mar (C) – OSTIA / Promedio Dia: 01 ABR 2017



Fuente: MARINE.COPERNICUS – UNION EUROPEA

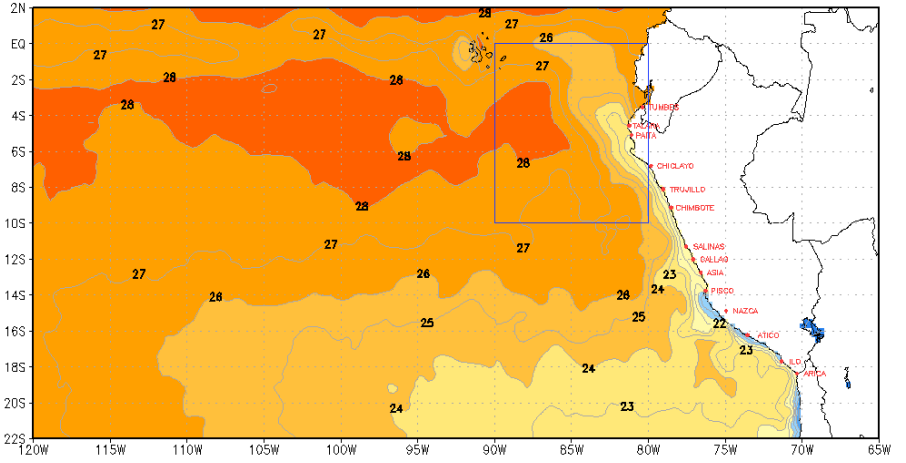
Temperatura Superficial del Mar (C) – OSTIA / Promedio Dia: 10 ABR 2017



Fuente: MARINE.COPERNICUS – UNION EUROPEA

DIRECCION DE HIDROGRAFIA Y NAVEGACION
DPTO OCEANOGRAFIA – DIV METEOROLOGIA

Temperatura Superficial del Mar (C) – OSTIA / Promedio Dia: 16 ABR 2017



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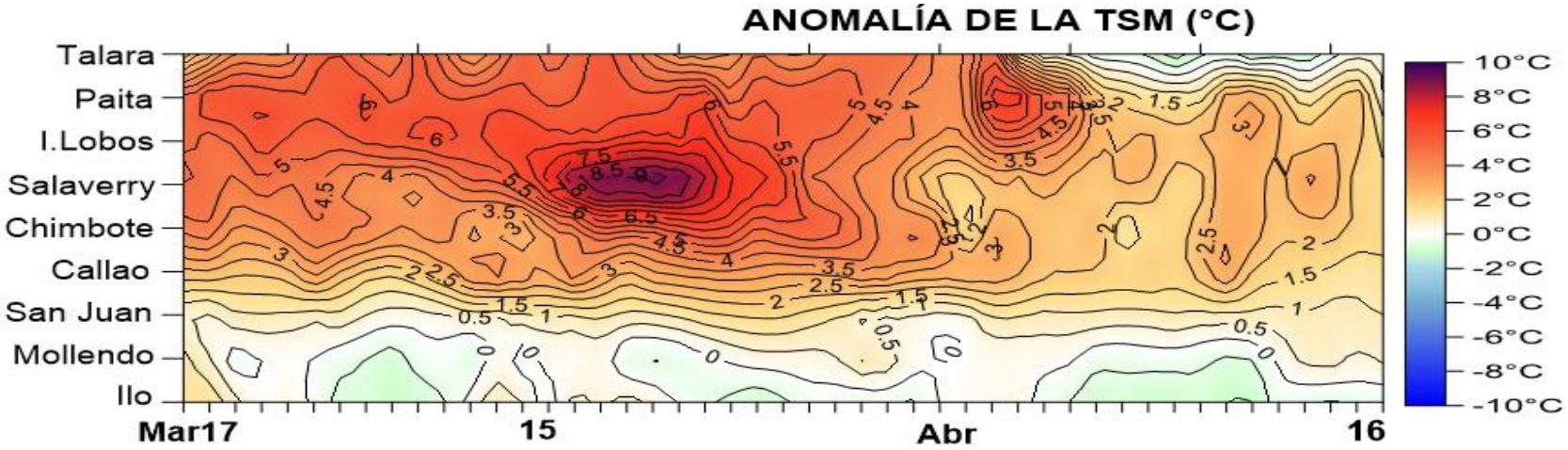
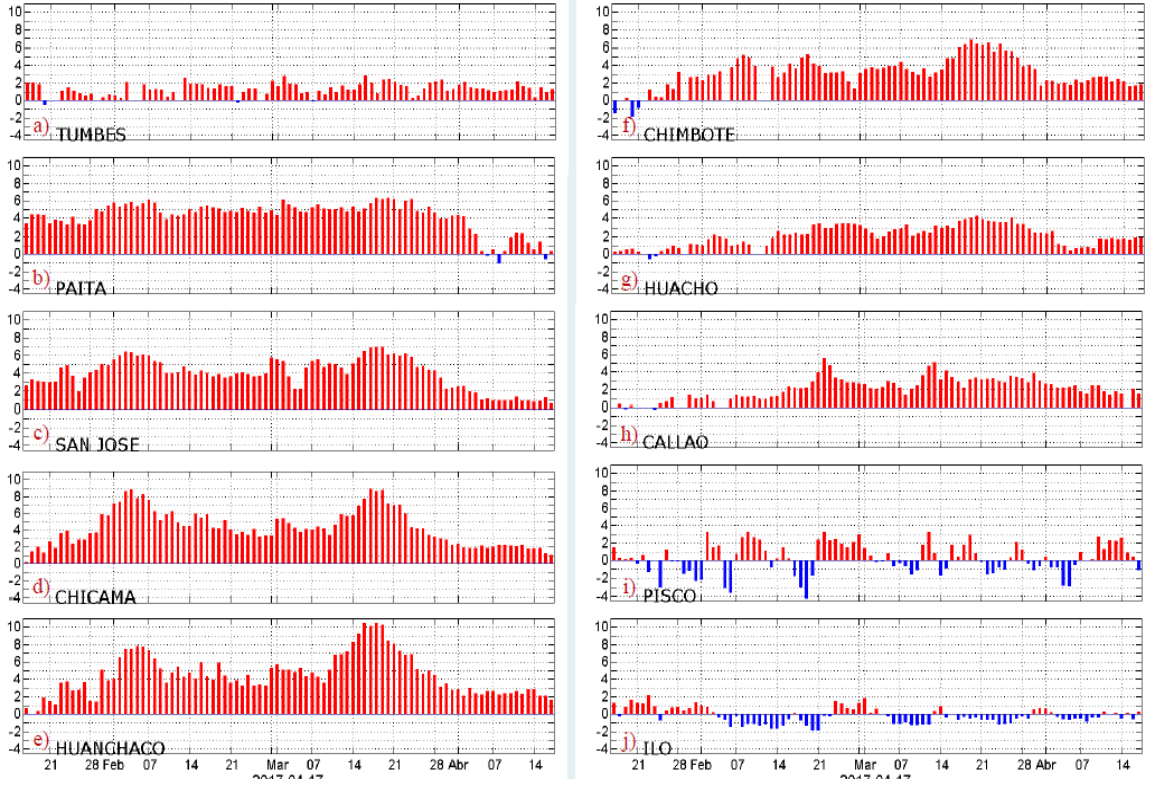
TSM – LABORATORIOS COSTEROS IMARPE



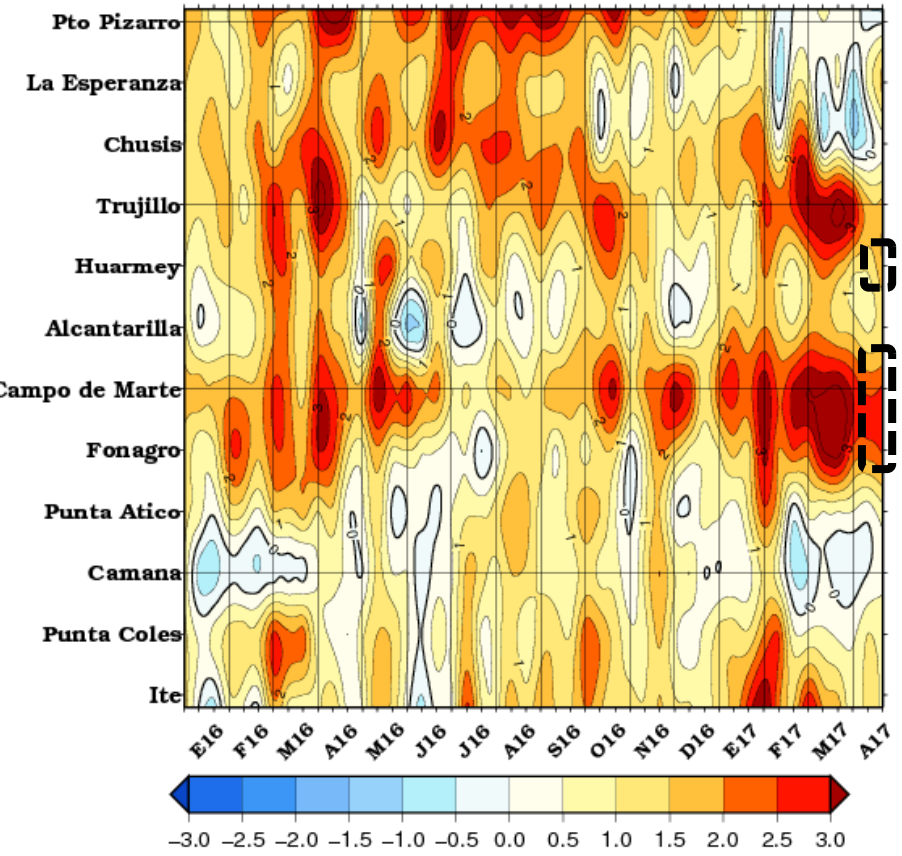


17-04-2017

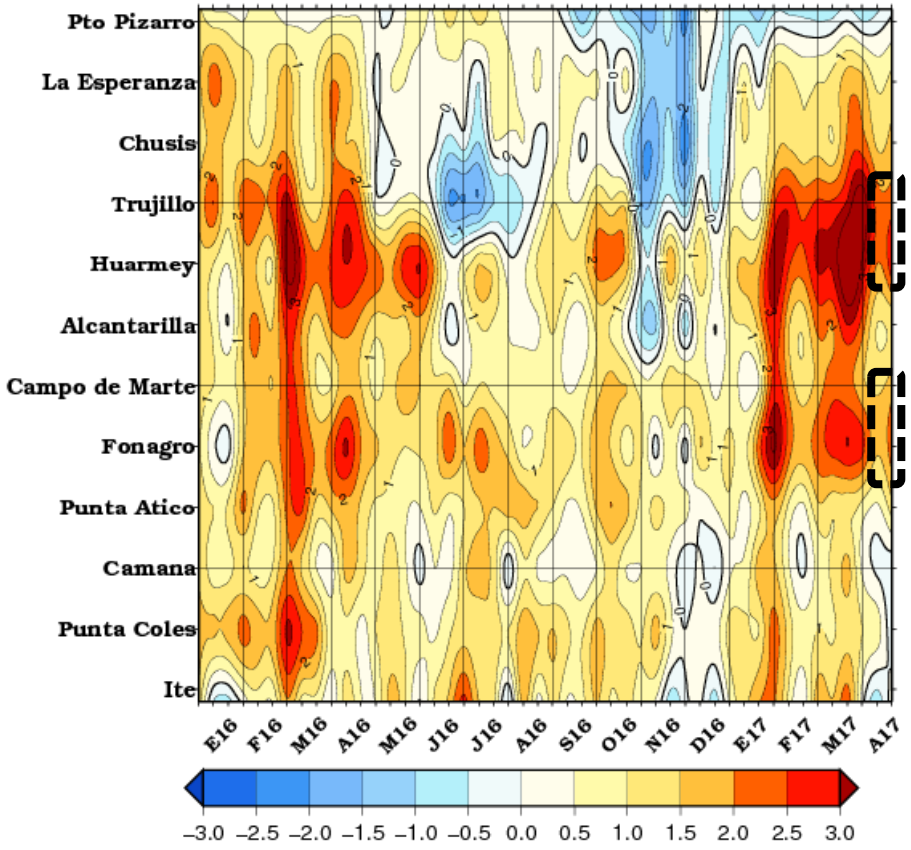
Estación	Climatología	T, °C	ΔT, °C
Tumbes	1985-2010	28.80	1.31
Paita	1981-2010	20.87	0.30
San José	1991-2010	21.33	0.62
Chicama	1981-2010	19.03	1.03
Huanchaco	2008-2016	19.80	1.60
Chimbote	1981-2010	22.90	1.83
Huacho	1989-2010	19.37	1.94
Callao	1981-2010	18.80	1.54
Pisco	1982-2010	21.30	-1.05
Atico	2015-2016	16.20	
Matarani	2013-2016	16.57	
Ilo	1981-2010	16.90	0.23

TEMPERATURAS EXTREMAS DEL AIRE (01 – 16ABR)

Anomalía de la Temperatura Máxima



Anomalía de la Temperatura Mínima



ANOMALÍAS PROMEDIO DE LA TEMPERATURA MÁXIMA

Tabla 1

Anomalías de la Temperatura Máxima del Aire
Promedio del 11 al 16 abril 2017

ANOMALIAS PROMEDIO TEMPERATURA MÁXIMA

Estación	DICIEMBRE 2016	ENE	FEB	MAR	*ABR
Costa Norte	1.4	1.5	1.2	1.0	0.9
Costa Centro	1.2	1.9	1.9	2.2	1.9
Costa Sur	0.5	1.5	1.2	1.0	0.9

DATA EXTENDIDA

Estación	Dic_2016	ENE	FEB	MAR	*ABR
Puerto Pizarro	1.8	1.1	0.0	0.4	-0.1
La Esperanza	0.8	1.1	0.2	-0.2	1.7
Chusis	1.5	2.2	1.7	0.4	0.3
Trujillo	1.3	1.6	2.8	3.3	1.7
Huarmey	0.7	1.2	1.2	1.7	2.0
Alcantarilla	0.7	1.8	1.4	1.6	1.2
Campo de Marte	2.1	2.8	3.0	3.3	2.6
Fonagro	0.8	2.1	2.2	2.8	2.6
Punta Atico	0.4	1.3	0.6	0.6	0.8
Camana	0.5	0.5	-0.2	-0.2	0.4
Punta Coles	0.7	1.4	1.2	0.5	0.7
Ite	0.9	2.5	2.1	1.6	0.8
La Yarada	-0.1	1.0	1.0	0.8	0.2

* Promedio del 11 al 16 de abril

Figura 1

Distribución de la las estaciones meteorológicas en la costa peruana

ANOMALÍAS PROMEDIO DE LA TEMPERATURA MÍNIMA

Tabla2

Anomalías de la Temperatura Mínima del Aire
Promedio del 11 al 16 abril 2017

ANOMALIAS PROMEDIO TEMPERATURA MÍNIMA

Estación	DICIEMBRE 2016	ENE	FEB	MAR	*ABR
Costa Norte	-0.2	0.8	1.1	1.4	1.3
Costa Centro	0.7	1.8	2.0	2.4	1.9
Costa Sur	0.2	1.7	0.8	1.0	0.2

DATA EXTENDIDA

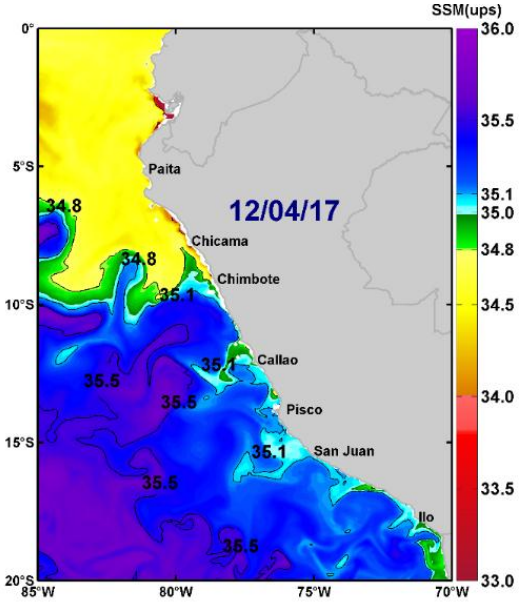
Estación	Dic_2016	ENE	FEB	MAR	*ABR
Puerto Pizarro	-0.2	0.5	-0.4	-0.4	0.1
La Esperanza	-0.4	0.9	1.0	1.3	1.2
Chusis	-0.4	0.8	1.3	1.5	1.7
Trujillo	0.2	1.0	2.6	3.1	2.3
Huarmey	1.0	2.3	2.7	3.2	2.9
Alcantarilla	0.5	1.9	1.6	2.1	1.1
Campo de Marte	0.7	1.1	1.6	1.9	1.8
Fonagro	1.2	2.3	2.1	2.6	2.3
Punta Atico	0.5	1.0	0.9	1.1	1.3
Camana	0.0	1.3	0.4	0.7	-0.3
Punta Coles	0.6	1.4	1.0	1.0	-0.4
Ite	0.1	1.7	1.0	1.2	0.2
La Yarada	-1.4	2.3	-0.4	-0.6	-2.0

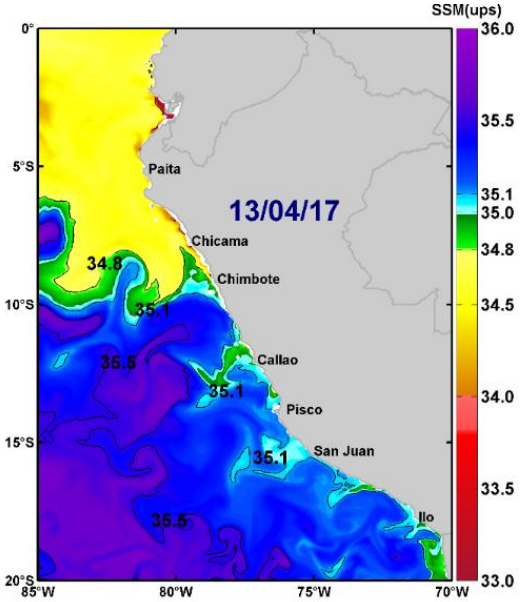
* Promedio del 11 al 16 de abril

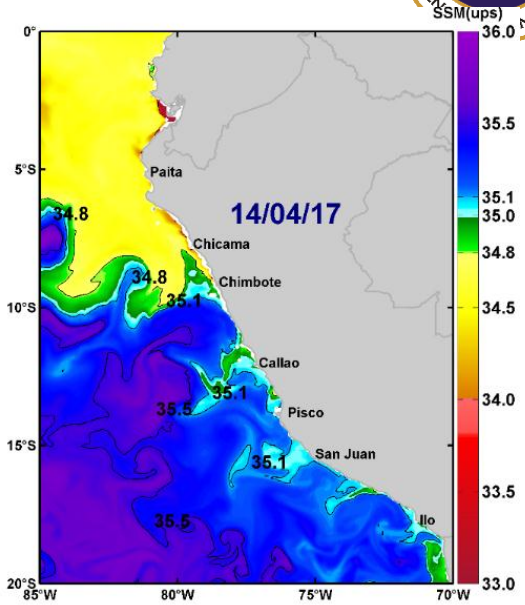
Figura 1

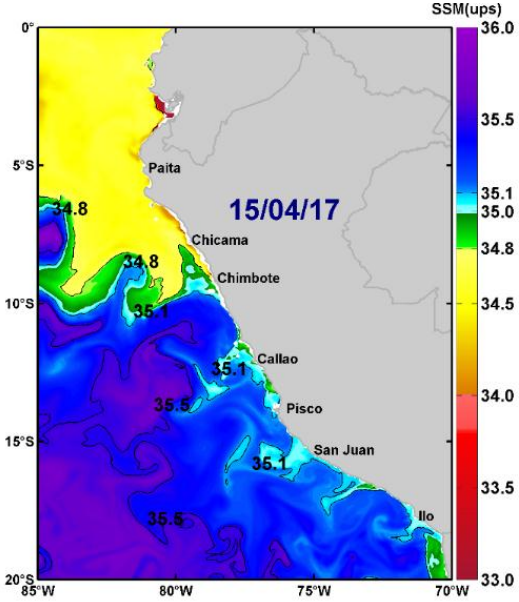
Distribución de la las estaciones meteorológicas en la costa peruana

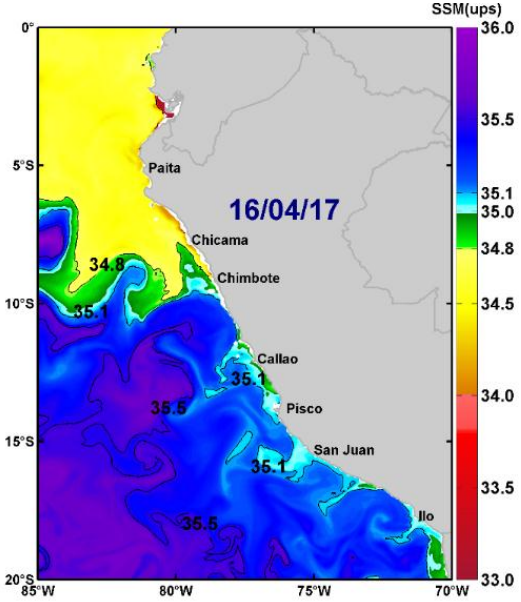
SALINIDAD SUPERFICIAL DEL MAR DEL 12 AL 16 DE ABRIL DE 2017 (HYCOM-NCODA)







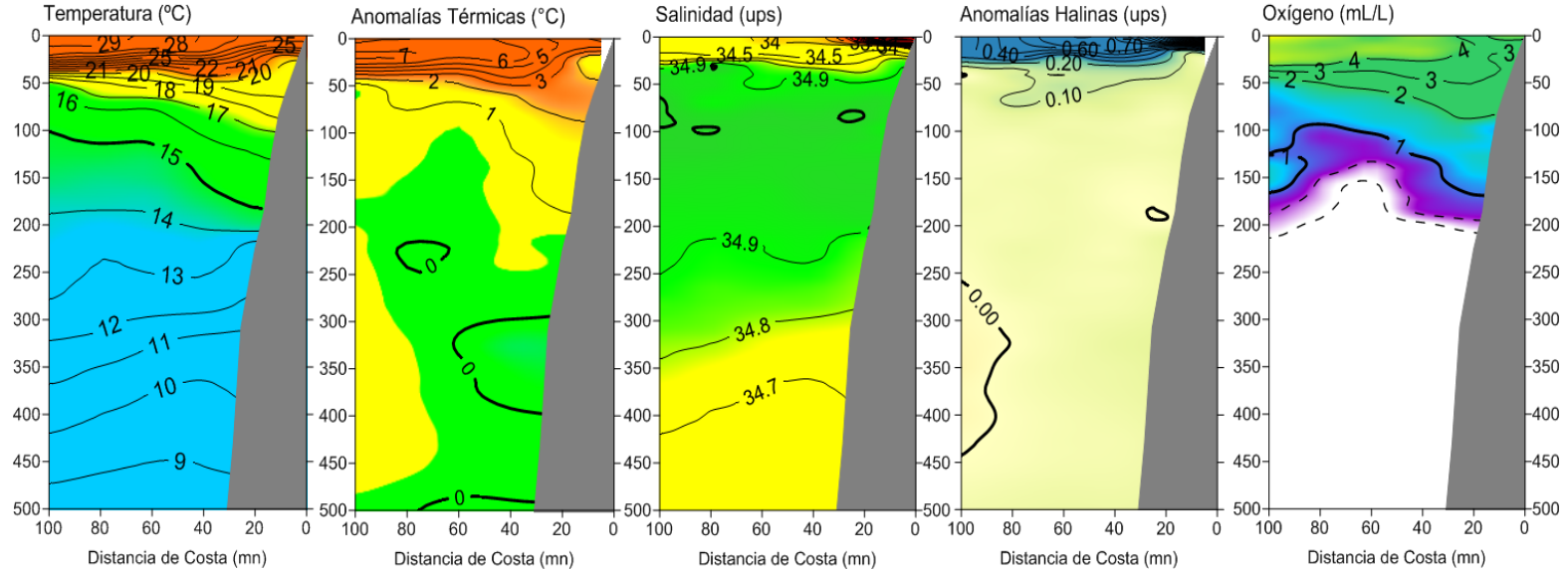




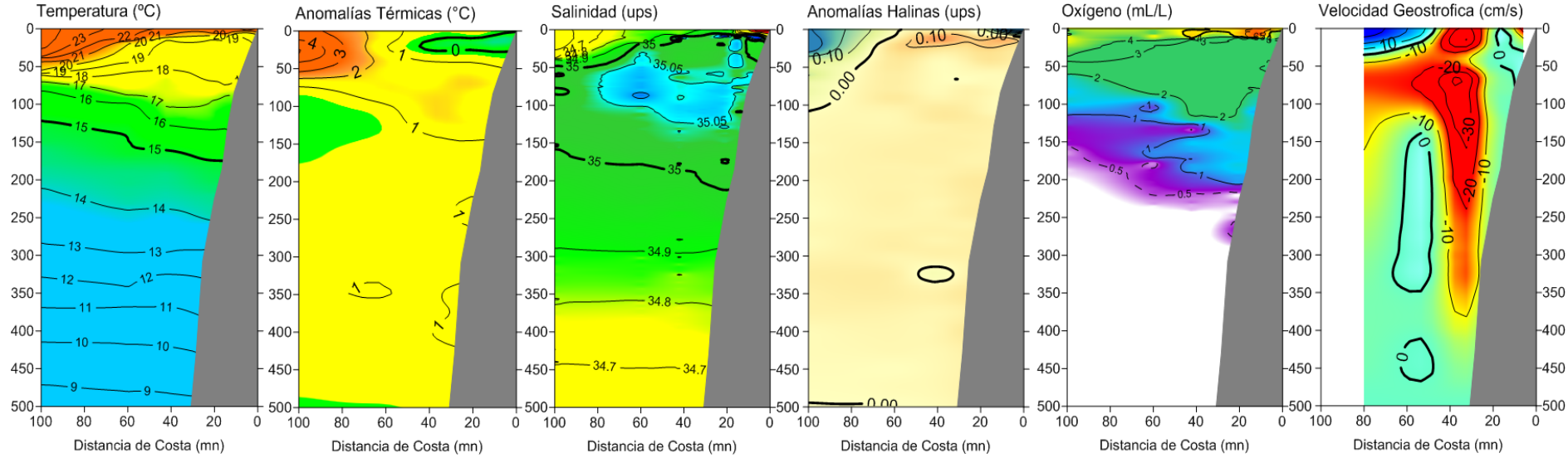
Persiste la proyección Aguas Ecuatoriales Superficiales (AES) hasta Chicama, próximo a la costa, y hasta los 10°S por fuera de las 90 mn.

Frente a Callao, Pisco, San Juan e Ilo vemos la influencia de aguas de mezcla entre Aguas Costeras Frías (ACF) y Aguas Subtropicales Superficiales (ASS).

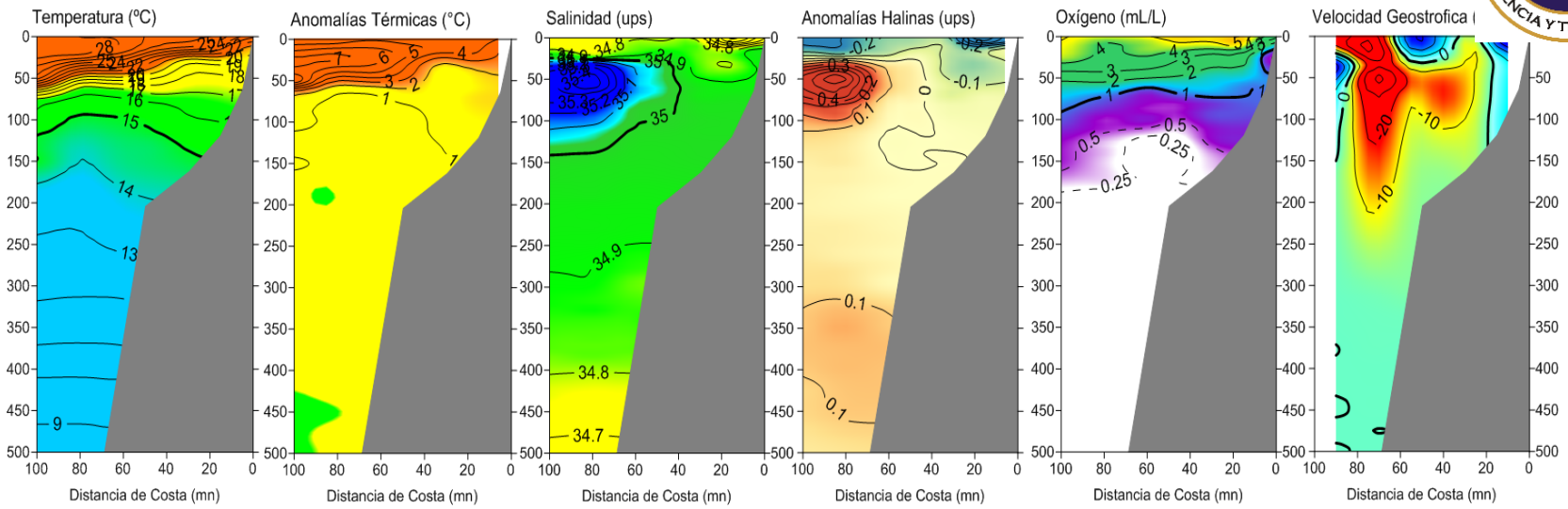
SECCION PAITA (30-31 marzo del 2017)



SECCION PAITA (10-11 abril del 2017)



SECCION CHICAMA (27-28 de marzo del 2017)



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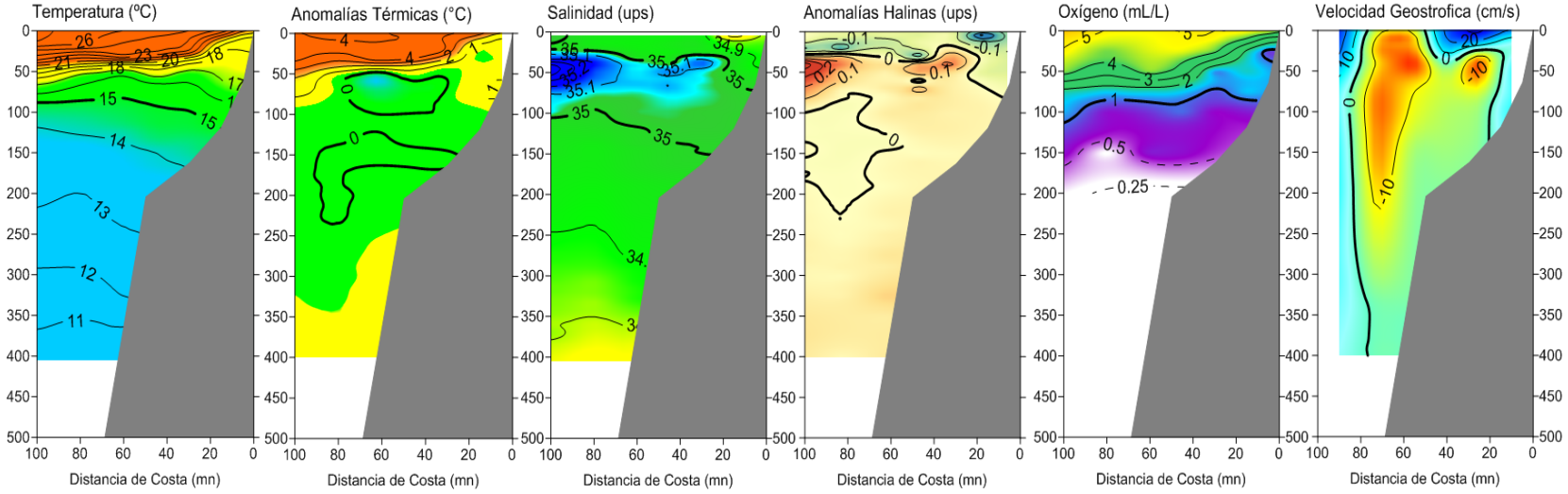
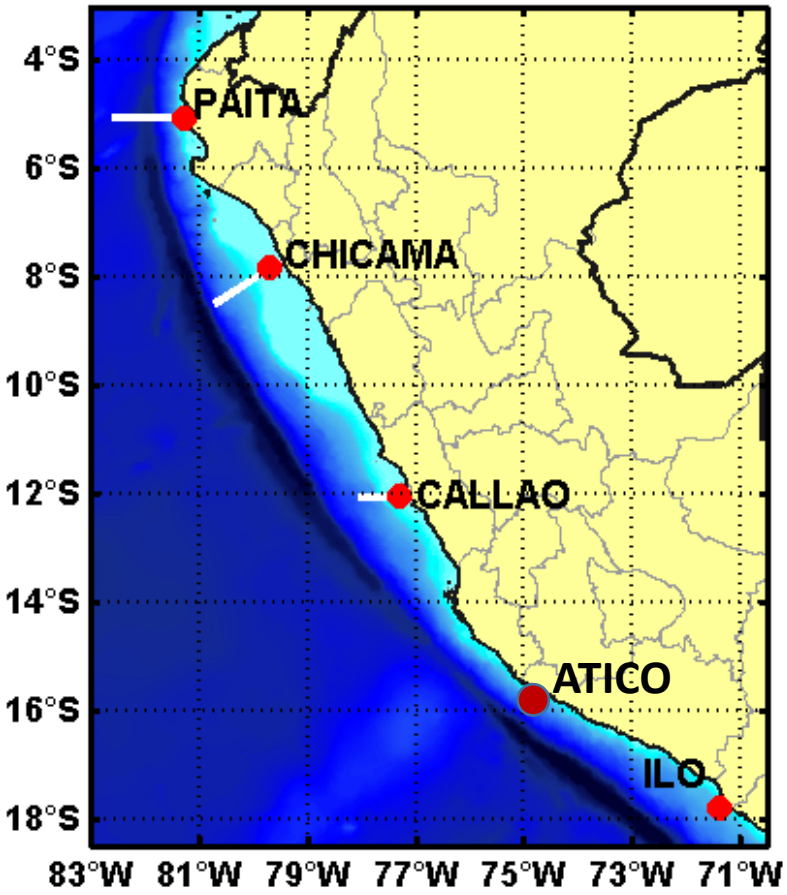
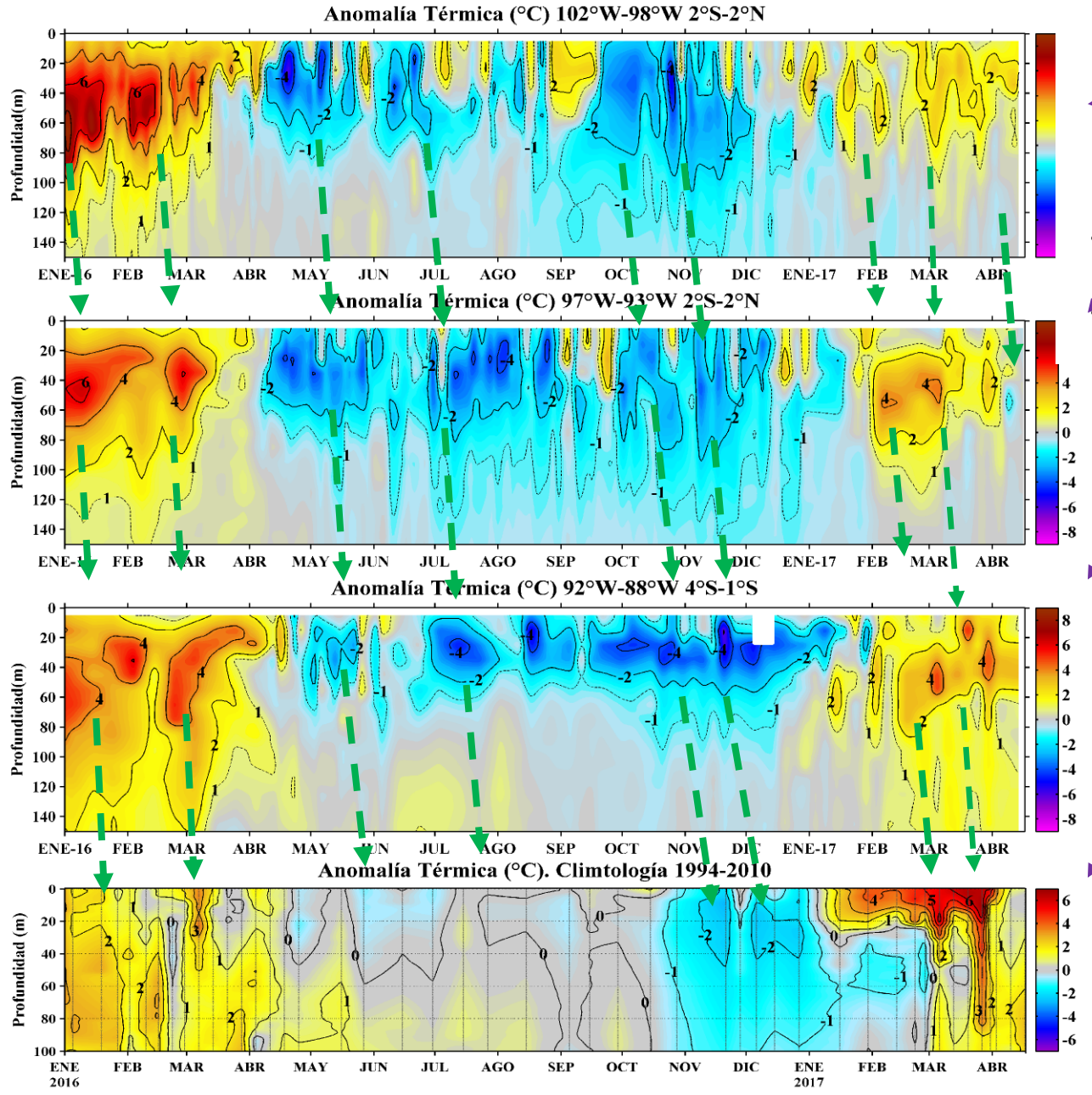
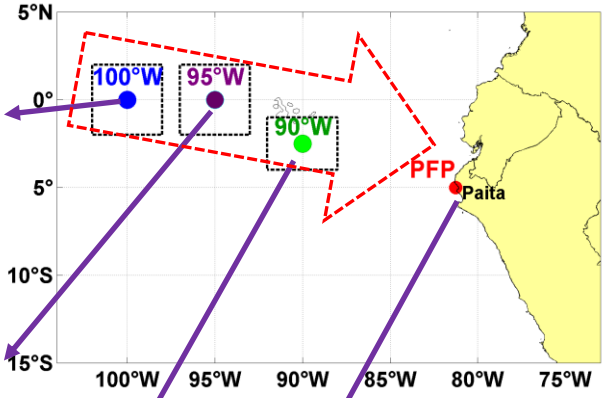


PUNTOS FIJOS Y DATOS ARGOS



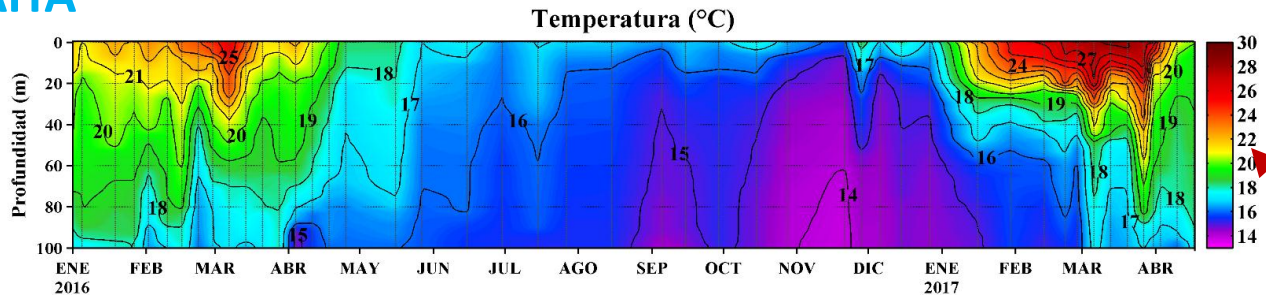




SERIE DE TIEMPO DE ANOMALÍA TÉRMICA USANDO DATOS ARGOS (ENERO 2016 – 17 DE ABRIL 2017), CLIMATOLOGÍA GODAS (1993-2015) Y ANOMALÍA TÉRMICA DEL PUNTO FIJO DE PAITA (ENERO 2016 – 17 DE ABRIL DE 2017)

TEMPERATURA PUNTOS FIJOS (17 DE ABRIL DE 2017)

PAITA



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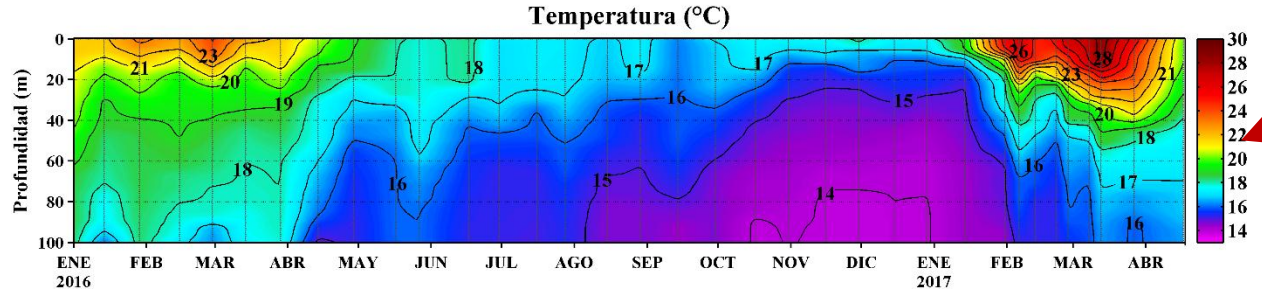

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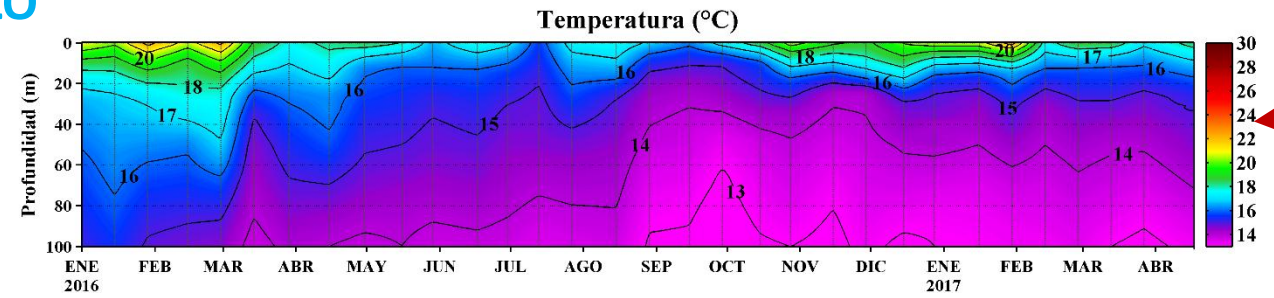
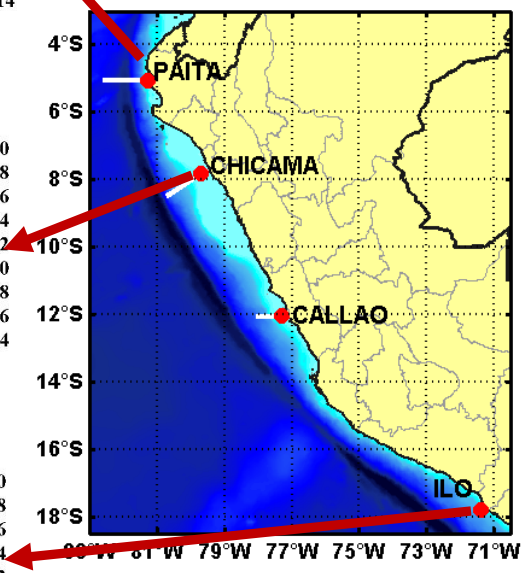
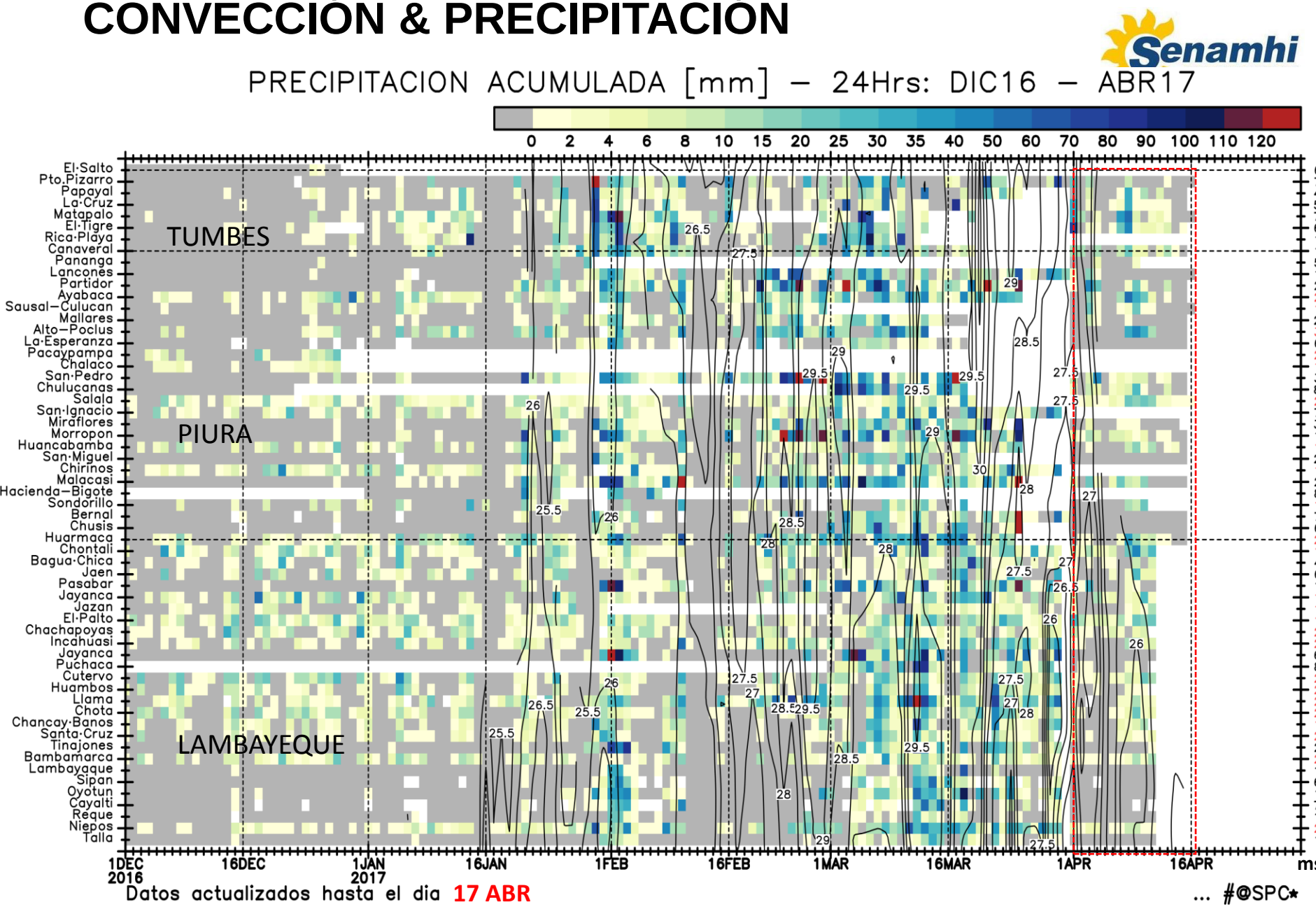


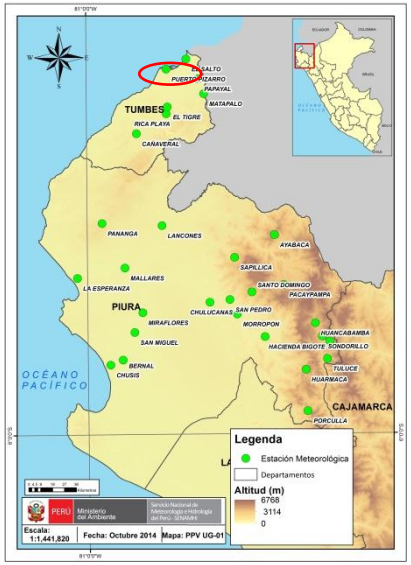


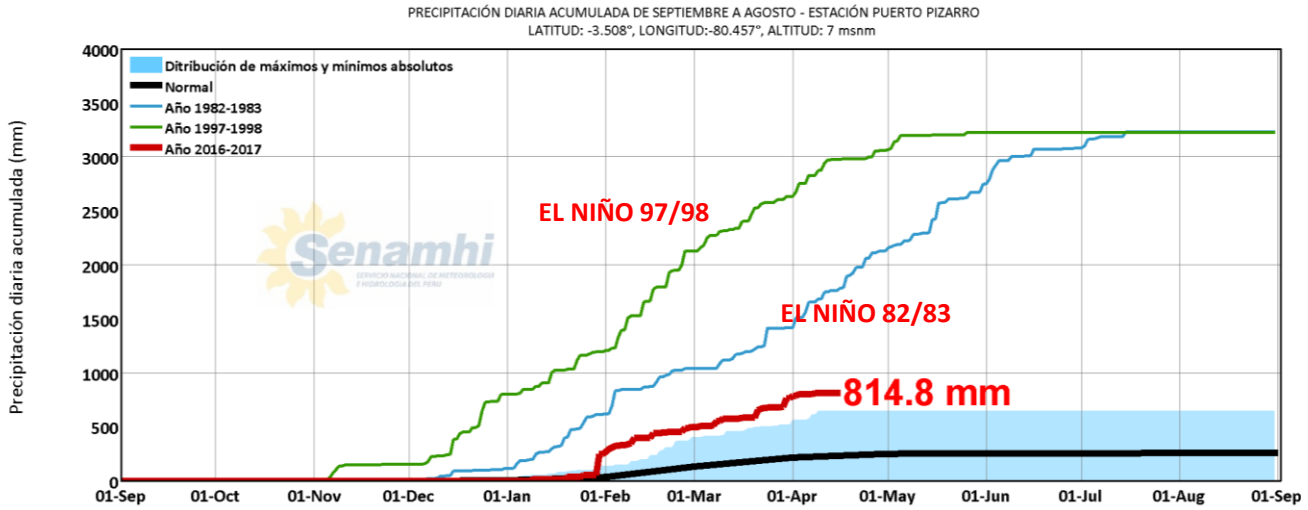
LLUVIAS Y CAUDALES

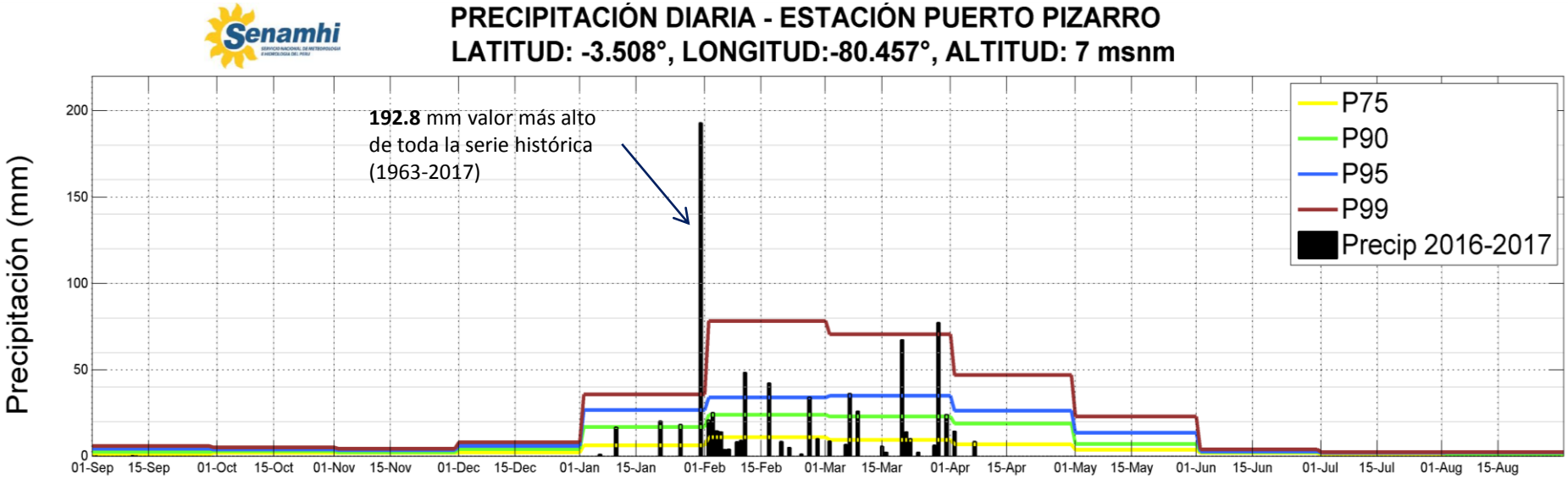
CONVECCIÓN & PRECIPITACIÓN



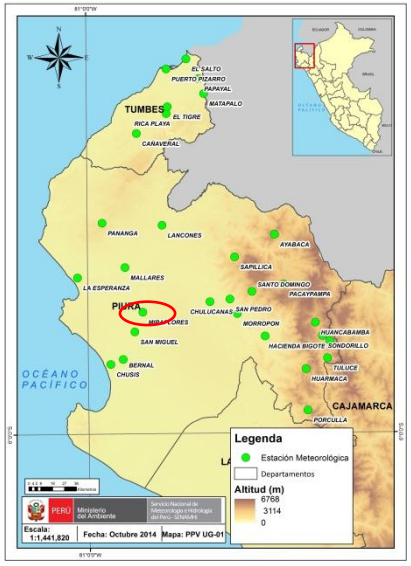
ESTACIÓN PUERTO PIZARRO

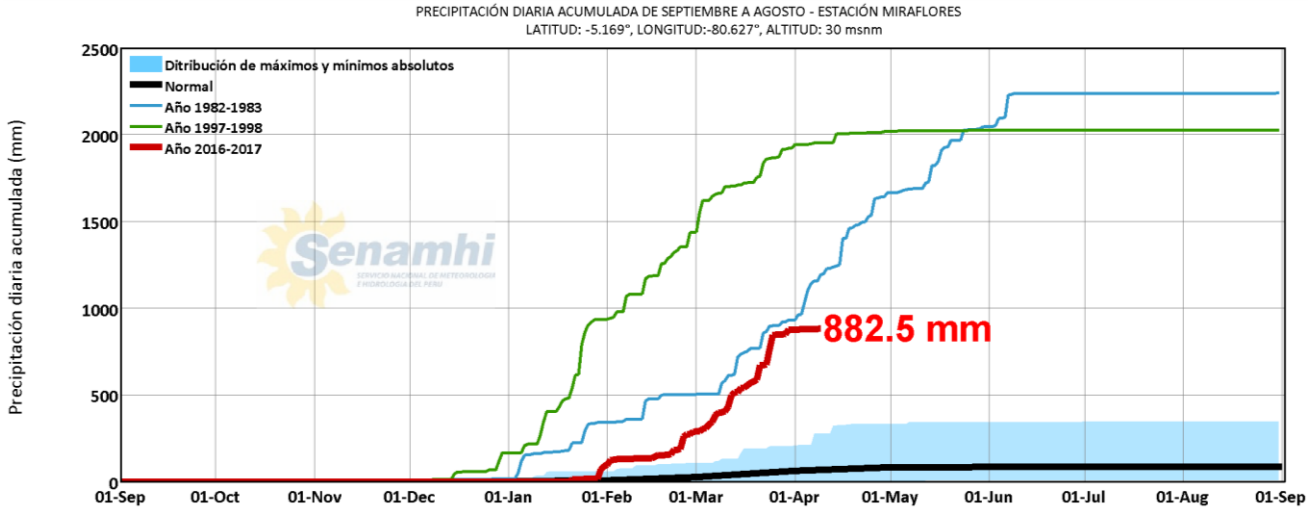






ESTACIÓN MIRAFLORES





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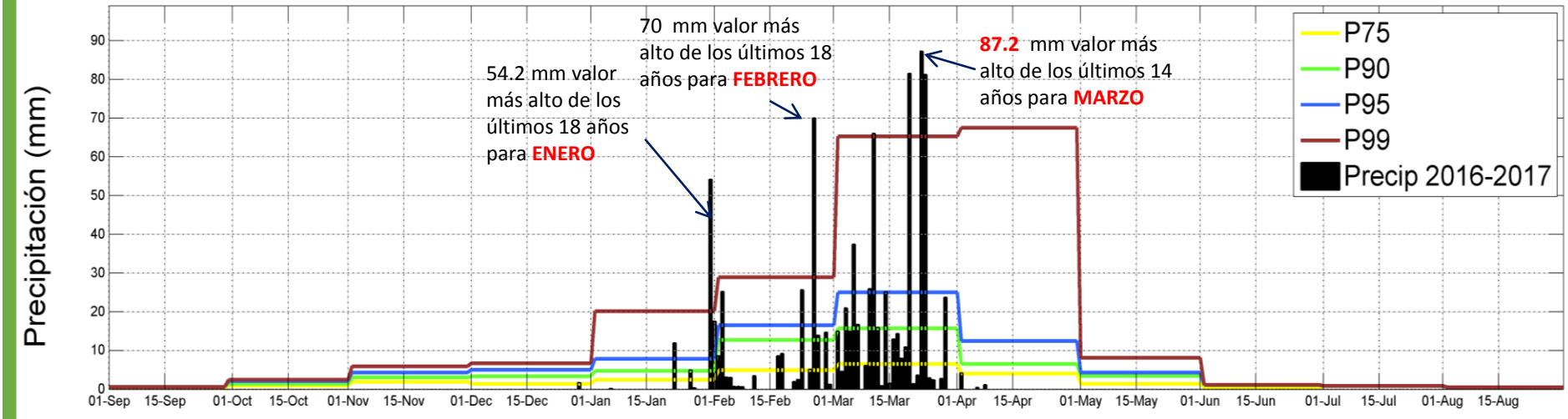

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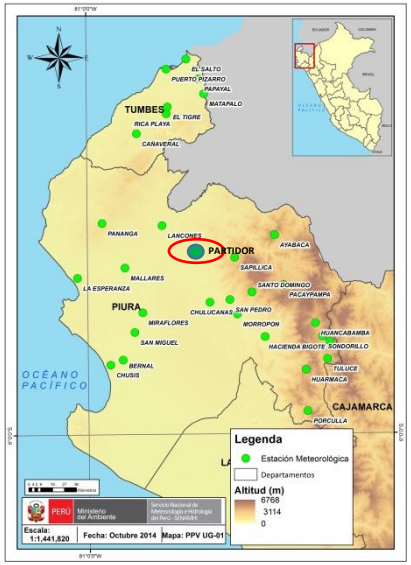
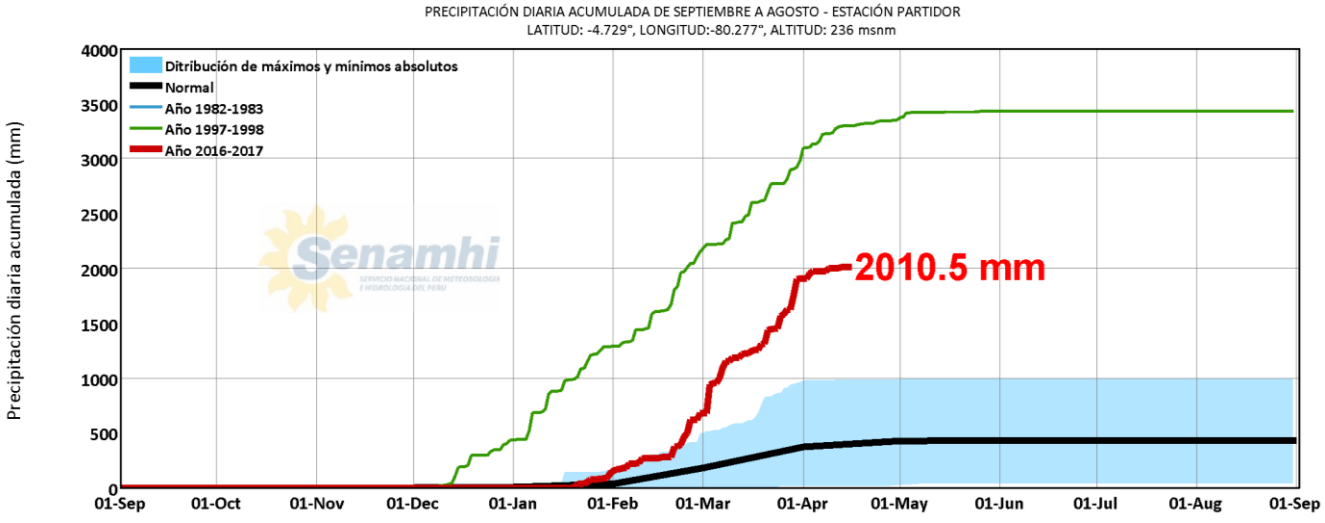
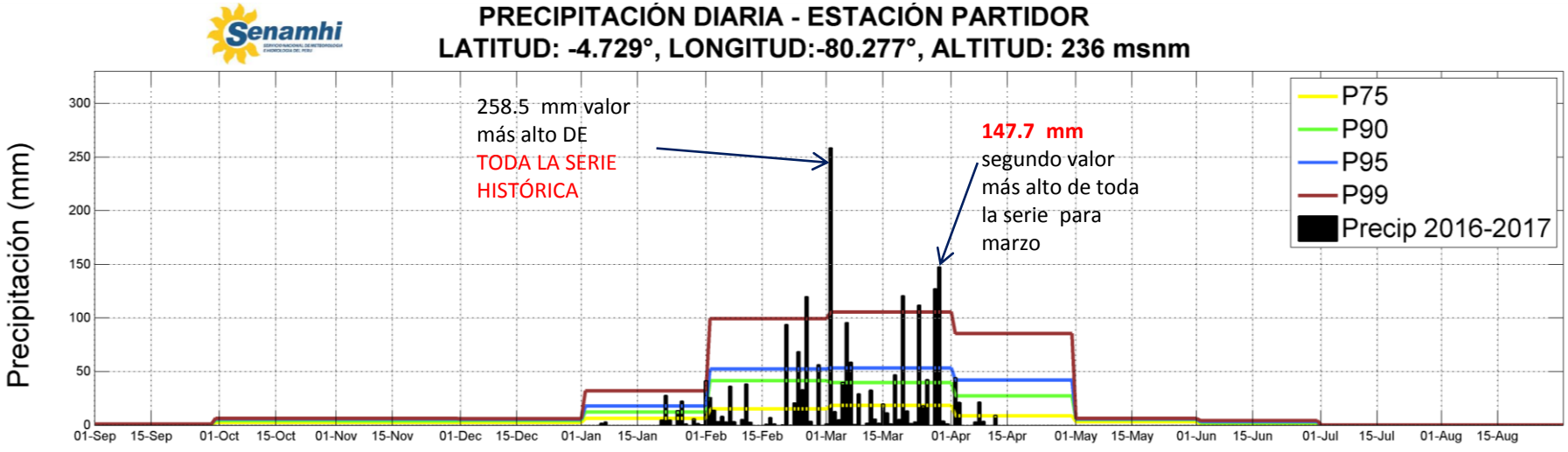
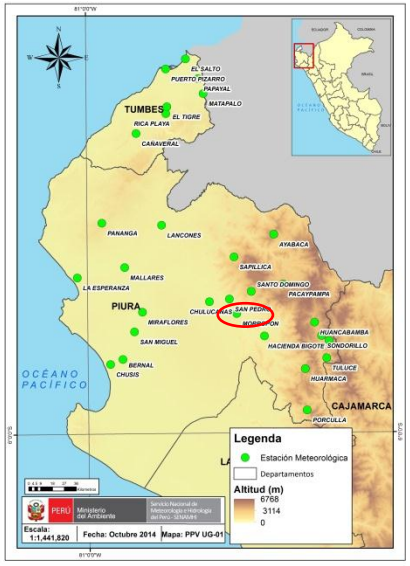
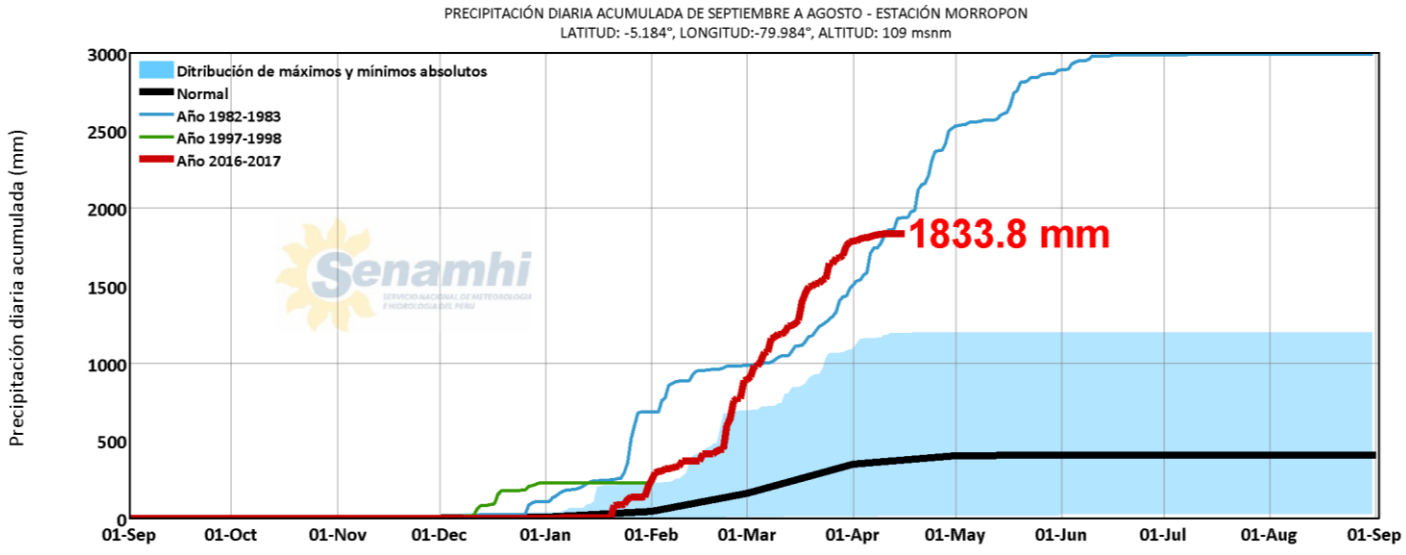


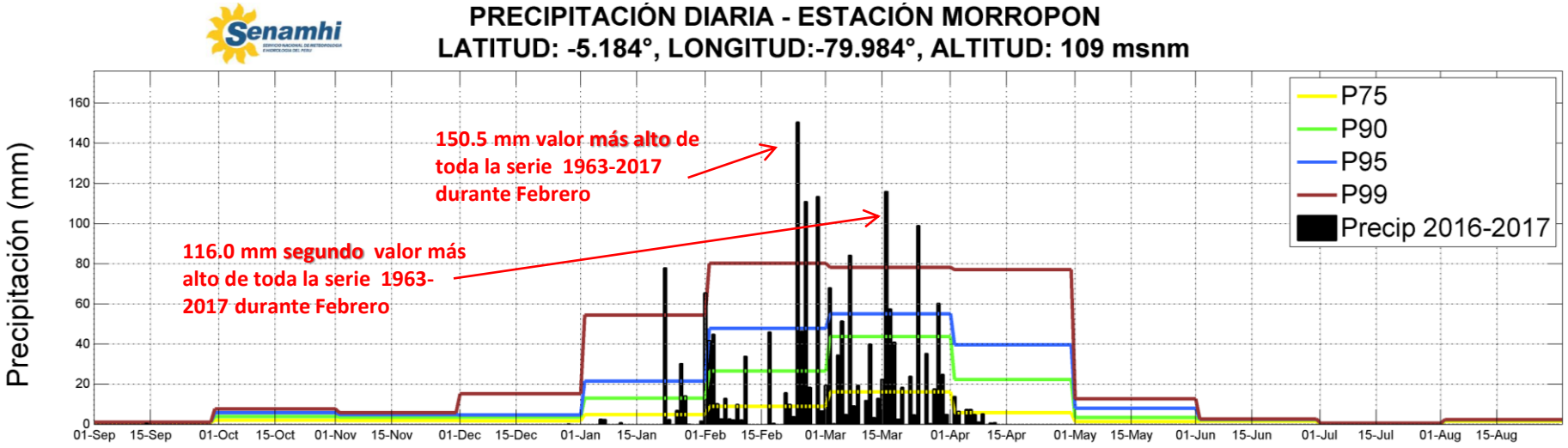




ESTACIÓN MORROPÓN







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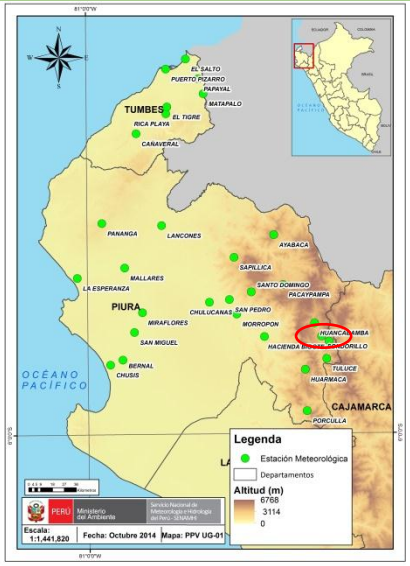
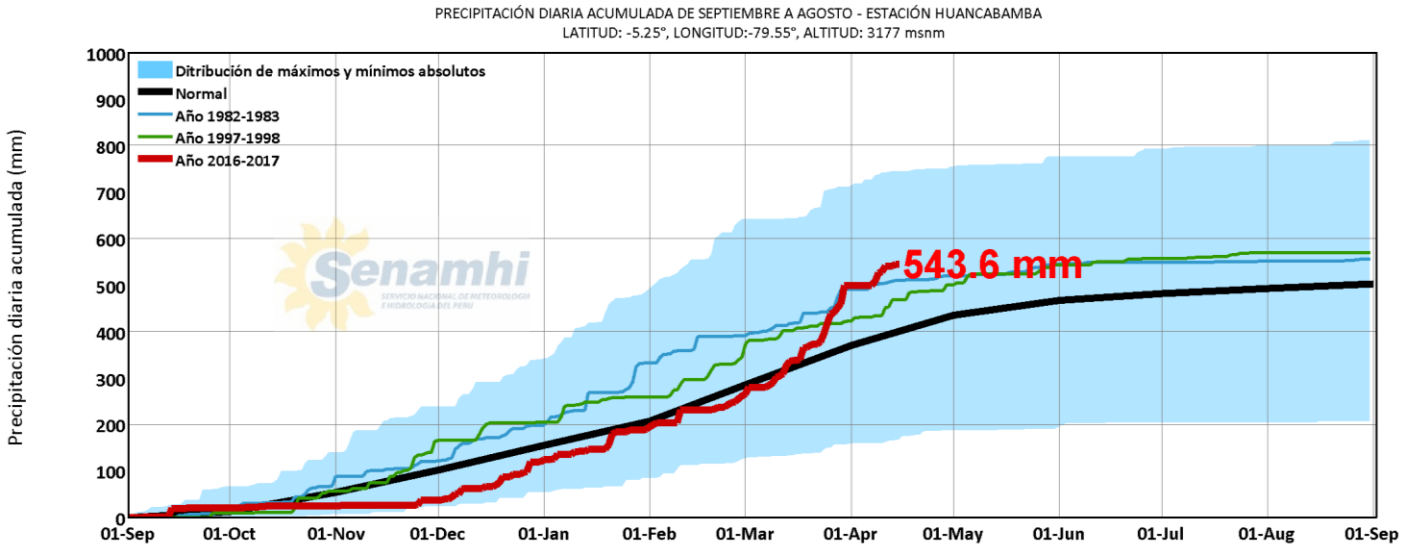
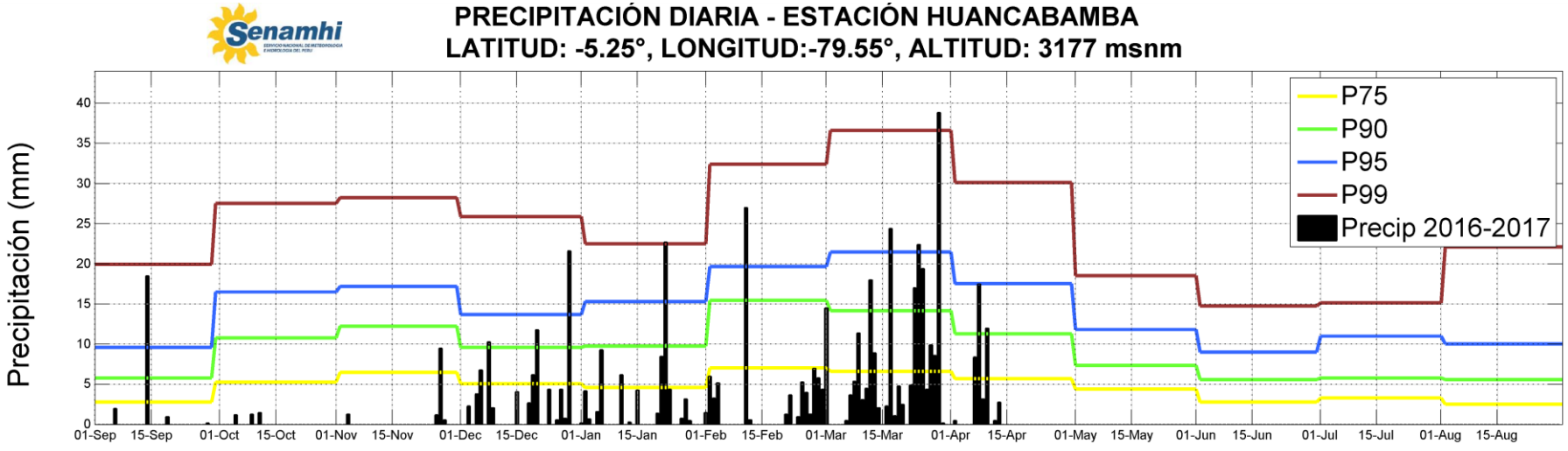




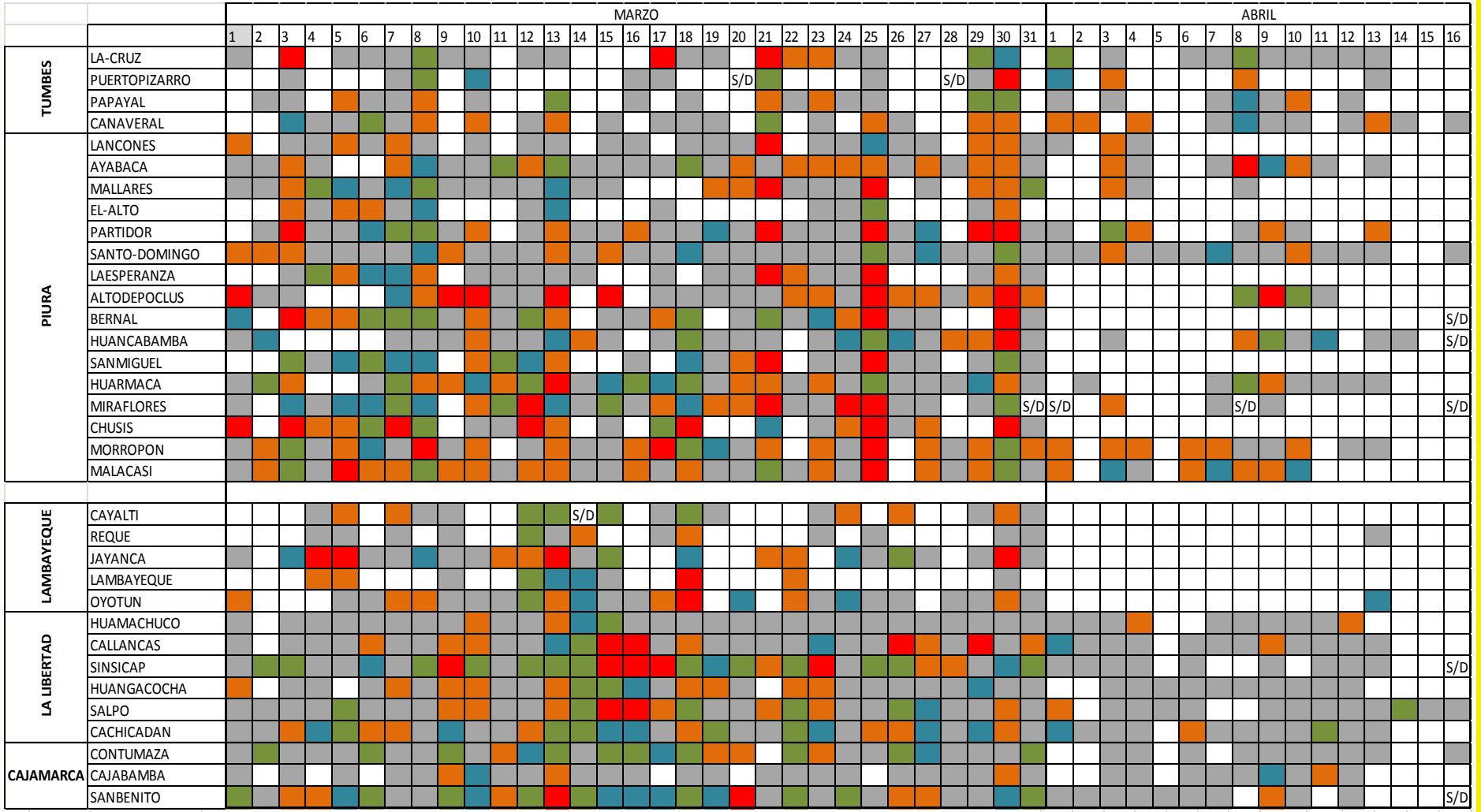


Senamhi
SERVICIO NACIONAL DE METEOROLOGIA E HIDROLOGIA DEL PERU

PERÚ Ministerio del Ambiente

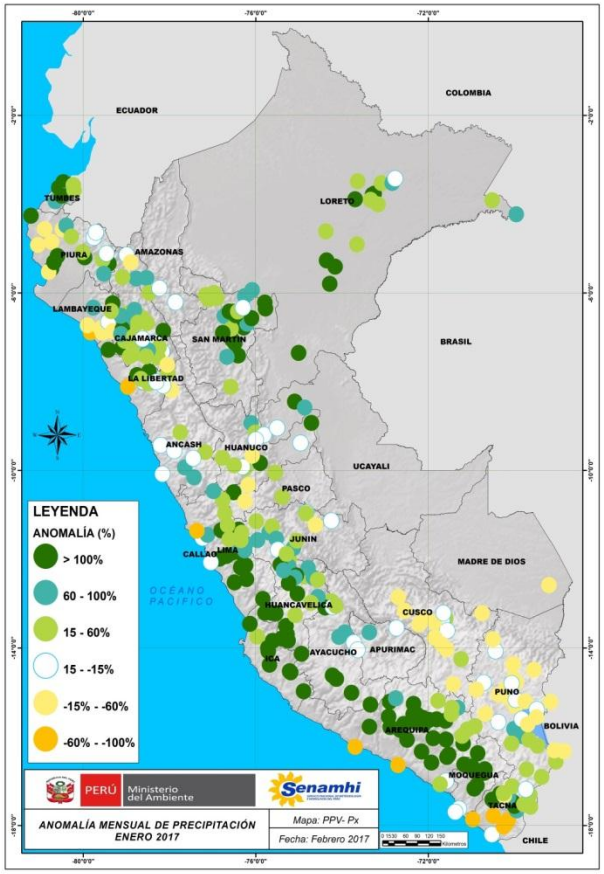
Servicio Nacional de Meteorología e Hidrología del Perú - SENAMHI

FRECUENCIA DE LLUVIAS (Marzo- Abril 2017)

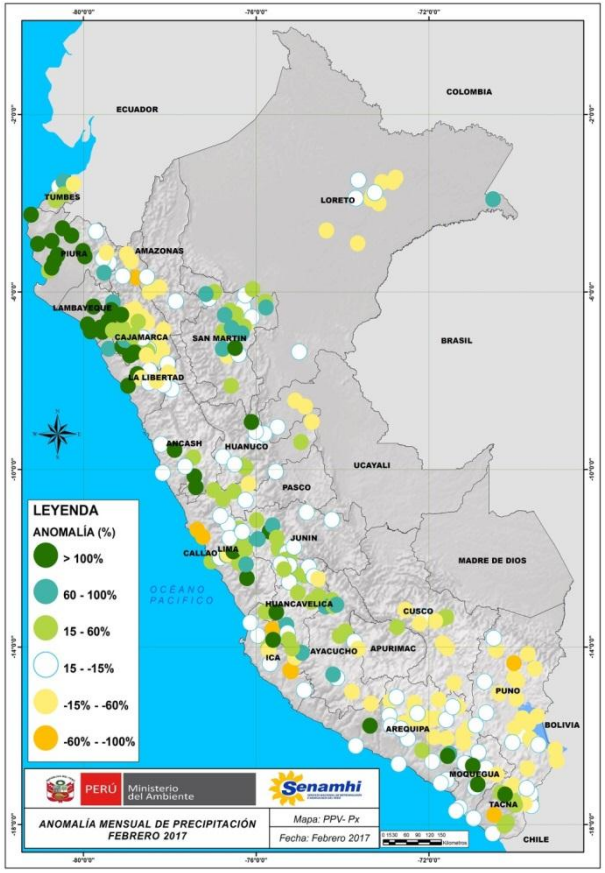


MONITOREO DE ANOMALÍAS PORCENTUALES DE LAS LLUVIAS - 2017

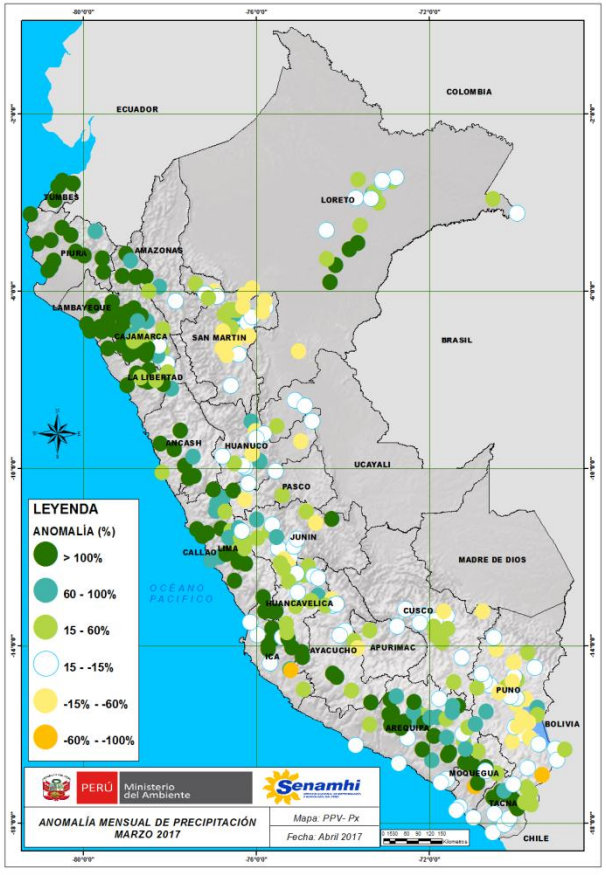
ENERO 2017



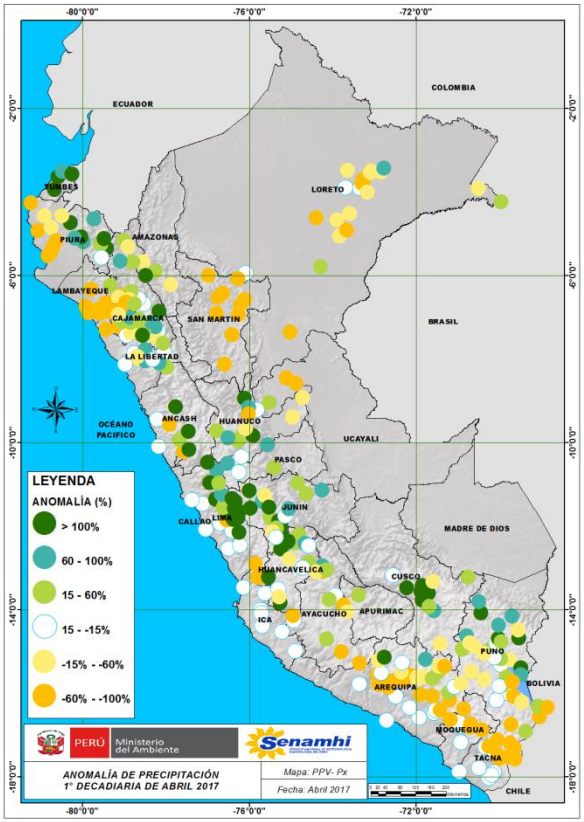
FEBRERO 2017



MARZO 2017



ABRIL 2017



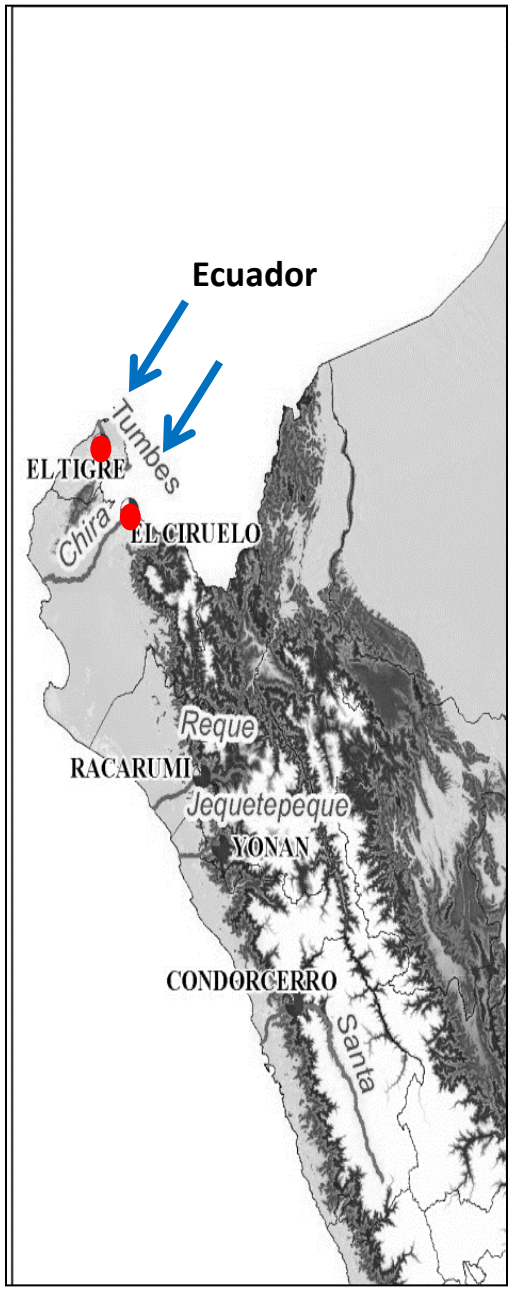
1RA DECADIARIA

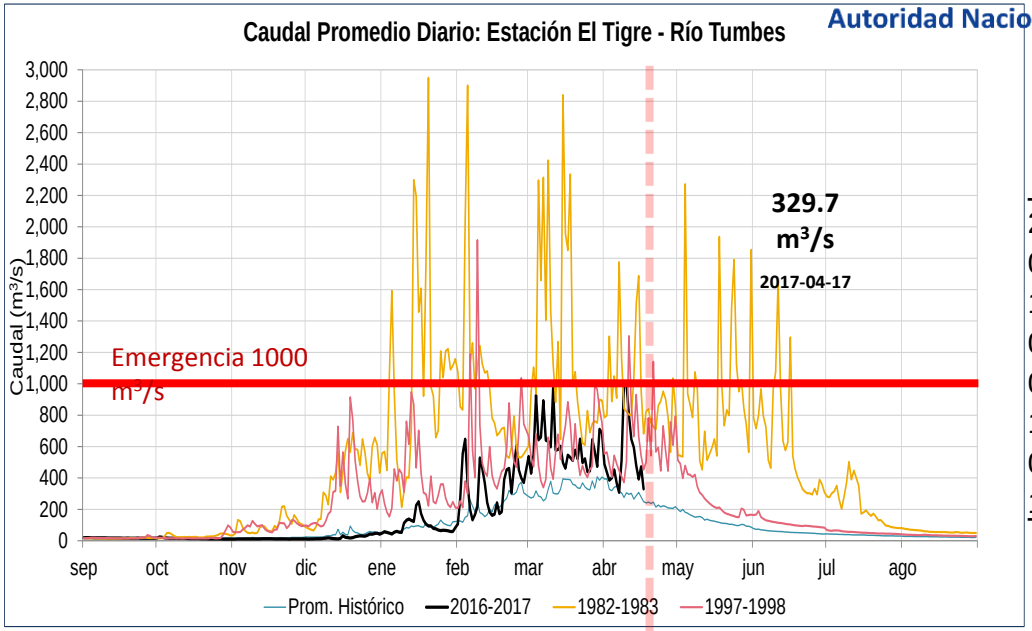
2DA
DECADIARIA

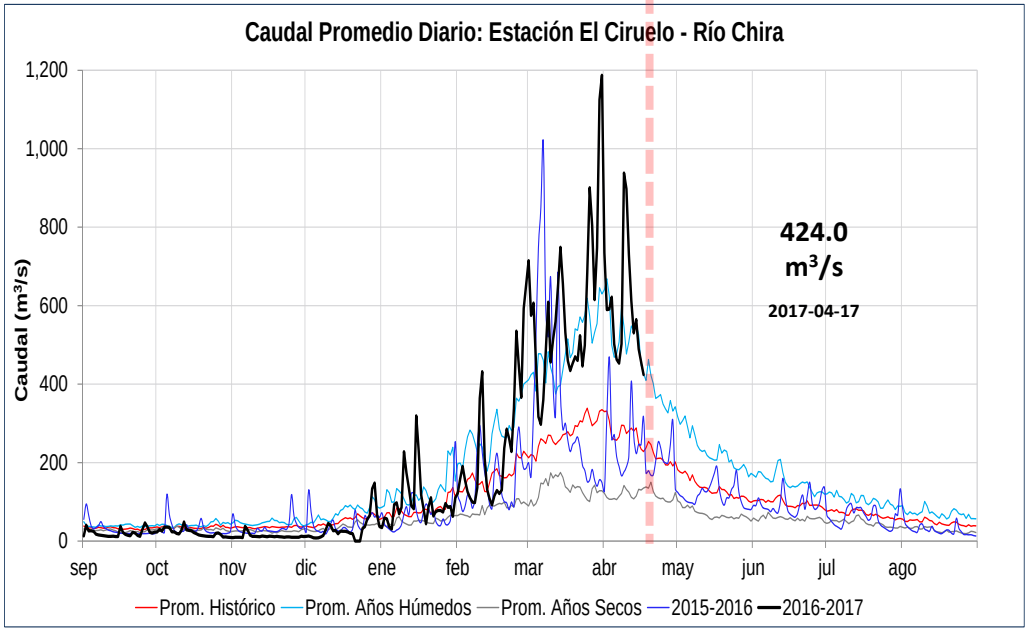
3RA
DECADIARIA

Región hidrográfica Pacífico – Ríos Costa Norte

Autoridad Nacional del Agua



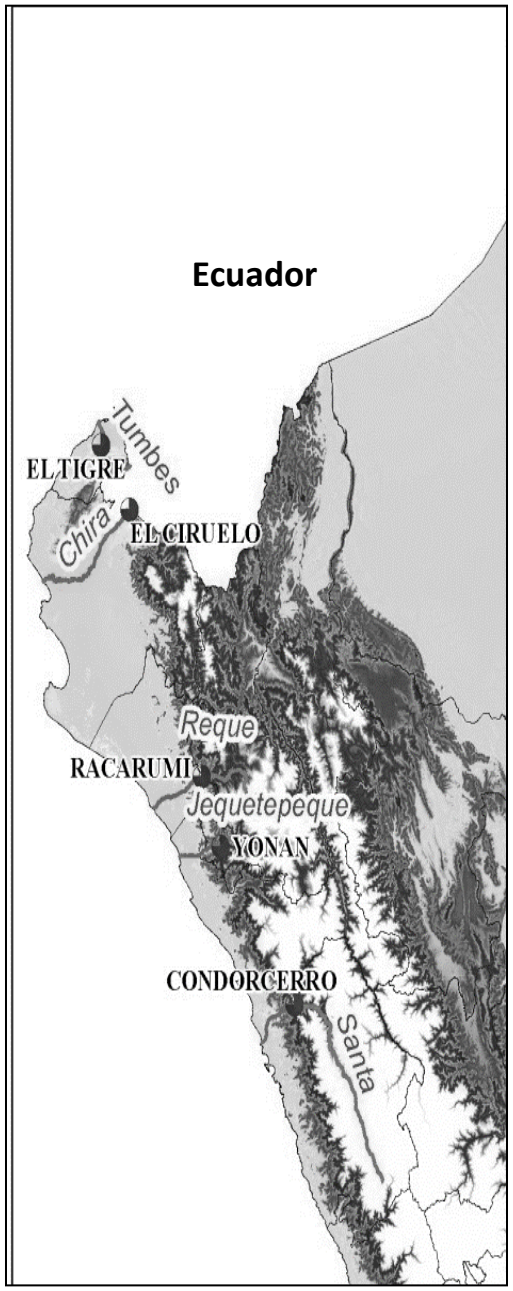


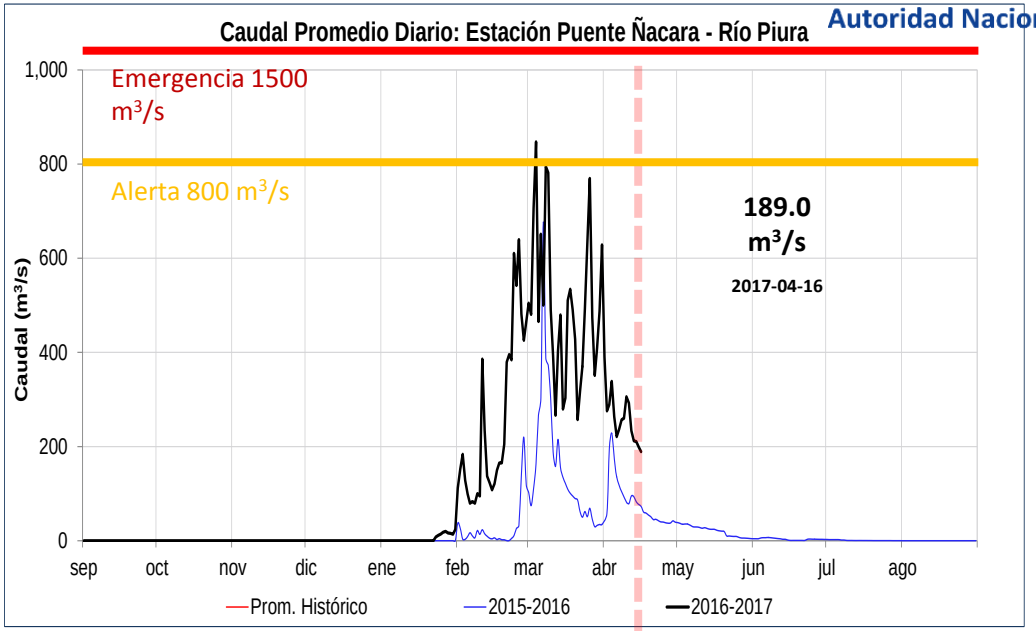


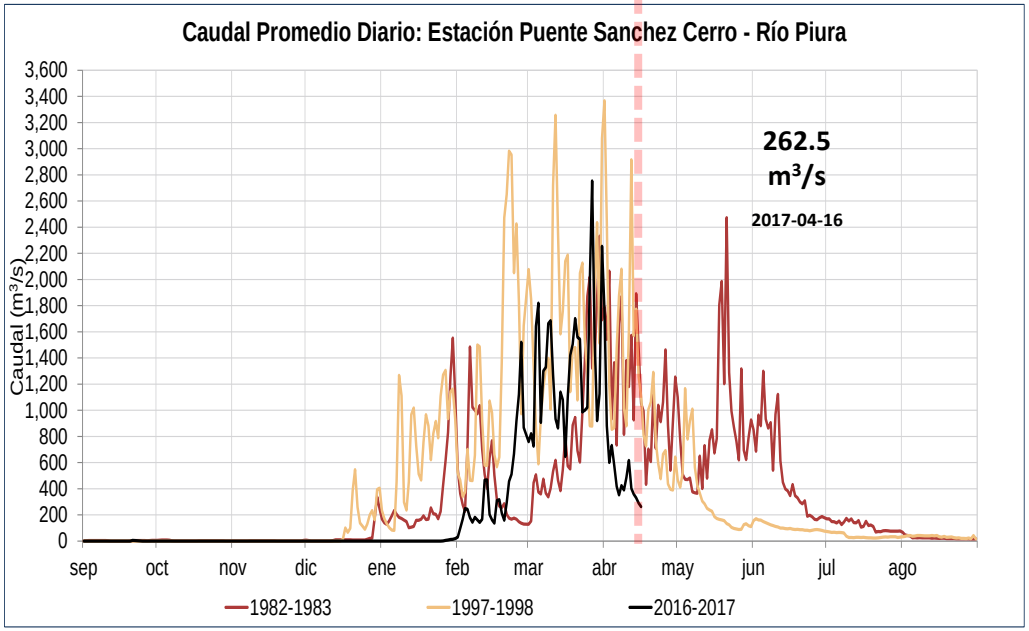
20.01.1983
08.02.1983
15.03.1983
04.05.1983
09.02.1998
11.03.2017
09.04.2017
10.04.2017

Región hidrográfica Pacífico – Ríos Costa Norte

Autoridad Nacional del Agua



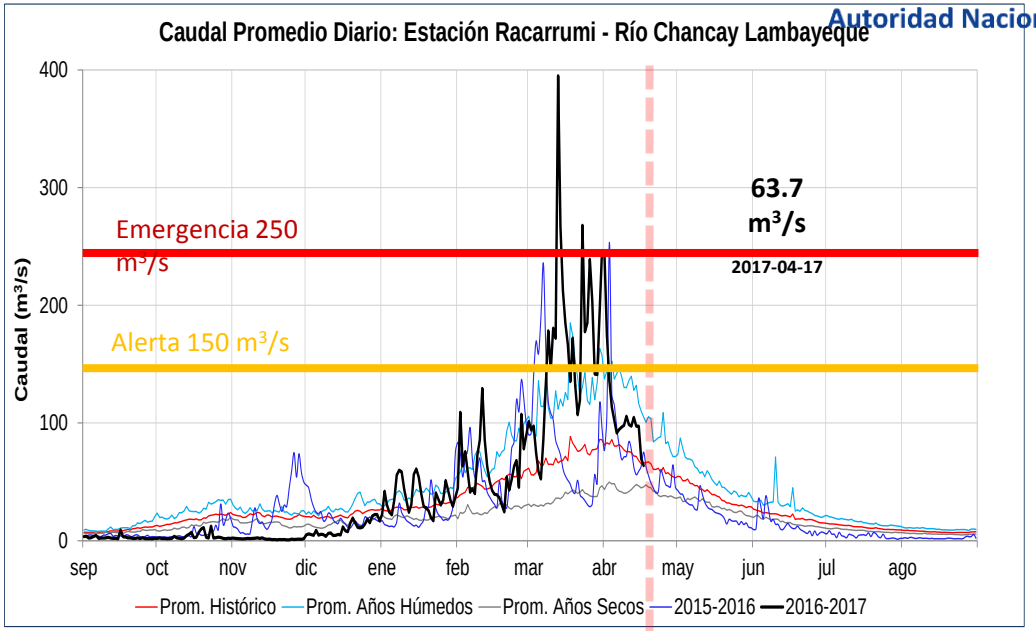


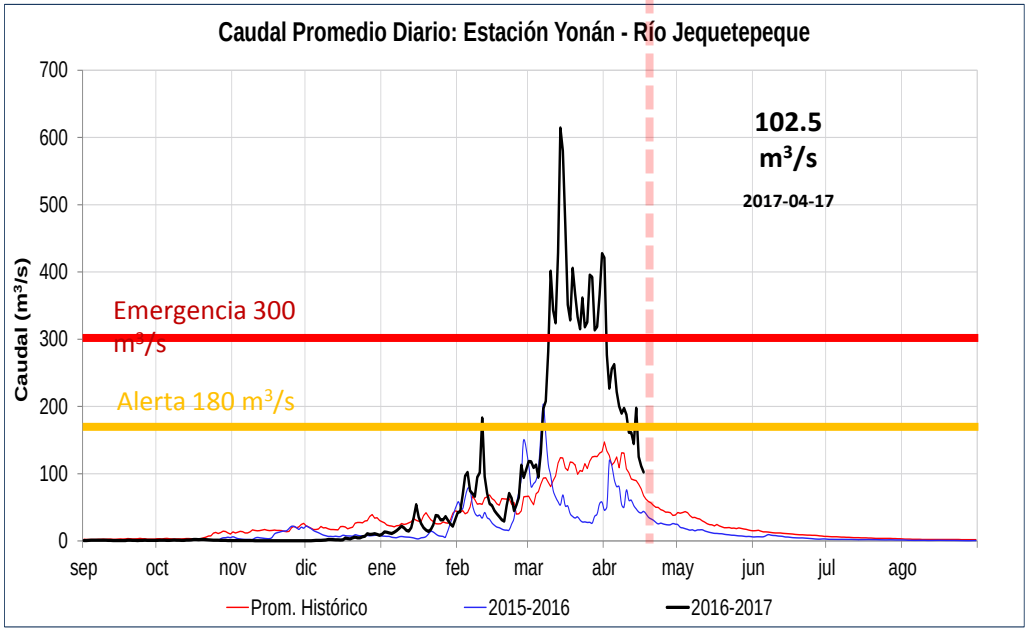


30.03.1983
21.05.1983
23.02.1998
12.03.1998
01.04.1998
27.03.2017
31.03.2017

Región hidrográfica Pacífico – Ríos Costa Norte

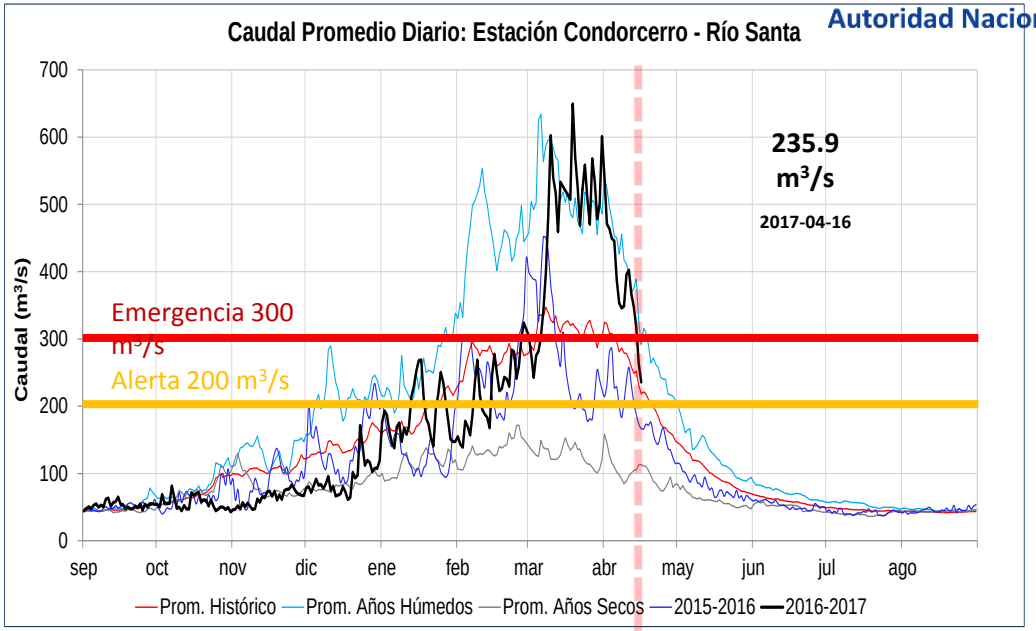
Autoridad Nacional del Agua

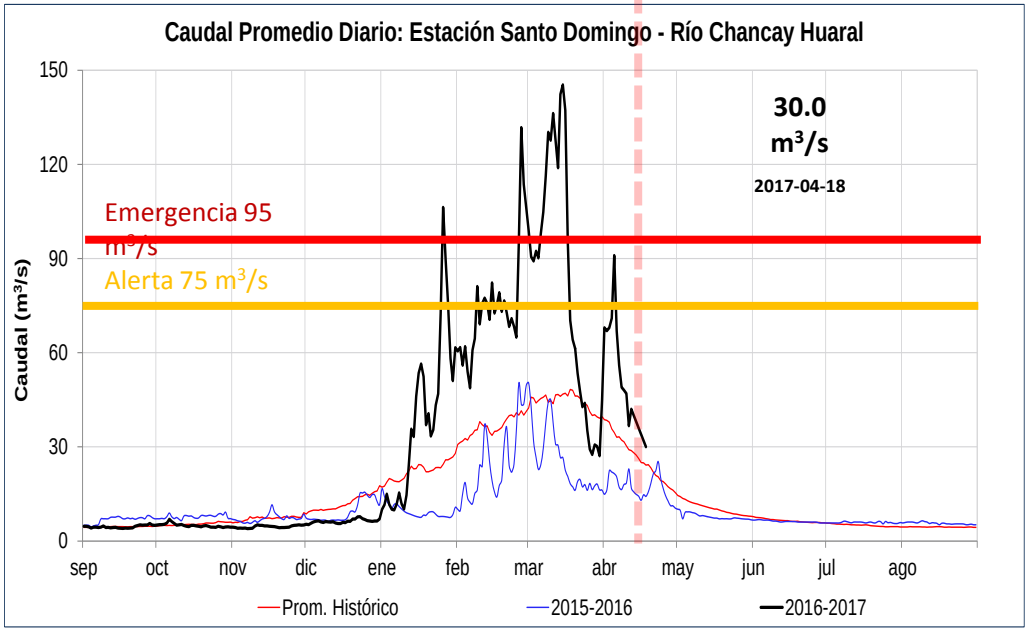




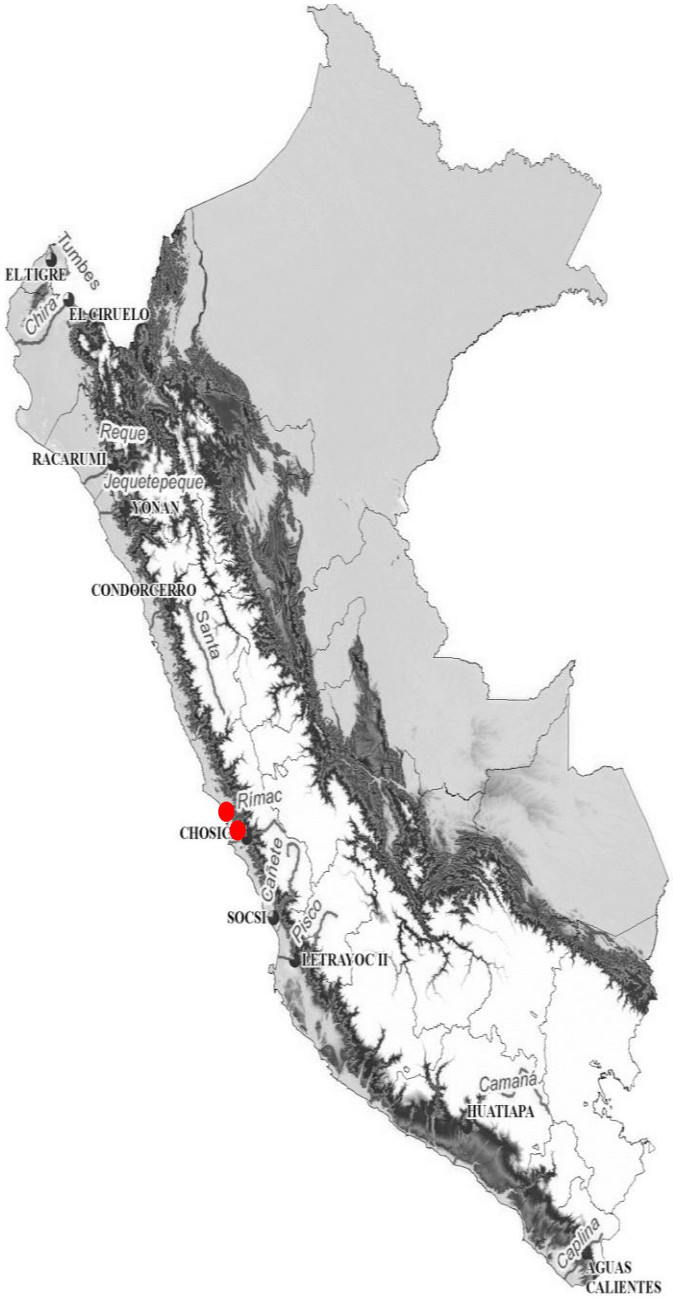
Región hidrográfica Pacífico – Ríos Costa Centro

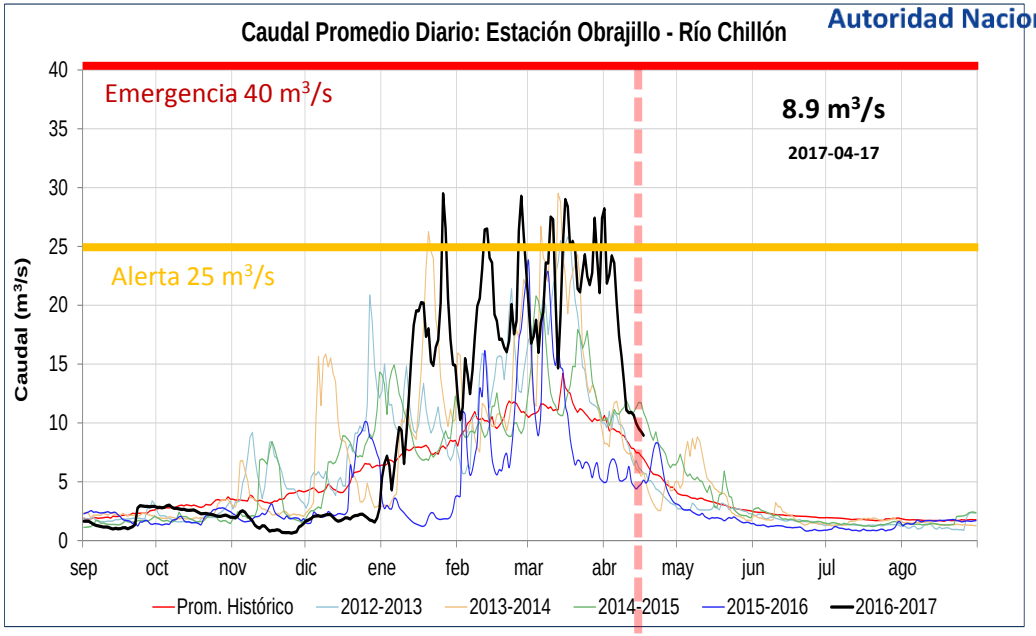
Autoridad Nacional del Agua

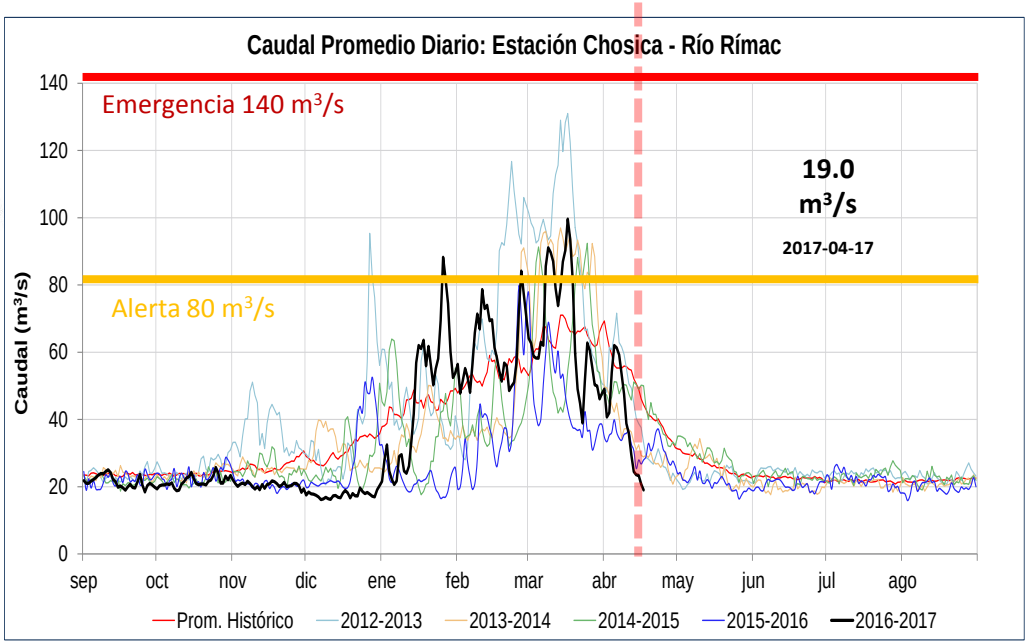




Región hidrográfica Pacífico – Ríos Costa Centro

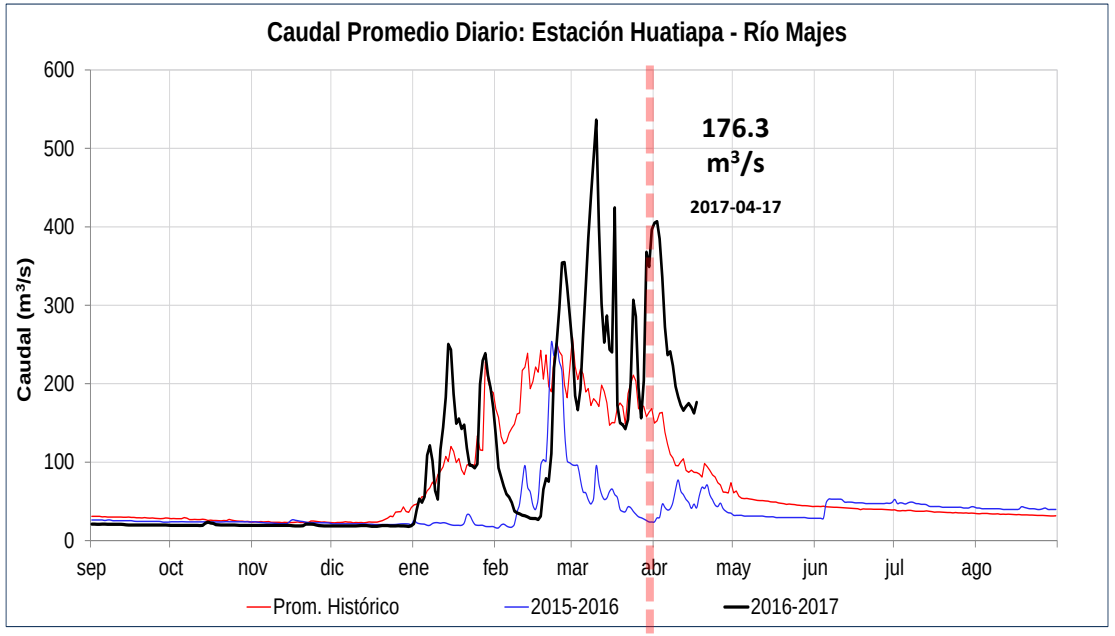


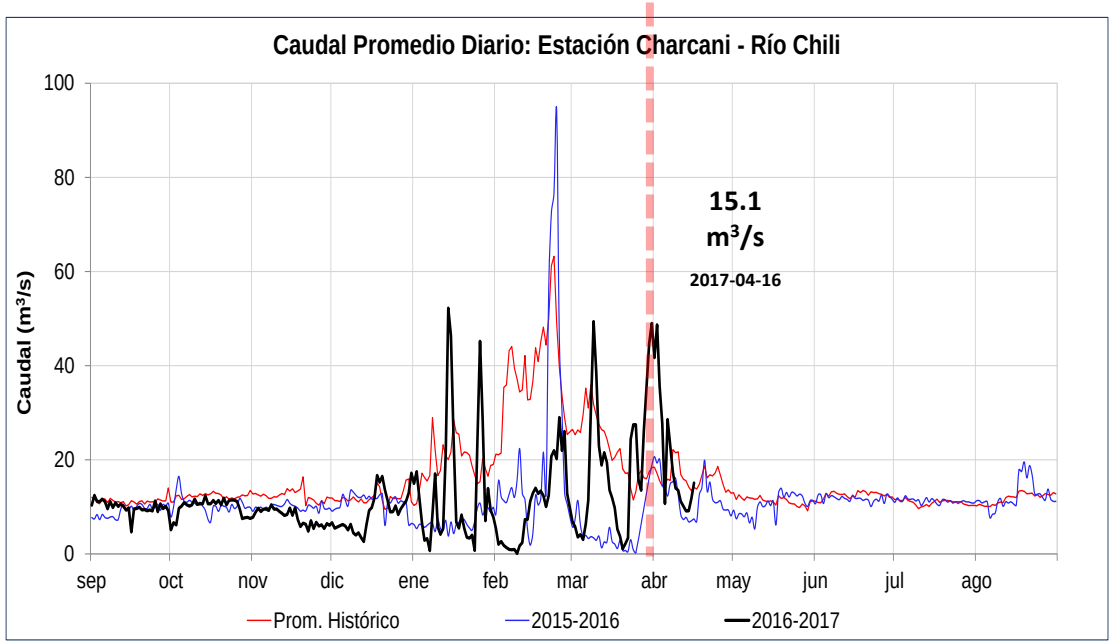


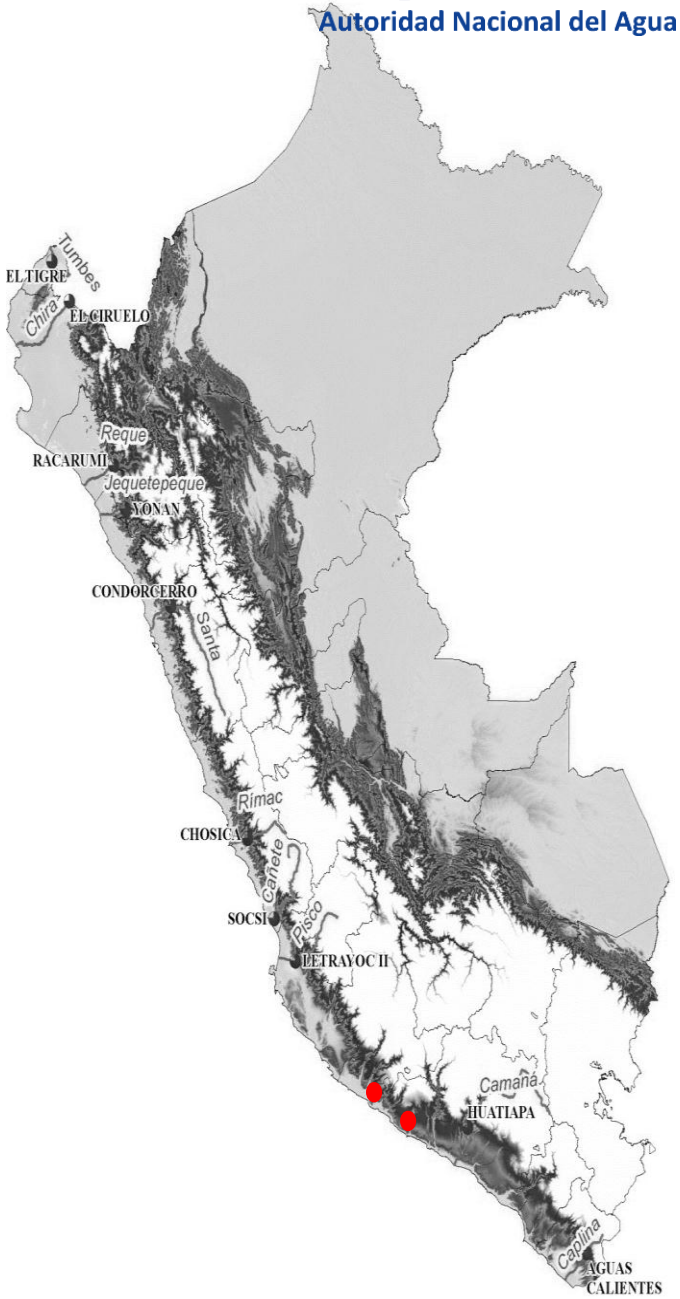


Región hidrográfica Pacífico – Ríos Costa Sur

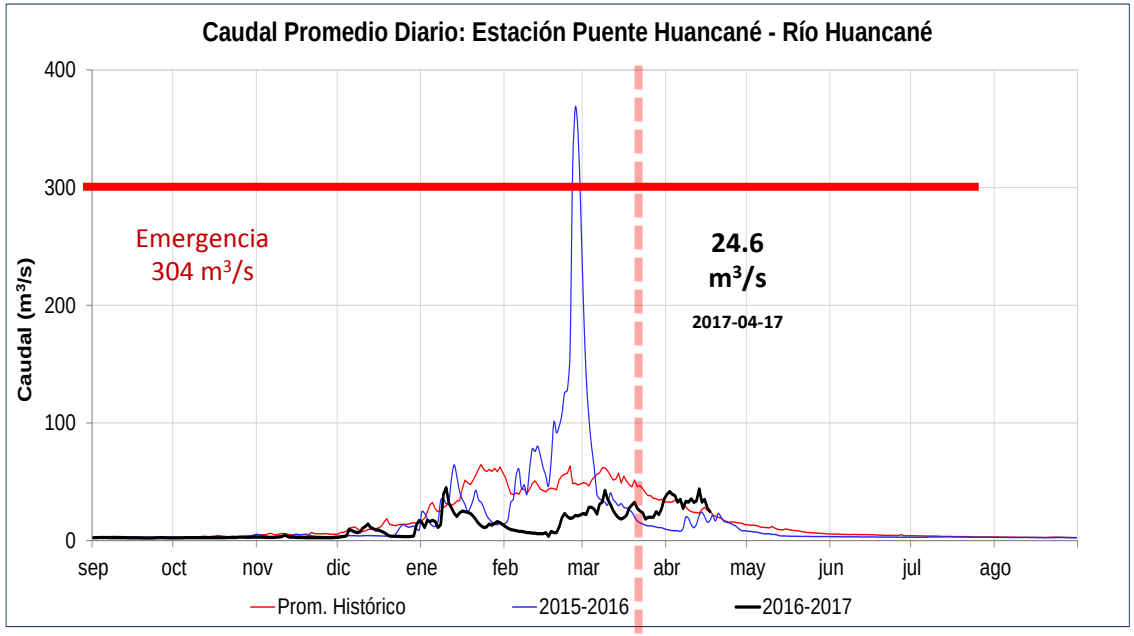
Autoridad Nacional del Agua

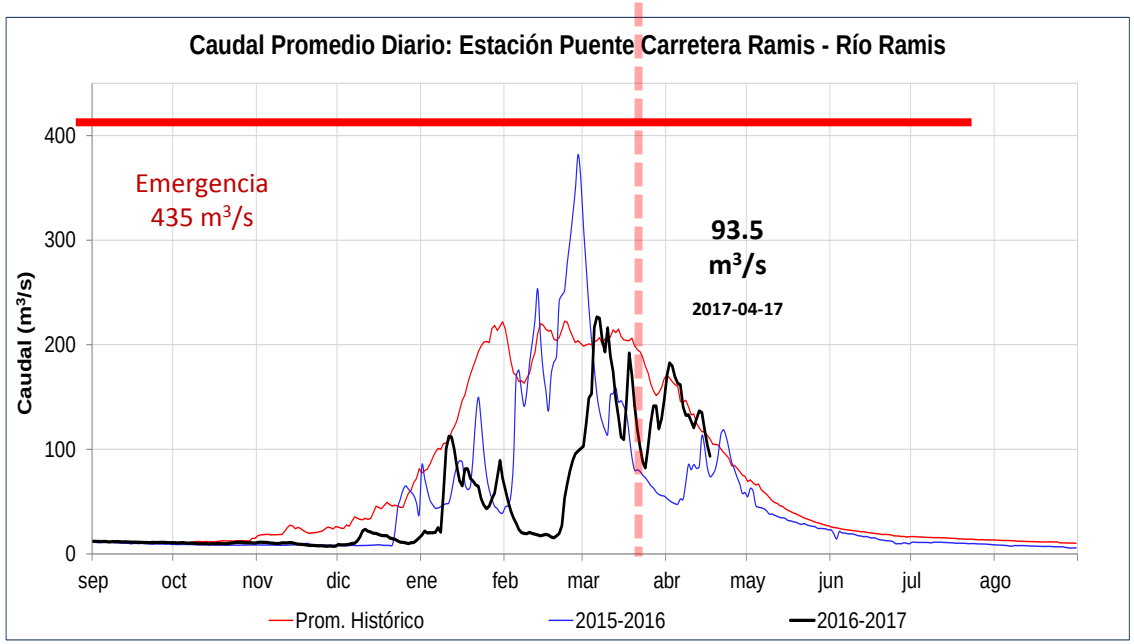


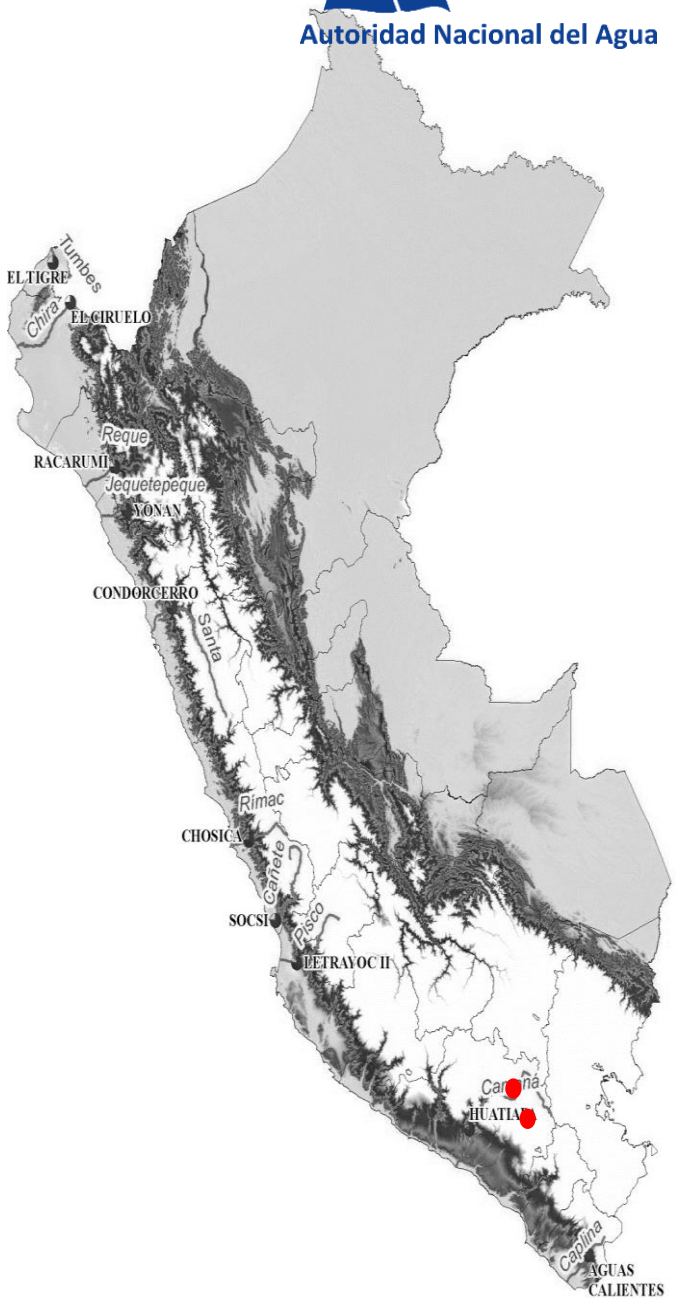




Región hidrográfica Titicaca

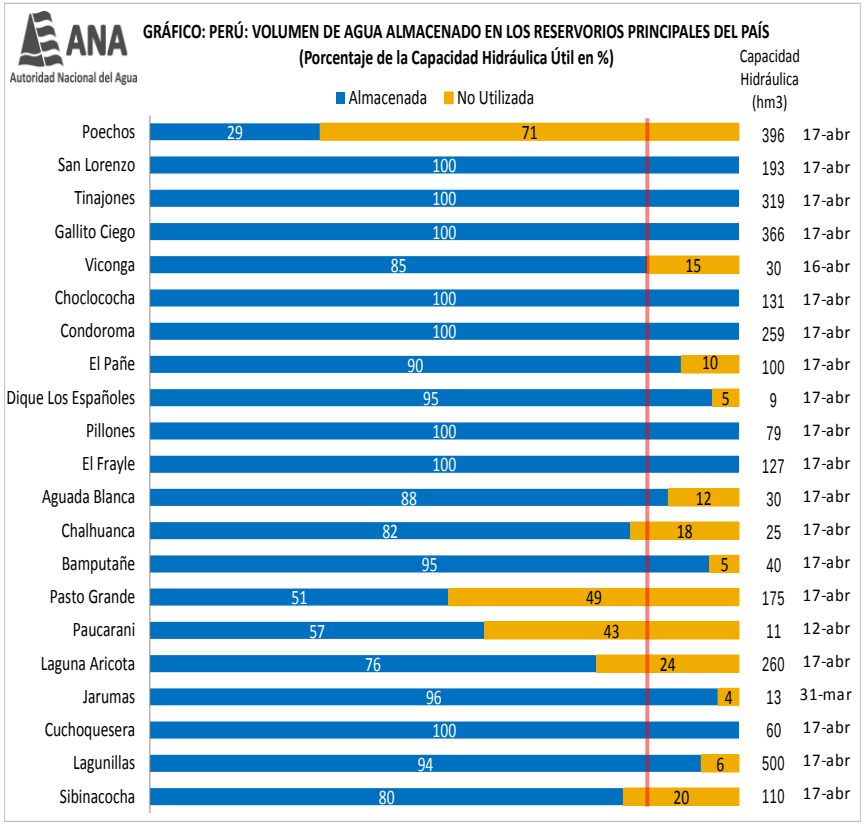






Resumen del estado de los principales embalses. enero-febrero 2017

Zona	Reservorio	Fecha Reporte	Departamento de Influencia	Capacidad Hidráulica (hm^3)		Capacidad Hidráulica Almacenada (%)
				Útil	Almacenada	
Costa - Norte	Poechos	17-abr	Piura	396.1	114.5	28.9
	San Lorenzo	17-abr	Piura	193.0	195.6	100.0
	Tinajones	17-abr	Lambayeque	319.0	319.0	100.0
	Gallito Ciego	17-abr	La Libertad	366.0	366.6	100.0
Costa - Centro	Viconga	16-abr	Lima	30.0	25.4	84.5
Costa - Sur	Choclococha	17-abr	Ica	131.1	131.1	100.0
	Condoroma	17-abr	Arequipa	259.0	261.3	100.0
	El Pañe	17-abr	Arequipa	99.6	89.8	90.2
	Dique Los Españoles	17-abr	Arequipa	9.1	8.7	95.5
	Pillones	17-abr	Arequipa	78.5	80.6	100.0
	El Frayle	17-abr	Arequipa	127.2	130.2	100.0
	Aguada Blanca	17-abr	Arequipa	30.4	26.8	88.0
	Chalhuanca	17-abr	Arequipa	25.0	20.4	81.6
	Bamputañe	17-abr	Arequipa	40.0	38.0	95.1
	Pasto Grande	17-abr	Moquegua	175.0	88.8	50.8
	Paucarani	12-abr	Tacna	10.5	6.0	56.8
	Laguna Aricota	17-abr	Tacna	260.0	197.1	75.8
	Jarumas	31-mar	Tacna	12.5	12.1	96.4
Sierra - Centro	Cuchoquesera	17-abr	Ayacucho	60.0	80.0	100.0
Sierra - Sur	Lagunillas	17-abr	Puno	500.0	468.0	93.6
	Sibinacocha	17-abr	Cusco	110.0	88.5	80.5

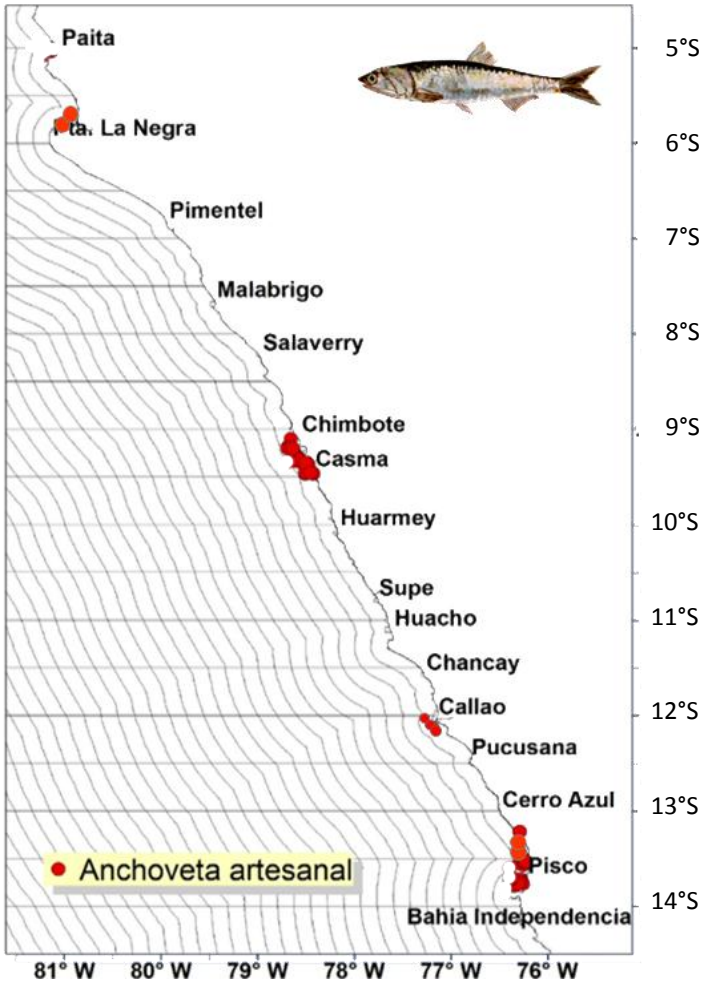


Fuente: http://snirh.ana.gob.pe/fen/EFEN_EstadoEmbalses.aspx

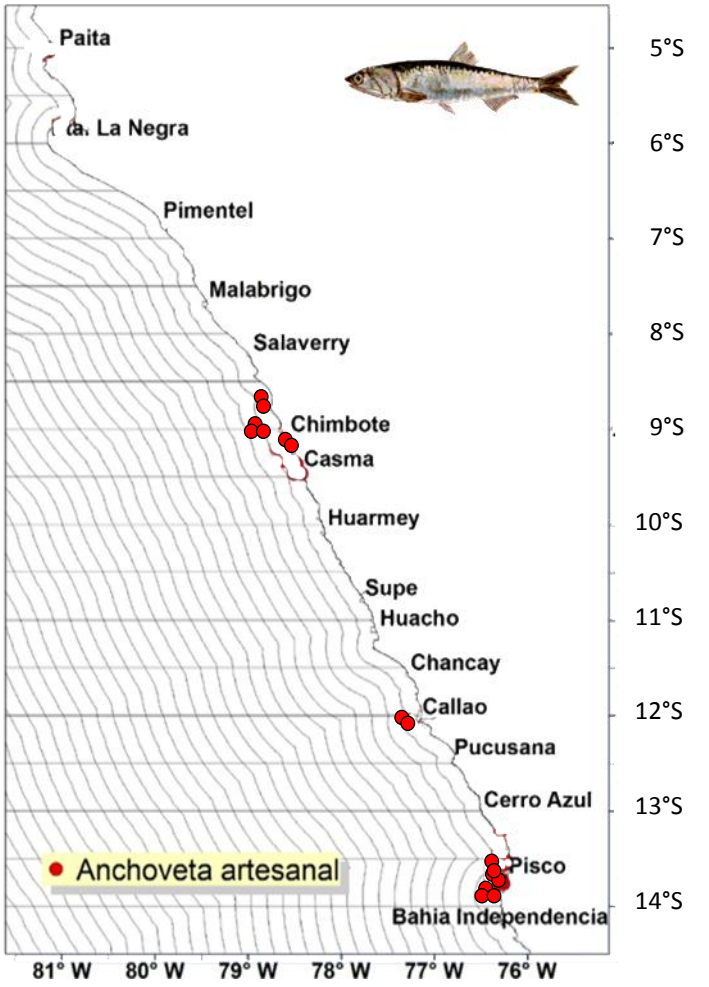
CONDICIONES
BIOLOGICO PESQUERAS

Zona de Pesca de anchoveta. Flota de menor escala y artesanal- Región Norte-Centro

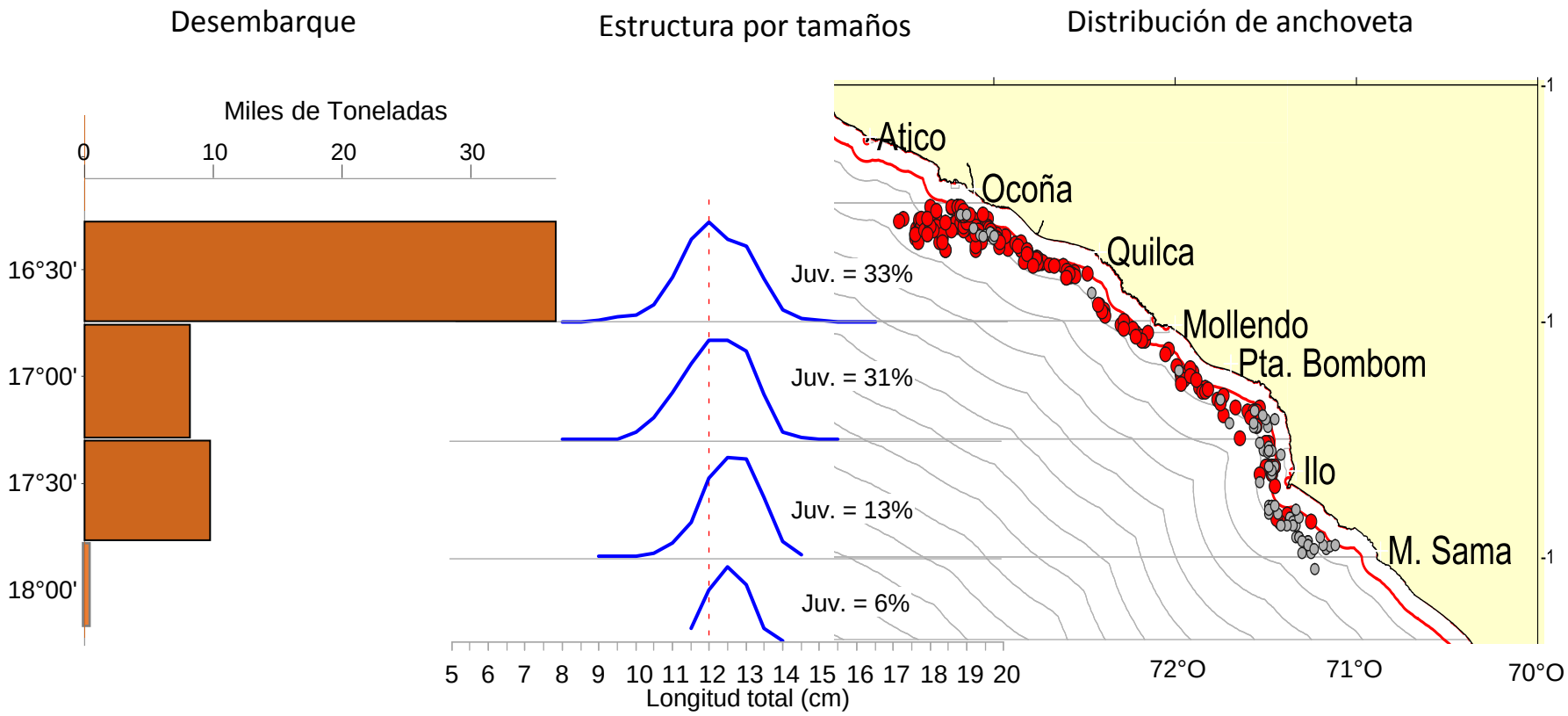
Marzo 2017



Abril 2017

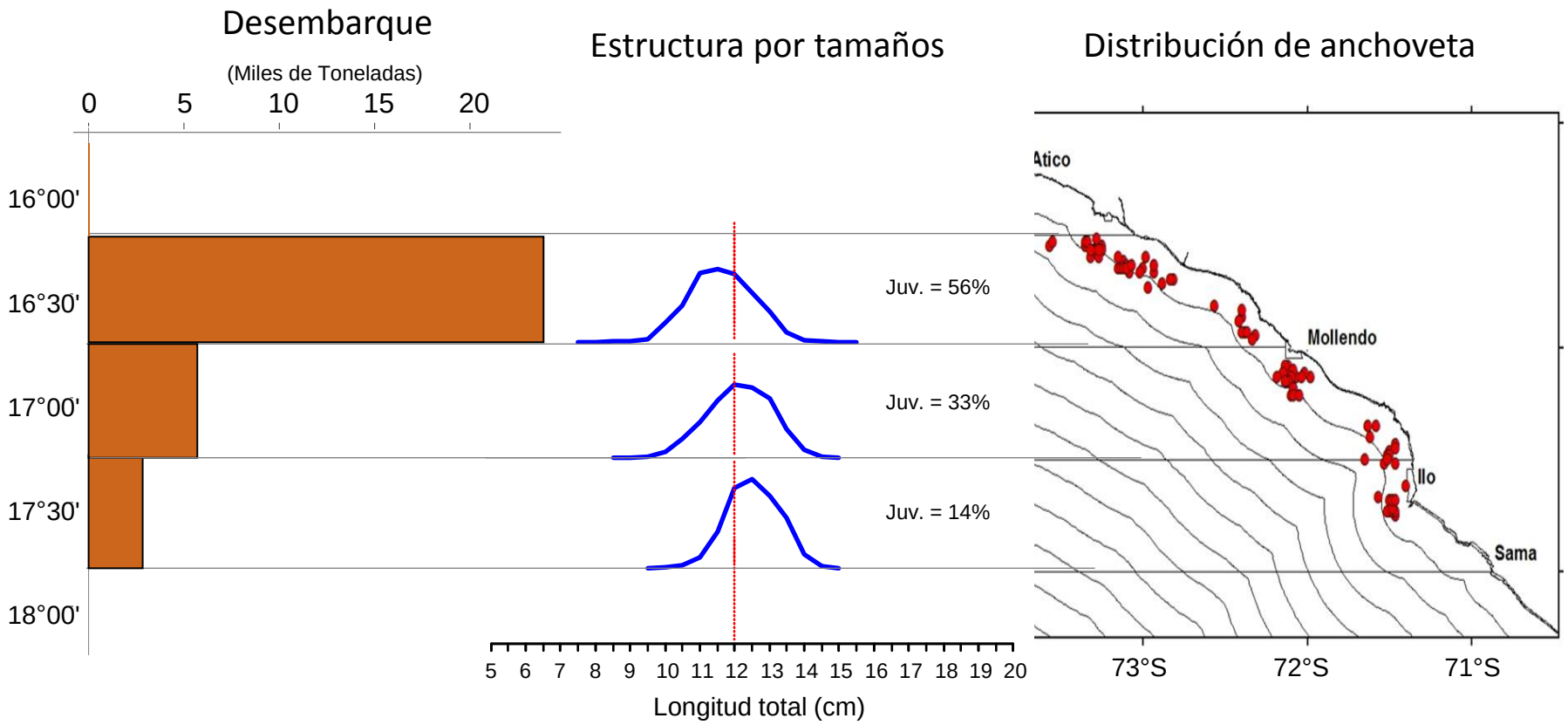


1ra Temporada de Pesca de anchoveta. Región Sur - Marzo



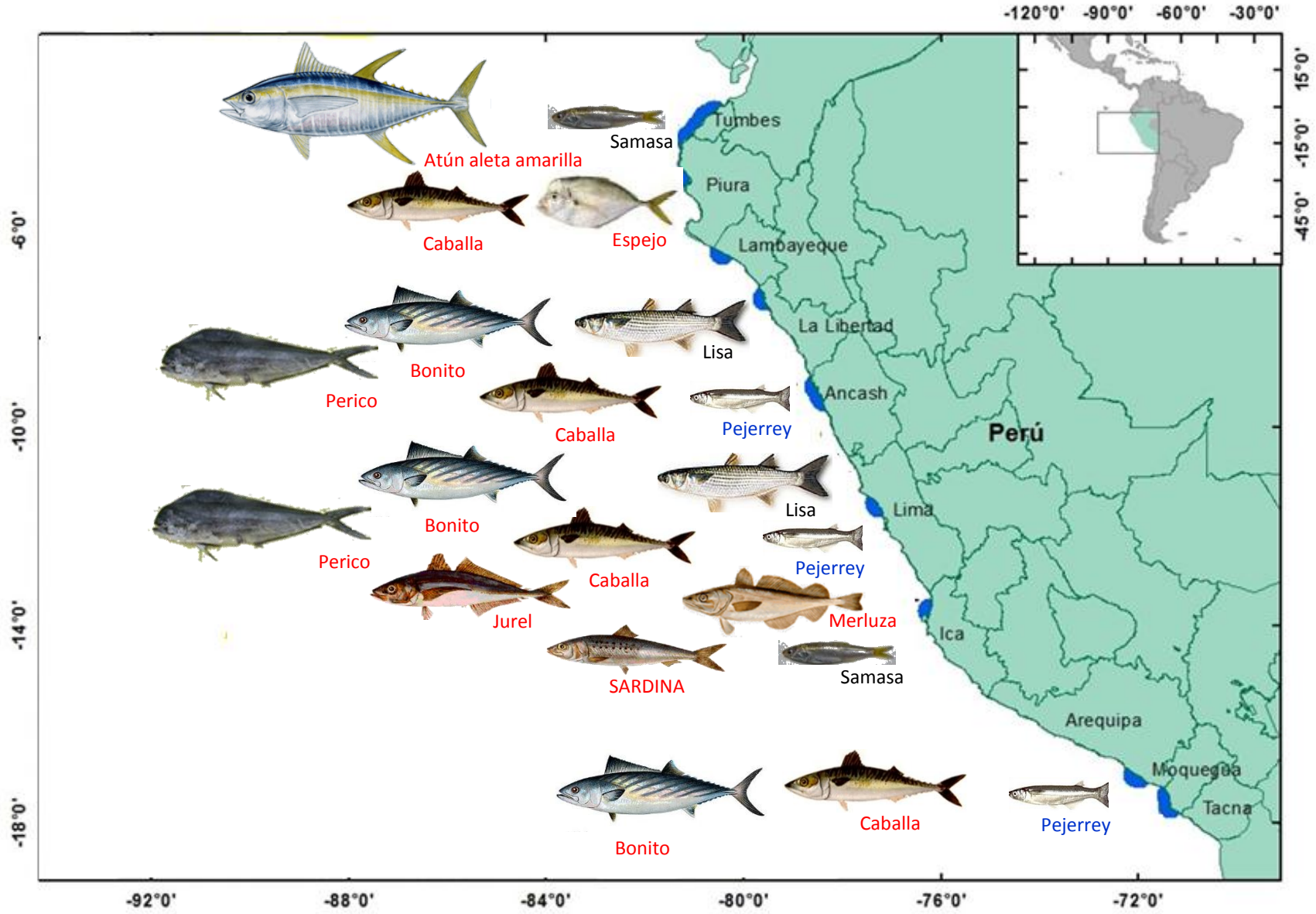
Avance de cuota : 20.5 %

1ra Temporada de Pesca de anchoveta. Región Sur – 1raQ Abril 2017



Avance de cuota : 27.6 %

Otras especies

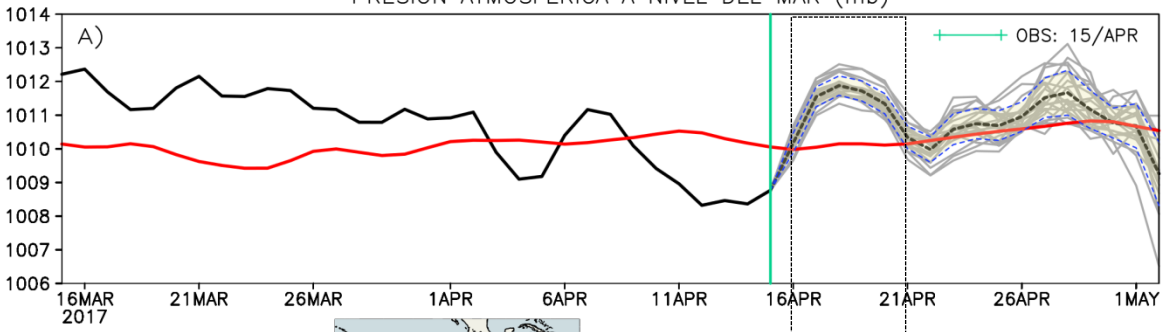


Perspectivas

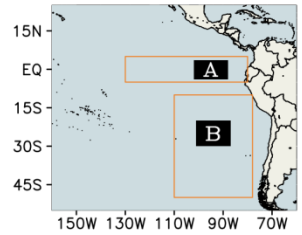
GFS "00Z" ENSEMBLES – ANALYSIS 15MAR2017

–SENAMHI DGM/SPC–DMA–

PRESION ATMOSFERICA A NIVEL DEL MAR (mb)

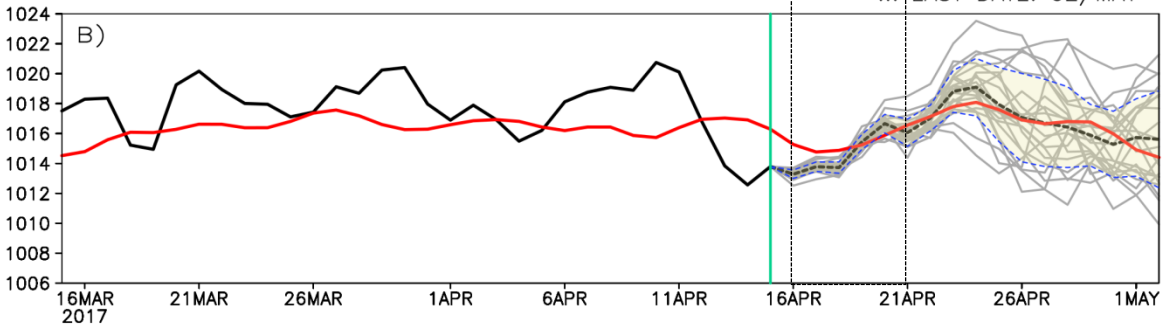


SELECTED ZONES

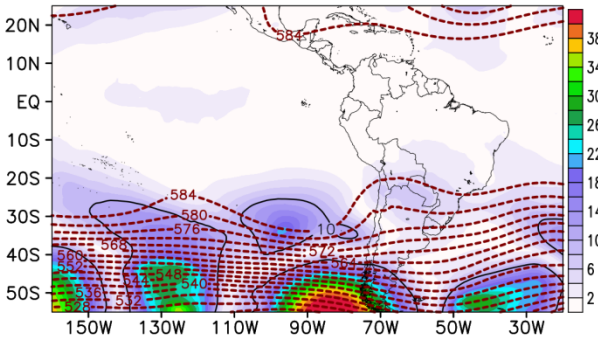


GFS daily analysis
forecast ensemble mean
individual ensemble members
multiyear–dayly mean

... LAST DATE: 02/MAY

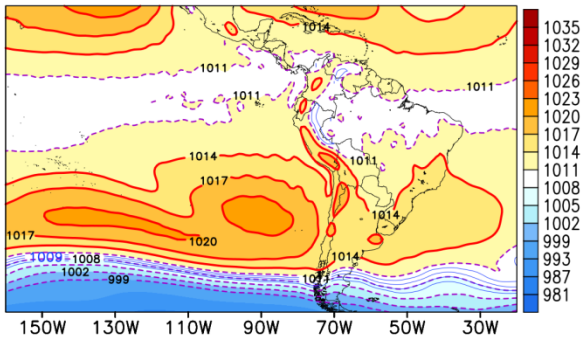


GFS–ENS. STD. DEVIATION (mgp) at 500mb



05–DAYS ENSEMBLE MEAN

SEA LEVEL PRESSURE (msnm)

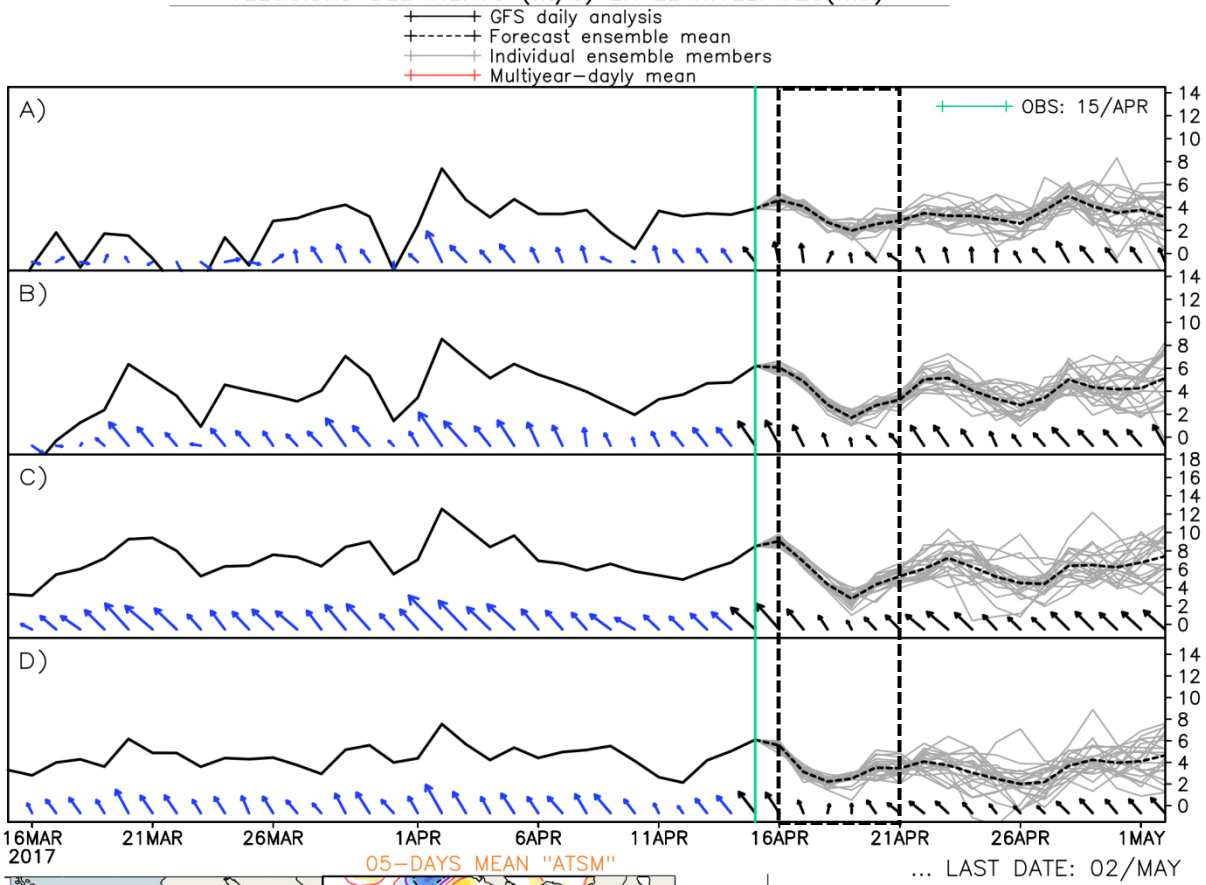


05–DAYS ENSEMBLE MEAN

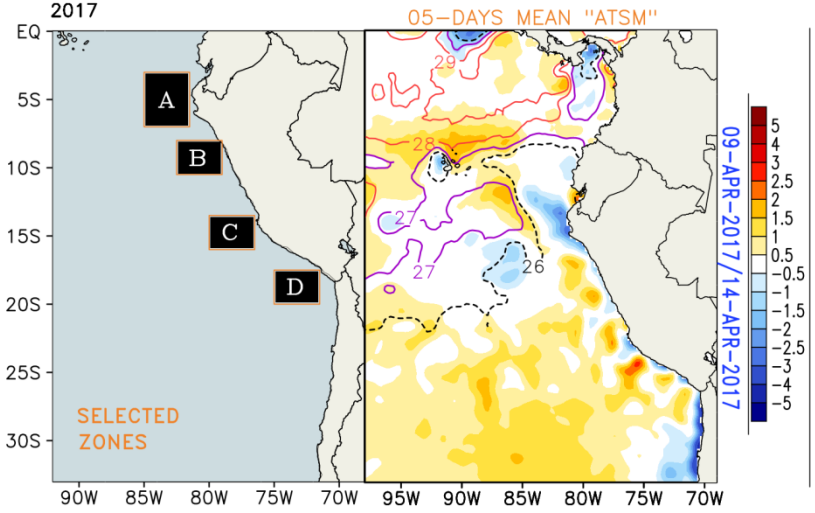
GFS "00Z" ENSEMBLES – ANALYSIS 15MAR2017

–SENAMHI DMA/SPC–

VELOCIDAD DEL VIENTO (m/s) EN EL NIVEL: 925(mb)



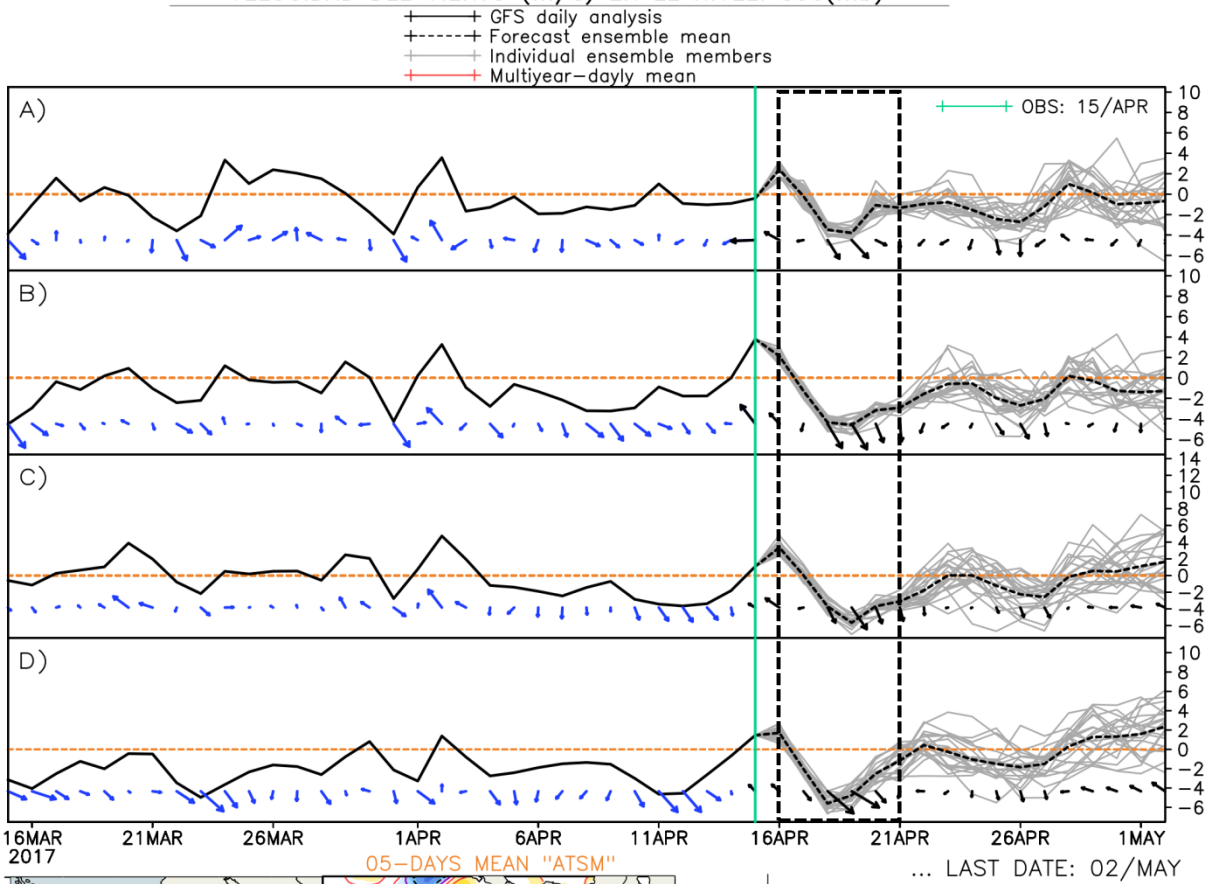
... LAST DATE: 02/MAY



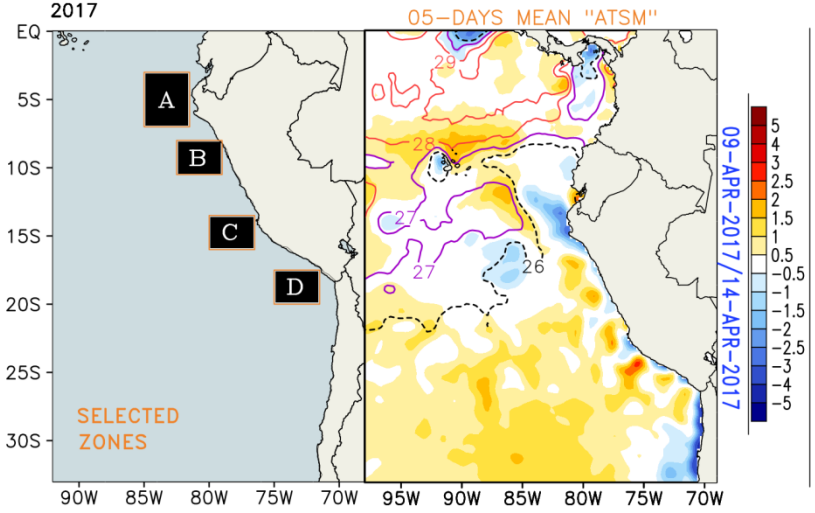
GFS "00Z" ENSEMBLES – ANALYSIS 15MAR2017

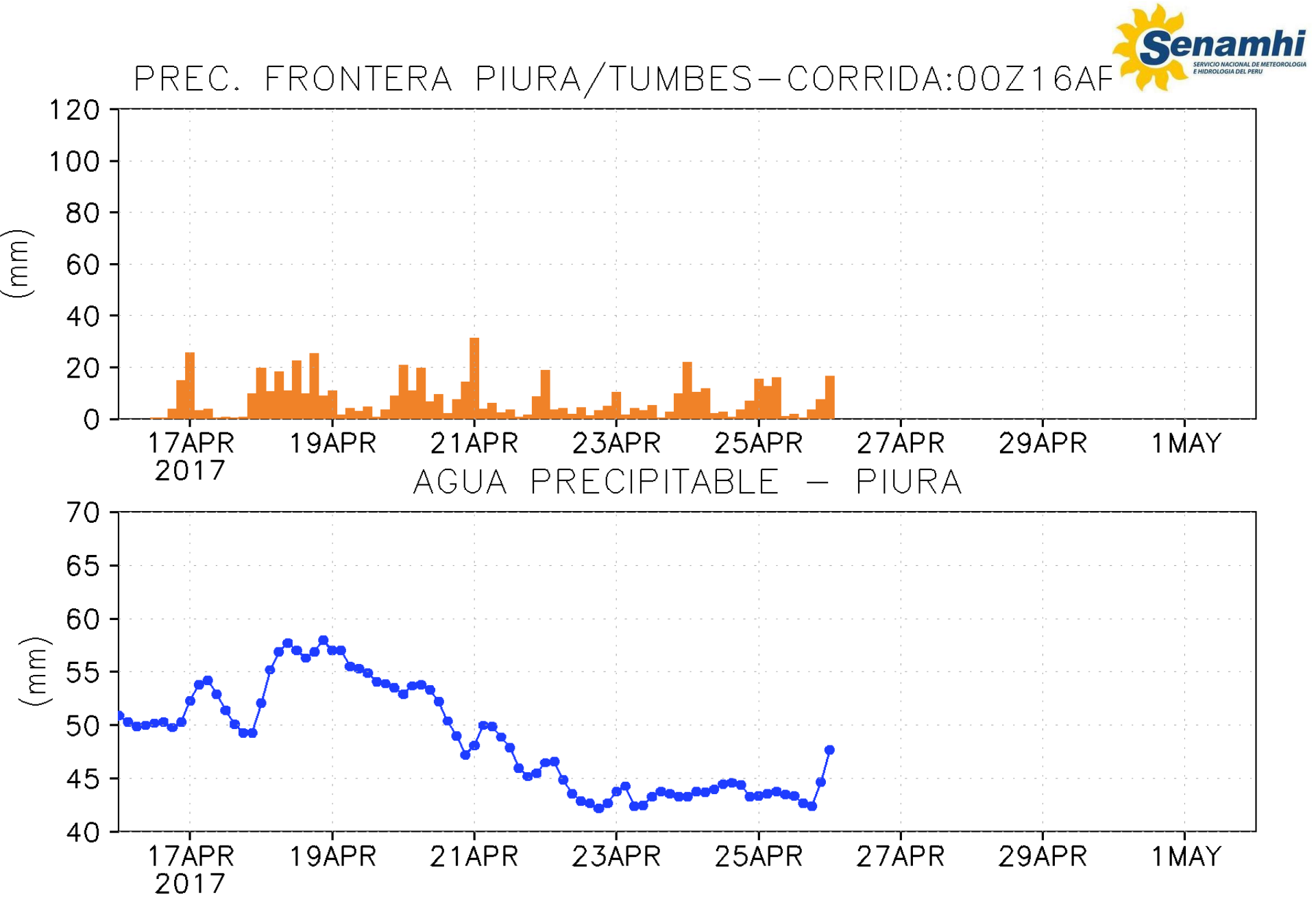
–SENAMHI DMA/SPC–

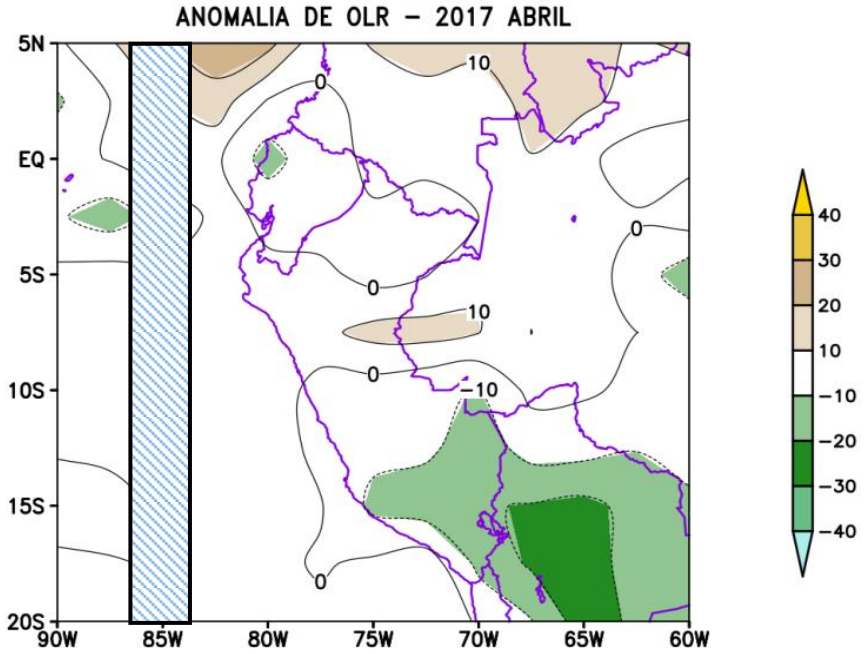
VELOCIDAD DEL VIENTO (m/s) EN EL NIVEL: 850(mb)

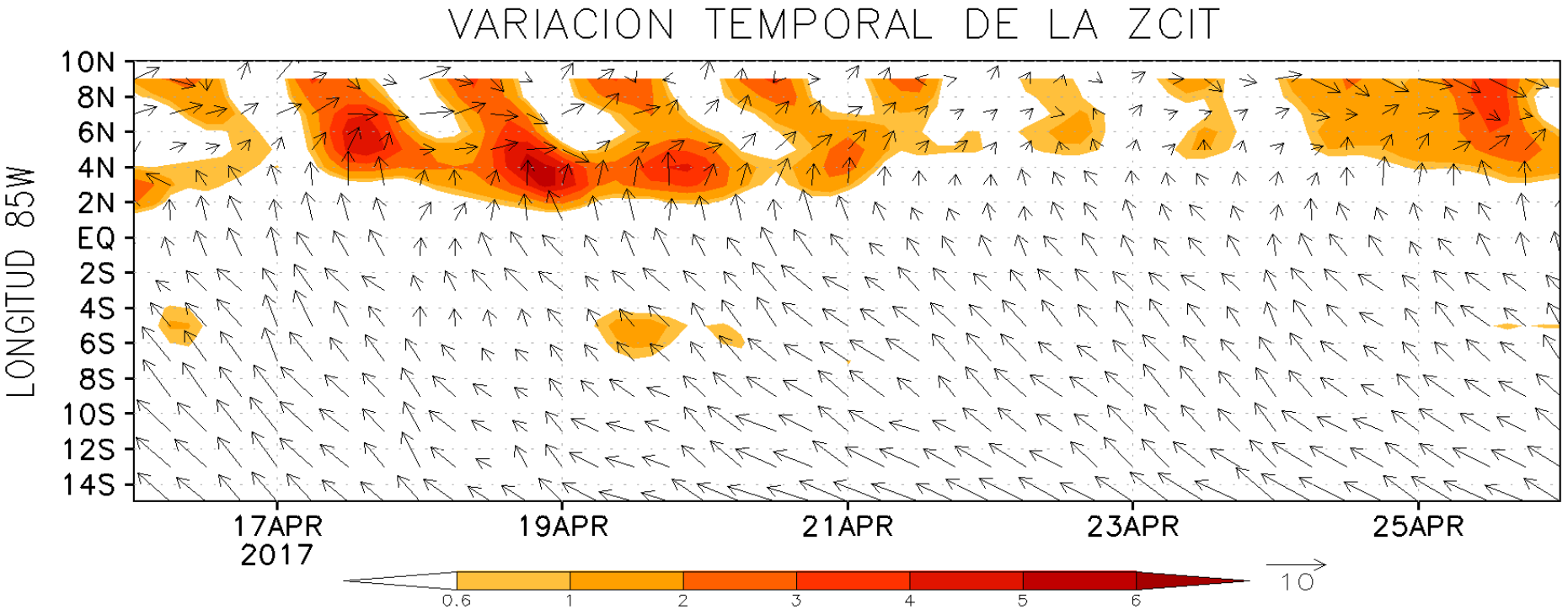


... LAST DATE: 02/MAY

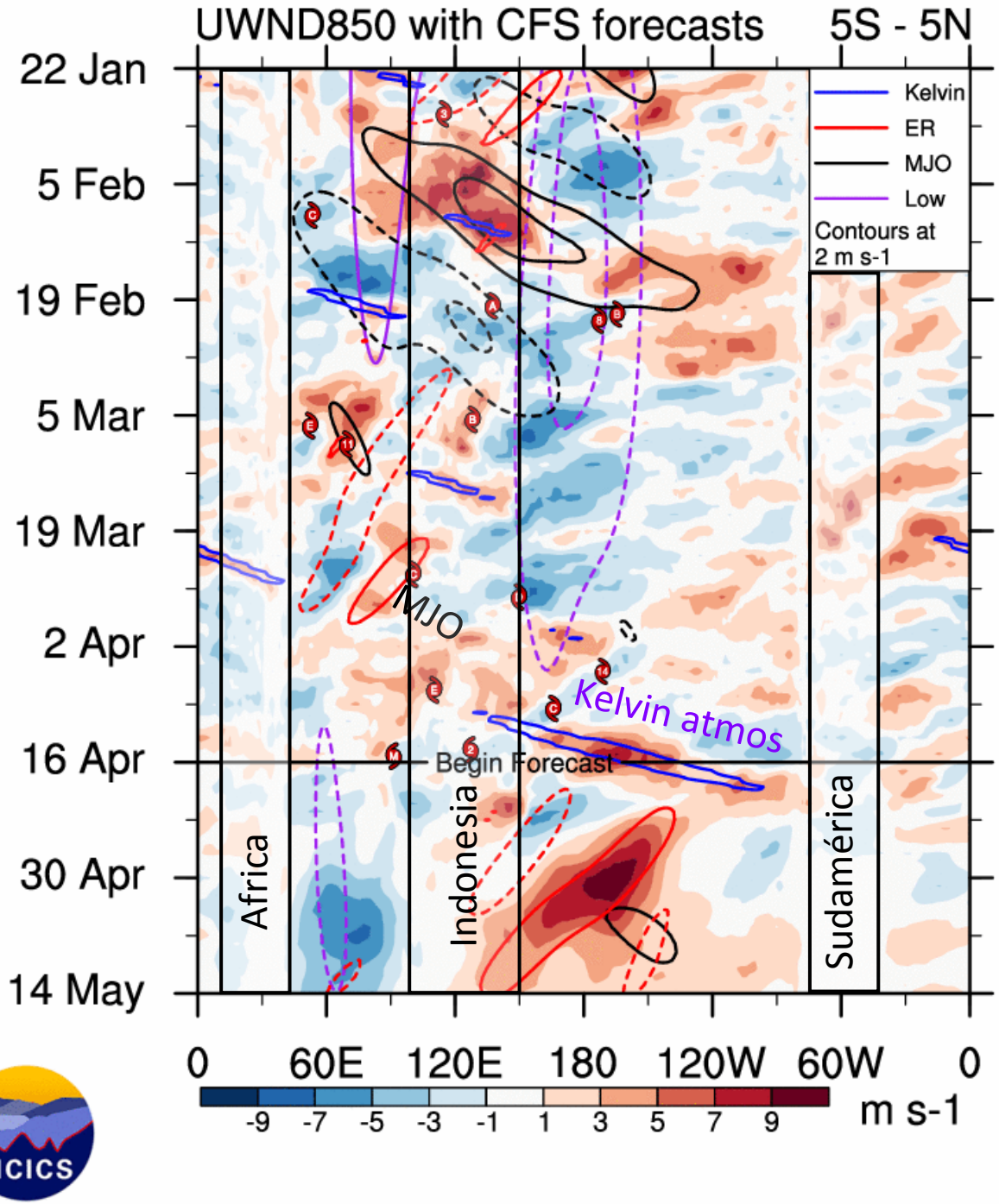



PREC. FRONTERA PIURA/TUMBES–CORRIDA:00Z16AF
(mm)
120
100
80
60
40
20
0
17APR
2017
19APR
21APR
23APR
25APR
27APR
29APR
1MAY
AGUA PRECIPITABLE – PIURA
(mm)
70
65
60
55
50
45
40
17APR
2017
19APR
21APR
23APR
25APR
27APR
29APR
1MAY


ANOMALIA DE OLR – 2017 ABRIL
5N
EQ
5S
10S
15S
20S
90W
85W
80W
75W
70W
65W
60W
10
0
0
10
0
−10
0
40
30
20
10
−10
−20
−30
−40


VARIACION TEMPORAL DE LA ZCIT
LONGITUD 85W
10N
8N
6N
4N
2N
EQ
2S
4S
6S
8S
10S
12S
14S
17APR
2017
19APR
21APR
23APR
25APR
0.6
1
2
3
4
5
6
10

Viento zonal ecuatorial en 850 Pa



Pulso del oeste reciente por onda Kelvin atmosférica convectiva

Pronóstico

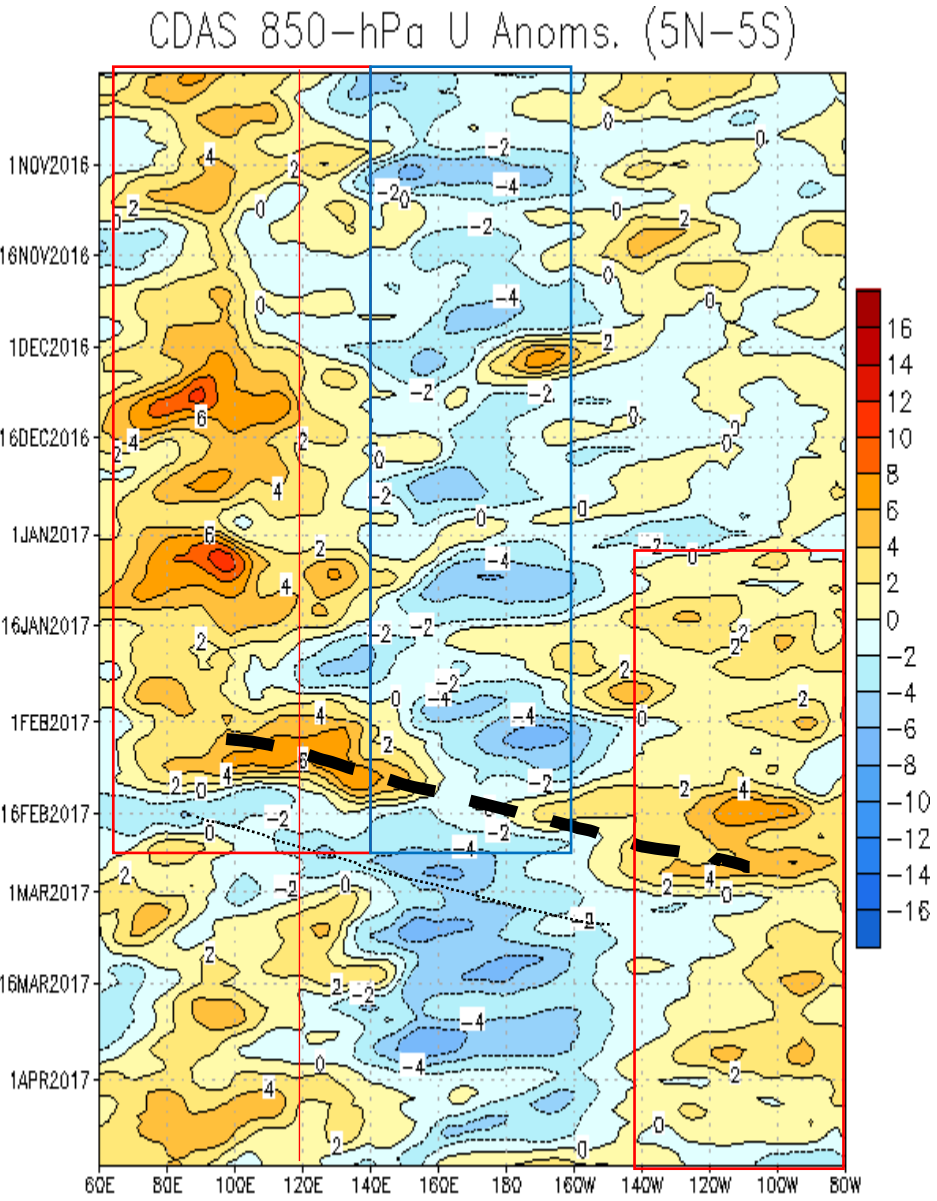
NCICS

ncics.org/mjo

Mon 2017-04-17 1024 UTC

Carl Schreck (cjschrec@ncsu.edu)

HOVMULLER DE ANOMALÍA DE VIENTOS

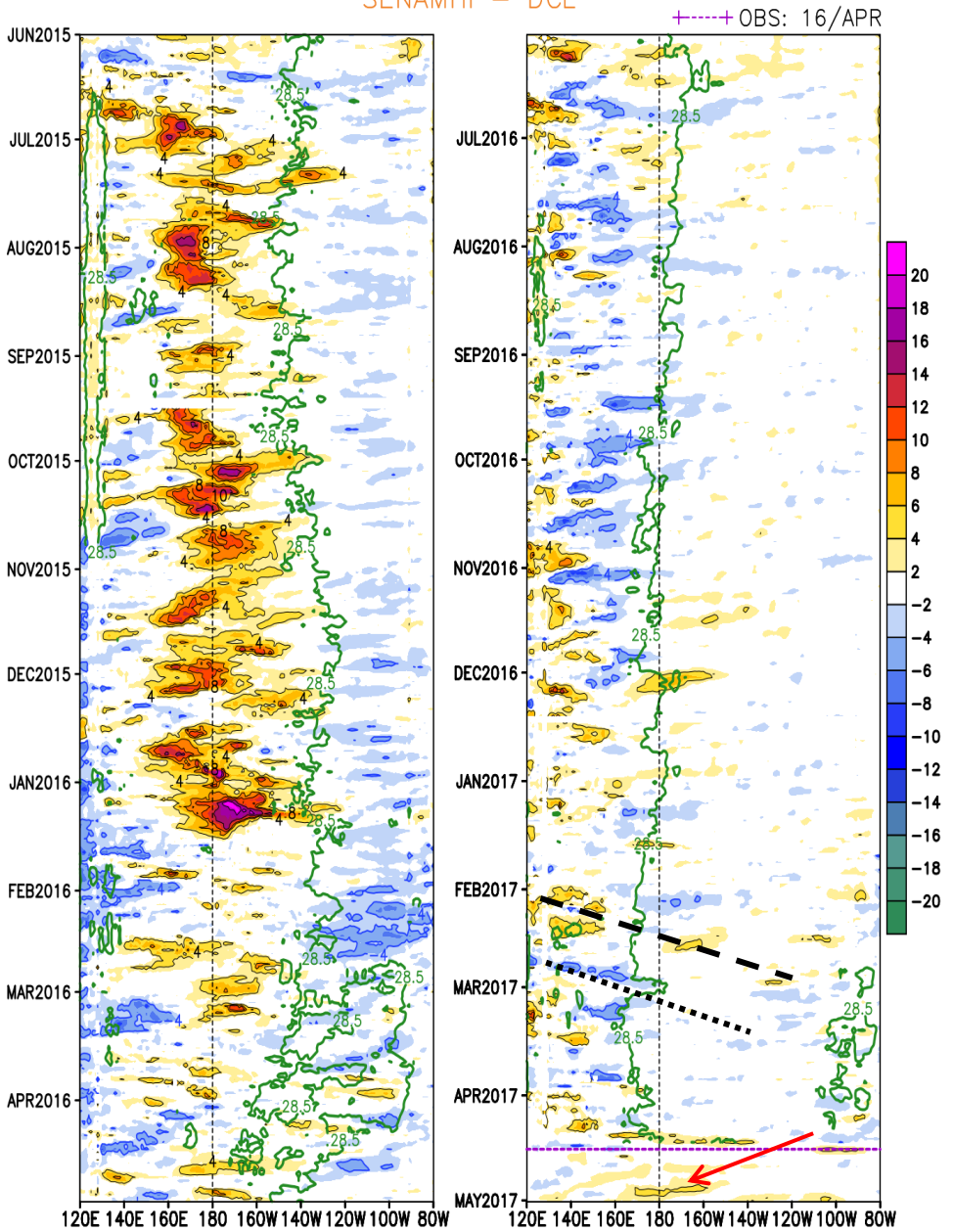


Data updated through 15 APR 2017

Viento Oceanico Superficial (m/s) – 10mts – *"Media Diaria Satelital"*

Anom.Viento Zonal <2°S–2°N>

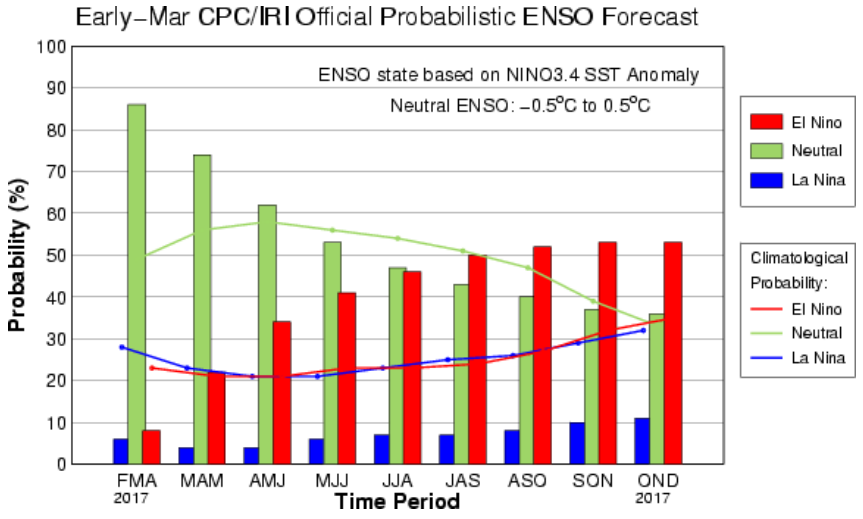
SENAMHI – DCL



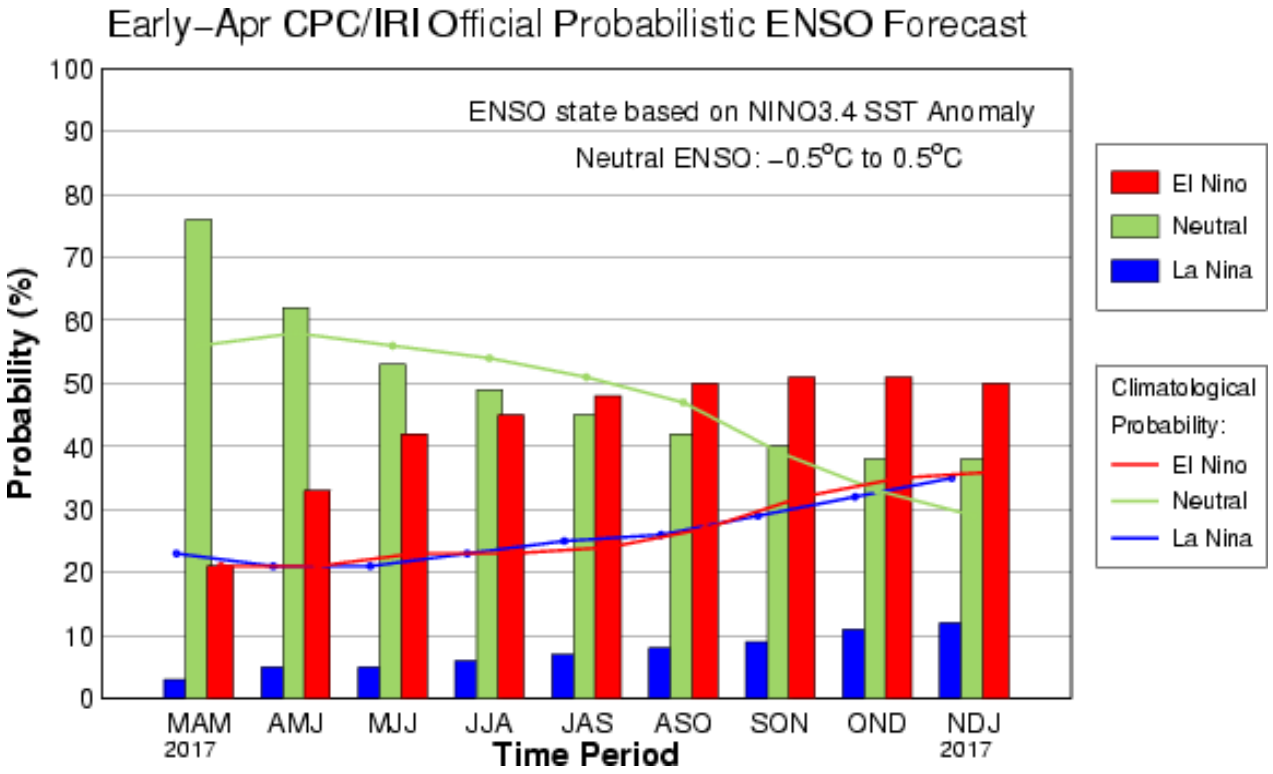
Datos Pronosticados hasta 01 MAY 2017.

Probabilidades de El Niño según porcentaje de modelos (IRI) y **evaluación experta**

Corrida del mes anterior



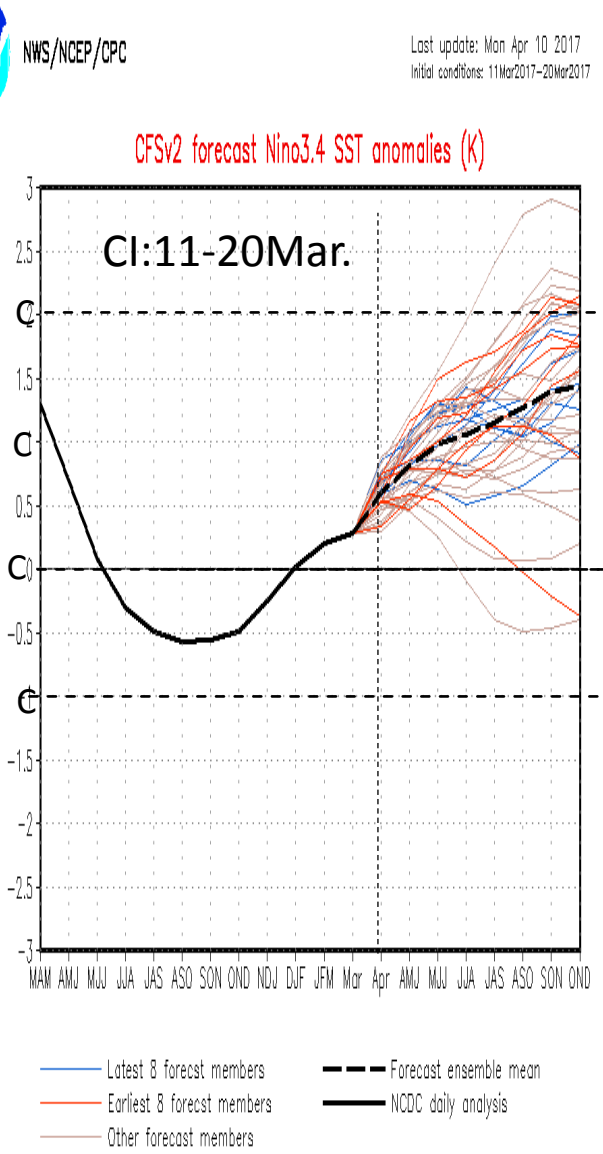
Corrida reciente

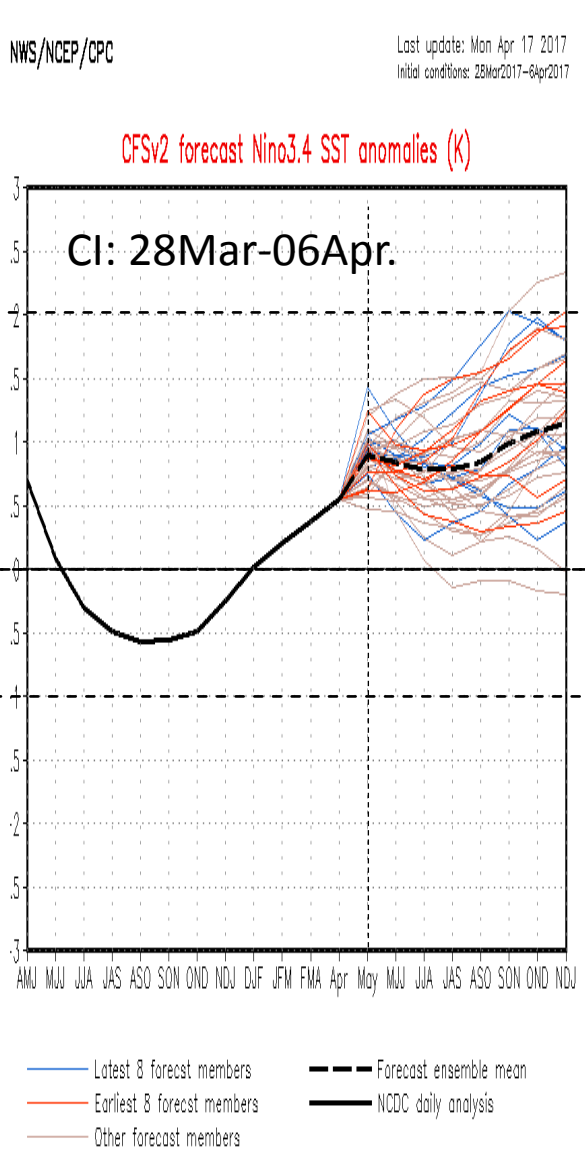


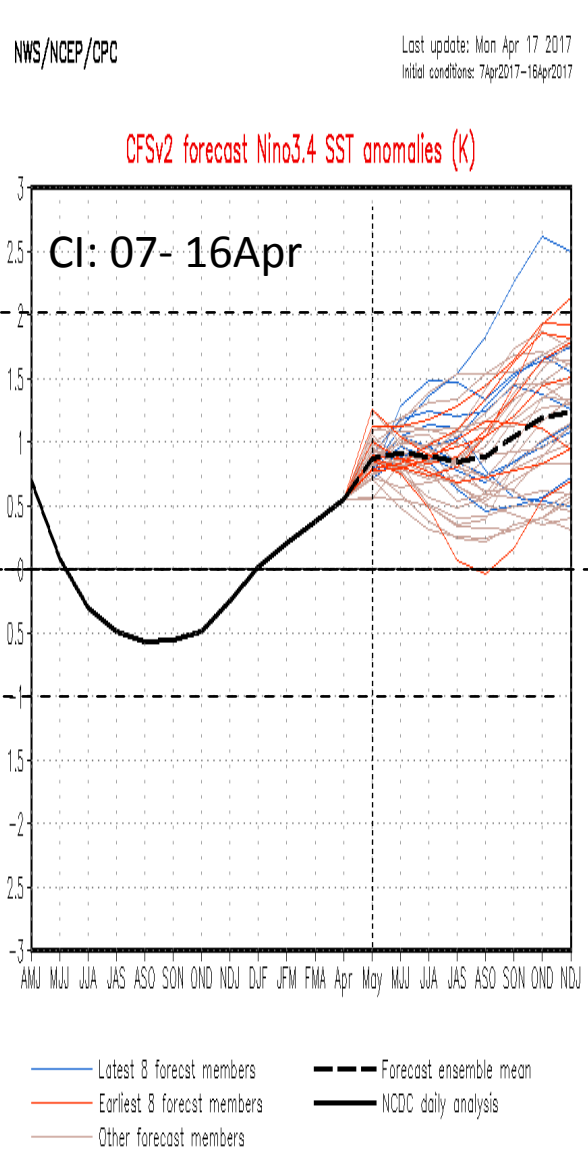
Según la evaluación NOAA/IRI, la probabilidad de Condiciones Neutras en el Pacífico central es de 53% para el mes de junio, y para julio es 49%

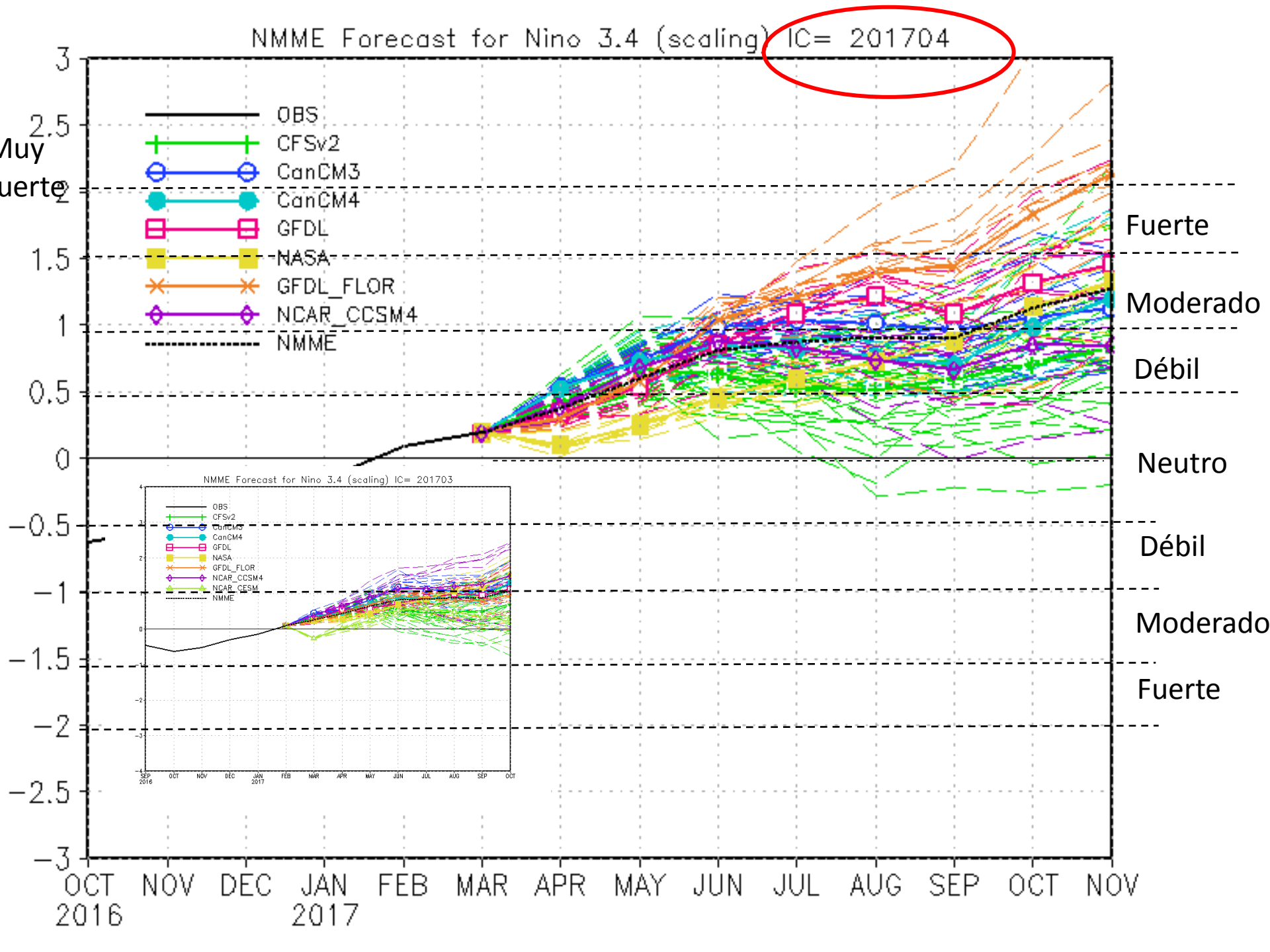
Publicado 13 de Abril de 2017

CFSv2: Niño 3.4

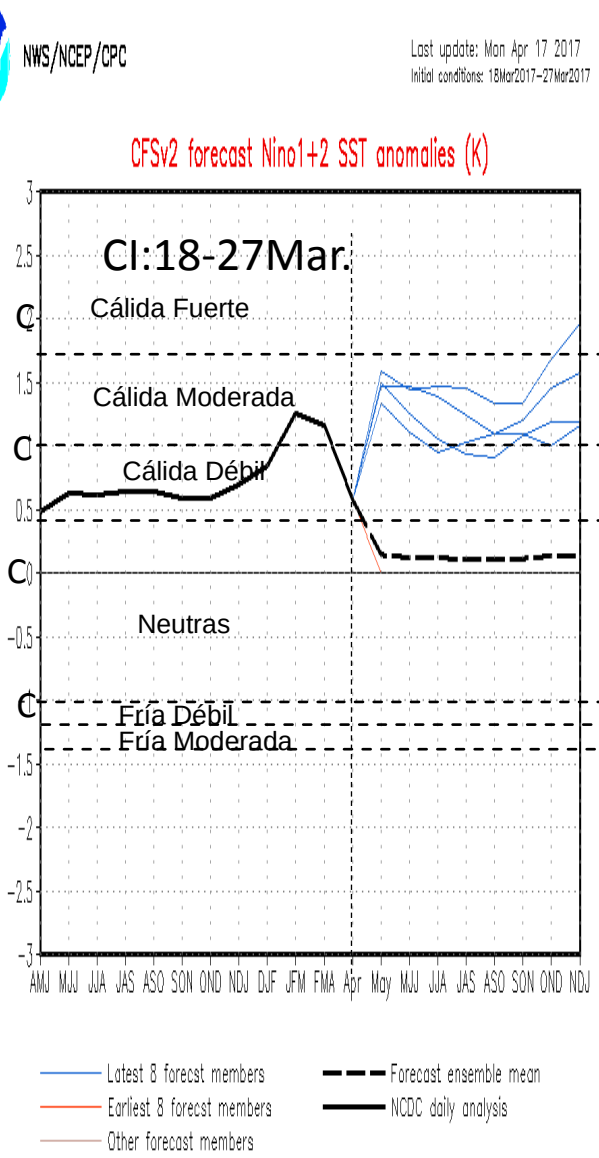


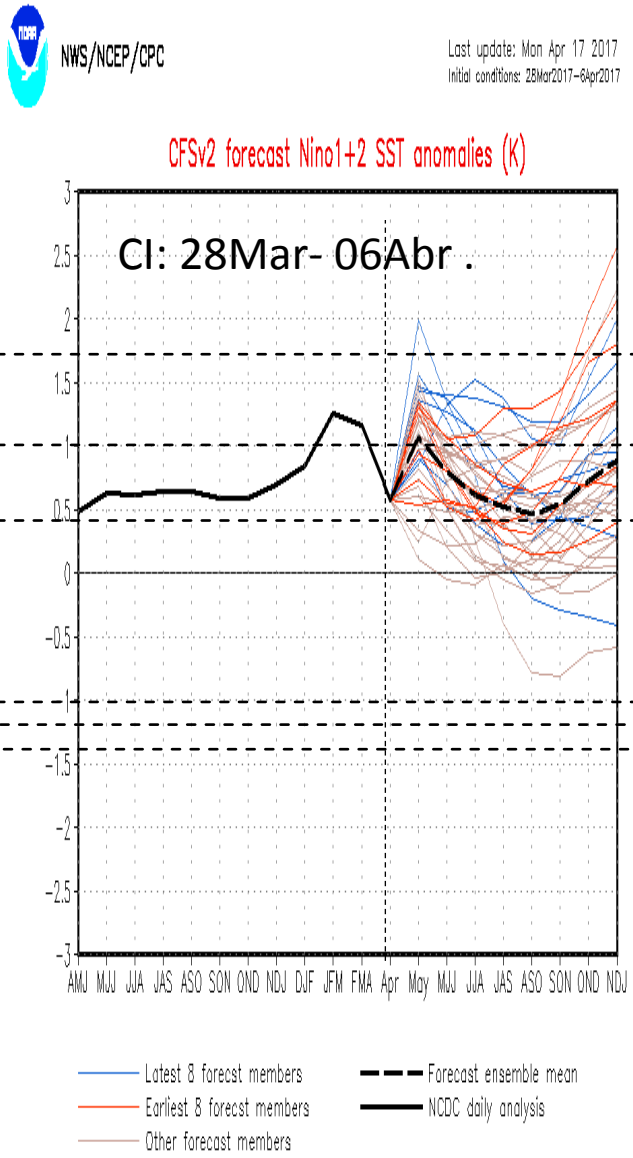


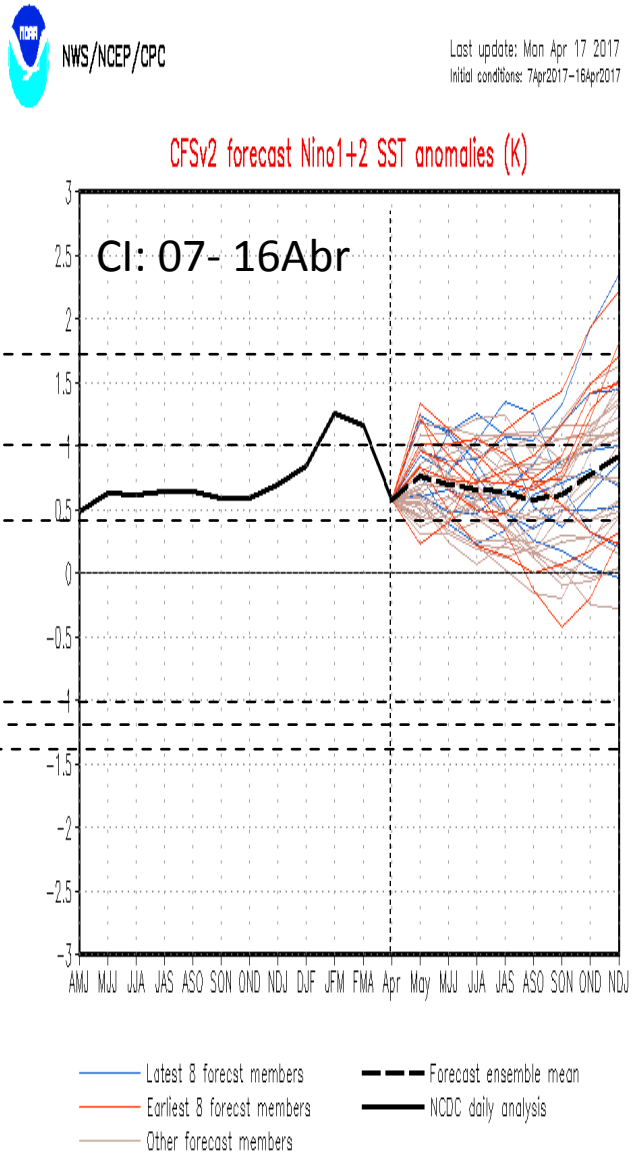


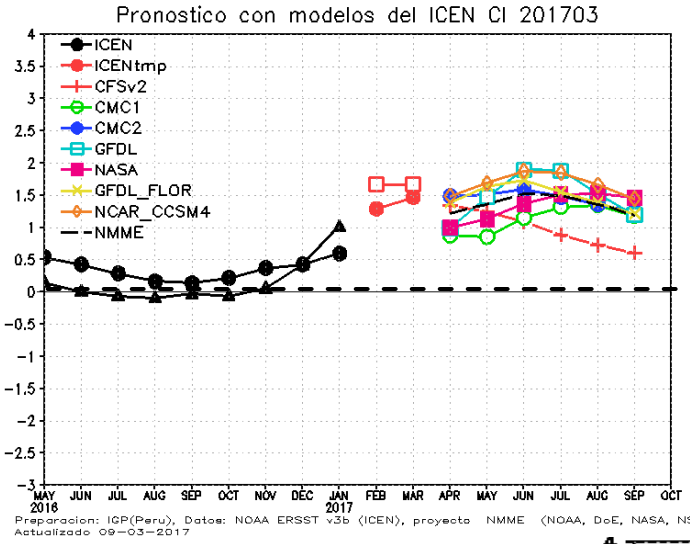

NMME Forecast for Nino 3.4 (scaling) IC= 201704
OBS
CFSv2
CanCM3
CanCM4
GFDL
NASA
GFDL_FLOR
NCAR_CCSM4
NMME
Muy
uerte
Fuerte
Moderado
Débil
Neutro
Débil
Moderado
Fuerte
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV
2016
2017
NMME Forecast for Nino 3.4 (scaling) IC= 201703

CFS v2: Niño 1+2



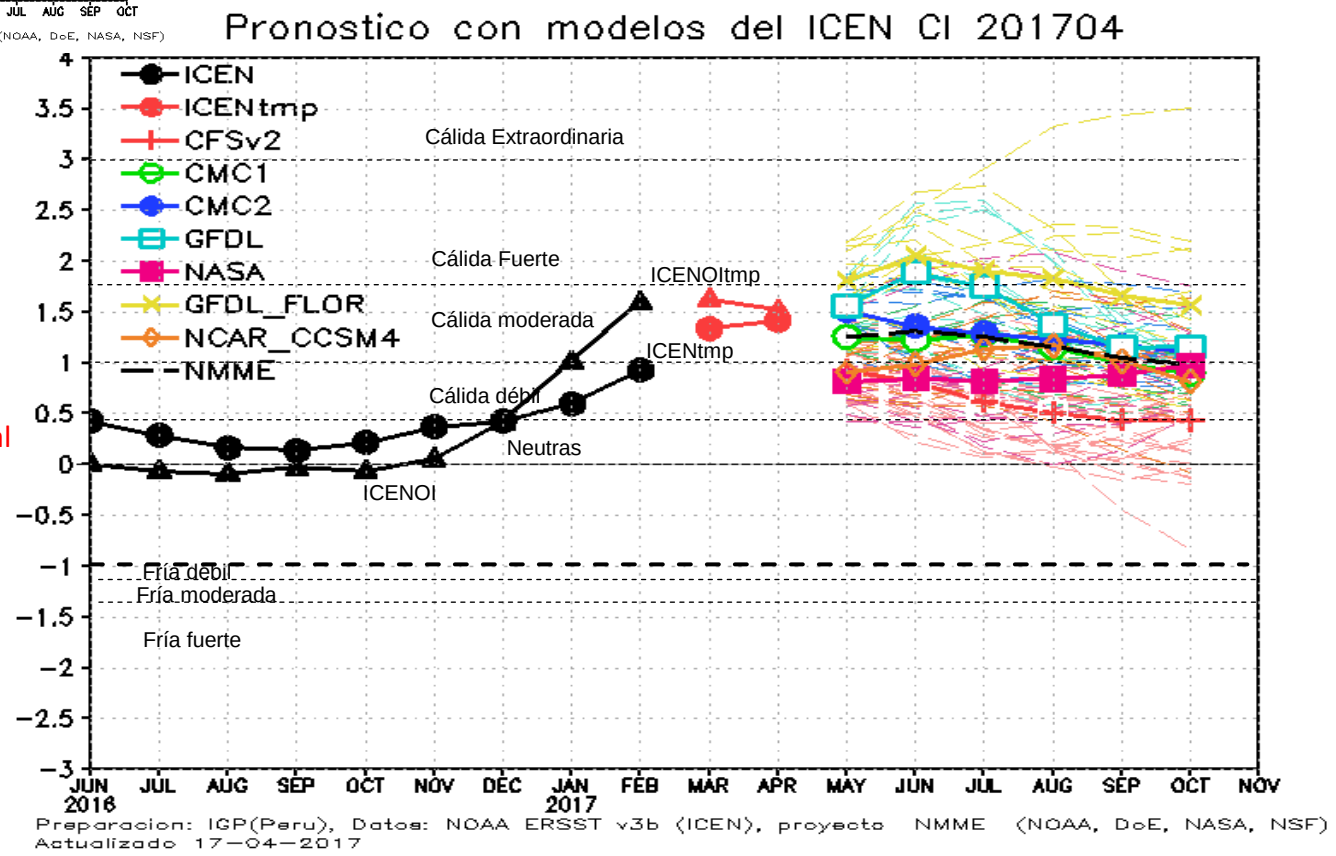






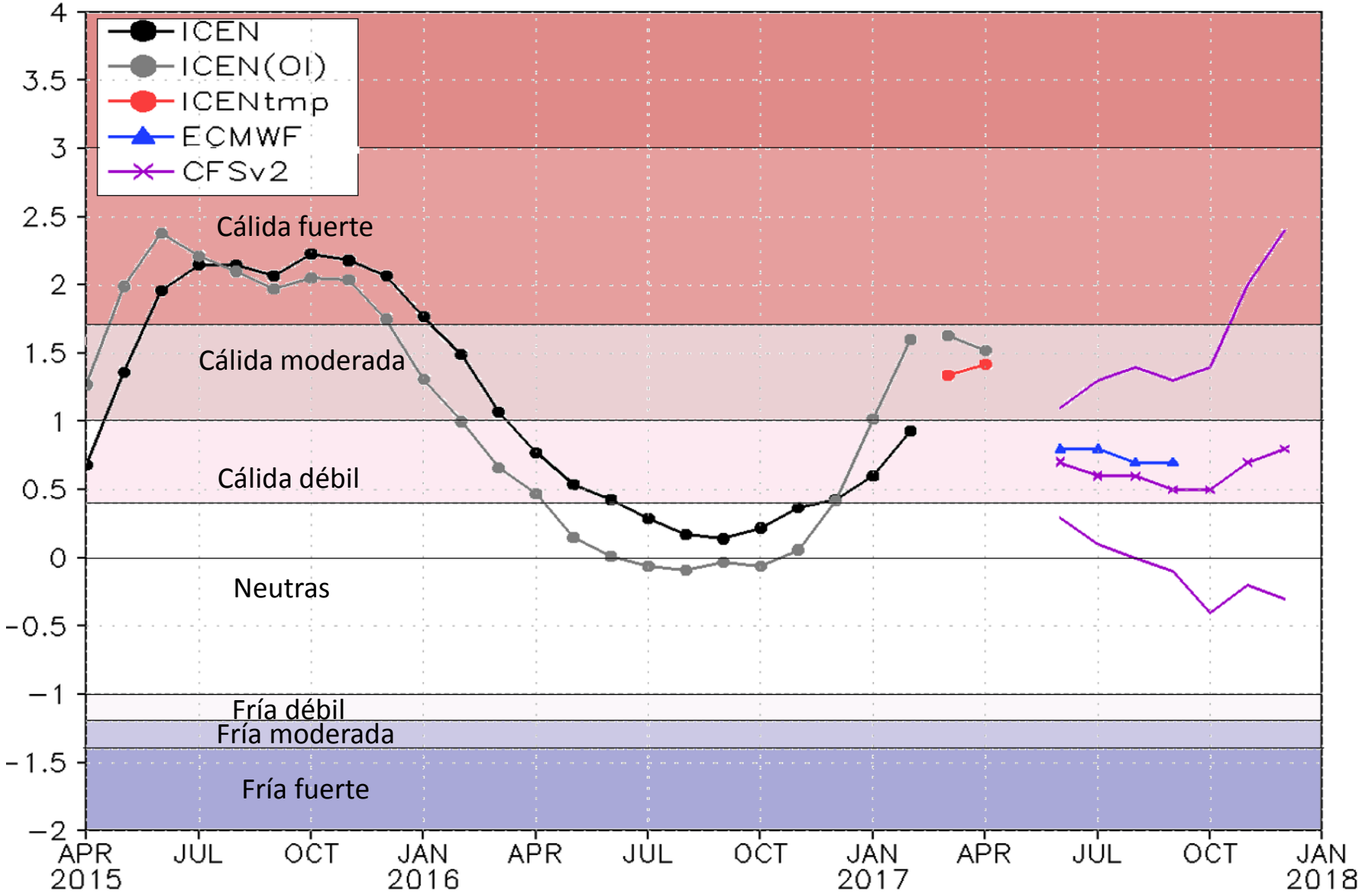
Corrida anterior

Corrida actual



Nota: Los pronósticos de los modelos CFSv2, CMC1, CMC2, GFDL, NASA , NCAR y GFDL_FLOR tienen como condiciones inicial el mes de abril de 2017.

Pronostico con modelos del ICEN



Nota: Las líneas delgadas en los pronósticos indican los máximos y mínimos en los “ensembles” de CFS2 con CI de abril.
Para ECMWF no se cuenta con datos del “ensemble”, tiene condiciones iniciales el mes de abril

Pronósticos de ICEN por modelos de NMME (promedios trimestrales de los pronósticos de las anomalías en Niño 1+2)

CI 2017 03

Modelo	EFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO
CFS2		1.23	1.34	1.25	1.09	0.89	0.73	0.61
CMC1		1.00	0.88	0.86	1.15	1.32	1.35	1.18
CMC2		1.30	1.49	1.51	1.59	1.48	1.36	1.25
GFDL		0.87	0.99	1.47	1.90	1.88	1.52	1.20
NASA		0.99	1.00	1.13	1.37	1.52	1.53	1.46
GFDL_FLOR		1.10	1.39	1.64	1.73	1.55	1.39	1.21
NCAR_CCSM4		1.25	1.49	1.69	1.88	1.85	1.66	1.44
NMME		1.11	1.23	1.36	1.53	1.50	1.36	1.19
ICENtmp	0.92							

CI 2017 04

Modelo	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON
CFS2		1.45	0.93	0.82	0.62	0.51	0.44	0.44
CMC1		1.41	1.26	1.22	1.28	1.15	0.99	0.89
CMC2		1.65	1.51	1.36	1.29	1.23	1.17	1.10
GFDL		1.44	1.57	1.89	1.75	1.38	1.15	1.16
NASA		1.14	0.82	0.84	0.82	0.84	0.89	0.98
GFDL_FLOR		1.79	1.80	2.05	1.91	1.83	1.66	1.56
NCAR_CCSM4		1.19	0.91	0.98	1.14	1.17	1.02	0.82
NMME		1.44	1.26	1.31	1.26	1.16	1.05	0.99
ICENtmp	1.34							

Nota: Para el modelo CFSv2 en (MAM), se realizó el promedio de los meses marzo y mayo; para (AMJ) se hizo el Promedio de mayo y junio.

Pronósticos de ONI por modelos de NMME (promedios trimestrales de los pronósticos de las anomalías en Niño 3.4)

CI 2017 03

Modelo	EFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO
CFS2		0.27	0.77	0.79	0.81	0.76	0.73	0.80
CMC1		0.28	0.52	0.62	0.78	0.98	**1.10**	**1.15**
CMC2		0.26	0.55	0.75	1.00	**1.26**	**1.46**	**1.62**
GFDL		0.36	0.75	**1.06**	**1.32**	**1.54**	**1.58**	**1.41**
NASA		0.15	0.36	0.51	0.75	**1.06**	**1.32**	**1.50**
GFDL_FLOR		0.27	0.57	0.77	0.94	**1.05**	**1.10**	**1.08**
NCAR_CCSM4		0.29	0.59	0.79	0.97	**1.19**	**1.42**	**1.57**
NMME		0.27	0.59	0.76	0.94	**1.12**	**1.24**	**1.30**
ONItmp	-0.06							

CI 2017 04

Modelo	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON
CFS2		0.38	0.84	0.83	0.78	0.76	0.78	0.90
CMC1		0.38	0.62	0.71	0.84	0.94	0.96	0.97
CMC2		0.41	0.73	0.93	**1.10**	**1.18**	**1.24**	**1.39**
GFDL		0.36	0.74	**1.15**	**1.52**	**1.64**	**1.55**	**1.45**
NASA		0.12	0.29	0.52	0.79	**1.05**	**1.23**	**1.39**
GFDL_FLOR		0.34	0.68	0.98	**1.26**	**1.46**	**1.62**	**1.77**
NCAR_CCSM4		0.35	0.63	0.80	0.87	0.89	0.90	0.91
NMME		0.33	0.65	0.85	**1.02**	**1.13**	**1.18**	**1.25**
ONItmp	0.07							

Nota: Para el modelo CFSv2 en (MAM), se realizó el promedio de los meses marzo y mayo; para (AMJ) se hizo el Promedio de mayo y junio.

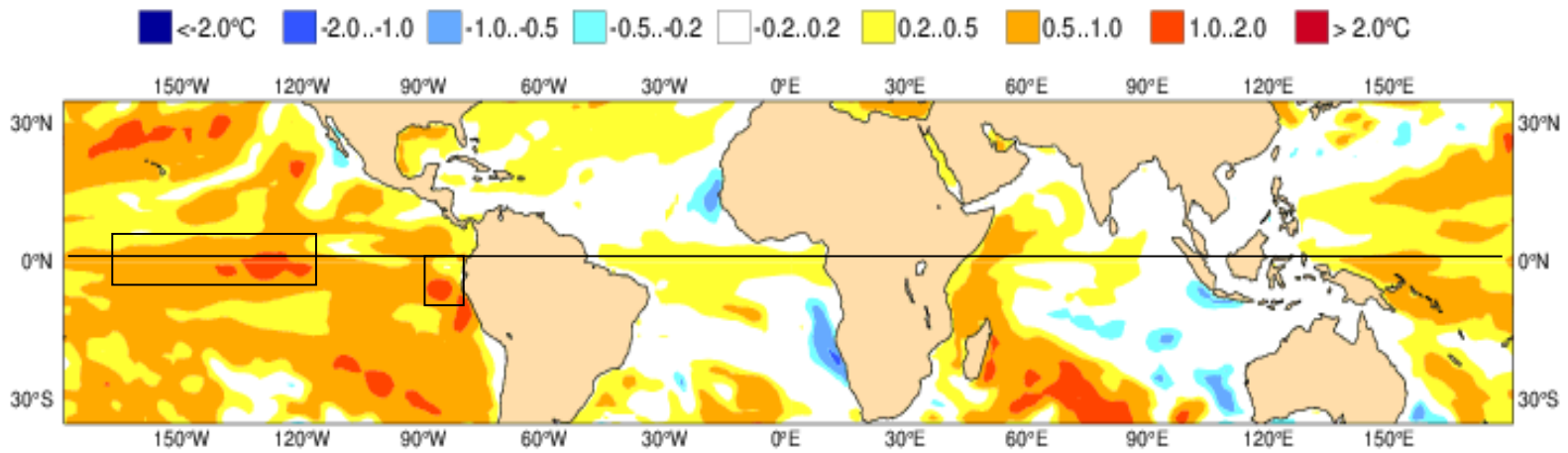
MJJ 2017

ECMWF Seasonal Forecast
Mean forecast SST anomaly
Forecast start reference is 01/04/17
Ensemble size = 51, climate size = 450

System 4
MJJ 2017

ECMWF

C.I. Abril

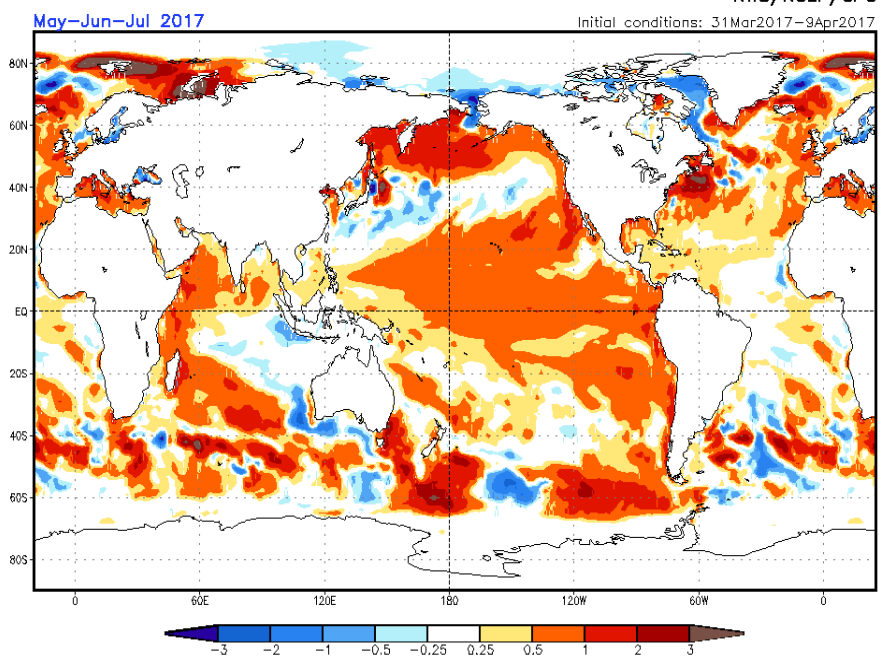


Pac. Cen.
0.8 ° C

Pac. Or.
0.8° C

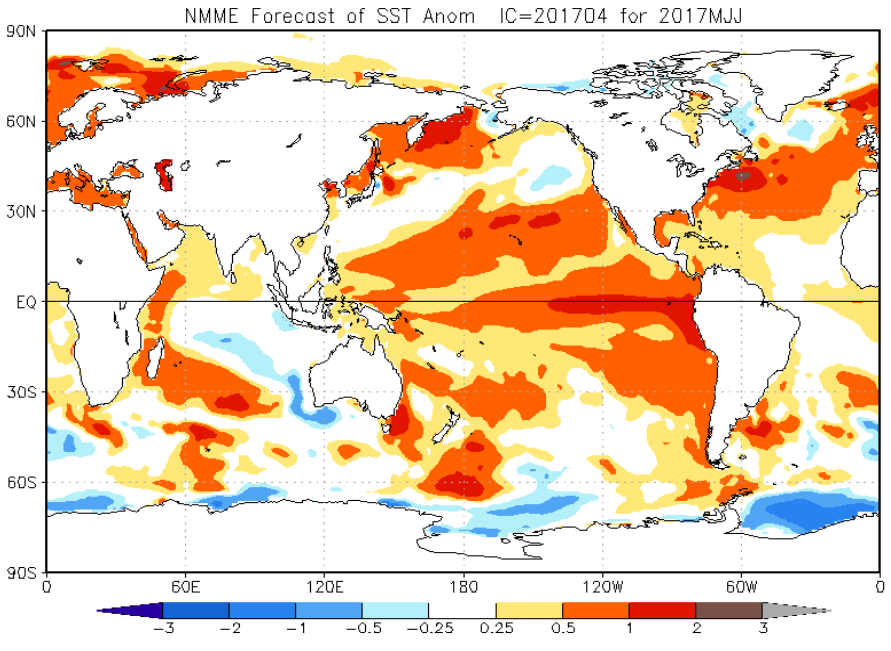
CFS2

C.I. Abril



NMME

C.I. Abril



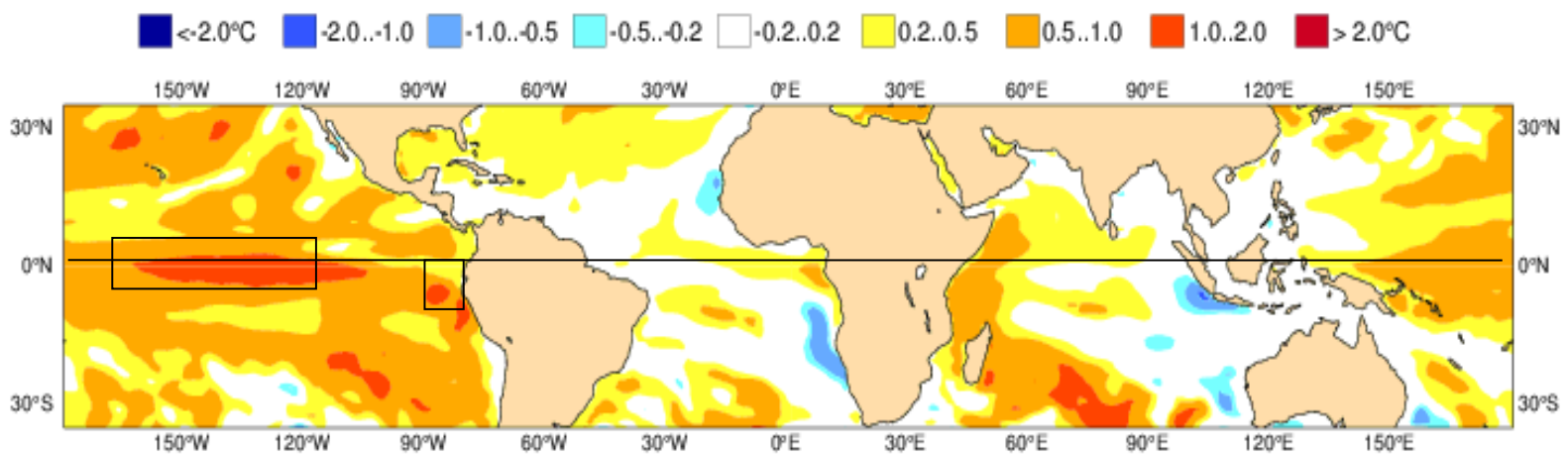
JJA 2017

ECMWF Seasonal Forecast
Mean forecast SST anomaly
Forecast start reference is 01/04/17
Ensemble size = 51, climate size = 450

System 4
JJA 2017

ECMWF

C.I. Abril

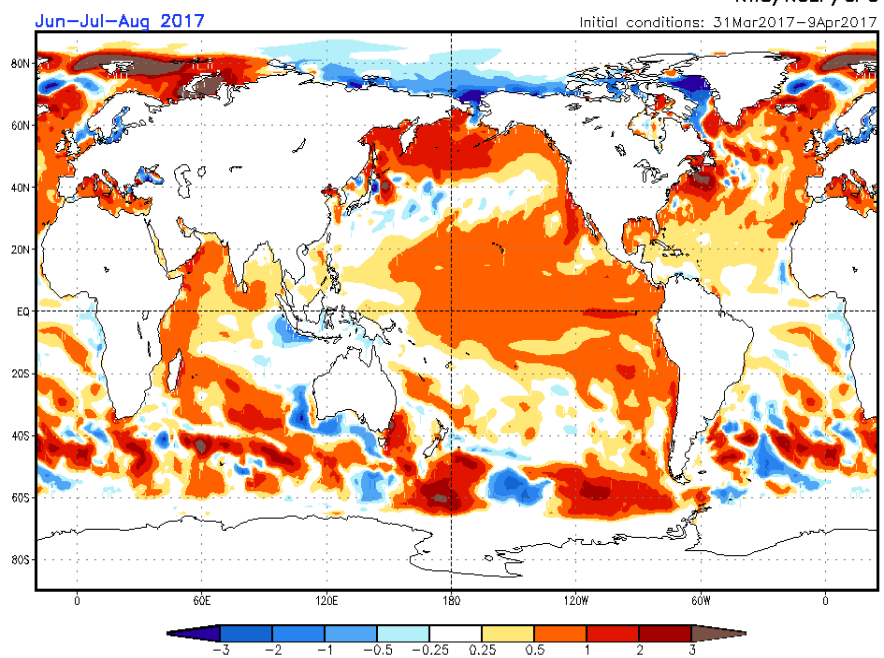


Pac. Cen.
1.2 ° C

Pac. Or.
0.8° C

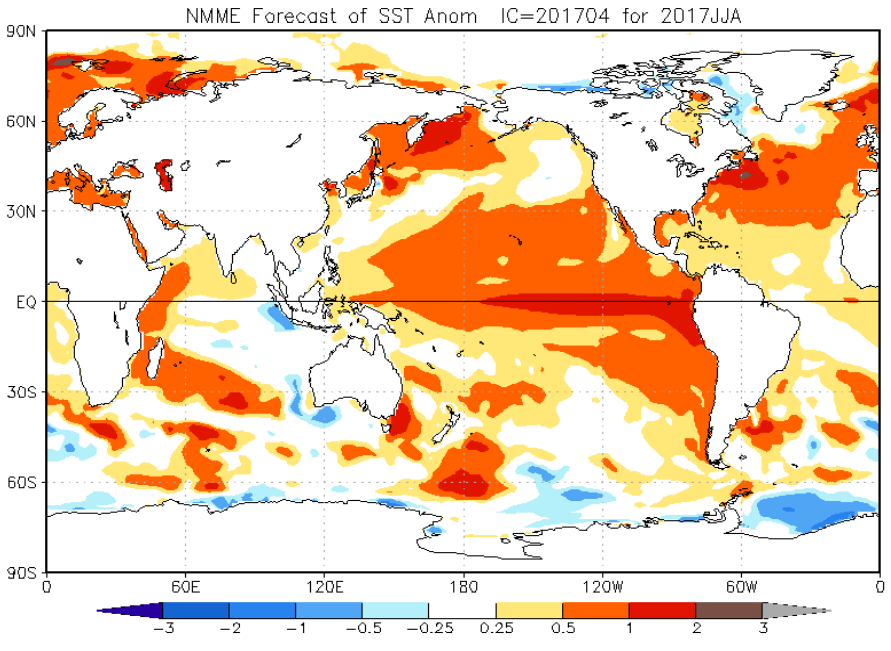
CFS2

C.I. Abril



NMME

C.I. Abril



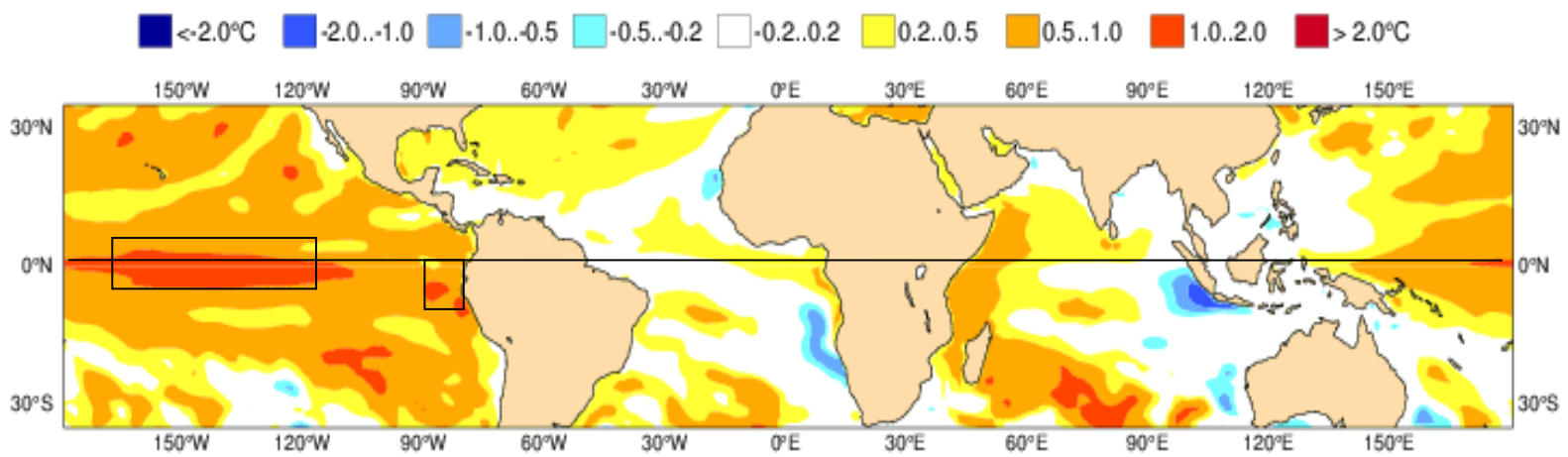
JAS 2017

ECMWF Seasonal Forecast
Mean forecast SST anomaly
Forecast start reference is 01/04/17
Ensemble size = 51, climate size = 450

System 4
JAS 2017

ECMWF

C.I. Abril

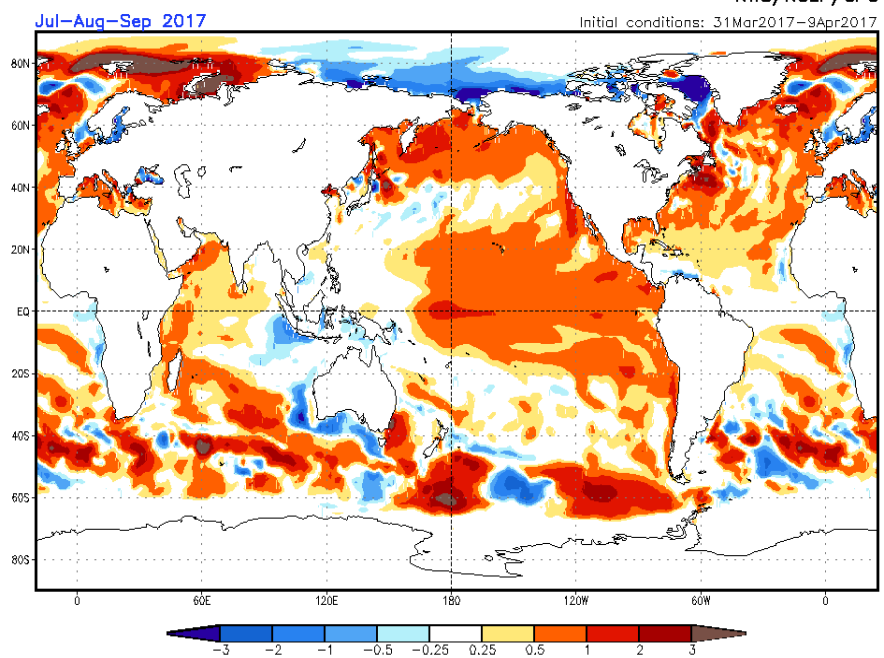


Pac. Cen.
1.3 ° C

Pac. Or.
0.7° C

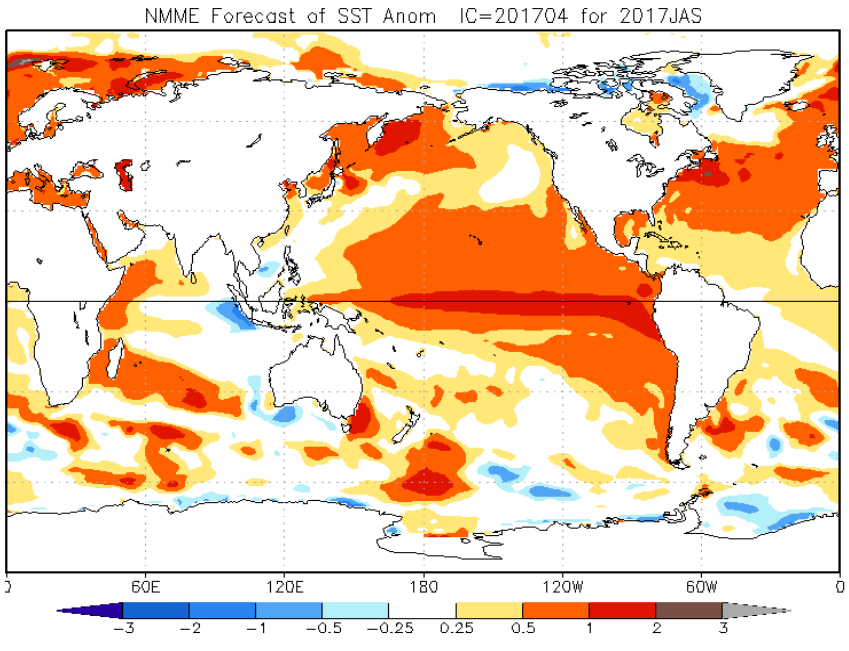
CFS2

C.I. Abril



NMME

C.I. Abril



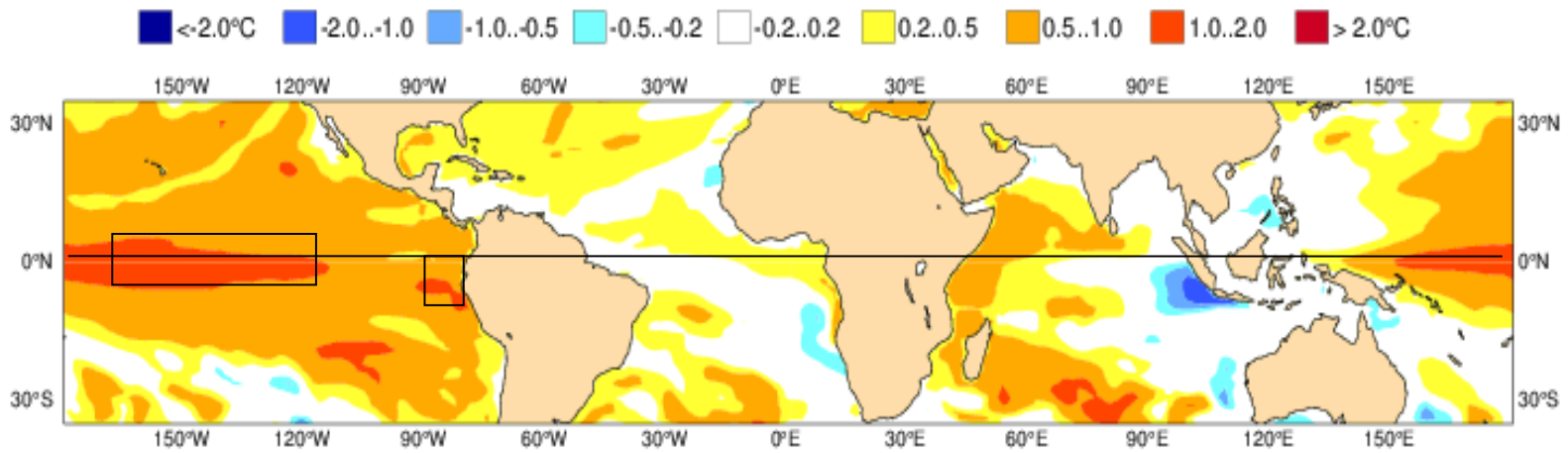
ASO 2017

ECMWF Seasonal Forecast
Mean forecast SST anomaly
Forecast start reference is 01/04/17
Ensemble size = 51, climate size = 450

System 4
ASO 2017

ECMWF

C.I. Abril

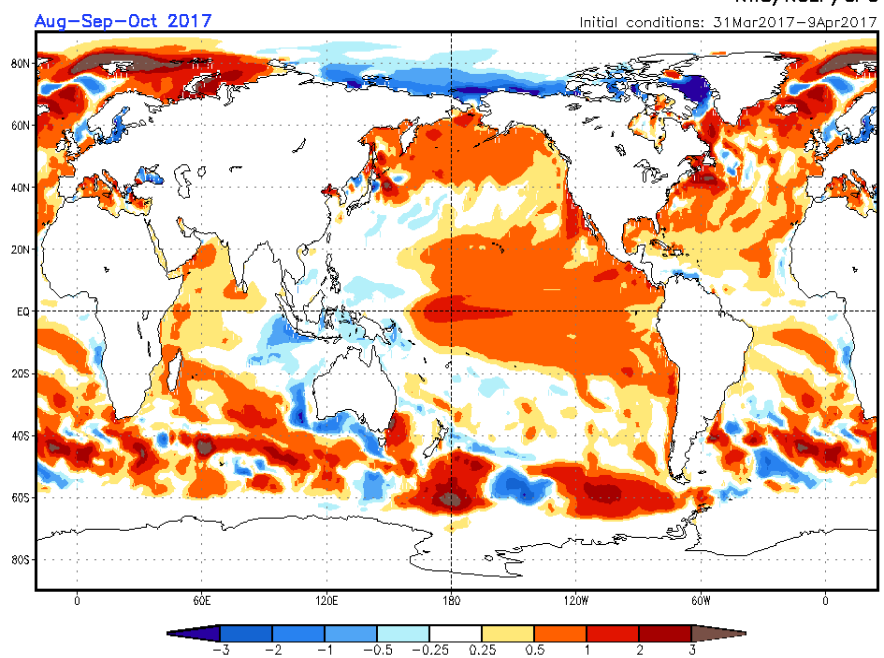


Pac. Cen.
1.5 ° C

Pac. Or.
0.7° C

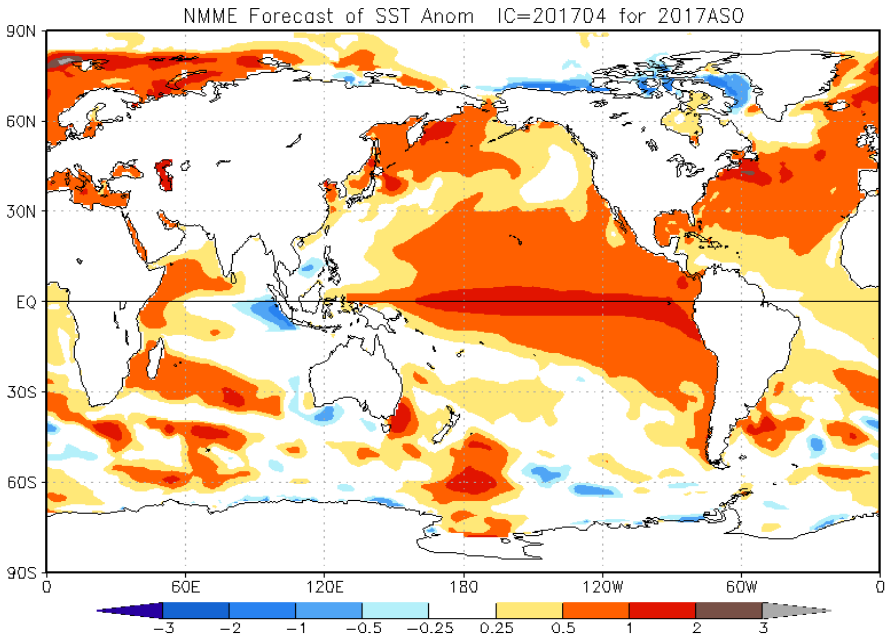
CFS2

C.I. Abril



NMME

C.I. Abril



Gracias!