



PERÚ

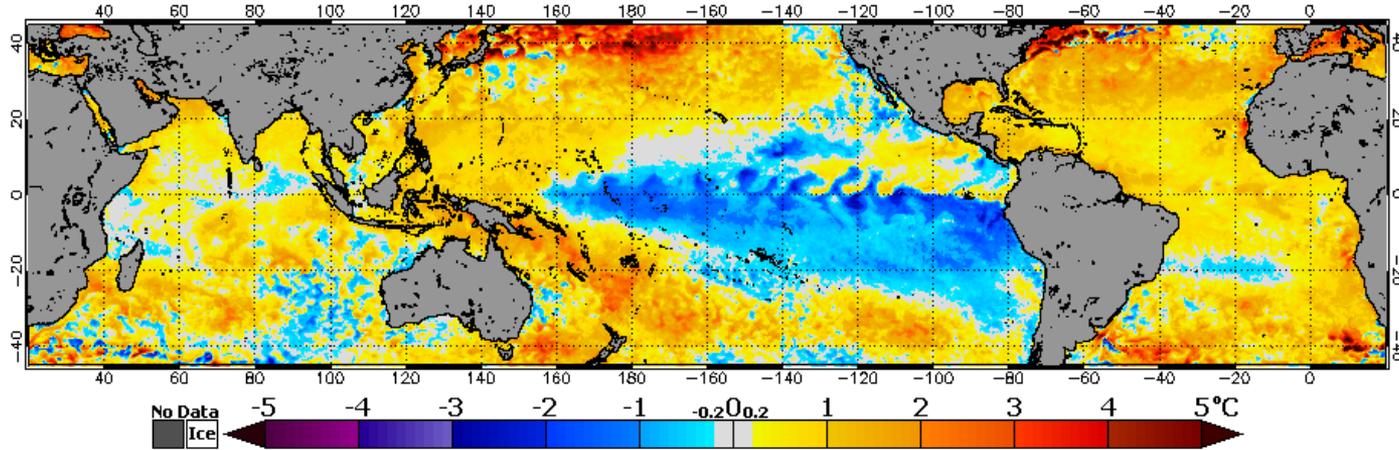
Ministerio
del Ambiente



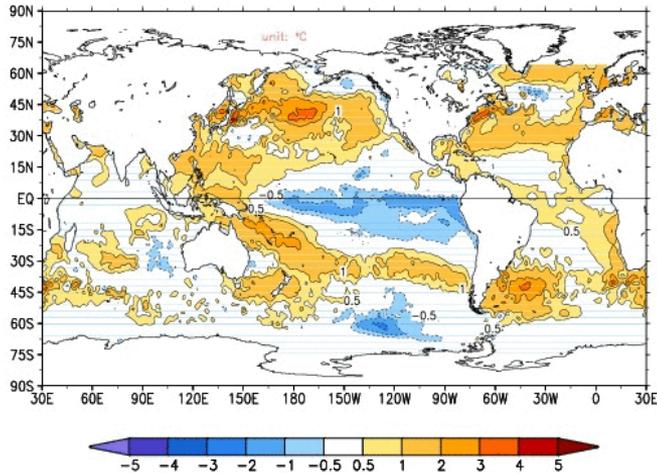
NOVIEMBRE 2022

**Boletín Informativo
Monitoreo del
Fenómeno El Niño /
La Niña**

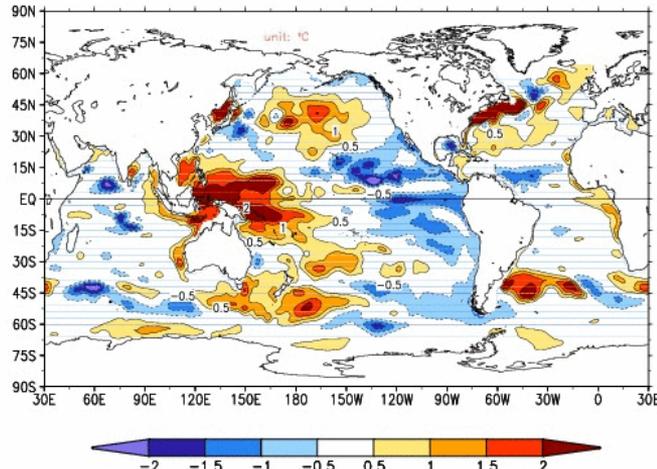
Este producto contempla la evolución de las condiciones atmosféricas a nivel global y regional durante noviembre y los primeros días de diciembre de 2022. Este monitoreo se realiza a partir de diferentes fuentes, incluidos datos de modelos numéricos de tiempo y clima, datos de vientos satelitales, entre otros. Este producto es insumo para las reuniones del GTCT-ENFEN



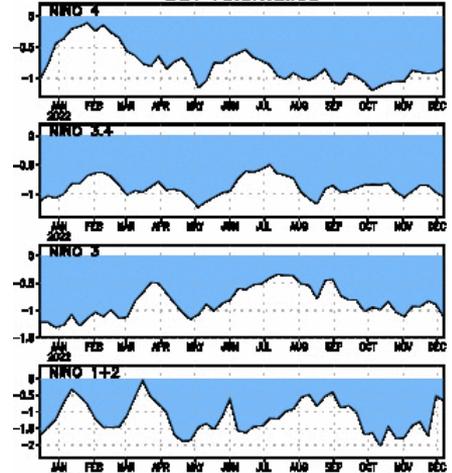
OISSTv2.1 Anomaly, 11/09/2022–12/04/2022



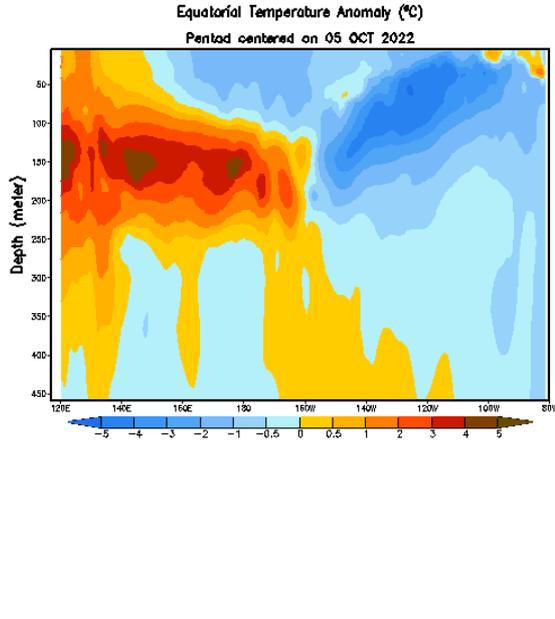
GODAS 300m Ave Temp Anomaly, 11/09/2022–12/04/2022



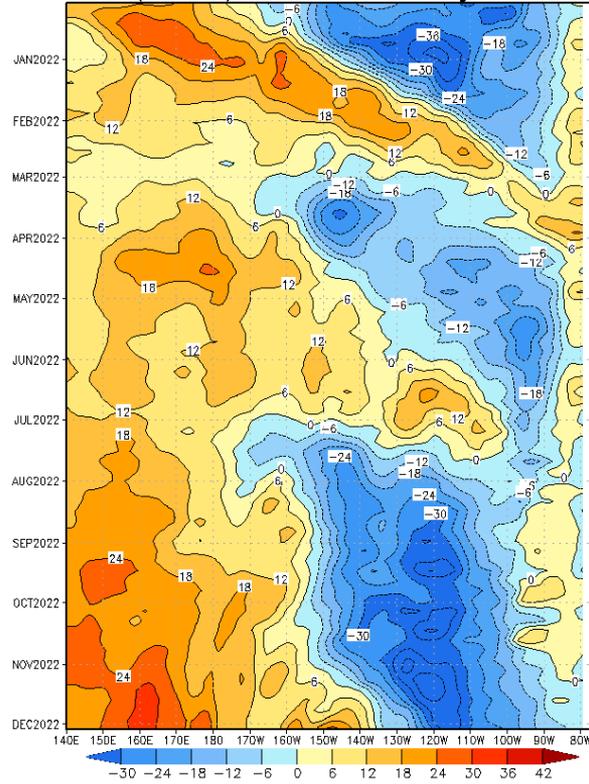
SST Anomalies



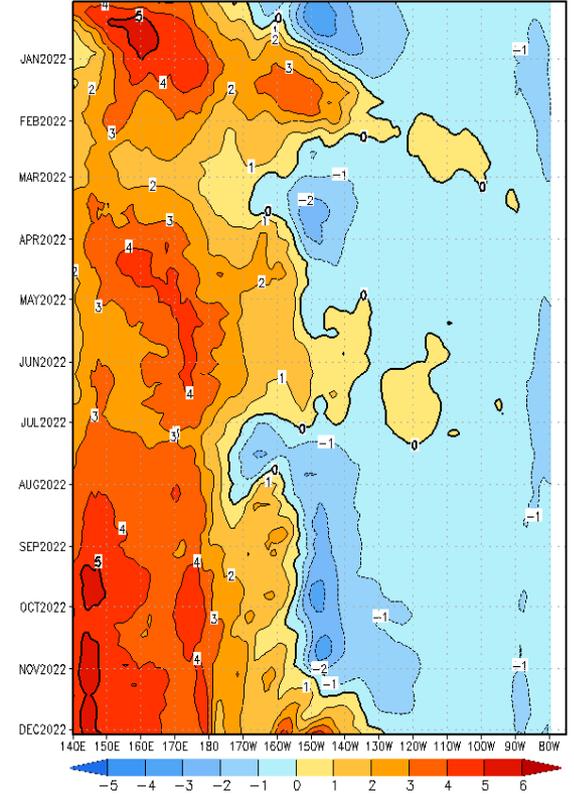
CPC Weekly ENSO update



Depth 20°C Pentad Anomaly, ending Dec 06 2022
(2°S–2°N), 12-Pentads Running Mean



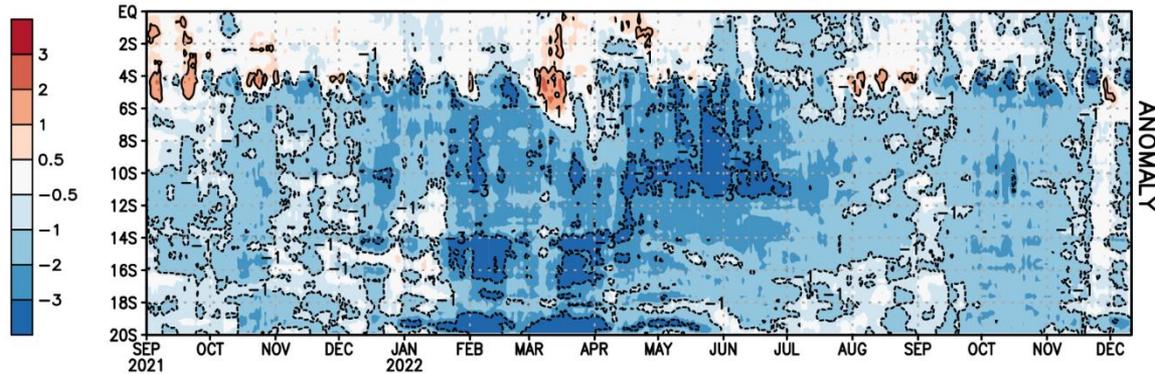
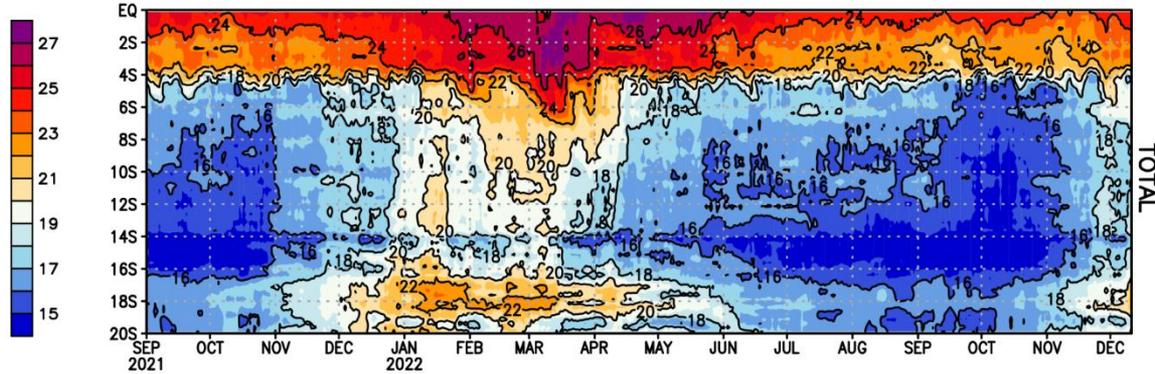
155M Temp Pentad Anomaly, ending Dec 06 2022
(2°S–2°N)



Analysis is based on NOAA/PMEL TAO buoy data, TOPEX/POSEIDON sea-level data and ships of opportunity

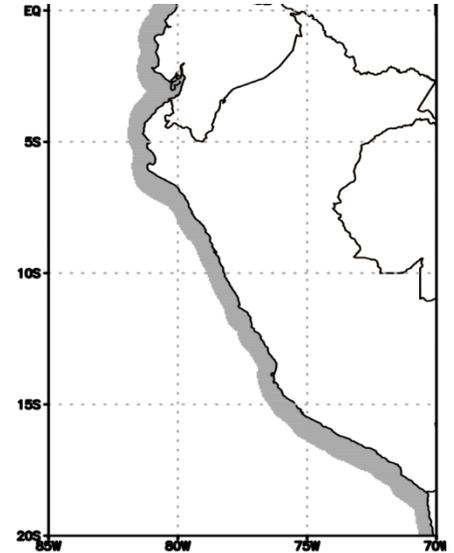
TSM frente a la costa peruana

Temperatura Superficial del Mar frente a la costa peruana



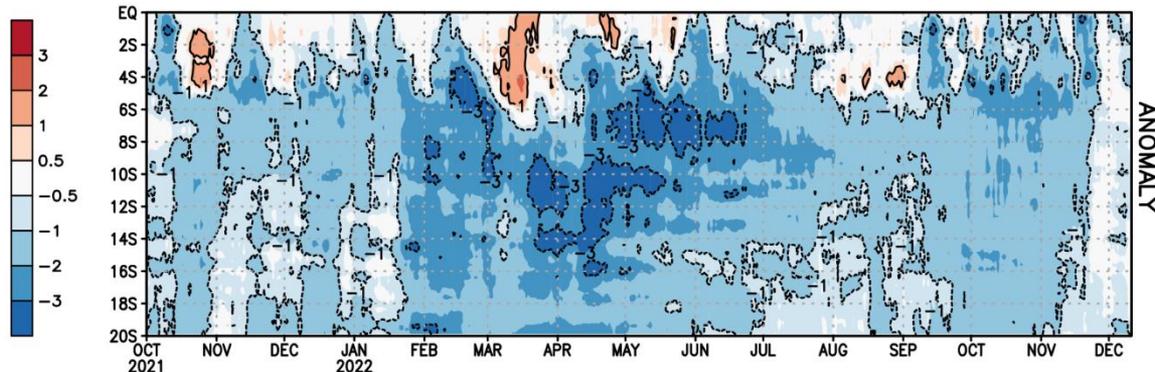
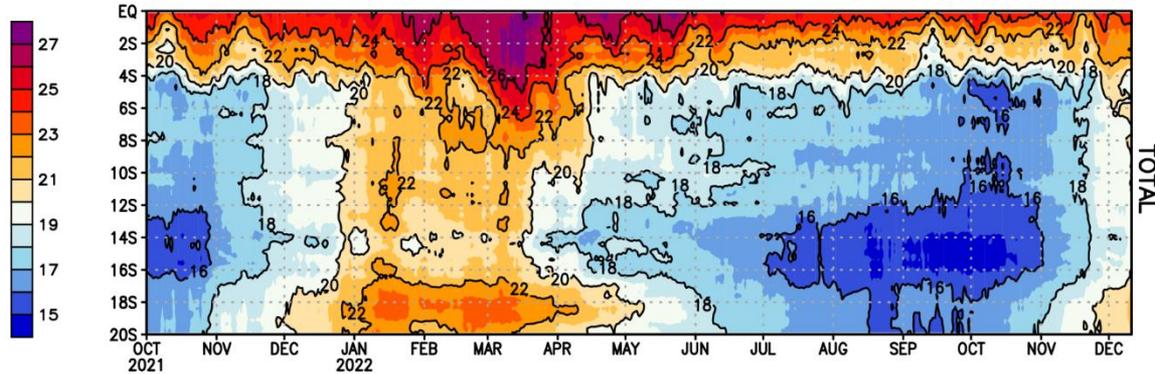
Source: OSTIA
CLIM: 2007 - 2019
Processing: SENAMHI/DMA/SPC

100 Km off the coast



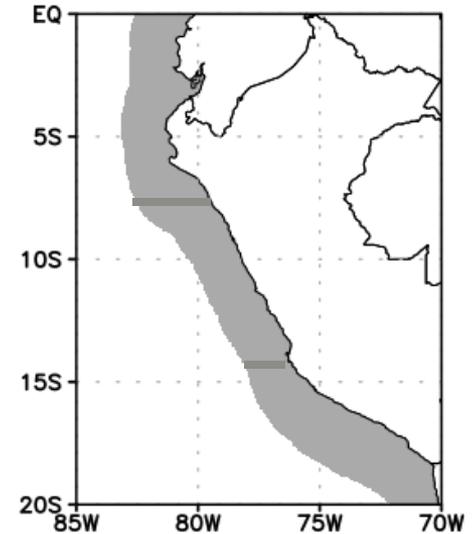
TSM frente a la costa peruana

Temperatura Superficial del Mar frente a la costa peruana

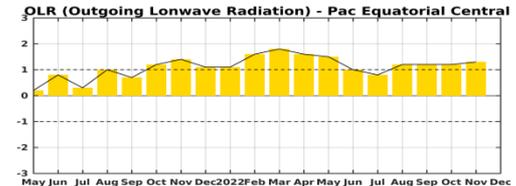
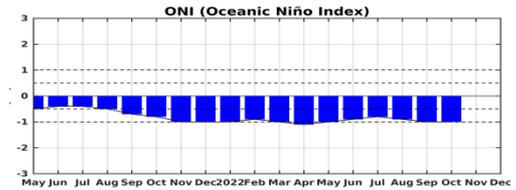
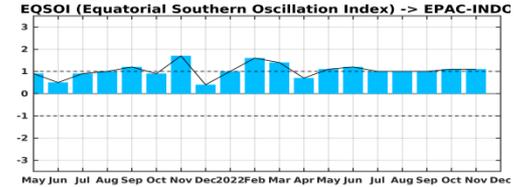
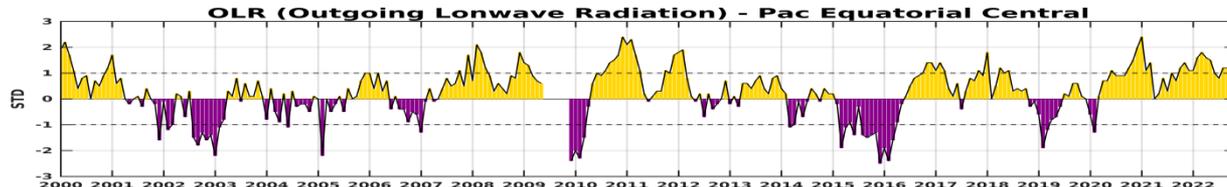
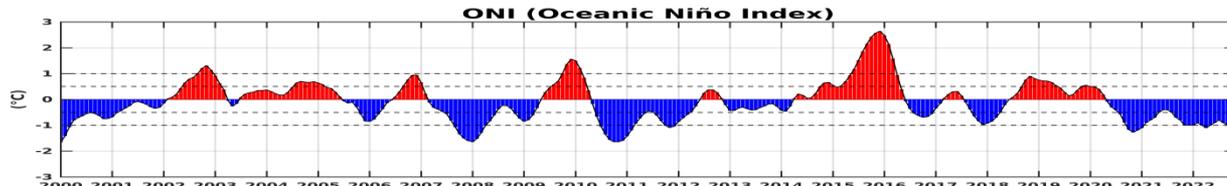
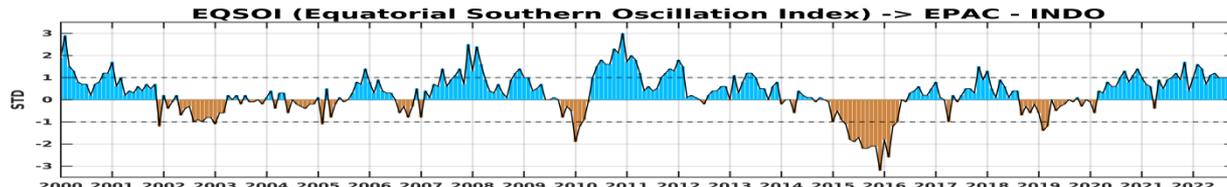


Source: OSTIA
CLIM: 2007 - 2019
Processing: SENAMHI/DMA/SPC

300 Km off the coast

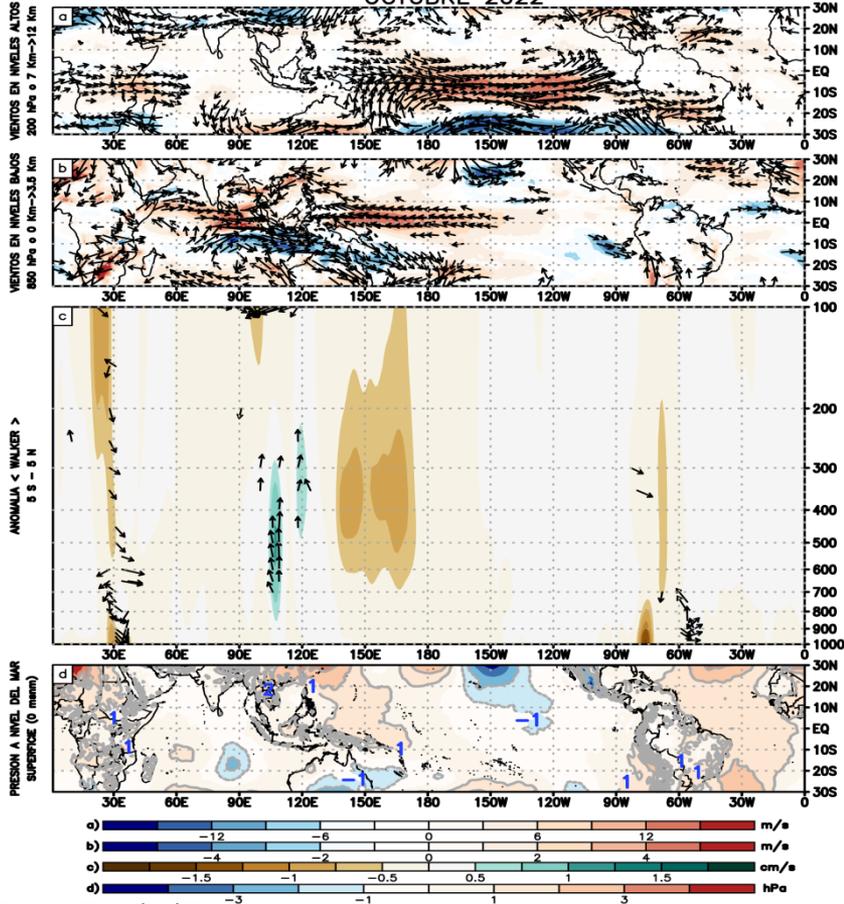


Pacífico Ecuatorial



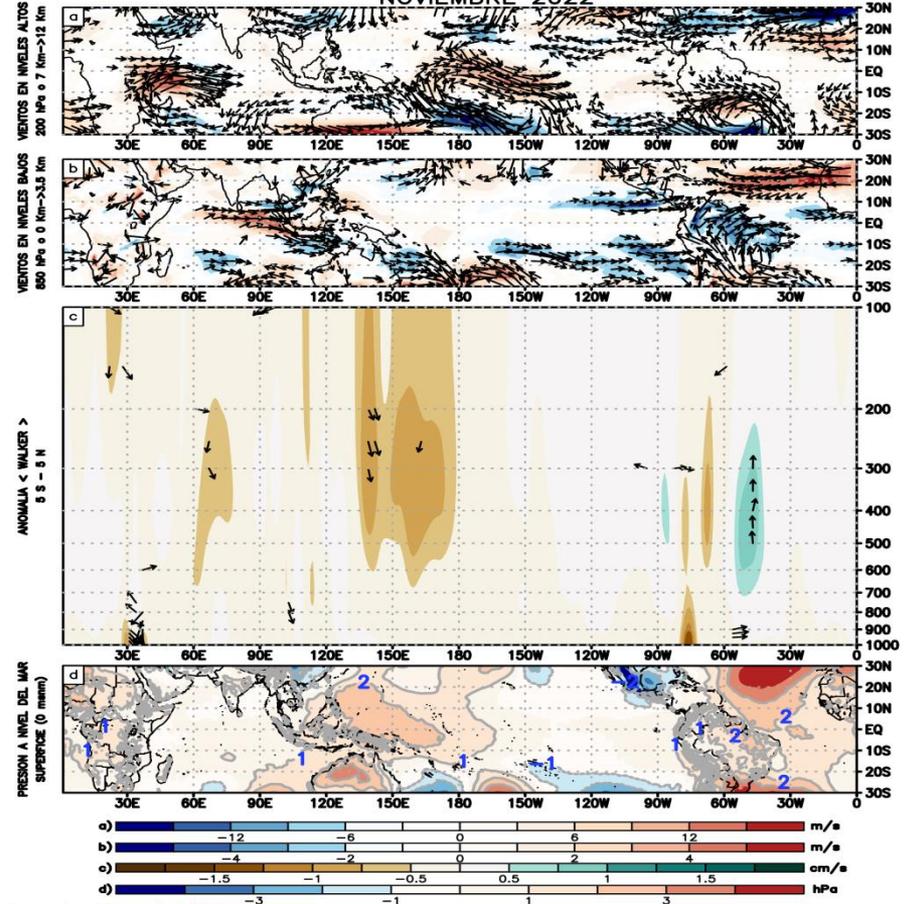
Pacífico Ecuatorial

OCTUBRE 2022



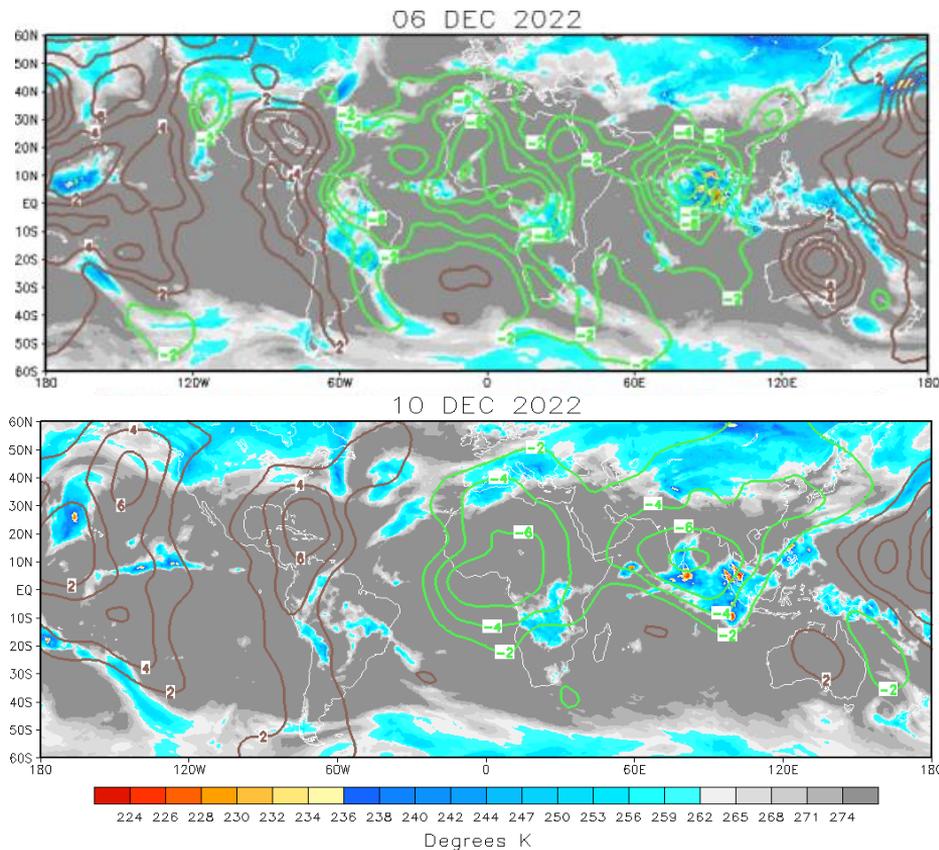
Processing: SENAMHI/DMA/SPC

NOVIEMBRE 2022

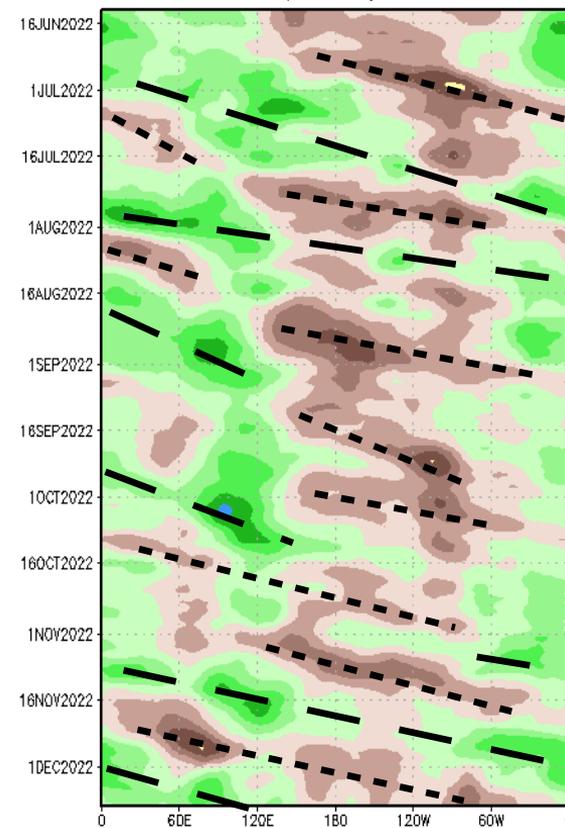


Processing: SENAMHI/DMA/SPC

Variabilidad intraestacional: Forzantes externas de Variabilidad - MJO



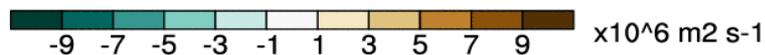
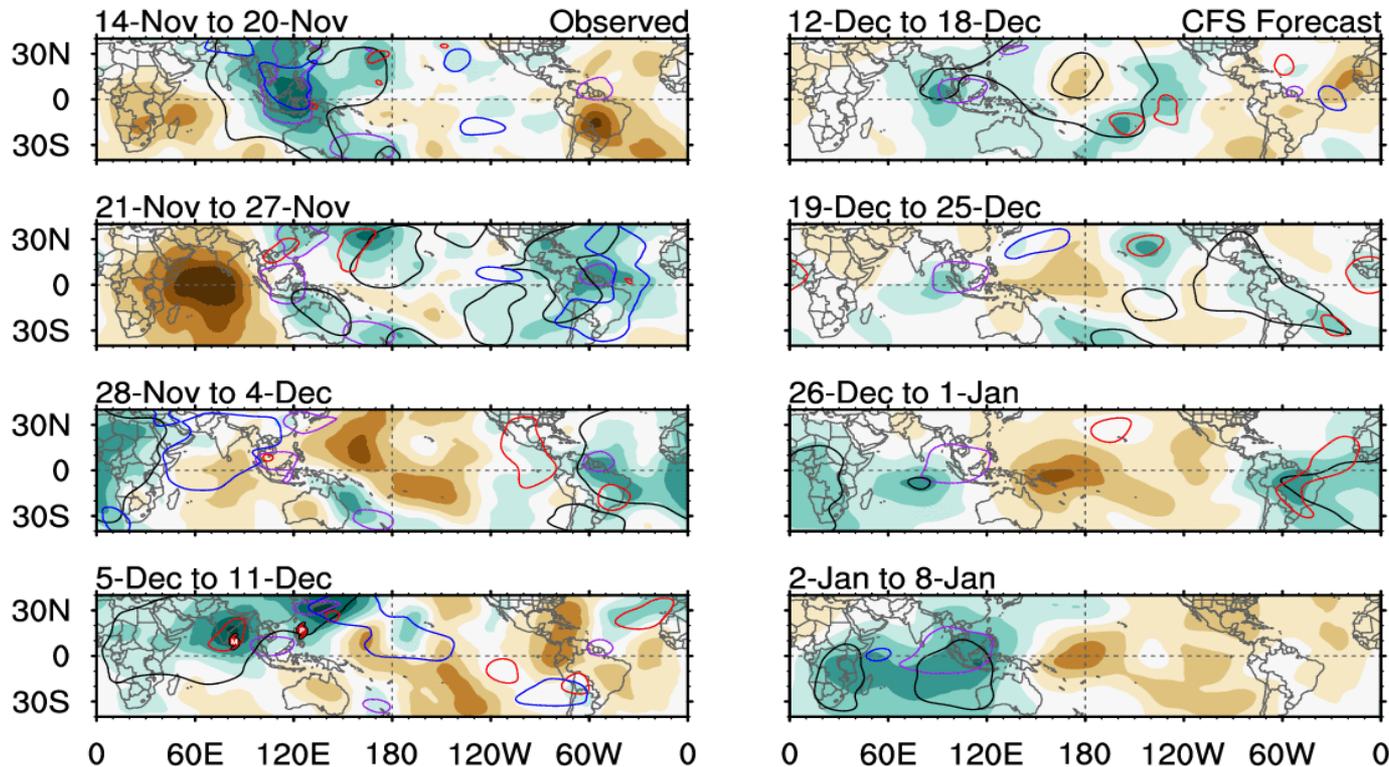
200-hPa Velocity Potential Anomaly: 5N-5S
5-day Running Mean



 Divergencia  Convergencia

Fuente: CPC/NOAA

Anomalía de la velocidad potencial a 200 hPa

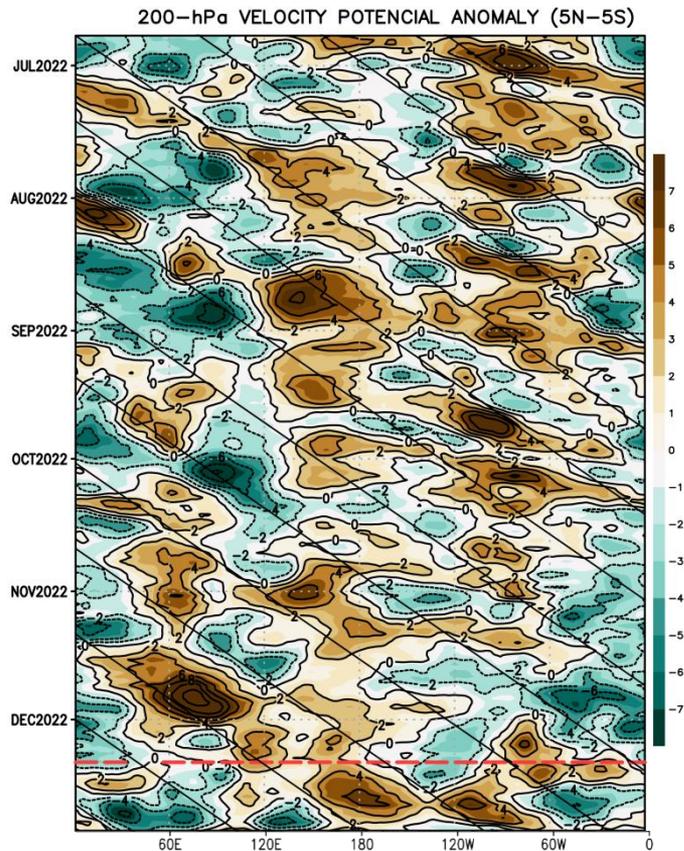


7-day CHI200 with CFS forecasts



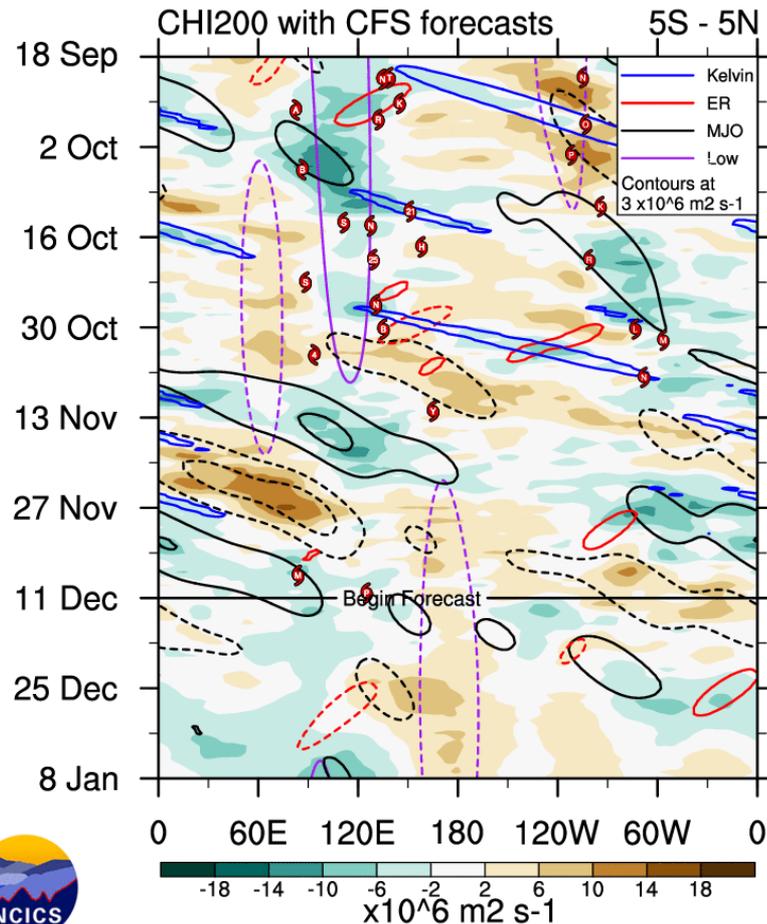
Contours at $-2, -6 \times 10^6 \text{ m}^2 \text{ s}^{-1}$

Variabilidad intraestacional: Forzantes externas de Variabilidad - OMJ

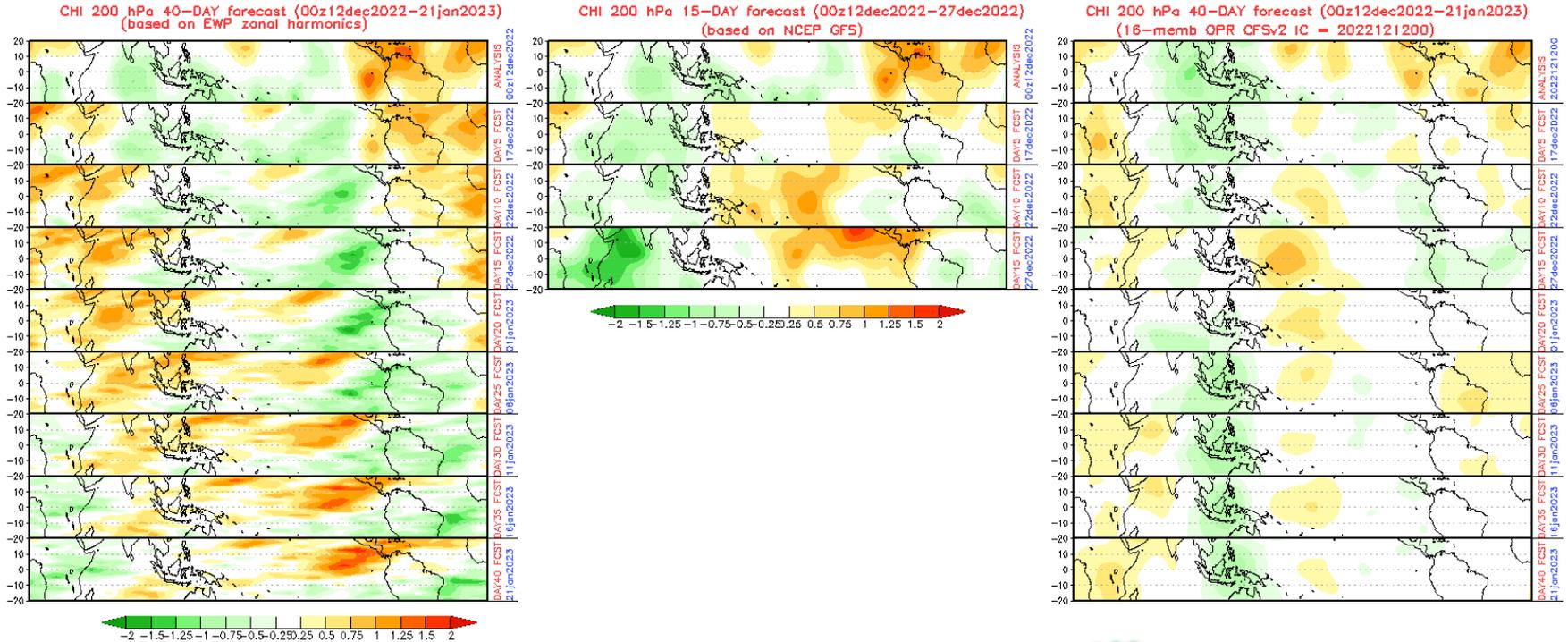


Source: GFS
Processing: SENAMHI/DMA/SPC

Begin GFS Forecast—green line
Forecast up to 00Z27DEC2022

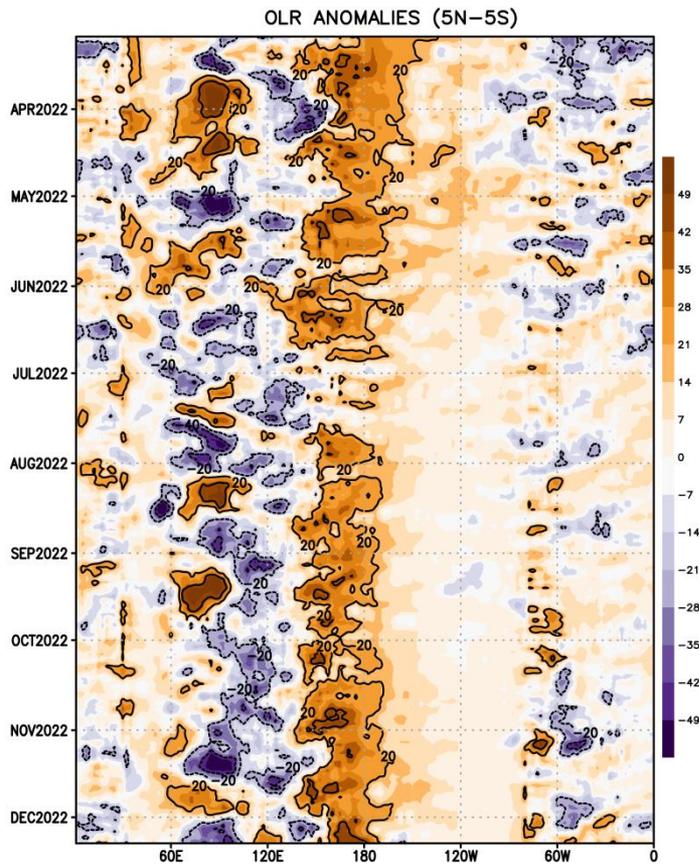


MJO - 200-hPa Velocity Potential Forecasts



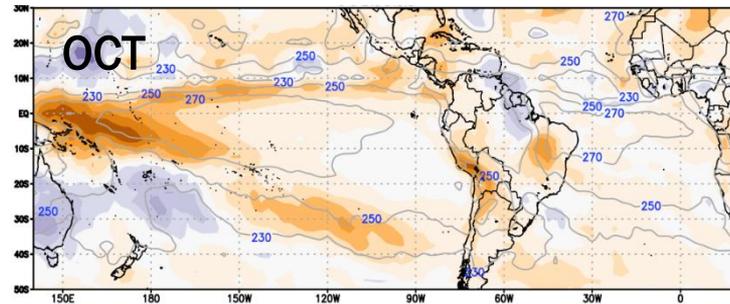
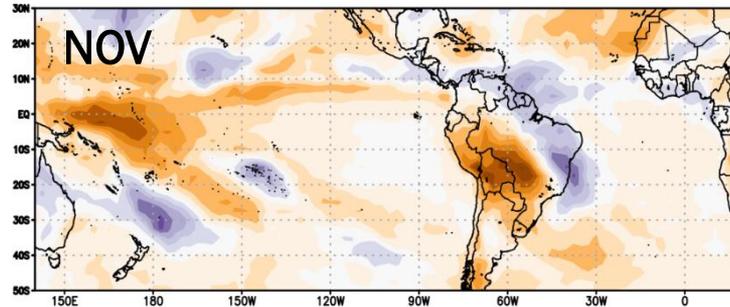
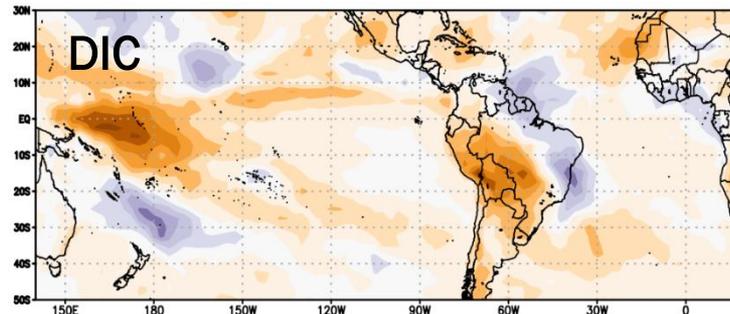
Fuente: CPC/NOAA

Anomalías de la ORL



Source: NCEP-NOAA
Processing: SENAMHI/DMA/SPC

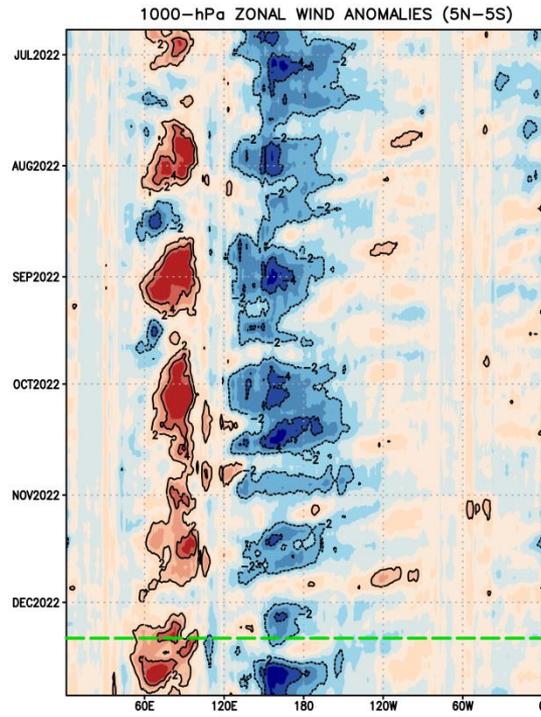
DATA up to 00z10DEC2022



Source: NCEP
CLIM: 1961 - 2010
Processing: SENAMHI/DMA/SPC

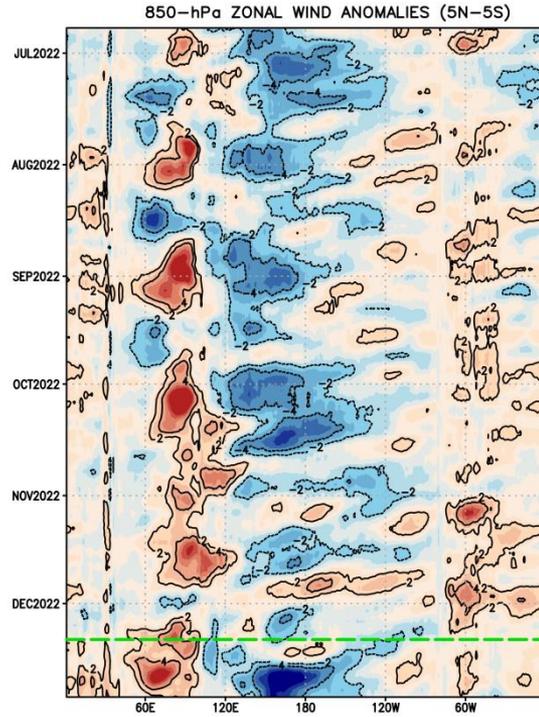


Condiciones en el Pacífico Ecuatorial: *Estes/Oestes*



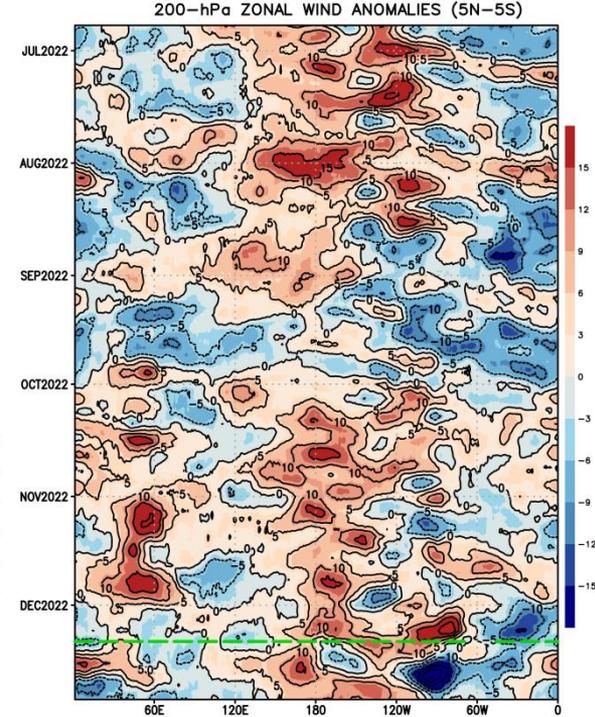
Source: GFS
Processing: SENAMHI/DMA/SPC

Begin GFS Forecast—green line
Forecast up to 00Z27DEC2022



Source: GFS
Processing: SENAMHI/DMA/SPC

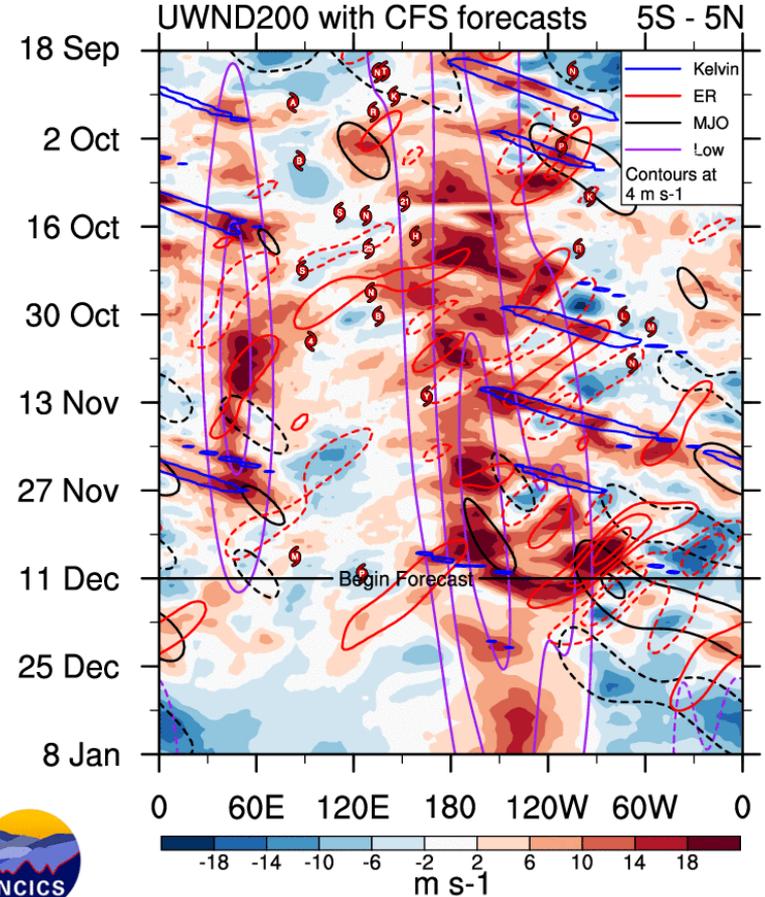
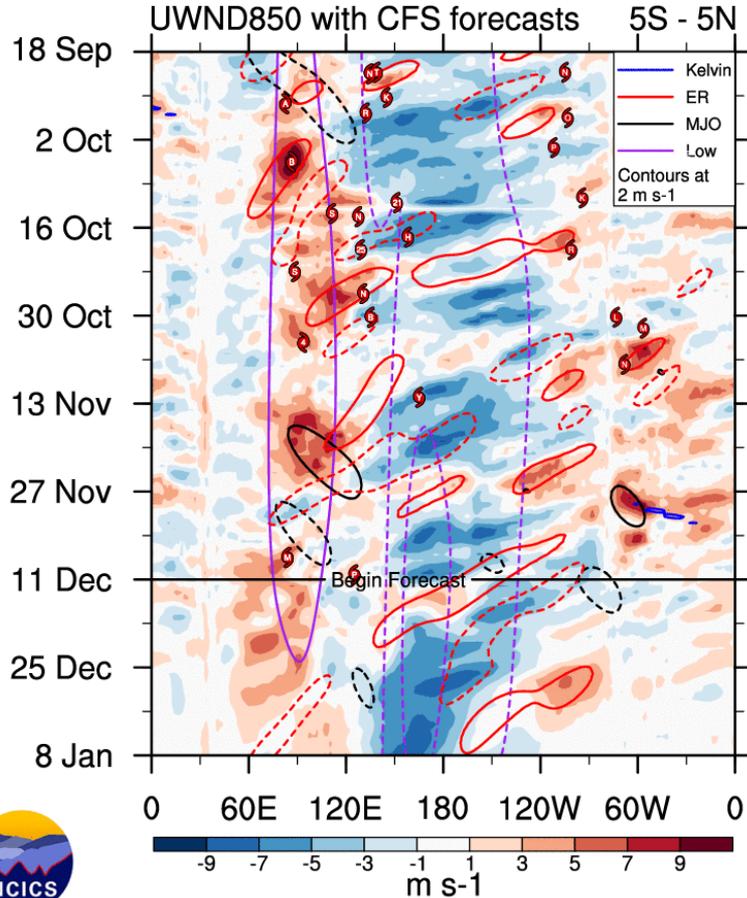
Begin GFS Forecast—green line
Forecast up to 00Z27DEC2022



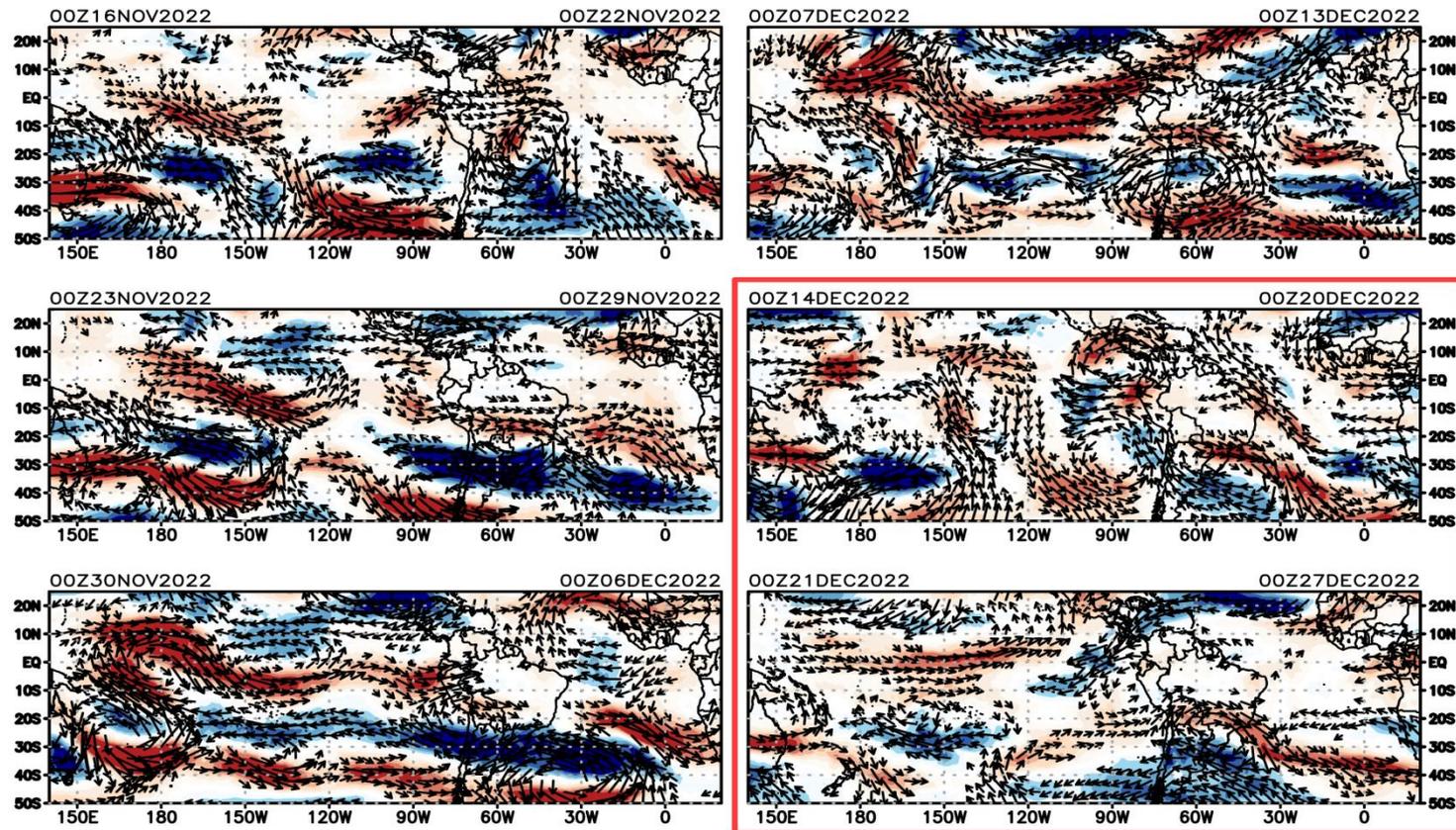
Source: GFS
Processing: SENAMHI/DMA/SPC

Begin GFS Forecast—green line
Forecast up to 00Z27DEC2022

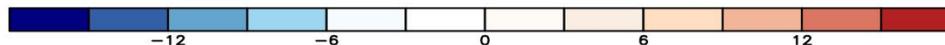
Condiciones en el Pacífico Ecuatorial: *Estes/Oestes*



Anomalía de vientos en 200 hPa

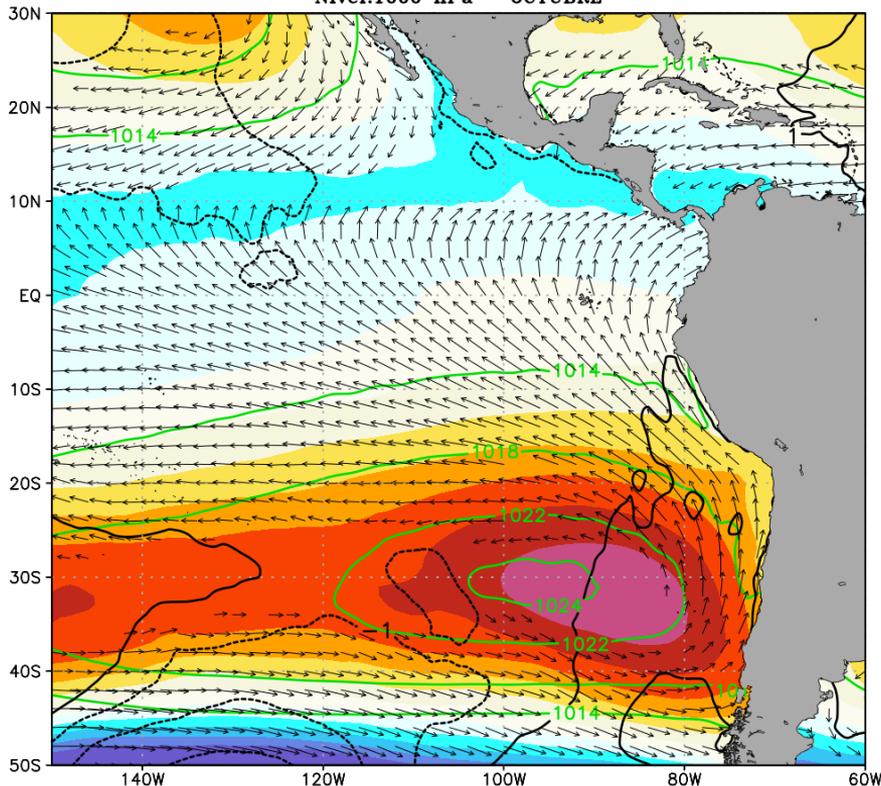


FORECAST

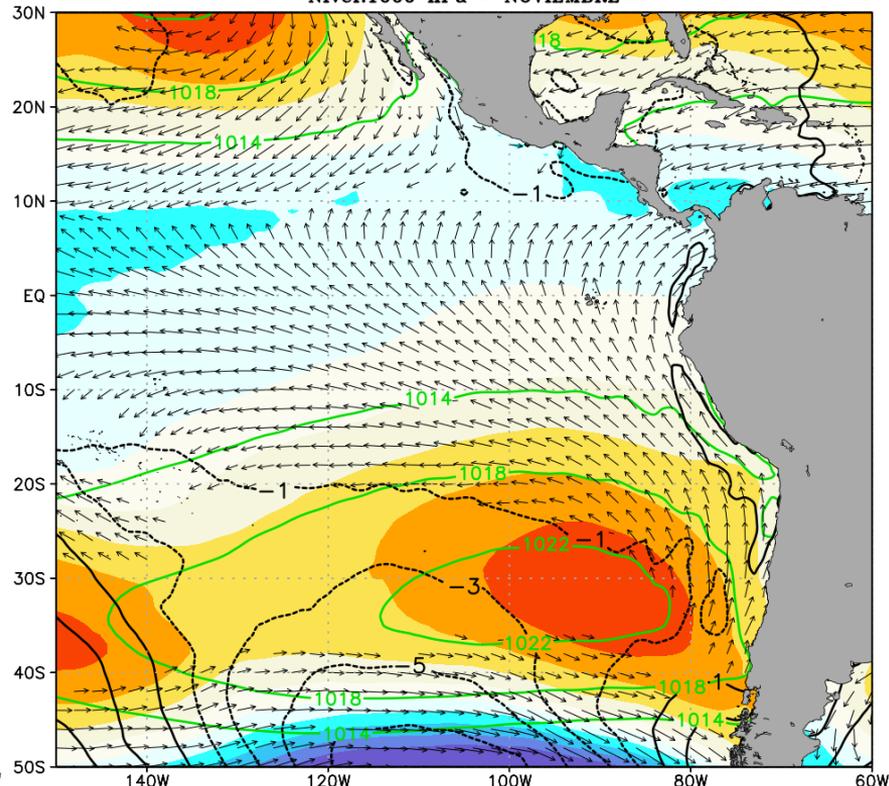


Anticiclón del Pacífico Sur

PROMEDIO DE LA PRSML (hPa) (color) - VIENTOS (m/s) (vector)
CLIMATOLOGIA(contorno verde) ANOMALIA (contorno negro)
Nivel:1000 hPa - OCTUBRE

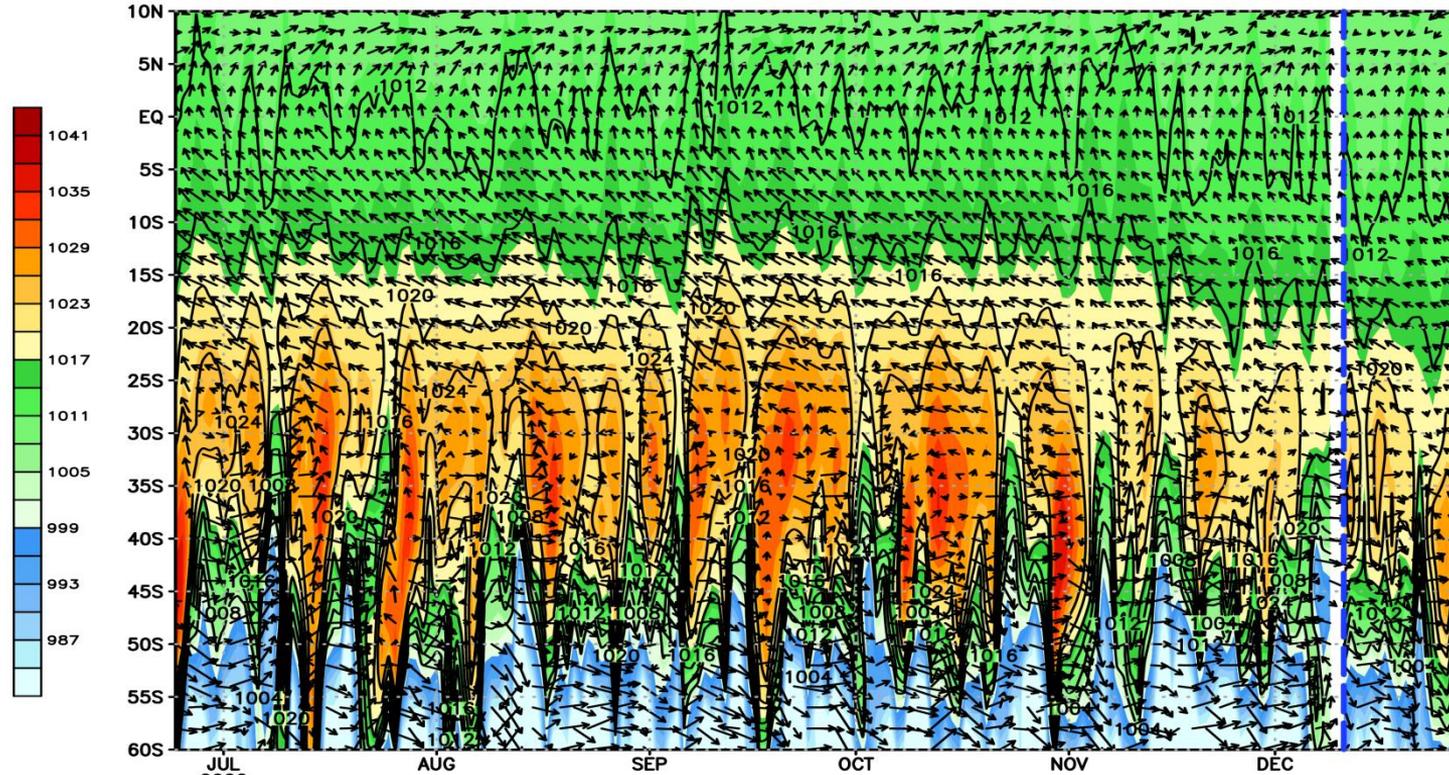


PROMEDIO DE LA PRSML (hPa) (color) - VIENTOS (m/s) (vector)
CLIMATOLOGIA(contorno verde) ANOMALIA (contorno negro)
Nivel:1000 hPa - NOVIEMBRE



Presión a nivel del mar / vientos a 1000 hPa

Presión a nivel del mar/vientos 1000 hPa (m/s)

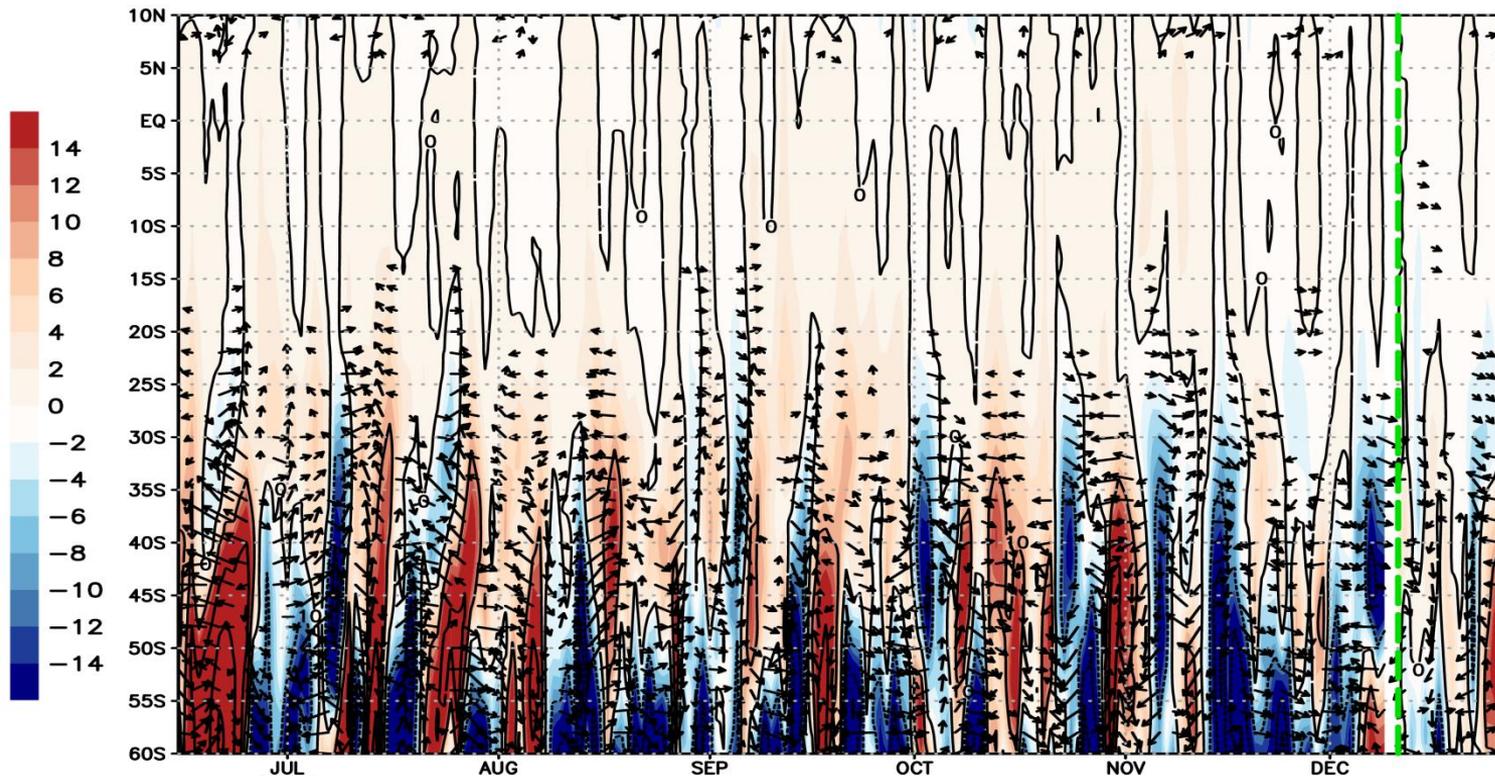


Source: GFS
CLIM: 2004 - 2014
Processing: SENAMHI/DMA/SPC

Average from 93W-87W
Forecast from 11DEC2022

Anomalía de presión a nivel del mar y vientos a 1000 hPa

Anom. de Presion a nivel del mar/Anom. viento a 1000 hPa.

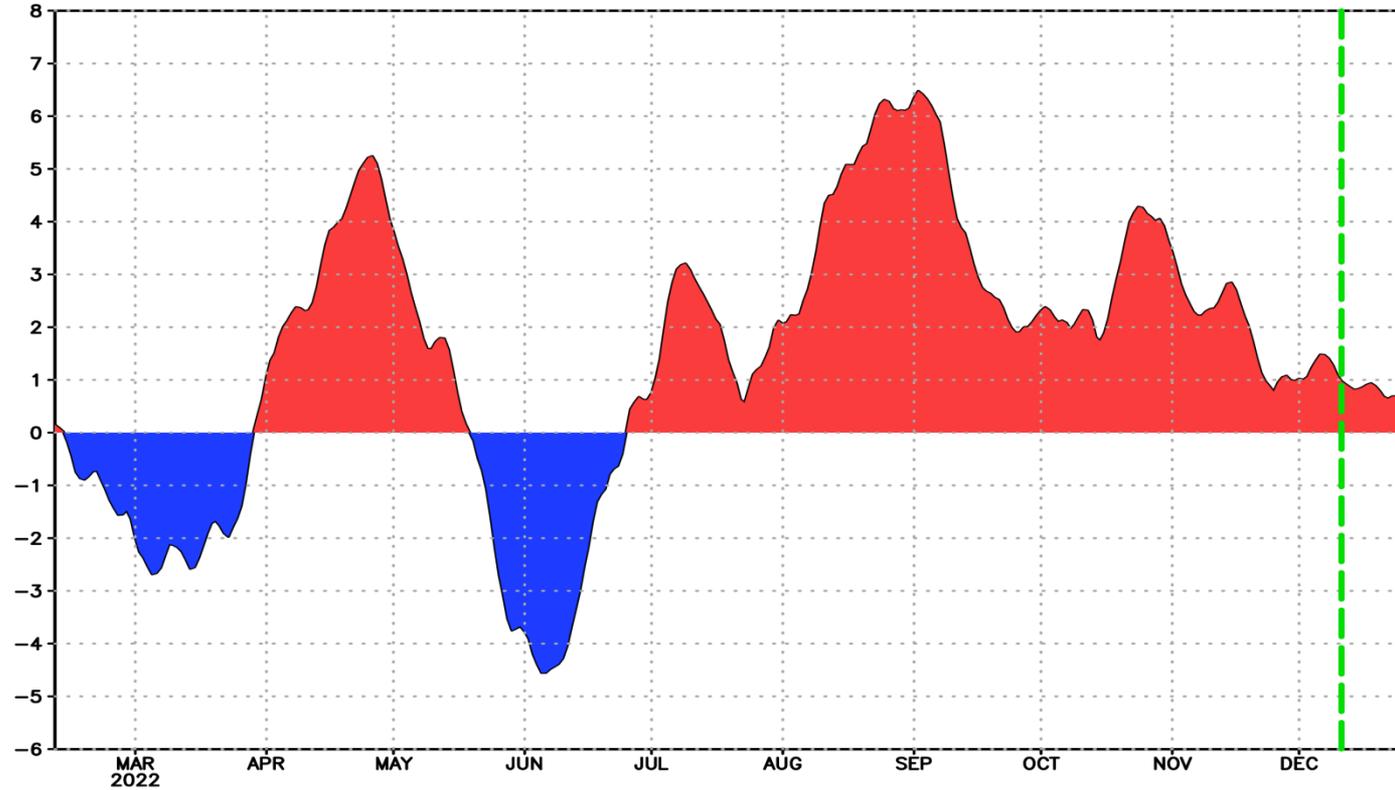


Source: GFS
CLIM: 2004 - 2014
Processing: SENAMHI/DMA/SPC

Average from 93W-87W
Forecast from 11DEC2022

Modo Anula del Sur (MAS)

Modo Anular del Sur(MAS)

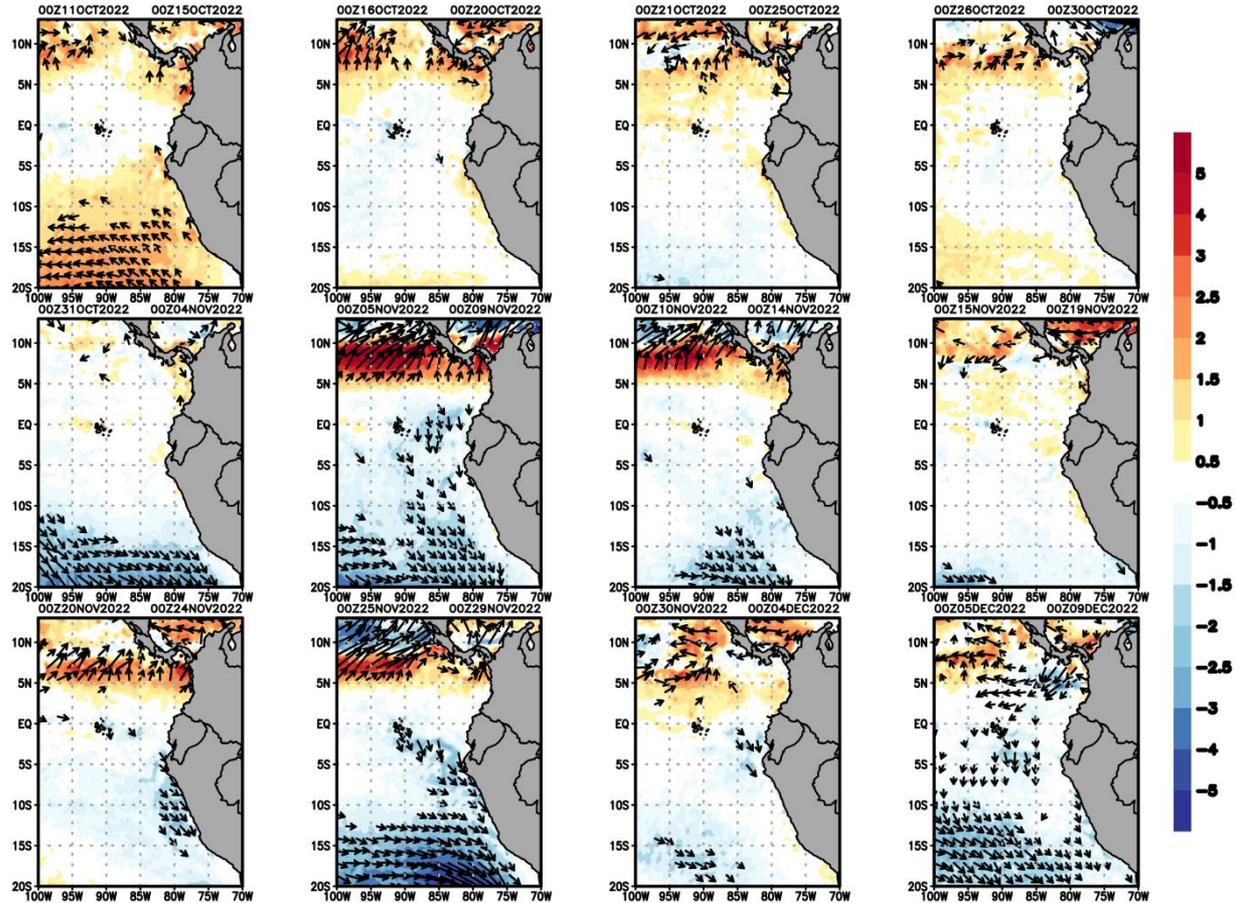


Source: GFS
CLIM: 2004 - 2014
Processing: SENAMHI/DMA/SPC

update to 11DEC2022

Condiciones regionales: *Vientos a 10 m - ASCAT*

Anomalia de viento 10m

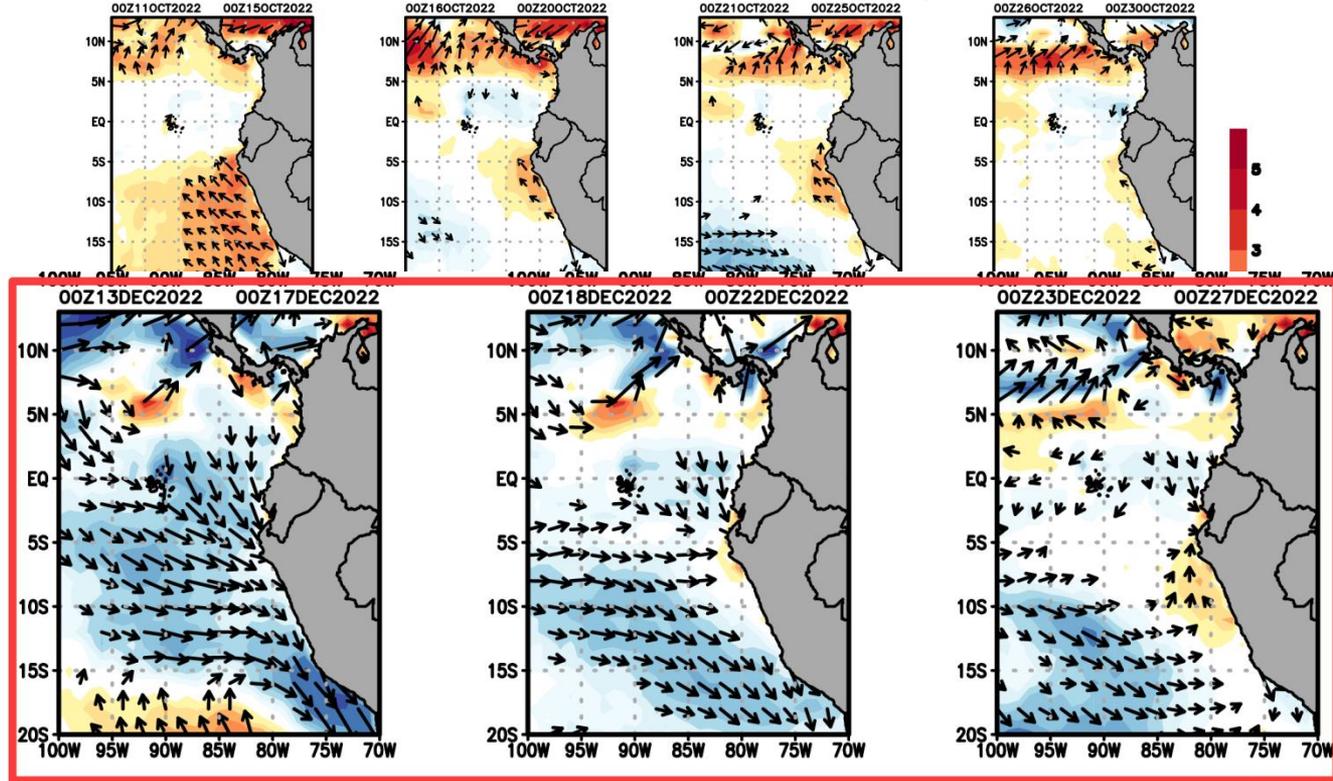


Source: ASCAT

Processing: SENAMHI/DMA/SPC

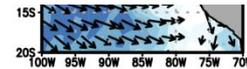
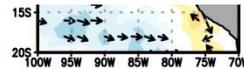
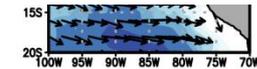
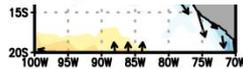
Condiciones regionales: Vientos a 1000 hPa - GFS

Anomalia de viento 1000 hPa (m/s)



SENAMHI/DMA/SPC

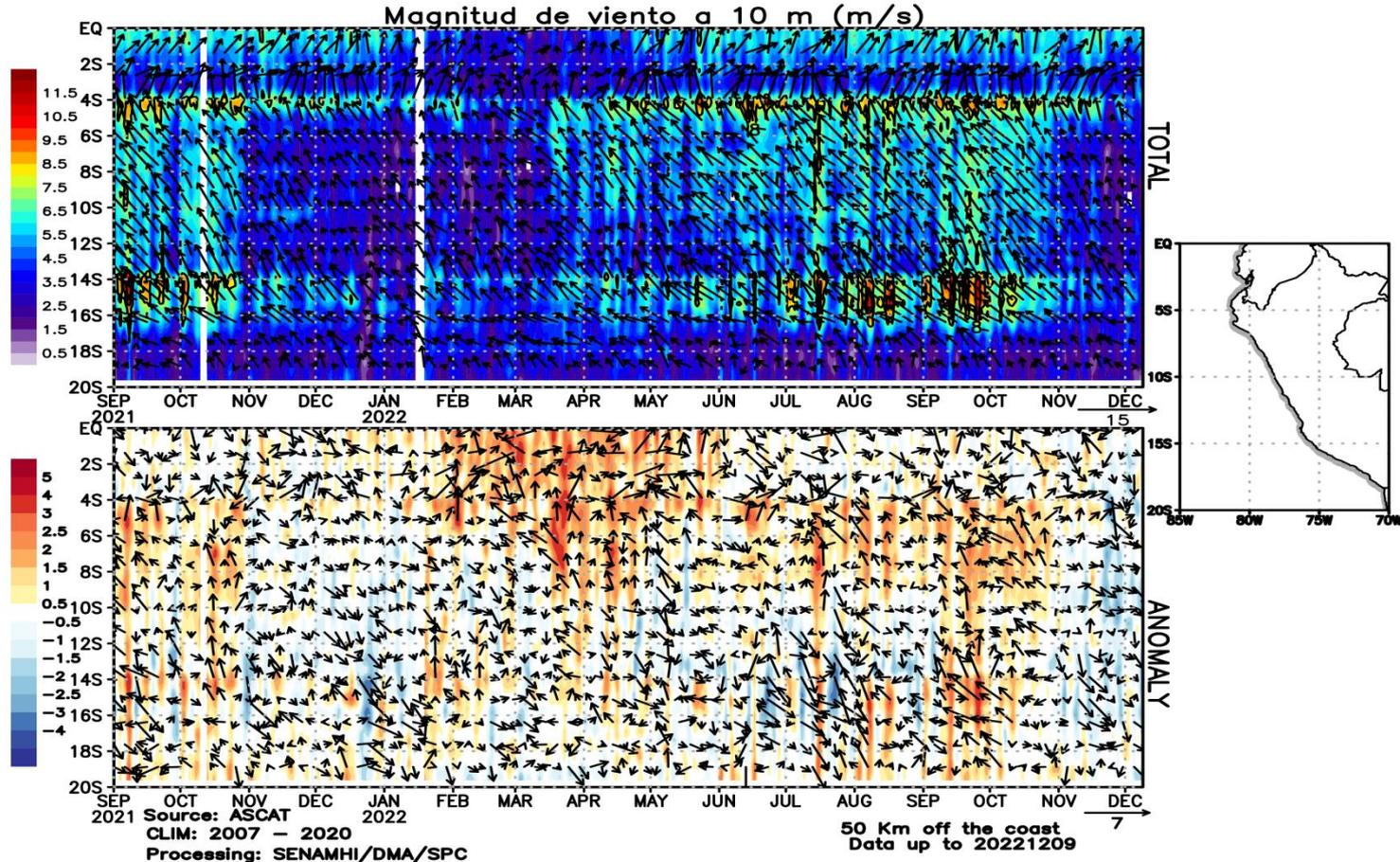
FORECAST



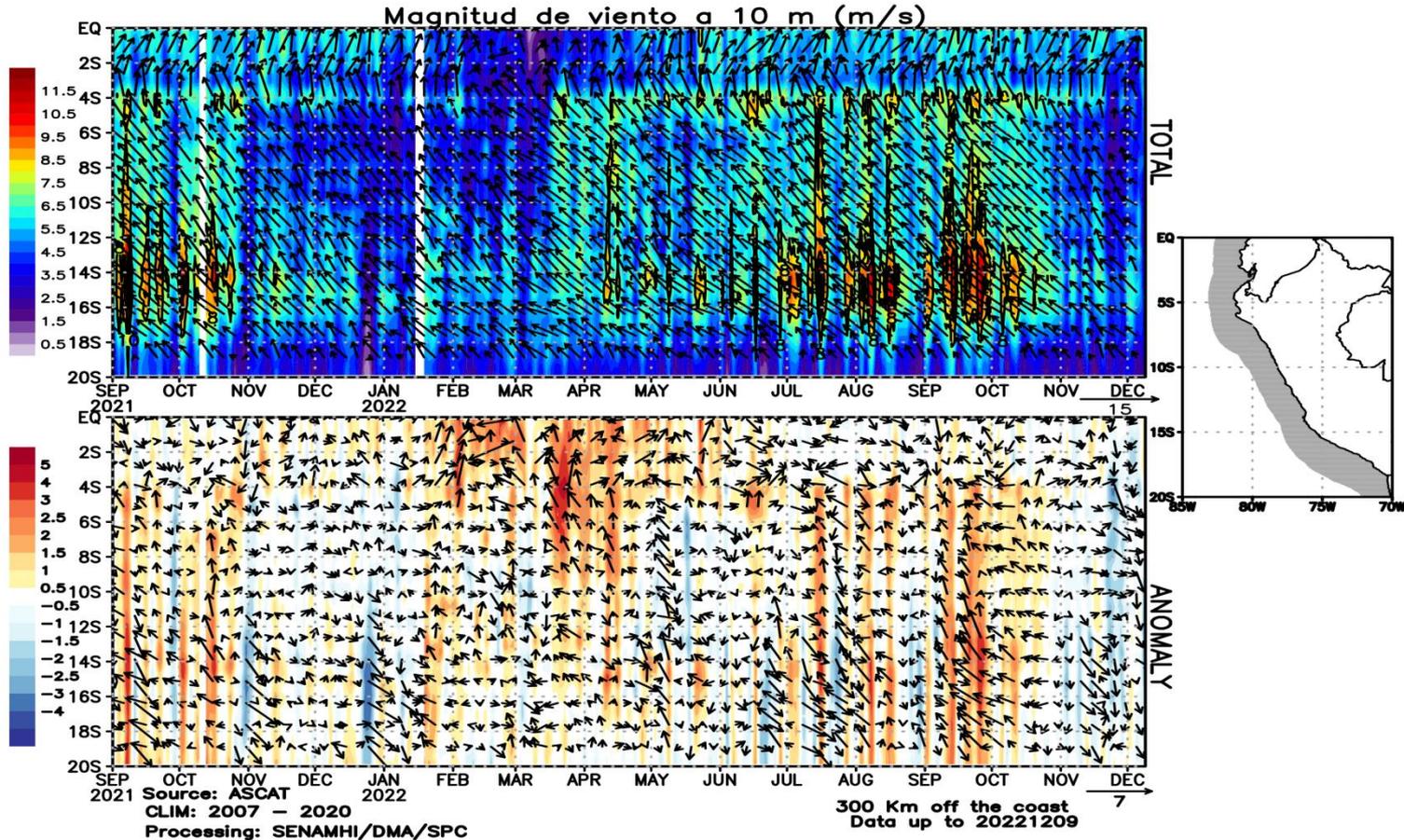
Source: GFS

Processing: SENAMHI/DMA/SPC

Condiciones regionales: Flujo de viento a 10m - 50 Km fuera de costa.

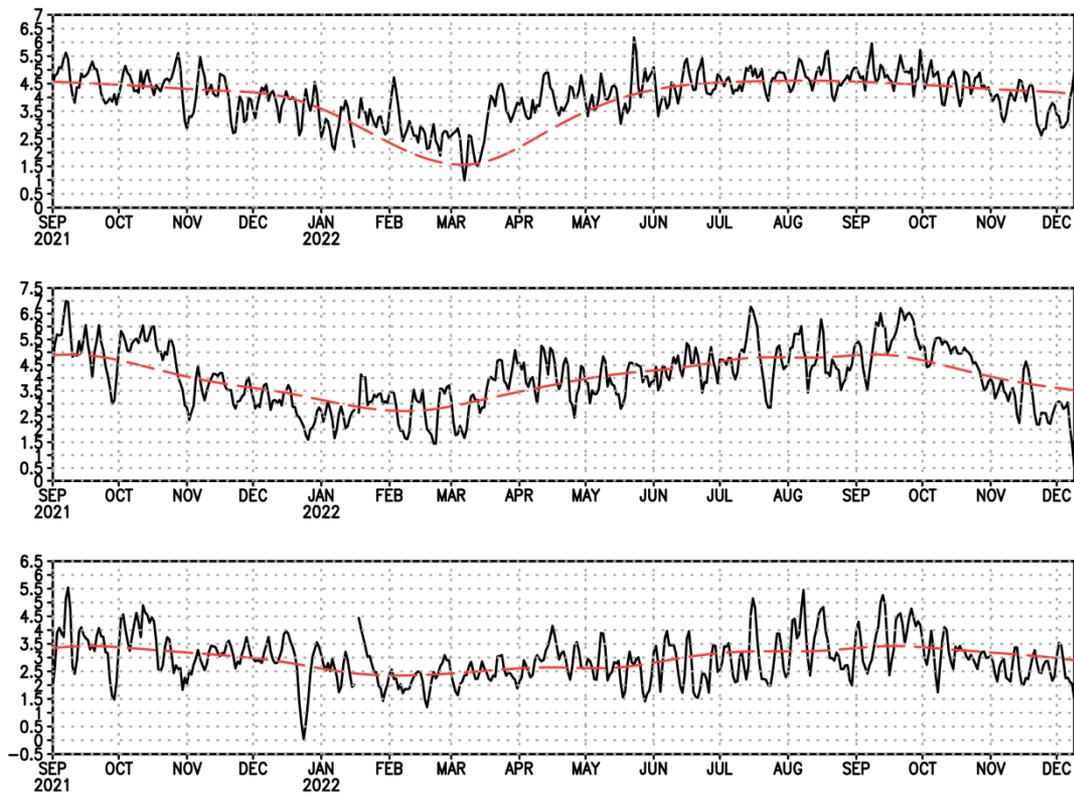


Condiciones regionales: Flujo de viento a 10m - 300 Km fuera de costa



Condiciones regionales: Flujo de viento a 10m

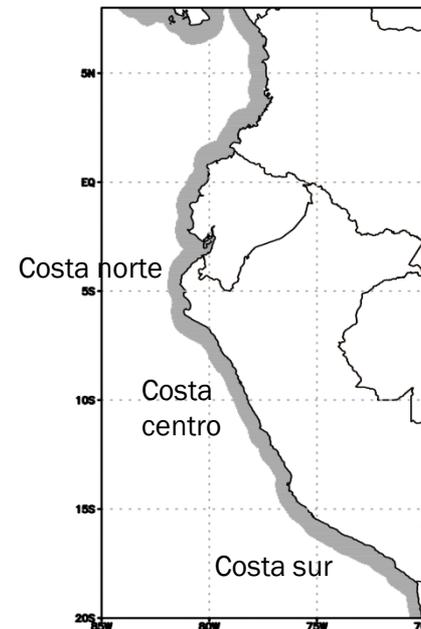
Magnitud de viento meridional a 10 m



NORTE

CENTRO

SUR



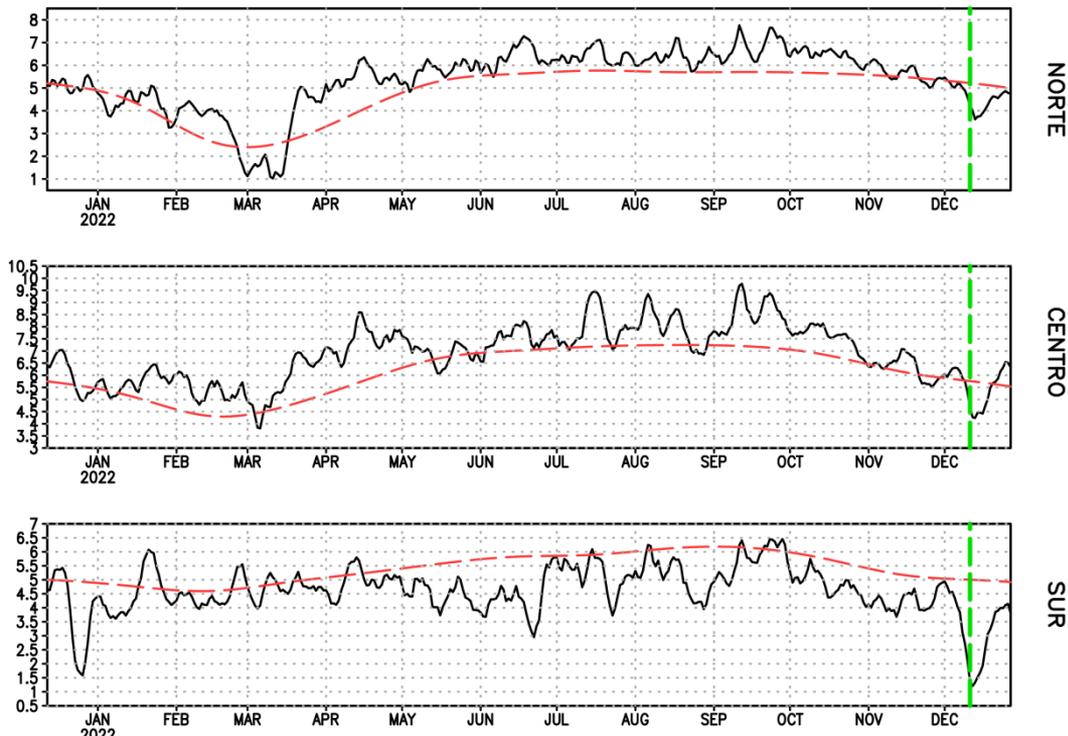
Source: ASCAT WIND
CLIM: 2007 - 2020
Processing: SENAMHI/DMA/SPC

100 Km off the coast

RED LINE: MERIDIONAL WIND CLIMATOLOGY
BLACK LINE: MERIDIONAL WIND

Condiciones regionales: Flujo de viento en 1000 hPa

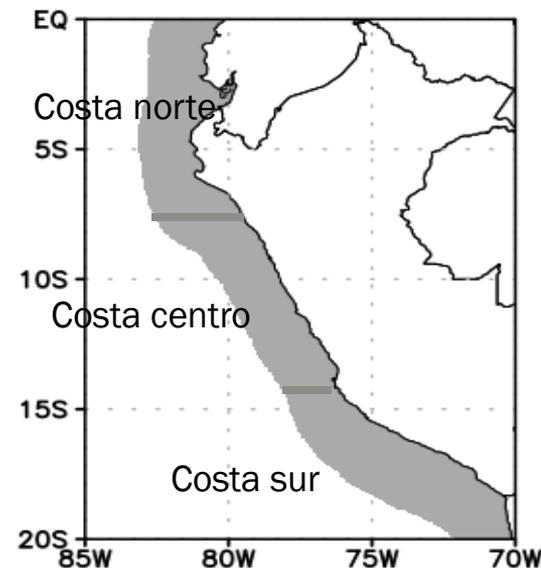
Magnitud de viento meridional a 1000 hPa (m/s)



Source: GFS
CLIM: 2004 - 2014
Processing: SENAMHI/DMA/SPC

300 Km off the coast
Forecast from 11DEC2022

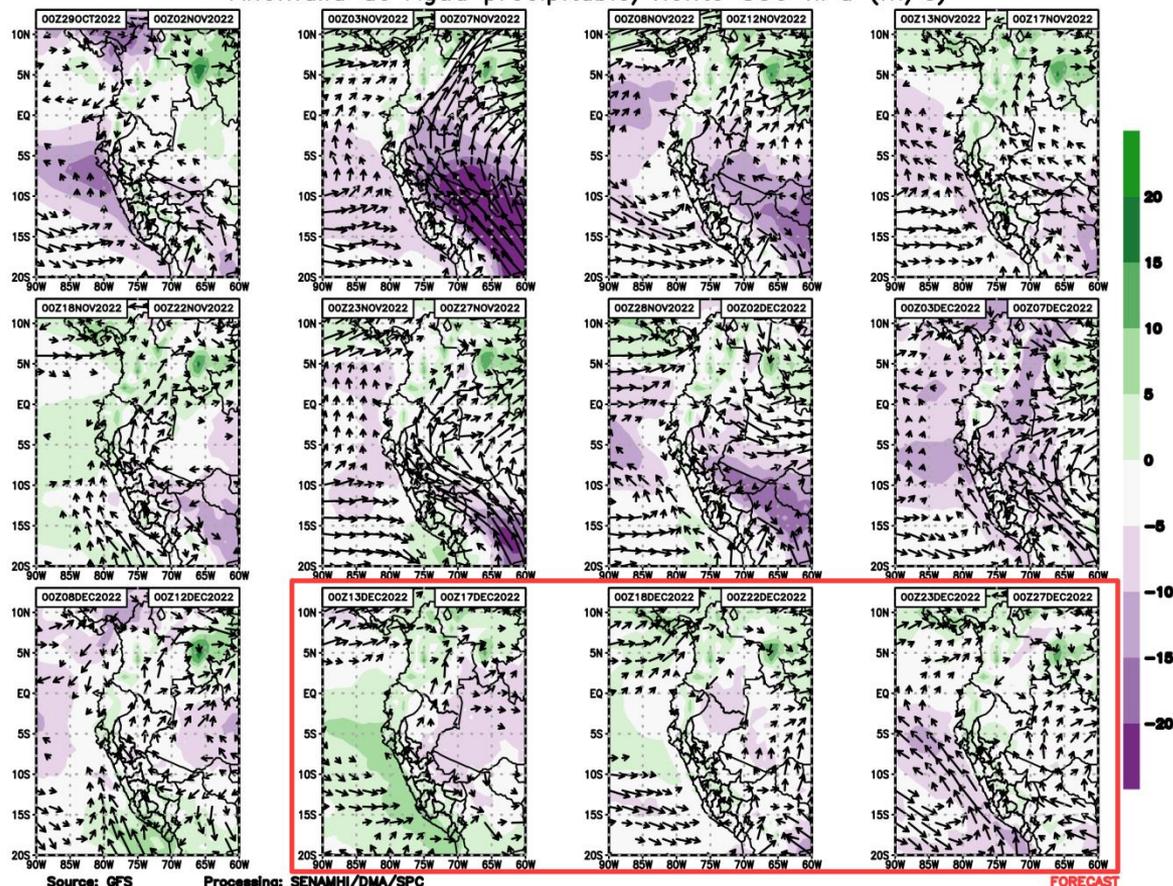
RED LINE: MERIDIONAL WIND CLIMATOLOGY
BLACK LINE: MERIDIONAL WIND



Condiciones regionales:

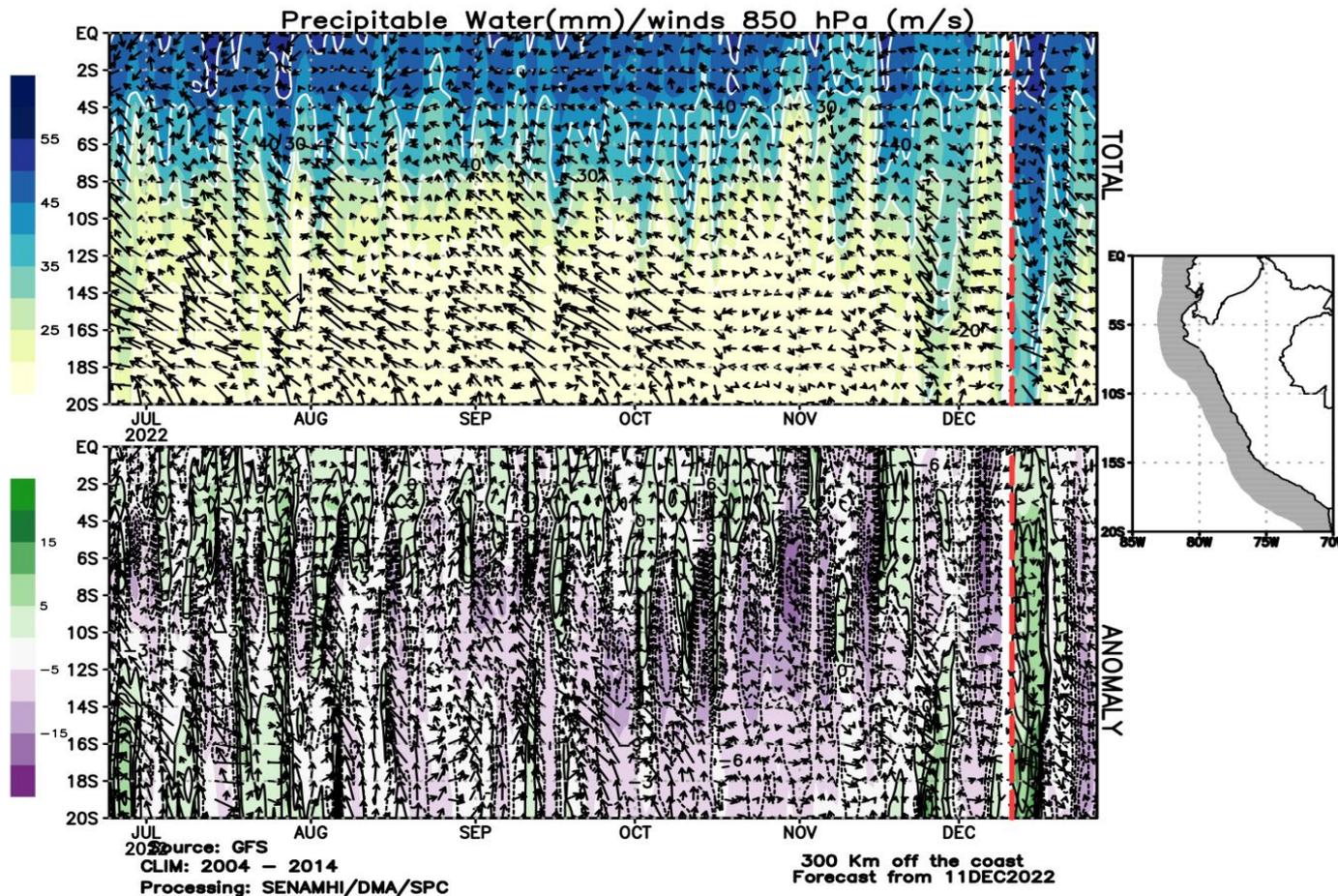
Agua Precipitable y Flujo de viento en 850 hPa fuera del litoral

Anomalia de Agua precipitable/viento 850 hPa (m/s)



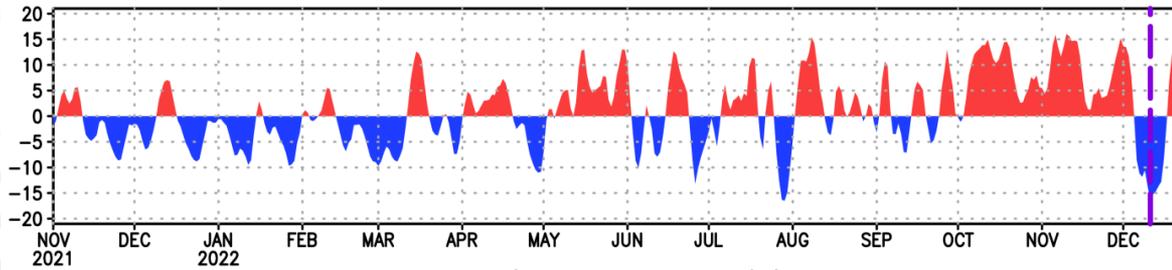
Condiciones regionales:

Agua Precipitable y Flujo de viento en 850 hPa fuera del litoral

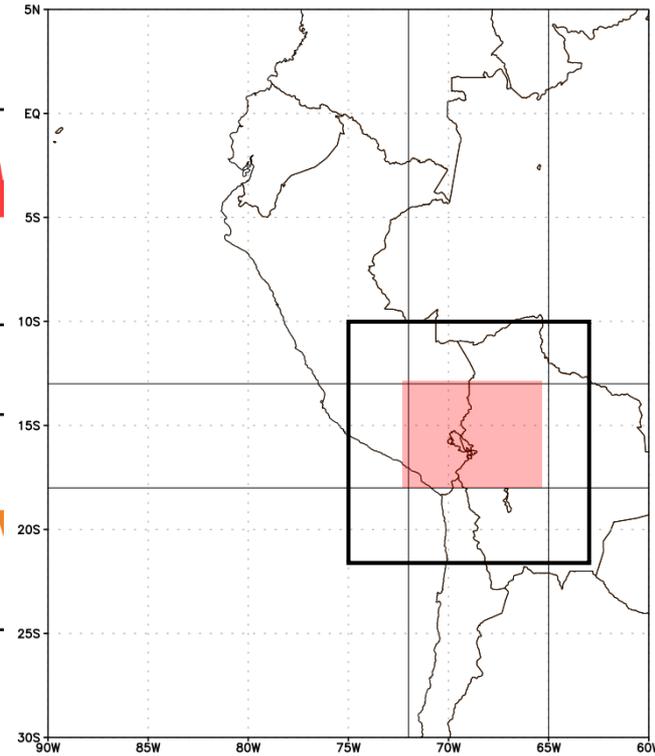
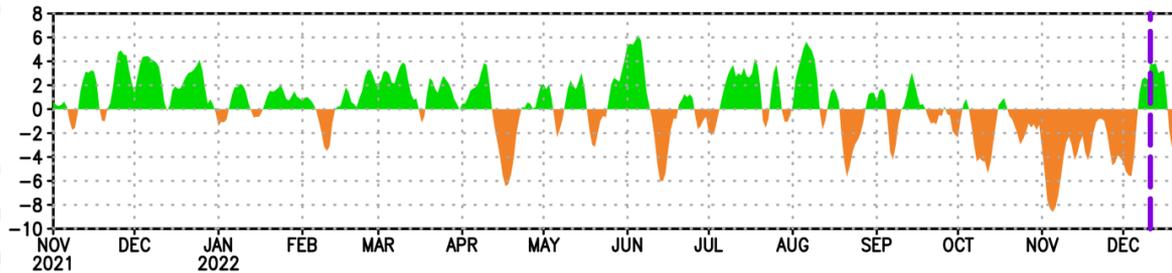


Anomalia de PWAT y viento en 200 hPa en la zona sur

Anomalia de viento zonal a 200 hPa (m/s)

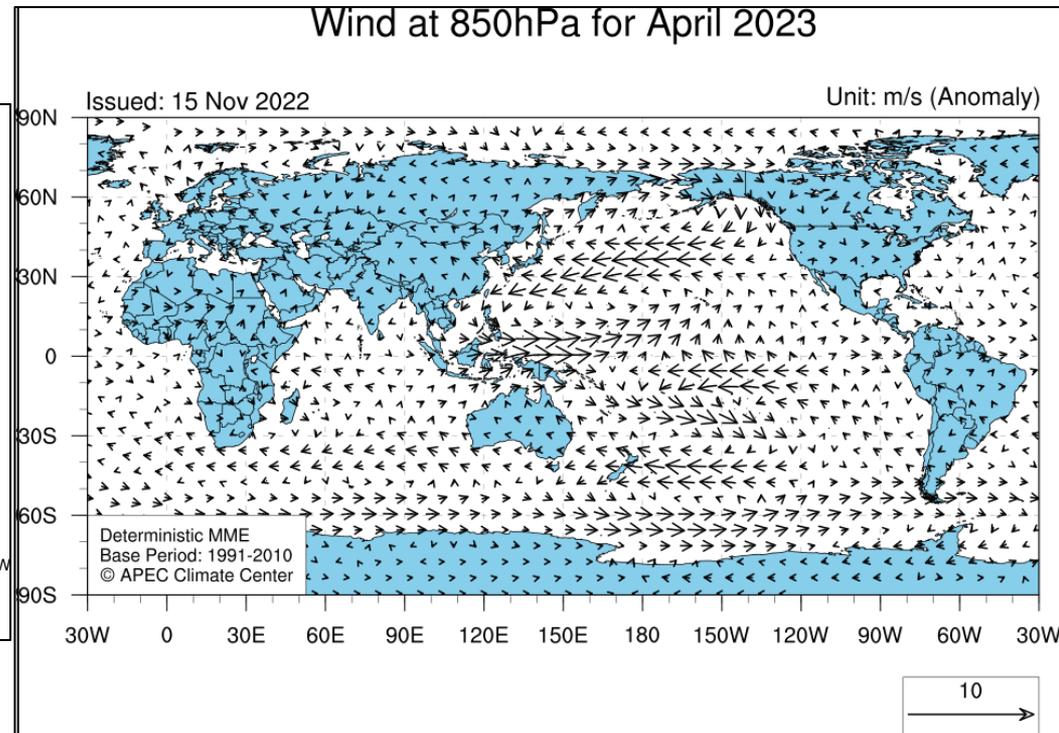
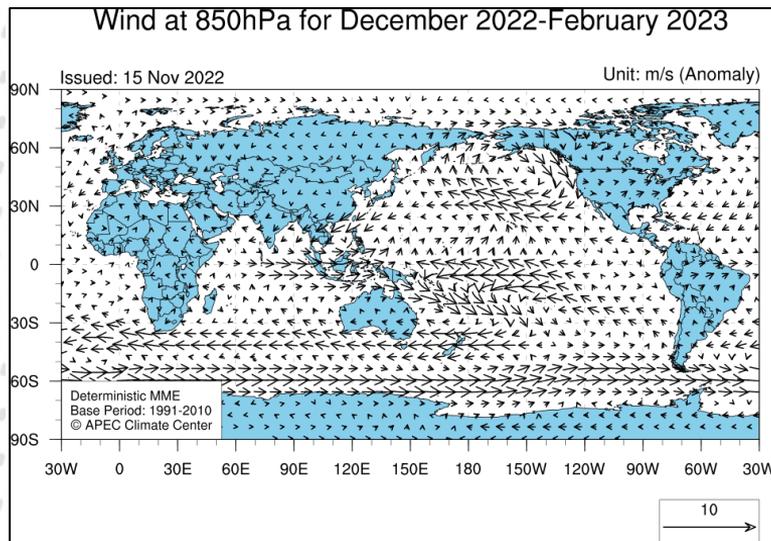


Anomalia de agua precipitable



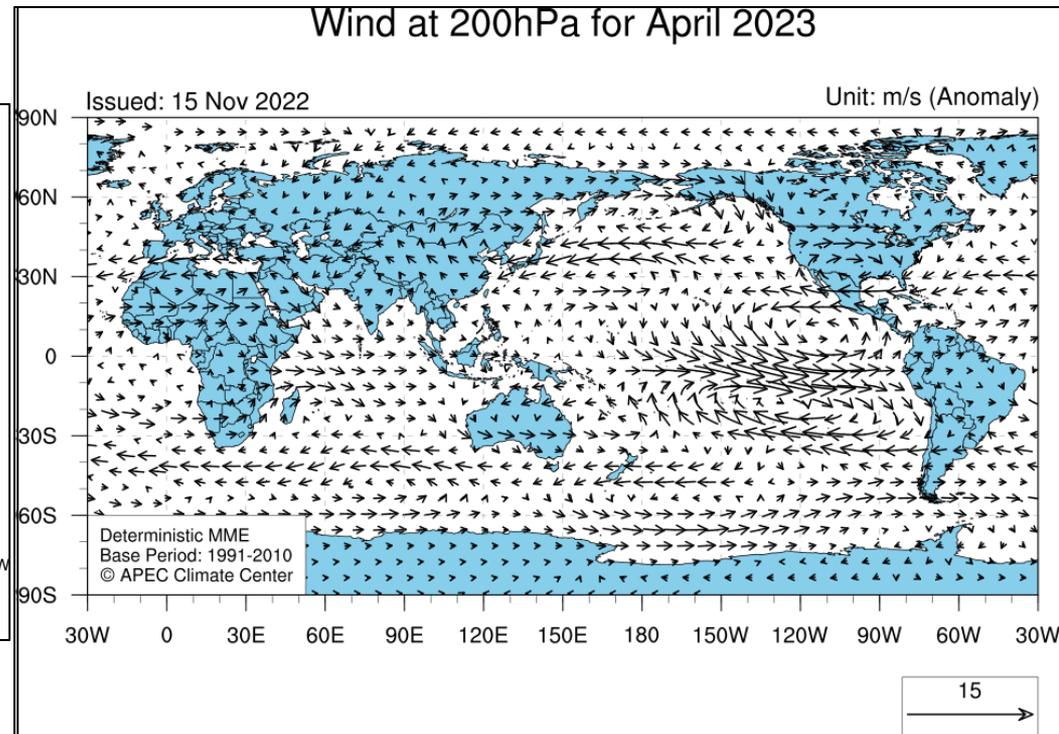
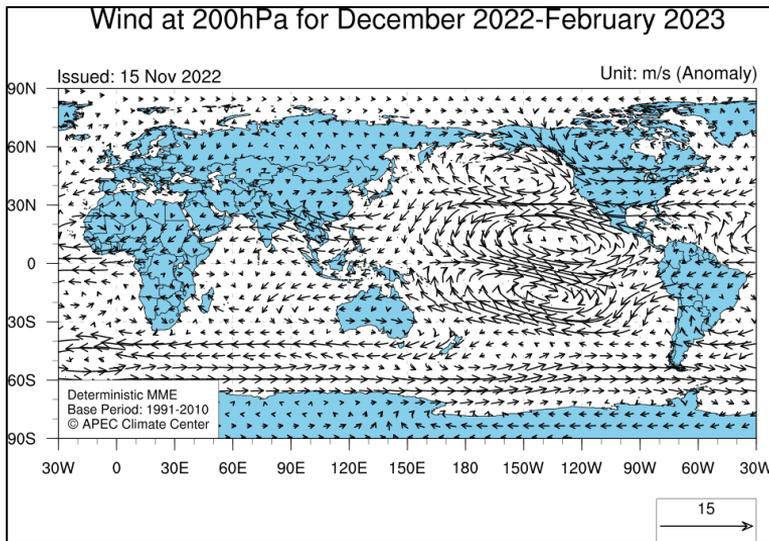
Pronóstico determinístico del MME

Viento 850 hPa



Pronóstico determinístico del MME

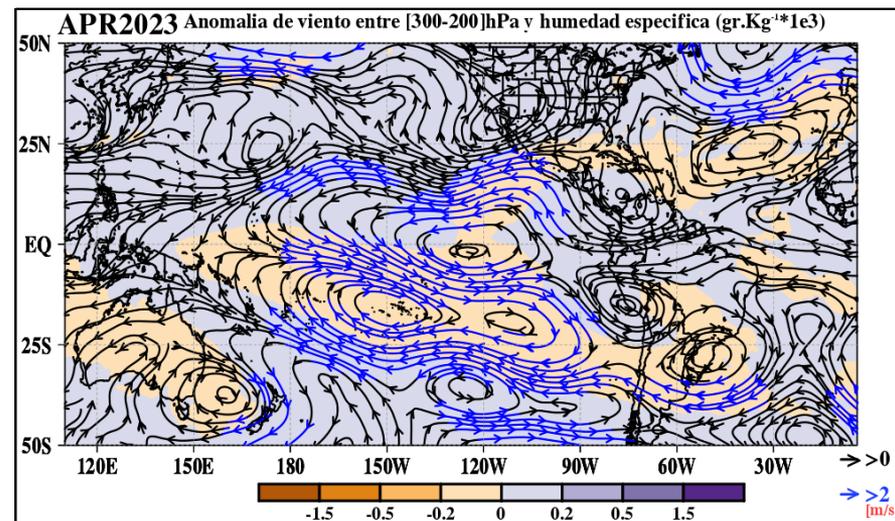
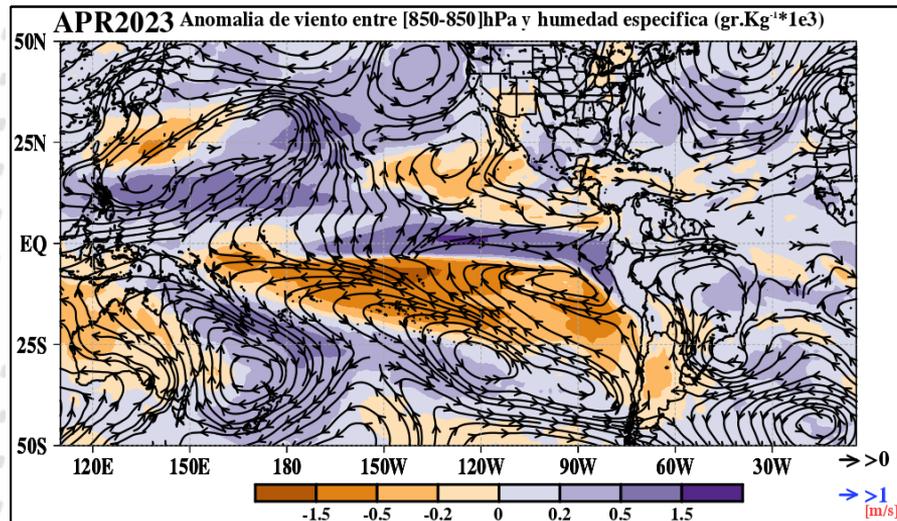
Viento 200 hPa



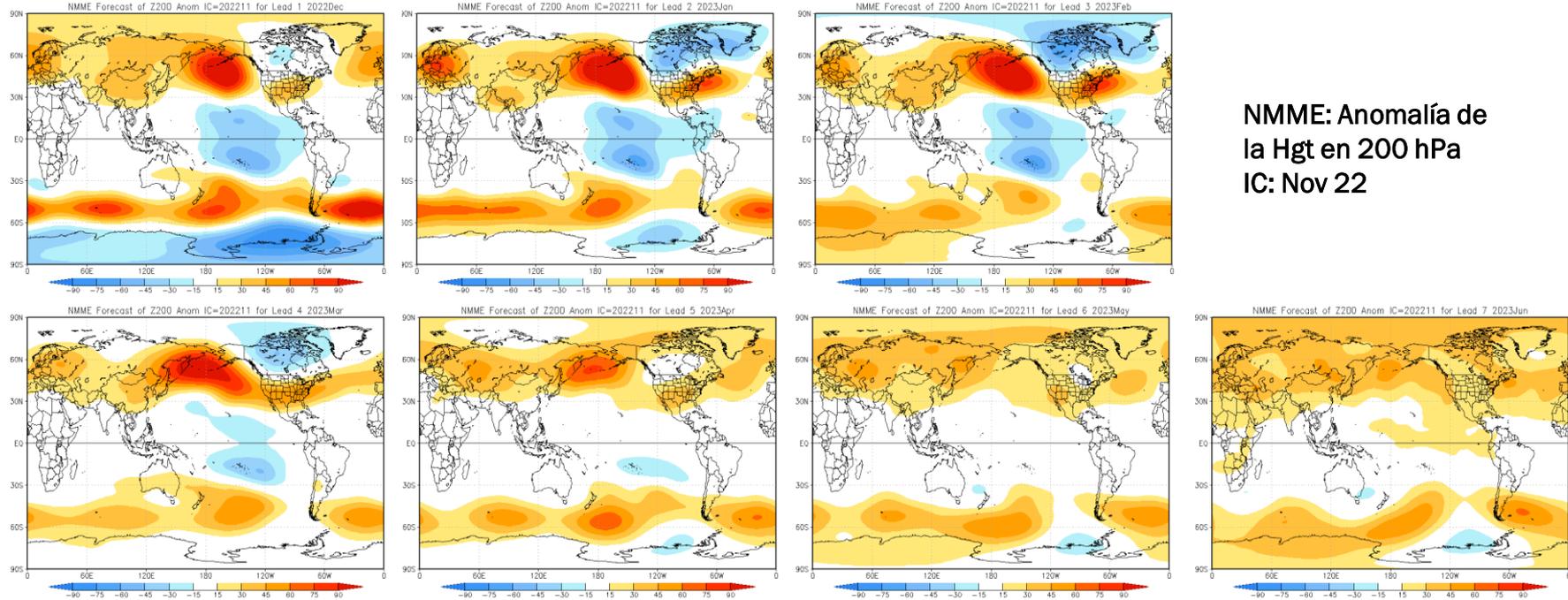
Pronóstico determinístico del ECMWF

850 hPa

200 hPa



NMME Forecasts of Monthly Climate Anomalies

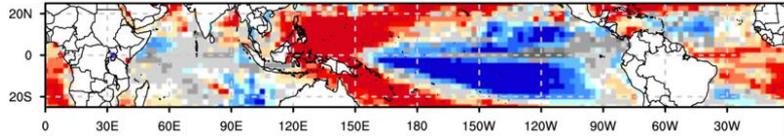


NMME: Anomalía de la Hgt en 200 hPa
IC: Nov 22

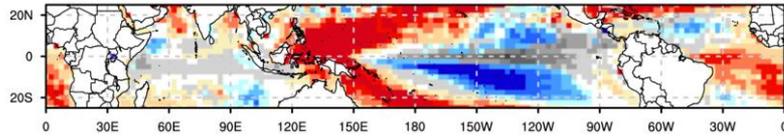
Pronóstico TSM

OMM

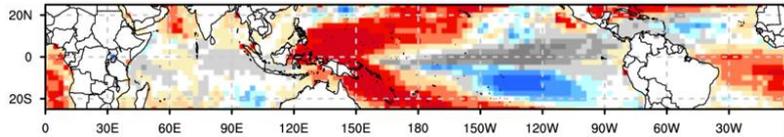
ENE23



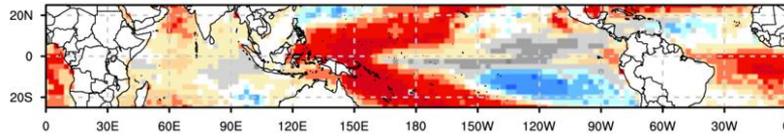
FEB23



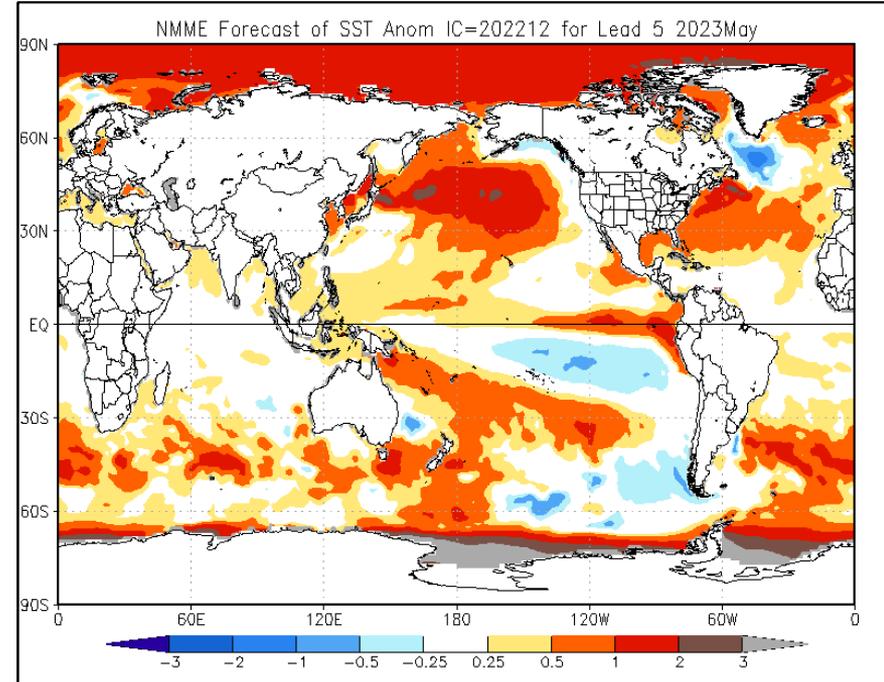
MAR23



ABR23

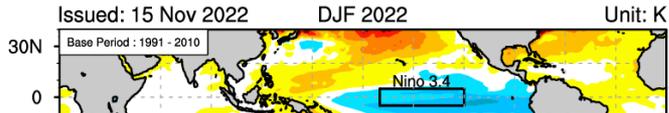


NMME

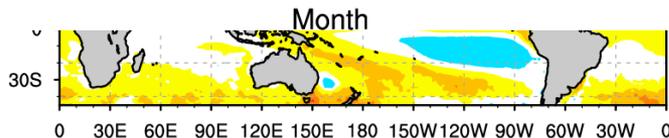
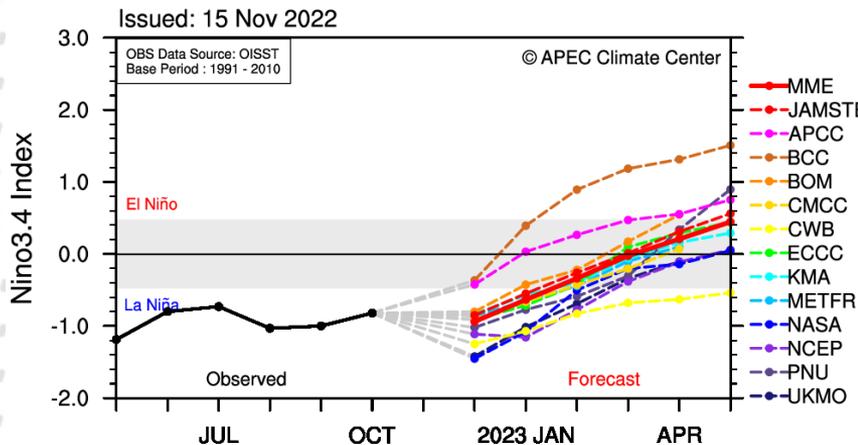


Pronóstico TSM

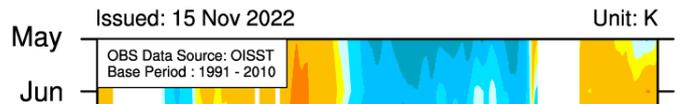
SST Anomaly for DJF-MAM 2022



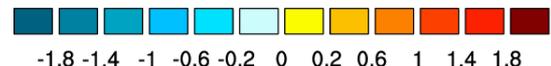
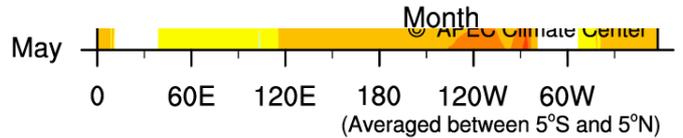
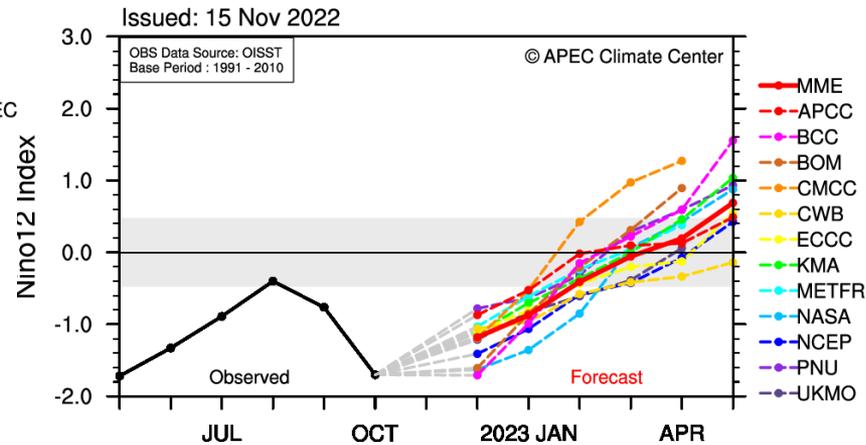
Niño3.4 Index for 2022 DJFMAM



SST Anomaly for 2022 DJFMAM



Niño1+2 Index for 2022 DJFMAM

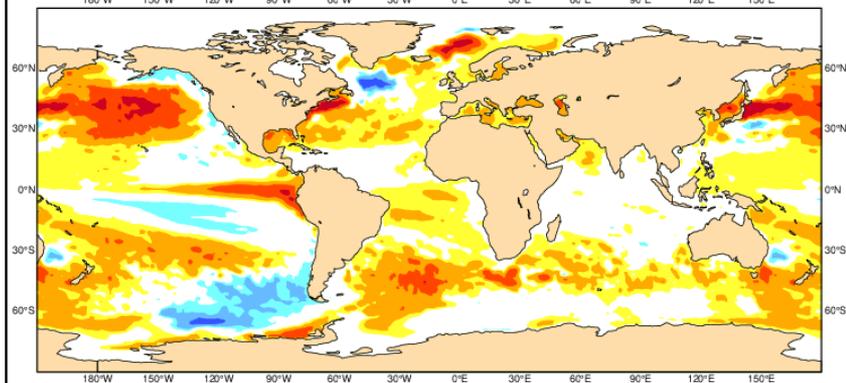


ECMWF Seasonal Forecast

Mean forecast SST anomaly

Forecast start is 01/12/22, climate period is 1993-2016
Ensemble size = 51, climate size = 600

System 5
MAM 2023

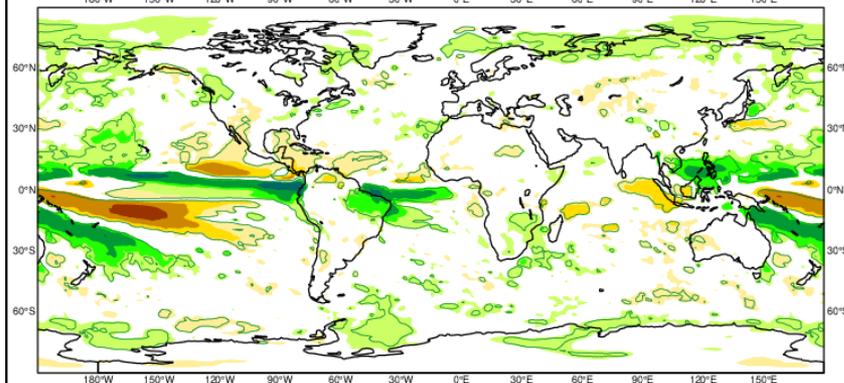
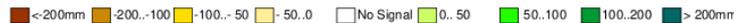


ECMWF Seasonal Forecast

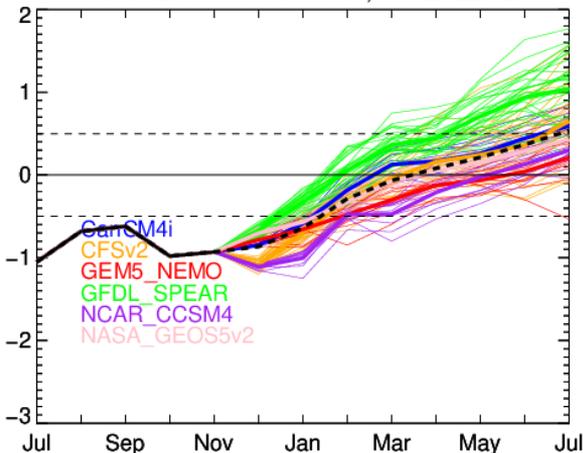
Mean precipitation anomaly

Forecast start is 01/12/22, climate period is 1993-2016
Ensemble size = 51, climate size = 600

System 5
MAM 2023
Shaded areas significant at 10% level
Solid contour at 1% level



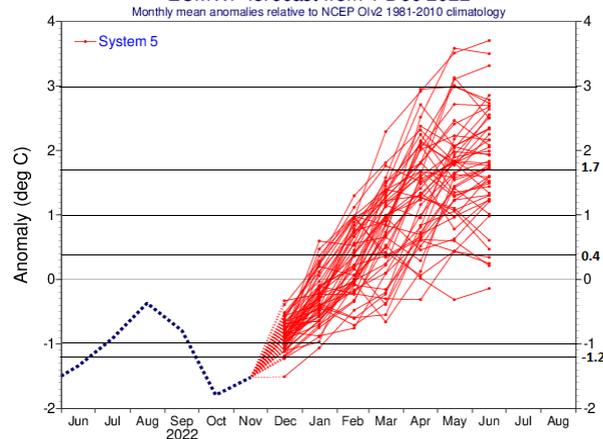
NMME scaled Nino3.4, IC=202212



NINO+2 SST anomaly plume

ECMWF forecast from 1 Dec 2022

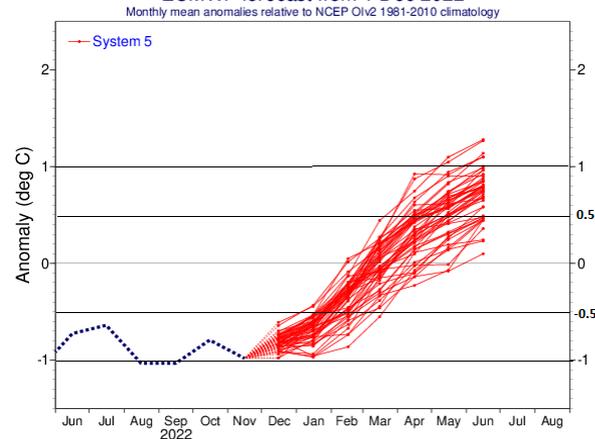
Monthly mean anomalies relative to NCEP OIv2 1981-2010 climatology



NINO.3.4 SST anomaly plume

ECMWF forecast from 1 Dec 2022

Monthly mean anomalies relative to NCEP OIv2 1981-2010 climatology



EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

CLIMATE PREDICTION CENTER/NCEP/NWS
8 December 2022

ENSO Alert System Status: **La Niña Advisory**

Synopsis: La Niña is expected to continue into the winter, with equal chances of La Niña and ENSO-neutral during January-March 2023. In February-April 2023, there is a 71% chance of ENSO-neutral.

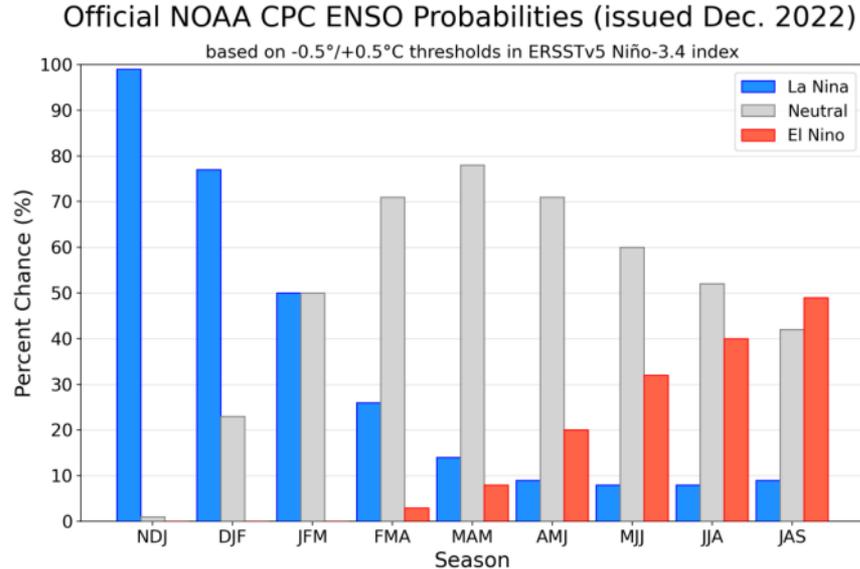


Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N - 5°S , 120°W - 170°W). Figure updated 8 December 2022.

GRACIAS!

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HIDROLOGÍA DEL PERÚ

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