



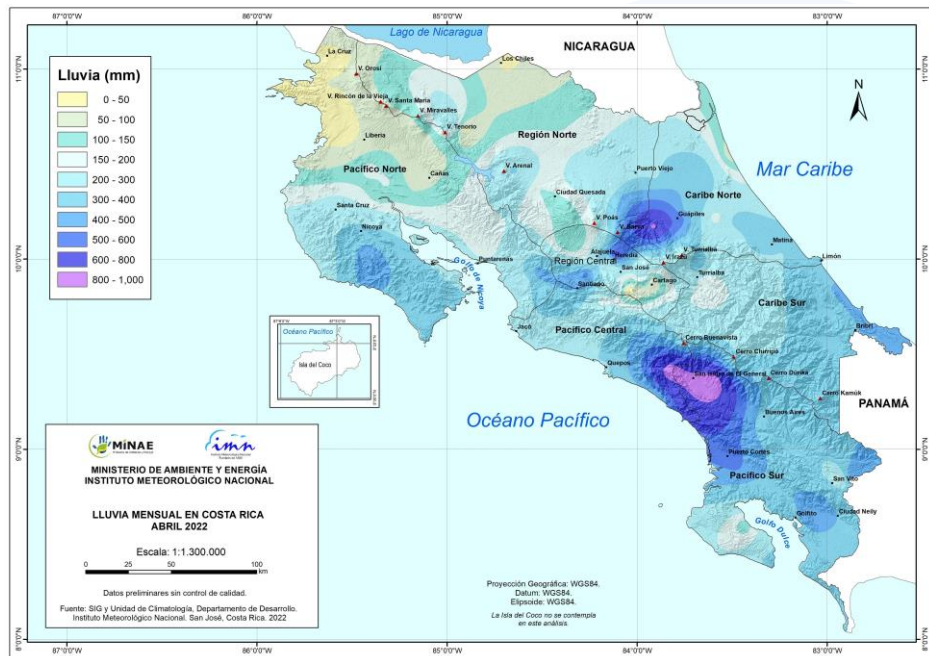
Presentación COENOS: abril 2022

Por: Comité Técnico IMN-ENOS y
M.Sc. Karina Hernández

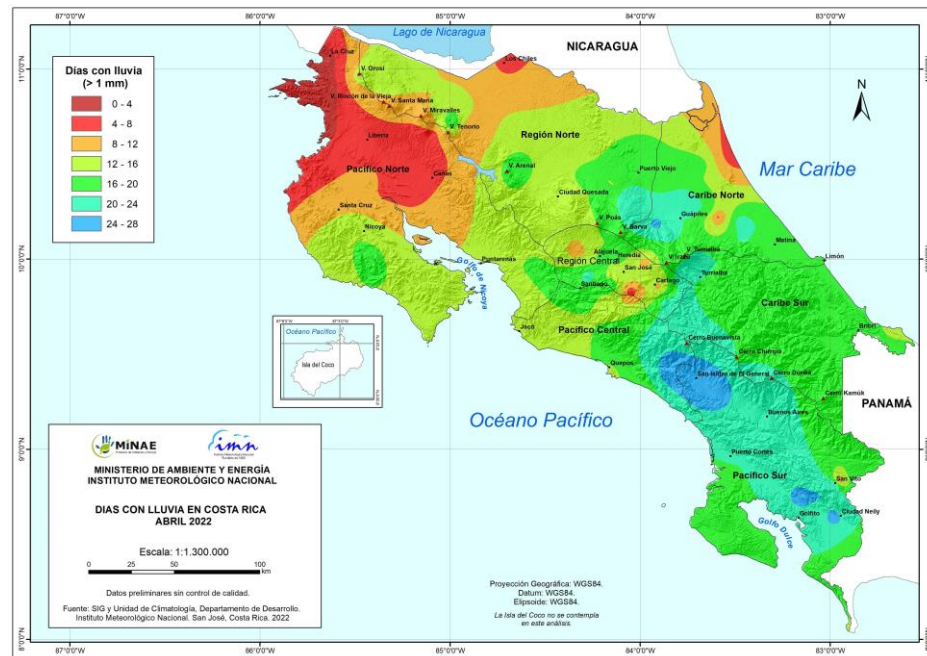
- Lluvia del mes previo
- Monitoreo de sequía
- Monitoreo de la temperatura superficial del Océano Atlántico
- Monitoreo del ENOS
- Análisis de modelos numéricos globales y locales
- Temporada de Ciclones Tropicales de la cuenca del Atlántico Norte
- Pronóstico del trimestre
- Época lluviosa

Lluvia del mes previo

Lluvias abril 2022

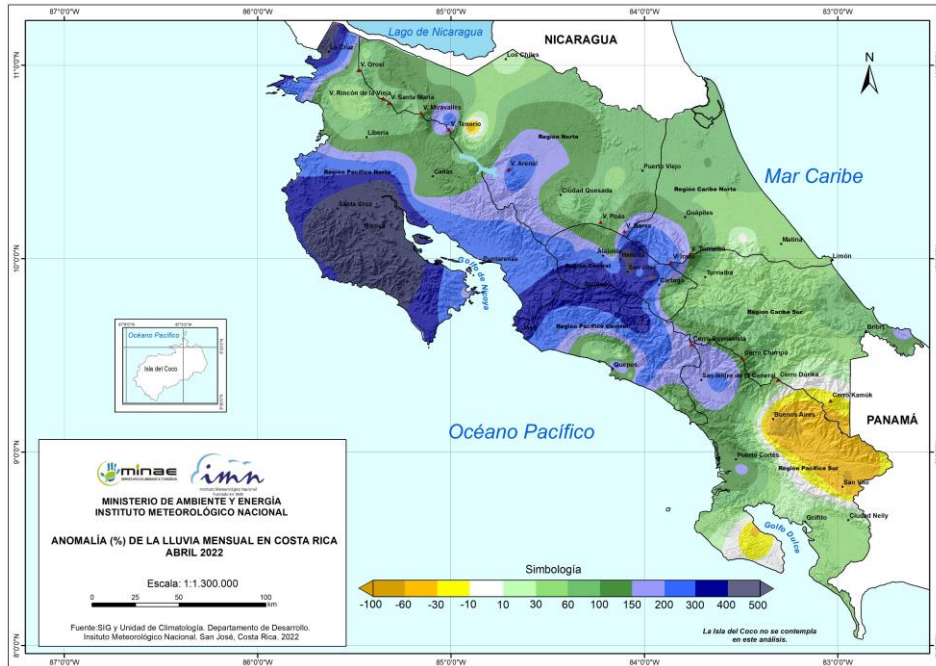


Lluvia acumulada (mm)

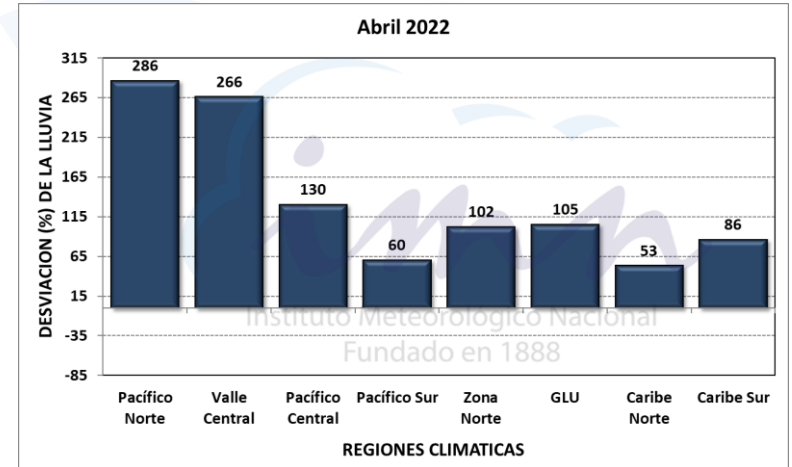


Número de días con lluvia

Desviación porcentual de lluvia en abril 2022

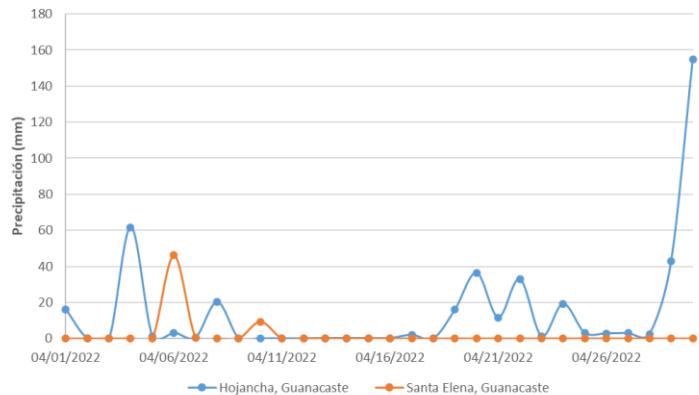


Espacialmente

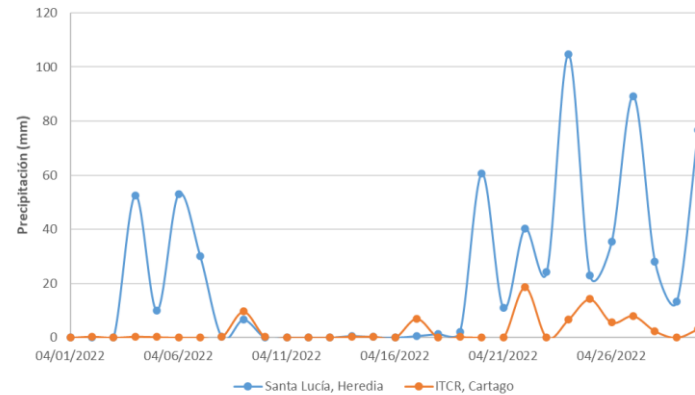


Región climática

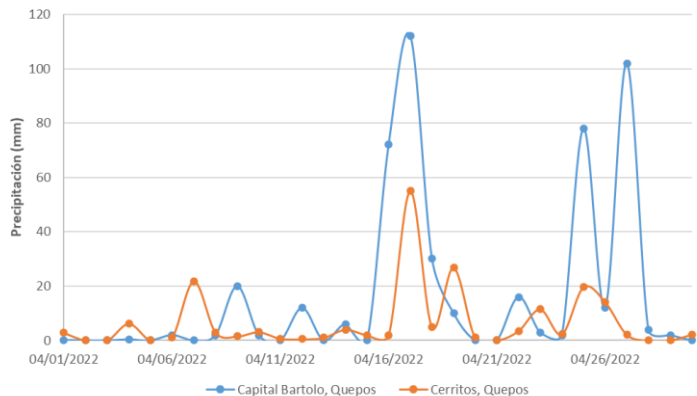
Pacífico Norte



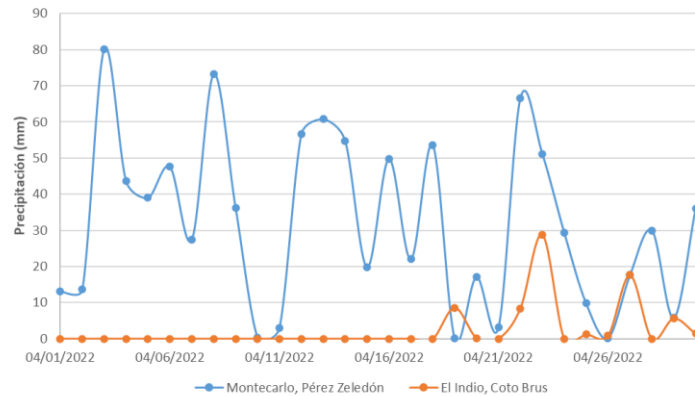
Valle Central



Pacífico Central

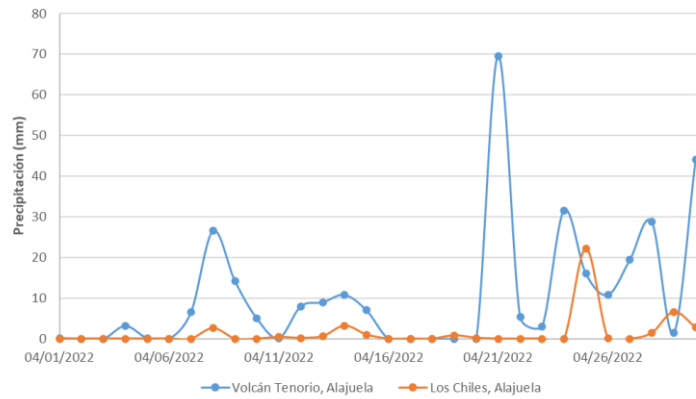


Pacífico Sur

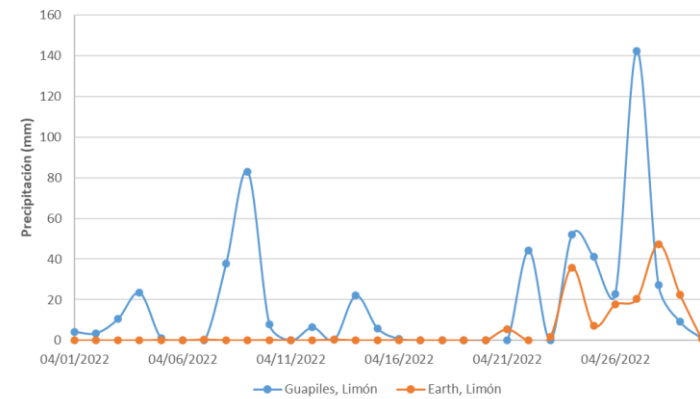


Distribución temporal de lluvia en abril 2022

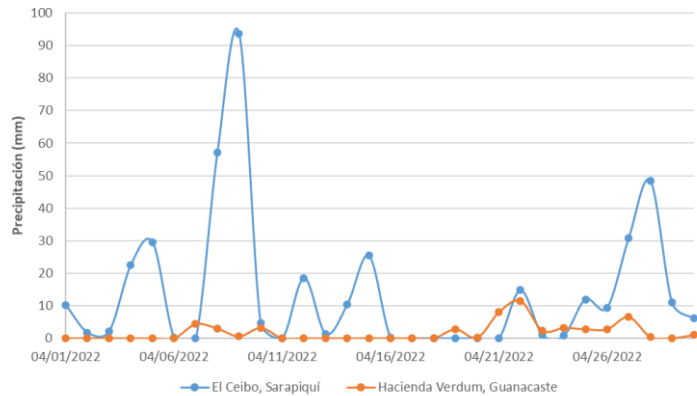
GLU



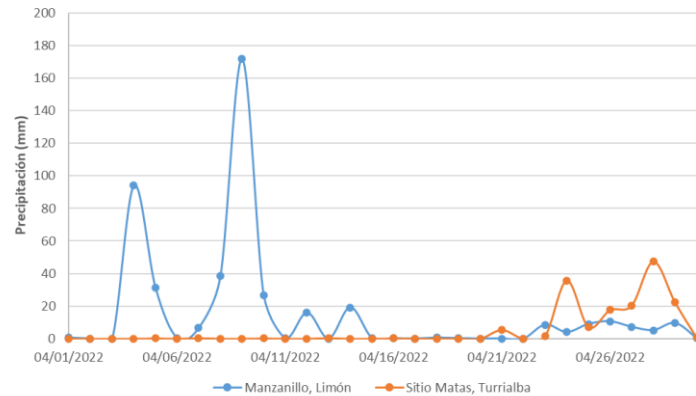
Caribe Norte



Zona Norte



Caribe Sur



Distribución temporal de lluvia en abril 2022

Estación	Ubicación	Periodo	Lluvia abril 2022 (mm)	Máximo anterior	Estación Mecánica	Periodo	Lluvia abril (mm)
Santa Lucía	Heredia (VC)	2011-2022	664	364 (2021)	Santa Lucía	1982-2022	360 (2021)
Pilangosta, Hojancha	Guanacaste (PN)	2017-2022	432,8	348 (2021)	Belén, Nicoya	1976-1991	218 (1979)
Capital Bartolo	Quepos (PC)	1945-2022	488	615 (1995)			
Montecarlo	Pérez Zeledón (PS)	2008-2022	962	658 (2018)	Cedral	1964-1993	620 (1979)
Volcán Tenorio	Alajuela (GLU)	2017-2022	321	388 (2021)	Río Achiote	1989-2013	194 (1995)
El Ceibo	Sarapiquí (ZN)	2015-2022	413	241 (2020)	San Miguel	1960-2011	508 (1970)
Guapiles	Limón (CN)	2011-2022	547	589 (2021)	Los Diamantes	2004-2022	702 (1970)
Manzanillo	Limón (CS)	2005-2022	461	477 (2021)	Puerto Vargas	1977-2016	481 (1987)

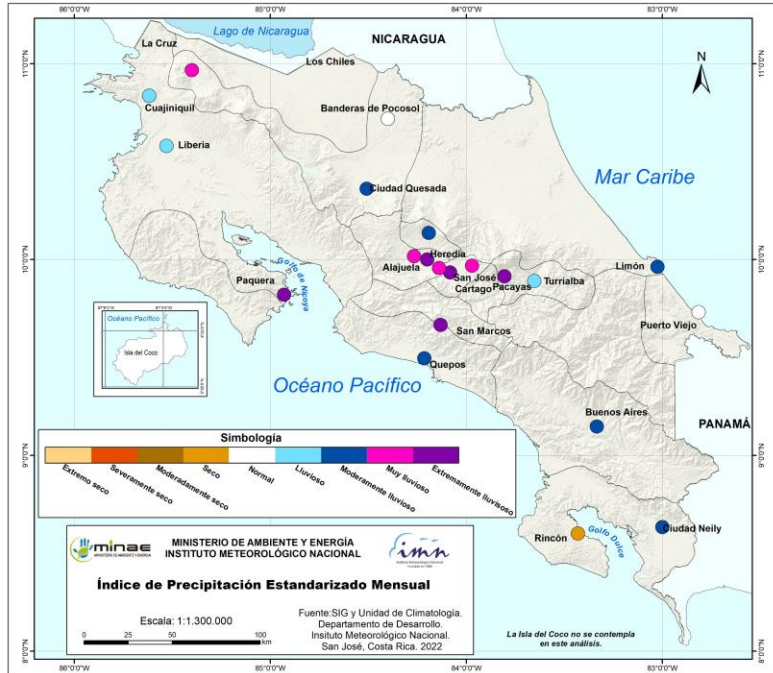
Estación	Ubicación	Lluvia (mm) abril 2022	Máximo de lluvia (mm) antecedente en abril	Máximo de lluvia (mm) abril estación mecánica
Santa Lucía	Barva	664	364 (2021)	360 (2021)
Santa Bárbara	Santa Bárbara	507	464 (2021)	273 (1997)
La Rebusca	Sarapiquí	275	264 (2008)	372 (1999)
Reserva El Ceibo	Sarapiquí	413	241 (2020)	515 (1979)
Planta Hidroeléctrica Río General	Sarapiquí	697	512 (2021)	199 (1998)

Distribución temporal de lluvia en abril 2022

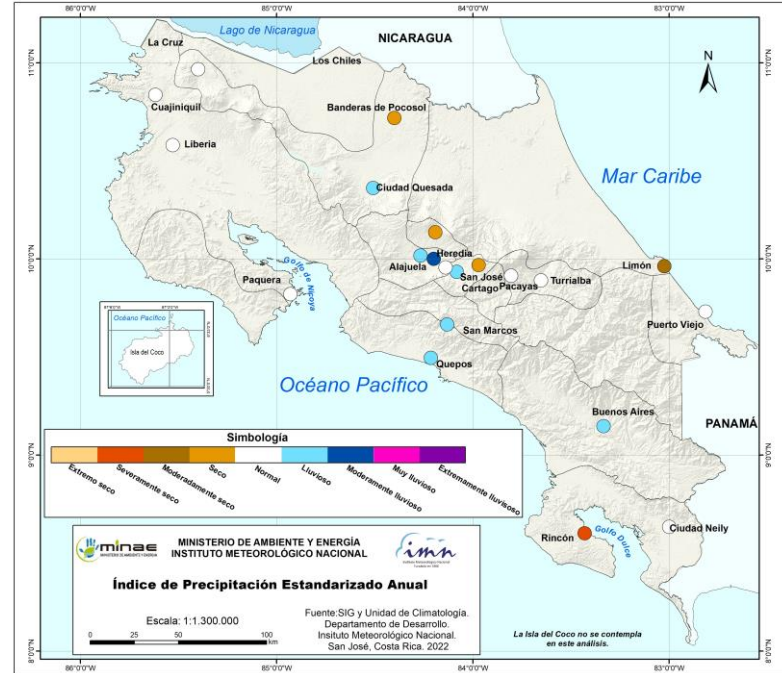
Monitoreo de sequía

Índice de precipitación estandarizado (SPI)

Periodo base CLINO



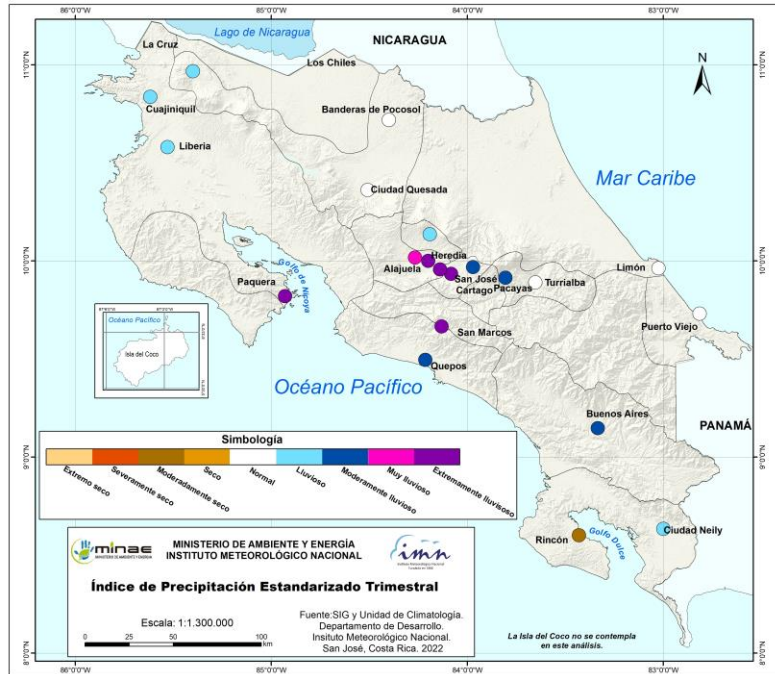
Mensual (abril)



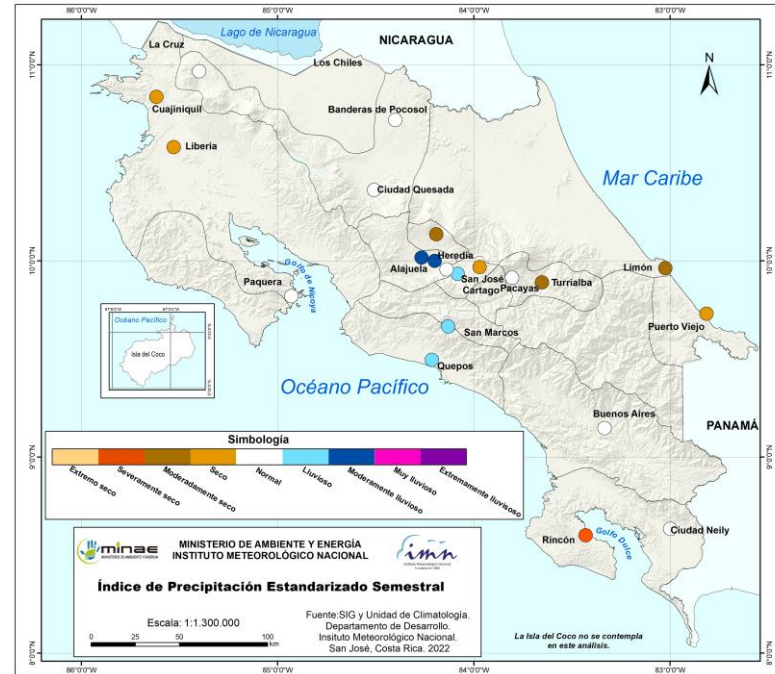
Anual (may-abr)

Índice de precipitación estandarizado (SPI)

Periodo base CLINO



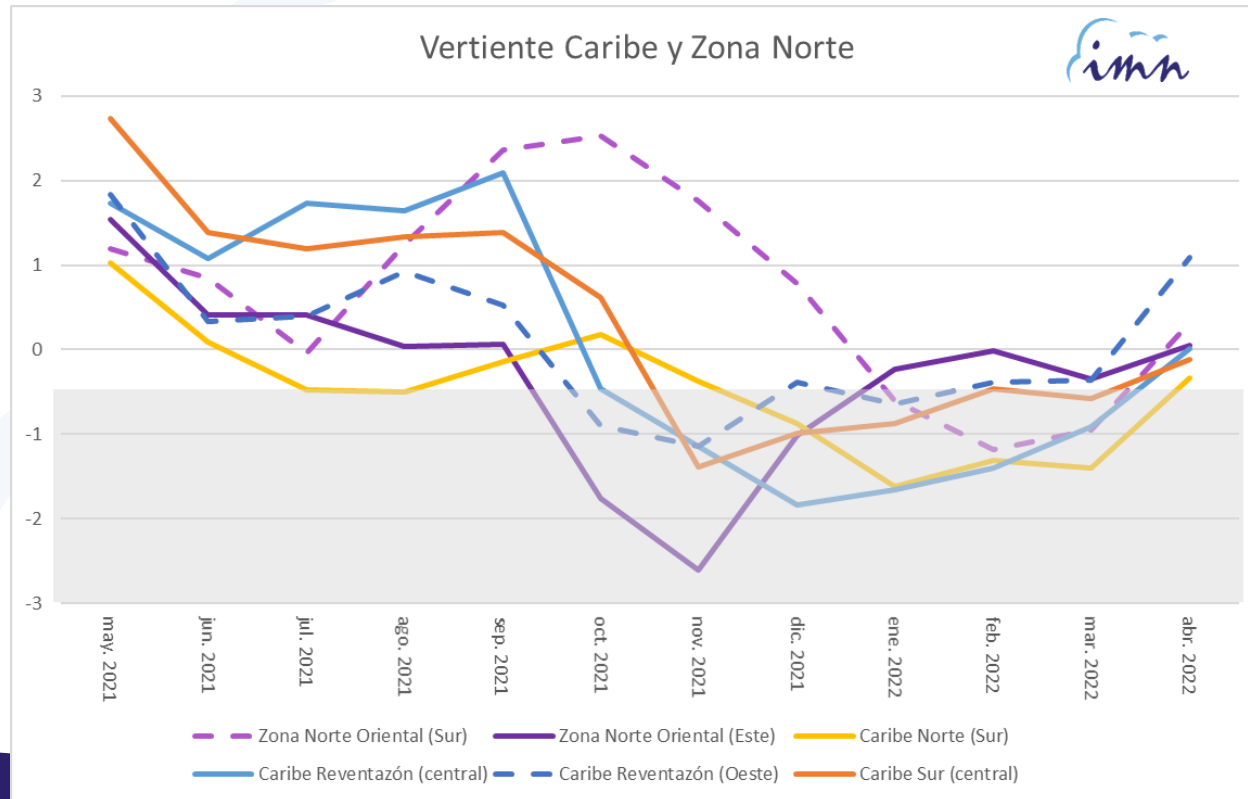
Trimestral (feb-abr)



Semestral (nov-abr)

Índice de precipitación estandarizado (SPI)

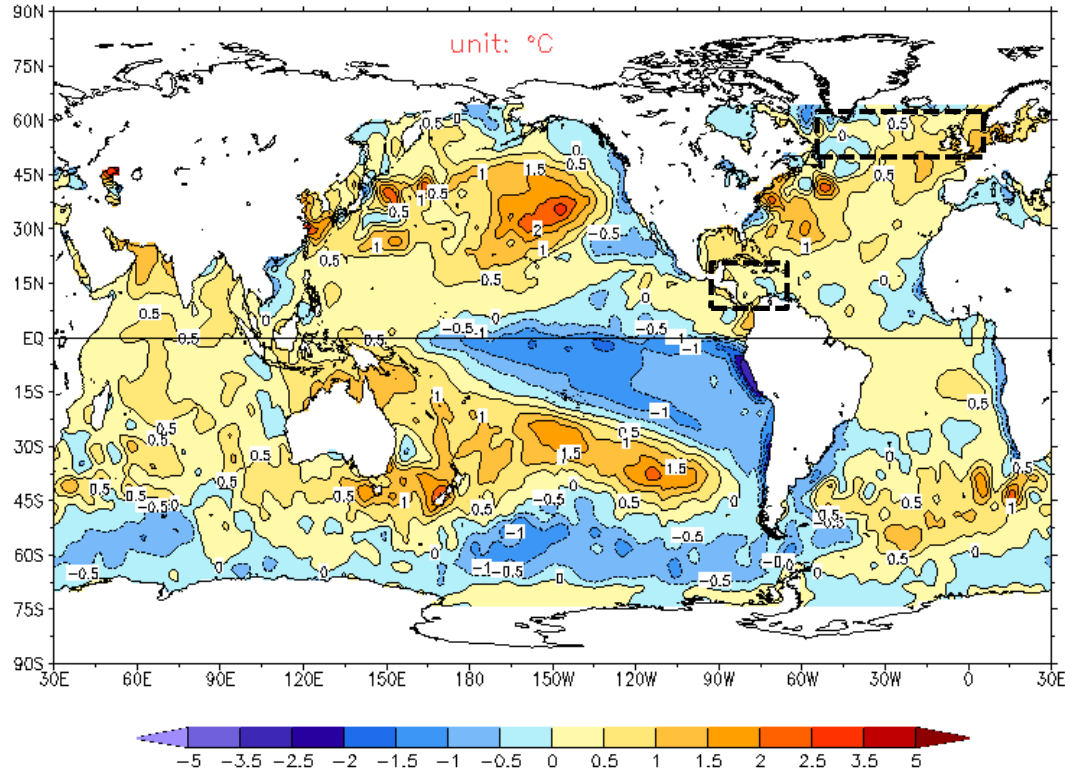
Periodo base CLINO



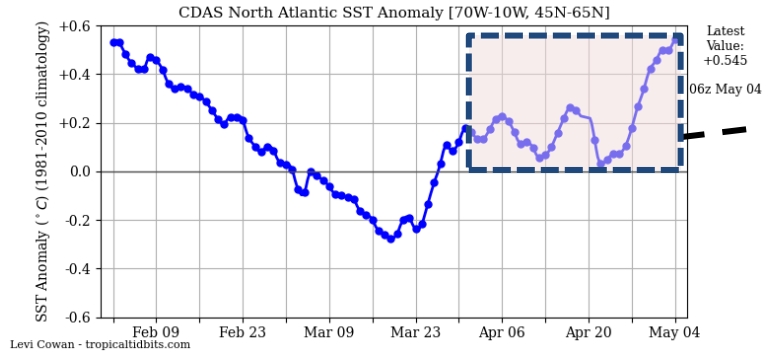
Monitoreo de la temperatura superficial del Océano Atlántico

Monitoreo TSM “Océano Atlántico”

Optimum Interpolation SST Anomaly, 2022 Apr



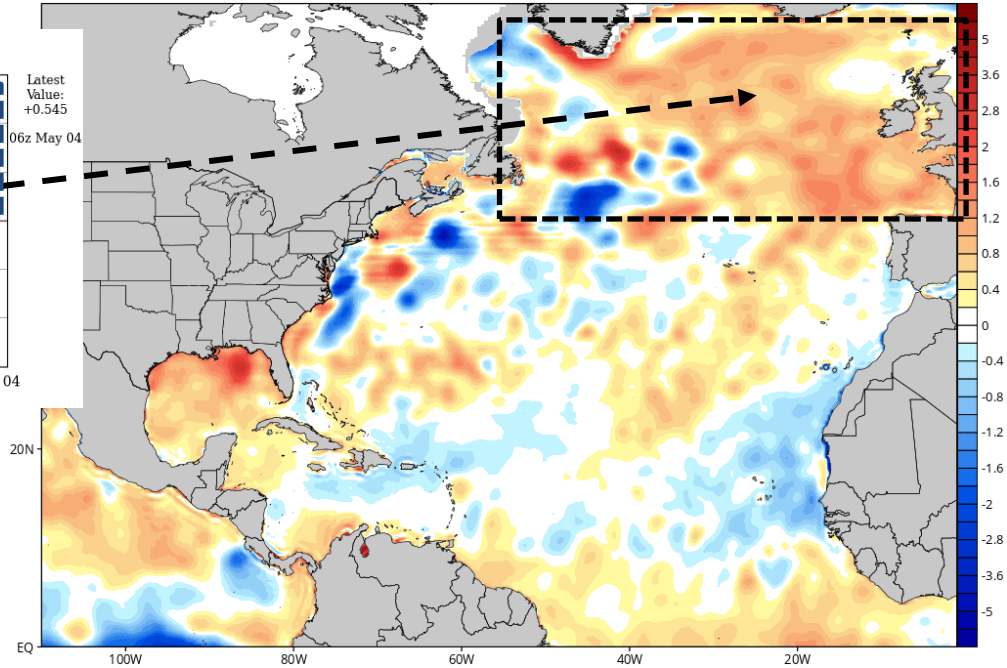
Monitoreo TSM "Océano Atlántico"



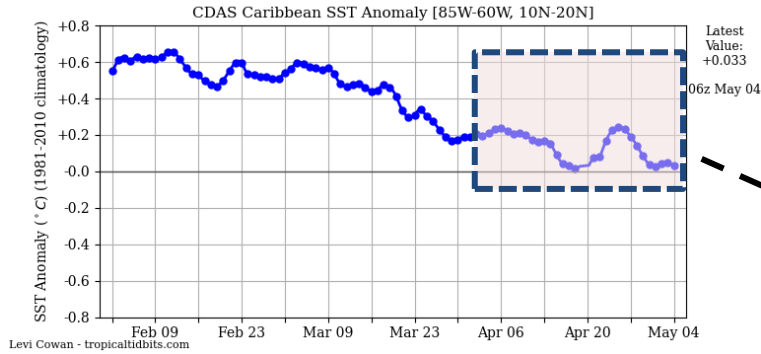
CDAS Sea Surface Temperature Anomaly (°C) (based on CFSR 1981-2010 Climatology)

Analysis Time: 06z May 04 2022

TROPICALTIDBITS.COM



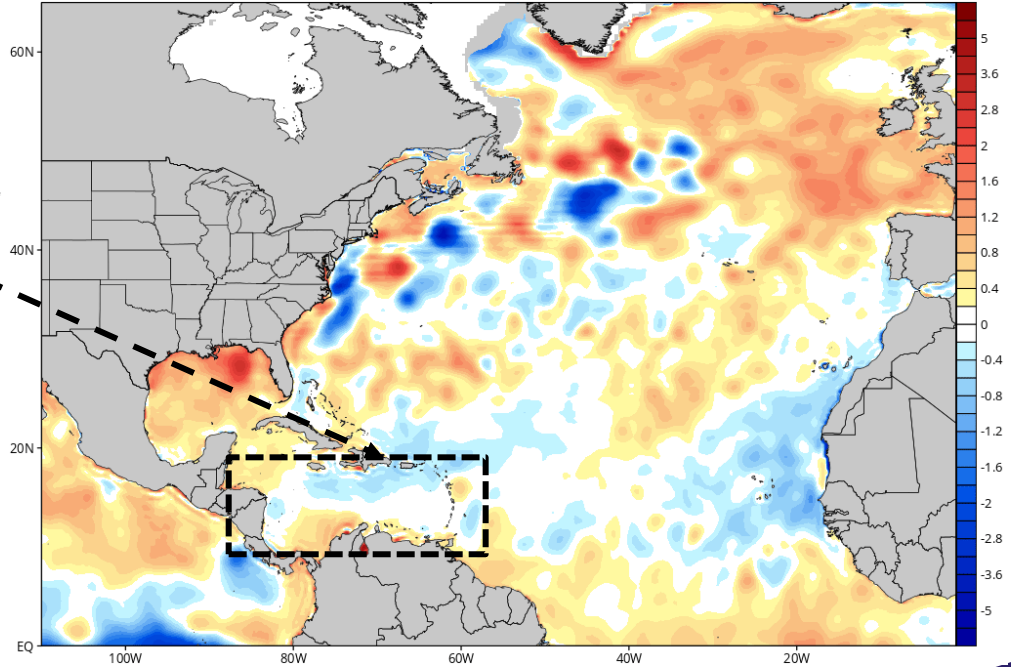
Monitoreo TSM “Mar Caribe”



CDAS Sea Surface Temperature Anomaly (°C) (based on CFSR 1981-2010 Climatology)

Analysis Time: 06z May 04 2022

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Pronóstico probabilístico de TSM

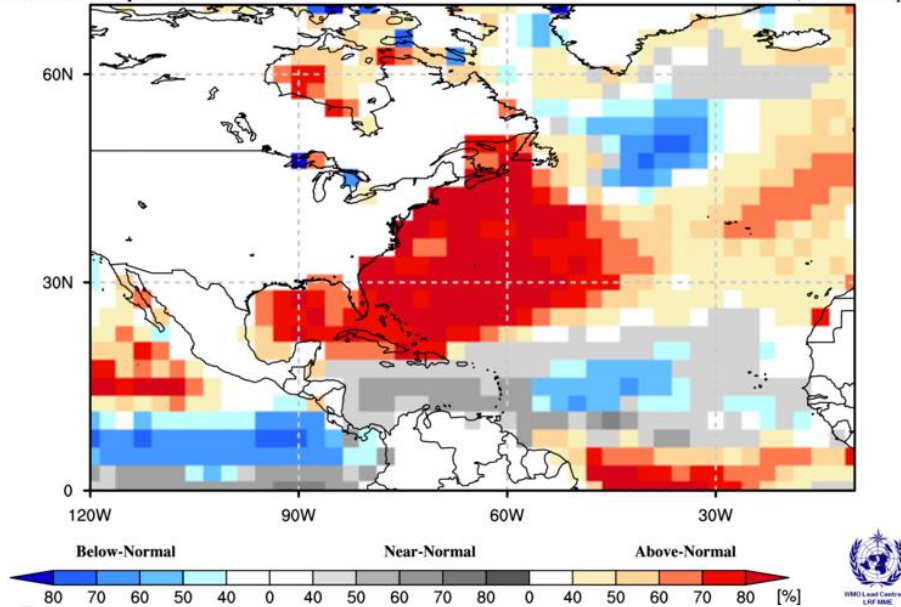
Ensamble modelos de la OMM

Probabilistic Multi-Model Ensemble Forecast

Beijing,ECMWF,Exeter,Melbourne,Montreal,Offenbach,Seoul,Tokyo,Toulouse,Washington

Sea Surface Temperature : MJJ2022

(issued on Apr2022)



MJJ



Pronóstico determinístico de TSM

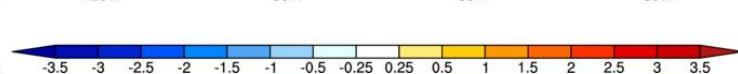
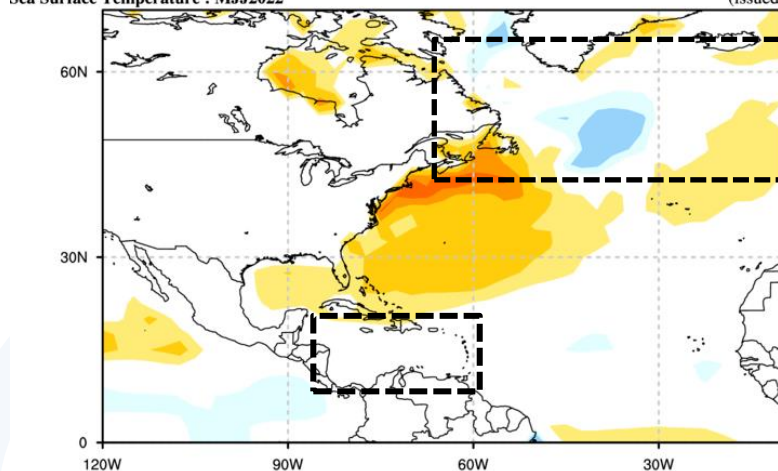
Ensamble modelos de la OMM

Simple Composite Map

Beijing,CMCC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington

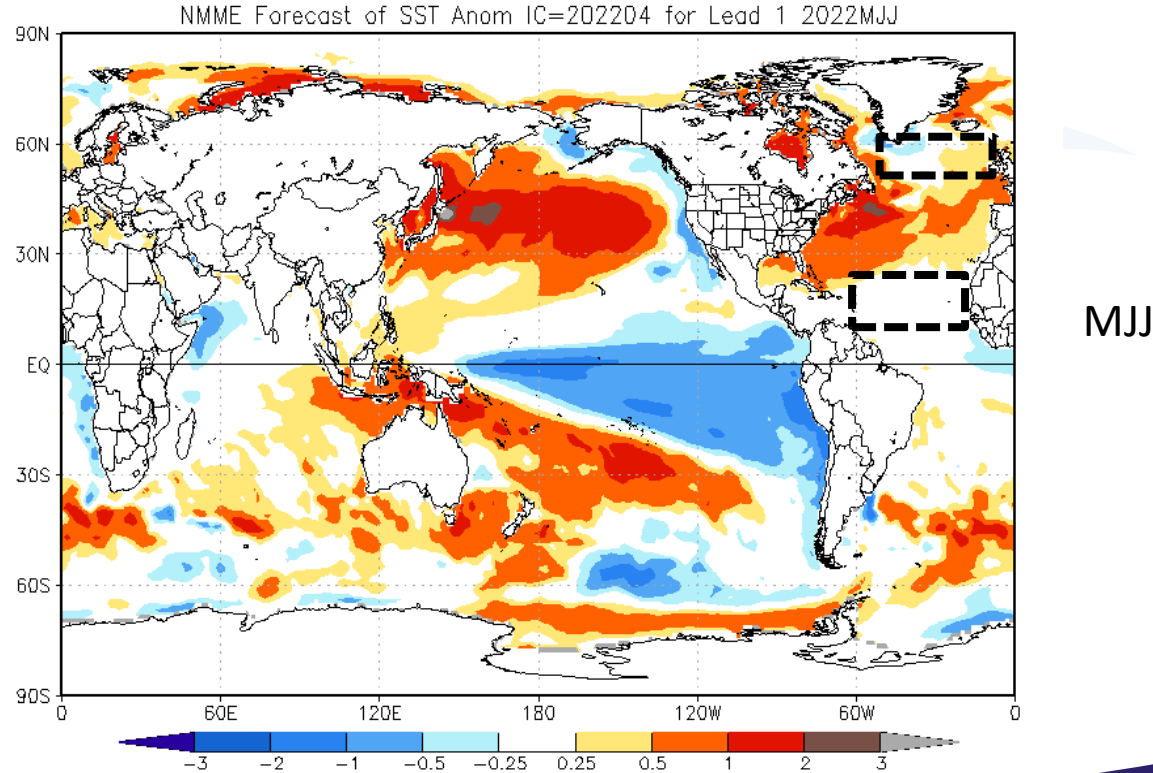
Sea Surface Temperature : MJJ2022

[Unit : K]
(issued on Apr2022)



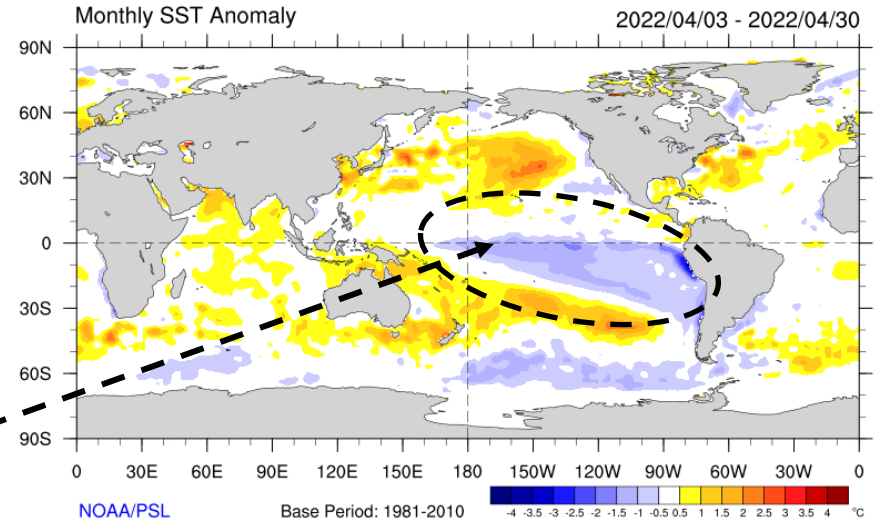
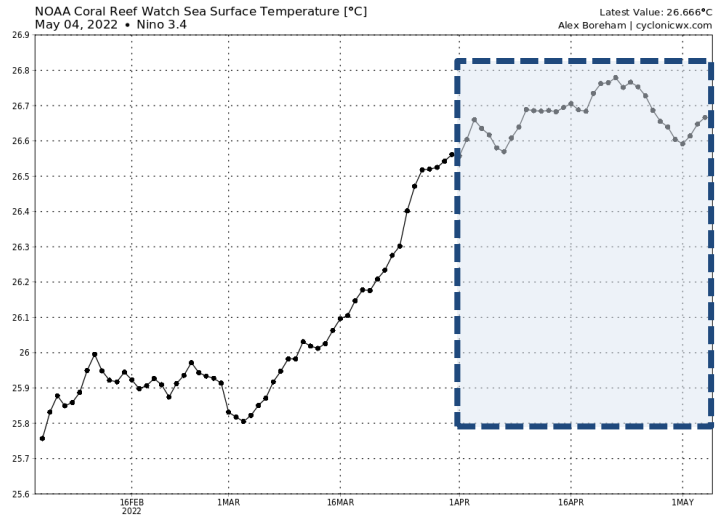
Pronóstico determinístico de TSM

Ensamble modelos NMME (Norteamérica)



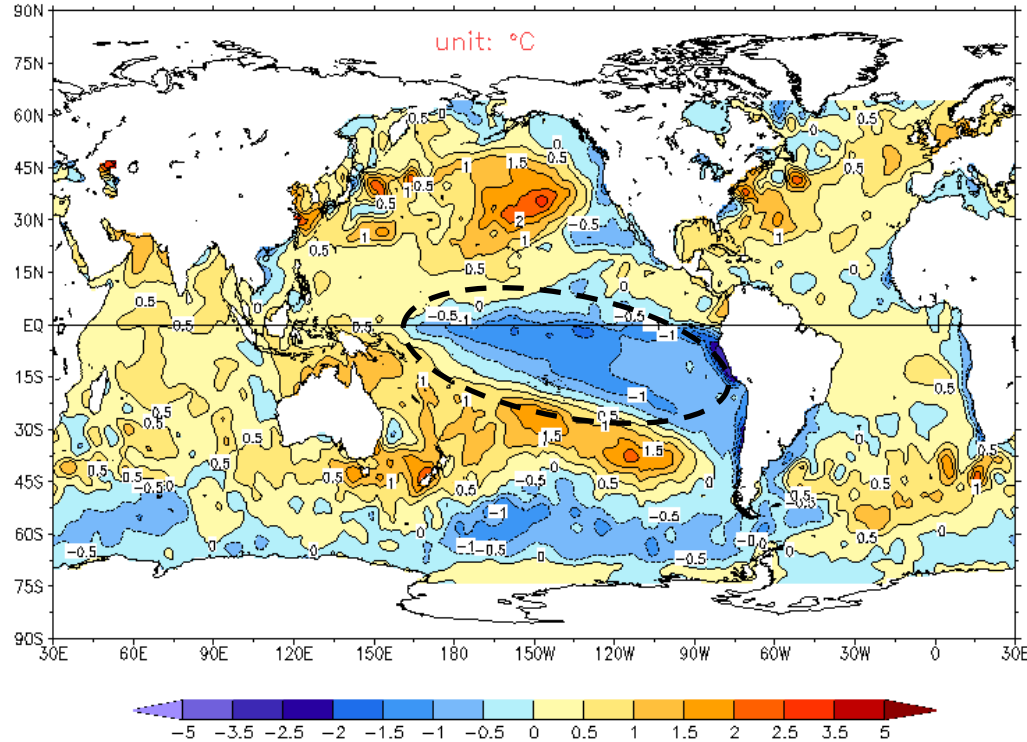
Monitoreo Fenómeno ENOS

Monitoreo fenómeno "ENOS" (La Niña)

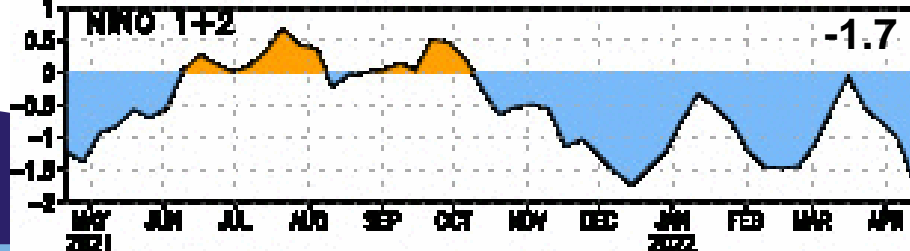
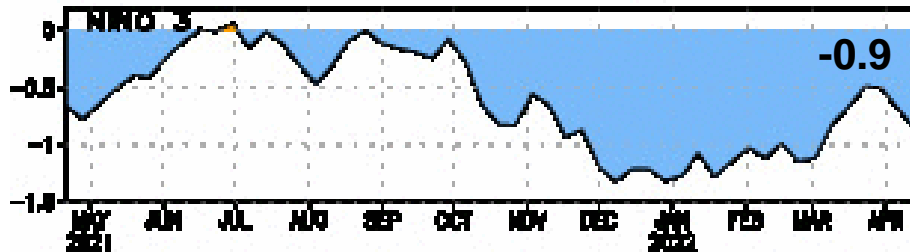
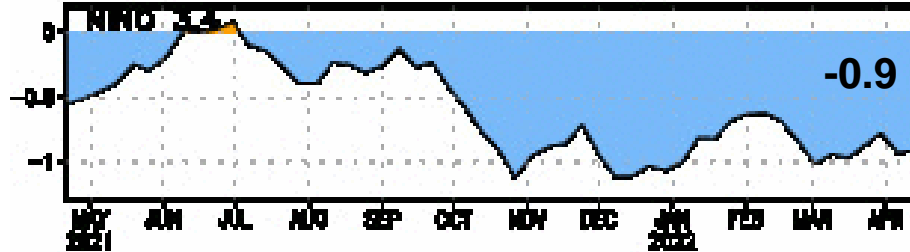
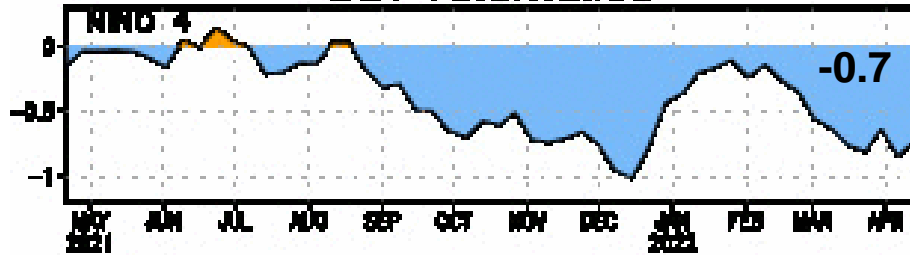


Monitoreo fenómeno “ENOS” (La Niña)

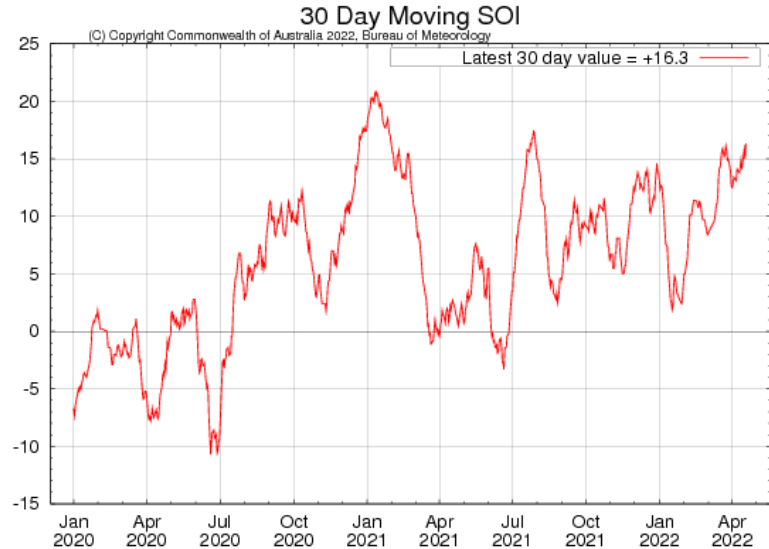
Optimum Interpolation SST Anomaly, 2022 Apr



SST Anomalies

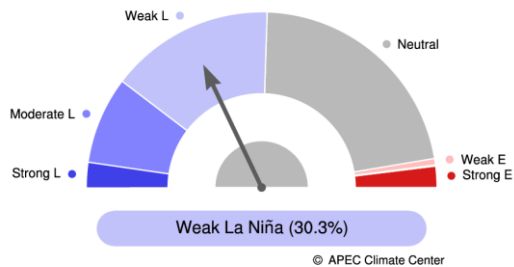


Monitoreo fenómeno "ENOS" (La Niña)



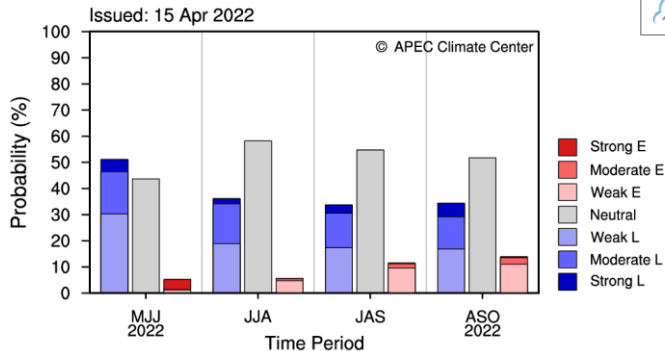
Monitoreo fenómeno “ENOS”: Sistema de Alerta Temprana

Probabilistic ENSO Forecast for MJJ 2022
Issued: 15 Apr 2022

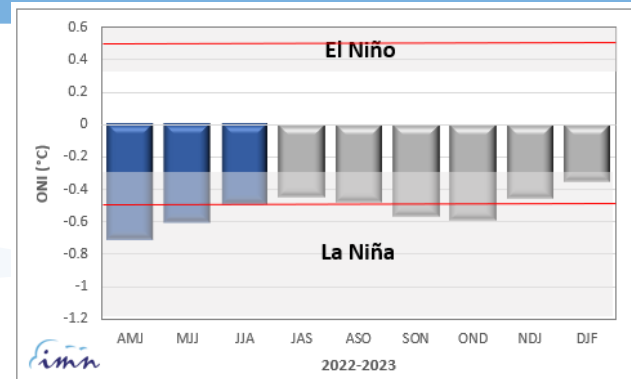


* ENSO Intensity based on 3M Mean Niño3.4 SST Anomaly (Category Boundaries: +/-1.5, 1.0, 0.5°C)

Probabilistic ENSO Forecast for 2022 MJJASO



* ENSO Intensity based on 3M Mean Niño3.4 SST Anomaly (Category Boundaries: +/-1.5, 1.0, 0.5°C)

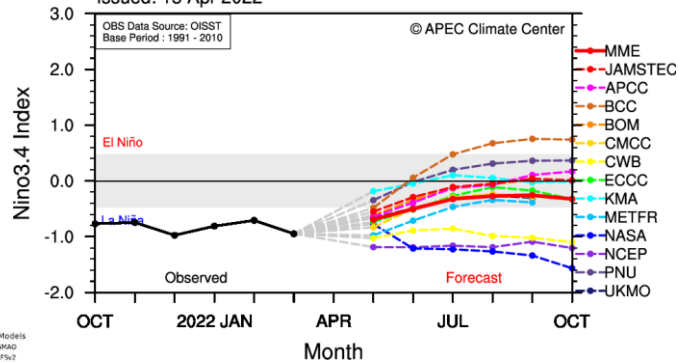


Se mantiene la perspectiva de ENOS en su fase La Niña de débil intensidad en la temporada de MJJ-2022.

Monitoreo fenómeno "ENOS" (La Niña)

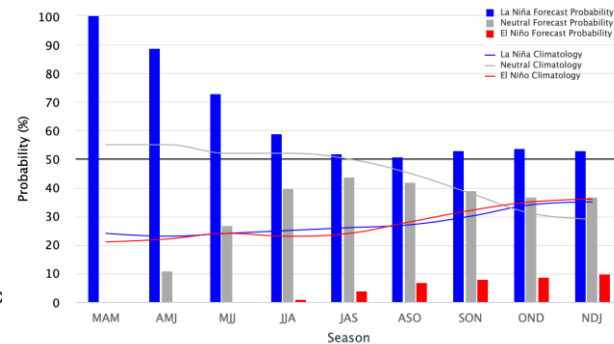
Nino3.4 Index for 2022 MJJASO

Issued: 15 Apr 2022

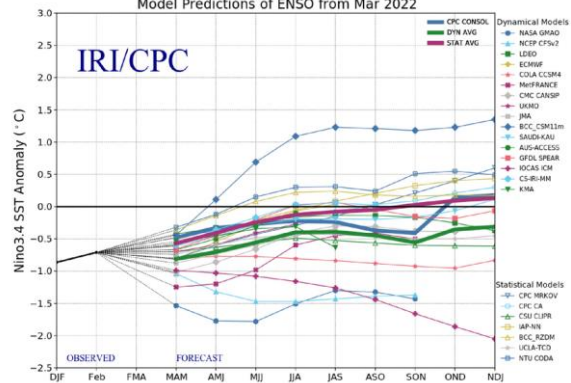


Early-April 2022 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: -0.5°C to 0.5°C



Model Predictions of ENSO from Mar 2022

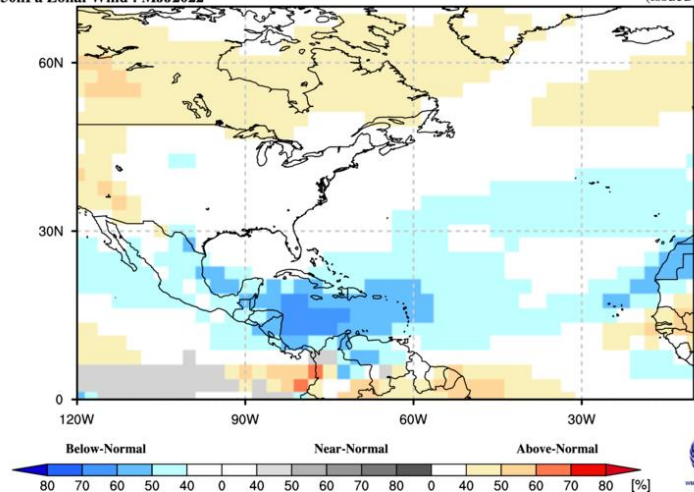


Análisis de modelos numéricos globales y locales

Pronóstico probabilístico de viento Ensamble modelos de la OMM

850hPa Zonal Wind : MJJ2022

(issued on Apr2022)



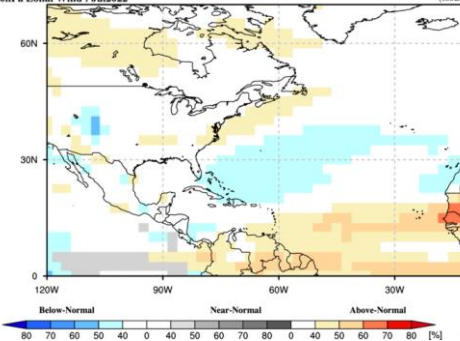
MJJ

Probabilistic Multi-Model Ensemble Forecast

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montrreal,Moscow,Seoul,Tokyo,Toulouse,

850hPa Zonal Wind : Jul2022

(issued on Apr2022)



Julio

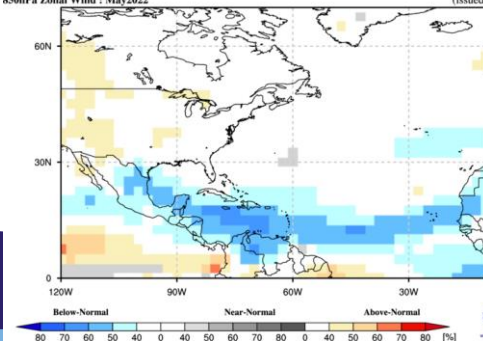
Mayo

Probabilistic Multi-Model Ensemble Forecast

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montrreal,Moscow,Seoul,Tokyo,Toulouse,

850hPa Zonal Wind : May2022

(issued on Apr2022)

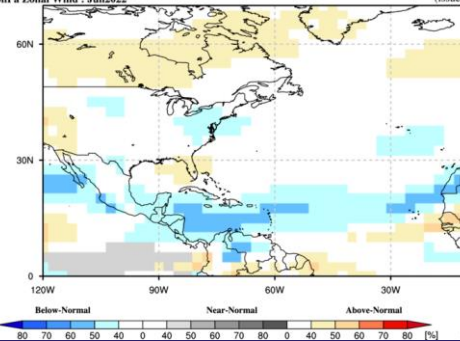


Probabilistic Multi-Model Ensemble Forecast

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montrreal,Moscow,Seoul,Tokyo,Toulouse,

850hPa Zonal Wind : Jun2022

(issued on Apr2022)



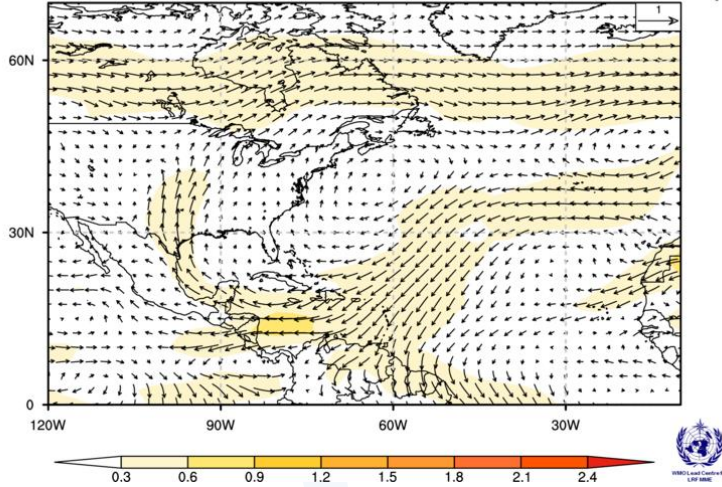
Junio

Pronóstico determinístico de viento, ensemble OMM

Simple Composite Map
Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Seoul,Tokyo,Toulouse

850hPa Wind : MJJ2022

[Unit : m/s]
(issued on Apr2022)

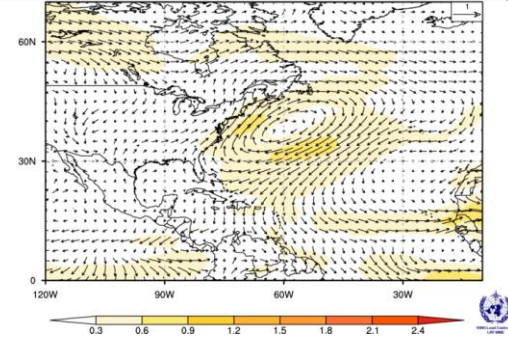


MJJ

Simple Composite Map
Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Seoul,Tokyo,Toulouse

850hPa Wind : Jul2022

[Unit : m/s]
(issued on Apr2022)

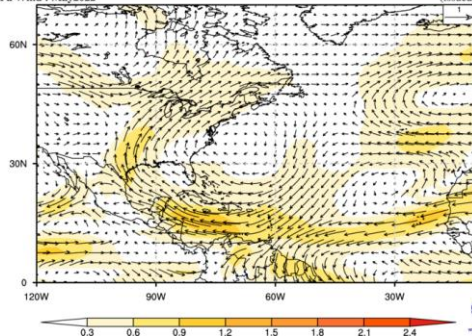


Julio

Simple Composite Map
Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Seoul,Tokyo,Toulouse

850hPa Wind : May2022

[Unit : m/s]
(issued on Apr2022)

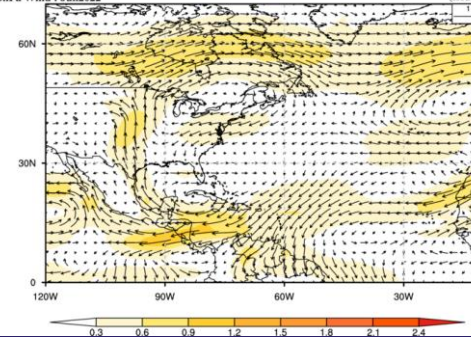


Mayo

Simple Composite Map
Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Seoul,Tokyo,Toulouse

850hPa Wind : Jun2022

[Unit : m/s]
(issued on Apr2022)



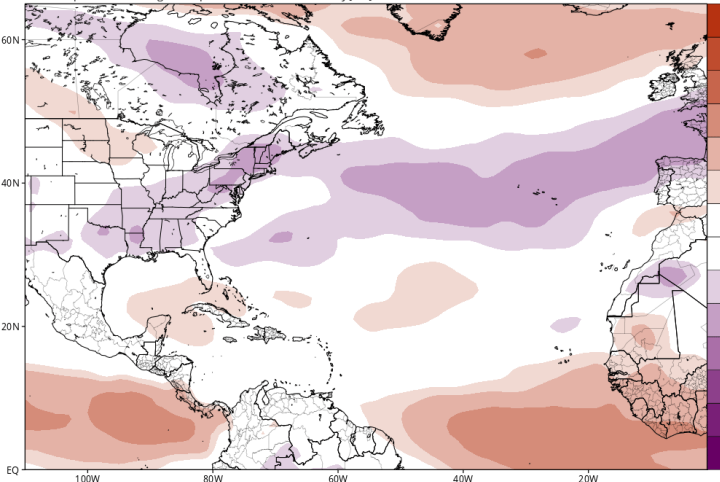
Junio

CFSv2 850 hPa Zonal Wind Anomaly (kt) (based on 1984-2009 Model Climatology)

Average of last 12 forecasts (12 runs x 1 members)

Init: 06z Apr 16 2022 through 00z Apr 19 2022 Valid for: May-Jun-Jul 2022

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MJJ

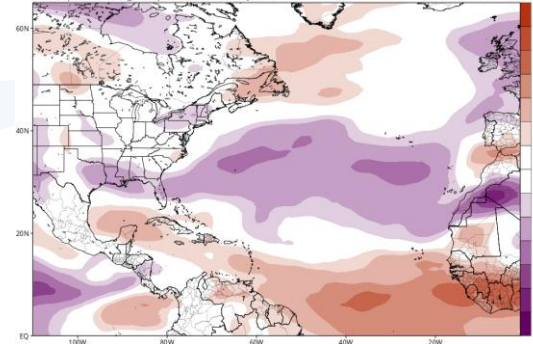
Pronóstico determinístico de viento, ensamble CFS

CFSv2 850 hPa Zonal Wind Anomaly (kt) (based on 1984-2009 Model Climatology)

Average of last 12 forecasts (12 runs x 1 members)

Init: 06z Apr 16 2022 through 00z Apr 19 2022 Valid for: Jul 2022

TROPICALTIDBITS.COM



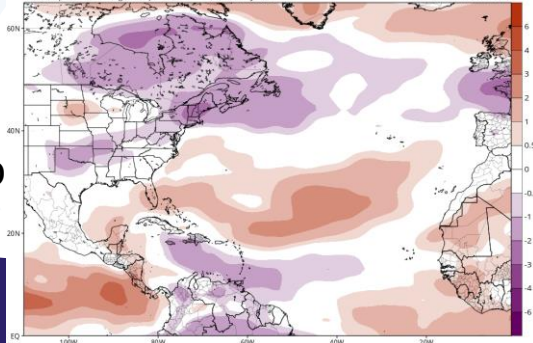
Julio

CFSv2 850 hPa Zonal Wind Anomaly (kt) (based on 1984-2009 Model Climatology)

Average of last 12 forecasts (12 runs x 1 members)

Init: 06z Apr 16 2022 through 00z Apr 19 2022 Valid for: May 2022

TROPICALTIDBITS.COM



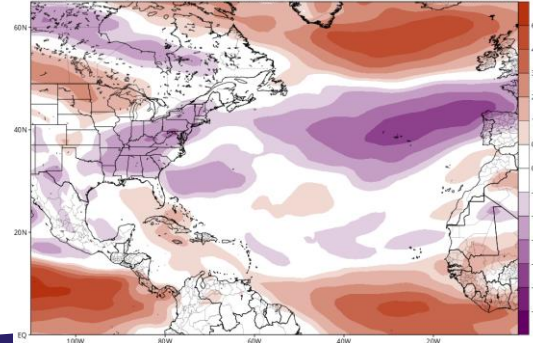
Mayo

CFSv2 850 hPa Zonal Wind Anomaly (kt) (based on 1984-2009 Model Climatology)

Average of last 12 forecasts (12 runs x 1 members)

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TROPICALTIDBITS.COM

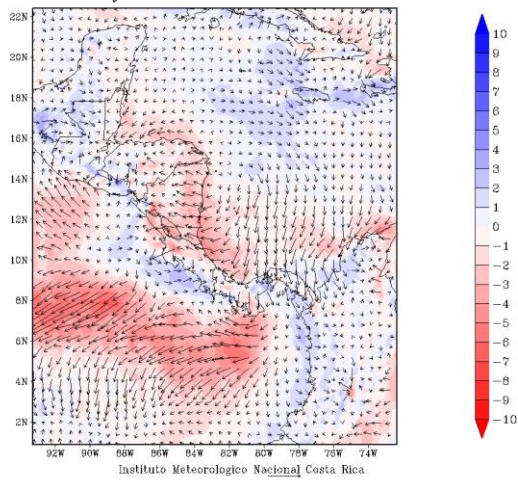


Junio

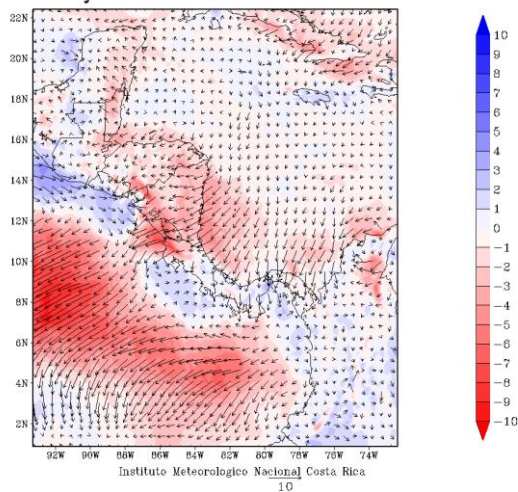
Pronóstico de viento: Modelo WRF-Clima-IMN

Mayo

IMN-WRF Anomalia del viento
mayo-2022 Mes C.I.: abril

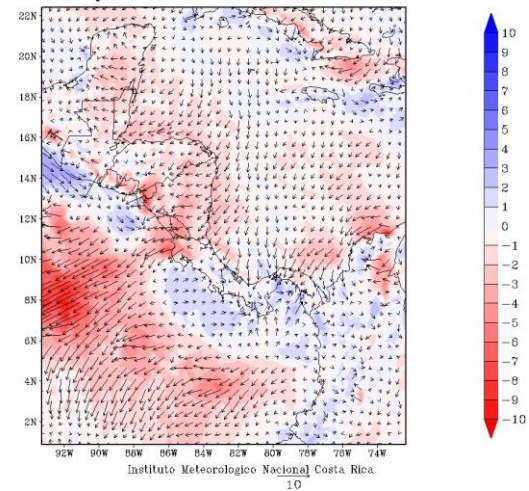


IMN-WRF Anomalia del viento
junio-2022 Mes C.I.: abril



Junio

IMN-WRF Anomalia del viento
julio-2022 Mes C.I.: abril



Julio

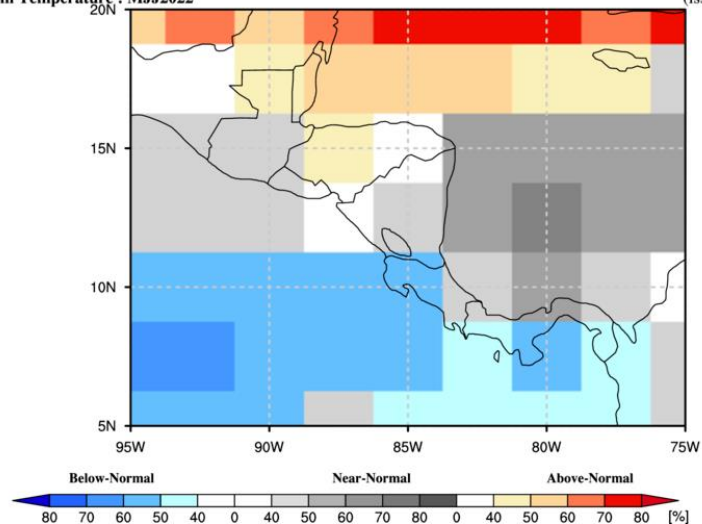
Pronóstico probabilístico de temperatura, ensamble OMM

Probabilistic Multi-Model Ensemble Forecast

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington

2m Temperature : MJJ2022

(issued on Apr2022)



Pronóstico determinístico de temperatura, ensamble OMM

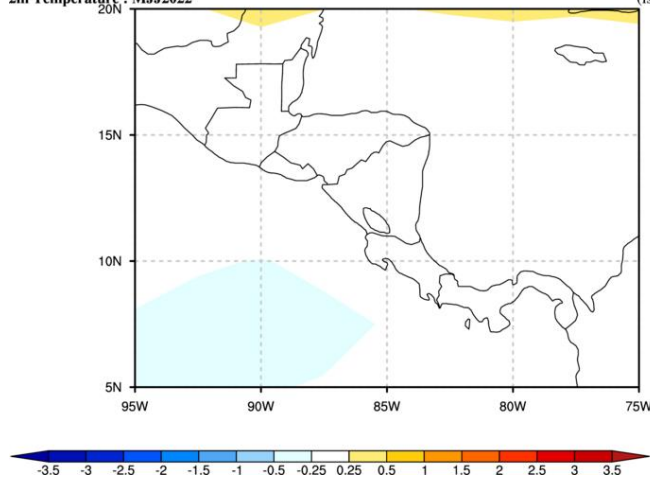
Simple Composite Map

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington

[Unit : K]

2m Temperature : MJJ2022

(issued on Apr2022)



Pronóstico probabilístico de temperatura, ECMWF y C3S

ECMWF Seasonal Forecast

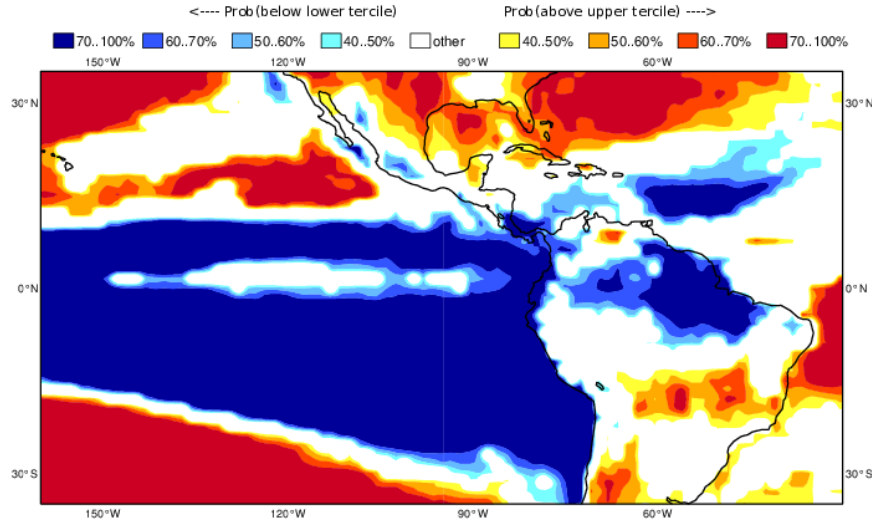
Prob(most likely category of 2m temperature)

Forecast start is 01/04/22, climate period is 1993-2016

Ensemble size = 51, climate size = 600

System 5

MJJ 2022



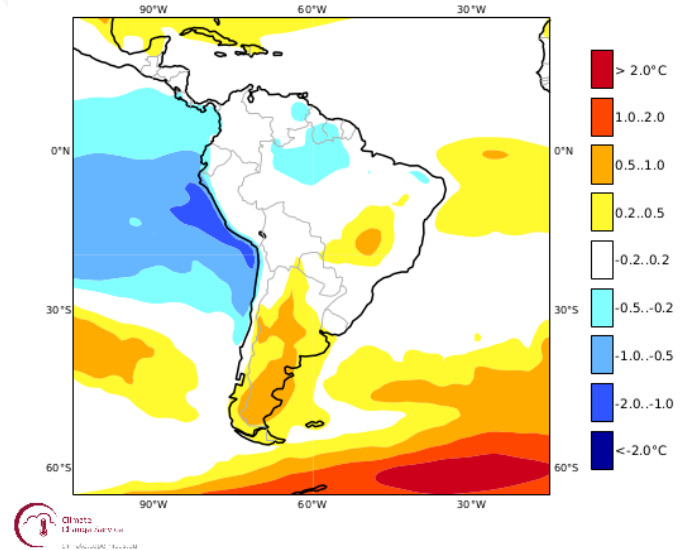
C3S multi-system seasonal forecast

Mean 2m temperature anomaly

Nominal forecast start: 01/04/22

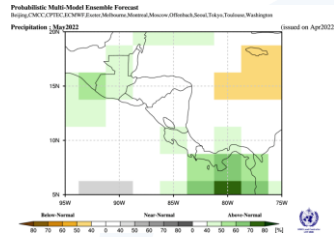
Variance-standardized mean

MJJ 2022

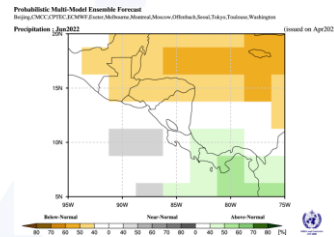


Pronóstico probabilístico de lluvia, ensamble OMM

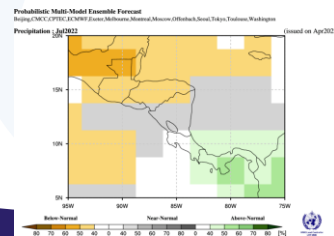
Mayo



Junio



Julio

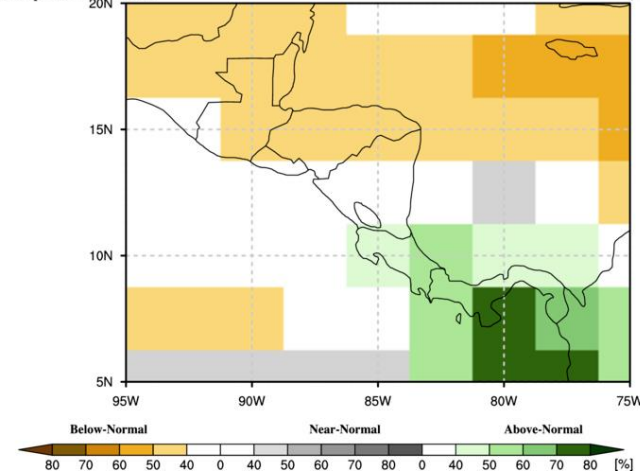


Probabilistic Multi-Model Ensemble Forecast

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington

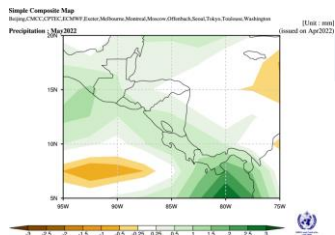
Precipitation : MJJ2022

(issued on Apr2022)

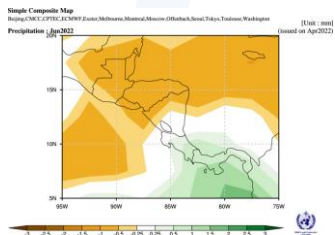


Pronóstico determinístico de lluvia, ensamble OMM

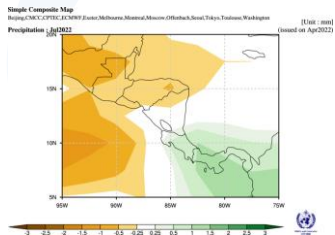
Mayo



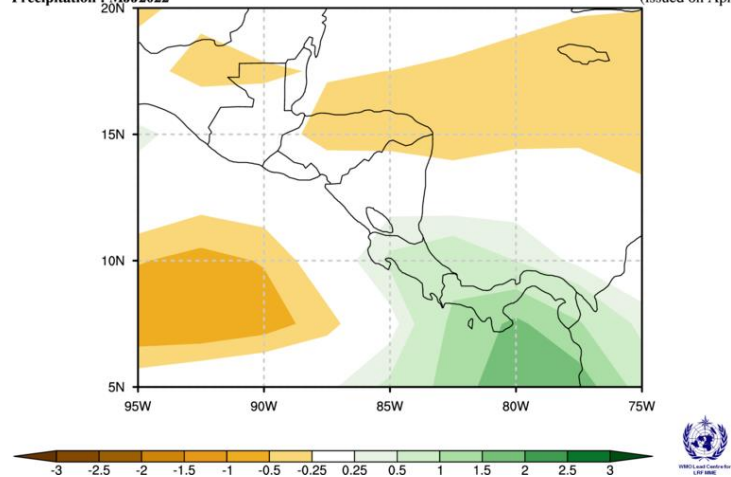
Junio



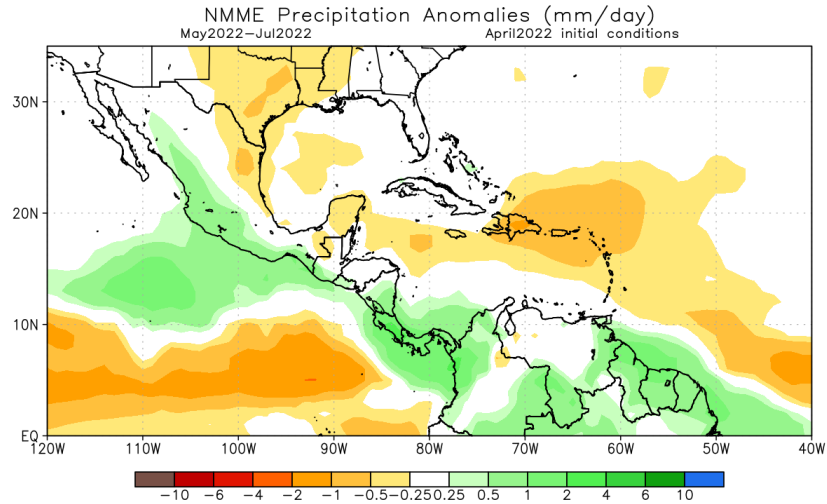
Julio



Simple Composite Map
Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington
Precipitation : **MJJ2022** [Unit : mm]
(issued on Apr2022)

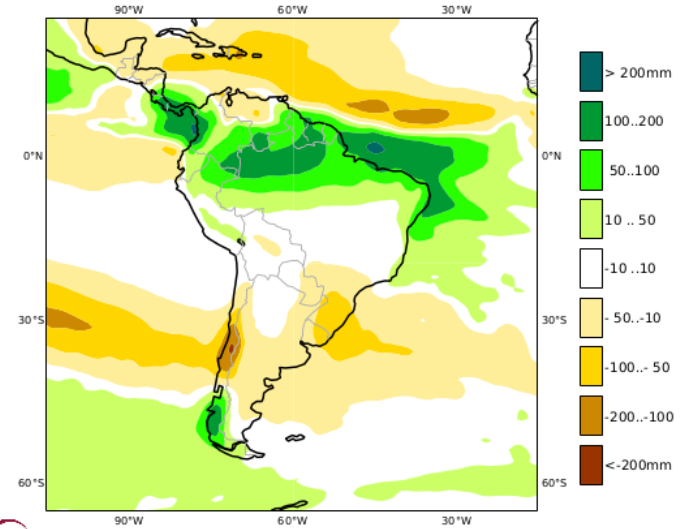


Pronóstico de Lluvia NMME y C3S-MME



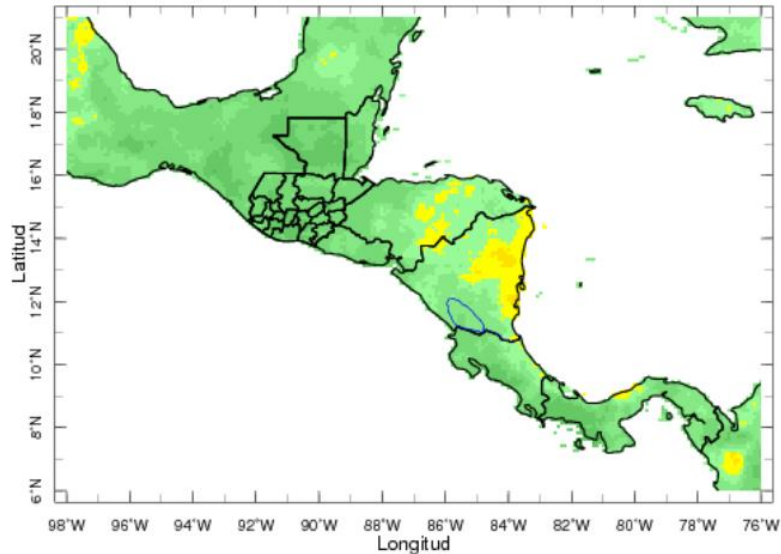
C3S multi-system seasonal forecast
Mean precipitation anomaly
Nominal forecast start: 01/04/22
Variance-standardized mean

MJJ 2022

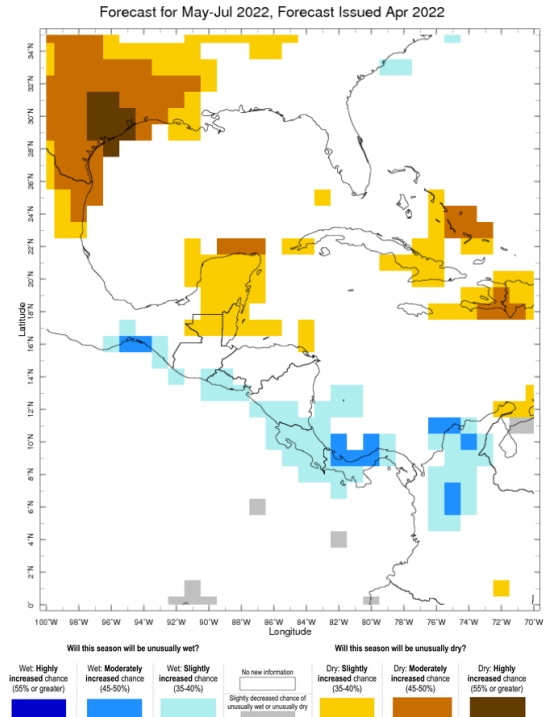
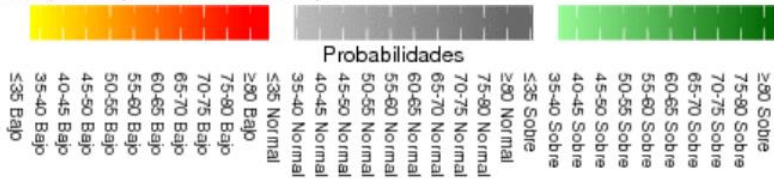


Pronostico determinístico y probabilístico de lluvias

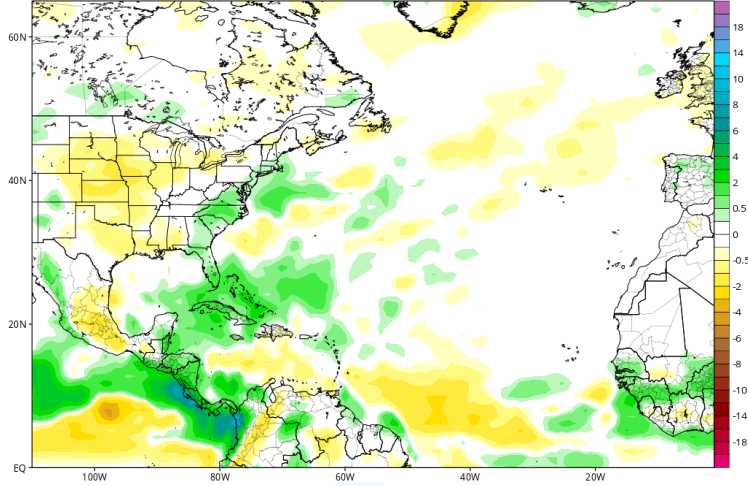
IRI



Válido para May-Jul 2022 Hecho en Apr 2022



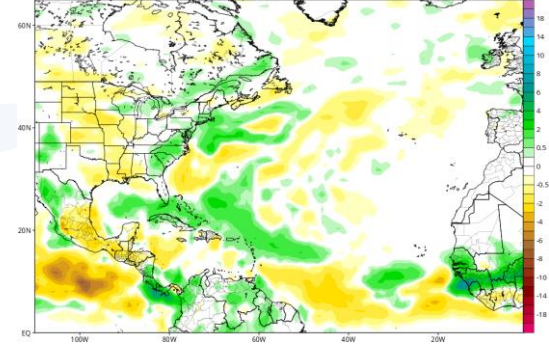
CFSv2 Total Accumulated Precipitation Mean Monthly (inches)
Average of last 12 forecasts (12 runs x 1 members)
Init: 06z Apr 16 2022 through 00z Apr 19 2022



MJJ

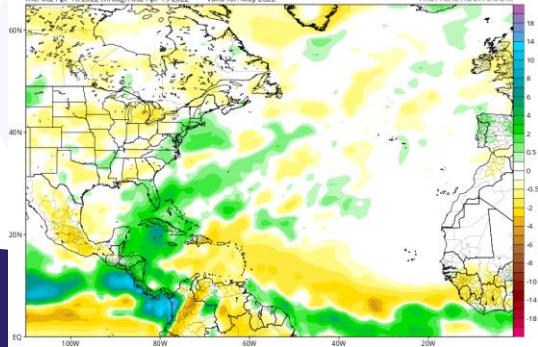
Pronóstico determinístico de lluvia Ensamble modelos de la CFS

CFSv2 Total Accumulated Precipitation Anomaly (inches)
Average of last 12 forecasts (12 runs x 1 members)
Init: 06z Apr 16 2022 through 00z Apr 19 2022



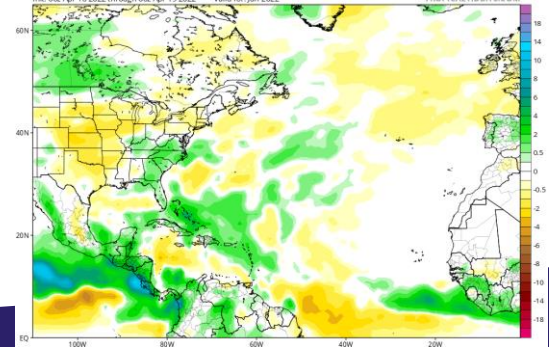
Julio

CFSv2 Total Accumulated Precipitation Anomaly (inches)
Average of last 12 forecasts (12 runs x 1 members)
Init: 06z Apr 16 2022 through 00z Apr 19 2022



Mayo

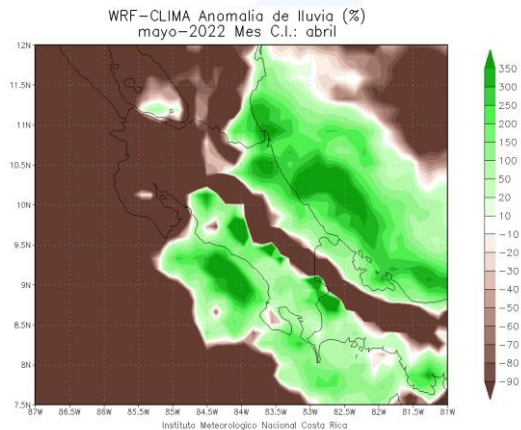
CFSv2 Total Accumulated Precipitation Anomaly (inches)
Average of last 12 forecasts (12 runs x 1 members)
Init: 06z Apr 16 2022 through 00z Apr 19 2022



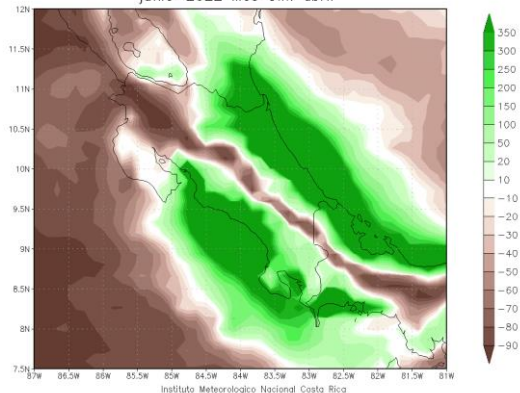
Junio

Pronóstico de Lluvia: Modelo WRF-Clima-IMN

Mayo

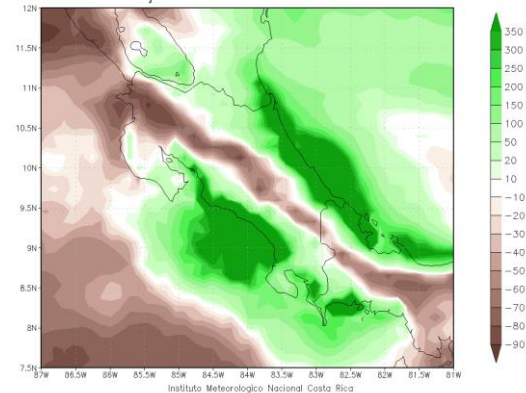


WRF-CLIMA Anomalia de Lluvia (%)
junio-2022 Mes C.I.: abril



Junio

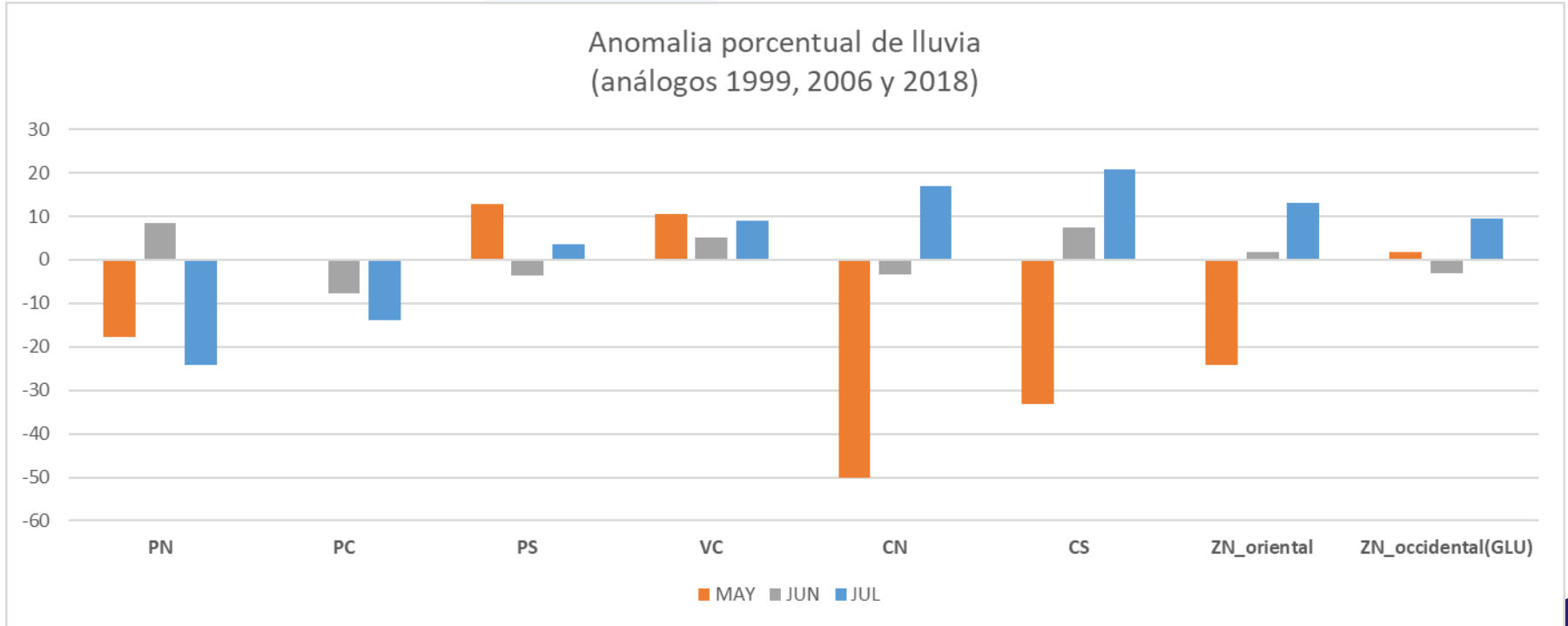
WRF-CLIMA Anomalia de Lluvia (%)
julio-2022 Mes C.I.: abril



Julio

Años análogos

Anomalia porcentual de lluvia
(análogos 1999, 2006 y 2018)



Temporada de Ciclones Tropicales de la cuenca del Atlántico Norte

Cuenca Atlántico (Océano Atlántico Tropical, mar Caribe y golfo de México)

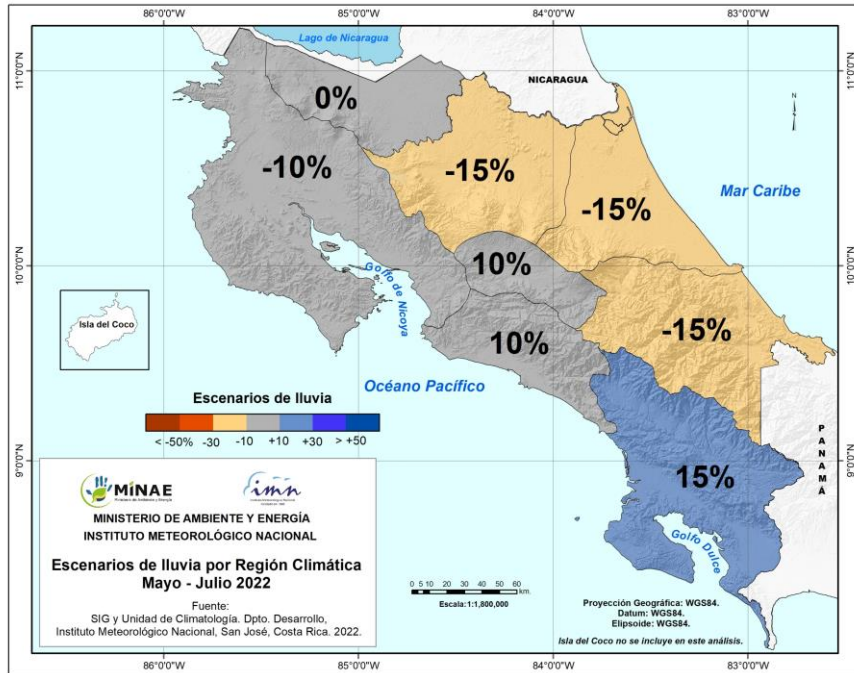
Temporada normal (1991-2020)		
TORMENTAS	HURACANES (1,2)	HURACANES (3,4,5)
7	4	3

Temporada récord 2020		
TORMENTAS	HURACANES (1,2)	HURACANES (3,4,5)
16	8	6

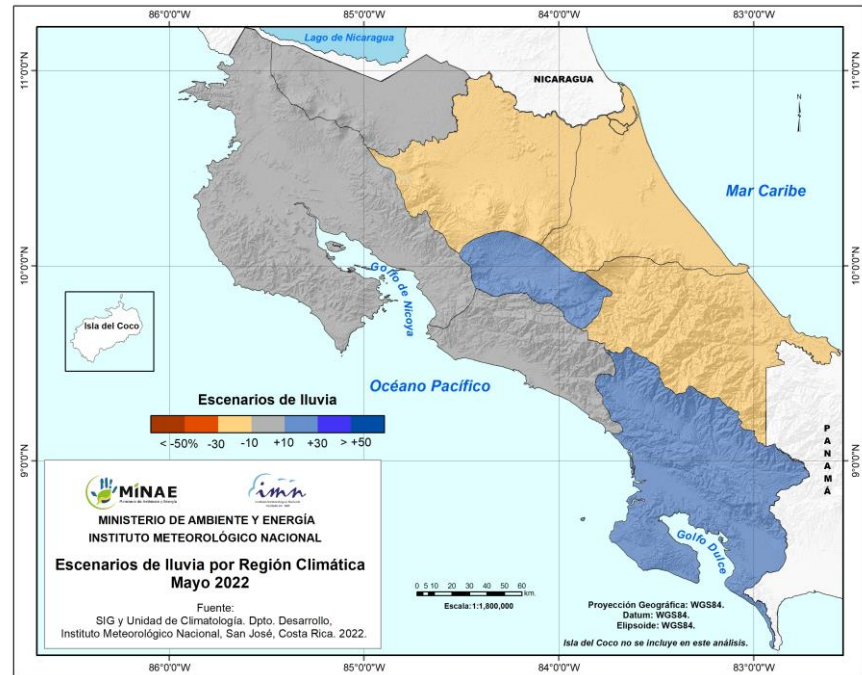
Pronóstico de temporada 2022		
TORMENTAS	HURACANES (1,2)	HURACANES (3,4,5)
19	9	4

Pronostico del trimestre

Pronóstico de Lluvias (%)



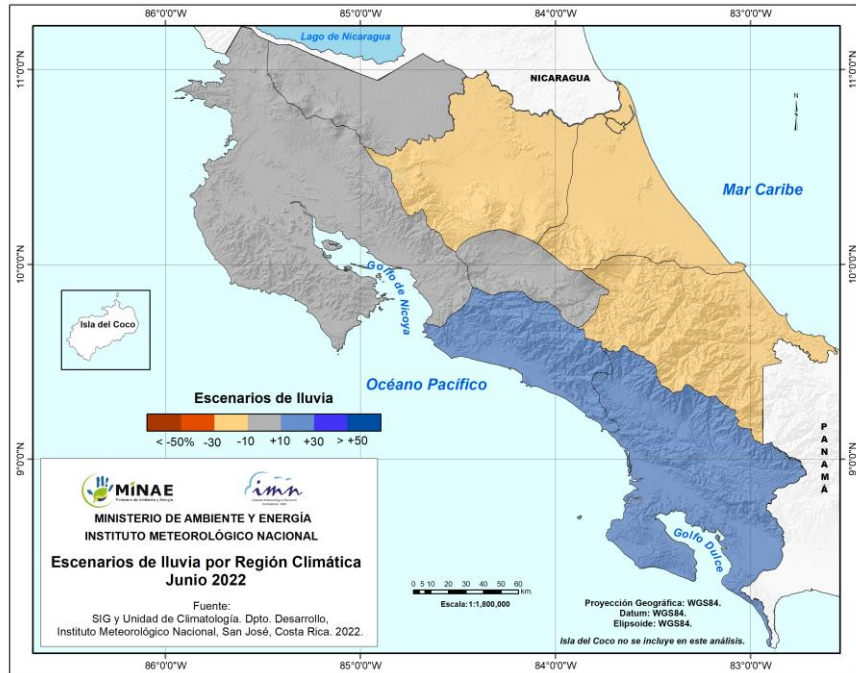
Mayo-Julio



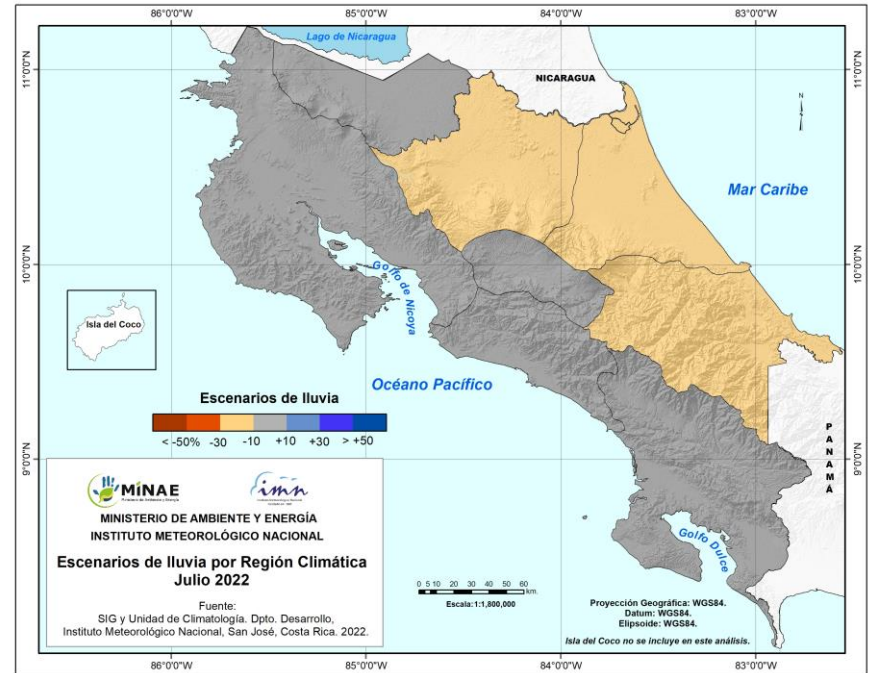
Mayo



Pronóstico de Lluvias (%)



Junio











Julio



Resumen de la información anterior

Región	Mayo	Junio	Julio	MJJ
Pacífico Norte	Normal	Normal	Normal	-10%
Pacífico Central	Normal	Arriba normal	Normal	10%
Pacífico Sur	Arriba normal	Arriba normal	Normal	15%
Valle Central	Arriba normal	Normal	Normal	10%
Zona Norte Occidental (GLU)	Normal	Normal	Normal	0%
Zona Norte Oriental	Bajo normal	Bajo normal	Bajo normal	-15%
Caribe Norte	Bajo normal	Bajo normal	Bajo normal	-15%
Caribe Sur	Bajo normal	Bajo normal	Bajo normal	-15%









Escenarios de lluvia

	> +50
	[+50, +30]
	[+30, +10]
	[+10, -10]
	[-10, -30]
	[-30, -50]
	< -50%
	Temporada Seca

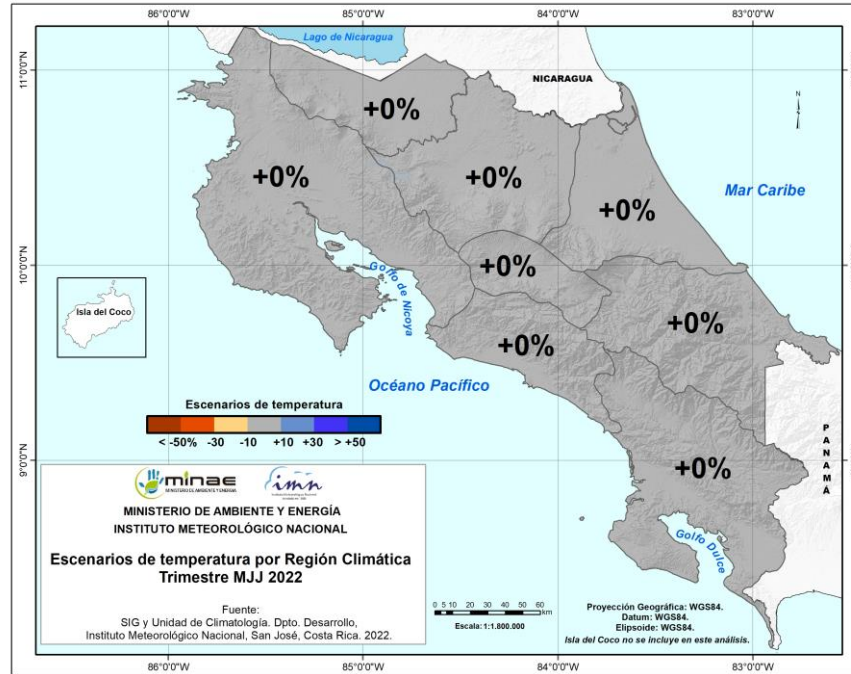
Estimaciones de lluvia pronosticada

REGION	may-22		jun-22		jul-22		Trimestre	
	NORMAL	2022	NORMAL	2022	NORMAL	2022	NORMAL	2022
PACIFICO NORTE	217	[195,238]	248	[223,273]	183	[165,201]	216	194
PACIFICO SUR	462	[508,600]	411	[452,534]	375	[338,413]	416	478
PACIFICO CENTRAL	378	[340,416]	366	[403,476]	348	[313,383]	364	400
VALLE CENTRAL	283	[312,368]	268	[241,295]	196	[177,216]	249	249
ZONA NORTE OCCIDENTAL	252	[226,277]	352	[317,387]	370	[333,407]	325	325
ZONA NORTE ORIENTAL	324	[227,291]	414	[289,372]	457	[320,411]	398	338
CARIBE NORTE	353	[247,318]	640	[448,576]	470	[329,423]	488	415
CARIBE SUR	282	[197,254]	268	[189,241]	315	[220,283]	288	245

Escenarios de lluvia

	> +50
	[+50, +30]
	[+30, +10]
	[+10, -10]
	[-10, -30]
	[-30, -50]
	< -50%
	Temporada Seca

Pronóstico de temperatura media (%)



Mayo-Julio









Escenarios de lluvia

- > +50
- [+50, +30]
- [+30, +10]
- [+10, -10]
- [-10, -30]
- [-30, -50]
- < -50%
- Temporada Seca

Pronóstico de temperatura media (%)

ID	Región	Mayo	Junio	Julio	MJJ
1	Pacífico Norte	Normal	Normal	Normal	Normal
3	Pacífico Central	Normal	Normal	Normal	Normal
4	Pacífico Sur	Normal	Normal	Normal	Normal
2	Valle Central	Normal	Normal	Normal	Normal
6	Zona Norte Occidental (GLU)	Normal	Normal	Normal	Normal
5	Zona Norte Oriental	Normal	Normal	Normal	Normal
7	Caribe Norte	Normal	Normal	Normal	Normal
8	Caribe Sur	Normal	Normal	Normal	Normal









Escenarios de lluvia

	> +50
	[+50, +30]
	[+30, +10]
	[+10, -10]
	[-10, -30]
	[-30, -50]
	< -50%
	Temporada Seca

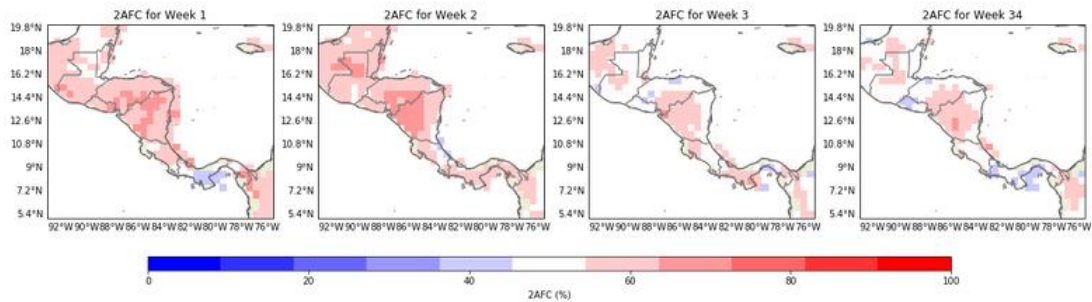
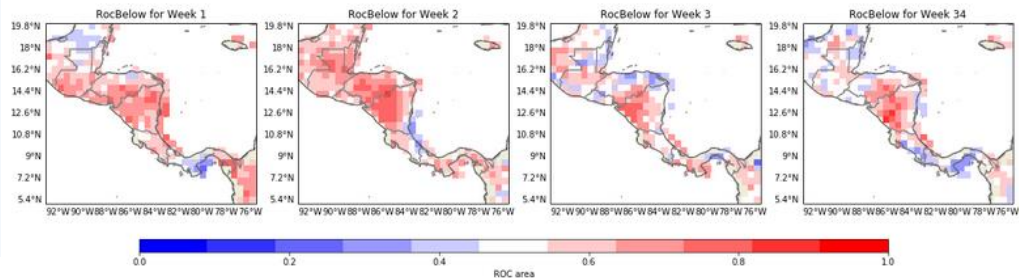
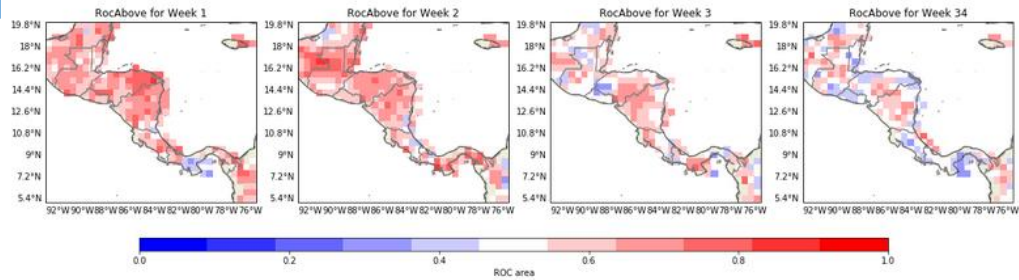
Estimaciones de temperatura media pronosticada

REGION	Mayo		Junio		Julio		Trimestre	
	NORMAL	2022	NORMAL	2022	NORMAL	2022	NORMAL	2022
PACIFICO NORTE	27	[25,30]	27	[24,29]	27	[24,29]	28	[25,30]
PACIFICO SUR	26	[23,28]	25	[23,28]	25	[23,28]	26	[23,28]
PACIFICO CENTRAL	27	[24,29]	26	[24,29]	26	[24,29]	27	[24,29]
VALLE CENTRAL	21	[19,23]	21	[19,23]	21	[19,23]	21	[19,23]
ZONA NORTE OCCIDENTAL	26	[24,29]	26	[24,29]	26	[24,29]	26	[24,29]
ZONA NORTE ORIENTAL	26	[23,28]	26	[23,28]	25	[23,28]	26	[23,28]
CARIBE NORTE	26	[24,29]	26	[23,29]	26	[23,29]	26	[23,28]
CARIBE SUR	25	[23,28]	25	[23,28]	24	[23,28]	25	[22,27]

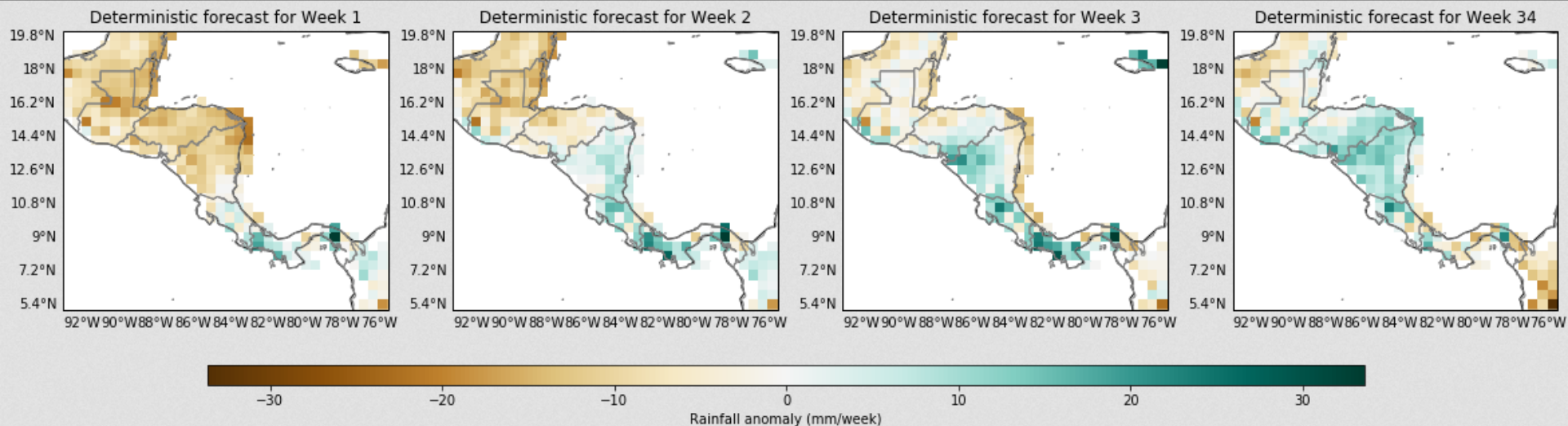
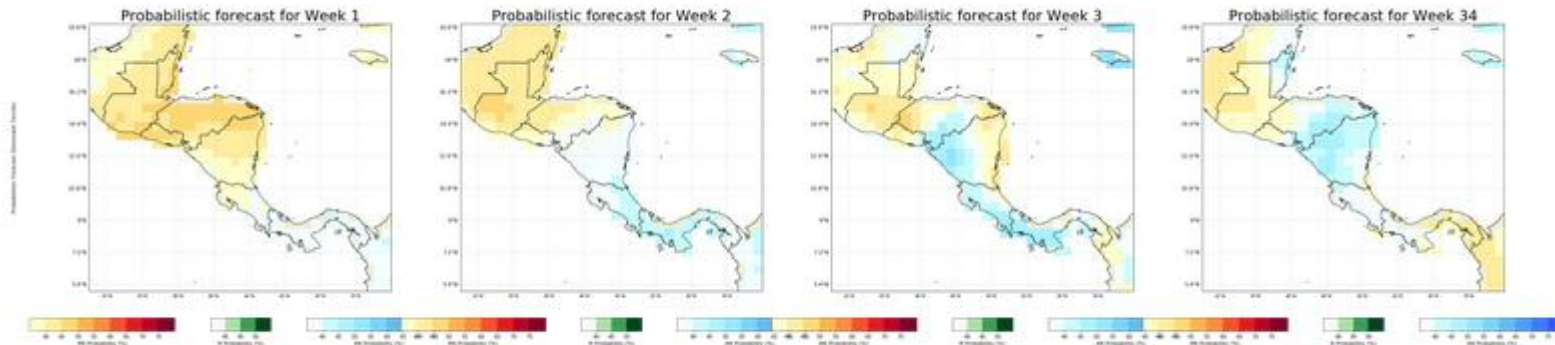
Escenarios de lluvia

	> +50
	[+50, +30]
	[+30, +10]
	[+10, -10]
	[-10, -30]
	[-30, -50]
	< -50%
	Temporada Seca

Época Lluviosa



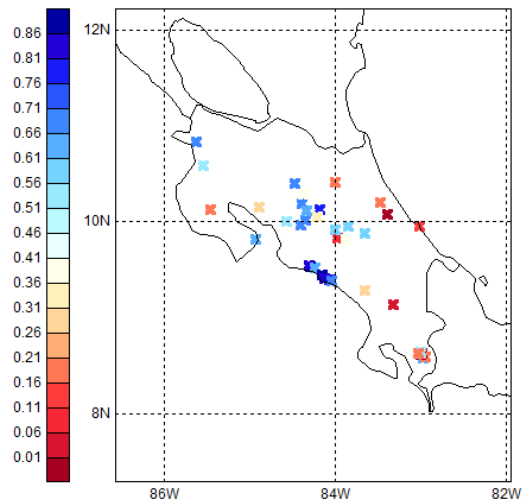
Pronostico probabilístico CPT-Subestacional del IMN



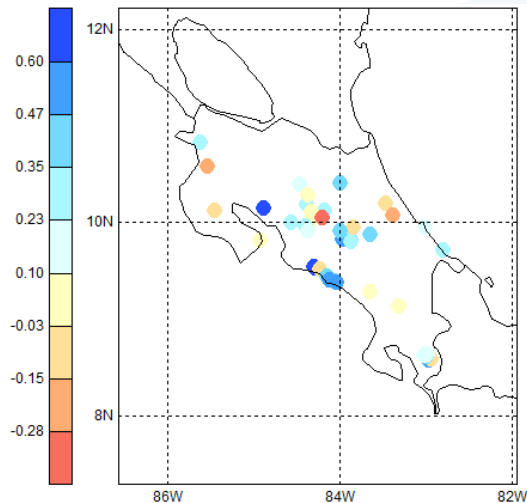
Pronostico probabilístico CPT-Subestacional del IMN

Pronostico determinístico de días con lluvia CPT del IMN

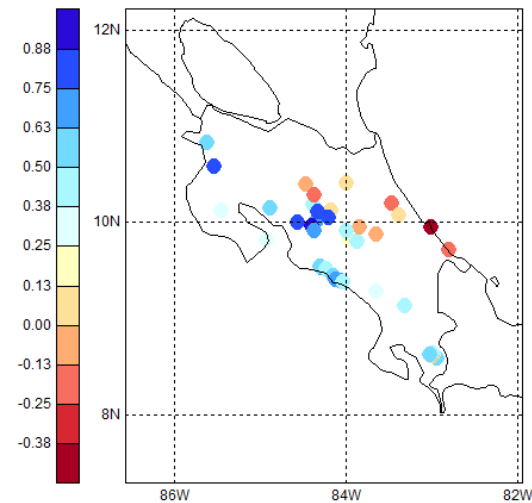
mayo



junio



julio



Inicio época lluviosa 2022

Regiones Climáticas

Región Climática	Normal (1991-2020)	2022
Zona Norte Occidental (GLU)	12 de mayo	Normal
Pacífico Central	4-9 may	Normal
Pacífico Sur	25 de abril	Normal
Pacífico Norte	10 - 15 de mayo	Normal
PENINSULA NICOYA	13-may	Normal
VALLE CENTRAL	30 de abril – 8 de mayo	14-25 de abril

Veranillo y Canícula en fechas normales, en el Pacífico Norte y Valle Central, del 23-26 junio y del 15 julio al 15 de agosto, respectivamente

Inicio época lluviosa Regiones Climáticas

Región Climática	Época Lluviosa	
	Normal (1991-2020)	Normal
Zona Norte Occidental (GLU)	12 de mayo	11-15 mayo
Pacífico Norte	10 - 15 de mayo	21-25 mayo
Península de Nicoya	13 de mayo	16-20 mayo
Pacífico Central	4-9 de mayo	1-5 mayo
Pacífico Sur	25 de abril	1-5 abril
Valle Central	30 de abril – 8 de mayo	11-15 mayo



Muchas gracias

Los insumos de esta presentación fueron elaborados por:

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