

Escenarios ante el aumento del nivel de mar y las afectaciones para el sector costero.

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Universidad de Costa Rica

junio del 2021

Pacífico Central

Playa Hermosa, 2005



Julio, 2006



Pacífico Central

Palo Seco, 23 agosto 2009



Pacífico Central

Tivives, mayo 21

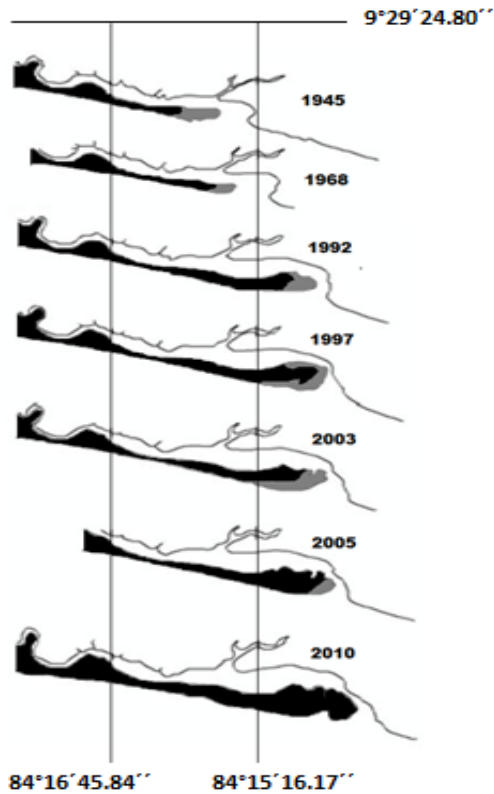


Tivives, mayo 21

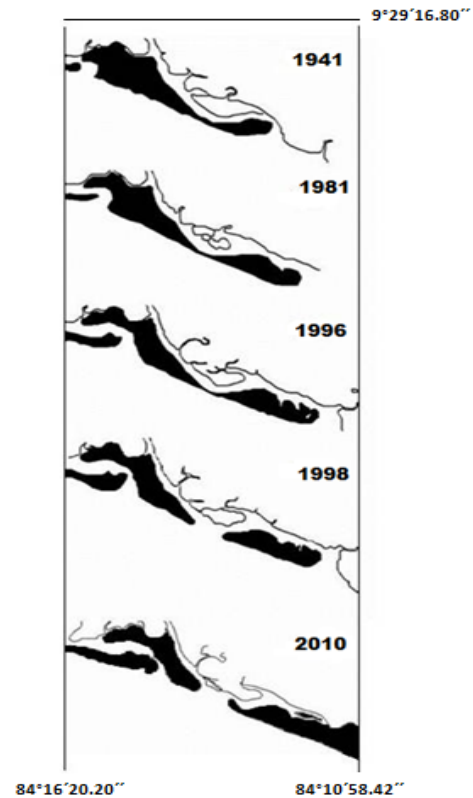


Pacífico Central

Palo Seco



Isla Damas



Pacífico Sur

Bahía Ballena 2018



Pacífico Sur

Sierpe, Dic., 2010



Sierpe, Feb., 2011



¿Quién genera la erosión costera?

Oleaje

Mareas

Tsunamis

Aumento del nivel del mar (.. El Niño, calentamiento global, Basculamiento de la costa (subducción))

Actividad antrópica

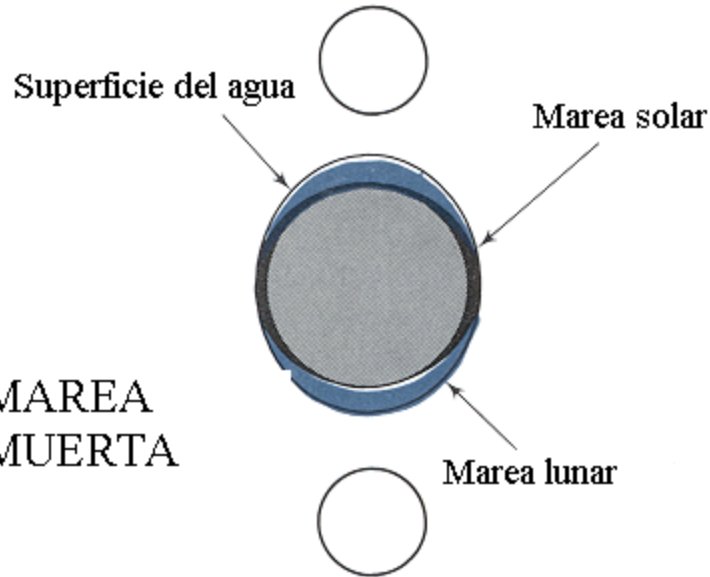
Mareas

The slide features a solid blue background. At the bottom, there are several overlapping, wavy lines in various shades of blue, creating a decorative, ocean-like effect.

Mareas astronómicas

POSICIONES DE CUADRATURA

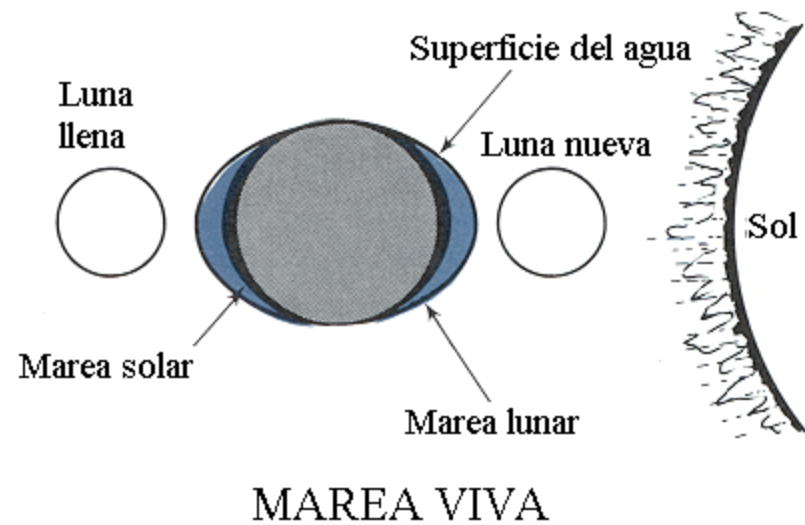
Primer cuarto



OPOSICIÓN O CONJUNCIÓN

(Luna llena)

(Luna nueva)



Declinación de la luna

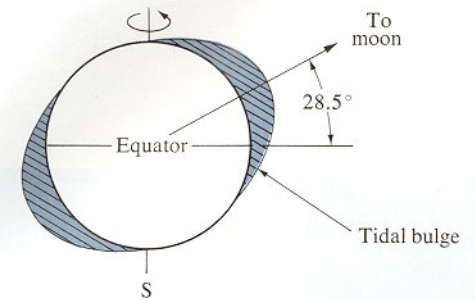
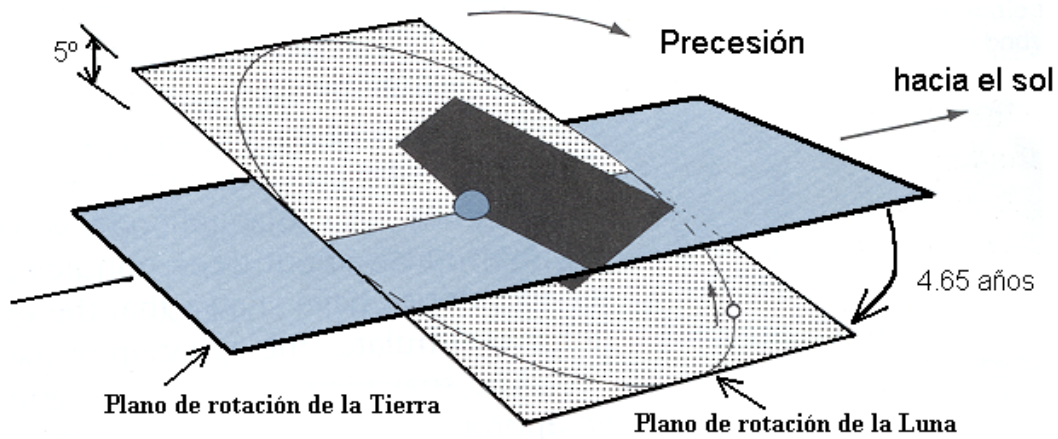
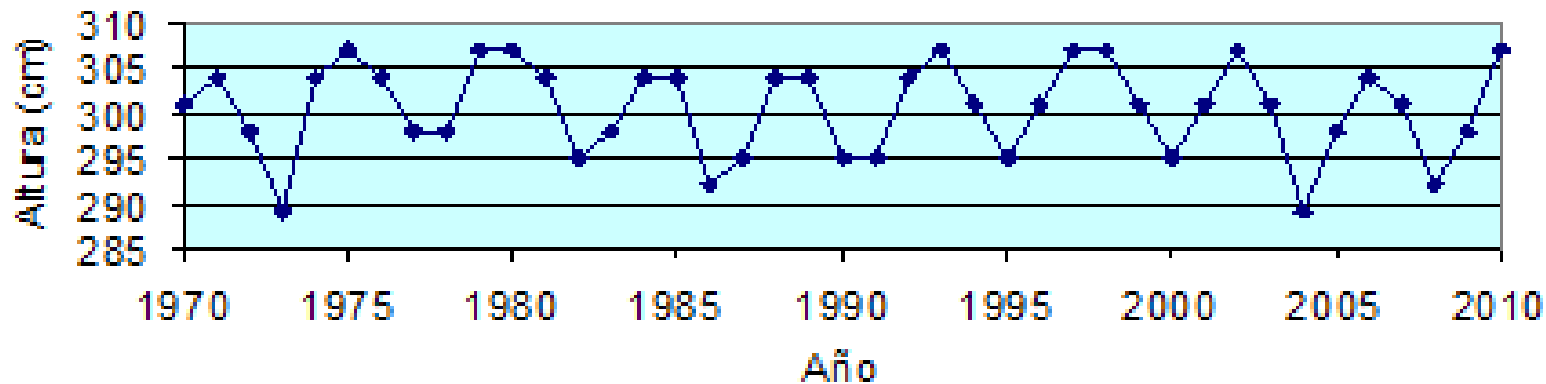


FIGURE 10-9 Maximum Declination of Tidal Bulges from Equator.

The center of the tidal bulges may lie at any latitude from the equator to a maximum of 28.5° on either side of the equator.

Variación de mareas en Quepos

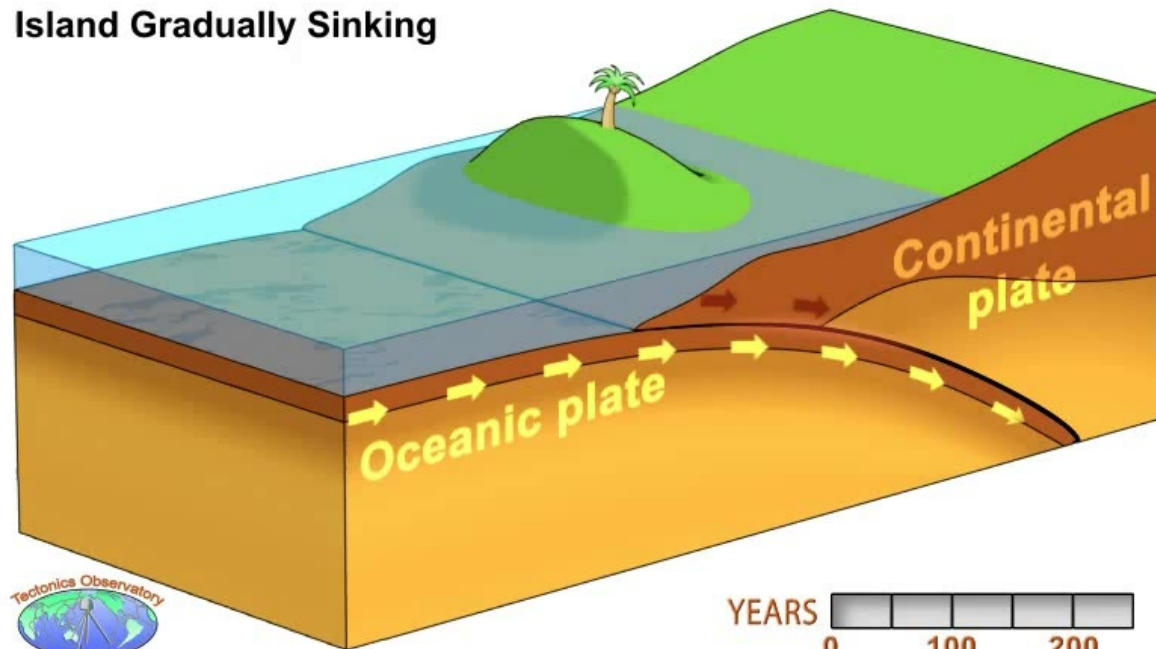
Valor máximo de la marea en Quepos entre 1970 y 2010



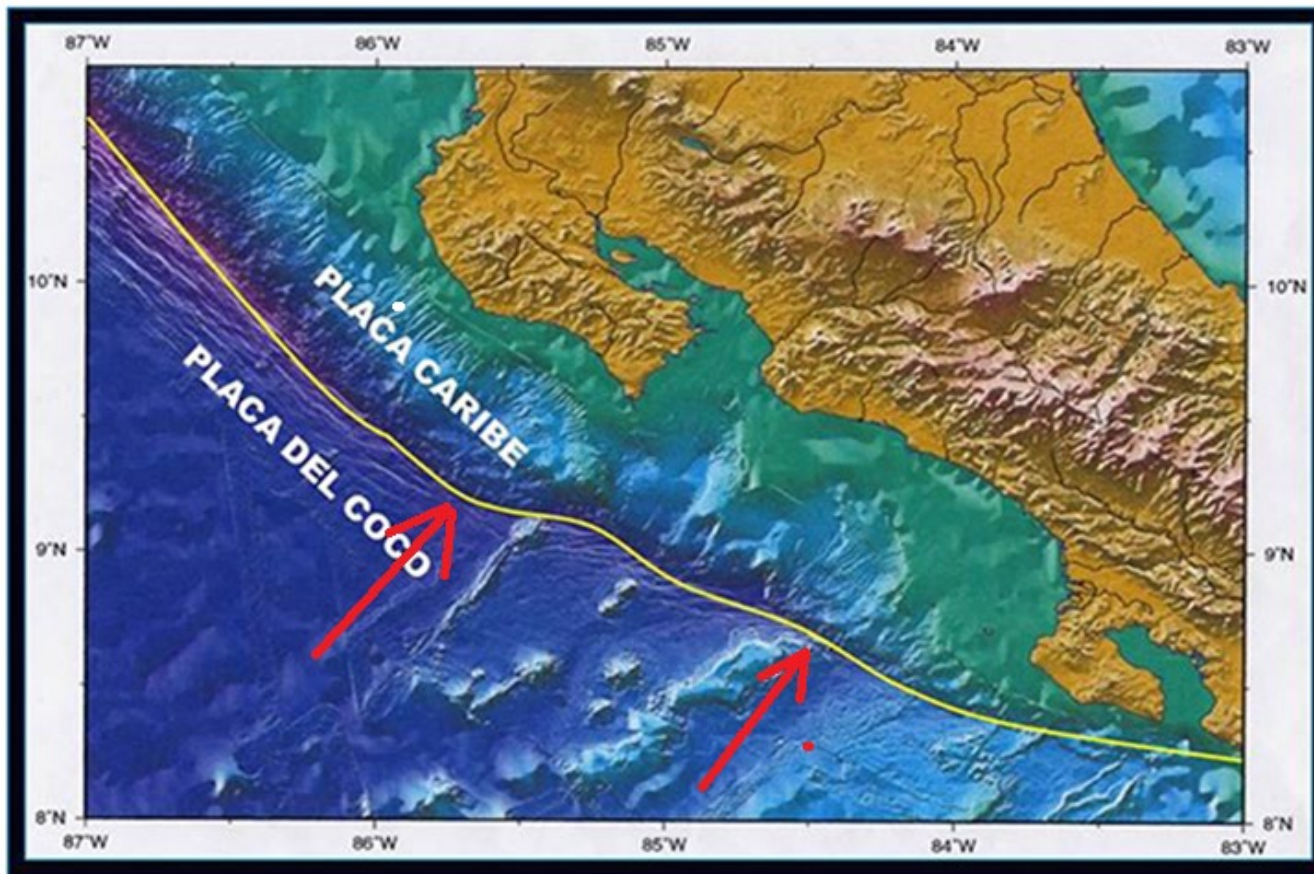
Maremotos y subducción

Tsunami por subducción

Island Gradually Sinking



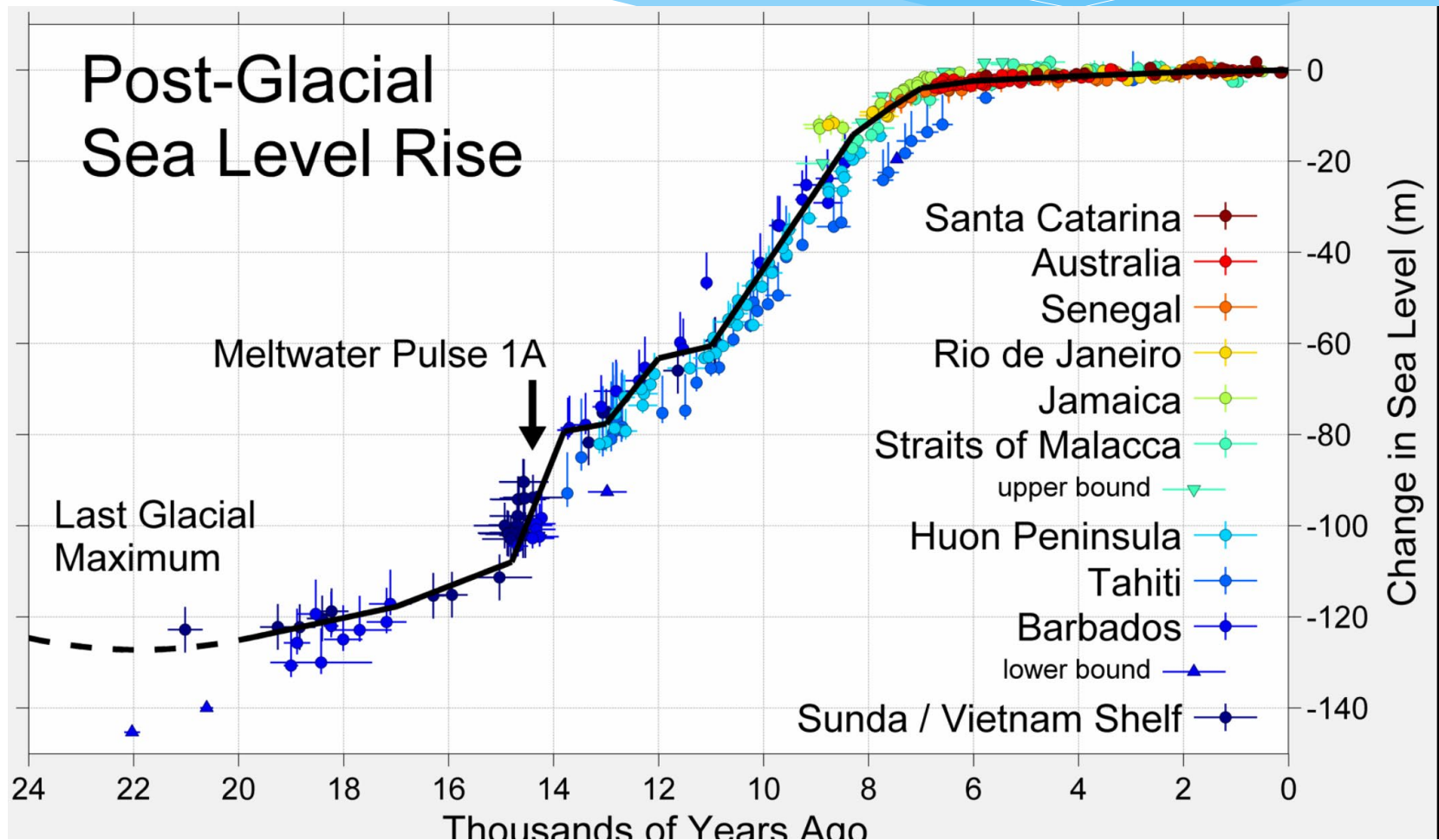
Tectonismo



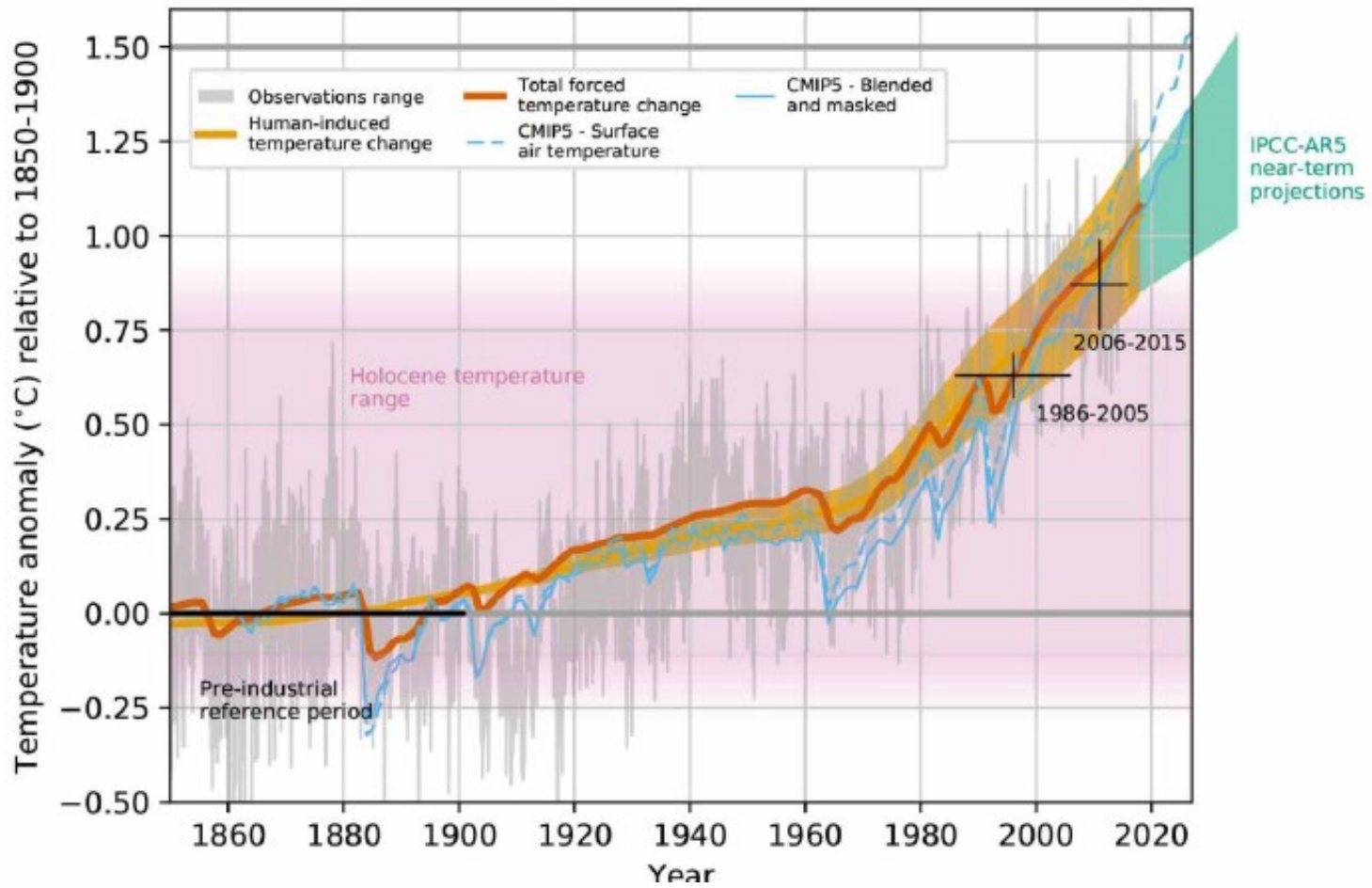
Nivel del mar

The slide features a solid blue background. At the bottom, there are several overlapping, wavy lines in various shades of blue, creating a stylized representation of water or waves.

Aumento del nivel del mar después de la última glaciación



Panel Intergubernamental sobre Cambio Climático (IPCC-2019)



Escenarios del nivel del mar IPCC 2019

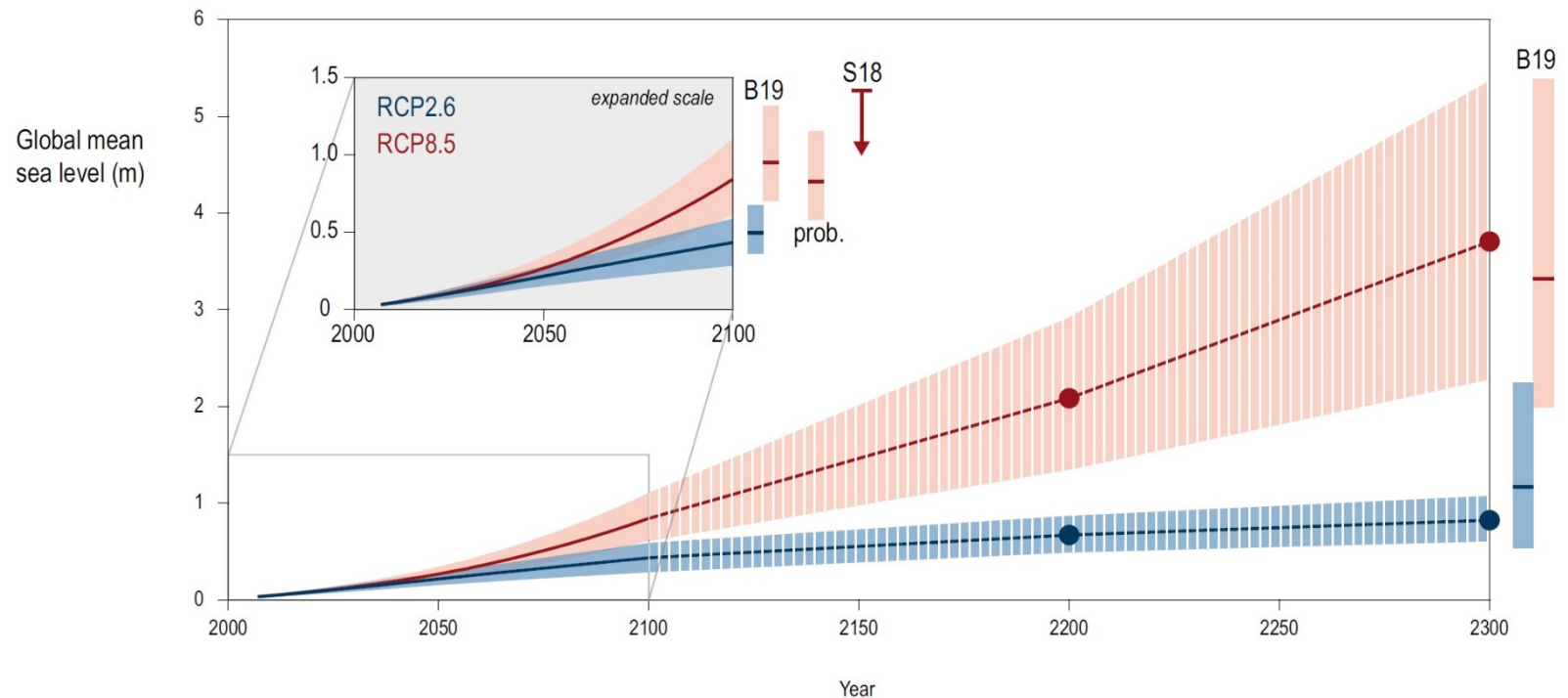
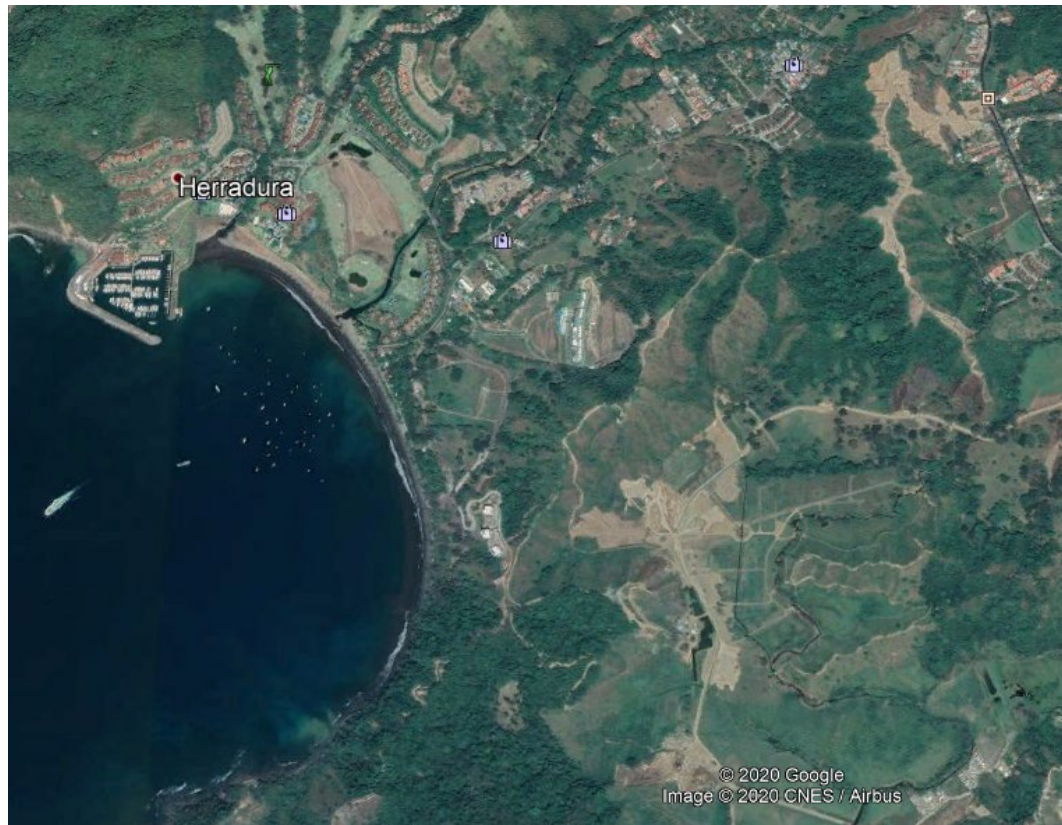


Figure 4.2 | Projected sea level rise (SLR) until 2300. The inset shows an assessment of the *likely* range of the projections for RCP2.6 and RCP8.5 up to 2100 (*medium confidence*). Projections for longer time scales are highly uncertain but a range is provided (4.2.3.6; *low confidence*). For context, results are shown from other estimation approaches in 2100 and 2300. The two sets of two bars labelled B19 are from an expert elicitation for the Antarctic component (Bamber et al., 2019), and reflect the *likely* range for a 2°C and 5°C temperature warming (*low confidence*; details section 4.2.3.3.1). The bar labelled “prob.” indicates the *likely* range of a set of probabilistic projections (4.2.3.2). The arrow indicated by S18 shows the result of an extensive sensitivity experiment with a numerical model for the Antarctic Ice Sheet (AIS) combined, like the results from B19 and “prob.”, with results from Church et al. (2013) for the other components of SLR. S18 also shows the *likely* range.

Actividad antrópica

Bahía Herradura



Playa Esterillos Centro

2011

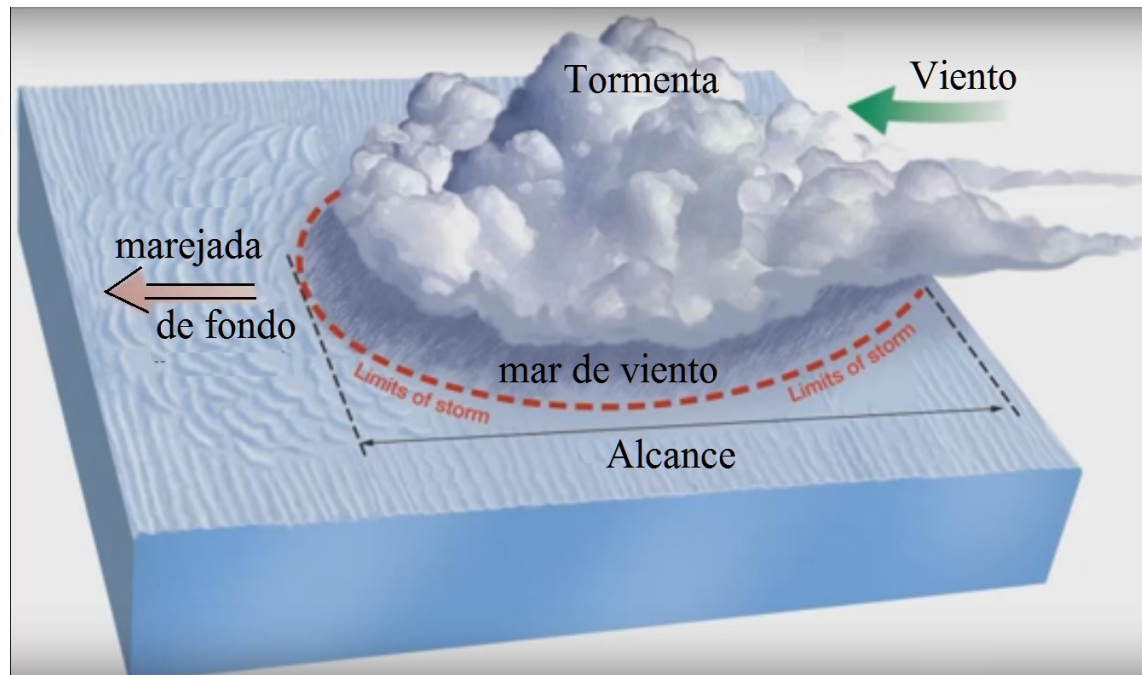


2016



Oleaje

Generación de olas: marejada de fondo y mar de viento



Tipos de olas

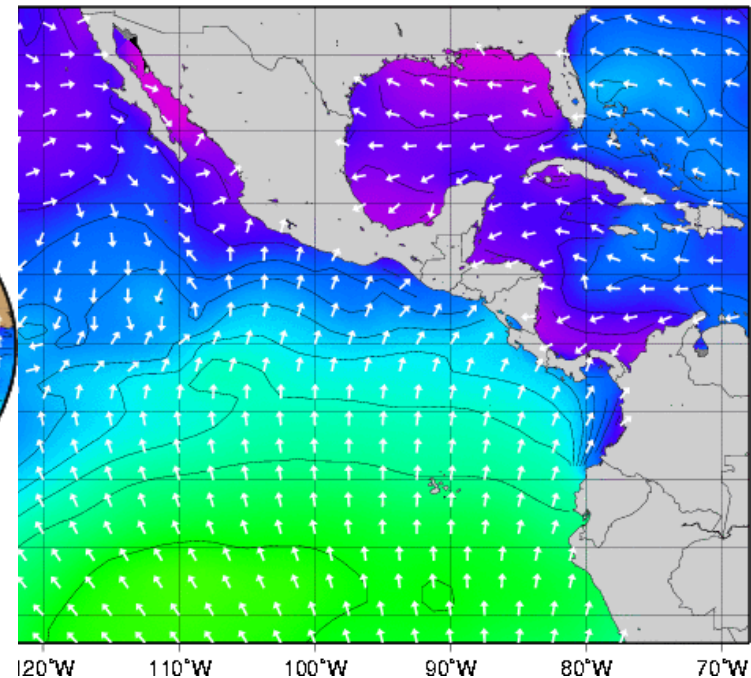
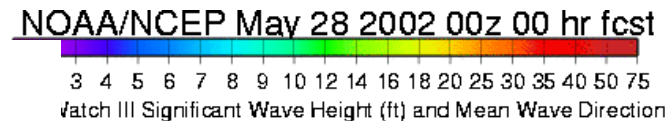
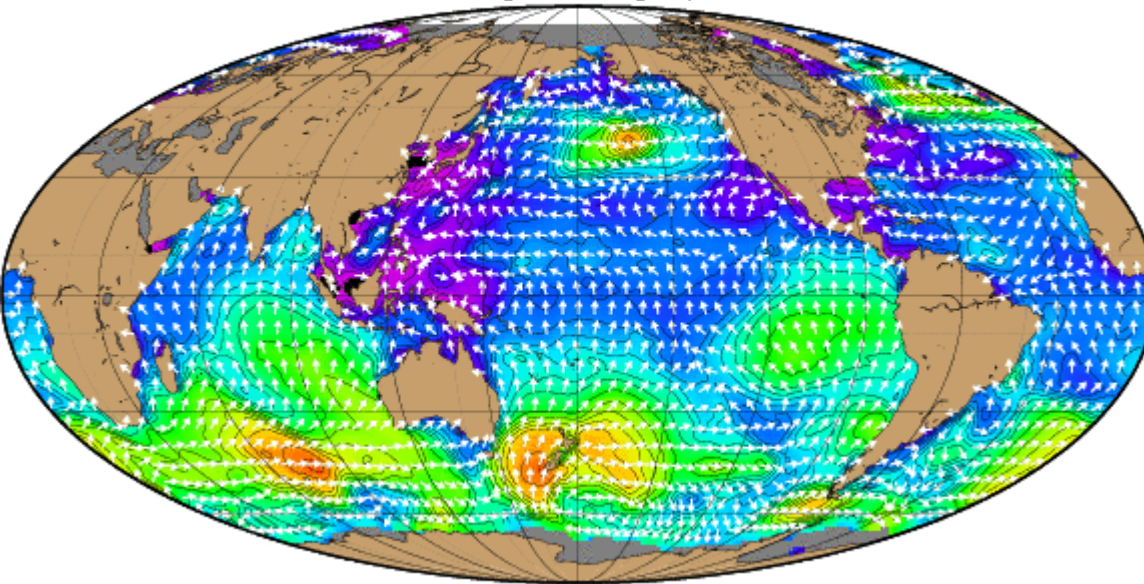
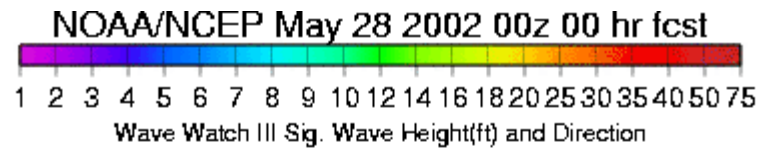
Mar de viento



Marejada de fondo

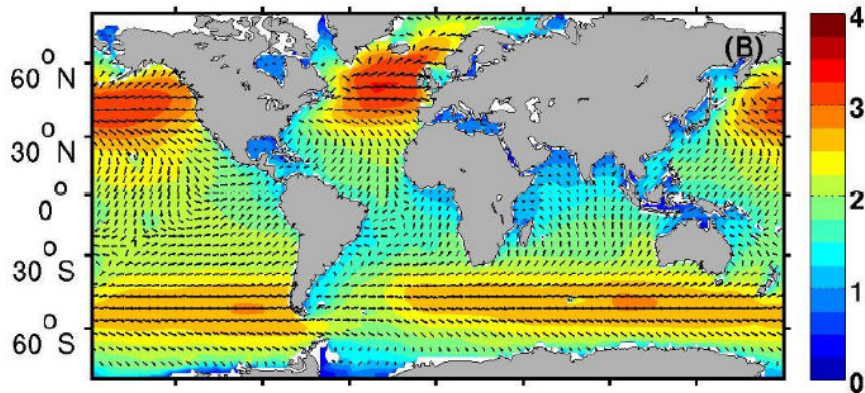


Pronóstico de altura de oleaje para las 00z del 28 de mayo (27 a las 6:00 pm) del 2002.

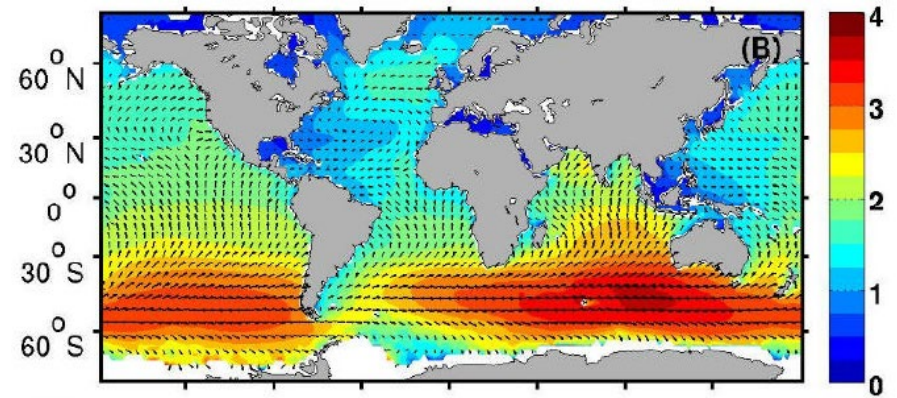


Climatología del oleaje: mar de viento

Invierno HN (DEF)



Invierno HS (JJA)



Energía de marejadas: invierno y verano HN (Ew/Et)

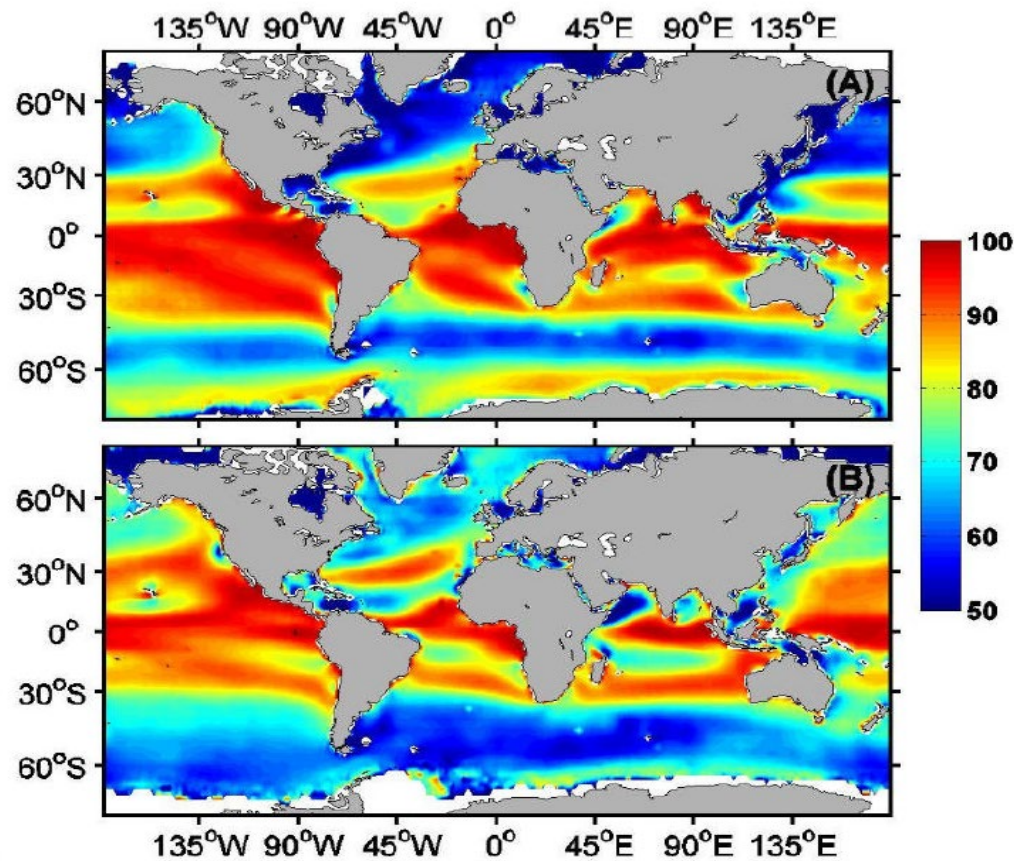


FIGURE 4. Global distributions of the swell energy weight (W_s) for DJF (A) and JJA (B).

Caldera,
mayo de
2002



Oleaje extraordinario en Caldera

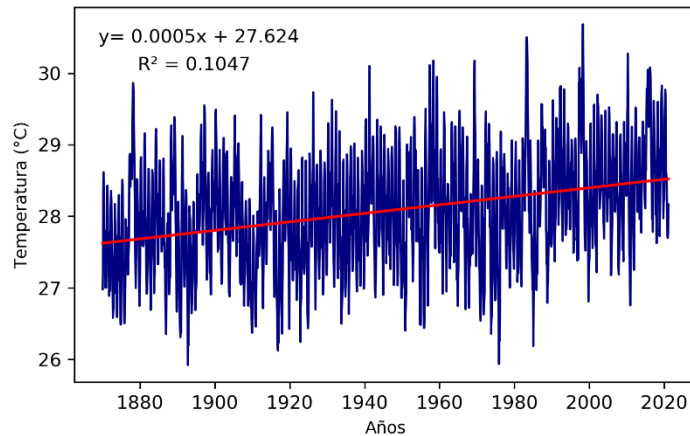
Caldera 04 de julio del 2014



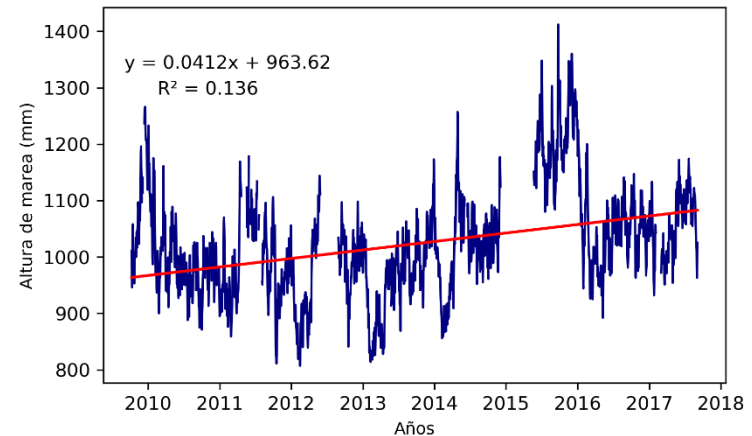
¿Que tenemos en el
Pacífico Sur de Costa
Rica?

Algunas variables de interés

Temp. Sup. Del mar

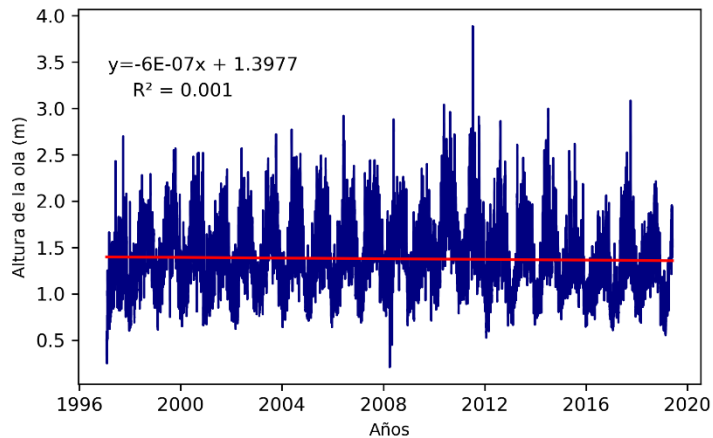


Nivel del mar - Quepos

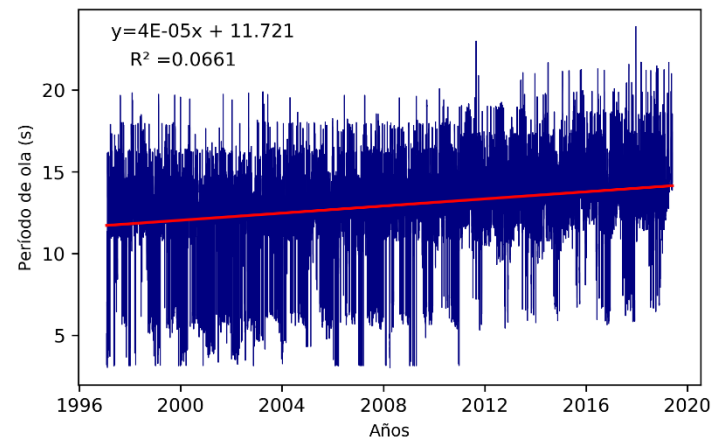


Algunas variables de interés

Altura de ola - Pac. Sur



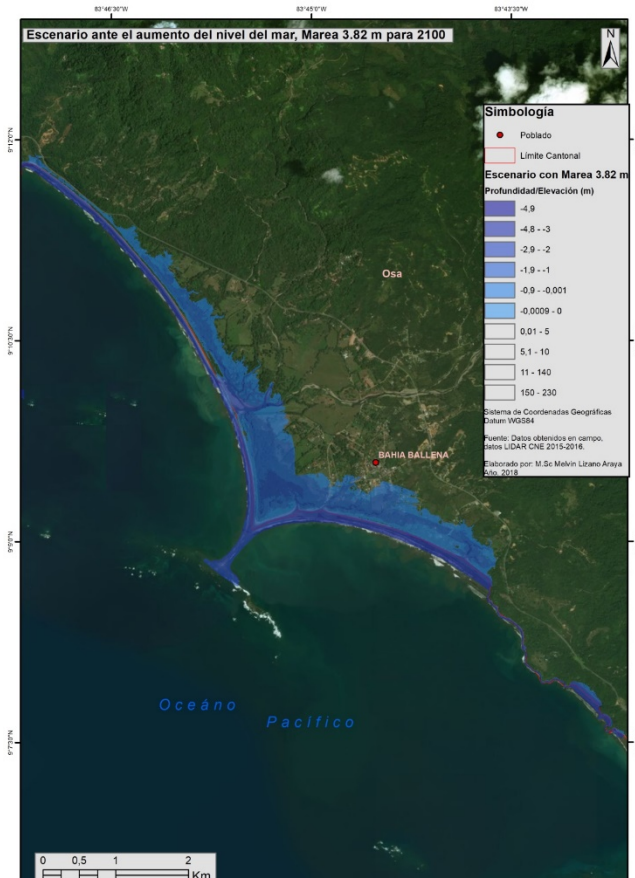
Período de ola – Pac. Sur



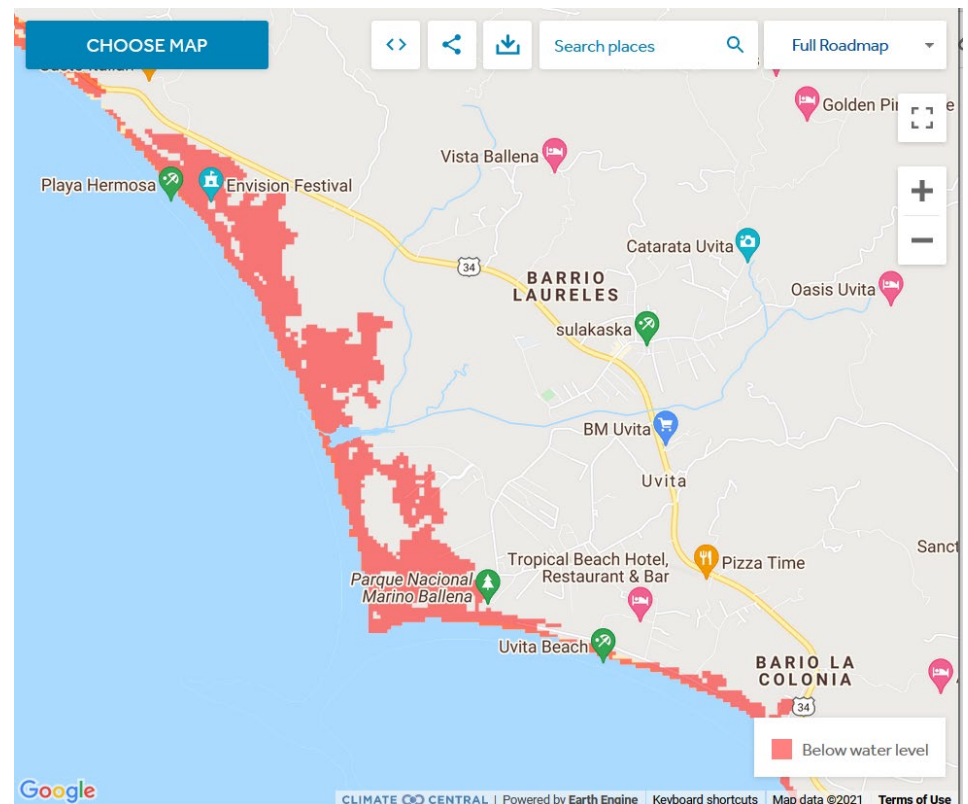
Proyecciones futuras

Escenario para Punta Uva al 2100

Informe Lizano (2018)

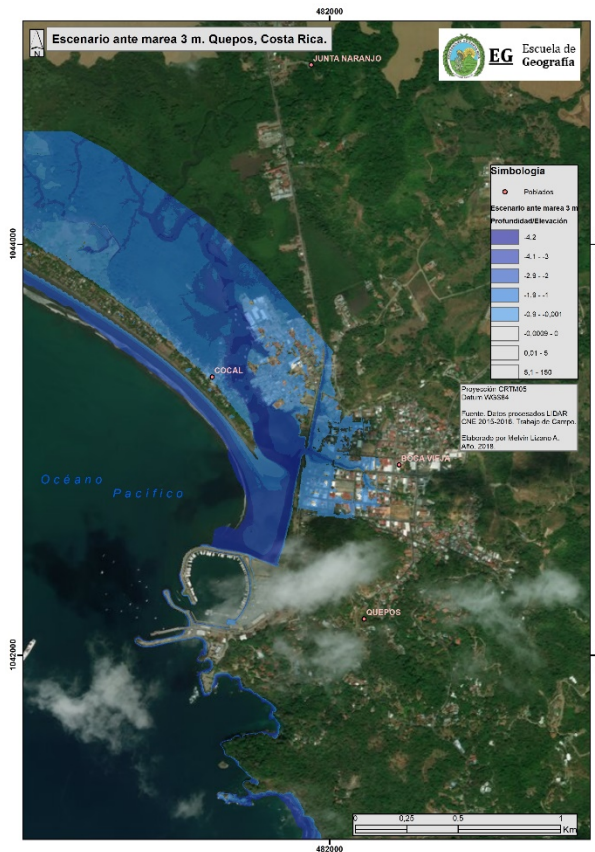


Climate Central (Consortio investigadores)

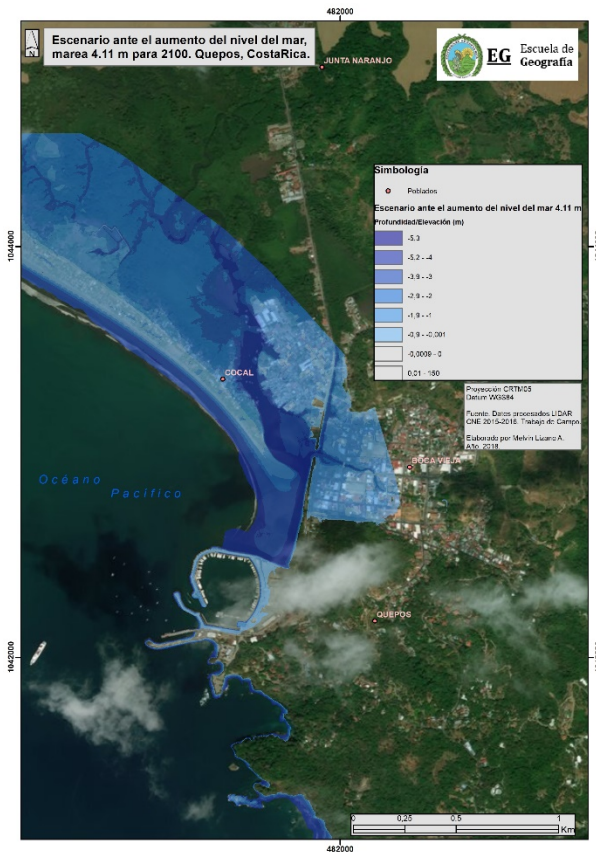


Escenarios para Quepos (M. Lizano, en prensa)

Marea máxima



Escenario 2100



Escenario para Quepos para el 2100



COASTAL RISK SCREENING TOOL

LAND BELOW 1.2 METERS OF WATER

A water level of 1.2 meters above the high tide line could be reached through combinations of sea level rise, tides, and storm surge.

[DETAILS AND LIMITATIONS](#)

WATER LEVEL

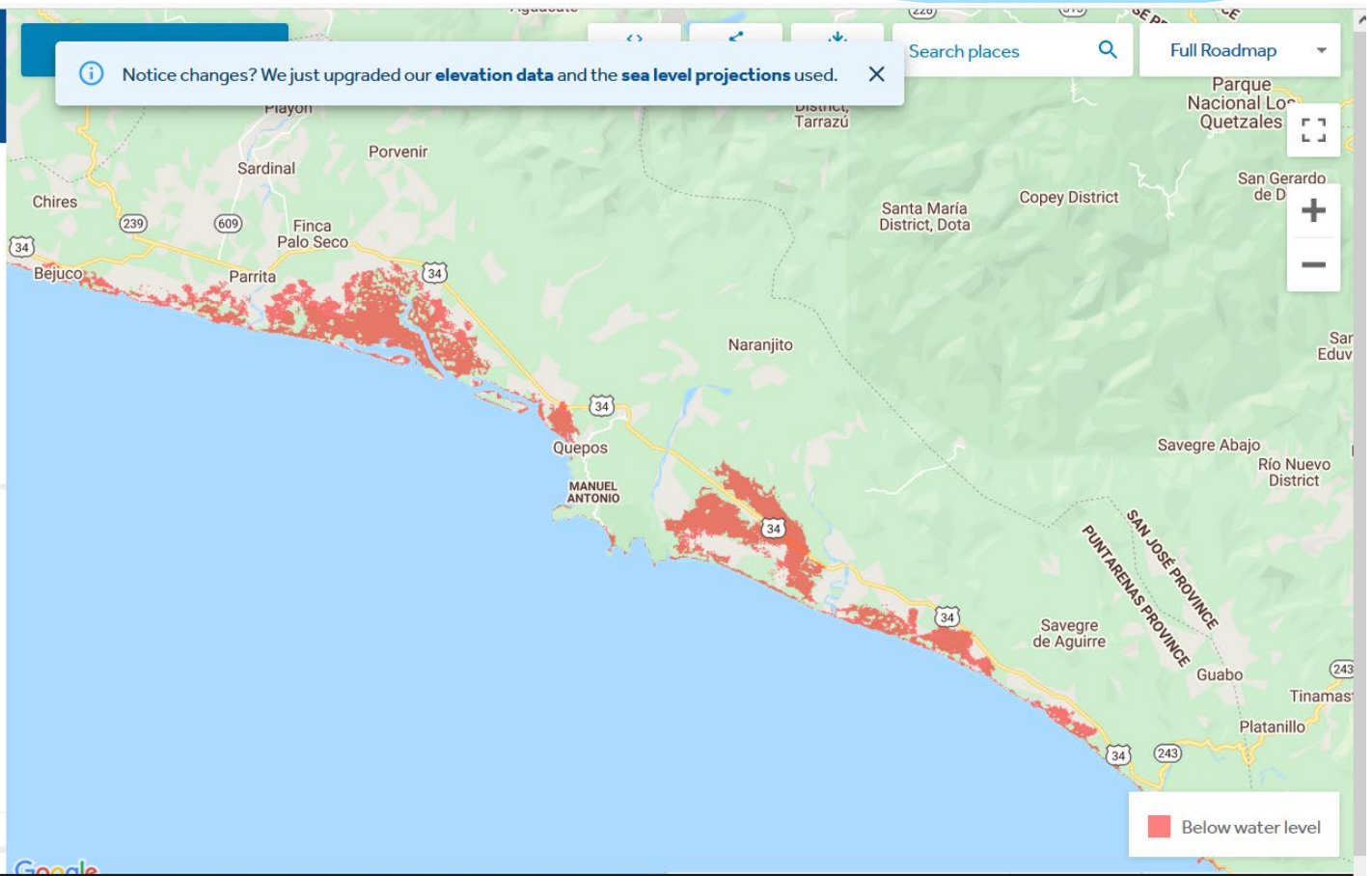
1.2 m



Meters Feet

[CHANGE OTHER SETTINGS](#)

[Video Tutorial](#)



Escenario para Quepos para el 2300



COASTAL RISK SCREENING TOOL

LAND BELOW 5.3 METERS OF WATER

A water level of 5.3 meters above the high tide line could be reached through combinations of sea level rise, tides, and storm surge.

[DETAILS AND LIMITATIONS](#)

WATER LEVEL

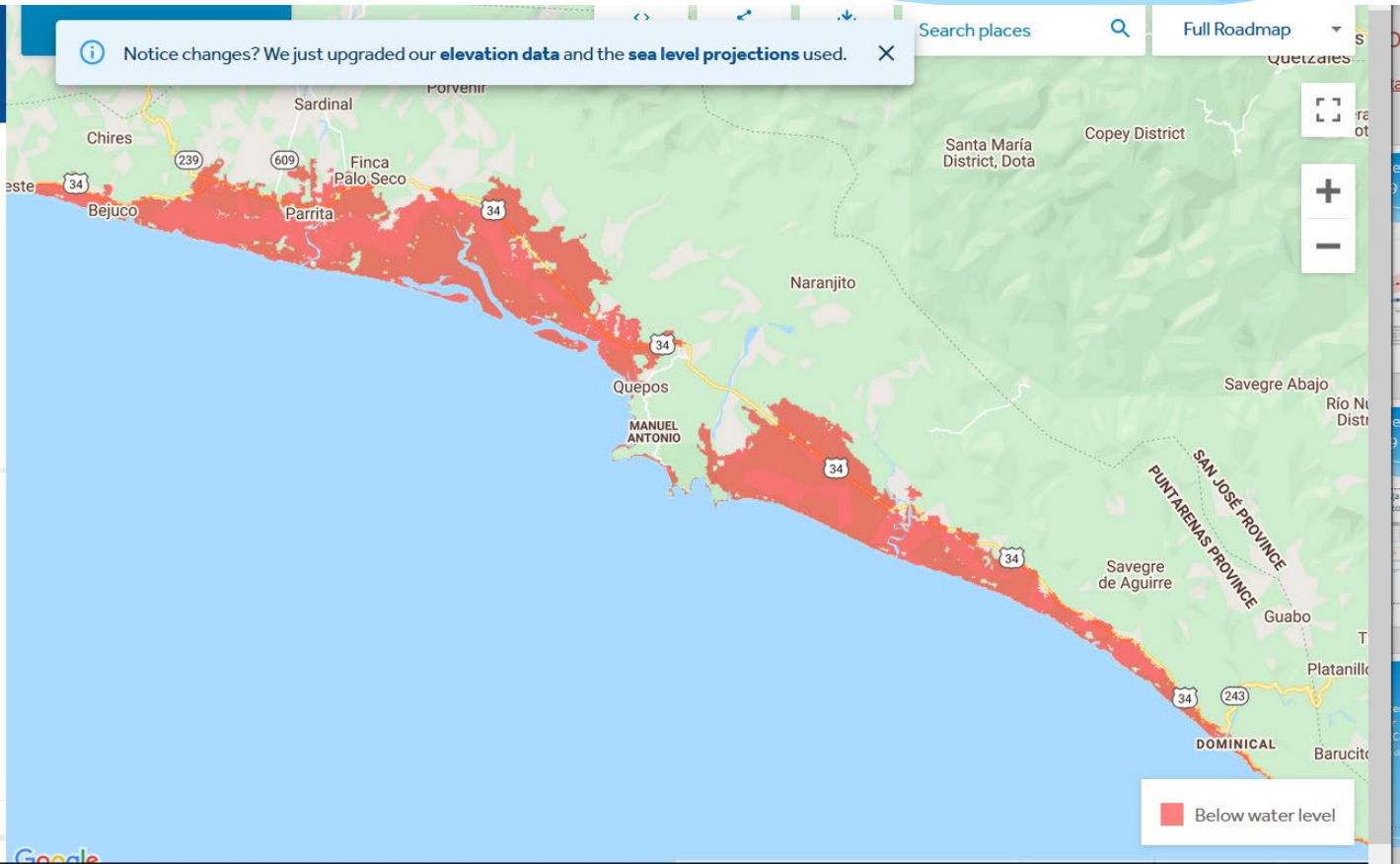
5.3 m



Meters Feet

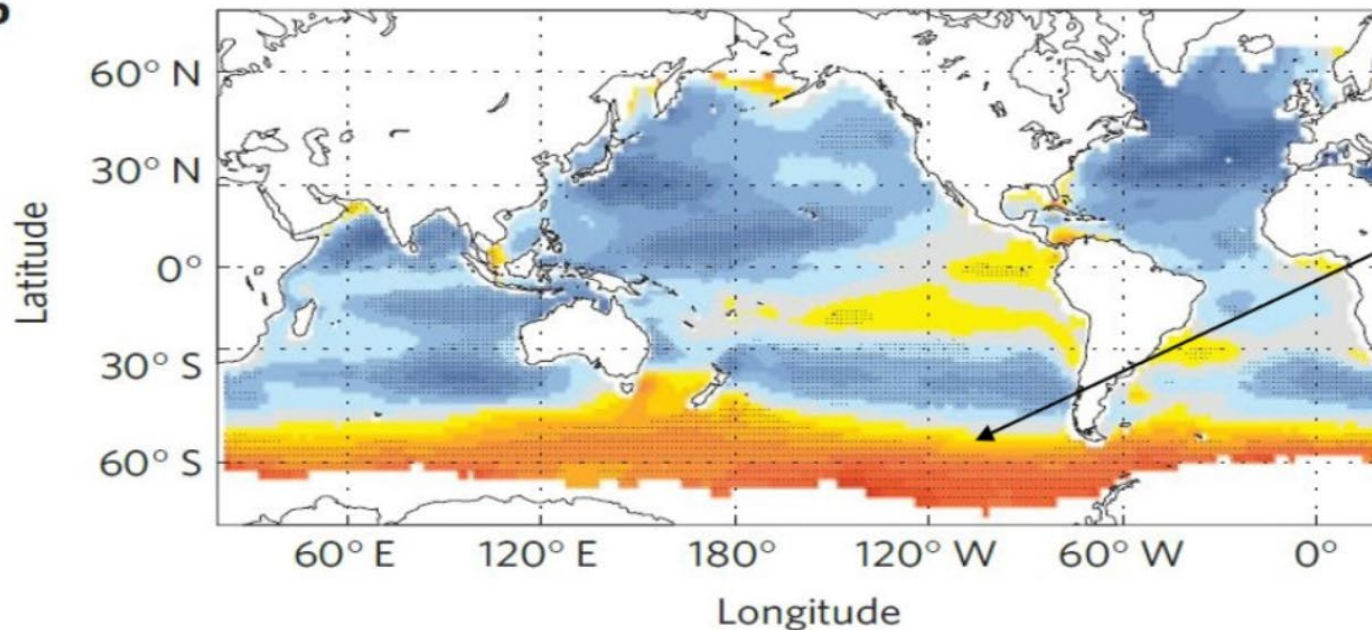
[CHANGE OTHER SETTINGS](#)

[Video Tutorial](#)

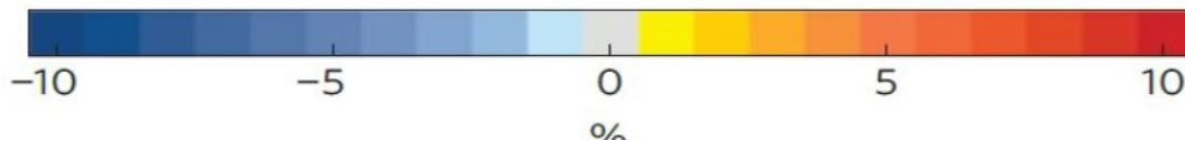


Proyección de escenarios de oleaje en el RCP8.5

b

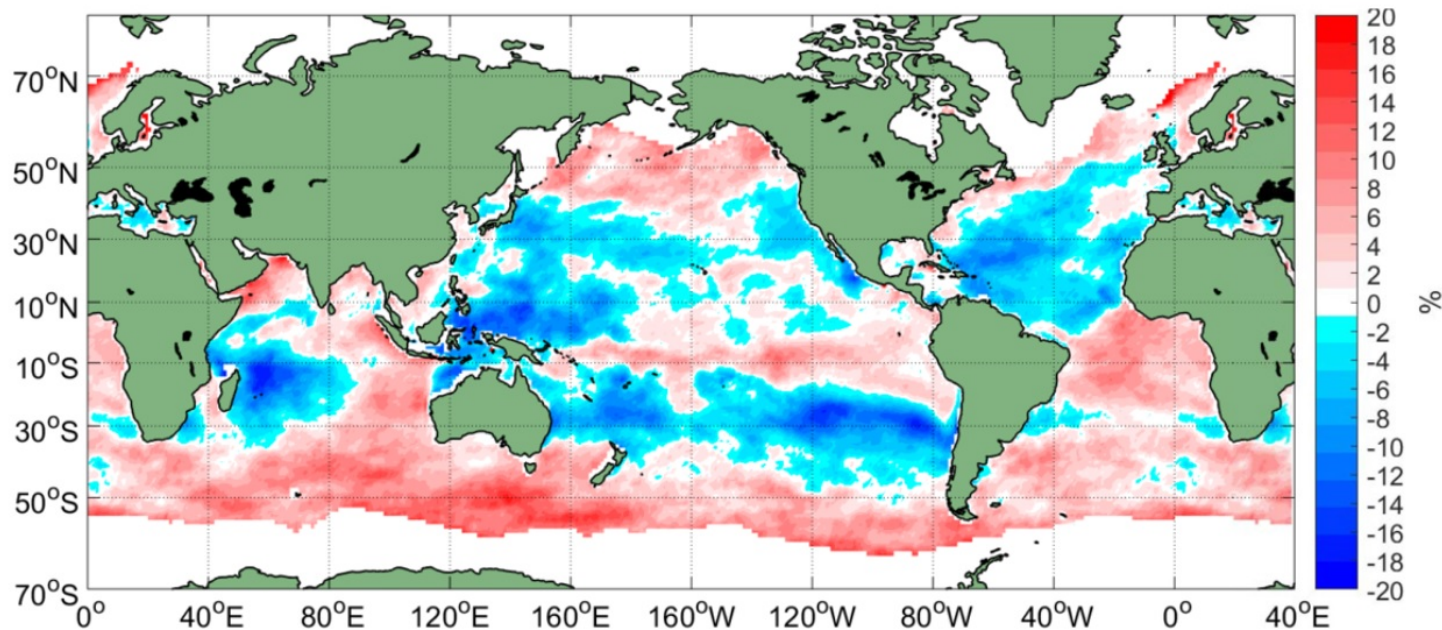


Projected increase in H_s in Southern Ocean



Proyección de la tendencia de eventos extremos

Consider projected changes in extreme waves (2081 – 2100) – (1979 – 2005)
RCP 8.5



Projected changes around 8%
Particularly in Southern Ocean

Gracias

