



## IV REUNIÓN CUMBRE DEL CONSEJO DE CAMBIOS CLIMÁTICOS

SAN JUAN, PUERTO RICO

23 DE AGOSTO DE 2013

The Puerto Rico Climate Change Council [PRCCC] was convened in November 2010 to assess Puerto Rico's vulnerabilities and recommend strategies to respond to changes.

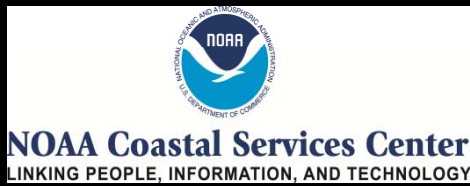
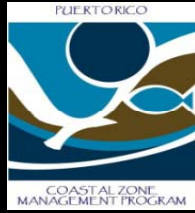
The PRCCC is comprised of four working groups:

WG1: Geophysical and Chemical Scientific Knowledge;

WG2: Ecology and Biodiversity;

WG3: Society and Economy; and

WG4: Communicating Climate Change and Coastal Hazards.



- Background knowledge: meteorology, physical oceanography, forestry, wildlife biology, marine biology, farmers and popular observation and knowledge...
- Greenhouse Gas Inventory (1996, before Kyoto)
- Sea Grant's roundtable: *Facing the consequences of Climate Change* (2007).
- Executive Order creating a high level Climate Change Advisory Commission (2007).
- UPR- Carolina campus initiatives (2009)
- PRCZMP Climate Adaptation Project (2009) and CZMA §309 Strategy 2011-2016 – funding to support five climate adaptation plans and PRCCC activities and publications - PRCCC Executive Secretariat
- Climate Change Summit II (2010) and III (2012)
- Climate Change in the Caribbean: PR and USVI (2011)
- Enlace Latino de Acción Climática (2013)

# PRCCC 2013

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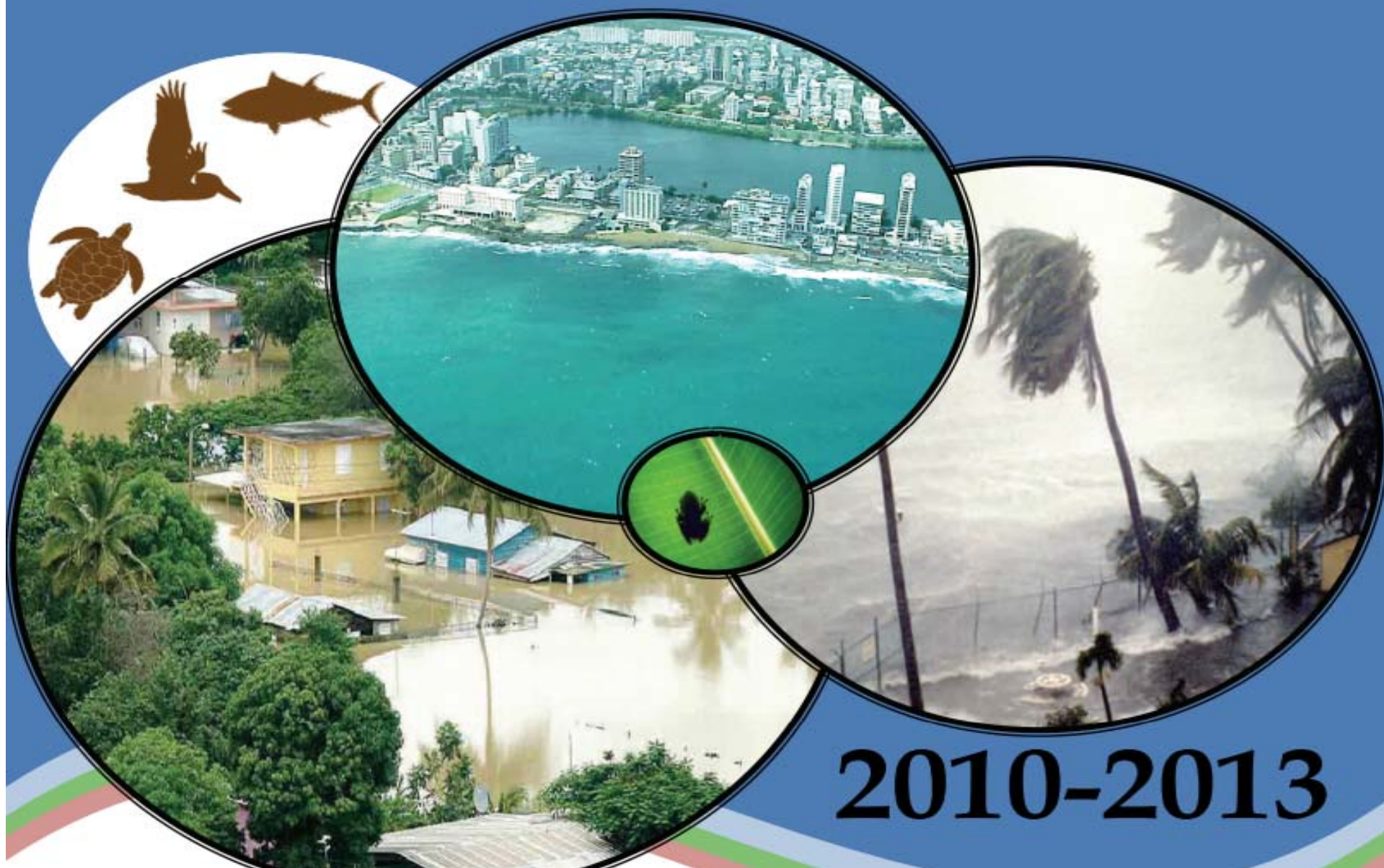
Based on the results of the PRCCC's WG1, WG2 and WG3 as well as the results from coastal hazards risk assessment workshops conducted with 30 / 44 coastal municipalities, the PRCCC concludes:

*...Puerto Rico's climate is changing and coastal communities , critical infrastructure, wildlife and ecosystems are all vulnerable to various effects and impacts associated with changes in global, regional, and island weather and oceanographic conditions.*



# Estado del Clima de Puerto Rico

Evaluación de vulnerabilidades socio-ecológicas en un clima cambiante



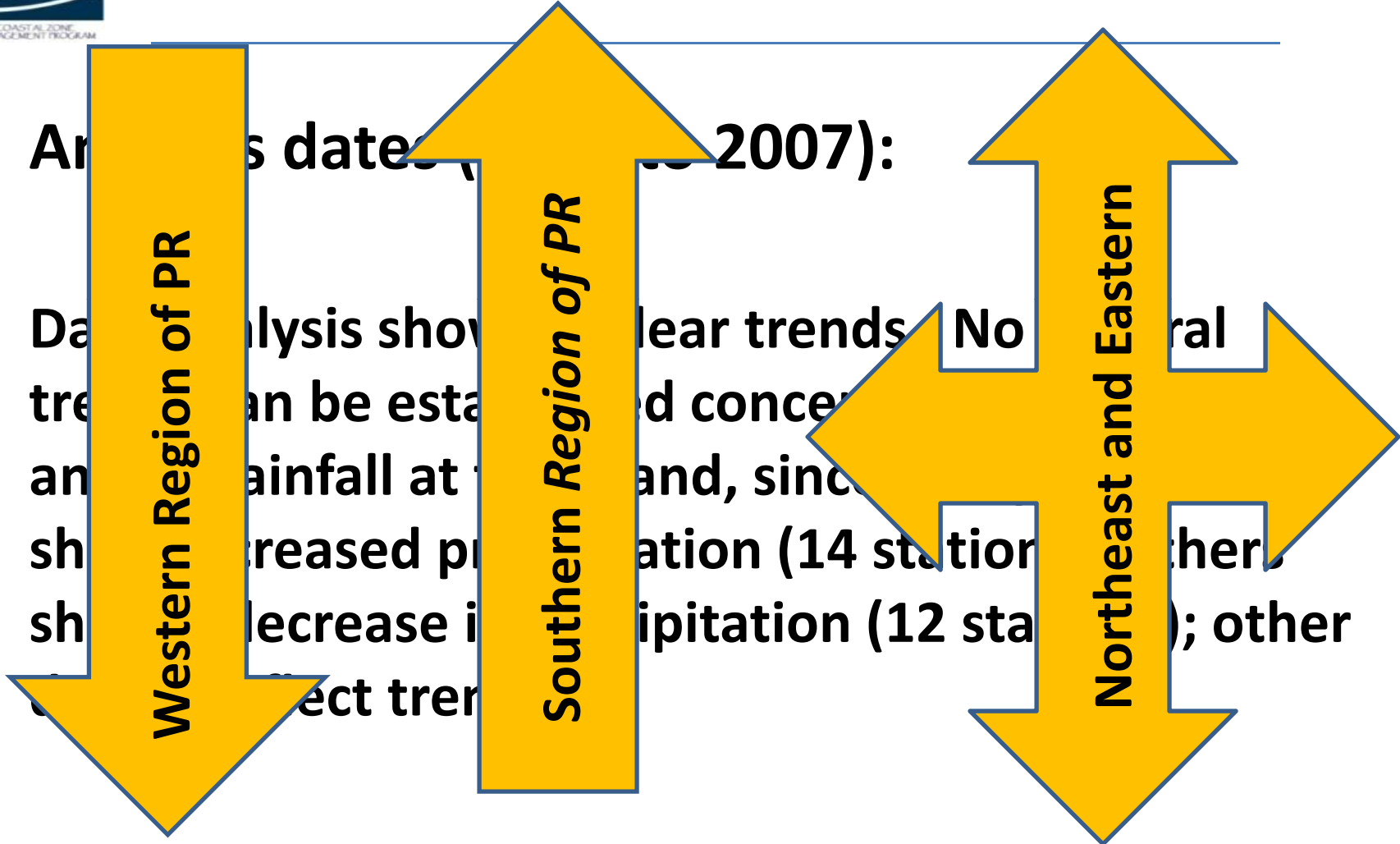


- Atm. Temp for Puerto Rico on the average has increased annually by 0.14°C from 1970.
- 12 stations out of 14 (86%) used throughout the island expressed positive trends from ~1948 to 2007 (Velasquez-Lozada et al., 2006)
- Heat island effect: temperature of San Juan has grown at a rate of 0.1°C over the past 40 years.



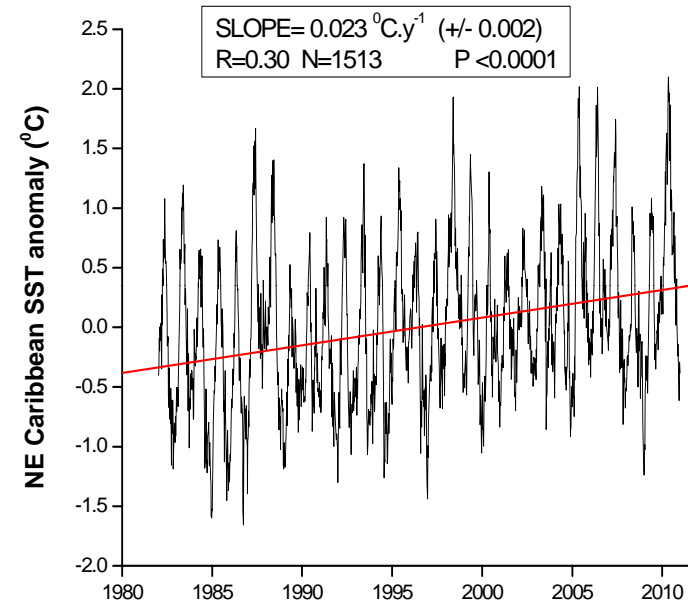
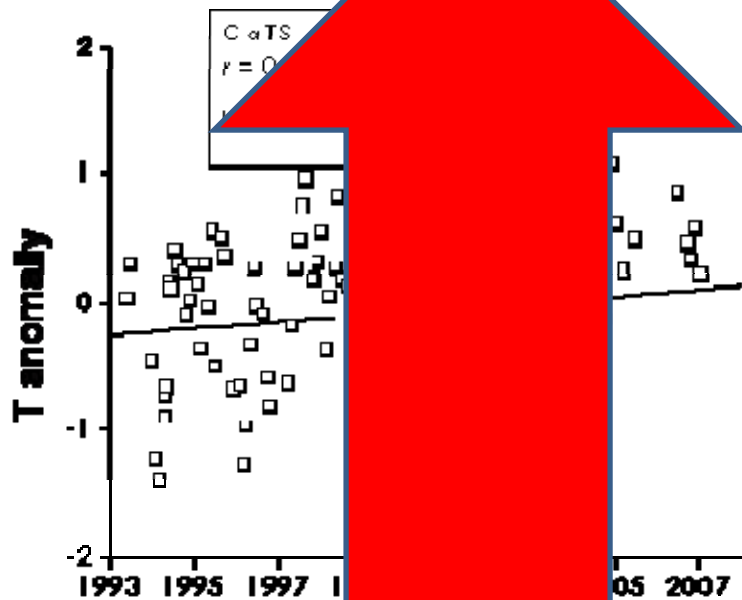
# Precipitation

- Analysis dates (1950-2007):
- Data analysis shows no clear trends. No regional trend can be established and concern is expressed for increased precipitation (14 stations) and decreased precipitation (12 stations); other stations show no trend.





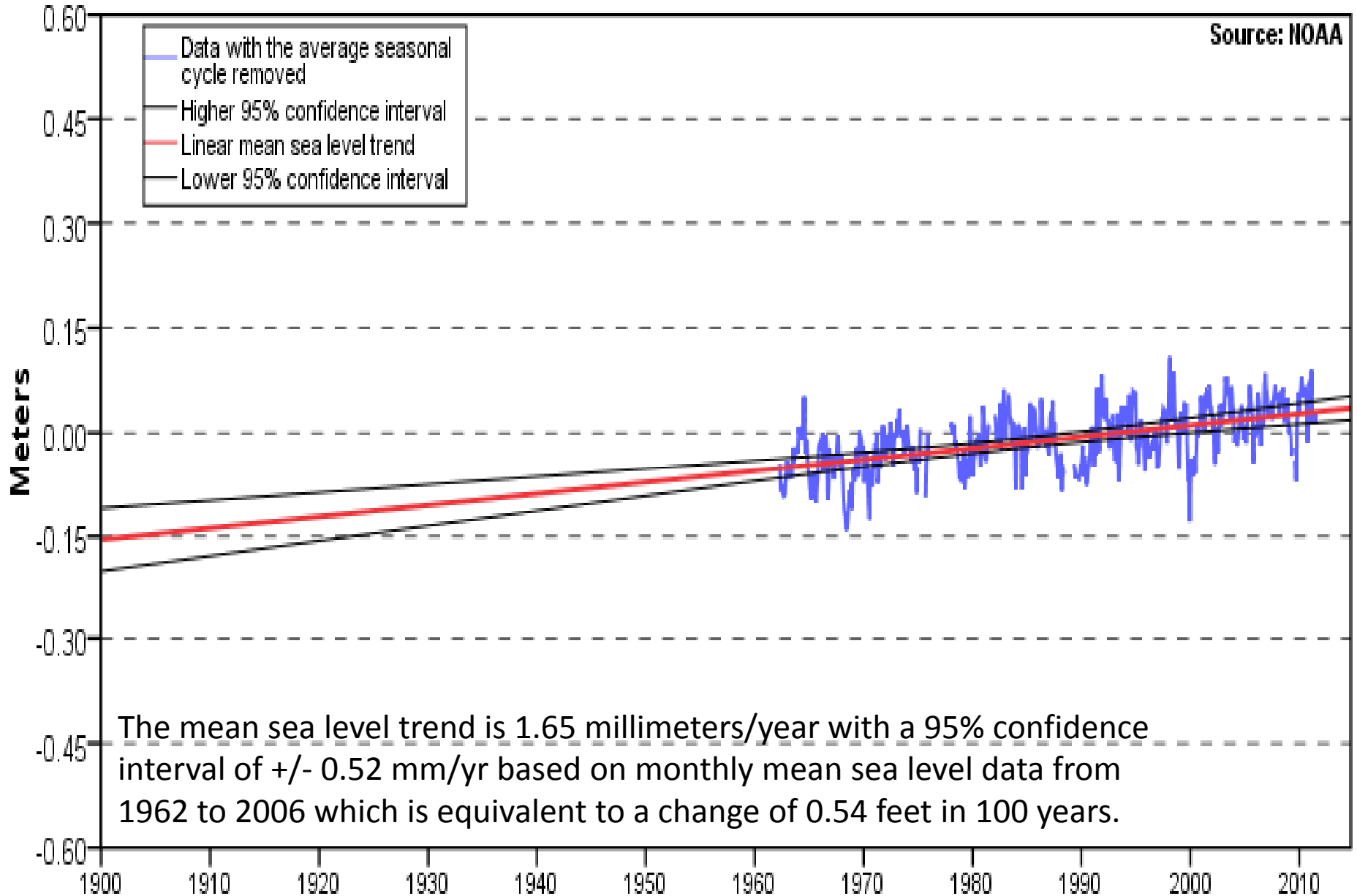
# Sea Surface Temperatures (SSTs) - CariCOOS



SST data from [red arrow] the slope or SST trend between 1993 and 2007 was linearly [red arrow] at **0.026 ( $\pm 0.01$ ) degrees Celcius/yr**

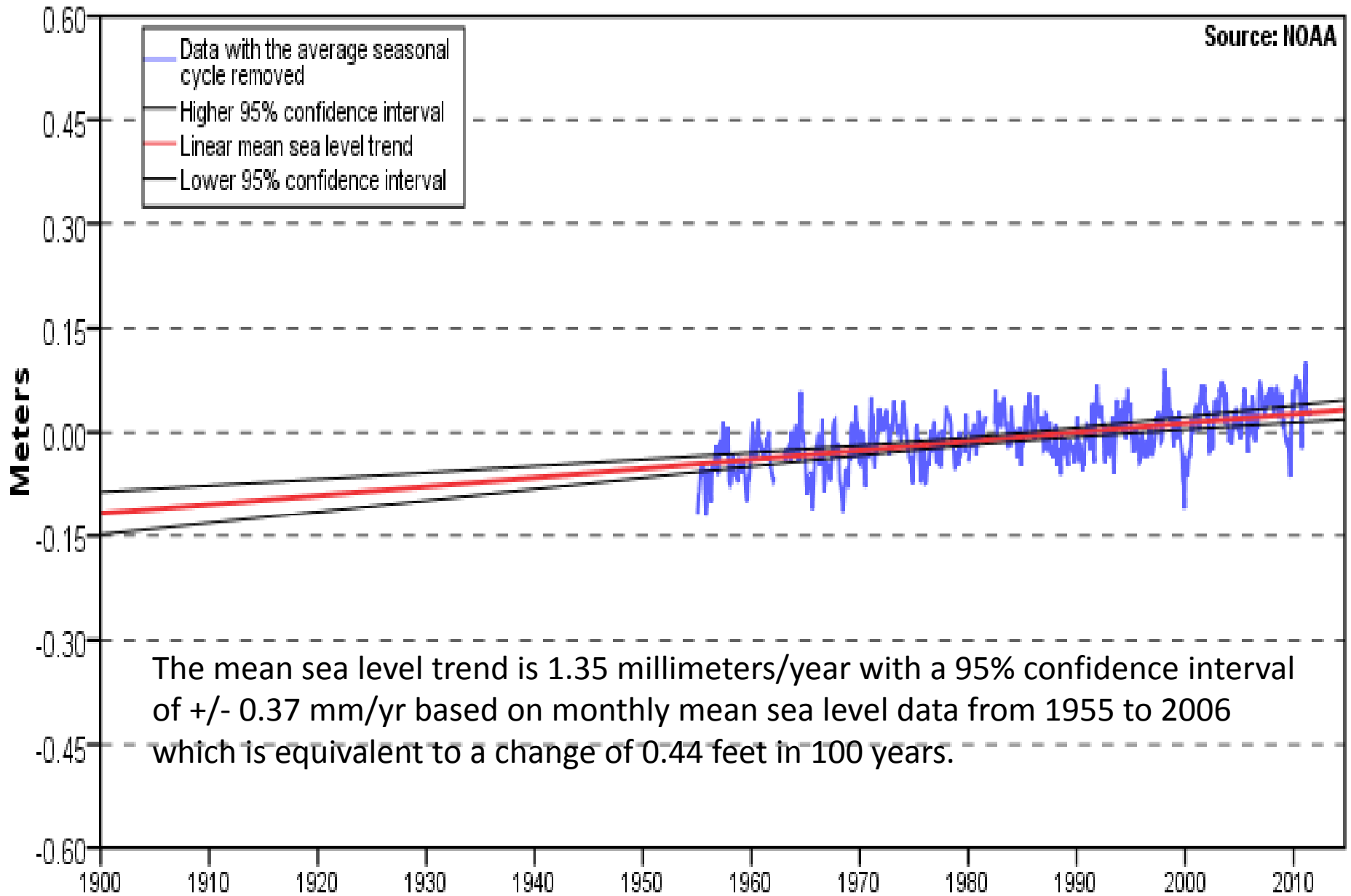


# San Juan, PR 1.65 +/- 0.52 mm/yr

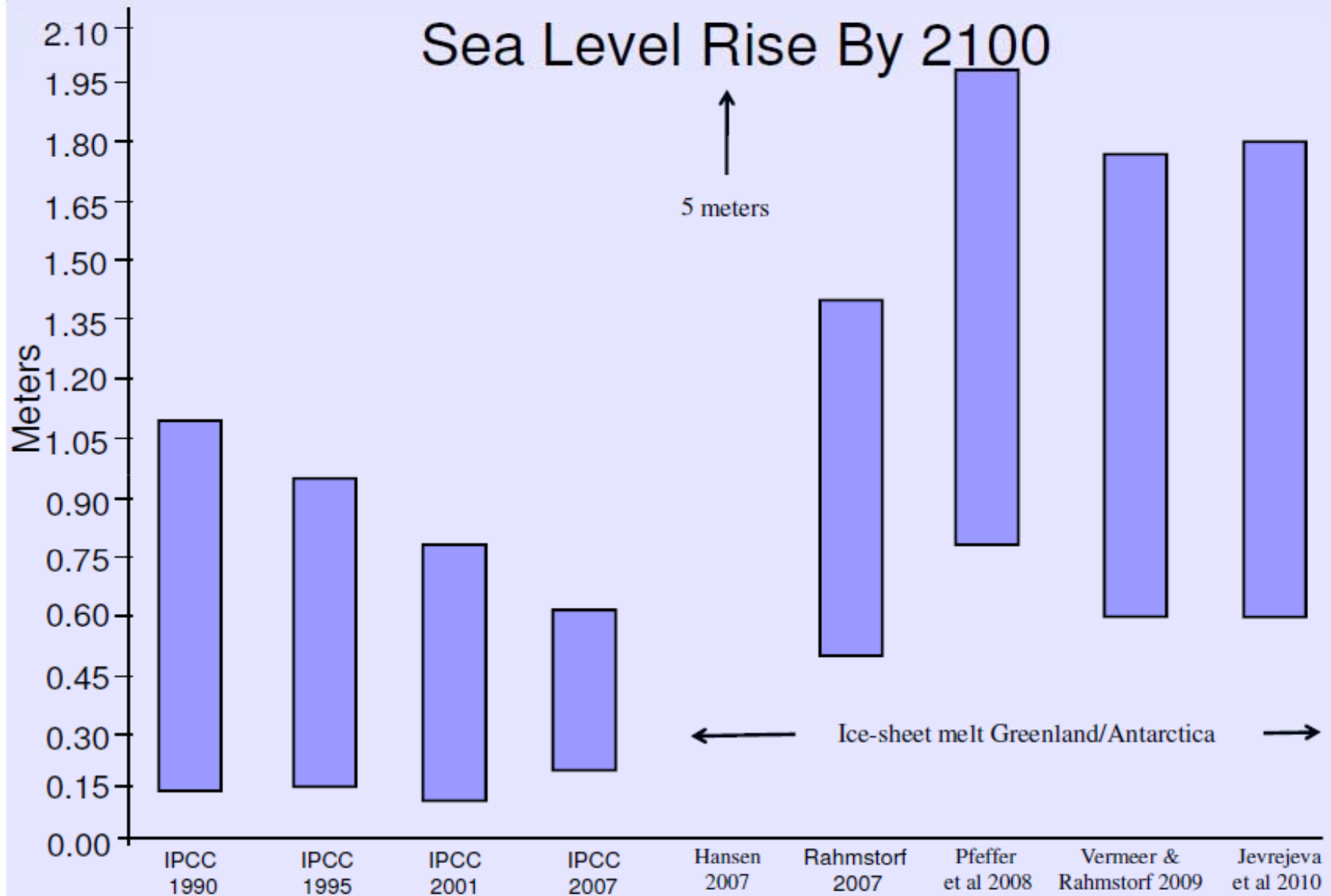


# Magueyes Island, PR

1.35 +/- 0.37 mm/yr



# Sea Level Rise By 2100







**Are climate and ocean changes  
natural or human induced?**

**...we must adapt!**



## **COASTAL FEATURES AND ECOSYSTEMS UPDATE**

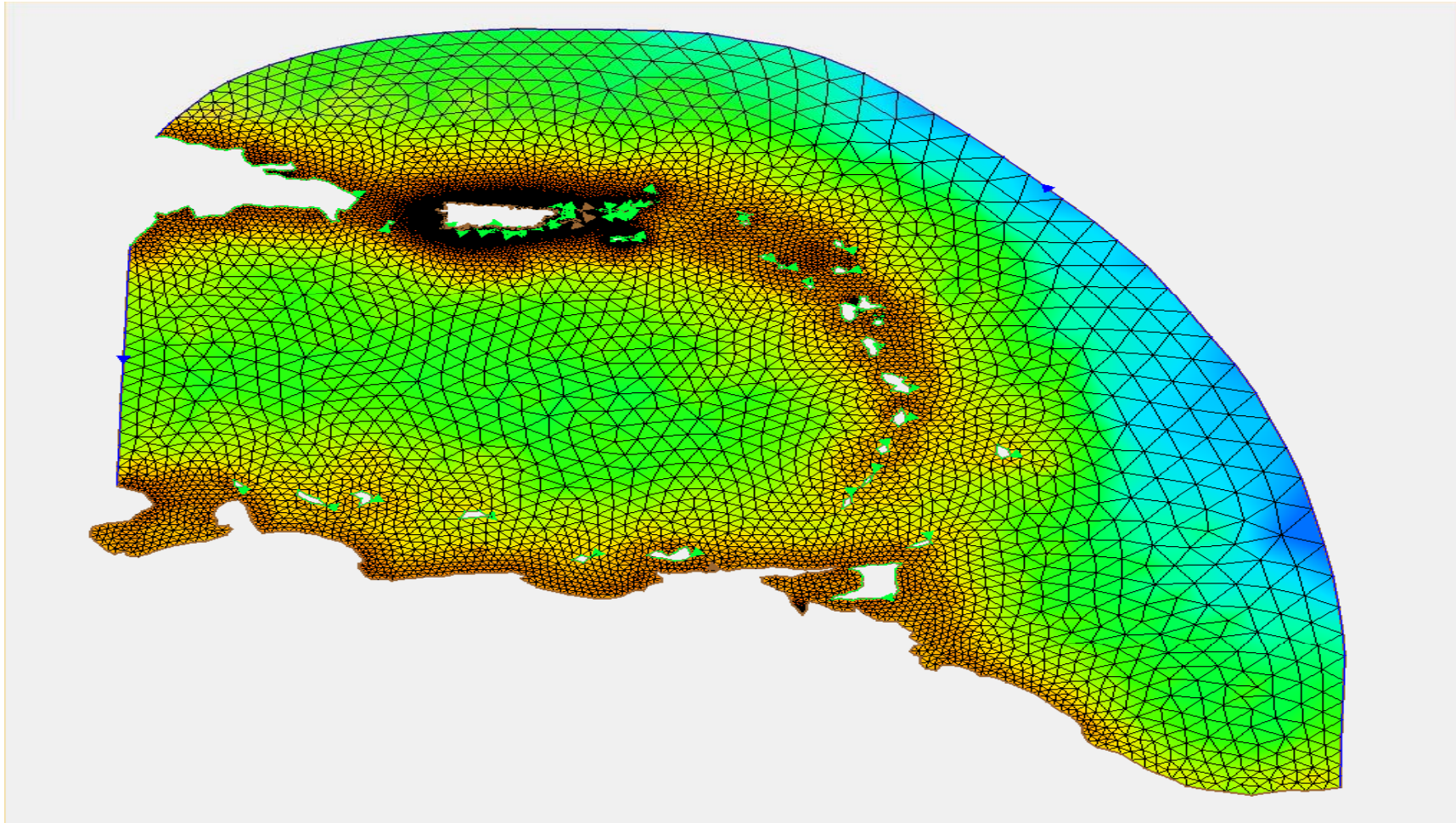
**Ecotone Identification**



**Lidar Coastal Profiling**



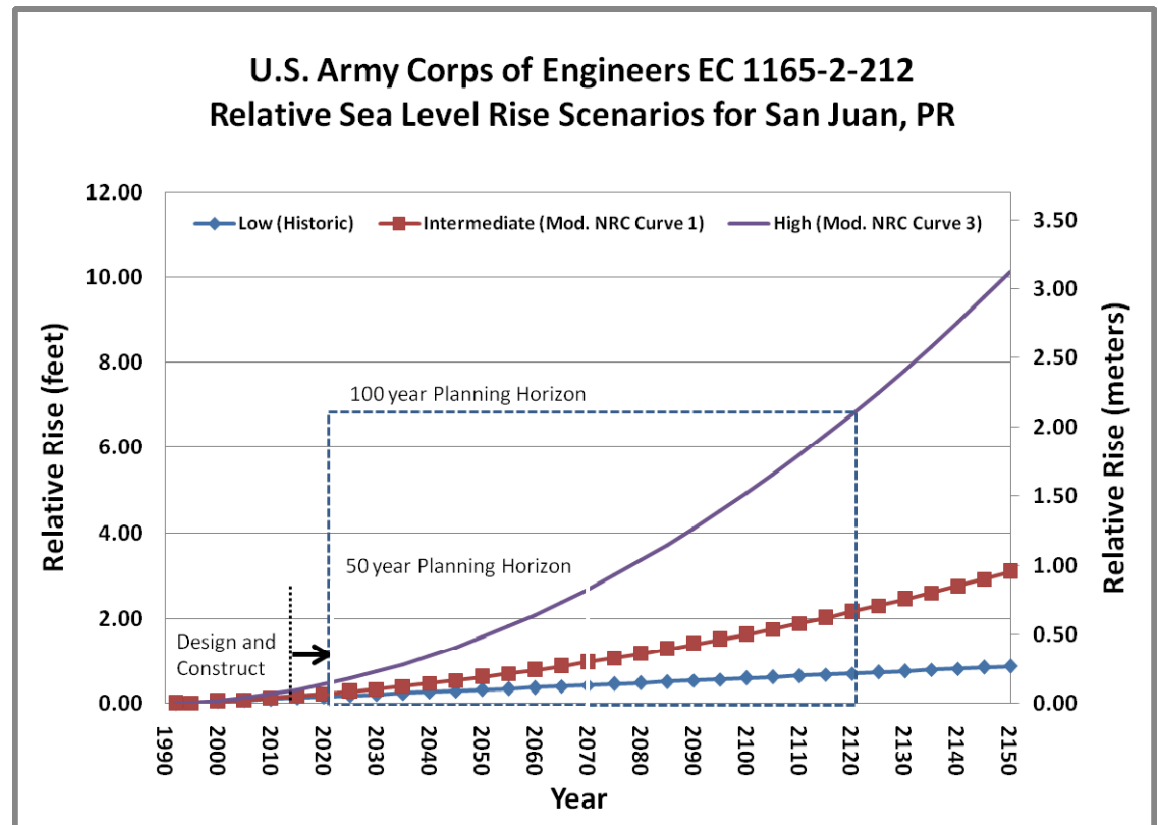
**National Wetland Inventory Update and Review  
(Lidar, Aerial photography, IR, and field  
validation)**



**Storm Surge Modeling in Puerto Rico in Support of Emergency Response,  
Risk Assessment, Coastal Planning and Climate Change Analysis**

# USACE SLR Projections, Planning and Design considerations for Puerto Rico

- by 2060: 0.07 to 0.57 m above current mean sea level
- by 2110: 0.14 and 1.70 m above current mean sea level

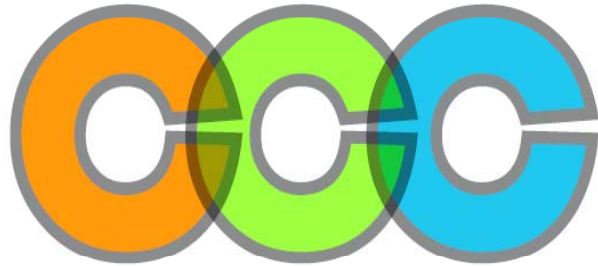


1. PRCCC Analysis Conducted by USACE , Jacksonville District
2. Section 22 Agreement has been formalized by DNER-USACE

## CLIMATE CHANGE RELATED POLICIES ADOPTED IN FEB 28, 2013

OE-2013-015	28-febrero-2013	Orden Ejecutiva del Gobernador del Estado Libre Asociado de Puerto Rico, Hon. Alejandro J. García Padilla, ordenando a la Junta de Planificación a finalizar y adoptar el Plan de Uso de Terrenos de Puerto Rico.
OE-2013-016	28-febrero-2013	Orden Ejecutiva del Gobernador del Estado Libre Asociado de Puerto Rico, Hon. Alejandro J. García Padilla, ordenando el desarrollo de un estudio sobre la vulnerabilidad de la infraestructura pública ante los cambios climáticos y la adopción de planes de adaptación para confrontar los hallazgos del estudio.
OE-2013-017	28-febrero-2013	Orden Ejecutiva del Gobernador del Estado Libre Asociado de Puerto Rico, Hon. Alejandro J. García Padilla, ordenando la creación del Consejo de Acción para la Sostenibilidad de Puerto Rico.
OE-2013-018	28-febrero-2013	Orden Ejecutiva del Gobernador del Estado Libre Asociado de Puerto Rico, Hon. Alejandro J. García Padilla, ordenando la cuantificación de las emisiones de los gases con efecto de invernadero en Puerto Rico y la elaboración de un plan para la reducción de estas emisiones con el fin de acercarnos a la meta de carbono neutral.
OE-2013-019	28-febrero-2013	Orden Ejecutiva del Gobernador del Estado Libre Asociado de Puerto Rico, Hon. Alejandro J. García Padilla, para ordenar al Departamento de Recursos Naturales y Ambientales a realizar el Deslinde Nacional de la Zona Marítimo Terrestre.





**PUERTO RICO**  
CLIMATE CHANGE COUNCIL



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**next steps...**

# PRCCC 2013

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- PRCCC portal, e-library and working space
- PRCCC organization charter
- Release of Insurer / re-insurer study
- Publication of PRCCC 2010-2013 report
- Development and publication of the Island-wide and community based adaptation strategies .
- Recommendations for new policy adoption (i.e., “Right to know – Full disclosure bill”, Coastal Hazards setback bill)
- Submittal of NOAA Coastal fellowship proposal
- Development of PRCCC State of the Climate Report 2013-2016
- This afternoon’s discussion...



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