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 Kyotto)
- 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)
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

2010-2013
• Atm. Temp for Puerto Rico, on the average, has increased annually 0.014°C from 1970.
• 12 stations out of 16 (75%) used throughout the island expressed positive trends from ~1948 to 2007 (Velázquez-Lozada et al., 2006)
• Heat island effect: Temp of San Juan has grown at a rate of 0.06°C over the past 40 years.
Precipitation

- Analysis dates (1948 to 2007):
  - Data analysis shows no clear trends. No general trends can be established concerning annual rainfall at the island, since other stations show increased precipitation (14 stations), others show a decrease in precipitation (12 stations); other stations do not reflect trends.
Sea Surface Temperatures (SSTs) - CariCOOS

SST data from CariCOOS. The slope or SST trend between 1993 and 2007 was linearly estimated at 0.026 (+/- .01) degrees Celsius/yr.
MORE INTENSE?  MORE FREQUENT?
The mean sea level trend is 1.65 millimeters/year with a 95% confidence interval of +/- 0.52 mm/yr based on monthly mean sea level data from 1962 to 2006 which is equivalent to a change of 0.54 feet in 100 years.
The mean sea level trend is 1.35 millimeters/year with a 95% confidence interval of +/- 0.37 mm/yr based on monthly mean sea level data from 1955 to 2006 which is equivalent to a change of 0.44 feet in 100 years.
Sea Level Rise By 2100

- IPCC 1990
- IPCC 1995
- IPCC 2001
- IPCC 2007
- Hansen 2007
- Rahmstorf 2007
- Pfeffer et al 2008
- Vermeer & Rahmstorf 2009
- Levrejeva et al 2010

Ice-sheet melt Greenland/Antarctica
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
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<thead>
<tr>
<th>Order</th>
<th>Date</th>
<th>Description</th>
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<tr>
<td>OE-2013-016</td>
<td>28-febrero-2013</td>
<td>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.</td>
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next steps...
- 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
- This afternoon’s discussion…
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