CARIBBEAN SIDS Climate Service

Adrian Trotman
Caribbean Institute for Meteorology and Hydrology
The Caribbean
Physical and socio-economic background and Food Production issues

Should Influence Climate Service
CARICOM in CONTEXT

- 15 Member States and 5 Associate States
- Mainly developing small island states
- Extensive coastlines relative to land area
- Significant amounts of their economic wealth and infrastructure in coastal regions
- Small climate sensitive interlocking economies (e.g., agricultural and tourism based, also industry and services fairly dominant) that often lack significant diversity at the national level thereby making them particularly vulnerable to economic shocks.
- Agriculture’s contribution to GDP is declining, but still very important for employment
- ...Fisheries also important
- Only about 8% of farmed land under irrigation
- Limited or no natural resources, with Trinidad and Tobago (oil and gas), Jamaica (bauxite) and Guyana (bauxite and precious metals) being exceptions.
- Expanding populations that are dominated by youth
- CARICOM has 6 of the top ten highest ranked countries with losses as a percentage of GDP from Climate (Climate Risk Index 1993 to 2012 Global Climate Risk Index 2014)
- The Caribbean can account for seven of the world’s top 36 water stressed countries
- At risk to natural disasters, particularly weather and climate related
<table>
<thead>
<tr>
<th>Countries</th>
<th>Size (Sq. Mi.)</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua/ Barbuda</td>
<td>170</td>
<td>90,801 (2010)</td>
</tr>
<tr>
<td>The Bahamas</td>
<td>5358</td>
<td>372,380 (2014)</td>
</tr>
<tr>
<td>Barbados</td>
<td>166</td>
<td>277,668 (2012)</td>
</tr>
<tr>
<td>Dominica</td>
<td>290</td>
<td>69,623 (2012)</td>
</tr>
<tr>
<td>Grenada</td>
<td>133</td>
<td>108,580 (2013)</td>
</tr>
<tr>
<td>Haiti</td>
<td>10714</td>
<td>10,413,211 (2012)</td>
</tr>
<tr>
<td>Jamaica</td>
<td>4244</td>
<td>2,714,734 (2013)</td>
</tr>
<tr>
<td>St. Kitts/ Nevis</td>
<td>104</td>
<td>46,398 (2013)</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>238</td>
<td>169,115 (2012)</td>
</tr>
<tr>
<td>St. Vincent/ Grenadines</td>
<td>150</td>
<td>109,903 (2011)</td>
</tr>
<tr>
<td>Trinidad/ Tobago</td>
<td>1981</td>
<td>1,340,557 (2013)</td>
</tr>
</tbody>
</table>

Source: www.caricomstats.org
Caribbean Weather and Climate

RAINFALL (most limiting and variable)

• Characterized by a wet and a dry season...
• ...except northern Guyana with two wet and two dry seasons associated with ITCZ – extended dry seasons cause water availability concerns
• At least 70 to over 80 % of the rainfall occurs during the wet season
• Large seasonal, interannual and inter-decadal variability...
• ...associated with ENSO, Pacific-Atlantic, SST and SLP anomalies and gradients, NAO and CLLJ
• Tropical systems such as Tropical waves, tropical Cyclones, Frontals Systems, localized convection
• Rainfall also cyclical – 50 to 60 years
Caribbean Weather and Climate

**Temperature**
- relatively constant
- annual range 2 to 5°C
- diurnal range larger and influenced by...
  - ...prevailing wind, topography, altitude, nature of the underlying surface, and cloudiness

**Wind**
- predominantly easterly
- strongest during the dry season
- Highest gusts associated with tropical cyclones

Concerns over Climate Change – increasing temperatures, increasing drought threat, stronger cyclones, sea-level rise
Climate Related Services
Information Products and Services Support from CariCOF

Tool(s) for Dynamic Downscaling?

Future Flood Risk Outlooks, Sub-seasonal information and forecasts
Future – Heat Waves Coral Reef Watch

Sep 2014 to Feb 2015 Drought Alert
Information Products and Services Dissemination

CariCOF newsletter

www.cimh.edu.bb/rcc to become www.rcc.cimh.edu.bb
Interface Mechanisms

Forums with the farming community and agricultural extension agencies to promote a better understanding of the applications of weather and climate information

Caribbean Climate Outlook Forum

Means for communication, awareness, education, and feedback. Suggested wet/hurricane and dry season

Stakeholder meetings bring meteorologists/climatologists and the user-community together to discuss climate forecasts and other information; and provide feedback. Builds trust and understanding

Future – User Online Helpdesk; Interactive Web portal
Capacity and Awareness Building

• Pre-CariCOF Seasonal Forecast Training – rainfall, drought temperature, verification, communication outlook - terciles

• Drought Monitoring and Planning training began in 2012 in collaboration with NDMC USA, to be expanded in January 2015

• Statistics – Statistics in Applied Climatology in collaboration with University of Reading’s Statistical Services Centre; advanced statistics

• Agriculture – for farmers (regional and national forums), for Extension Officers (special certificate course),

• DRR – Regional and sub-regional for DRM Managers and their Stakeholders

• Health and Water – on regional scale mainly through CariCOF – greater focus in 2015.
Observation and Monitoring

- Provision of observation equipment, retrofitting
- Enhancing database and monitoring through remote sensing (satellite, radar) and GIS technology and techniques
- Database (CDB funded project) release and launch of “light” synchronising version for Met Services
- Climate Impacts Database – link with DEWETRA