

How is Geospatial Research is Contributing to the measurement of SDG indicators? A Caribbean Perspective

Bheshem Ramlal, PhD

Senior Lecturer,

Department of Geomatics Engineering and Land Management

The University of the West Indies,

St. Augustine, Trinidad, West Indies

Introduction

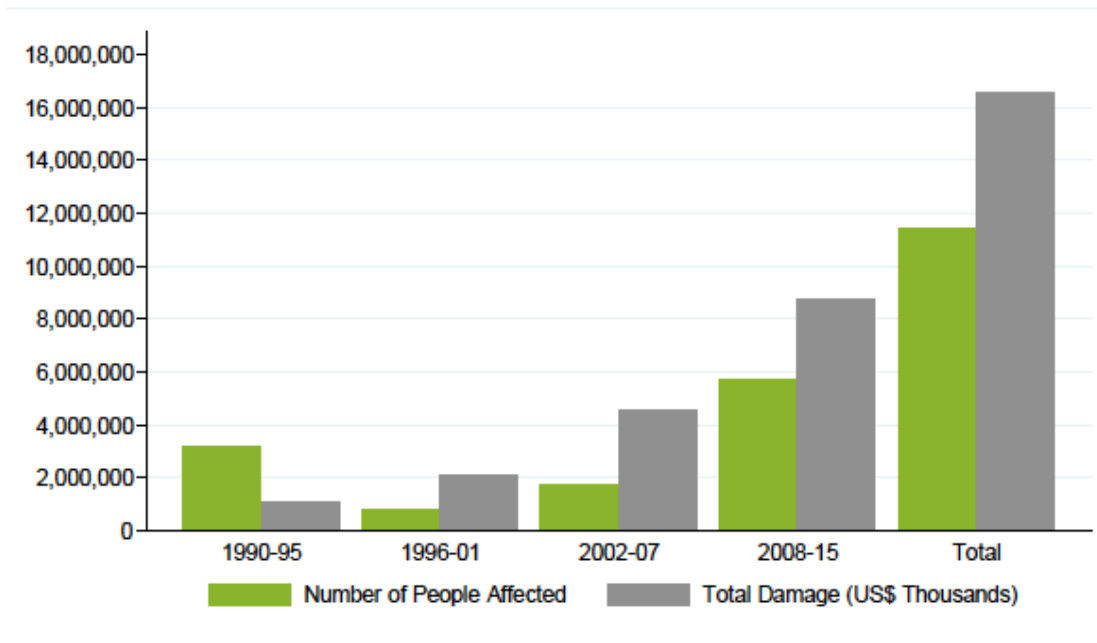
- The 17 SDGs and associated 232 indicators cover diverse issues that are not all equally important to the Caribbean Region
- The region is quite diverse in several ways including geography – size, topography, geology, history, natural resources availability, economies, and population sizes, legal and political systems

The Caribbean Region



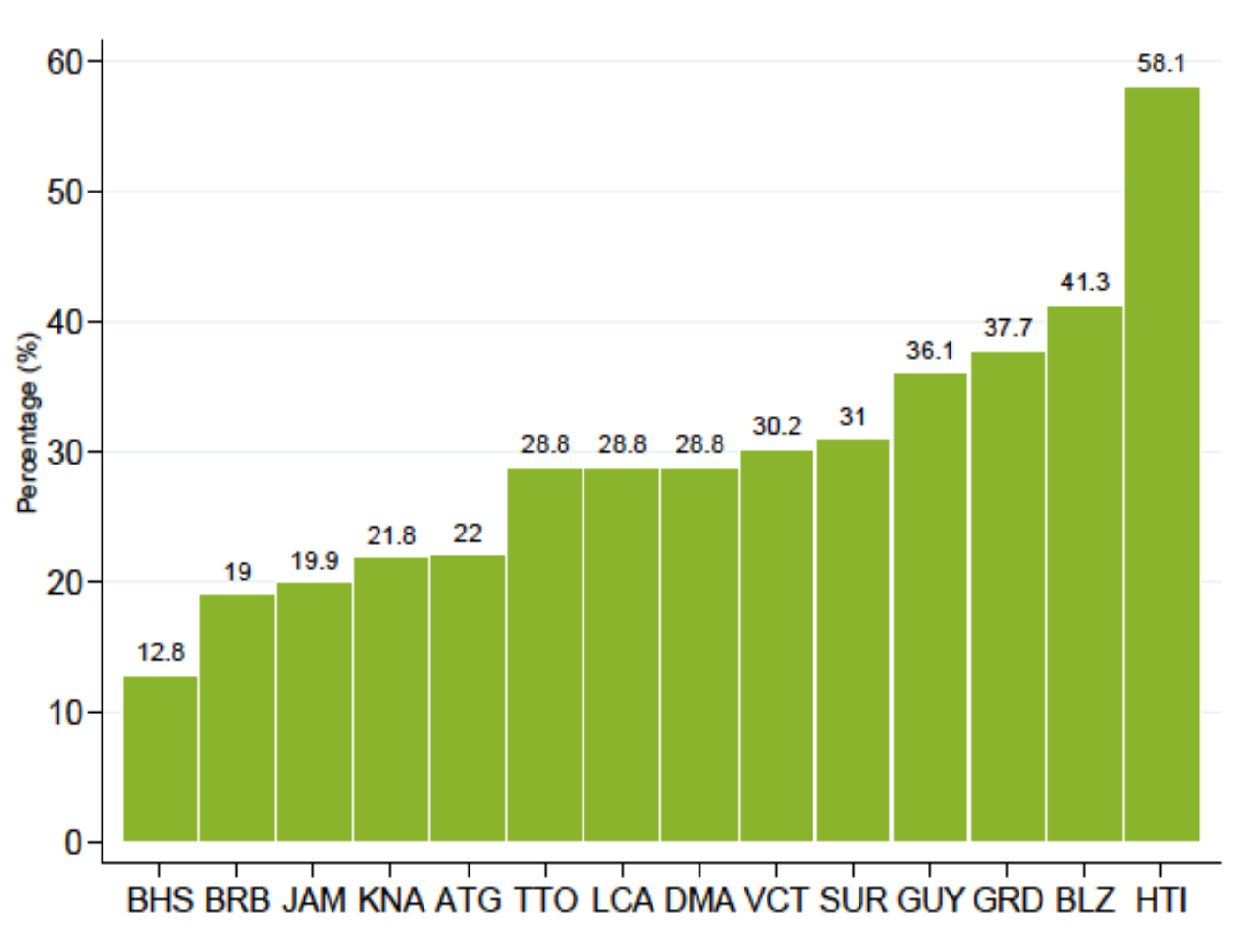
Spatial Challenges

- The challenges are diverse; including vulnerability to natural disasters – hurricanes, flooding, earthquakes, volcanic eruptions, and landslides.
- These may be further exacerbated by climate change



Source: EM-DAT Database, 2015

Poverty



Poverty, 2015

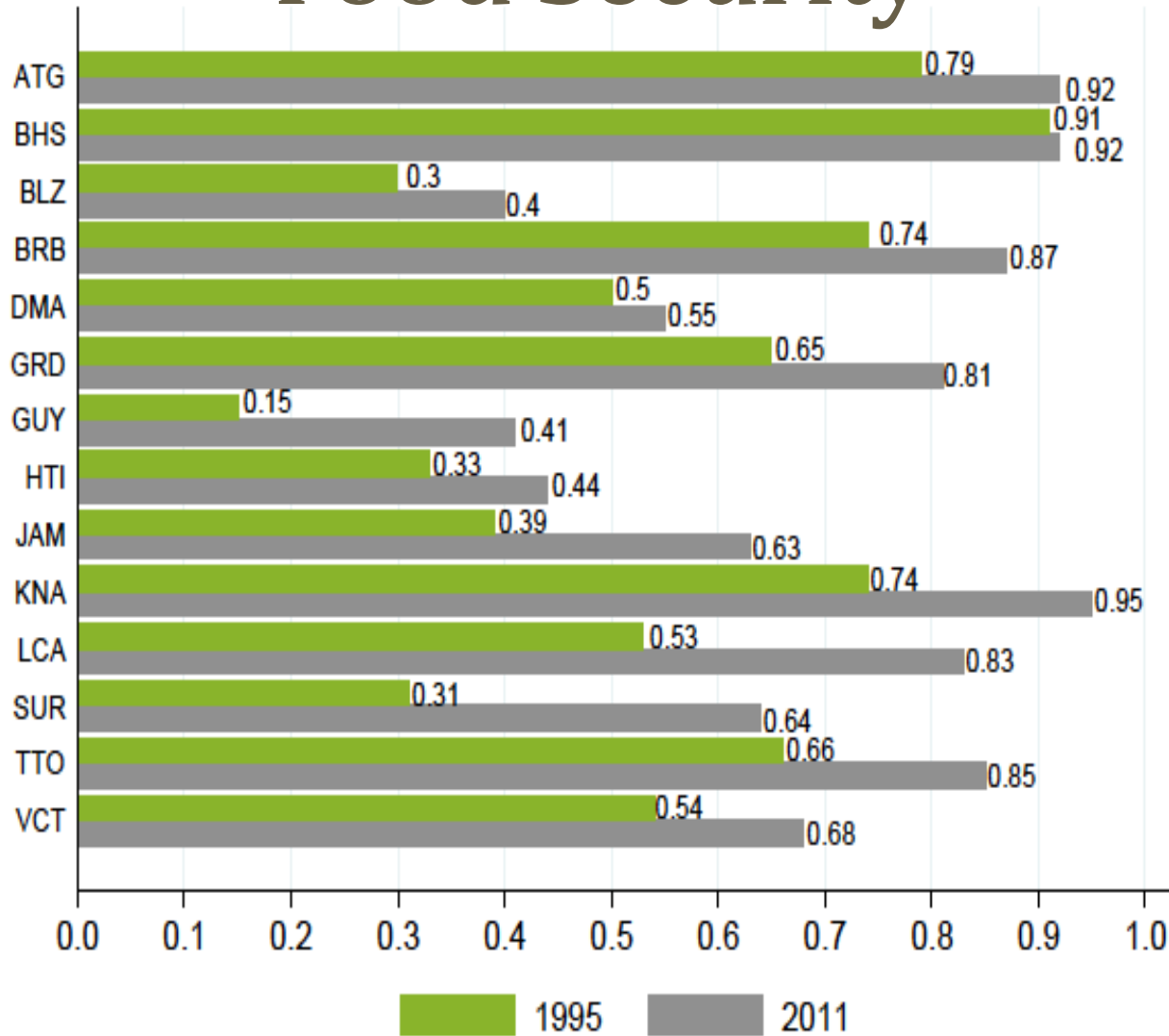
<http://www.fao.org/3/a-i5131e.pdf>

Hunger and food security

Prevalence of Undernourished persons in the Caribbean - Numbers and Percentage of total population

	Millions					Prevalence (%)				
	1990-92	2000-02	2005-07	2009-11	2011-16 ²	1990-92	2000-02	2005-07	2009-11	2011-16
Caribbean ¹	8.1	8.2	8.3	7.6	7.5	27	24.4	23.5	20.8	19.8
Antigua and Barbuda	<0.1	<0.1	<0.1	<0.1	<0.1	15.9	42	28.1	23.2	13.9
Bahamas	<0.1	<0.1	<0.1	<0.1	<0.1	9.5	6	8	7.5	5.6
Barbados	ns	<0.1	<0.1	ns	ns	<5.0	5.2	6.7	<5.0	<5.0
Dominica	ns	ns	ns	ns	ns	<5	<5	<5	<5	<5
Grenada	<0.1	<0.1	<0.1	<0.1	<0.1	17.5	31	26.6	23.1	18.7
Haiti	4.4	4.8	5.4	5	5.7	61.1	55.2	57.1	50.6	53.4
Jamaica	0.2	0.2	0.2	0.2	0.2	10.4	7.3	7	8.2	8.1
St. Kitts and Nevis	<0.1	<0.1	<0.1	<0.1	<0.1	14.2	18.3	21.9	17.8	10.2
St. Lucia	<0.1	<0.1	<0.1	<0.1	<0.1	12.8	11.8	11.3	12.8	12.2
St. Vincent and the Grenadines	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	16.8	9.2	6.8	6.2
Trinidad and Tobago	0.2	0.2	0.2	0.1	0.1	12.6	11.9	11.7	10.2	7.4
Belize	<0.1	<0.1	ns	<0.1	<0.1	9.7	5.8	<5.0	5.7	6.2
Guyana	0.2	<0.1	<0.1	<0.1	<0.1	22.8	9.7	10.4	11.9	10.6
Suriname	<0.1	<0.1	<0.1	<0.1	<0.1	15.5	13.9	11.5	8.7	8

Food Security



Selected CARICOM countries Food Import Dependence Ratio
(Total Food Imports/Total Food Consumption)

Health

Main diseases
in the
Caribbean,
1980s and
2000s
(percentage)

1980s	%	2000s	%
1. Heart disease*	20	1. Heart disease*	18
2. Cancer*	12	2. Cancer*	16
3. Stroke*	11	3. Stroke*	10
4. Injuries	8	4. Diabetes	12
5. Hypertension	6	5. Hypertension*	9
6. Acute respiratory infections	5	6. Injury	7
7. Diabetes	4	7. HIV and AIDS	6
*Food/Nutrition-related	53	* Food/Nutrition-related	65

Literacy

Country Name	Literacy (%)	Year of Estimate
Cuba	100	2011
Barbados	100	2002
Antigua and Barbuda	99	2011
Cayman Islands	99	2007
Trinidad and Tobago	99	2011
Saint Kitts and Nevis	98	2003
Grenada	96	2003
Saint Vincent and the Grenadines	96	1970
Bahamas, The	96	2003
Dominica	94	2003
Saint Lucia	90	2001
Jamaica	87	2011
Belize	77	2000
Haiti	49	2006

<http://www.indexmundi.com/map/?v=69&r=ca&l=en>

Geospatial Research

- Focus is placed on research done in the Caribbean by Caribbean Institutions
- Much work is being done by other universities in several other countries in the Americas, Europe and elsewhere.
- There are two levels of focus here:
 - Applied Research relevant to the SDG Indicators
 - Fundamental Geospatial Research

Caribbean Research Organizations

UWI, St. Augustine, Trinidad

- Department of Geomatics Engineering and Land Management
<http://sta.uwi.edu/eng/surveying/Research.asp>
- Department of Life Sciences,
http://sta.uwi.edu/fst/lifesciences/research_facil.asp
- Department of Geography,
<http://sta.uwi.edu/ffa/geography/research-page>
- Seismic Research Centre, <http://uwiseismic.com>
- Institute for Gender and Development Studies
<http://sta.uwi.edu/igds/research.asp>
- ANSA McAl Psychological Research Centre
<http://sta.uwi.edu/psychological-research-centre/prc-research>
- Family Development Centre,
<https://sta.uwi.edu/fhe/fdcrc/publications.asp>
- The Caribbean Network for Urban and Land Management (CNULM)
<http://bluespacecaribbean.com/about-us/>

Caribbean Research Organizations

UWI Mona Campus, Jamaica

- Department of Geography and Geology
<https://www.mona.uwi.edu/dogg/>
- Mona Geoinformatics, <http://www2.monagis.com>
- Centre for Marine Studies
<https://www.mona.uwi.edu/cms/research.html>

UWI Cave Hill Campus, Barbados,

- Centre for Resources Management and Environmental Studies (CERMES), <http://www.cavehill.uwi.edu/cermes/projects.aspx>
- <http://caribbean-rris.biopama.org>

Support Organizations

- The Caribbean Industrial Research Institute (CARIRI)
<http://www.cariri.com>
- Caribbean Disaster Emergency Management Agency
<http://www.cdema.org>
- Association of Caribbean States, <http://www.acs-aec.org>
- Caribbean Community Climate Change Centre,
<http://www.caribbeanclimate.bz/projects/projects.html>
- CARICOM, <http://caricom.org/community/institutions>
- Note that there are several national universities and institutions in the region as well.
- Several global organizations also present in the region

Fundamental Geospatial Research

- National and Regional Geodetic frameworks
- Availability and access to current and reliable spatial data
- Appropriately trained personnel
- Robust ICT infrastructure
- National and Regional standards and policies
- National and Regional Partnerships
- National and Regional legal and regulatory framework.
- Access to Education and Geospatial Research Support

Applied Geospatial Research

Sample Research Projects – UWI, Jamaica

Project Title	Client	SDG
AFRICAN CARIBBEAN PACIFIC — EUROPEAN UNION — CARIBBEAN DEVELOPMENT BANK NATURAL DISASTER RISK MANAGEMENT PROJECT - PLANNING FOR THE INTEGRATION OF CLIMATE RESILIENCE IN THE ROAD TRANSPORT SECTOR	IMC World wide	5, 8, 9, 11, 13
CLASSIFICATION OF THE PROTECTION PROVIDED BY REEF SYSTEMS IN JAMAICA	World Resources Institute (WRI)	11, 13, 14
ECONOMIC VALUATION OF CORAL REEFS IN THE CARIBBEAN	World Resources Institute (WRI)	8, 11, 13, 14
CLASSIFICATION OF FISH SANTUARIES - HABITAT MAPPING	Ministry of Agriculture and Fisheries, GOJ	2, 9, 11, 12, 13, 14

Applied Geospatial Research

Project Title	Client	SDG
COASTAL DYNAMICS MODELLING LABORATORY - OCEANOGRAPHIC PORTAL	University of the West Indies and Japan International Cooperation Agency	9, 11, 13, 14
THE USE OF BIOLOGY, OCEANOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS TO MANAGE THE RELEASE OF BALLAST WATER IN KINGSTON HARBOUR, JAMAICA	University of the West Indies and Port Authority of Jamaica	9, 11, 13, 14
PREPARATION OF LANDCOVER MAPS TO DETECT CHANGE IN THE NEGRIL/ ORANGE RIVER WATERSHED	Planning institute of Jamaica	11, 13, 15
DISSEMINATION OF SPATIAL DATA AND THE DEVELOPMENT OF THE CARIBBEAN DISASTER RISK ATLAS PLATFORM	UWI Institute for Sustainable Development for the Urban and Disaster Risk Management Unit (LCSDU), Latin America and the Caribbean Region (LCR), World Bank	11, 13

Applied Geospatial Research

Project Title	Client	SDG
Analyzing poverty at the community level using geospatial techniques	Ministry of Planning, GORTT	1
Analyzing Shipping Risks in the Greater Caribbean Area	Maritime Services Division, GORTT	9
Vulnerability Analysis of Resettlement Sites for Dominica	Gov't of Dominica	14
Development of a rapid land cover, land use and land capability mapping methodology for the OECS	Organization of the Eastern Caribbean States	15

Regional Initiatives

- Geodetic framework, PITCA and Caribbean SDI, Capacity Building – Funded by Gov't of Mexico and supported by Gov't of Chile, UWI, ACS
- UN-GGIM Academic Network Americas
<http://redacademica.org>
- Proposal to launch a Caribbean Journal of Geoinformatics, UWI and URISA Caribbean Chapter
- Development of a repository of Geospatial research and technical work relevant to the SDGs – UWI, St. Augustine
- A Geospatial Research Agenda to support the SDGs in the Caribbean, UWI St. Augustine

Research Uptake

- Fundamental research are, to a great extent, being used by Government Geospatial Agencies
- Some of the results of applied research are being used by Caribbean Governments.
- However, many reports are shelved (Often if done by the party no longer in government).
- Uptake is very much dependent on the nature of the work and the client who commissioned the work.
- While most governments have identified an agency to implement and monitor the SDGs, only some are using geospatial data and even less are accessing and utilizing the results of geospatial research
- Some countries have limited access to geospatial research

Conclusions

- Significant amounts of research work being undertaken by Caribbean Institutions related to the SDG Indicators
- Stakeholders have limited access and use
- Extent of uptake of the results of this work by stakeholders not formally evaluated

Thank You