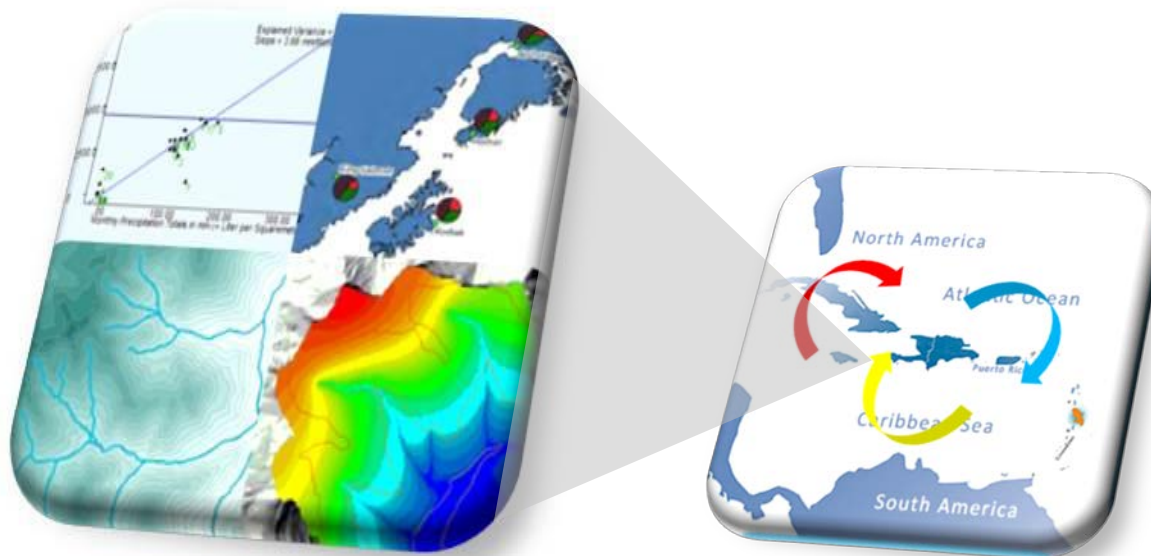


Project for the strengthening of spatial data infrastructures in the Caribbean



Overview & Summary of Progress

October 2014

Project for the strengthening of spatial data infrastructures in the Caribbean

This project is being realized on the frame of the Regional Committee of United Nations on Global Geospatial Information Management for the Americas

[\(UN-GGIM:Américas\)](#)



UN-GGIM:Americas

REGIONAL COMMITTEE OF
UNITED NATIONS
ON GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT
FOR THE AMERICAS

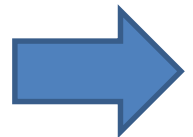


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Asociación de Estados del Caribe
Association des Etats de la Caraïbe



Genesis of UN-GGIM

- In 2009, the United Nations Statistics Division/DESA (UNSD) convened in New York, on the side of the 9th United Nations Regional Cartographic Conference for the Americas (UNRCC-A), an informal consultative meeting with geospatial information experts from different regions of the world, and discussed how to better coordinate the various regional and global activities on geospatial information and the related management issues.
- At its substantive session in July 2011, Economic and Social Council (ECOSOC) considered the report of the General Secretary and adopted a resolution to create the United Nations Committee of Experts on Global Geospatial Information Management (2011/24), asking to present a Report on 2016 to propose the creation of the Geospatial Information Commission of The United Nations.

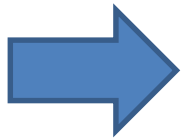


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UN-GGIM: Why a global mechanism?

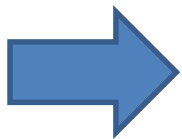
- Significant gap in the recognition and management of geospatial information globally
- Lack of a global consultative and decision-making mechanism among Member States in:
 - setting global standards on geospatial information;
 - developing common tools; and
 - bringing geospatial information to bear on global policy issues
- This gap is increasingly being filled by the private sector, reducing the role and influence of Governments
- Governments, not the private sector, have the mandate and accountability to maintain and deliver the national geospatial information base and related policy



UN-GGIM: A global initiative

Formal inter-governmental Committee of Experts to:

- Coordinate Global Geospatial Information Management activities by involving Member States at the highest level as key participants
- Make joint decisions and set directions on the use of geospatial information within national and global policy frameworks
- Address global issues and contribute collective knowledge as a community with shared interests and concerns
- Develop effective strategies to build geospatial capacity in developing countries

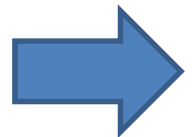


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UN-GGIM: Global Agenda

1. Global geodetic reference frame.
2. National institutional arrangements in GI management.
3. Global map for sustainable development and status of mapping in the world.
4. Legal and policy frameworks.
5. Establishment and implementation of standards.
6. Linking of geospatial information to statistics and other data.
7. Integration of land and marine GI.
8. Activities on GI within the United Nations system and to the United Nations Conference on Sustainable Development.
9. Development of a knowledge base for GI.



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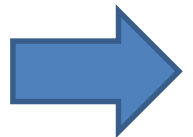


Creation of a Regional-Global architecture for UN-GGIM

- UN-GGIM Co-Chairs (2014-2015), Dr. Vanessa Lawrence, Ordnance Survey U.K; Dr. Eduardo Sojo, INEGI Mexico and Dr. Li Pengde, NASG, China.

UN-GGIM Regional Committees:

- UN-GGIM for Asia-Pacific (formerly PCGIAP) November 2012
- UN-GGIM for the Americas (formerly PC-IDEA) August 2013
- UN-GGIM for Arab States February 2013
- UN-GGIM for Europe August 2014
- UN-GGIM Africa 2014



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UN-GGIM:Americas' Working Groups

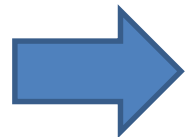
1. WG on geospatial data collection and management- Colombia

2. WG on access and use of geospatial information in disaster risk reduction and climate change- El Salvador

3. WG on Standards and technical specifications- Mexico

4. WG on regional coordination and cooperation- Mexico

5. WG on promotion and assessment of Spatial Data Infrastructure- Chile





Cooperation for the Caribbean Region



A Collaborative Agreement between the National Institute of Statistics and Geography (INEGI) and the Ministry of Foreign Affairs of Mexico was signed to make this Project possible. INEGI is contributing with the technical support and the Government of Mexico is providing the financial support for this project.

The project has the support of the Association of Caribbean States, who is committed with contributing to the development of the region.

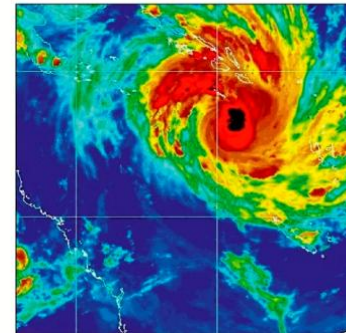


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Overarching Goal

To use location and geography to measure and monitor sustainable development



General Objective

To promote the development of [Spatial Data Infrastructure \(SDI\)](#) in the Caribbean, in order to strengthen the generation, use and sharing of geospatial information, including for policy making

Specific Objectives:

- Reduce Geospatial Data Infrastructure gaps within the Caribbean region, and with respect to the rest of the Continent
- Support the integration and participation of Caribbean countries in the international geospatial information context, including the UN-GGIM: Americas initiative

Specific Benefits for Caribbean Countries

1. Build infrastructure and knowledge to advance in the development of national SDIs.
2. Advance in the construction of Regional and Continental Geodetic Reference Frameworks.
3. Enable access and exchange of information among Caribbean countries and throughout the Americas.
4. Generate and compile information for the design and implementation of national and regional development plans.

Participating Caribbean Countries

1. Antigua & Barbuda



2. Bahamas



3. Barbados



4. Cuba



5. Dominique



6. Dominican Republic



7. Grenada



8. Guadeloupe



9. Guyana



10. Haiti



11. Jamaica



12. Martinique



13. St Kitts & Nevis



14. St. Lucia



15. St. Maarten



16. St. Vincent & the Grenadines



17. Suriname



18. Trinidad & Tobago



19. Belize



Caribbean Project Technical Advisory Committee

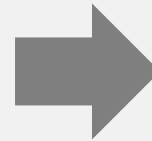


Strengthening the Region

Regional Collaboration Project scheduled for execution within a three year timeframe (2014-2016) and a \$4.5 million USD budget

Specific Actions

- [1. Diagnosis of National SDIs](#)
- [2. Capacity Building](#)
- [3. Acquisition of Infrastructure](#)
- [4. Incorporation to UN-GGIM](#)



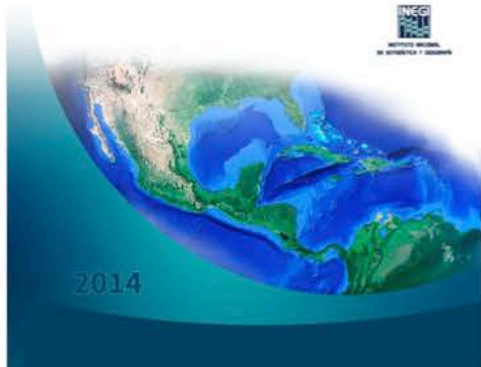
Establishment of National SDIs

Aligned to key actions in UNGGIM- Americas

Promote Regional Interoperability

1. Diagnosis of the geospatial information management status

Cuestionario de diagnóstico
sobre el estado de la infraestructura de Datos
Espaciales (IDE) en los países miembros de la
Asociación de Estados del Caribe



Diagnostic Questionnaire
on the state of the Association of Caribbean
States member countries' Spatial Data
Infrastructure (SDI)



Questionnaire de diagnostic
sur l'état de l'infrastructure d'information géo-
spatiale dans les pays membres de l'Association
des États de la Caraïbe



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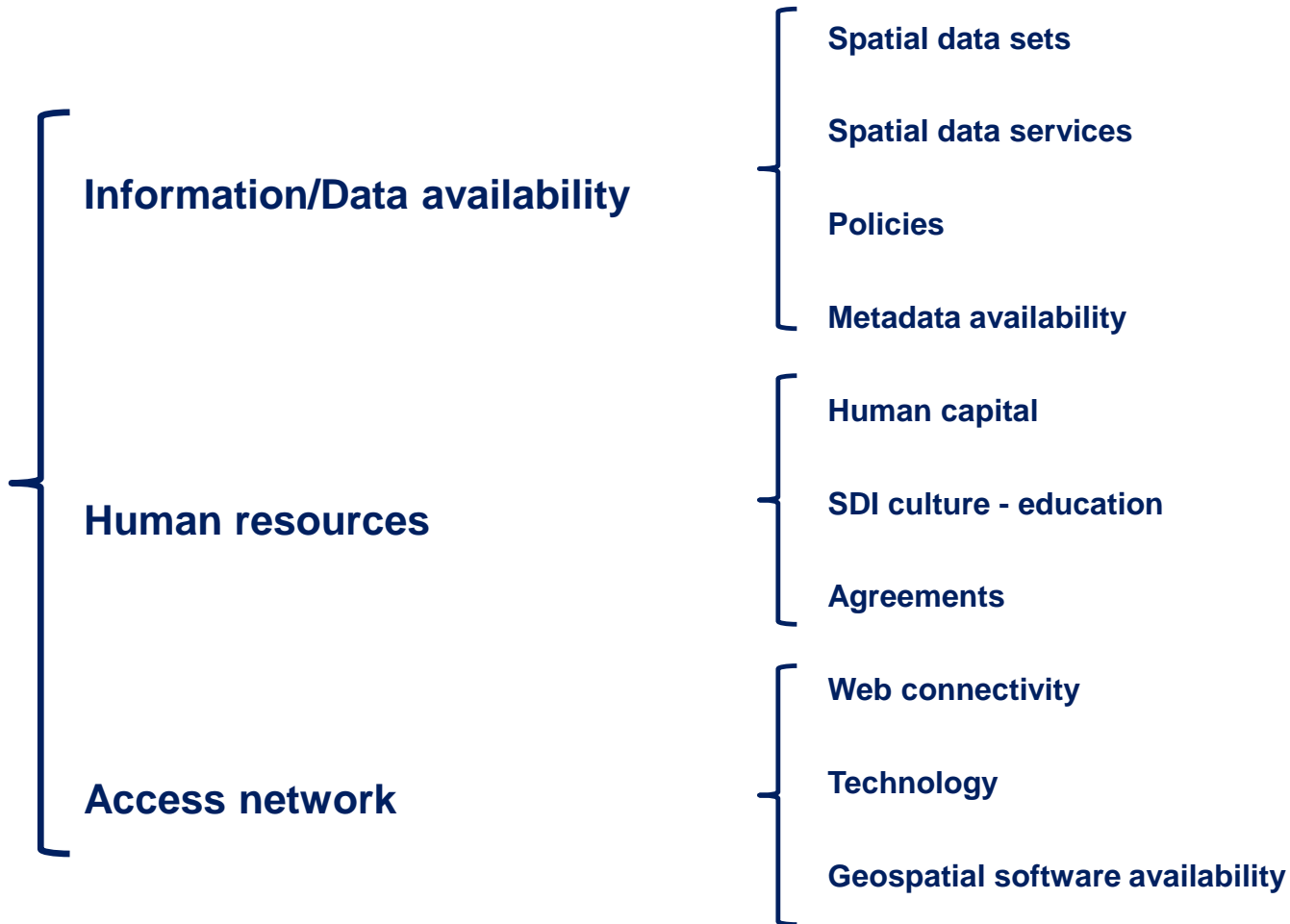
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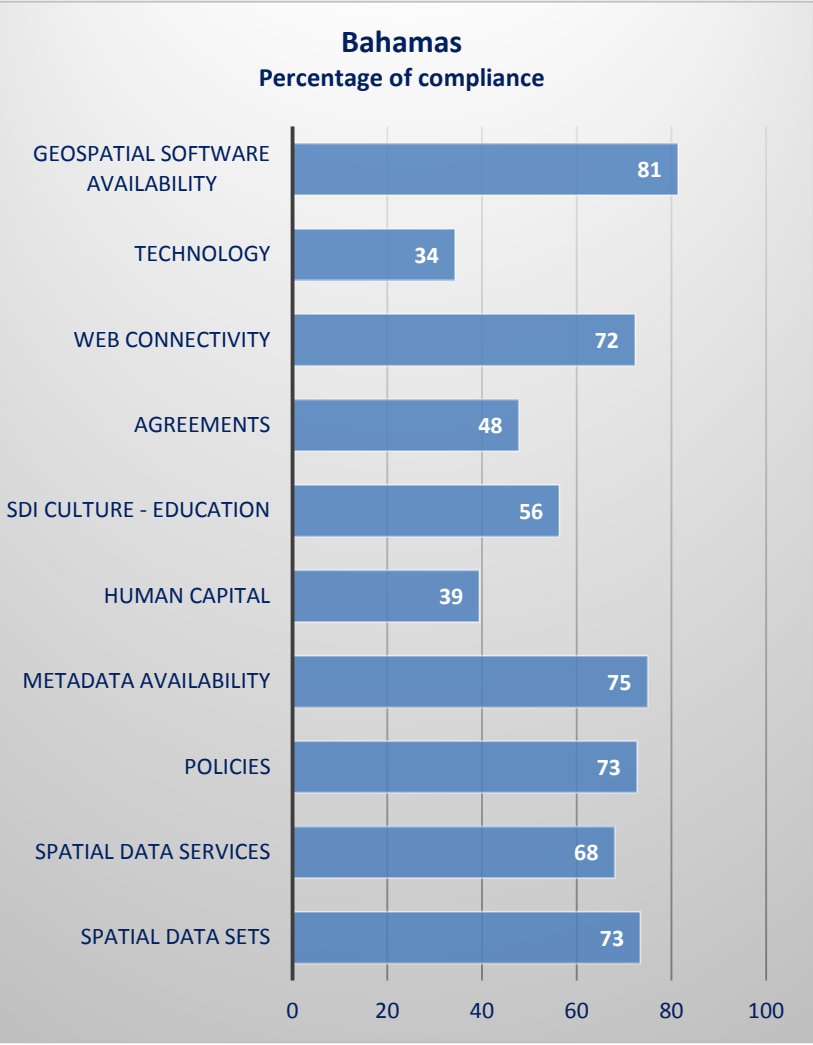


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Elements considered in the diagnosis



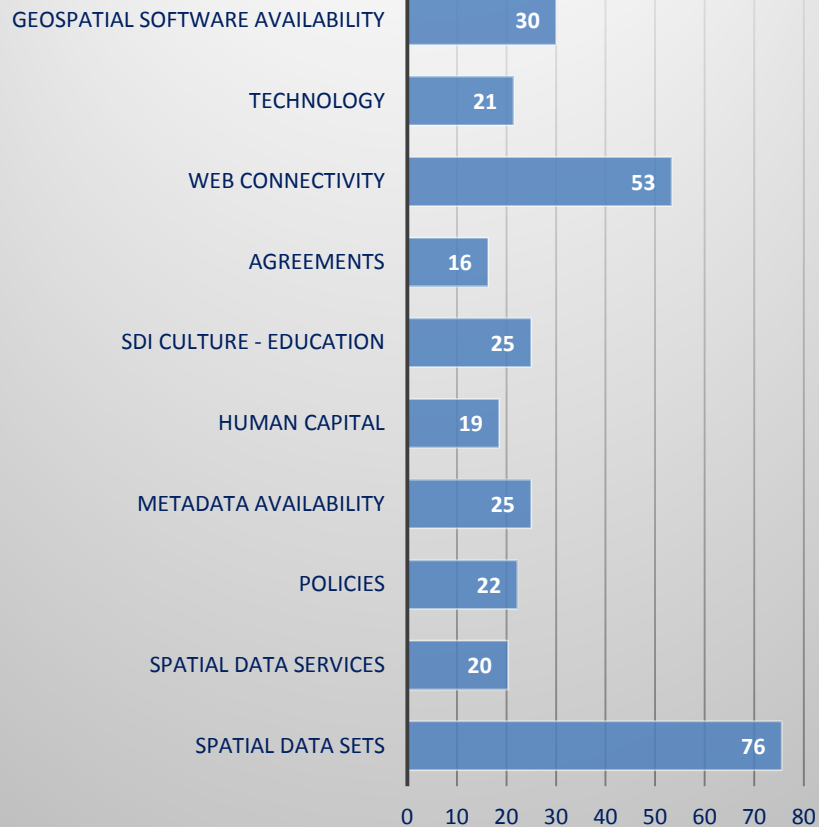
Bahamas



República Dominicana



República Dominicana Percentage of compliance



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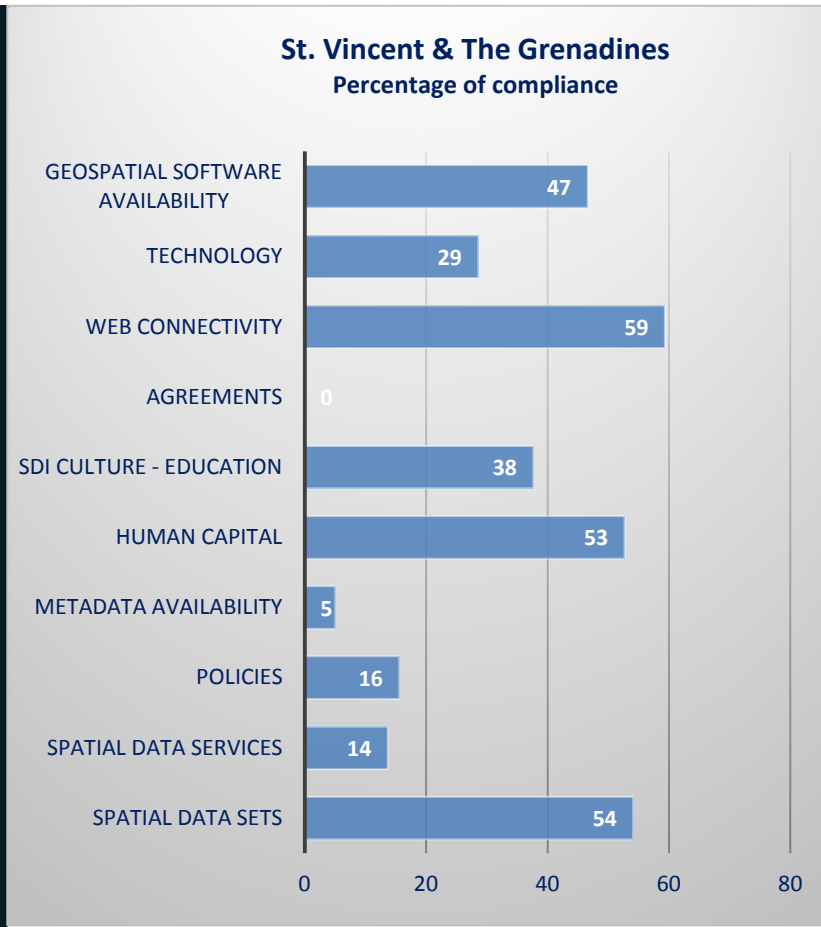
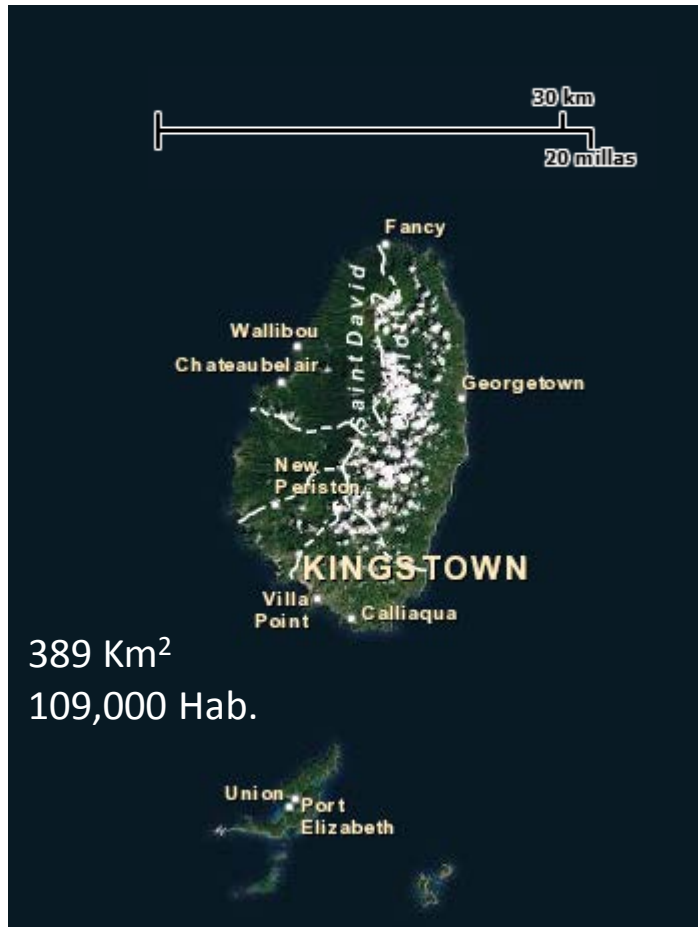


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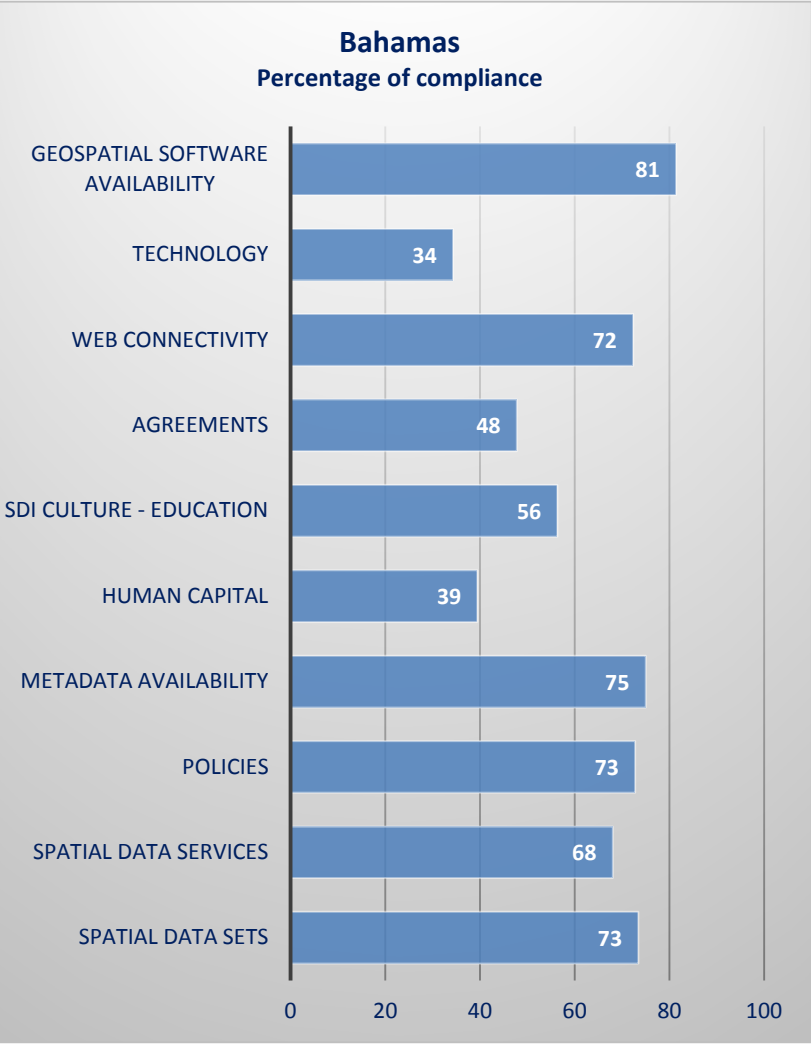


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St. Vincent & The Grenadines



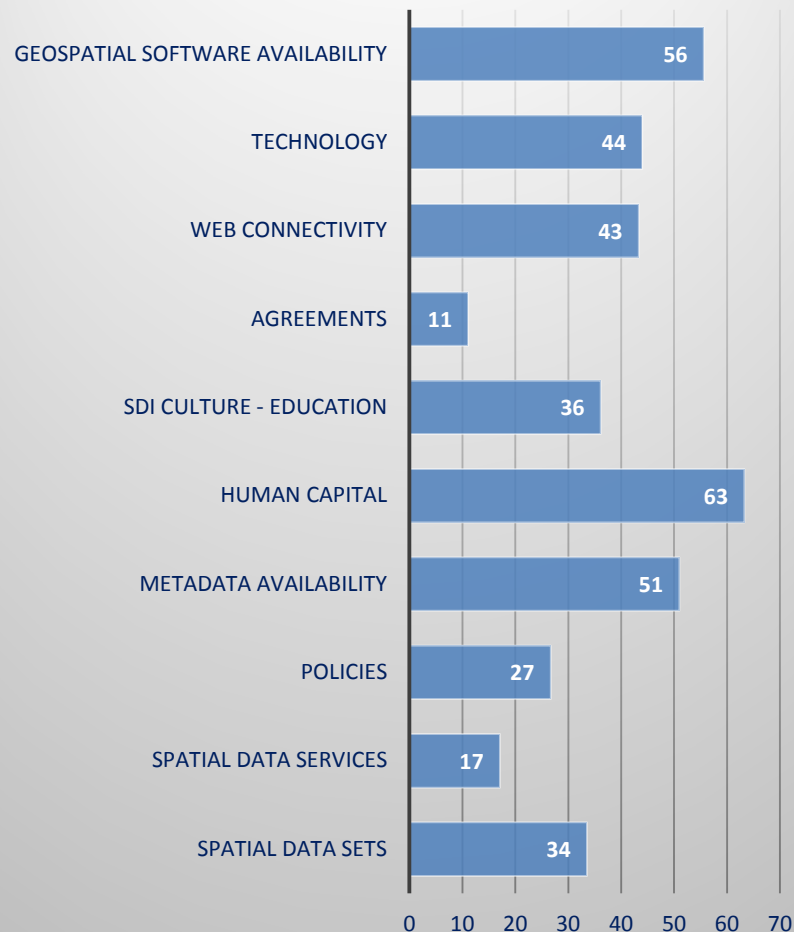
Bahamas



Barbados



Barbados Percentage of compliance



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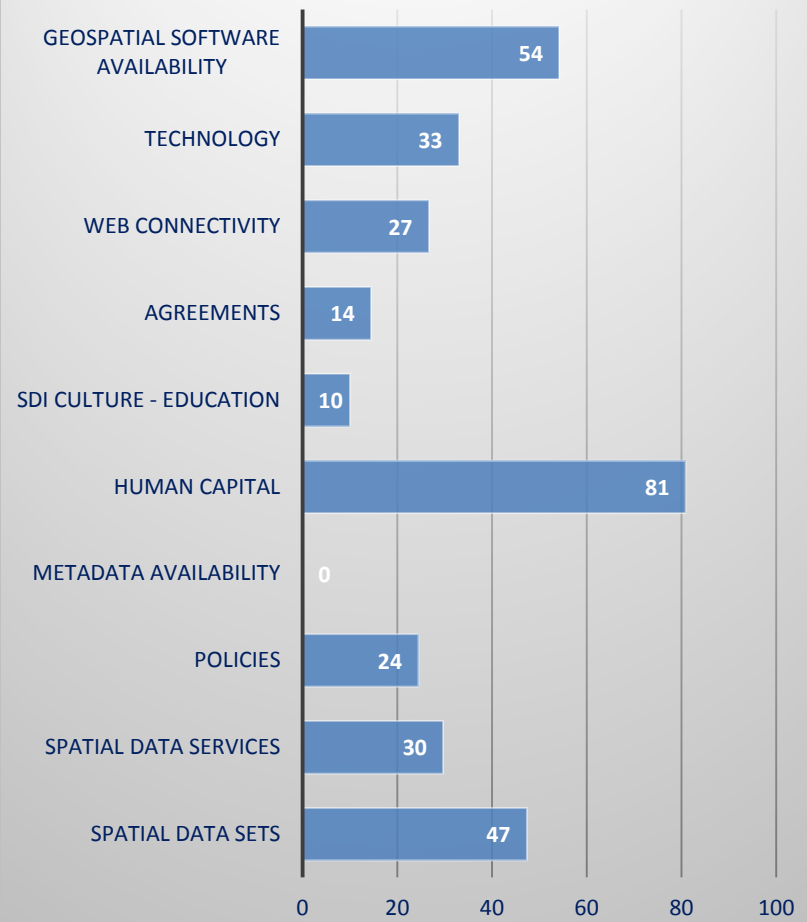


Dominica

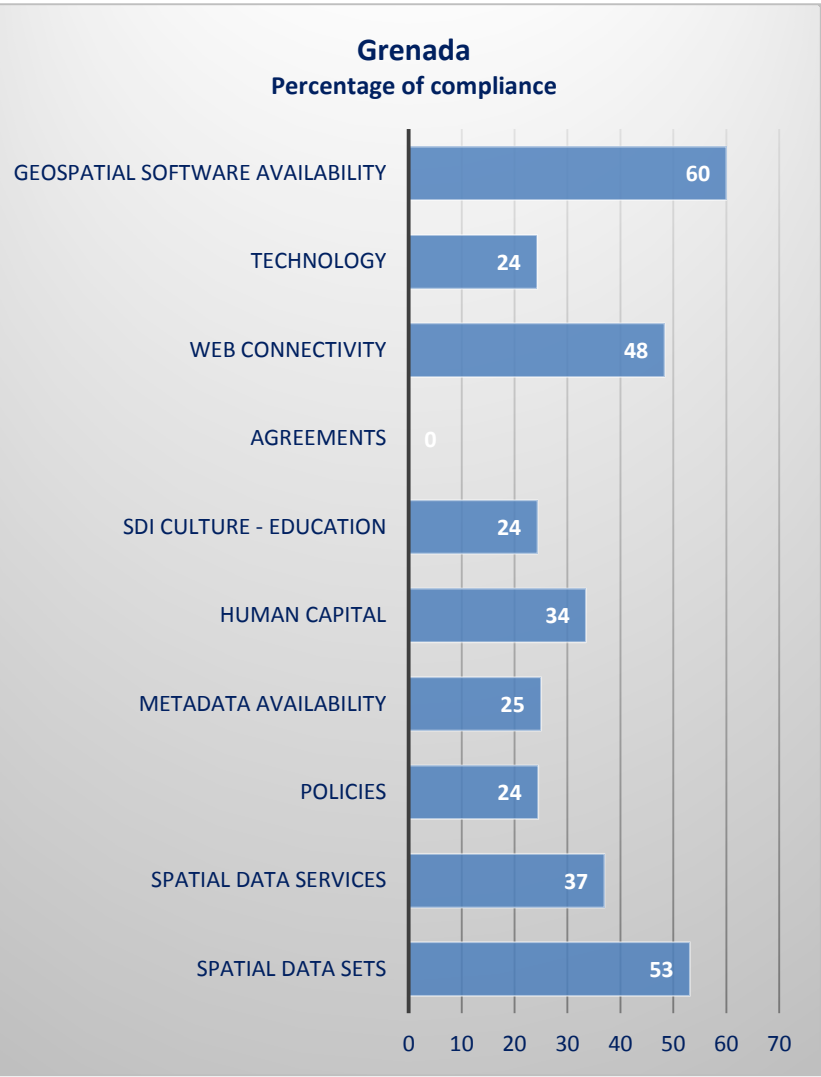
751 Km²
72,000 Hab.



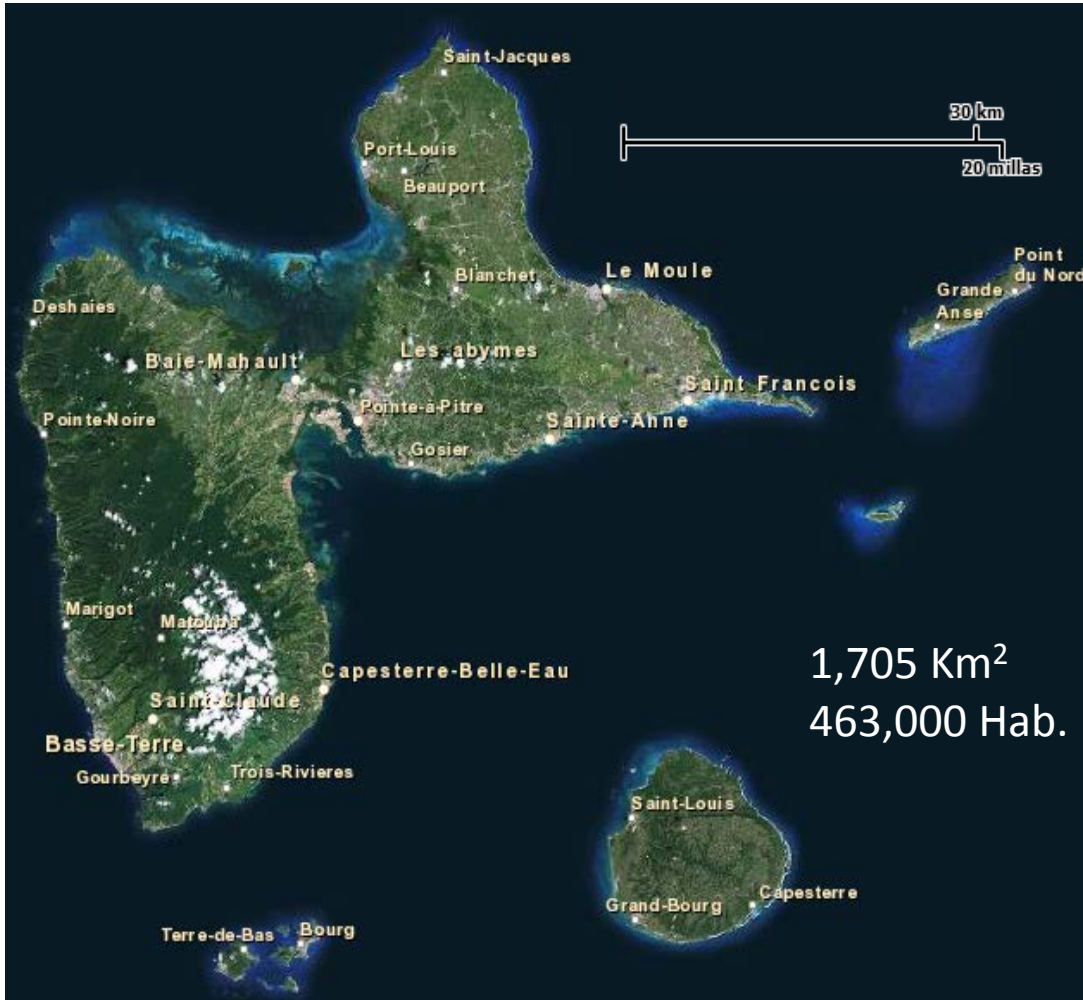
Dominica
Percentage of compliance



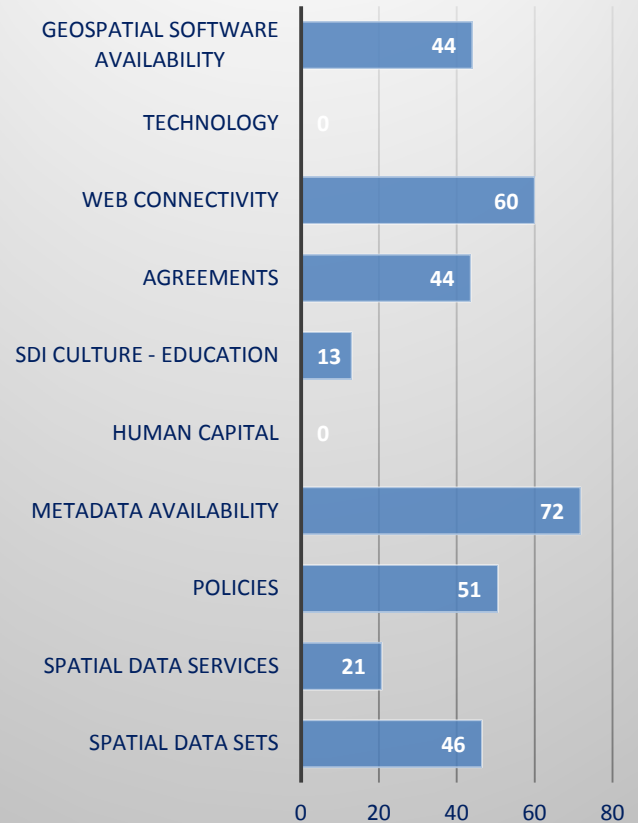
Grenada



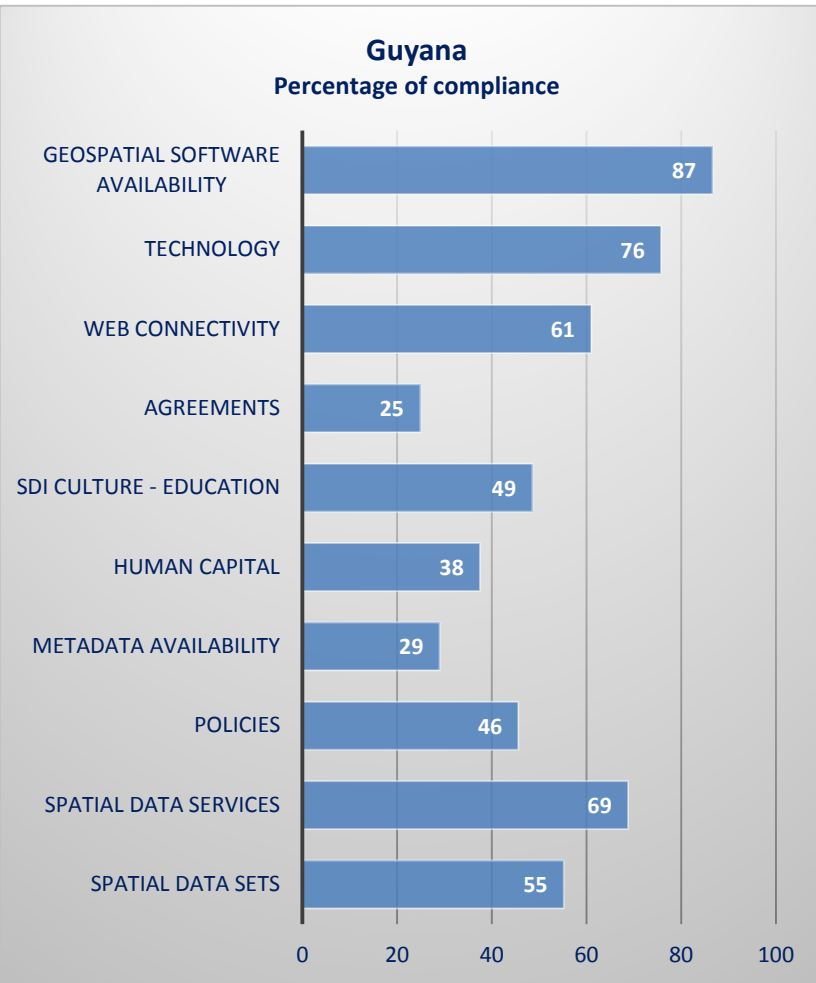
Guadeloupe



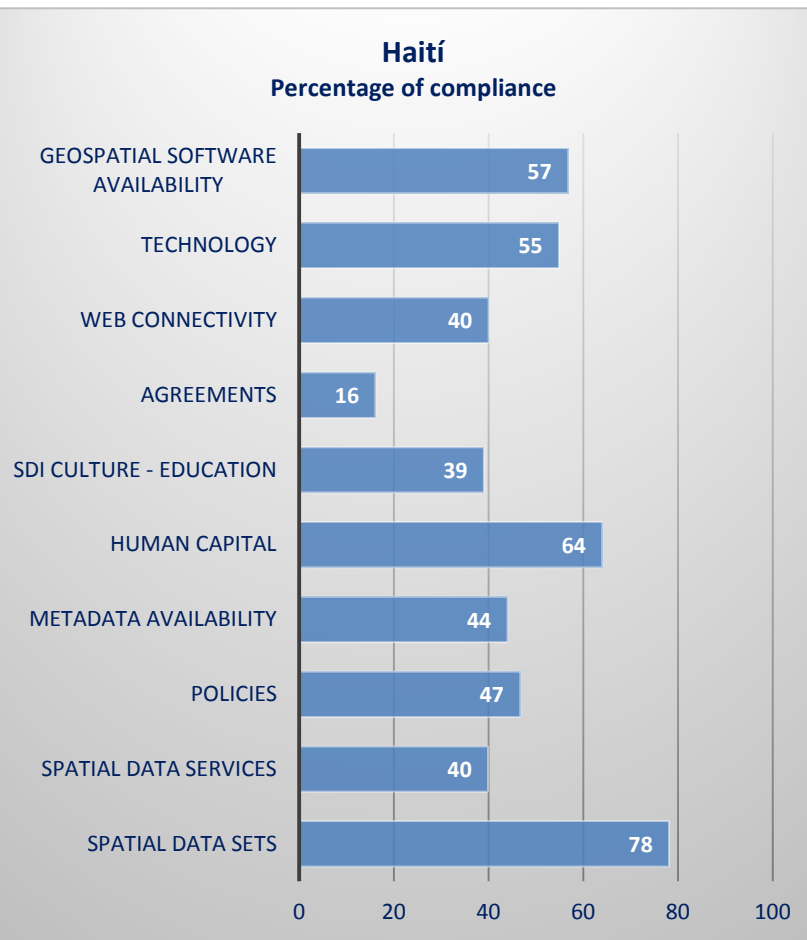
Guadeloupe
Percentage of compliance



Guyana



Haiti



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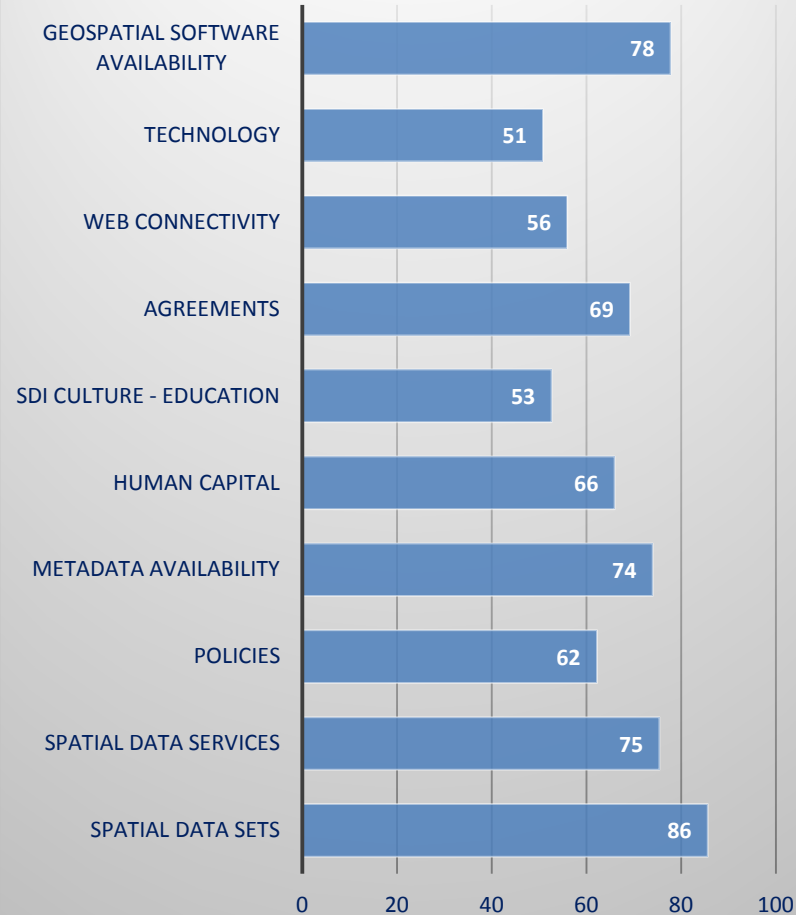


Jamaica

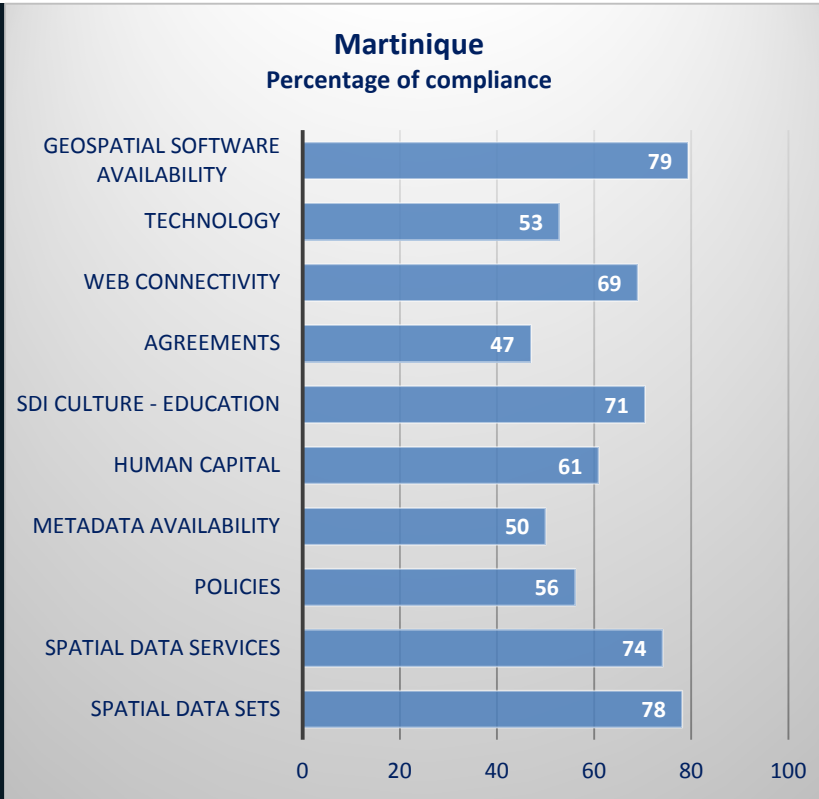
10,991 Km²
2' 799,000 Hab.



Jamaica
Percentage of compliance



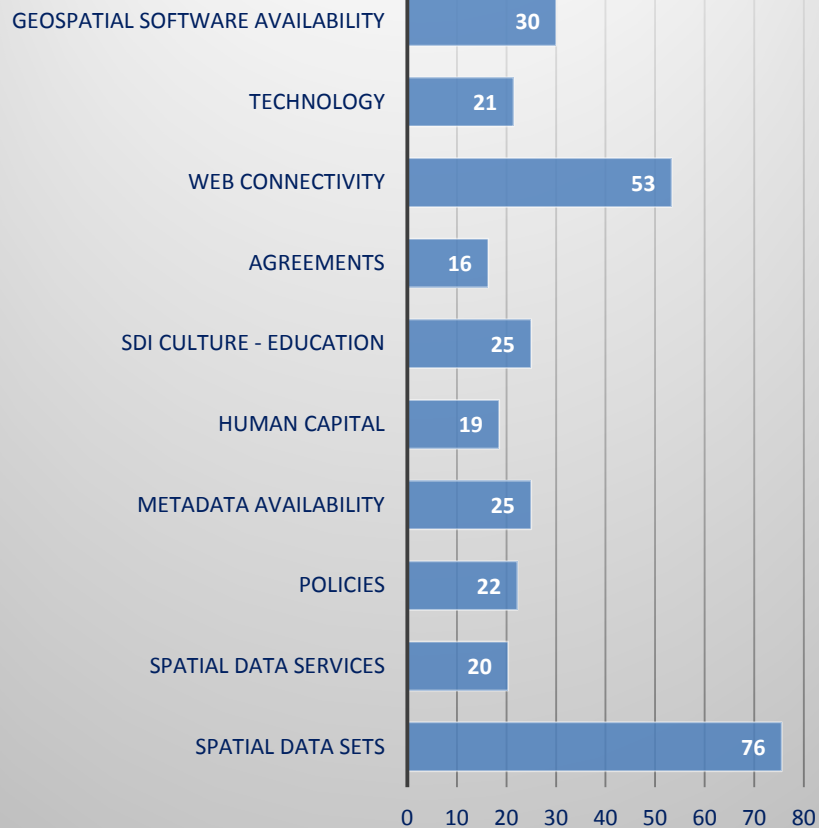
Martinique



Dominican Republic



República Dominicana Percentage of compliance



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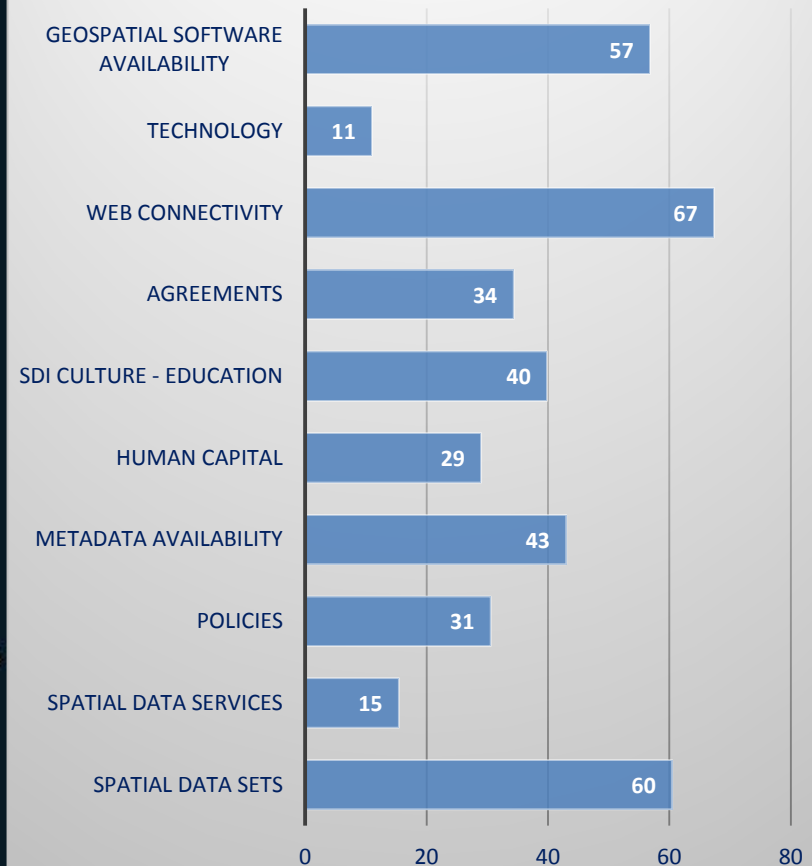
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St. Kitts & Nevis



St. Kitts & Nevis
Percentage of compliance



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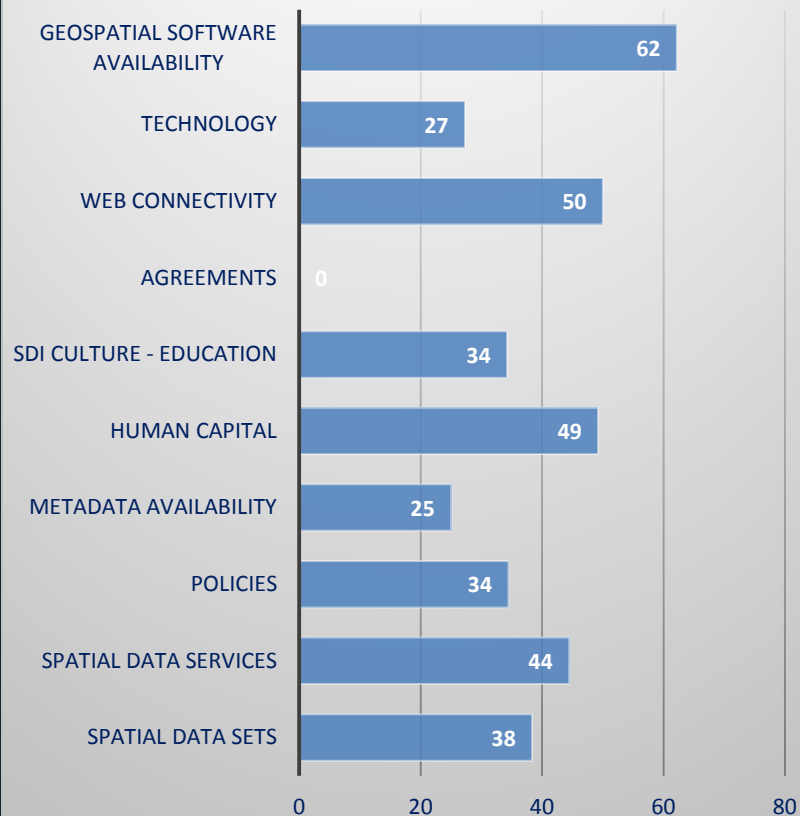


St. Lucia

616 Km²
184,000 Hab.



St. Lucía
Percentage of compliance



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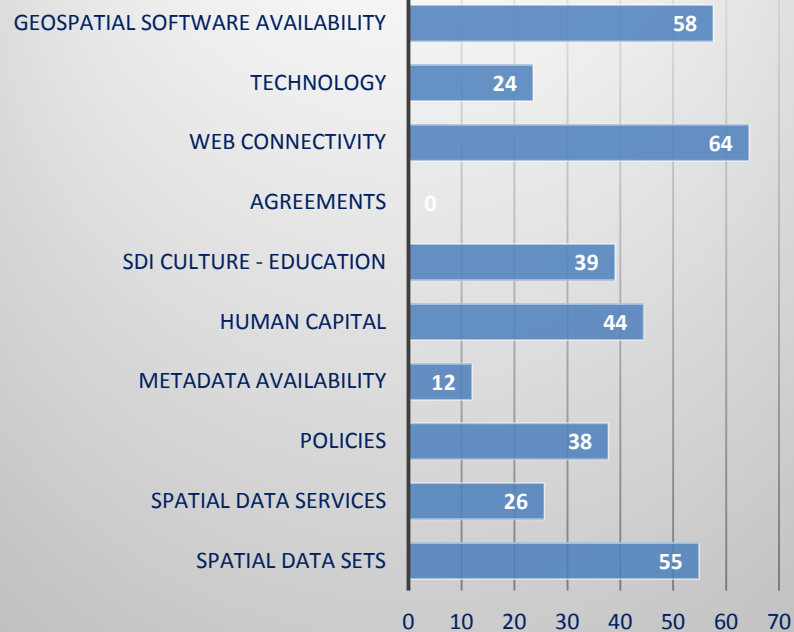
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St. Maarten



St. Maarten Percentage of compliance



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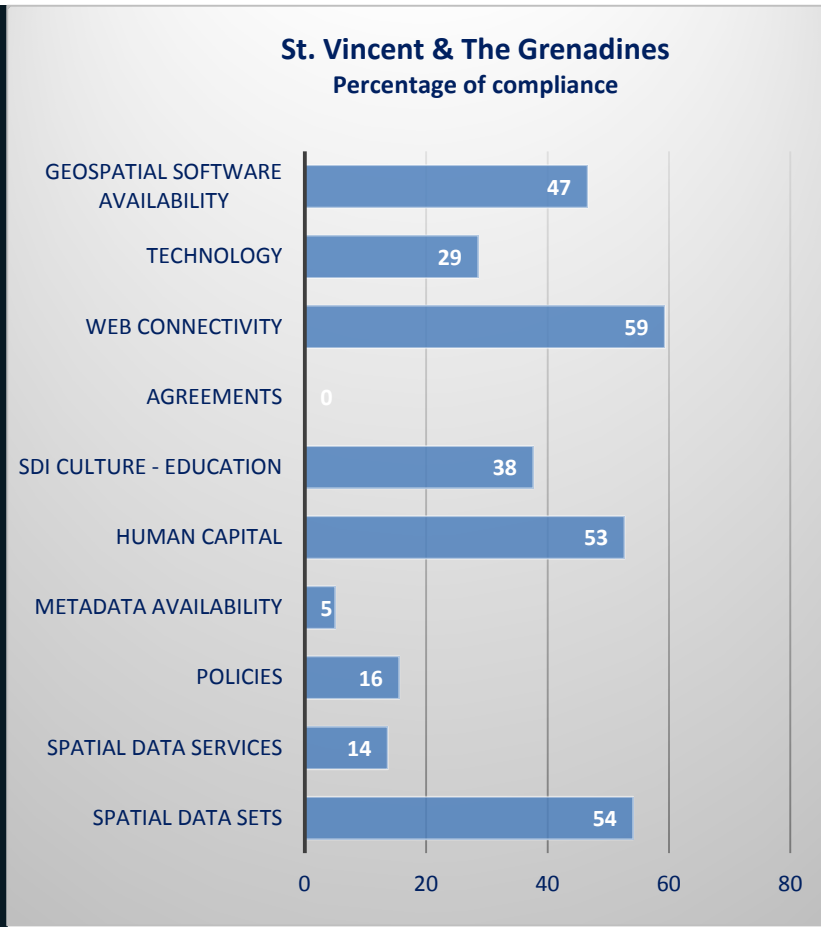
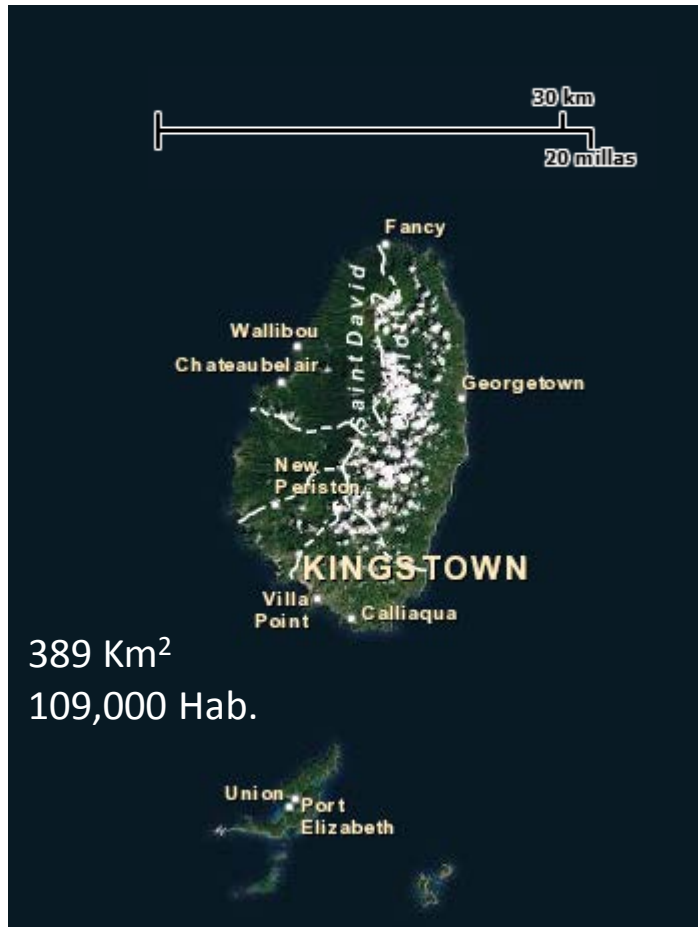
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St. Vincent & The Grenadines

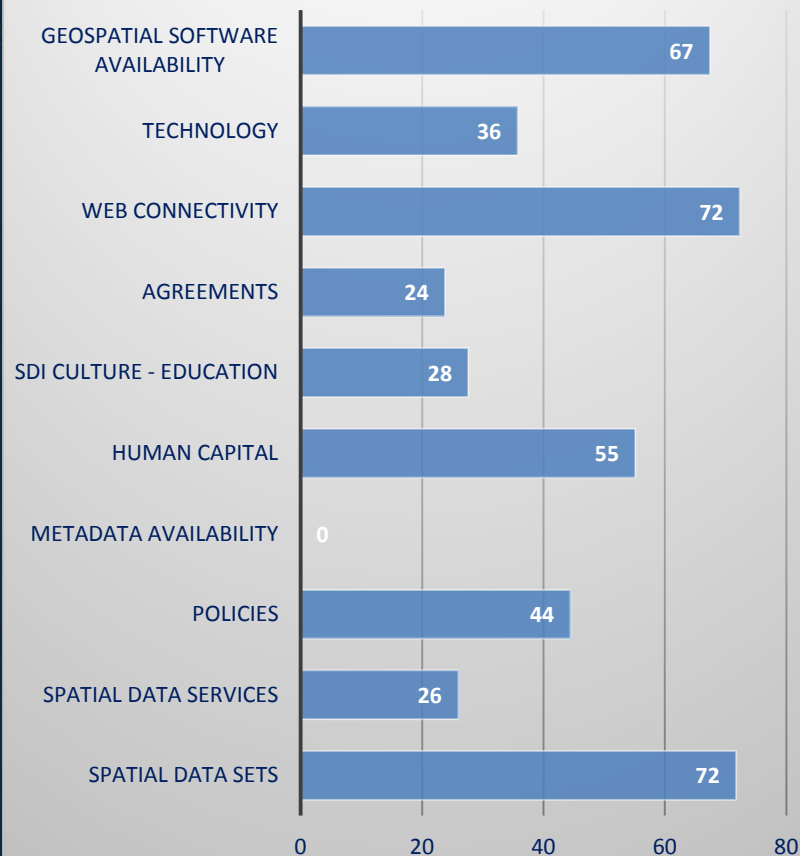


Trinidad & Tobago

5,128 Km²
1' 344,000 Hab.



Trinidad & Tobago
Percentage of compliance



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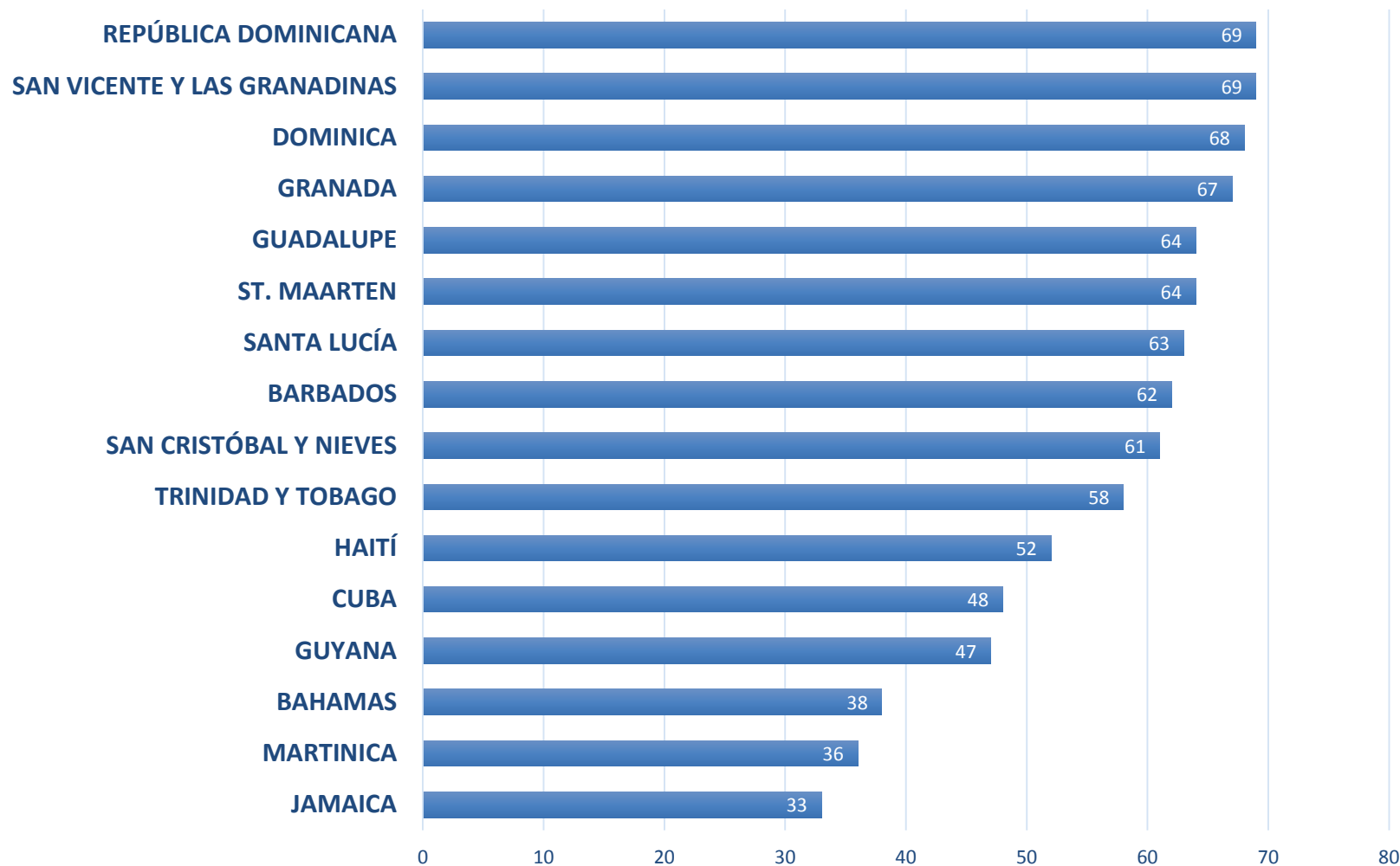
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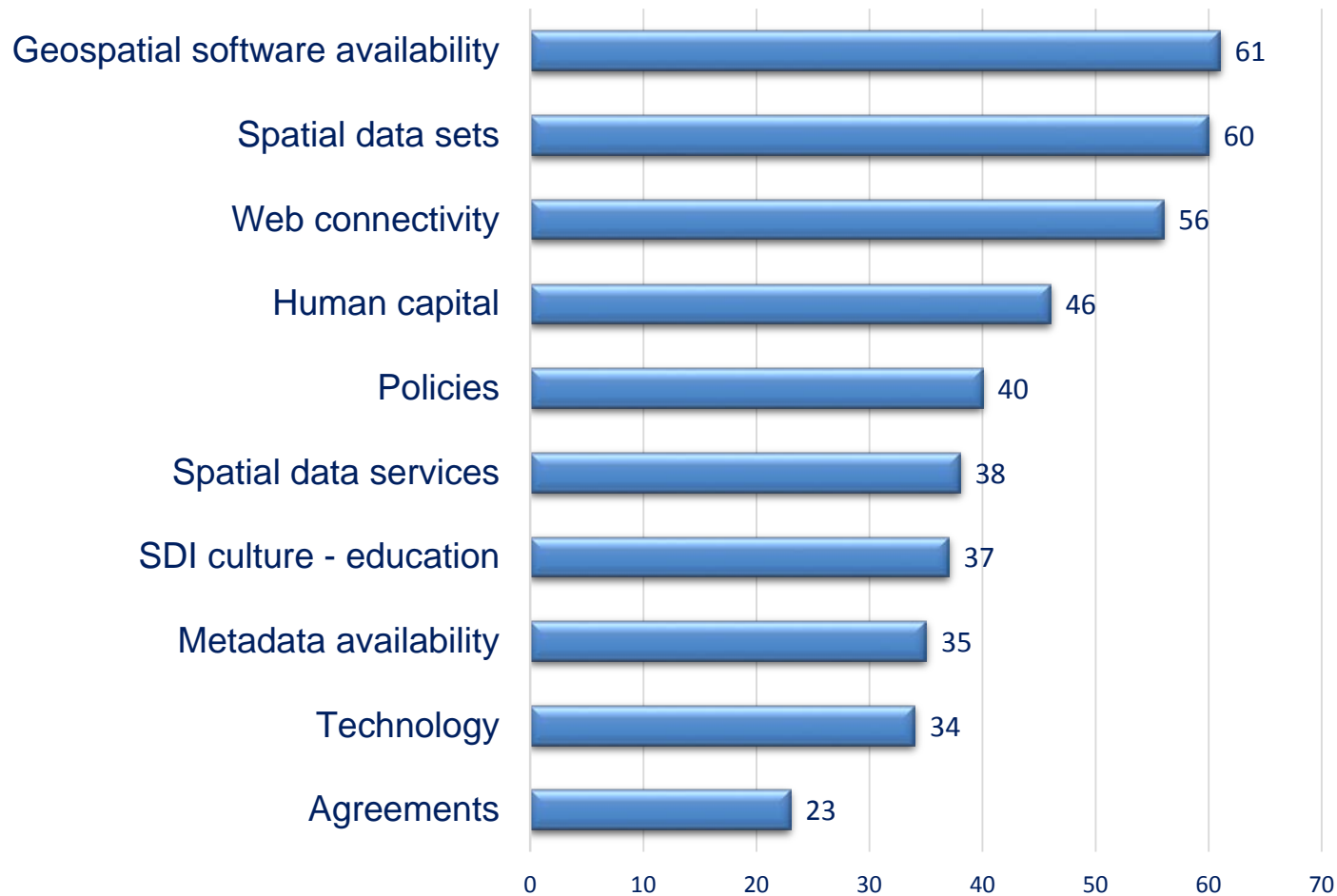
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Average value of gaps by country



Average value per element in the region



Diagnosis Results

COUNTRY	Spatial data sets	Spatial data services	Policies	Metadata availability	Human capital	Culture IDE - Education	Agreements	Web connectivity	Technology	Geospatial software availability
Bahamas	73.43	68.00	72.78	75.00	39.46	56.35	47.78	72.33	34.29	81.40
Barbados	33.56	17.11	26.67	51.00	63.25	36.15	11.11	43.33	44.00	55.60
Cuba	77.78	71.00	66.67	34.75	63.45	25.80	38.67	54.33	41.00	46.60
Dominica	47.33	29.67	24.44	0.00	80.88	10.00	14.44	26.67	33.00	54.20
Grenada	53.11	37.00	24.44	25.00	33.50	24.35	0.00	48.33	24.29	60.00
Guadeloupe	46.43	20.78	50.56	71.75	0.00	13.00	43.56	60.00	0.00	44.00
Guyana	55.22	68.78	45.63	29.00	37.50	48.56	24.89	61.00	75.71	86.60
Haití	78.11	39.89	46.67	44.00	64.00	39.00	16.11	40.00	54.86	56.80
Jamaica	85.67	75.44	62.22	74.00	66.00	52.65	69.22	56.00	50.86	77.80
Martinique	78.11	74.11	56.11	50.00	60.94	70.50	47.00	69.00	52.86	79.40
República Dominicana	75.56	20.33	22.22	25.00	18.56	25.00	16.33	53.33	21.43	30.00
San Kitts and the Nevis	60.44	15.44	30.56	43.00	29.00	39.85	34.33	67.33	11.00	56.80
Saint Lucia	38.33	44.44	34.44	25.00	49.23	34.23	0.00	50.00	27.29	62.20
St. Maarten	54.89	25.67	37.78	12.00	44.44	39.00	0.00	64.33	23.57	57.60
Saint Vincent and the Grenadines	54.11	13.67	15.56	5.00	52.69	37.65	0.00	59.33	28.57	46.60
Trinidad and Tobago	71.72	25.96	44.44	0.00	55.13	27.63	23.78	72.33	35.71	67.40
PROMEDIO POR REGIÓN	61.49	40.46	41.32	35.28	47.38	36.23	24.20	56.10	34.90	60.19
DESVIACIÓN ESTÁNDAR	15.92	23.24	17.16	24.92	20.50	15.73	20.86	12.47	18.39	15.30

As an example, to increase the low value in Agreements training required standards and share best practices for the use and distribution of information.

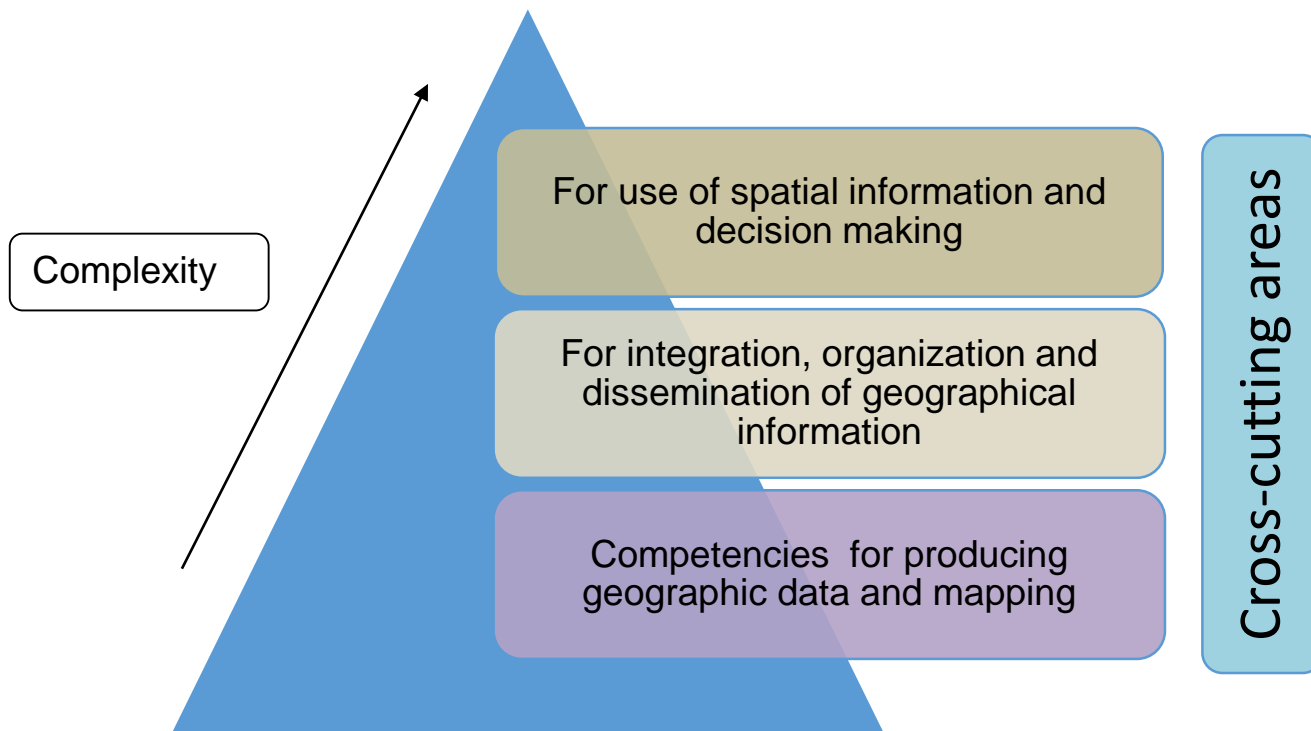
Lines of action

- **Agreements**: considers existing policies and standards, inter-institutional as well as international agreements and collaborations. It represents the largest gap in the region, which can be reduced through a program of education and training, especially on standards.
- The use of **metadata** is essential for proper management and use of information, therefore it is possible to propose a mechanism for its implementation in the countries of the region.
- As for **technology**, it is considered in two areas: improving the geodetic reference frame and renewing equipment (servers and computers).
- Regarding the **spatial data services** a geomatics solution for the management and dissemination of geographic information across network will be offered.
- The **culture SDI and education** gap will be reduced through a modular program of capacity building.

Training priorities by country

PAÍS	Geodesy	Cartography	Photogrammetry	Cadastral	Field Compilation	Remote Sensing	Photointerpretation	Geographic Databases	Geoportals and Geoservices	Geographic Information Systems	Geographic Metadata	Analysis and Use of Geographic Information	Digital Elevation Models	Geostatistics	Geographic Information Standards	Programming and Application Development
Antigua and Barbuda																
Bahamas	1	1	2	1	1	5	3	1	1	1	1	1	1	2	1	1
Barbados	3	1	2	1	1	3	3	1	1	1	2	1	2	3	1	1
Cuba	1	1	2	1	3	2	2	1	3	3	&	1	2	2	2	1
Dominica																1
Grenada	1	1	1	2	1	1	3	2	1	1	1	1	2	2	1	1
Guadeloupe																
Guyana	1	3	2	3	5	2	4	1	1	2	1	3	3	3	2	1
Haiti	2	4	1	2	1	4	3	3	1	5	2	2	5	1	1	1
Jamaica	3	1	1	3	3	2	2	2	2	4	3	3	3	2	3	1
Martinique	1	5	2	5	4	2	4	5	5	5	5	5	5	4	5	1
República Dominicana	1	&	1		&	&		1	1	1		1	&	&		1
Saint Kitts and Nevis	1	1	2	1	1	3	2	1	2	1	1	1	3	3	1	1
Saint Lucia	2	1	4	1	2	2	3	1	2	1	2	3	2	3	1	1
St. Maarten	4	1	5	&	2	4	5	2	2	1	2	1	3	3	2	1
Saint Vincent and the Grenadines	4	2	4	2	3	4	4	2	3	2	2	2	3	3	3	1
Suriname																
Trinidad and Tobago	1	1	1	1	3	2	1	2	1	3	1	4	1	5	2	1

2. Capacity building



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Classification of Capacities and Competencies for SDI

1. Production of Cartography and Geographic Data	2. Integration, Organization and Dissemination of Geographic Information	3. For Using Spatial Information and Decision Making
<p>Geodesy</p> <p>Cartography</p> <p>Remote Sensing</p> <p>Photointerpretation</p> <p>Photogrammetry</p> <p>Field Compilation</p> <p>Cadastre</p>	<p>Geographic Metadata</p> <p>Geographic Databases</p> <p>Geographic Information Systems</p> <p>Geoportals and Geoservices</p>	<p>Geostatistics</p> <p>Applications of Geographic Information Analysis and Use of Geographic Information</p>
4. Cross-cutting competences		
<p>Use and Application of Geographic Software</p> <p>Programming and Application Development</p> <p>Geographic Information Standards</p> <p>Policies</p>		

1. Cartography (two-tiered)

- General mapping
- Map Projections
- Scales, references and coordinate systems
- Data Models for digital cartographic information
- Digitization of maps
- Cartographic design
- Map reproduction & publishing

Scope

All 18 participating countries

Timeframe

November 2014 – February 2015



2. Geodesy (two-tiered)

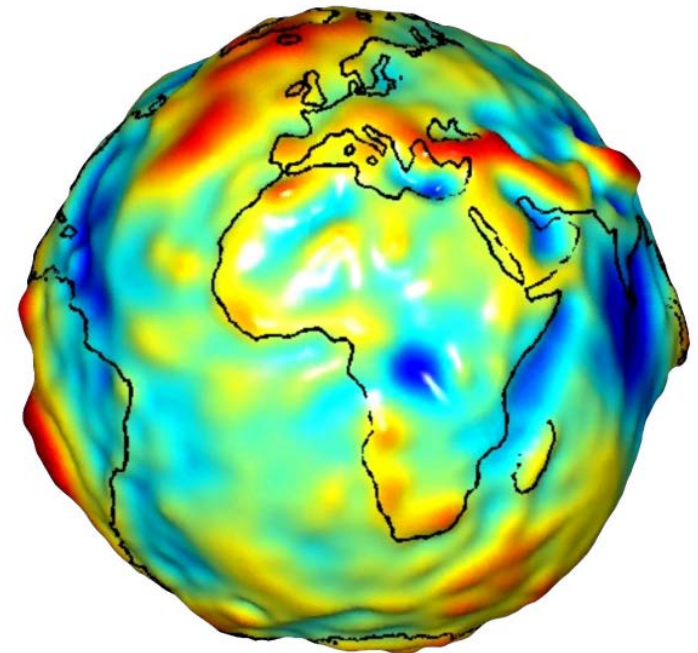
- Overview
- Geodetic Surveys
- Global Positioning System (GPS)

Scope

The 18 participating countries

Timeframe

November 2014 – February 2015



Tentative Schedule of Work

	2014			2015												2016												
CAPACITIES	O	N	D	E	F	M	A	M	J	J	A	S	O	N	D	E	F	M	A	M	J	J	A	S	O	N	D	
Geodesy (theoretical course)		■																										
Cartography	■																											
Photogrammetry					■																							
Geodesy (workshop)											■	■	■	■	■													
Cadastre							■																					
Field Compilation						■	■	■	■	■																		
Remote Sensing													■															
Photointerpretation	Esta capacidad se atiende con Percepción Remota																											
Geographic Databases									■																			
Geoportals and Geoservices										■	■																	
Geographic Information Systems	Esta capacidad se atiende con Uso y Aplicación de Software Geográfico																											
Geographic Metadata																	■											
Analysis and Use of Geographic Information																		■	■									
Digital Elevation Models																			■	■								
Geostatistics																							■					
Geographic Information Standards							■																					
Programming and Application Development	Esta capacidad se atiende como parte del proyecto Mapa Digital del Caribe																											
Use and Application of Geographic Software	■																											
Symbology																												
Strengthening Geodetic Network		■																										
Map of Land Cover																												
Digital Map of the Caribbean																												
Capacity Building high priority																												
Capacity Building medium priority																												



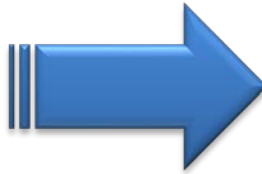
3. Infrastructure acquisition



GNSS continuous operating reference stations



Computer equipment



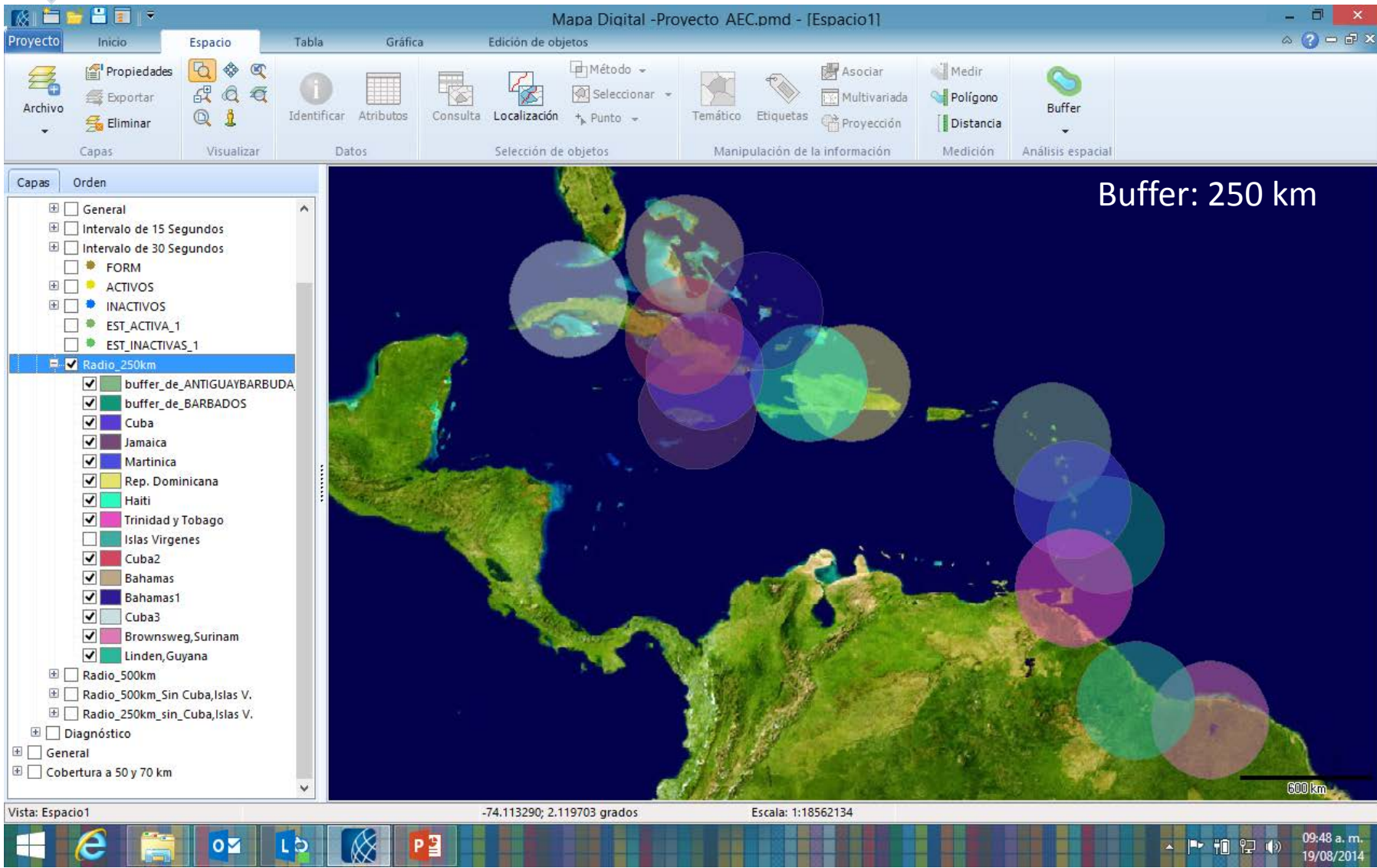
- Caribbean geodetic reference frame
- Promote interoperability and facilitate timely geospatial information use and exchange



Telecommunications

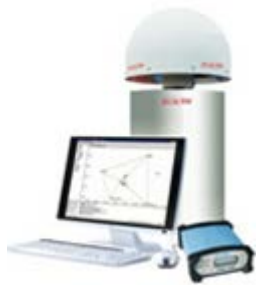


Potential scenario for a geodetic network (GNSS stations)



Geodetic kit for the región

14 GNSS Stations



36 satellite positioning kits
2 reception frequencies

(2 per country)

54 portable, single-frequency
satellite positioning kits

(3 per country)

Informatics kit per country

1 Server



3 work stations



Current actions

- We are building scenarios for the identification and positioning of the Geodetic Network in the region.
- We seek to establish contact with other organizations and institutions working on similar projects in the region in order to combine efforts and avoid duplications.
- We are evaluating the technological characteristics of the equipment for continuous monitoring stations (GNSS), in order to select the best features and lower cost.

Continuous Monitoring Stations (GNSS)

Main Stages

Description	Period	Deliverable	Visit
Definition of sites for the 15 stations	August – November 2014	Sites identified	N - A
Process of acquisition and distribution equipment. Fixed Stations Geodetic Survey Equipment	February - July 2015	Reviewed acceptance of equipment	N - A
Suitability of sites for stations	February – May 2015	Report	N - A
Meeting to define requirements and specifications	April – May 2015	Document	13 countries/1 person per country / 5 days (2 shuttles and 3 working days).
Training with service providers	August-September 2015.	Training manuals	Aguascalientes supplier
Training and installation of equipment Training for Geodetic land surveying	October-December 2015	Training report	13 countries / 1 person per country/ 6 days (2 shuttles and 4 training). 6 days by type of training

Potential collaborations on Capacity Building and Infrastructure-sharing

- National & regional initiatives
- Inter American Development Bank / World Bank
- SIRGAS
- GeoSUR
- Pan American Institute of Geography and History (IPGH)
- International Cartographic Association (ICA)
- COCONet project – UNAVCO-NSF
- Harte Research Institute - Texas A&M University
- MacDonald, Dettwiler and Associates Ltd (MDA), Canada

Potential for collaboration with existing projects



COCONet - UNAVCO Consortium

CONTINUOUSLY OPERATING CARIBBEAN
GPS OBSERVATIONAL NETWORK

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station coverage (2014)



UN-GGIM:Américas

COMITÉ REGIONAL DE LAS
NACIONES UNIDAS SOBRE
LA GESTIÓN GLOBAL
DE INFORMACIÓN GEOESPACIAL
PARA LAS AMÉRICAS



Association of Caribbean States
Asociación de Estados del Caribe
Association des Etats de la Caraïbe



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Geomatics Solution

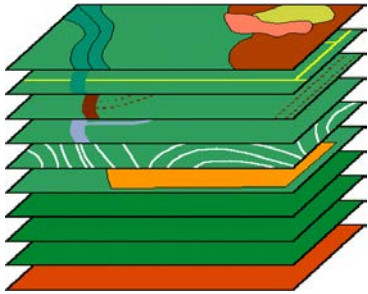


Goal: a Digital Map of the Caribbean

Geomatics Solution

Digital Map of the Caribbean

Digital Map of Mexico + GeoNode and other software



Spatial data infrastructures
Multiple layers:
Land cover and vegetation
classification System



Geospatial information systems

Sustainable Development Global Map:
Land Cover Classification System and
Cartography, Cadastre information, among
others



Map of Vegetation Cover and Land Use



4. Incorporation to the United Nations Initiative for Global Geospatial Information management (UN-GGIM)

UN-GGIM: Global Agenda

1. Global geodetic reference frame.
2. National institutional arrangements in GI management.
3. Global map for sustainable development and status of mapping in the world.
4. Legal and policy frameworks.
5. Establishment and implementation of standards.
6. Linking of geospatial information to statistics and other data.
7. Integration of land and marine GI.
8. Activities on GI within the United Nations system & the UN Post-2015 Agenda on Sustainable Development.
9. Development of a knowledge base for GI



Participation in UN-GGIM meetings

UN-GGIM 4
August 6-8, 2014
UNHQ, New York City





UN-GGIM: Americas

First Regional Committee Meeting

Mexico City, September 22-25, 2014,
alongside the Latin America Geospatial Forum



THANK YOU!



Maps source: http://www.geosur.info/map-viewer/index.html?config=config-rms-es.xml&lang=es_ES



UN-GGIM:Américas

COMITÉ REGIONAL DE LAS
NACIONES UNIDAS SOBRE
LA GESTIÓN GLOBAL
DE INFORMACIÓN GEOESPACIAL
PARA LAS AMÉRICAS



Association of Caribbean States
Asociación de Estados del Caribe
Association des Etats de la Caraïbe



SECRETARÍA DE
RELACIONES EXTERIORES



INSTITUTO NACIONAL
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