Incorporation of the Caribbean to the Geocentric Reference System for the Americas SIRGAS

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AGENCIA NACIONAL DE MINERÍA

SIRGAS and the Caribbean (1)

- Since 1996 DGFI has been processing data from permanent GNSS stations located in the Caribbean.

- 2001: 7th United Nations Regional Cartographic Conference for the Americas. New York (January 22 – 26): Recommends that the member countries of the Americas integrate their national geodetic reference systems into a reference system compatible to SIRGAS.

- 2002: SIRGAS changes it denomination from South America to The Americas.

- 2006: Workshop of the WG-I. Rio do Janeiro - Brazil (August 16 - 18): To establish a scientific service oriented to the development of ionospheric models based on GNSS for Latin America and the Caribbean.

- 2006: Technical Meeting. Heredia - Costa Rica (November 27 – 28): Modernization of the existing height systems of Latin America and the Caribbean.

SIRGAS and the Caribbean (2)

- 2007: SIRGAS Executive Committee Meeting. Bogotá - Colombia (June 7 – 8): WGII discussed the need to intensify the activities focused on the densification SIRGAS in the countries of Central America and the Caribbean, as well as its formal adoption.

- 2008 - 2009: SIRGAS Meeting. Buenos Aires (September 3). Release of VEMOS 2009, the Velocity Model for South America and the Caribbean)

- 2009: First SIRGAS School. Bogotá (July 13 - 17).

- 2010 – 2011: SIRGAS Meeting. Heredia (August 8 - 10). *Solución de Aumentación para el Caribe, Centro y Sur América (SACCSA)*. Under the umbrella of the Ionospheric Maps for SIRGAS initiative.

- 2012: SIRGAS Meeting. Concepción (October 24 - 31). The COCONet project is presented in SIRGAS; it is focused on improving the understanding of natural hazards in the Caribbean, Central America and the Northern Andes.

SIRGAS and the Caribbean (3)

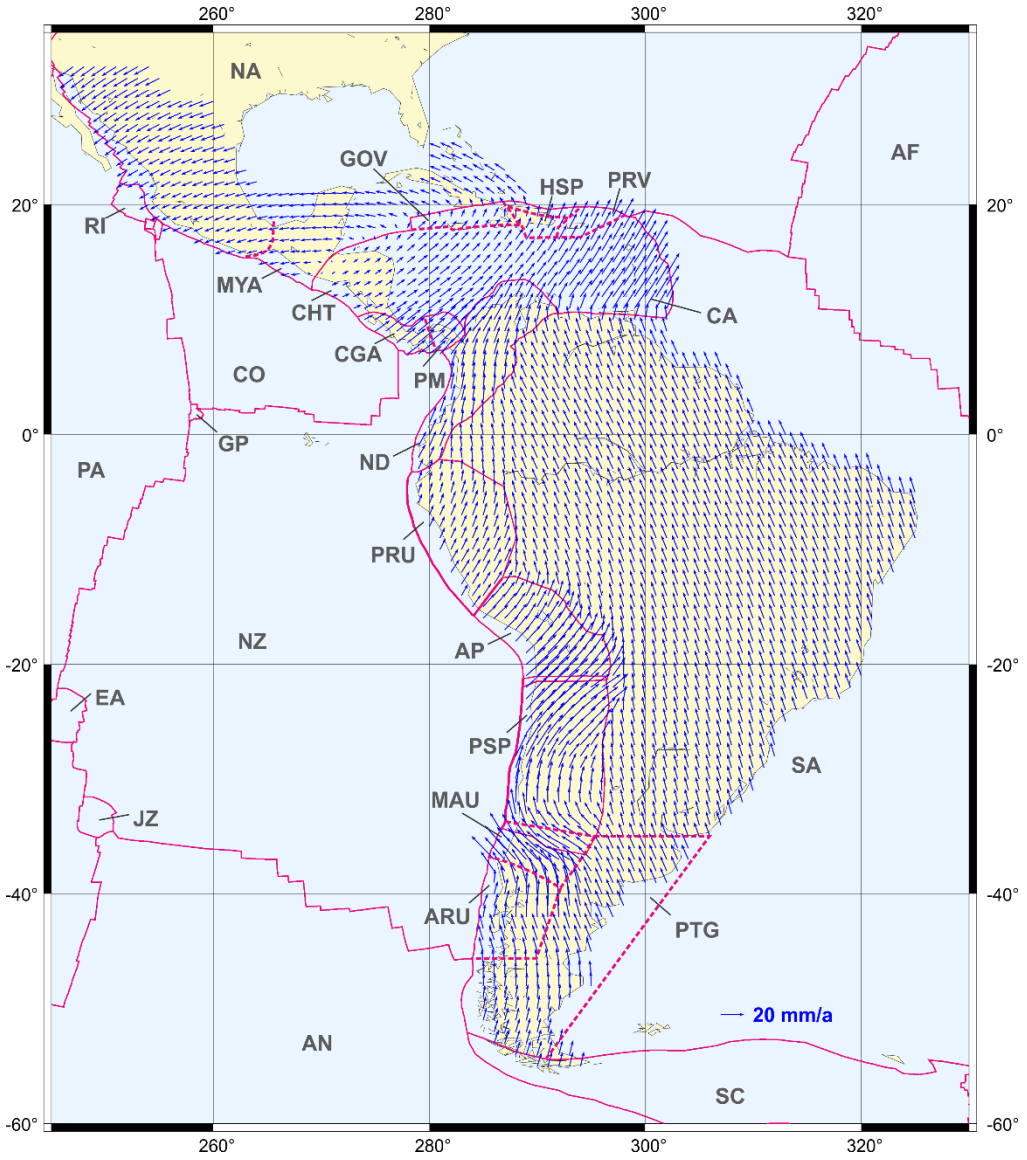
- 2013: SIRGAS Meeting. Panama City. IGNTG and SIRGAS School on Reference Systems, Crustal Deformation and Ionosphere Monitoring. Main objective: The Caribbean and Central America.

- The school was attended by 145 participants from 28 countries, among those from the Caribbean: Barbados, Colombia, Costa Rica, Dominican Republic, Guatemala, Honduras, Jamaica, Mexico, Monserrat-UK, Nicaragua, Panama, Puerto Rico, St. Lucia, Suriname, Trinidad and Tobago, Turks and Caicos Islands, USA, and Venezuela.

- 2015: SIRGAS Symposium and School held in Dominican Republic.

- 2015: A new version of the Velocity Model for SIRGAS: VEMOS is released.

VEMOS 2015: Velocity Model



- Sánchez L., Drewes H. (2016): VEMOS2015: Velocity and deformation model for Latin America and the Caribbean, doi: 10.1594/PANGAEA.863131, supplement to:

- Sánchez L. Drewes H. (2016): Crustal deformation and surface kinematics after the 2010 earthquakes in Latin America. Journal of Geodynamics, doi: 10.1016/j.jog.2016.06.005.

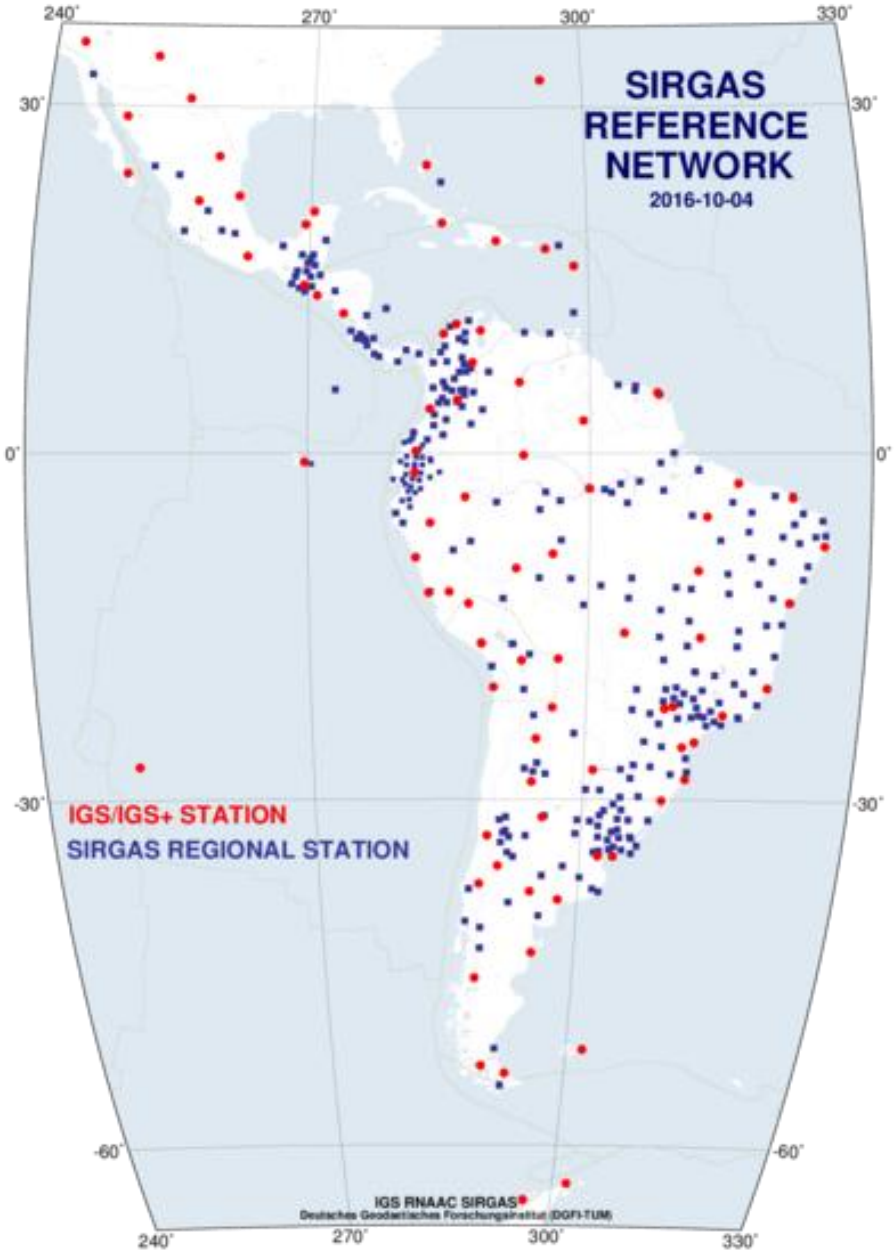
Invitation

“To invite the Caribbean countries to participate actively in geodetic and geophysical initiatives going on in the Central and South American region, in order to enable the use the acquired data for practice and science in their countries, and to promote geosciences.

This includes capacity building activities providing the basis for profound education and sustainable development as well as the establishment of international and interdisciplinary contacts to participate in research projects at regional and global scales”

(Brunini and Sanchez, 2013).

SIRGAS CON stations



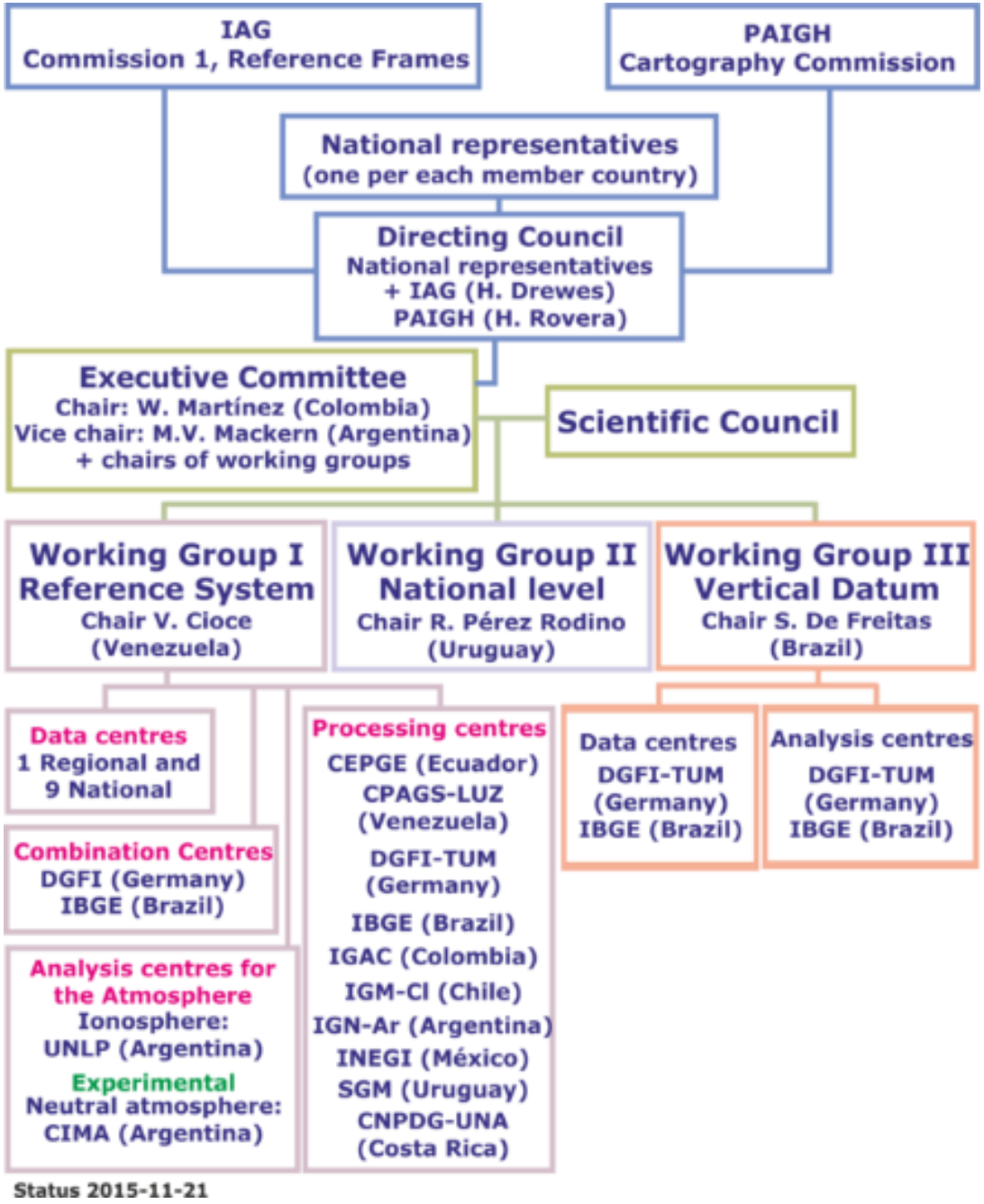
Topics on Integration (1)

- A Caribbean data processing center (University of the West Indies) is a mutual benefit the region and SIRGAS
- Personnel is the most important resource: trained and preferably stable (at all the involved intitutions)
- Data sharing policies and mechanisms must be defined and maintained
- An operational workflow has to be rigorously followed
- A 7/24 data availability scheme is fundamental
- Maintenance, communications and replacements are critical

Topics on Integration (2)

- SIRGAS is happy to share its experiences on data processing and combination at its centers.
- Also their best practices and the solutions to emerging issues by periodic meetings and permanent communications (technical and administrative).
- Is it recommended that Caribbean stations coordinates and velocities can be processed at two additional centers in order to compare and evaluate the quality of results.
- Caribbean network would be part of SIRGAS WG-I “Reference System”

SIRGAS WG-I Reference System



Benefits of Integration

- To share 23 years of experience at the continental level
- To extend a successful experience and a human cooperation network to the Caribbean
- Integration with IAG, GGOS.
- To participate in the periodic scientific events (Symposia and workshops), as well as research on related disciplines (ionosphere, troposphere, geodynamics, etc.)
- Improve the capacities in applications: land management, navigation, real time positioning, etc.
- Active participation in the ITRS, ITRF, **GGRF** definitions
- To be part in the new International Height Reference System (IHRS)

Integration to GGRF

"The GGRF is intended to support the increasing demand for positioning, navigation, timing, mapping, and geoscience applications.

The GGRF is essential for a reliable determination of changes in the Earth system, for natural disaster management, for monitoring sea-level rise and climate change, and to provide accurate information for decision-makers. Furthermore, due to globalization and interoperability requirements, there is a growing demand for spatial data infrastructure.

Precise spatial information is needed in many areas of benefit to society, including transportation, construction, infrastructure, process control, surveying and mapping, and Earth sciences, and is especially important for monitoring progress towards the UN's Sustainable Development Goals".

(Description of the Global Geodetic Reference Frame, IAG, 2016)

“Thank you, very much, and remember:

www.sirgas.org

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