



# FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting  
Our World,  
Conquering  
New Frontiers

## Geodetic Reference Frame for the Americas (GRFA)

The Implementation of the Global Geodetic  
Reference Frame (GGRF) in the Americas  
Working Group GRFA

Dana J. Caccamise II, SIRGAS USA Representative



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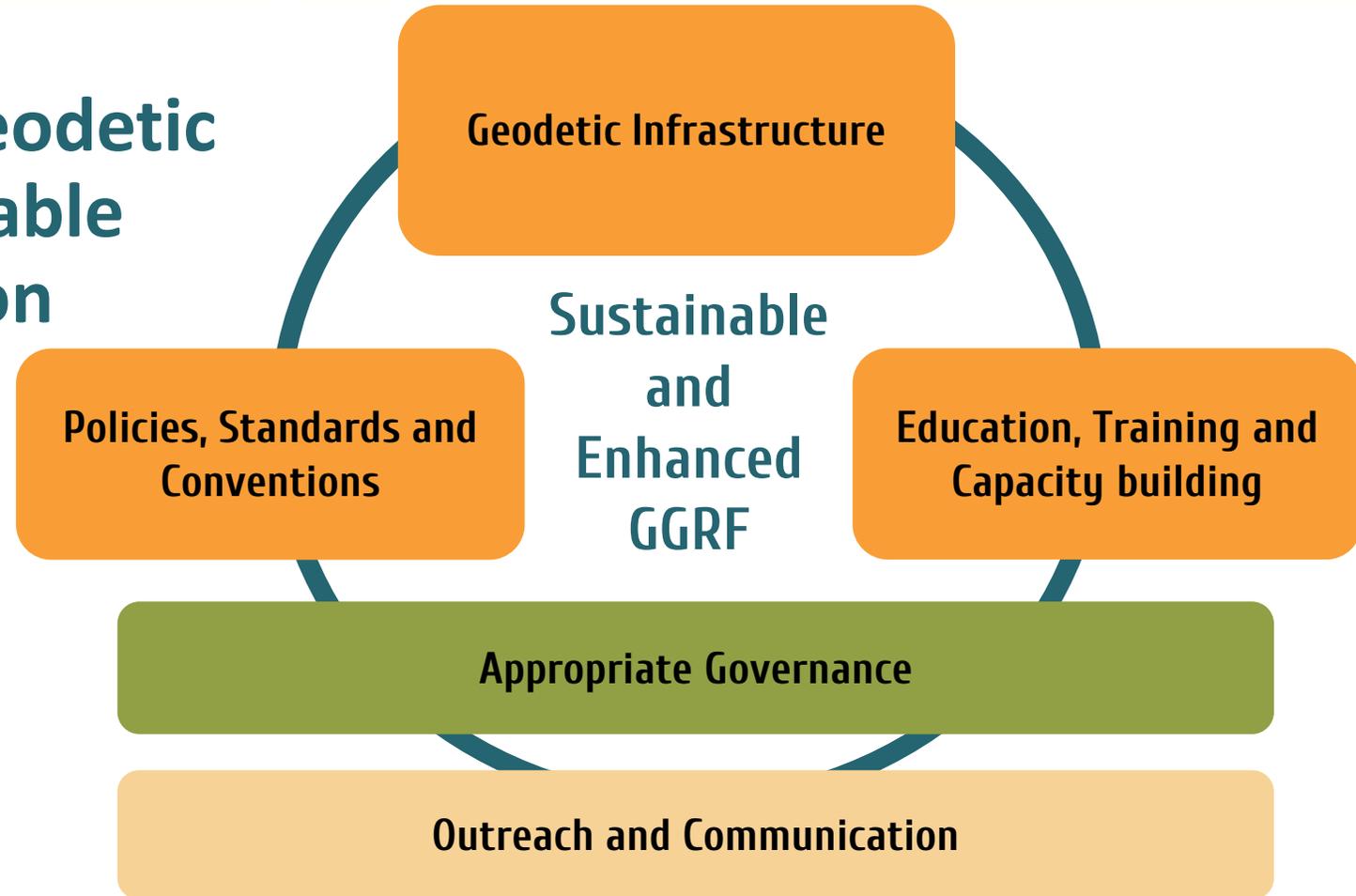


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## “Road Map for the Global Geodetic Reference Frame for Sustainable Development Implementation Plan”

IN-CCM Eighth Session,  
New York, New York, USA, 1-3 August 2018



## Implementing the Global Geodetic Reference Frame (GGRF) in the Americas for sustainable development.

### Strategic decision-makers

**GRFA WG UN:GGIM–Americas**

Promotes and provides policies and the appropriate governance, plus outreach and communication



### Science

**SIRGAS**

Regional geodetic infrastructure following and applying International Association of Geodesy (IAG) standards, recommendations, products, and services

## What is SIRGAS?

- SIRGAS is a **non-profit organization** based on the voluntary contribution of scientific organizations and the member states' geodetic, cartographic, or geographic national agencies.
- SIRGAS was **established in 1993** to replace (or update) the classic geodetic datums with a geocentric reference frame called SIRGAS: Geodetic Reference System for the Americas.
- This **purpose was extended in 1998** to determine a vertical reference system tied to the Earth's gravity field.

*Find out more:*

<https://sirgas.ipgh.org/>

## What is SIRGAS? continued

SIRGAS is part of the International Association of Geodesy (IAG), Commission 1: Reference Frames – Subcommission 1.3: Regional Reference Frames.

SIRGAS is responsible for Subcommission 1.3b: Regional Reference Frame for South and Central America and Subcommission; 1.3c for the North American Reference Frame; Subcommission 2.4b Gravity and Geoid in South America; Subcommission 2.4c Gravity and Geoid in North and Central America.

SIRGAS is a science advisory organization at the working group level under the Cartography Commission of the Pan American Institute of Geography and History (PAIGH).

IAG (Sub-Commission 1.3b&c and 2.4b&c)



Pan American Institute of Geography and History (PAIGH)

Working Group for the Geodetic Reference Frame for the Americas (GRFA) – UN:GGIM–Americas



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International Assoc.  
of Geodesy



Chile



Guatemala



Paraguay



Pan American Institute  
of Geography and History



Colombia



Guyana



Peru



Argentina



Costa Rica



Honduras



Dominican Republic



Bolivia



Ecuador



Mexico



French Overseas  
Territories



Brazil



El Salvador



Nicaragua



Uruguay



Canada



United States  
of America



Panama



Venezuela

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## SIRGAS Directing Council

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## SIRGAS Organizational Structure

Elections are currently being held for President and Vice President.

### Executive Committee

#### President

- Sonia Maria Alves Costa (IBGE, Brazil)

#### Vicepresident

- Federico Arpe (IGN, Argentina)

#### Presidents of the Working Groups (WG)

- WG I: José Antonio Tarrío Mosquera (USACH, Chile)
- WG II: Demian David Gómez (OSU, USA)
- WG III: Gabriel do Nascimento Guimarães (UFU, Brazil)

### Scientific Council

#### Members

- Denizar Blitzkow (USP, Brazil)
- Claudio Brunini (CONICET, Argentina)
- Hermann Drewes (IAG/DGFI-TUM, Germany)
- Silvio Rogerio Correia de Freitas (UFPR, Brazil)
- Melvin Jesús Hoyer Romero (LUZ, Venezuela)
- Virginia Mackern (UNCUYO/UMAZA, Argentina)
- Laura Sánchez (DGFI-TUM, Germany)
- Luis Paulo Souto Fortes (IME, Brasil)

## SIRGAS structure

The SIRGAS Working Groups (WG) are responsible for carrying out the scientific and technical activities (approved by the Directive Council) necessary to fulfill the SIRGAS mission.

Three working groups coordinate the SIRGAS activities.



## WG I – Establishment and maintenance of the Geocentric Reference Frame for the Americas and the Caribbean, for which the main objectives are the following:

- a) Coordinate the **implementation and maintenance of the geocentric reference frame.**
- b) Coordinate activities at the **data centers and the analyses by the Working Group.**
- c) Develop the **tools, applications, technical guides, and training linked to the activities performed by this Working Group.**

Chair: Dr. José Antonio Tarrío Mosquera

Analysis Coordinator: Ing. Jesarella Inzunza Muñoz

Network Coordinator: Msc. Alberto Luis da Silva

Real-Time Network Coordinator: Ing. Roberto Pérez Rodino

*Find out more:*

<https://sirgas.ipgh.org/en/organization/working-groups/working-group-i/>

## WG II – National Integration to the SIRGAS Reference Frame, for which the main objectives are:

- a) Encourage the integration of the pre-existing geodetic networks of the Member States to SIRGAS.
- b) Develop the tools, applications, technical guides, and training for implementing the SIRGAS reference frames.

Chair: Dr. Demián D. Gómez

Regional Coordinators

North America Coordinator: Dr. Dana J. Caccamise II

Central America Coordinator: Ing. Álvaro Álvarez

South America Coordinator: Dr. Virginia Mackern

Geodetic Infrastructure Coordinator: Msc. Mara Anabel Figueroa Berrocá

National Reference Frames Coordinator: Msc. Franco Sebastián Sobrero

*Find out more:*

<https://sirgas.ipgh.org/en/organization/working-groups/working-group-ii/>

## WG III - Definition, establishment and maintenance of the Vertical Datum for the Americas and the Caribbean, for which the main objectives are the following:

- a) Define, maintain and update a **unified system of physical heights**.
- b) Coordinate the **implementation of a network of stations linked to the international system for heights**.
- c) Develop and update a **model of a gravimetric, high-resolution geoid**.
- d) Establish and maintain an **absolute gravity network**.
- e) Develop the tools, applications, technical guides and training linked to the activities performed by this Working Group.

Chair: Dr. Gabriel do Nascimento Guimarães

Geopotential Models Coordinator: Dr. Ayelen Pereira

Gravimetric Reference Coordinator: Lic. Ezequiel Antokoletz

Geoid Models Coordinator: Ana Cristina O. C. de Matos

Leveling Networks Coordinator: Dr. José Luis Carrión Sánchez

*Find out more:*

<https://sirgas.ipgh.org/en/organization/working-groups/working-group-iii/>

## UNGGIM Americas: Session 9, Santiago, Chile - November 2022

Recognized the effort made by SIRGAS and the Member States to implement the GGRF in their respective countries, the training and joint work of all the countries' professionals and technicians to maintain the most up-to-date geodetic reference frame for the Americas.

Discussions included the **status of implementation of the GGRF in the Americas** and the importance that countries implement UN General Assembly Resolution 69/266 "A global geodetic reference framework for sustainable development" (26 February 2015).

**Support efforts to link and align their national geodetic infrastructures** towards the International Terrestrial Reference Frame (ITRF), International Height Reference Frame (IHRF), and International Terrestrial Gravity Reference Frame (ITGRF), to ensure the development, sustainability, and promotion of the GGRF.

**Encourage the countries of the region to increase the incorporation of GNSS stations into the SIRGAS continuous operation reference station network**, as well as height and gravity stations throughout Latin America and the Caribbean, to achieve the implementation of the GGRF in all the Member States of the Americas.

**The Ninth Session also highlighted decisions 11/104 and 12/106** of the eleventh and twelfth session of UN-GGIM, respectively, related to establishing UN-GGCE towards a stable and sustainable GGRF.

## UNGGIM Americas: Session 9, Santiago, Chile - November 2022

### Resolution 1:

Advance on implementing the United Nations (UN) General Assembly Resolution on the **Global Geodetic Reference Frame (UN-GGRF)** for Sustainable Development in the Americas and Caribbean region.

**Develop geodetic capabilities within the Americas and the Caribbean** for the establishment and maintenance of a high-precision geocentric network as densification of the ITRF, IHRF, and ITGRF on the continent;

Urge the Member States to make the necessary efforts to **link and align their national geodetic infrastructures** towards the ITRF, IHRF, and ITGRF, to ensure the development, sustainability and promotion of the GGRF;

**Support the countries of the region to include GNSS stations in the SIRGAS** continuous operating network, as well as height and gravity stations throughout the Americas and the Caribbean, with the objective of GGRF implementation in all member states;

### Resolution 2:

Support from the American Nations to establish the **Global Geodesic Center of Excellence (GGCE)** in Bonn, Germany.

Urge the Member States and relevant regional organizations to support strengthening the **United Nations Global Geodetic Center of Excellence (GGCE)**, located in Bonn, Germany, and participate to ensure the exchange of experiences and best practices to facilitate the implementation of the GGRF globally.

July 3 to 7, 2023

Coming soon..!

## 8th SIRGAS School on Reference System



SIRGAS  
www.sirgas.org



The 8th SIRGAS School on "Reference System" will be held from July 3 to 7, 2023. The School will occur at the University of Costa Rica and the National University of Costa Rica, in San José and Heredia, Costa Rica. In this opportunity, **attendance will be in person**, and the lectures will be in Spanish only.

By the end of the course, participants should be able to:

Know what **metadata** is necessary to process GNSS.

Understand the details of **GNSS processing**.

Set up a **GAMIT/BERNESE** process with your own data.

Use **GLOBK/BERNESE** to perform daily and weekly combinations.

Densify **IGS20** using the sample data.

Understand the theory taught during the first two and a half days.

Location:

*300 attendees for theory and 45 for practical*

School of Topography, Cadastre and Geodesy, Faculty of Exact and Natural Sciences, National University of Costa Rica, Theoretical classes.

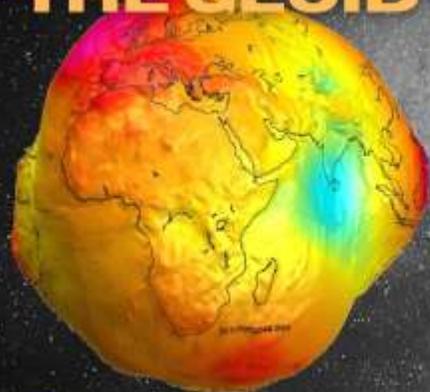
<https://maps.app.goo.gl/yVPE2WdB6pEe6fyi6>

School of Topographic Engineering, School of Engineering, University of Costa Rica, Practical classes, GAMIT/GLOBK and Bernese.

<https://maps.app.goo.gl/sZFH2gkvuBHEEwyY7>

From November 13 to 17, 2023

## XIV - INTERNATIONAL SCHOOL OF "THE DETERMINATION AND USE OF THE GEOID"



Intended for graduates, scientists, employees of national mapping agencies and students, to calculate and use gravimetric geoids in scientific and technical applications of Geodesy.

Registration until July 20



International Service for the Geoid



 Instituto Geográfico Nacional, Buenos Aires, Argentina

The School will be held in person and taught only in English.

In addition, the full-week intensive Geoid School will provide an excellent opportunity to familiarize students with the latest geoid determination development and improve international contacts and collaborations among scientists dealing with gravity field modeling.

A maximum number of 30 attendees can be accepted. Registration will be open from March 20 to July 20.

Complete the pre-registration form at the following link:

<https://forms.gle/HYsAdAuJ4PuzvNXH9>

Find out more:

<https://sirgas.ipgh.org/en/capacitaciones-2023/14th-international-school-on-the-determination-and-use-of-the-geoid/>



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SIRGAS Symposium, Santiago, Chile  
November 2022



FIG Reference Frames in Practice  
Technical Seminar  
Held after the SIRGAS meeting

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¡Gracias!  
Thank you!  
Muito obrigado!



[www.sirgas.org](http://www.sirgas.org)

