SC 1.3: Regional Reference Frames
SC 1.3b: South and Central America

J.A. Tarrío[1], D. Gómez[2],
[1]Universidad de Santiago de Chile, Chile, [2] The Ohio State University,

IAG 2021 Beijing June 28–July 2 2021
Geodesy for a sustainable Earth
Scientific Assembly of the International Association of Geodesy
Beijing • June 28-July 2, 2021

SIRGAS' objectives

SIRGAS, as organization, takes care of realizing and maintaining a tri-dimensional geocentric reference system for Americas, including a unified gravity field-related vertical reference system with global consistency.

This objective includes:

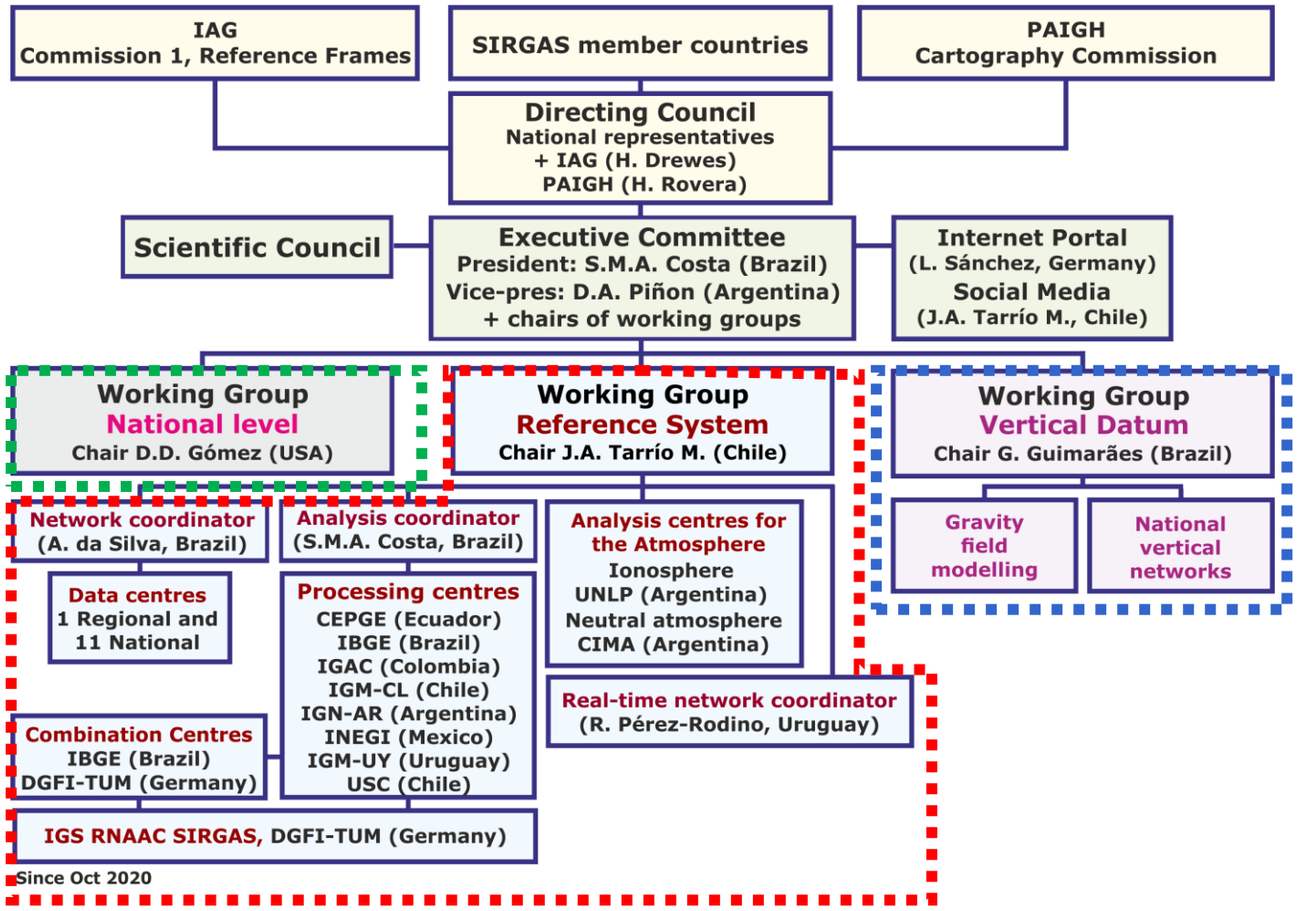
a) Definition of a tridimensional Cartesian geocentric reference system.

b) Realization and maintenance of a Cartesian geocentric reference frame (network of stations with high-precise geocentric coordinates *[X, Y, Z]* and their variation with time *[V_X, V_Y ,V_Z])*. *José Antonio Tarrío*

c) Densification of the continental reference frame in the SIRGAS member countries, as well as the promotion and support of its utilization in practical and scientific applications. *Demián Gómez*

d) Definition and realization of a unified vertical reference system based on the consistent combination of physical and geometric heights, including the determination of the reference frame variations with time. *Gabriel Guimaraes*

SIRGAS is a non-profit organisation and its activities are possible thanks the voluntary contribution of more than 50 Latin American agencies and universities



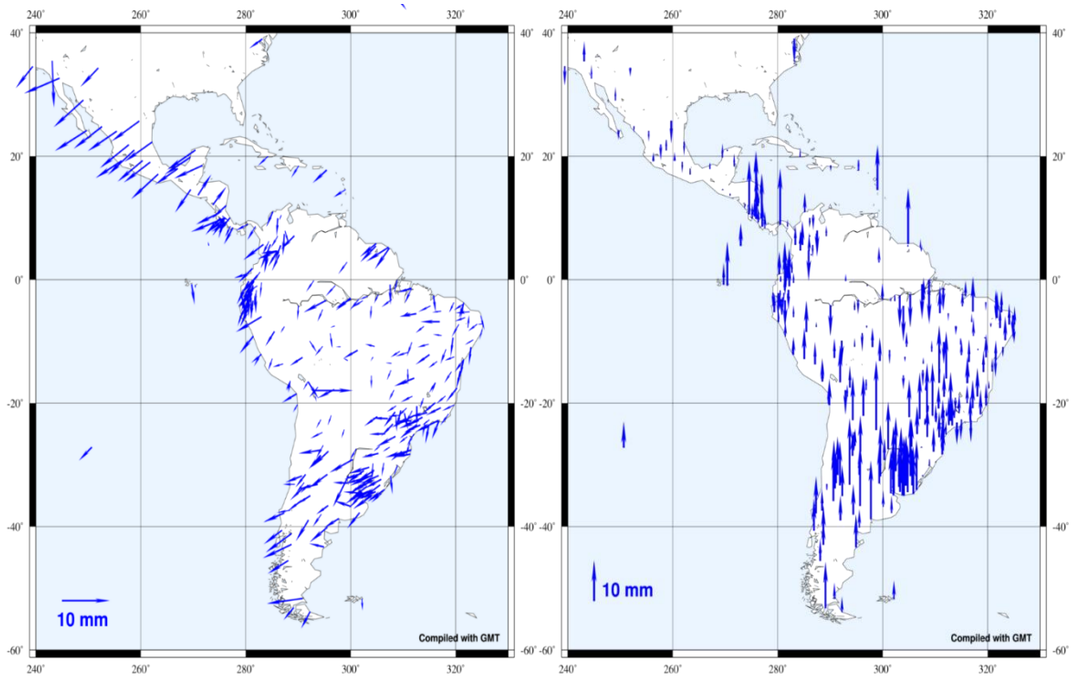
Source: www.sirgas.org

Recent achievements

a) Reprocessing of the SIRGAS reference network based on the ITRF2014 (IGS14 / IGb14)

Motivation

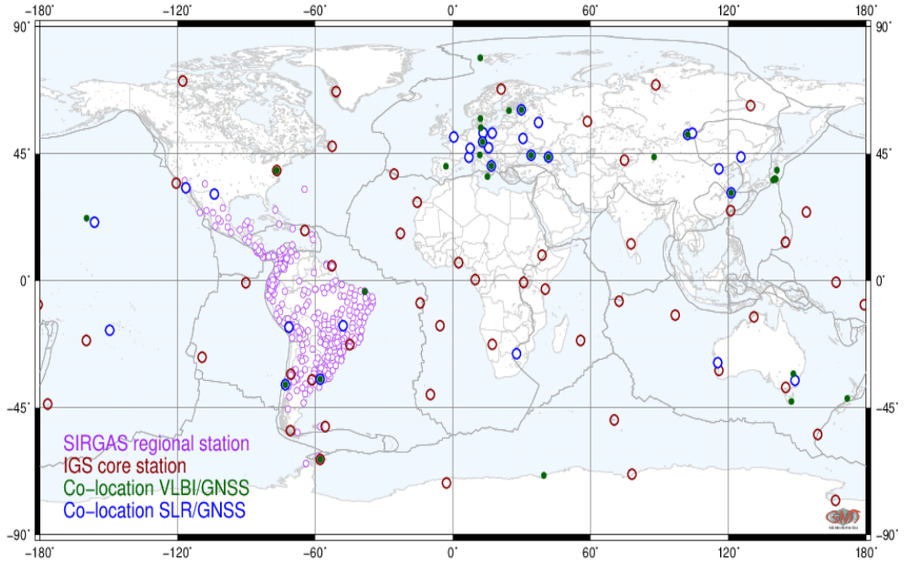
Need to update the SIRGAS reference frame to the new ITRF.



Changes (artificial) caused by the change from ITRF2008 to ITRF2014..
Sanchez et a., 2020

Currently Situation

Once the analysis of the time series is finished, the determination (adjustment) of weekly coordinates will begin in the IGb14 reference frame. A comprehensive multi-year solution will be calculated (2000.0 to 2020.5) and the results will be published on www.sirgas. org and ftp.sirgas.org.



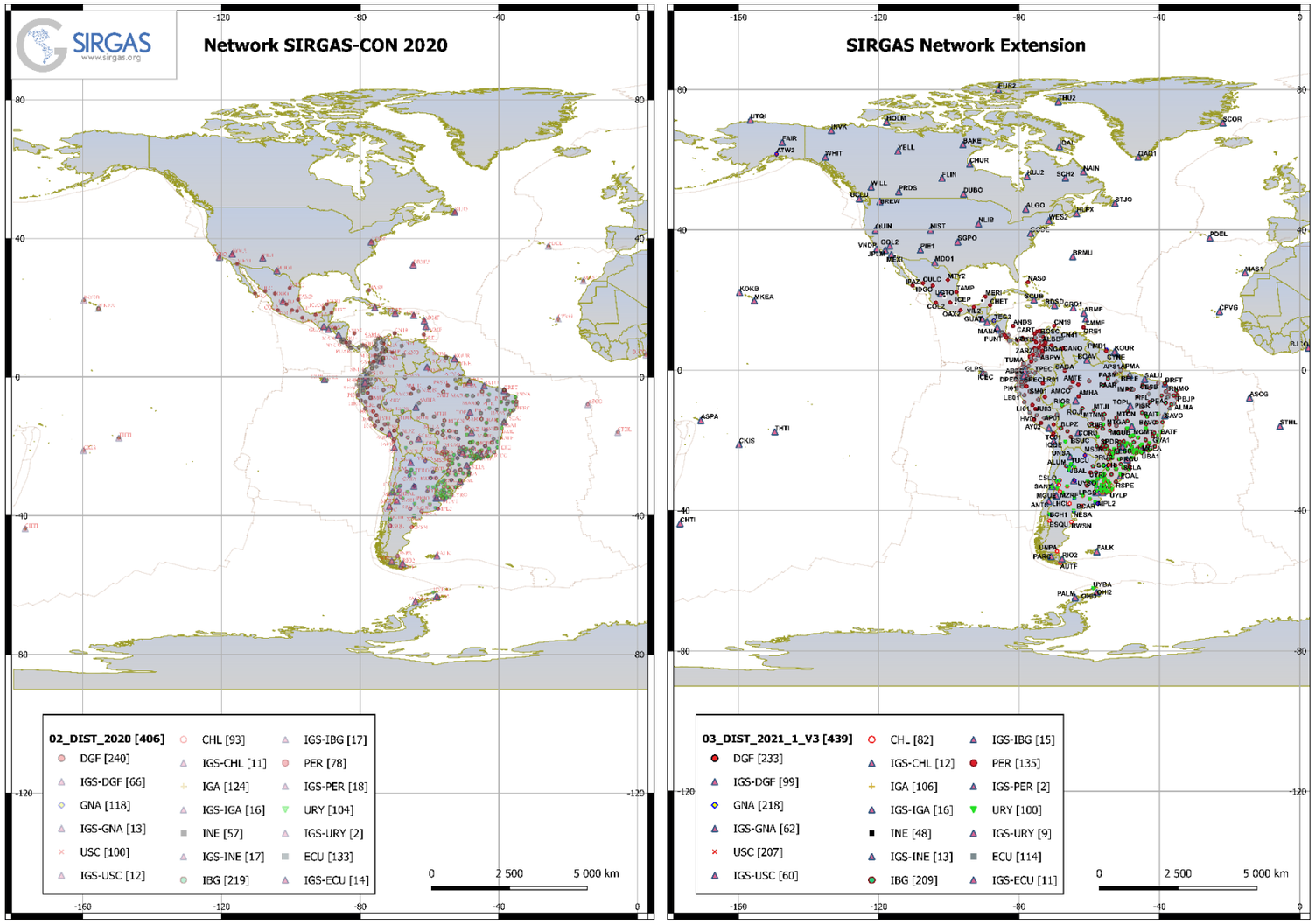
Stations included in the reprocessing of the SIRGAS network using the IGS14 / IGb14 (ITRF2014) as a reference framework. Sanchez et a., 2020

More details in *Sánchez L.* (2020). **SIRGAS Regional Network Associate Analysis Centre Technical Report 2019**. Villiger A., Dach R. (eds.) International GNSS Service: Technical Report 2019, 125-136, 10.7892/BORIS.144003.

Recent achievements

b) Extension of the SIRGAS network

At the request of NGS(National Geodetic Survey) and to help support GRFA activities (Geodetic Reference Frame for Americas) working group, established in the framework of the Regional Committee of the United Nations on Global Geospatial Information Management for the Americas (UN-GGIM: Americas), since GPS week 2151, the SIRGAS network was extended to North América



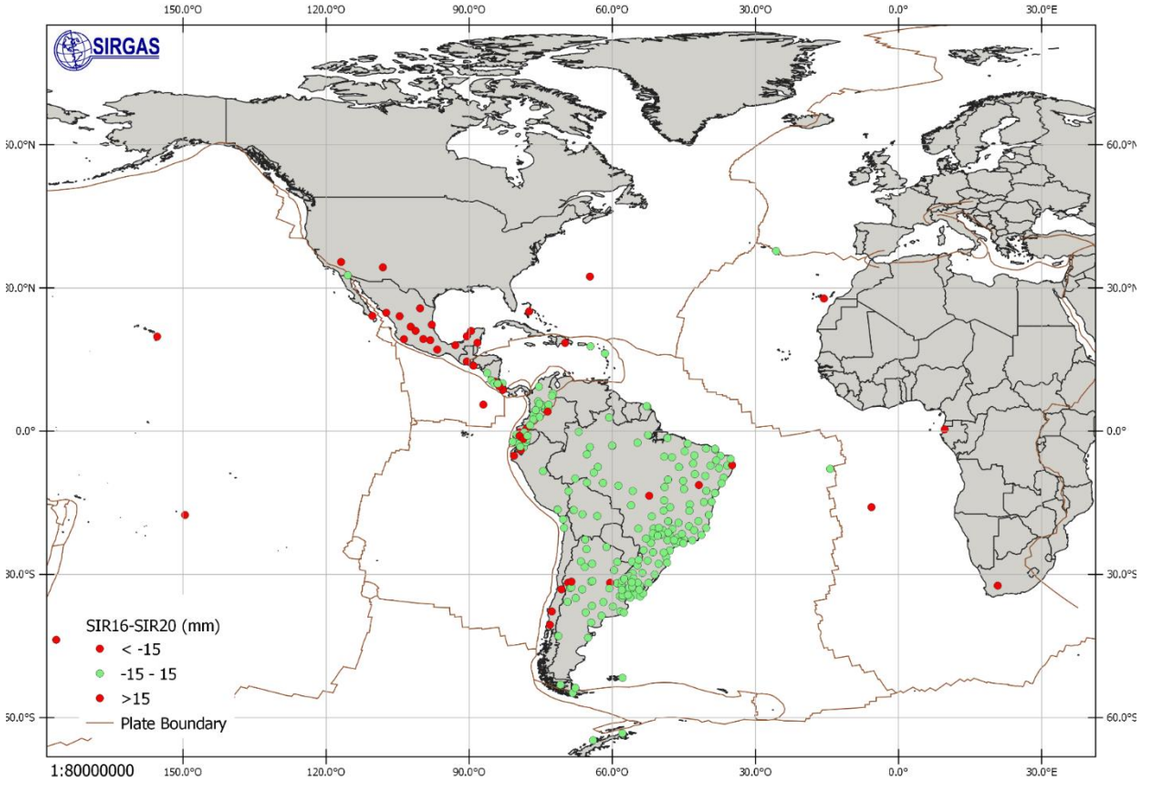
Source: SIRGAS-WG I Meeting. Tarrío et al. 2020

Current challenges

Main challenges in SIRGAS today

- To make the participation of the countries bigger in the CARIGEO area
- Add more stations to the SIRGASCON network and implement 3 or more analysis center: PER, CRI
- Calculation of transformation parameters between differents realization of SIRGAS (Ongoing effort between WG 1 and WG 2)
- To continue with the training courses by WG 1, WG 2 and WG 3

Differences between SIR16 and SIR20



Source: Tarrío et al. 2020 SIRGAS-WG I Meeting