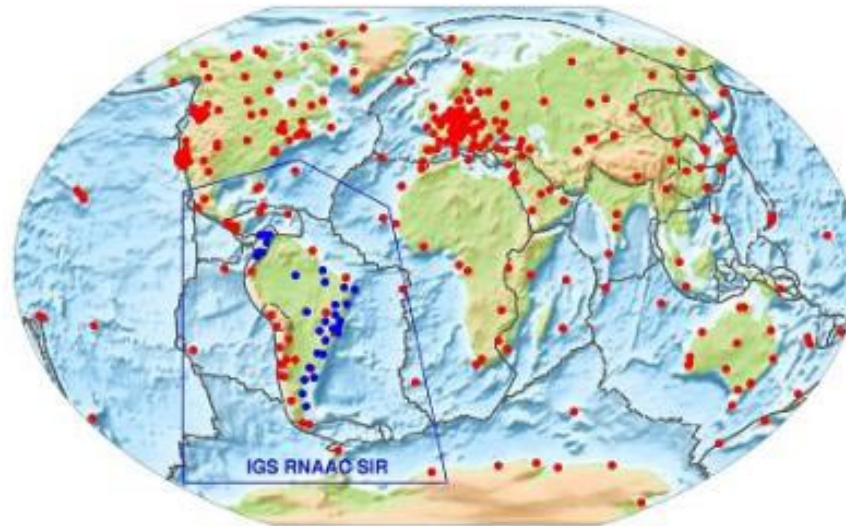


**El centro asociado de análisis del IGS para la
red regional SIRGAS
IGS Regional Network Associate Analysis
Centre for SIRGAS (RNAAC SIR)**



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The IGS Regional Network Associate Analysis Center for SIRGAS (IGS RNAAC SIR)

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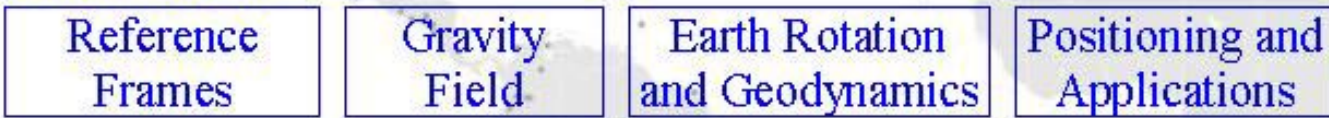


Introduction

- Since June 30, 1996 DGFI is in charge of processing the IGS RNAAC for South America
- Weekly coordinate solutions are generated on a regular basis to be included in the global combinations
- Since 2000 yearly DGFI solutions for coordinates and velocities are produced.
- The South American network covers several seismically very active regions. Thus,
- The network sites are exposed to seismic events

International Association of Geodesy (IAG)

Commissions



- Sub-Commissions - Study Groups - Commission Projects

Inter-Commission Committees



Services

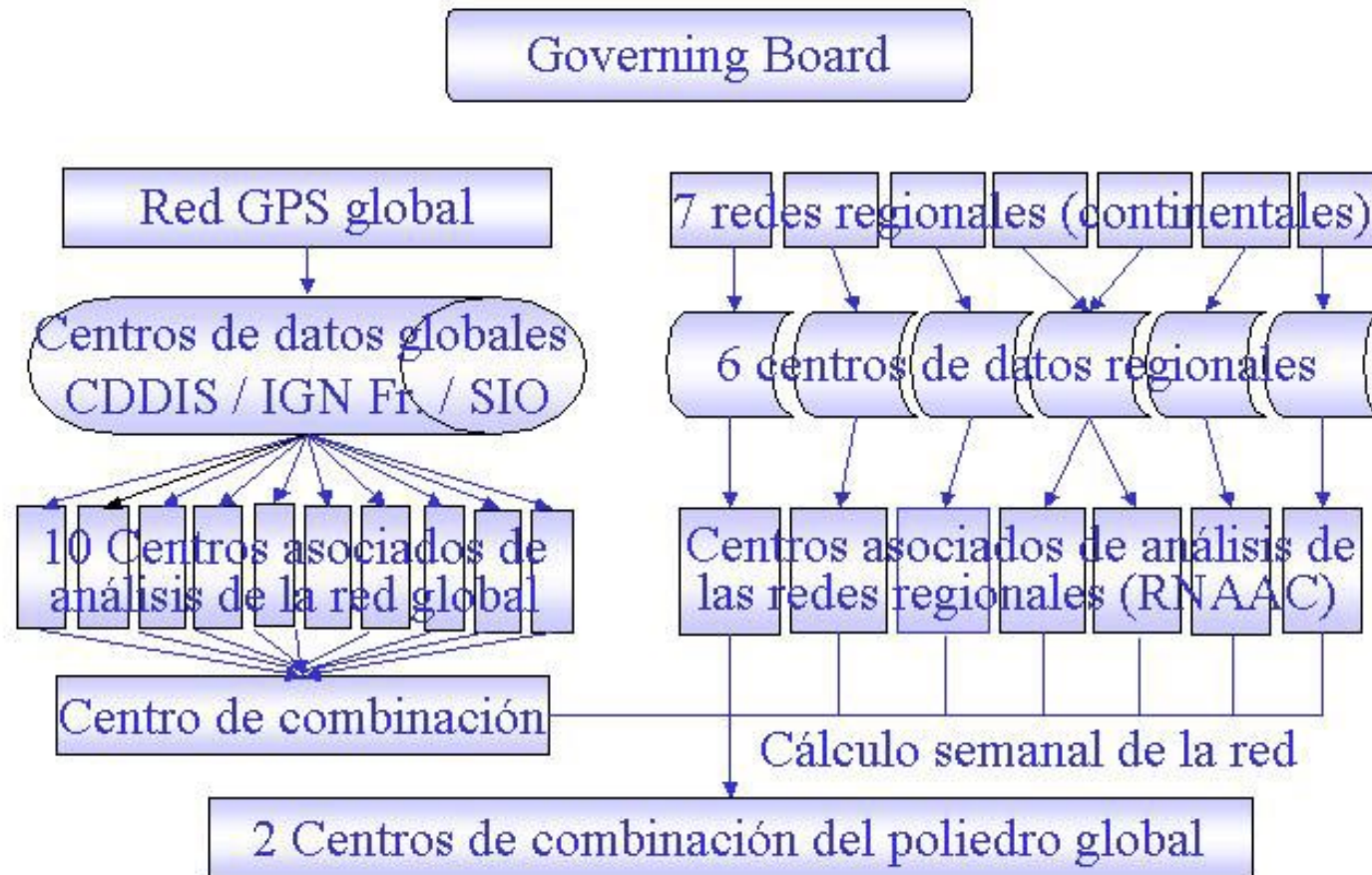


IAG Project

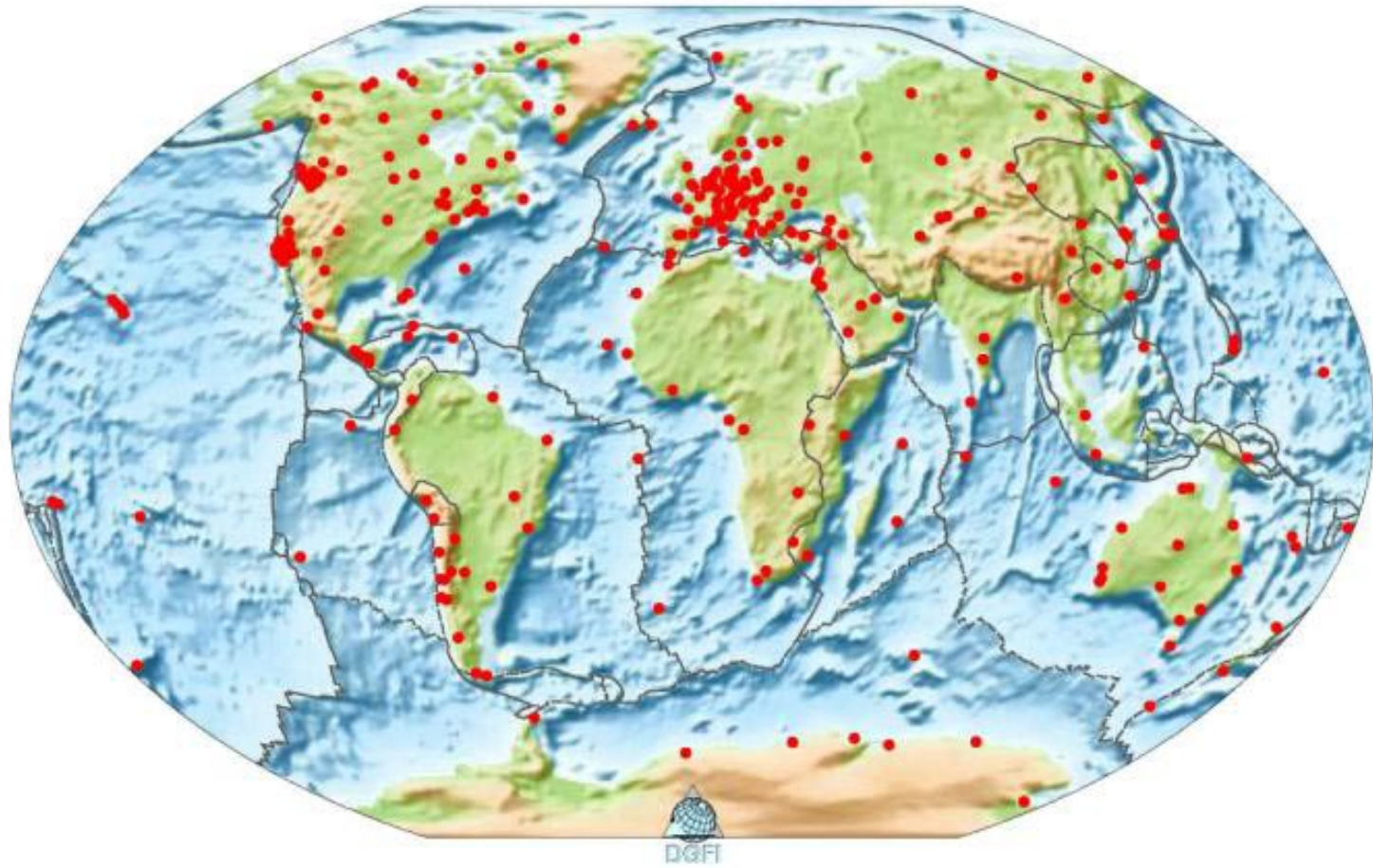


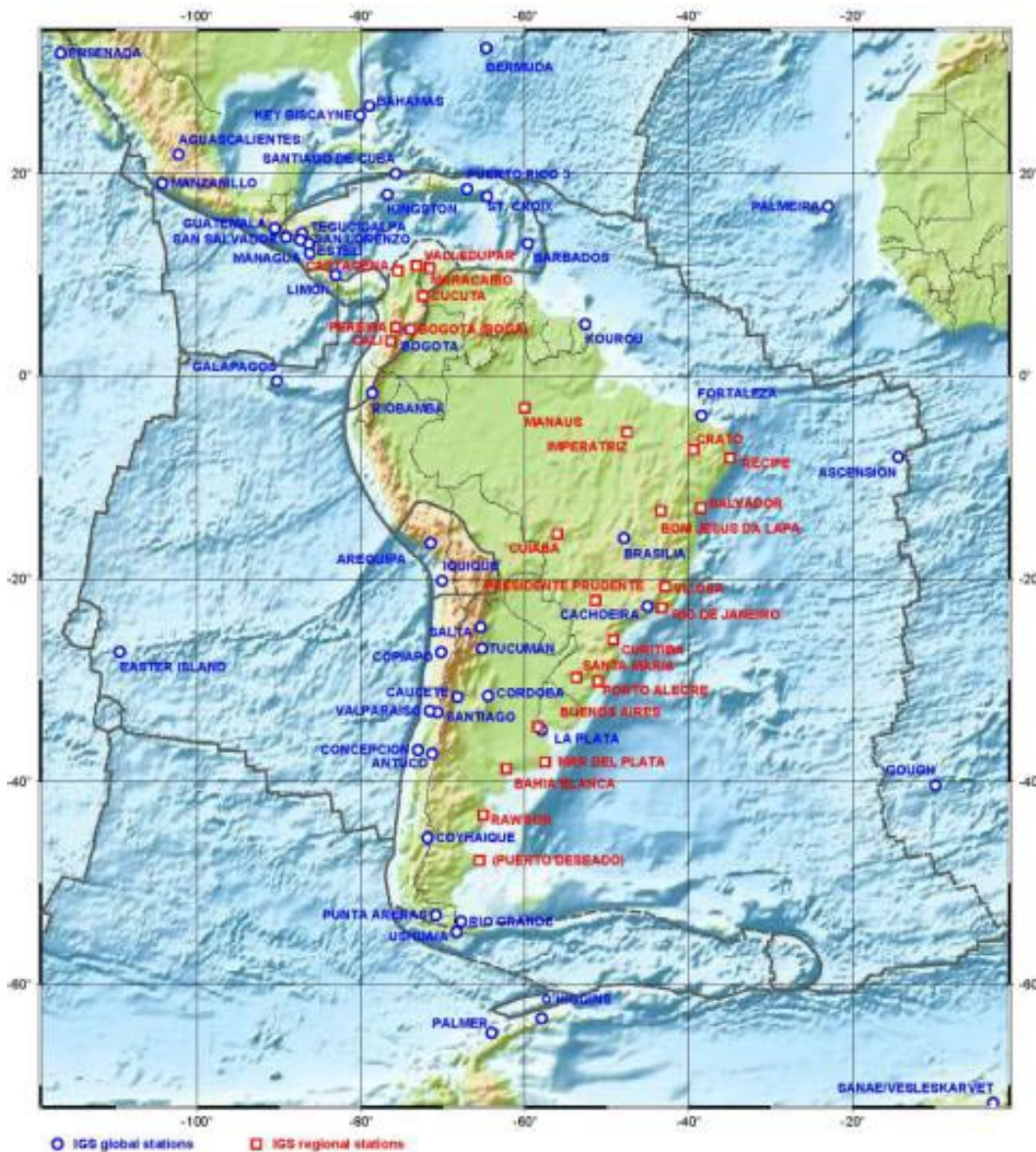
Communication and Outreach Branch

International GPS Service (IGS)



La red IGS global





La red IGS regional del RNAAC SIR



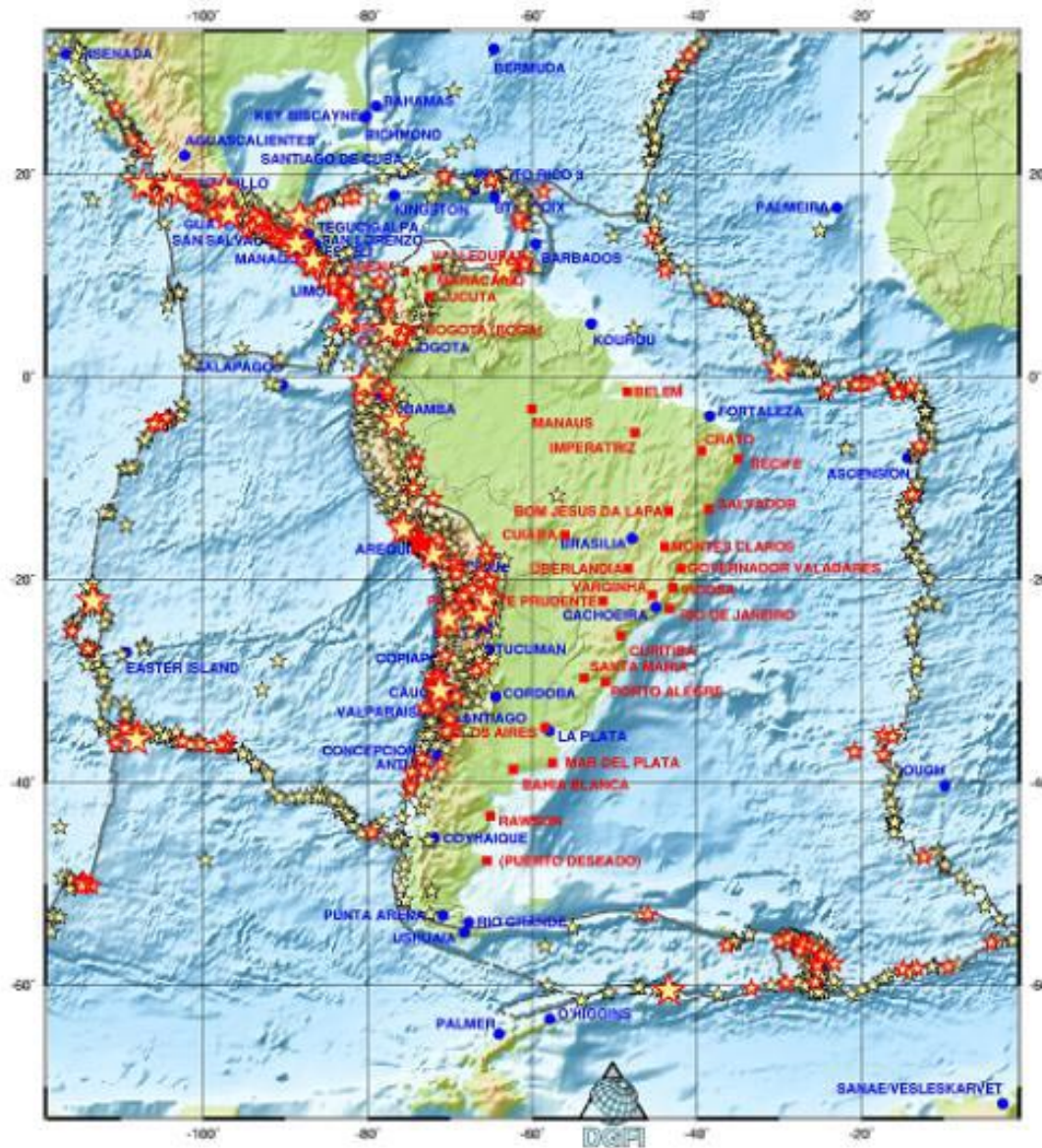


Data Flow and Processing Schedule at RNAAC SIR



IGS RNAAC Processing Strategy

- Software used: Bernese GPS software version 4.2
- Sampling rate: 30 sec. for 1-day solution
- Elevation cutoff: 10°
- Orbits/EOP: IGS final orbits / EOP (ITRF 2000)
- Troposphere: zenith delay estimated each 2 hours
a priori sigmas with respect to prediction:
 - first parameter $\pm 5\text{m}$ absolute
 - following parameters $\pm 10\text{ cm}$ relative
- Ambiguities: partly resolved, remaining estimated as real values with no a priori constraints
- Ocean loading: implemented since GPS week 1156
- Coordinates (daily): "free" network, a priori sigmas 1 m,
→ daily normal equations
- Coordinates (weekly): accumulated daily normal equations
→ weekly SINEX file

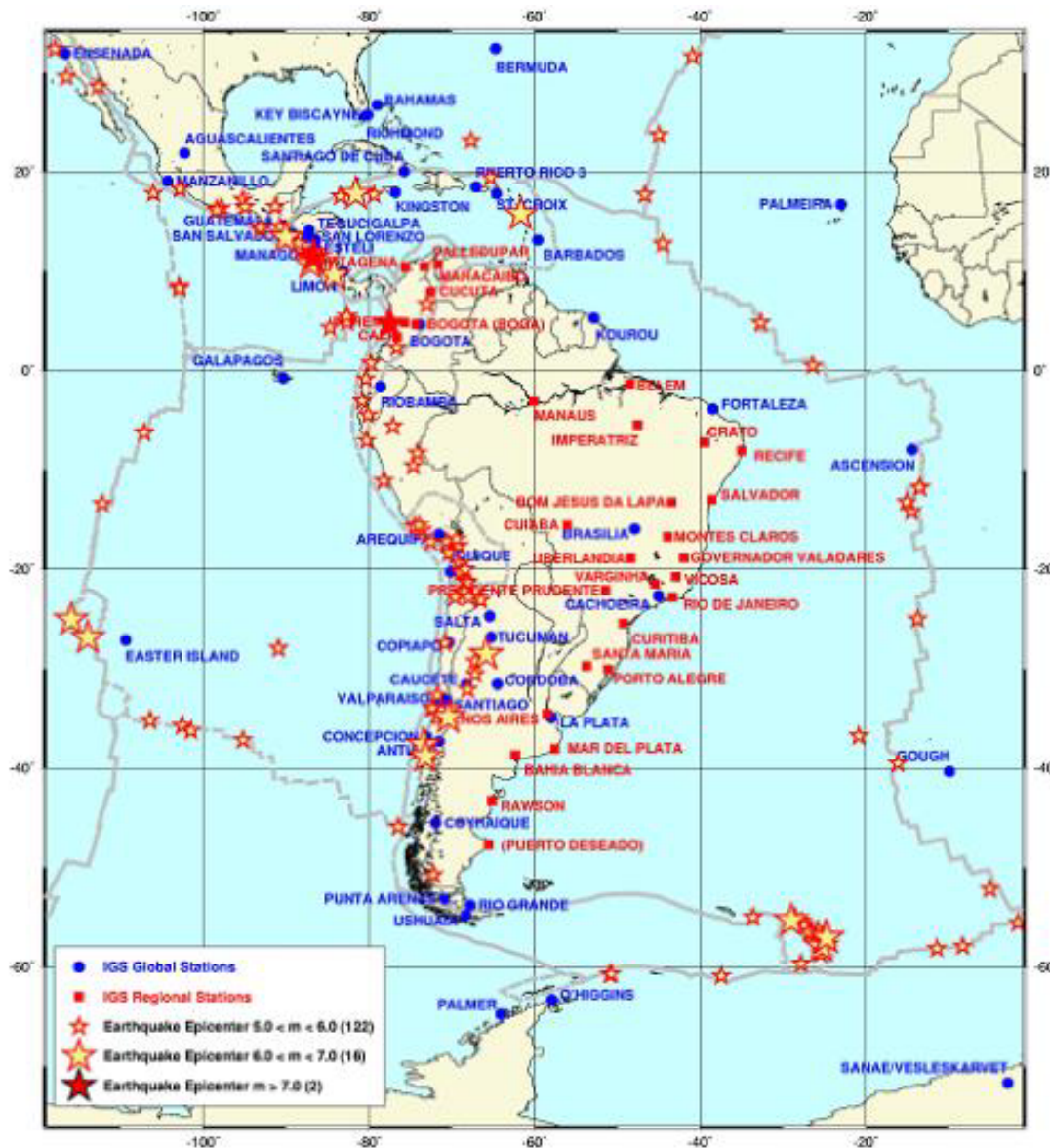


Earthquake Epicenters 1996 - 2004

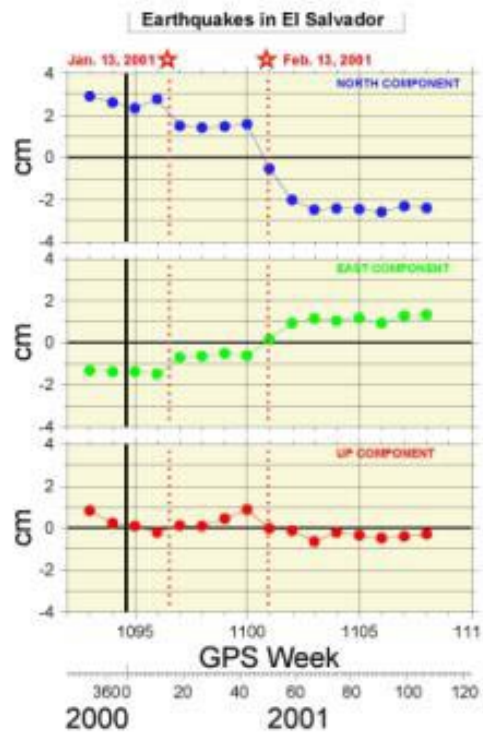
- ☆ Earthquake Epicenter, $5.0 \leq m < 6.0$ (1757)
- ★ Earthquake Epicenter, $6.0 \leq m < 7.0$ (215)
- ★ Earthquake Epicenter, $7.0 \leq m < 8.0$ (23)
- ★ Earthquake Epicenter, $m \geq 8.0$ (1)

Status: 01 Dec. 2004

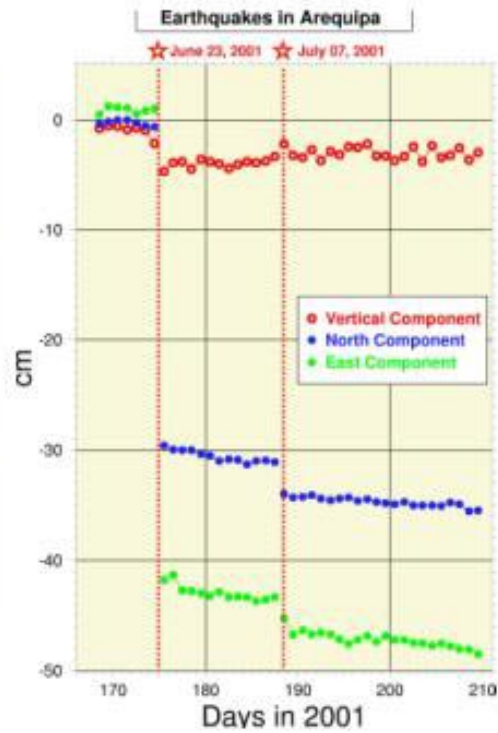
Latest Earthquake Epicenters May – Dec. 2004



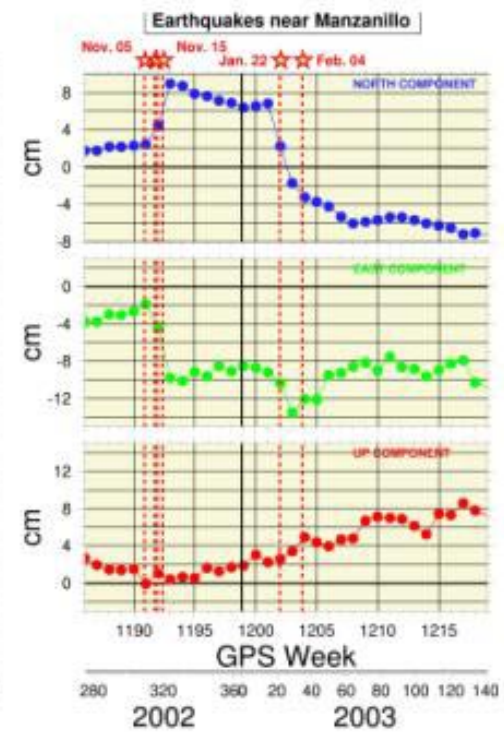
Earthquake Signals



Earthquakes in San Salvador



Earthquakes in Peru



Earthquakes in Mexico

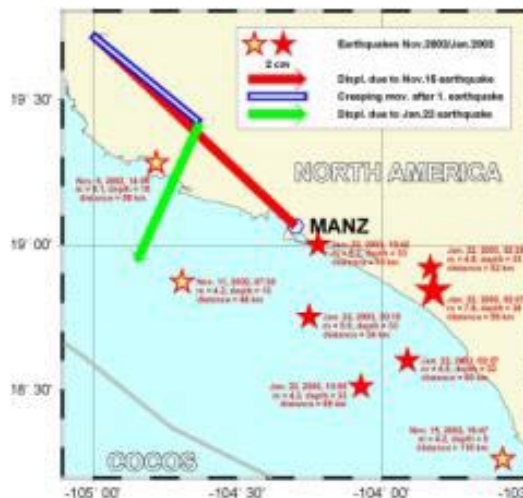
Station Displacements due to Earthquakes



Displacements of station SSIA



Displacements of station AREQ



Displacements of station MANZ

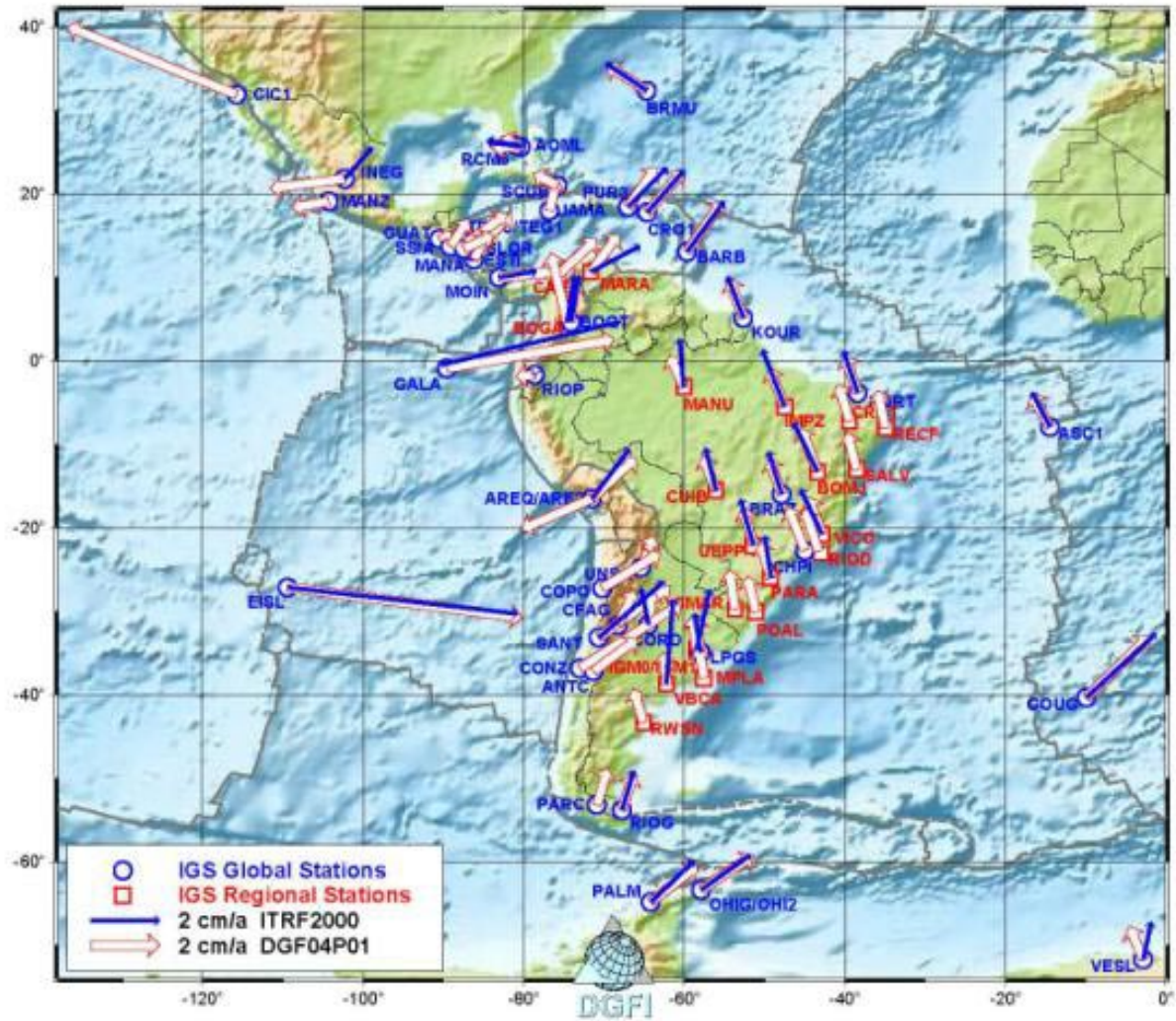
Main Features of DGFI04P01 Adjustment (1)

- Inversion of the weekly SINEX files to free normal equations, and removing the loose constraints included in the weekly solutions.
- Accumulation of all normal equations and parameter transformation from weekly epoch coordinates to coordinates at the reference epoch 2003.0 and linear velocities.
- Accounting for antenna height or antenna phase centre offset errors, which could not be corrected at the stage of the operational weekly processing, by according transformation of the right hand side of the normal equations.

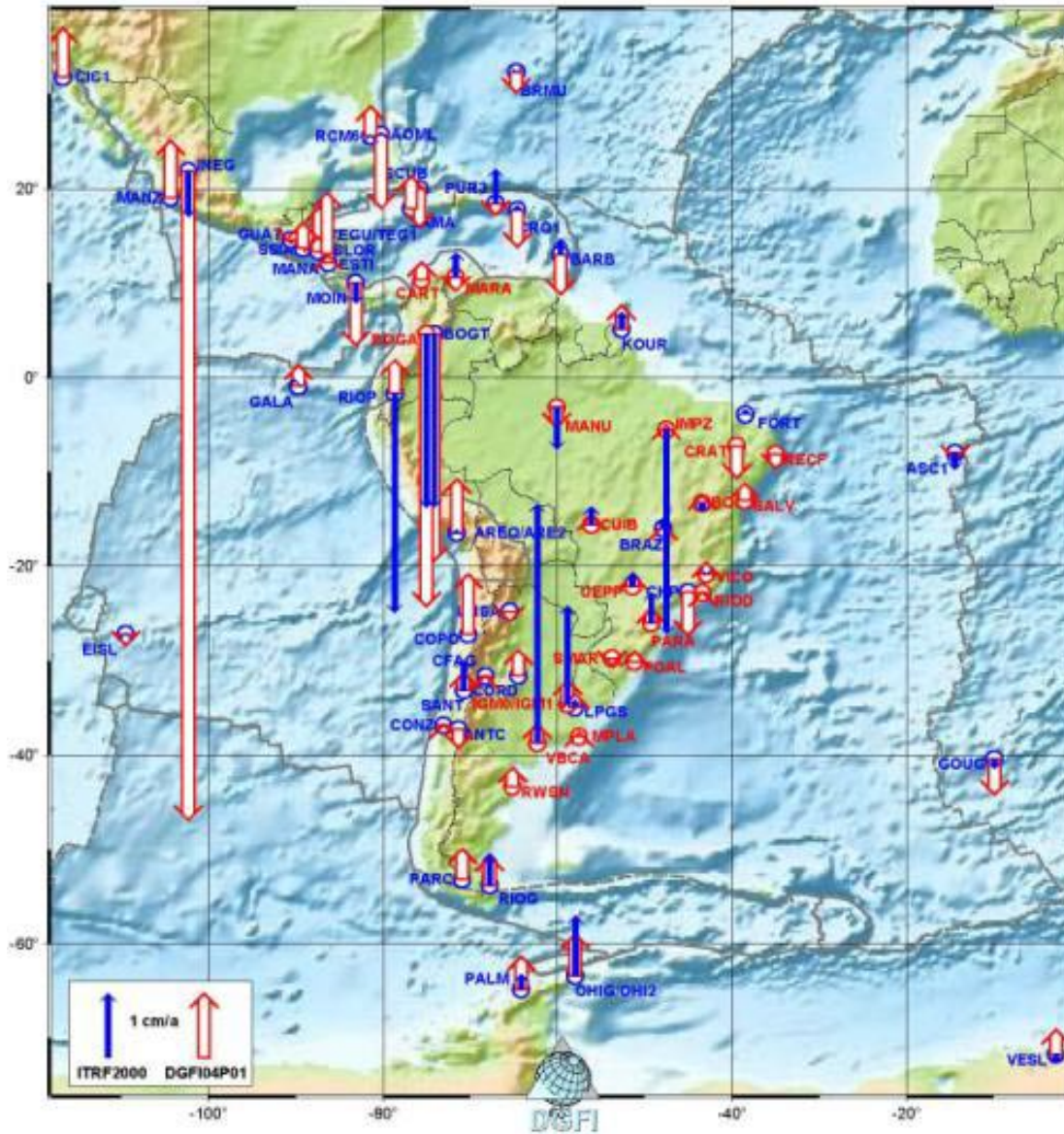
Main Features of DGFI04P01 Adjustment (2)

- Analysis of time series of inter-station vectors, which are not sensitive to the datum, in order to identify remaining outliers; reduction of outliers from the normal equations.
- Identification of position discontinuities due to episodic effects such as co-seismic displacements or antenna configuration changes, and set-up of appropriate parameters in the combined adjustment.
- Introduction of the positions at epoch 2003.0 and the velocities of fiducial stations selected for realising the reference frame, and application of appropriate weights or condition equations.

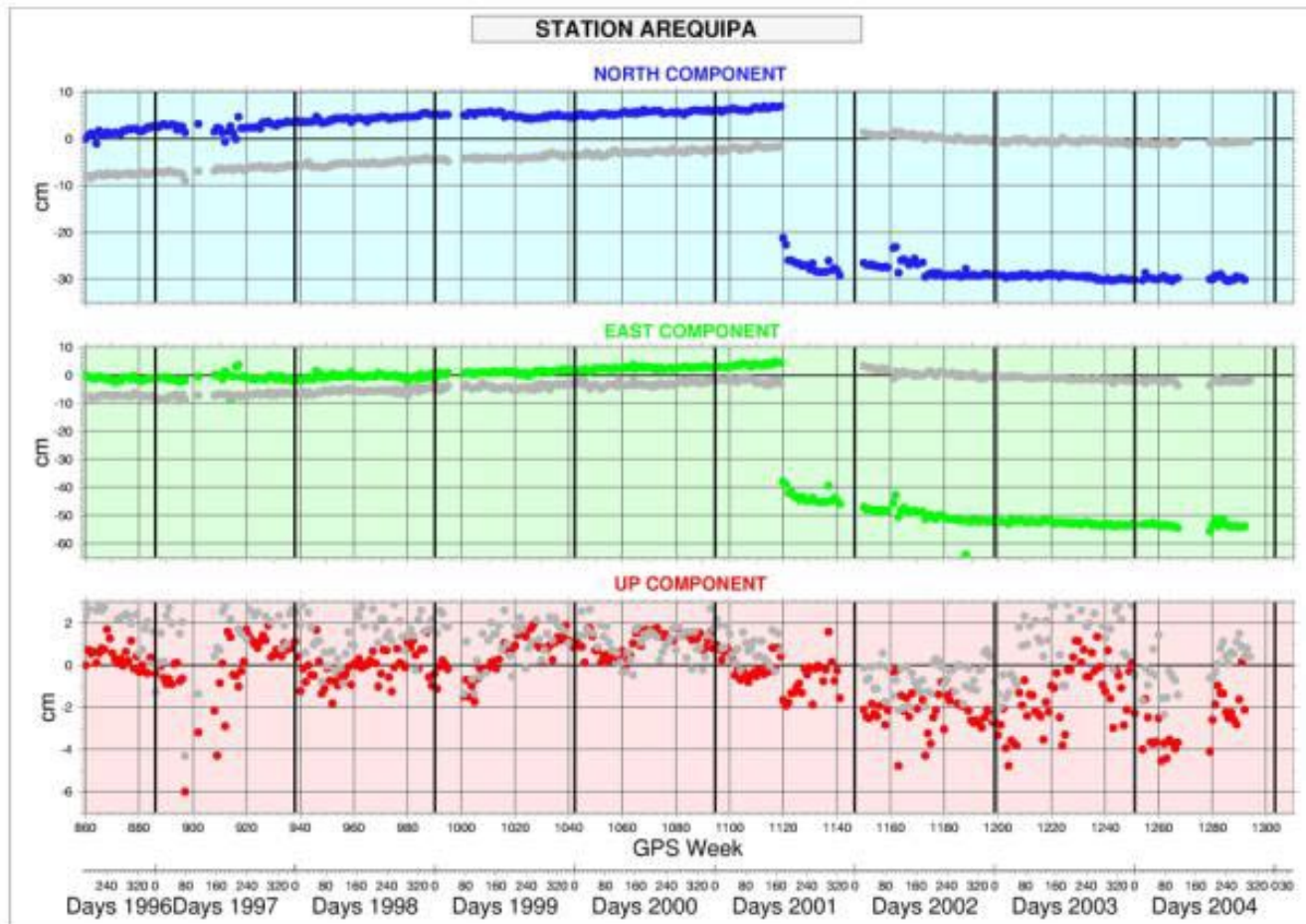
Velocidades horizontales (DGFI04P01)



Velocidades verticales (DGFI04P01)



Variations of IGS RNAAC SIR Stations from GNAAC Polyhedron Solutions



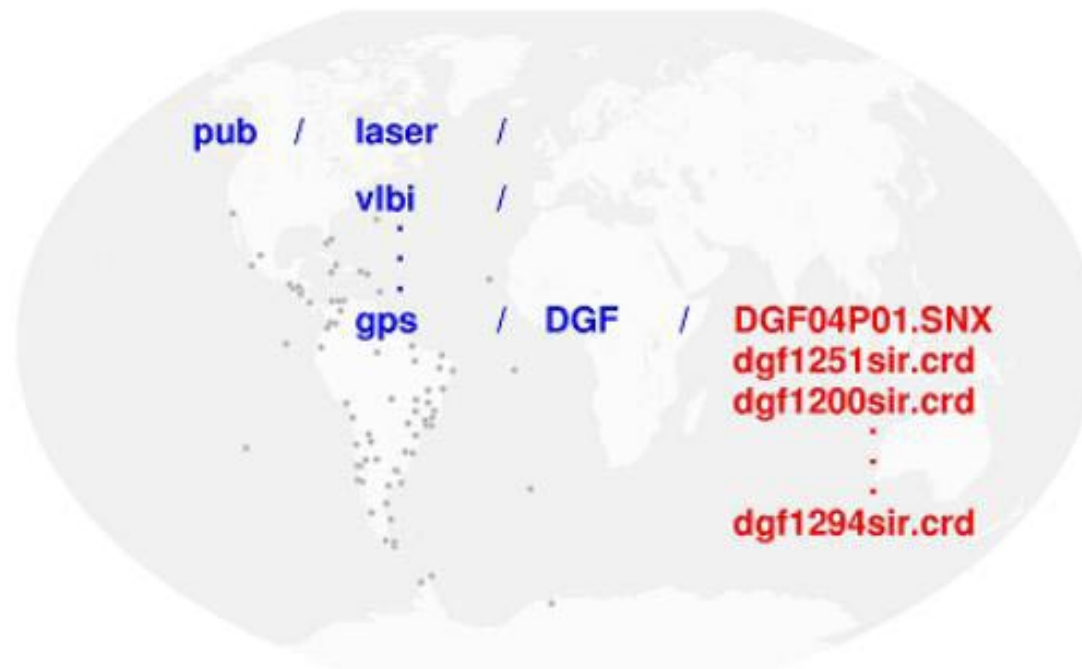
Comparaciones de coordenadas DGFI04P01

Solución	Estaciones	x [m]	y [m]	z [m]
ITRF2000	37	-0,0035 ± 0,0241	0,0065 ± 0,0307	-0,0005 ± 0,0139
IGS04P35	35	-0,0025 ± 0,0107	0,0062 ± 0,0193	0,0015 ± 0,0121
MIT1199P	45	0,0020 ± 0,0084	-0,0016 ± 0,0090	-0,0070 ± 0,0111
SIRGAS95	21	0,0016 ± 0,0129	-0,0044 ± 0,0147	-0,0101 ± 0,0117
SIRGAS2000	46	0,0008 ± 0,0059	0,0050 ± 0,0109	-0,0008 ± 0,0080

Comparaciones de velocidades DGFI04P01

Solución	Estaciones	v(x) [m/a]	v(y) [m/a]	v(z) [m/a]
ITRF2000 rms	35	-0,0016 ± 0,0018	0,0032 ± 0,0034	-0,0024 ± 0,0020
IGS04P35 rms	39	-0,0011 ± 0,0025	-0,0001 ± 0,0028	0,0017 ± 0,0013
VEMOS (SIRGAS)	38	-0,0014 ± 0,0036	0,0005 ± 0,0060	-0,0023 ± 0,0035

Directory pub/gps/DGF (DGFI ftp server)



Conclusion/Summary

- The DGFI04P01 solution for coordinates and velocities contains new sites and more observations (until end of July 2004) and is available at our ftp server (see below).
- DGFI is now providing weekly coordinate solutions as support for national surveys available from 2004 onward at <ftp://ftp.dgfi.badw-muenchen.de/pub/gps/DGF>.
- These weekly coordinate solutions are computed since GPS week 0860, and will be made available at the above address soon.