SIRGAS Report on the activities related to the IAG Working Group 'Regional Dense Velocity Fields'

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SIRGAS contributes to the IAG-WG 'Regional Dense Velocity Fields' by means of the SIRGAS Continuously Operating Network **SIRGAS-CON**

Number of continuously operating GNSS stations over 15 years of SIRGAS

Year	IGS Stations	Regional Stations	Sum
1993	5	0	5
1994	7	0	7
1995	10	0	10
1996	15	0	15
1997	15	6	21
1998	19	10	29
1999	24	14	38
2000	32	16	48
2001	35	17	52
2002	41	18	59
2003	47	19	66
2004	47	28	75
2005	48	55	103
2006	48	72	120
2007	48	128	176
present	**53**	**141**	**194**

www.sirga

SIRGAS Station
IGS Station
SIRGAS Tide Gauge

SIRGAS-CON
06/10/2008
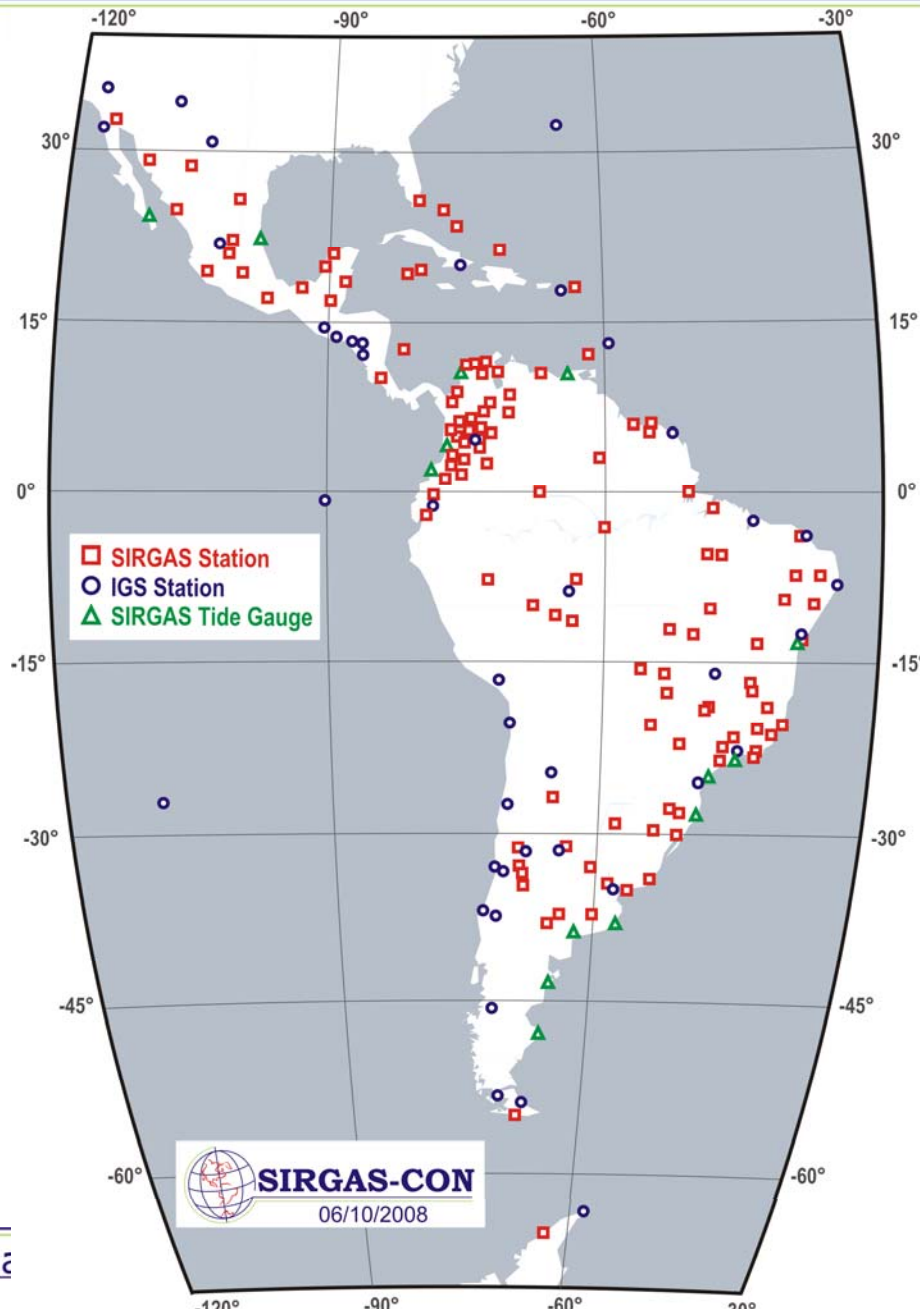
The SIRGAS-CON network is weekly processed by applying the following strategy:

1. The elevation mask and the data sampling rate are set to 3° and 30 s, respectively;

2. The absolute calibration values for the antenna phase centre corrections published by the IGS are applied;

3. Satellite orbits, satellite clock offsets, and Earth orientation parameters are fixed to the combined IGS solutions. The earlier satellite orbits are transformed from previous ITRF realizations (e.g. ITRF97 or ITRF2000) to ITRF2005;

4. The quasi ionosphere free (QIF) strategy is applied for solving the L1 and L2 phase ambiguities. The applied a priori ionosphere models correspond to the daily global ionosphere maps derived at the CODE analysis centre;

5. The periodic site movements due to ocean tide loading are modelled according to the FES2004 ocean tide model. The corresponding values are provided by M.S. Bos and H.-G. Scherneck at http://www.oso.chalmers.se/~loading/.

6. The zenith delay due to the tropospheric refraction (wet part) is estimated at a 2 hours interval within the daily network adjustment. The Niell (1996) dry mapping function is applied to the total delay.

7. The loosely constrained normal equations generated by the daily network adjustments are combined to determine a loosely constrained cumulative solution with epoch site coordinates and linear velocities.

8. Possible discontinuities or systematic effects to be modelled in the combination are pre-analysed by generating time series of stations coordinates, which are derived from the transformation of each daily solution to the cumulative one.

9. Regional stations with short time series (less than two years) are not included in the cumulative solution.

1. To provide homogeneously precise coordinates and velocities for all SIRGAS-CON stations, weekly solutions computed previously to the GPS week 1400 (November 2006) with relative phase centre corrections are being reprocessed.

2. This re-processing includes absolute corrections for the antenna phase centre variations and satellite orbits referred to ITRF2005 (i.e. IGS05).

3. At present, the weeks from January 2002 until October 2006 are ready.

4. The other weeks (from June 1996 until December 2001) shall be ready in June 2009.

ITRF2005 (IGS05), 2004.4. Precision: ± 2,2 mm (hor), ± 4,5 mm (up); ± 1 … 2 mm/a (vel).
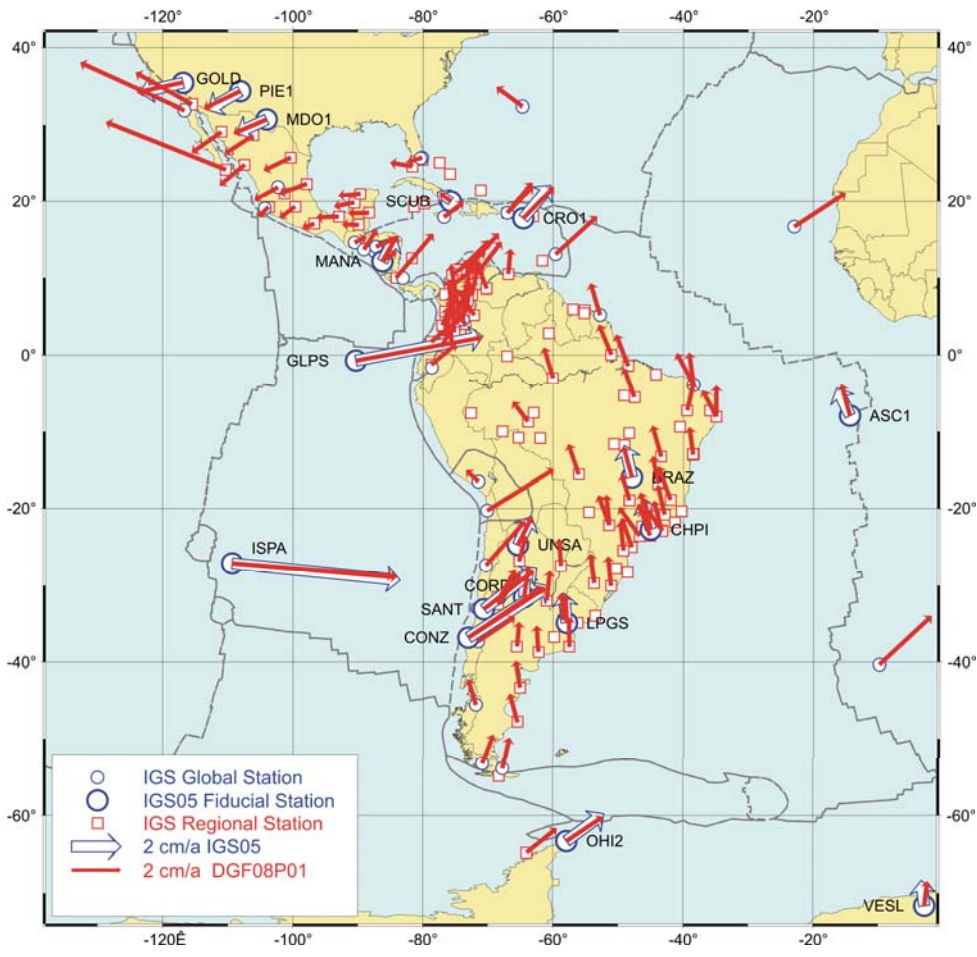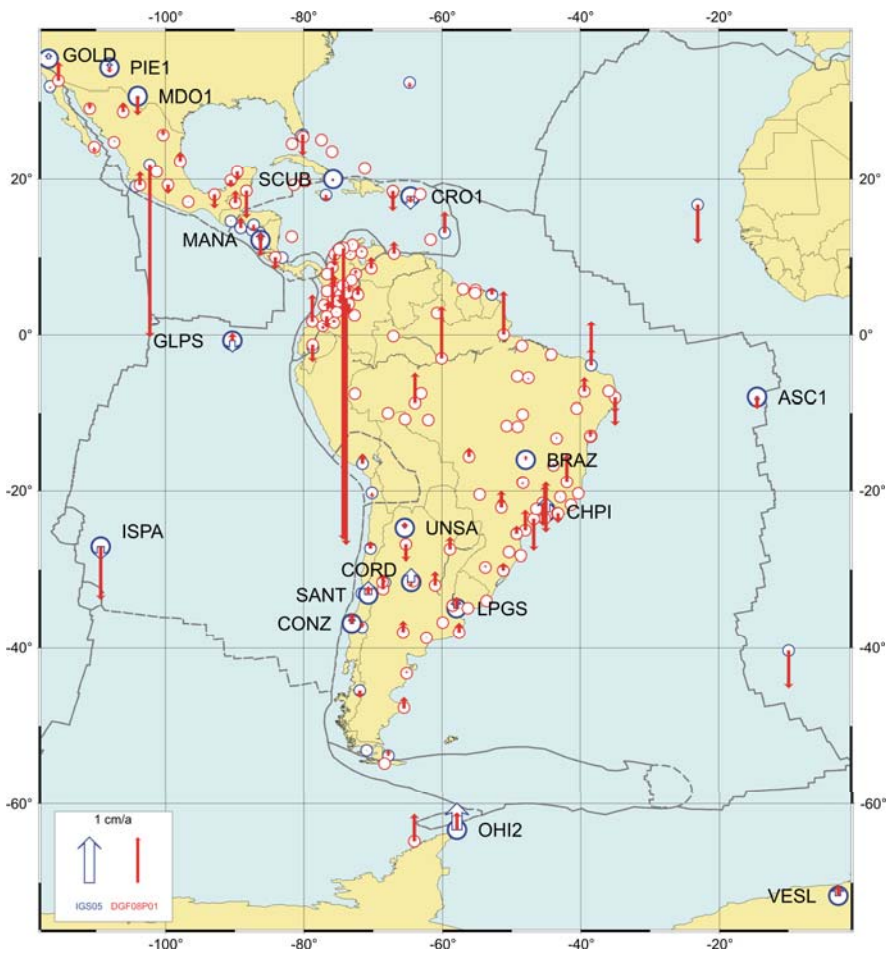
Includes GPS weeks from 1199 to 1470 (December 2002 to March 2008)