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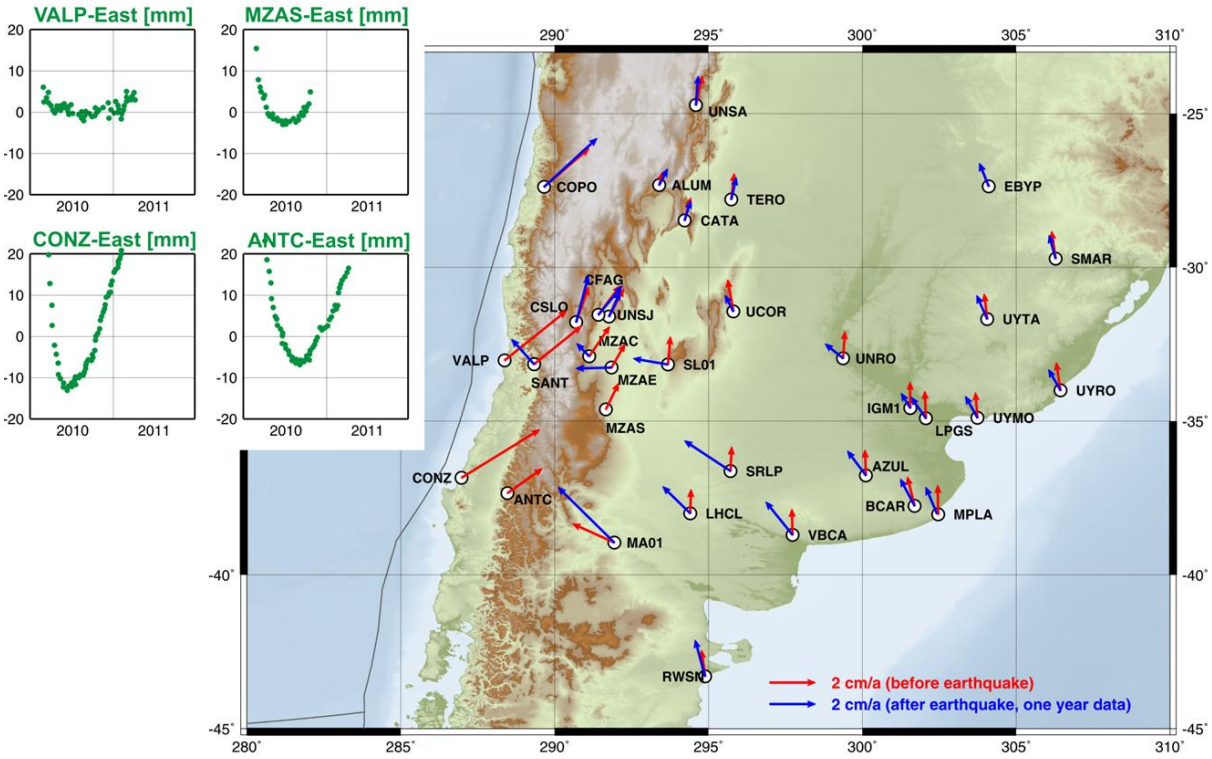
No. 87

Recent activities of the
IGS Regional Network Associate Analysis Centre for SIRGAS
(IGS RNAAC SIR)

Report for the SIRGAS 2011 General Meeting
August 8 – 10, 2011. Heredia, Costa Rica

LAURA SÁNCHEZ, MANUELA SEITZ



Comparison of pre-seismic and post-seismic (constant) velocities one year after the earthquake on 2010-02-27 in Chile and post-seismic relative time series with respect to linear coordinate changes for the East component at the SIRGAS stations ANTC, CONZ, MZAS, and VALP.

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1. Introduction

Terrestrial reference frames supporting precise positioning based on global navigation satellite systems (GNSS) must be consistent with the reference frame in which the GNSS orbits are determined. At present, the conventional reference frame is the ITRF (International Terrestrial Reference Frame, http://itrf.ensg.ign.fr/), which is computed and maintained by the International Earth Rotation and Reference Systems Service (IERS, www.iers.org). According to the IERS conventions (Petit and Luzum 2010), the International GNSS Service (IGS, www.igs.org) determines and provides the GNSS satellite ephemeris referring to the ITRF (Dow et al. 2009). Users applying IGS orbits for precise (differential) GNSS positioning have to introduce coordinates of terrestrial reference stations referring also to the ITRF. The accessibility to this reference frame at regional and local levels is guaranteed through continental densifications of the global frame and subsequent national densifications of these continental frames. Following this hierarchy, SIRGAS (Sistema de Referencia Geocéntrico para las Américas, www.sirgas.org) is realized by a regional densification of the ITRF in Latin America and the Caribbean (Brunini et al. 2011), and it is further extended to each country by the national reference networks.

The present realization of SIRGAS is a network of about 250 continuously operating stations covering Latin America and the Caribbean. This so-called SIRGAS-CON network is weekly processed to generate

a) loosely constrained solutions of station positions for further combinations of the network (e.g. integration into the IGS polyhedron, computation of multi-year solutions), and

b) weekly station positions aligned to the same reference frame in which the GNSS satellite orbits are computed (i.e. ITRF, IGS reference frame) to be used as reference coordinates in GNSS positioning.

Due to the large number of stations, the analysis strategy of SIRGAS-CON is based on the combination of individual solutions of different sub-networks (Brunini et al. 2011). For this purpose, the SIRGAS-CON stations are divided in (Fig. 1):

a) One core network (SIRGAS-CON-C) with 112 stations distributed over the whole continent, and

b) different densification sub-networks (SIRGAS-CON-D) distributed regionally on the northern, middle, and southern part of the continent.

These sub-networks are individually processed by the SIRGAS Processing Centres (see Section 3): the core network is computed by DGFI, the other sub-networks by the SIRGAS Local Processing Centres: CEPGE (Ecuador), CIMA (Argentina), CPAGS-LUZ (Venezuela), IBGE (Brazil), IGAC (Colombia), IGN (Argentina), INEGI (Mexico), and SGM (Uruguay). The weekly combination of the individual solutions is carried out by the SIRGAS Combination Centres: DGFI and IBGE. The distribution of the SIRGAS-CON stations within the SIRGAS Processing Centres guarantees that each station is included in three solutions.

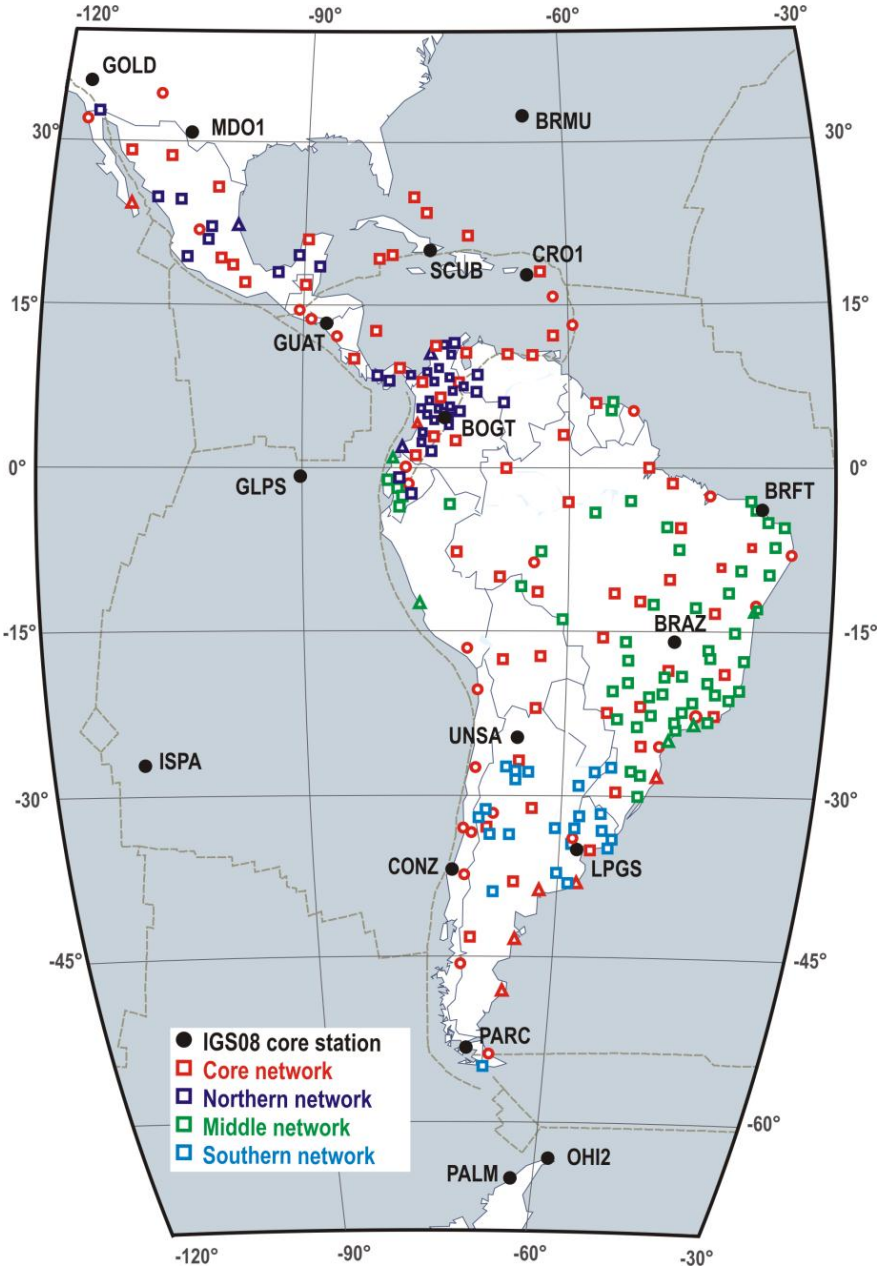


Fig. 1. SIRGAS-CON-C core and SIRGAS-CON-D densification sub-networks (status June 2011).

This operational infrastructure is possible thanks to the active participation of many Latin American and Caribbean institutions, who not only make available the measurements of their stations, but also are operating SIRGAS Analysis Centres in charge of processing the observational data on a routine basis.

As responsible for the IGS Regional Network Associate Analysis Centre for SIRGAS (IGS RNAAC SIR, Seemüller and Drewes 2008), DGFI has to deliver loosely constrained weekly solutions of the SIRGAS-CON network to the IGS. These solutions are combined together with those generated by the other IGS Global and Regional Analysis Centres to form the IGS polyhedron. The processing of the SIRGAS-CON network in the frame of the IGS RNAAC SIR also includes the computation of weekly coordinate solutions aligned to the ITRF and cumulative (multi-year) position and velocity solutions for estimating the kinematics of the network. Until 31 August 2008 (GPS week 1495), DGFI processed the entire SIRGAS-CON

network in one block (Sánchez et al. 2010a). Afterwards, with the introduction of the core network and the densification sub-networks within SIRGAS-CON, as well as the installation of SIRGAS Processing Centres under the responsibility of Latin American institutions, DGFI is now responsible for processing the SIRGAS-CON-C core network, combining this core network with the densification sub-networks (SIRGAS-CON-D), and making available the final SIRGAS products.

According to this, the present report summarizes the activities carried out by DGFI as IGS RNAAC SIR after the SIRGAS 2010 General Meeting, i.e. from 2010-09-05 (GPS week 1600) to 2011-06-18 (GPS week 1640).

2. Routine analysis of the SIRGAS-CON-C core network

The SIRGAS-CON-C core network (Fig. 1) is composed by 112 stations homogeneously distributed over Latin America and the Caribbean. The processing strategy is based on the double difference approach using the Bernese Software V. 5.0 (Dach et al. 2007) and follows the IGS (Kouba 2009) and SIRGAS guidelines (SIRGAS 2011). The main characteristics are (compare with Seemüller et al. 2011):

a) Elevation mask and data sampling rate are set to 3° and 30 s, respectively.

b) Absolute calibration values for the antenna phase centre corrections published by the IGS are applied (http://igscb.jpl.nasa.gov/igscb/station/general/pcv_archive/).

c) Satellite orbits, satellite clock offsets, and Earth orientation parameters are fixed to the combined IGS weekly solutions (Dow et al. 2009, http://igscb.jpl.nasa.gov/igscb/product/).

d) Phase ambiguities for L1 and L2 are solved by applying the quasi ionosphere free (QIF) strategy of the Bernese Software (Dach et al. 2007).

e) Periodic site movements due to ocean tide loading are modelled according to the FES2004 ocean tide model (Letellier 2004). The corresponding values are provided by M.S. Bos and H.-G. Scherneck at http://129.16.208.24/loading/.

f) The Niell (1996) dry mapping function is applied to map the a priori zenith delay (~ dry part), which is modelled using the Saastamoinen model (1973). The wet part of the zenith delay is estimated at a 2 hours interval within the network adjustment and it is mapped using the Niell wet mapping function.

g) Daily free normal equations are computed by applying the double difference strategy (Bernese Software 5.0, Dach et al. 2007). The baselines are created taking into account the maximum number of common observations for the associated stations.

h) Daily free normal equations are combined for computing a loosely constrained weekly solution for station positions (all station coordinates are loosely constrained to ±1 m).

i) Stations with large residuals in the weekly combination (more than ±20 mm in the N-E component, and more than ±30 mm in the height component) are reduced from the normal equations. Steps (h) and (i) are iterative. Fig. 2 shows RMS values for the daily coordinate repeatability in the weekly solutions.

j) The DGFI loosely constrained solutions are made available to be combined with the corresponding solutions delivered by the other SIRGAS Processing Centres. They are given in SINEX format and are identified with the name DGF*wwww*7.SNX: DGF stands for DGFI, *wwww* for the GPS week, and 7 for including the seven days of the week. They are available at ftp://ftp.sirgas.org/pub/gps/SIRGAS/.

k) According to the IGS procedures, the IGS05 reference frame was used until the GPS week 1631 (2011-04-16). Since GPS week 1632 (2011-04-17), the IGS08 reference frame is used (see IGS messages [IGSMAIL-6354], [IGSMAIL-6355], [IGSMAIL-6356]).

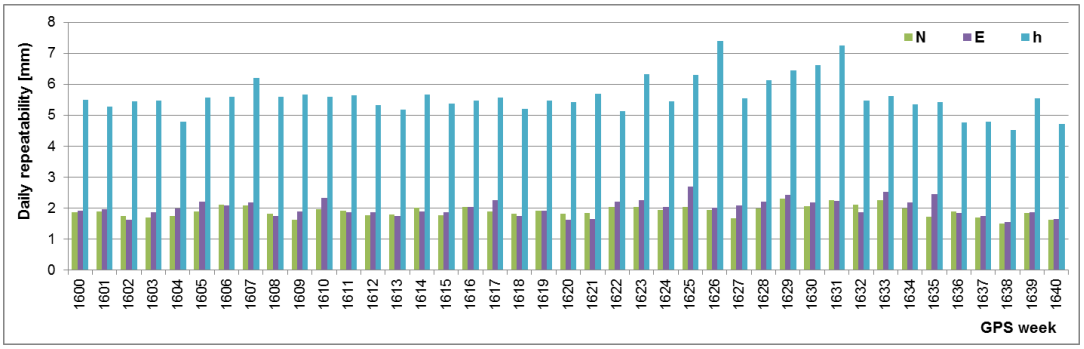


Fig. 2. Daily coordinate repeatability in the DGFI loosely constrained weekly solutions for the SIRGAS-CON-C core network. Mean RMS values are: North: 1,9 mm, East: 2,0 mm, height: 5,6 mm.

The 112 core stations are not always included in all weeks because some of them are at present inactive or the corresponding RINEX are not available on time (between the two following weeks after observation). Fig. 3 shows the number of stations processed in the weekly solutions between 2010-09-05 (GPS week 1600) and 2011-06-18 (GPS week 1640). It varies between 84 and 92 stations.

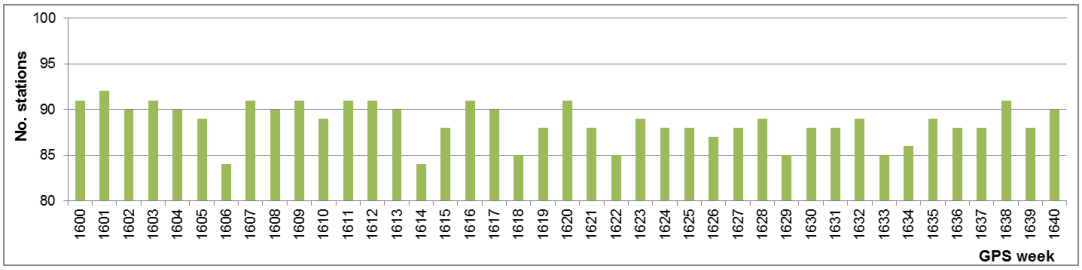


Fig. 3. Number of stations included in the weekly solutions of the SIRGAS-CON-C core network processed by DGFI.

To evaluate the quality of the DGFI weekly solutions for the SIRGAS-CON-C core network, the following steps are carried out:

a) Each loosely constrained weekly solution is aligned to the IGS reference frame (the IGS05 until GPS week 1631, the IGS08 for the following weeks). In this case, the geodetic datum is defined by constraining the IGS reference stations (Fig. 1) to their positions computed within the IGS weekly combinations (igs*yy*P*wwww*.snx). To minimize network distortions, the reference coordinates are introduced with a weight

inversely proportional to ±1E-04 m. The obtained standard deviation is understood as the formal error of the station positions within the weekly solutions.

b) Residual time series of station positions are computed. For this purpose, the loosely constrained weekly solutions are aligned to the latest SIRGAS multi-year solution (SIR10P01, Seemüller et al. 2010) using a 7-parameter similarity transformation. Then, coordinate time series are generated for each station and mean RMS values are derived from the weekly residuals. This procedure is helpful to identify outliers or jumps of the stations that may cause network deformations within the weekly solutions. Jumps caused by the earthquakes are excluded from this statistics.

The mean formal error (standard deviation) of the weekly solutions is estimated in ±1,6 mm. The weekly repeatability (mean RMS values from residual time series) for the entire period (41 weeks) is N = 1,5 mm, E = 1,6 mm, and h = 4,3 mm. Just for comparison, the weekly repeatability for the previous period (2009-06-28 to 2010-09-04, 63 GPS weeks) is N = 1,5 mm, E = 2,2 mm, and h = 4,4 mm (Sánchez et al. 2010b).

3. Combination of the individual solutions for the SIRGAS-CON network

The SIRGAS Processing Centres deliver loosely constrained weekly solutions for different sub-networks of SIRGAS-CON stations (Table 1). In these solutions, satellite orbits, satellite clock offsets, and Earth orientation parameters are fixed to the final weekly IGS values (Dow et al. 2009) and coordinates for all sites are loosely constrained to ±1 m. These individual contributions are integrated in a unified solution by the SIRGAS Combination Centres: DGFI and IBGE. The DGFI combination strategy corresponds to (Sánchez et al. 2011b):

a) Individual solutions are reviewed/corrected for possible format problems, station inconsistencies, utilization of erroneous equipment, etc.

b) Datum constraints included in the delivered normal equations are removed. In this way, unconstrained (condition free, non-deformed) normal equations with correct station information are available for combination.

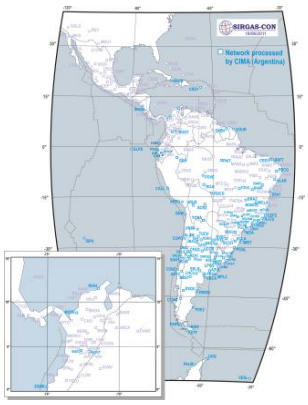
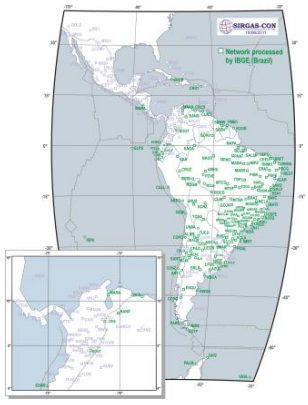
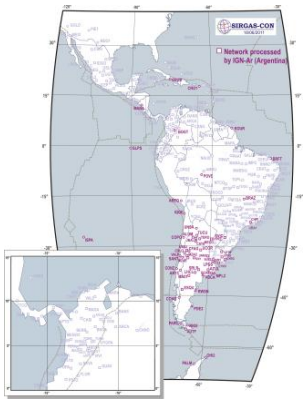
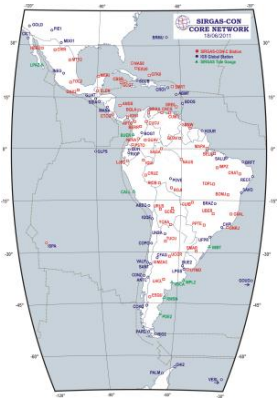
c) Individual normal equations are separately solved with respect to the same IGS stations used for the GPS orbit computation (the so-called IGS reference frame, http://igscb.jpl.nasa.gov/network/refframe.html). In this case, the IGS reference station positions are constrained to the IGS weekly coordinates (igs*yy*P*wwww*.snx). According to the IGS procedures, the IGS05 reference frame was used until GPS week 1631 (2011-04-16). Since GPS week 1632 (2011-04-17), the IGS08 reference frame is used (see IGS messages [IGSMAIL-6354], [IGSMAIL-6355], [IGSMAIL-6356]).

d) Station positions obtained in (c) for each sub-network are compared with the IGS weekly values and among each other to identify possible outliers.

e) Stations with large residuals (more than ±10 mm in the North or East components, and more than ±20 mm in the height component) are reduced from the normal equations. Steps (c), (d), and (e) are iterative.

f) Variances obtained in the final computation of step (c) are analysed to estimate variance factors for relative weighting of the individual solutions (see below item 4.1.5).

Table 1. SIRGAS processing centres and distribution of the SIRGAS-CON stations in sub-networks.

CEPGE (ECU), Ecuador	**CIMA (CIM), Argentina**	**CPAGS-LUZ (LUZ), Venezuela**
		
Centro de Procesamiento de datos GNSS del Ecuador, Instituto Geográfico Militar. Software: BERNESE.	Centro de Procesamiento Ingeniería-Mendoza-Argentina, Universidad Nacional de Cuyo. Software: BERNESE	Centro de Procesamiento y Análisis GNSS SIRGAS de la Universidad del Zulia. Software: BERNESE
Selected sites of the northern and middle networks, 77 stations, 60 of them active. GPS weeks: 1600-1640.	Southern network and selected sites of the middle network, 111 stations, 100 of them active. GPS weeks: 1600-1640.	Northern network, 115 stations, 85 of them active. GPS weeks: 1600-1640.
IBGE (IBE); Brazil	**IGAC (IGA), Colombia**	**IGN-Ar (GNA), Argentina**
		
Instituto Brasileiro de Geografia e Estatistica. Software: BERNESE	Instituto Geográfico Agustín Codazzi. Software: BERNESE	Instituto Geográfico Nacional. Software: GAMIT/GLOBK
Middle network and selected sites of the southern network, 142 stations, 129 of them active. GPS weeks: 1600-1640.	Northern network, 115 stations, 85 of them active. GPS weeks: 1600-1640.	Southern network, 59 stations, 55 of them active. GPS weeks: 1617-1640.
INEGI (INE), Mexico	**SGM (URY), Uruguay**	**DGFI (DGF), Germany**
		
Instituto Nacional de Estadística y Geografía. Software: GAMIT/GLOBK	Servicio Geográfico Militar. Software: BERNESE	Deutsches Geodätisches Forschungsintitut. Software: BERNESE
Selected sites of the northern network, 37 stations, 32 of them active. GPS weeks: 1617-1640.	Southern network and selected sited of the middle network, 77 stations, 71 of them active. GPS weeks: 1600-1640.	Core network, 112 stations, 91 of them active. GPS weeks: 1600-1640.

g) Once inconsistencies and outliers are reduced from the individual free normal equations, a combination for a loosely constrained weekly solution of station positions (all station coordinates constrained to ±1 m) is computed. This solution is submitted to IGS for the global polyhedron and stored to be included in the next multi-year solution of the SIRGAS reference frame.

h) Finally, a weekly solution aligned to the IGS reference frame is computed. As in step (c), the geodetic datum is defined by constraining the coordinates of the IGS reference stations to their positions computed within the IGS weekly combinations (igs*yy*P*wwww*.snx). The applied constraints guarantee that the coordinates of the IGS reference stations do not change more than ±1,5 mm within the SIRGAS-CON adjustment. This solution provides the final weekly positions for the SIRGAS-CON stations. Table 2 summarizes the IGS reference stations applied for the solution of the combined SIRGAS weekly normal equations.

Table 2. IGS reference stations used for estimating the SIRGAS weekly station positions.

IGS05 stations: GPS weeks: 1600 - 1631	**IGS08 core stations: since GPS week 1632**	**Comments (see [IGSMAIL-6354], [IGSMAIL-6355], [IGSMAIL-6356])**
ASC1	ASC1	Inactive since Feb. 2006
--	BOGT	
BRAZ	BRAZ	
--	BRFT	
--	BRMU	
CHPI	--	
CONZ	CONZ	
CORD	--	Decommissioned in May 2006
CRO1	CRO1	
GLPS	GLPS	No data since Dec. 2010
GOLD	GOLD	
--	GUAT	
ISPA	ISPA	
LPGS	LPGS	
MANA	--	
MDO1	MDO1	
OHI2	OHI2	
PIE1	--	
--	PALM	
--	PARC	
SANT	--	
SCUB	SCUB	
UNSA	UNSA	
VESL	VESL	

i) The accumulation and solution of the normal equations are carried out with the Bernese Software V.5.0 (Dach et al. 2007).

j) Resulting files of these procedures are:

SIR*wwww*7.SNX: SINEX file of the loosely constrained weekly combination.
SIR*wwww*7.SUM: Report of weekly combination.
siryyP*wwww*.snx: SINEX file for the combination aligned to the IGS reference frame.
siryyP*wwww*.crd: SIRGAS-CON station positions for week *wwww*.

The loosely constrained combinations as well as the weekly SIRGAS-CON coordinates are available at ftp://ftp.sirgas.org/pub/gps/SIRGAS/ or at www.sirgas.org.

Before the weekly combinations of the SIRGAS-CON network computed by DGFI are published or made available to users, a quality control is carried out to guarantee consistency and reliability of the SIRGAS products. This quality control is described in the following section.

4. Quality control carried out by DGFI in the weekly combinations for the SIRGAS-CON network

The generation of the weekly SIRGAS-CON products (i.e. loosely constrained combinations and station positions aligned to the IGS reference frame) at DGFI includes a quality control at two levels: Firstly, the individual solutions delivered by the SIRGAS Processing Centres are analysed to establish their quality and consistency. This includes a survey about the date of delivering, processed stations, log file observance, etc. Once the individual solutions are reviewed and free of inconsistencies (e.g. in antenna type or eccentricities), their combination is carried out by applying the procedure summarized in Section 3. Then, the second quality control concentrates on the results of this combination. Here, the main objective is to ascertain the accuracy and reliability of the weekly solutions for the entire SIRGAS-CON network. The procedures, analysis, and conclusions contained in this report are based on the weekly solutions summarized in Table 1.

4.1 Evaluation of individual solutions

4.1.1. Punctuality on delivering weekly solutions

According to the SIRGAS 2008 Resolutions (Brunini and Sánchez 2008), the SIRGAS Processing Centres shall deliver their weekly solutions to the IGS RNAAC SIR (i.e DGFI) in the third week after observation. In the same way, the SIRGAS Combination Centres shall report their results in the fourth week after observation. In general, these punctuality requirements are satisfied. Fig. 4 shows the corresponding statistics classified in three main time tables: on time (solutions delivered according to the SIRGAS agreement), delayed (solutions delivered during the following week after deadline), and late (solutions delivered after two or more weeks after deadline).

4.1.2 Compatibility with log files

The SIRGAS-CON stations included in the individual solutions shall be identified by the 4-character code together with the IERS domes number, and the station information (receiver, antenna, height of the antenna, etc.) shall precisely correspond to the station information contained in the log files. In general, all Processing Centres satisfy these requirements. The few inconsistencies found under this topic were appropriately corrected.

4.1.3 Identification of outliers

To avoid deformations in the combined network, stations with very large outliers (more than ±50 mm in any component) are reduced from the weekly normal equations. The identification of these outliers is carried out by transforming the

contributing normal equations to identical a-priori values and generating time series for station coordinates. The loosely constrained weekly solutions delivered by each Processing Centre are aligned to the IGS reference frame by constraining the positions of the IGS reference stations (Table 2) to the values determined within the IGS weekly solutions (Dow et al. 2009). After that, coordinate time series are generated for each station included in the individual solutions. In this way, if one station is processed by three Processing Centres, three different time series for the same station are available. By comparing the time series among each other, it is easier to identify outliers and their possible causes: if outliers, jumps, or interruptions are identifiable in the different series, the problems may be individually associated to the station (tracking deficiencies, equipment changes, failure of the data submission, earthquakes, etc.). If outliers, jumps, or interruptions are not present in all the time series, the deficiencies may be associated to administrative issues (neglecting of stations, incomplete download of RINEX files, disagreement with the log files, etc.). In this step, a few outliers were identified and the corresponding stations were reduced from the normal equations before combination.

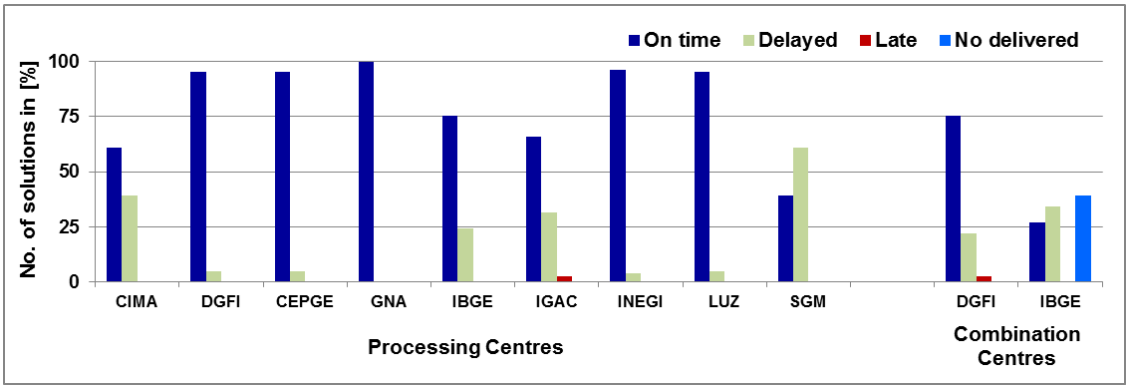


Fig. 4. Percentage of solutions delivered on time, delayed, or late by the SIRGAS Analysis Centres (GPS weeks 1600 to 1640). IBGE combinations between GPS weeks 1618 and 1633 were not delivered.

4.1.4 Quality control of the individual solutions

The consistency between the different individual solutions is evaluated by means of (Sánchez et al. 2008):

a) Mean standard deviations of station positions after solving the individual solutions with respect to the IGS reference frame. These values represent the formal errors of the individual solutions (Fig. 5).

b) Weekly repeatability (mean RMS values from residual time series) of station positions for each Processing Centre to assess the individual precision of the weekly solutions (Fig. 6).

c) Comparison with the IGS weekly coordinates for common stations to estimate the reliability (accuracy) of the individual solutions (Fig. 7).

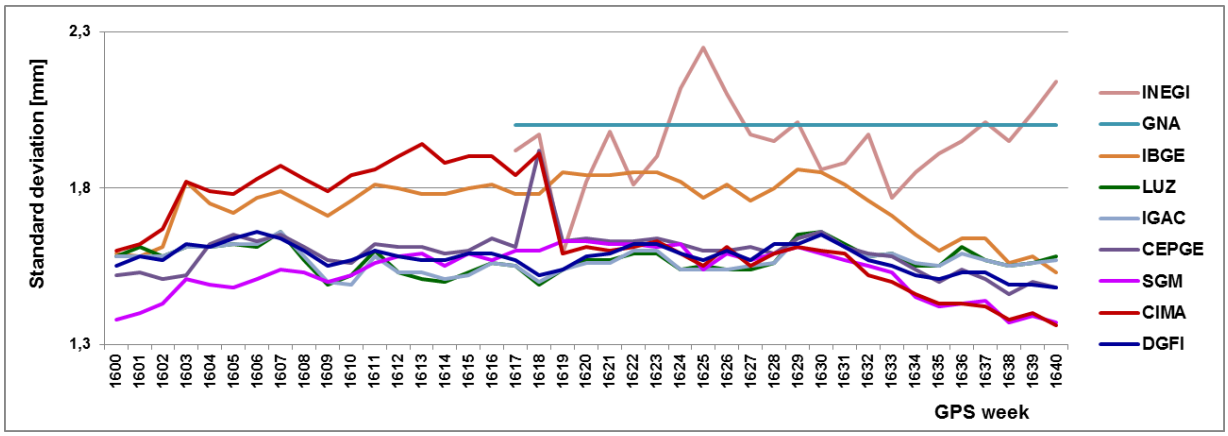


Fig. 5. Weekly standard deviations obtained after solving the individual normal equations with respect to the IGS reference stations (see Table 2).

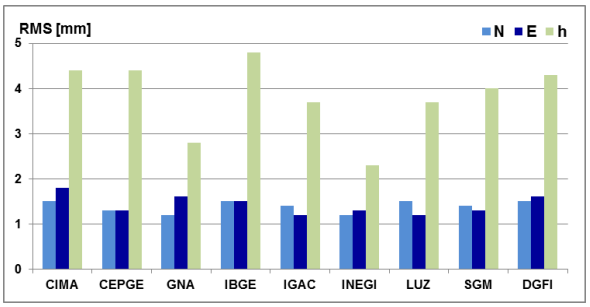


Fig. 6. Weekly repeatability of station positions within the individual solutions delivered by the SIRGAS Processing Centres (mean RMS values for GPS weeks 1600 to 1640).

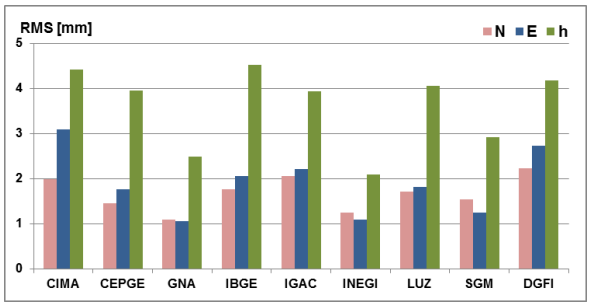


Fig. 7. Mean RMS values of the residuals after comparing the individual SIRGAS solutions with the IGS weekly coordinates (mean values for GPS weeks 1600 to 1640).

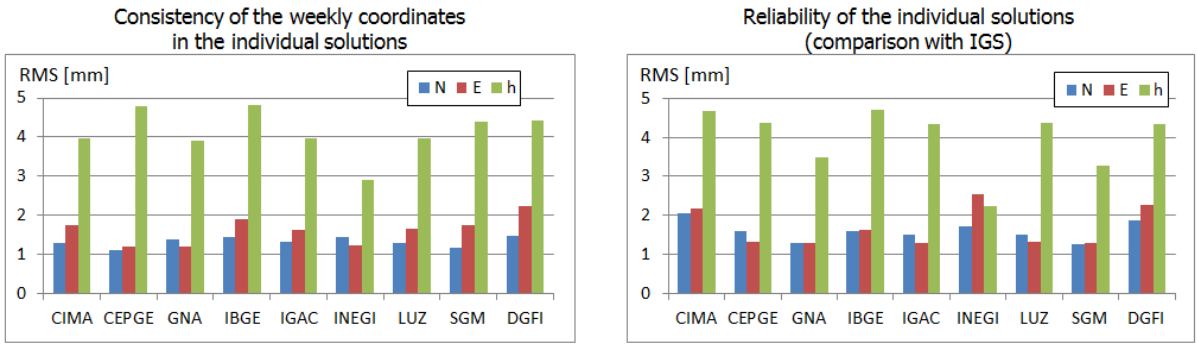


Fig. 8. Comparison of the individual solutions for the period 2009-06-28 (GPS week 1538) to 2010-09-04 (GPS week 1599), Sánchez et al. 2010b (modified). Left: weekly repeatability of station positions (equivalent to Fig. 6); right: consistency with the IGS stations (equivalent to Fig. 7).

Fig. 5, 6 and 7 summarize the results. The main comments are:

a) The CIMA solutions present an important improvement since week 1619; the mean standard deviation of these solutions for GPS weeks 1600 to 1618 is ±1,8 mm, while from GPS week 1619 to 1640 it is ±1,5 mm.

b) The standard deviations estimated for the IGAC and CPAGS-LUZ solutions are practically identical, because they are processing the same network using the same

strategy, and software. The small differences between them are caused by the occasional omission of any station in one of both solutions.

c) The variance factor (relationship between a-posteriori and a-priori variance) included in the weekly solutions delivered by IGN-Ar (denomination GNA) is always around 1. In consequence, the standard deviation obtained after solving the normal equations with respect to the IGS stations is also (almost) constant (around ±2,0 mm).

d) With exception of IBGE, Processing Centres applying the Bernese Software (Table 1) present mean standard deviations of about ~±1,6 mm. The reason for the larger standard deviations (~±1,8 mm) estimated within the IBGE solutions is still unknown. This shall be further investigated.

e) Here accuracy is understood as the measure of a solution difference with respect to the IGS global network, while precision is interpreted as the solution repeatability over time. In this way, RMS values derived from station position time series (Fig. 6) represent the precision of the individual solutions and the RMS values derived after the comparison with the IGS weekly coordinates (Fig. 7) represent the accuracy of those solutions. RMS values obtained for both criteria are very similar (about ±1,5 mm in the North and the East, and ±3,8 mm in the height); this indicates that the weekly solutions provided by the SIRGAS Processing Centres are homogeneously precise and accurate.

f) The best accuracy estimates in the vertical component (about ±2,8 mm) are delivered by the Processing Centres applying GAMIT/GLOBK, i.e. IGN-Ar and INEGI. This can be a consequence of

   i) the sub-networks processed by IGN-Ar and INEGI are smaller than the sub-networks processed by the other Analysis Centres;

   ii) the stations processed by IGN-Ar and INEGI show a very low occurrence of seasonal variations;

   iii) only 25 weekly solutions of these two Processing Centres are included in this report (they are official SIRGAS Processing Centres since January 2011);

   iv) particularities of the processing strategy by applying the GAMIT/GLOBK package.

   In order to identify the reason of this "best estimate" in the height component, it is necessary to extend the comparison analysis to a longer period (at least 2,5 years).

g) Sánchez et al. (2010b) mentioned that the reliability of the East component in the INEGI solutions was a bit poor in comparison with the other individual solutions (Fig. 8). In order to establish whether this depends on the geometry of the network processed by INEGI (elongated geometry in the N-S direction and located on the N-W corner of the SIRGAS region), it was suggested to add some additional SIRGAS-CON stations located in Central America and the Caribbean. In this way, the network would be extended to the East presenting a similar extension in both, N-S and E-W directions. The INEGI staff followed this recommendation and included 10 more stations. The new results show that the extended network present homogeneous precision in the North and the East component and a better agreement with the other individual solutions (Fig. 7).

4.1.5 Validation of the stochastic models

The relative weighting of individual solutions by means of variance factors is necessary to compensate possible differences in the stochastic models of the Processing Centres. In the SIRGAS-CON weekly combination, these variance factors are calculated from the mean standard deviations obtained after solving the individual normal equations with respect to the IGS reference frame and are given with respect to the major SIRGAS-CON-C core network (i.e. DGFI solution). Table 3 summarizes standard deviation values and variance factors computed for the weekly combinations covered by the considered period (GPS weeks 1600 - 1640).

Table 3. Variance factors computed for relative weighting of individual solutions in the weekly combination of the SIRGAS-CON sub-networks (mean values for the GPS weeks 1600 - 1640).

Processing Centre	**Standard deviation (σ) after solving the individual normal equations wrt IGS reference frame [mm]**		**Variance factor ($\sigma_{DGFI}/\sigma_{PC}$)**
	Max	**Min**	
DGFI	1,66	1,58	1,0
CIMA	1,94	1,66	0,9
CEPGE	1,92	1,59	1,0
GNA	2,00	2,00	0,8
IBGE	1,86	1,75	0,9
IGAC	1,66	1,57	1,0
INEGI	2,25	1,95	0,8
LUZ	1,66	1,57	1,0
SGM	1,63	1,53	1,0

4.2 Evaluation of combined solutions

The evaluation of the weekly combinations carried out by the DGFI is based on the following criteria (Sánchez et al. 2011b):

a) Mean standard deviation for station positions after aligning the network to the IGS reference frame indicates the formal error of the final combination;

b) RMS values after combining the weekly individual solutions provides information about the internal consistency of the combined network;

c) Time series analysis of station coordinates allows to determine the compatibility of the combined solutions from week to week;

d) Comparison with the IGS weekly coordinates (igs*yy*P*wwww*.snx) indicates the consistency with the IGS global network;

e) Comparison with the IBGE weekly combination (ibg*yy*P*wwww*.snx) as external control and to fulfil the required redundancy for the generation of the SIRGAS products.

Fig. 9 presents mean values of the different criteria for the period covering the GPS weeks 1600 to 1640. The mean standard deviation of the combined solutions agrees quite well with those computed for the individual contributions (Fig. 5), i.e. the quality of the individual solutions is maintained and their combination does not deform or damage the accuracy of the entire SIRGAS-CON network. The coordinate repeatability in the weekly combinations provides an estimate of the precision (internal consistency) of about ±1,0 mm in the horizontal component and about ±2,9 mm in the vertical one. The RMS values derived from the time series for station coordinates and with respect to the IGS weekly coordinates indicate that the reliability (accuracy) of the network is about ±1,7 mm in the horizontal position and ±3,7 mm in height.

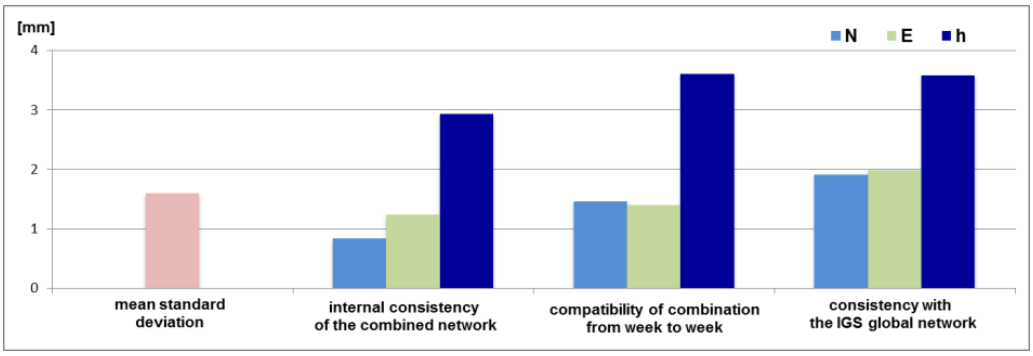


Fig. 9. Quality of the DGFI combinations following different evaluation criteria (mean values for the GPS weeks 1600 - 1640).

Regarding the comparison with the IBGE combinations, Fig. 10 shows the maximum and minimum coordinate differences ($[X,Y,Z]_{DGFI} - [X,Y,Z]_{IBGE}$) for the GPS weeks 1600 to 1640 (IBGE combinations for the weeks 1618 to 1633 were not delivered). This comparison is carried out with the final coordinate values; no transformation is applied here. The largest discrepancies (up to 1,6 cm) occurred in weeks 1614 to 1617. For the combinations computed after week 1634, the discrepancies are smaller (less than 1 mm) than the estimated station position precision (Fig. 9). A description about the IBGE combination strategy (Costa, Silva 2009) is available at ftp://geoftp.ibge.gov.br/SIRGAS.

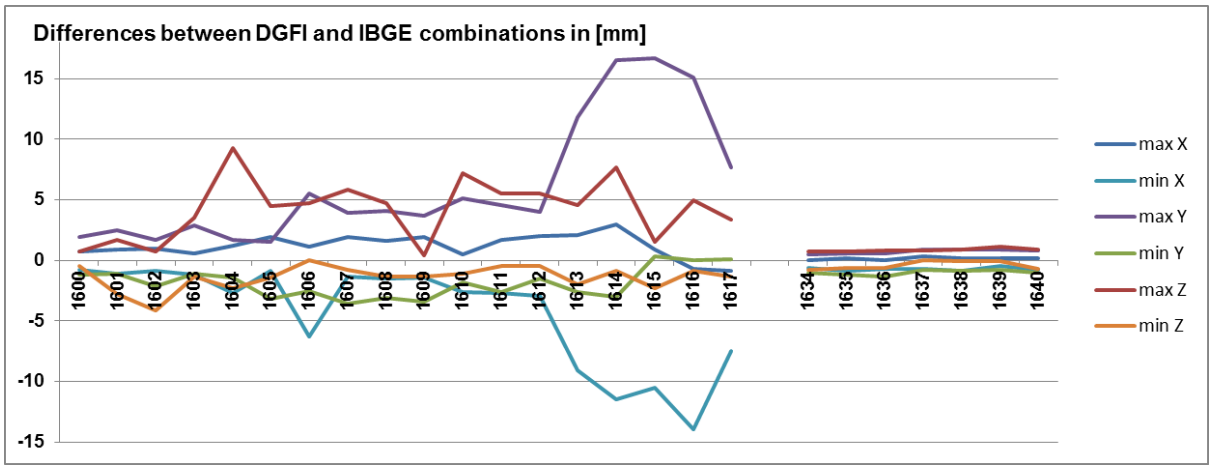


Fig. 10. Maximum and minimum coordinate differences $[X,Y,Z]_{DGFI} - [X,Y,Z]_{IBGE}$ for GPS weeks 1600 to 1640 (IBGE combinations for weeks 1618 to 1633 were not delivered).

5. Replacement of the IGS05 reference frame by the IGS08 reference frame

Since GPS stations included in the ITRF solutions do not present a homogenous performance and precision, the IGS periodically selects a set of globally distributed, stable GPS sites to be used as the reference frame for the computation of the IGS final products (i.e. satellite orbits, satellite clock estimations, Earth orientation parameters, etc.). The main selection criteria are the station performance, track record, monumentation, co-location with other geodetic space techniques, and geographical distribution (http://igscb.jpl.nasa.gov/ network/refframe.html). These so-called IGS reference stations are in principle minimally constrained to the current ITRF and their coordinate sets are internally more consistent than the original ITRF coordinates. It is expected that the network (frame) composed by the IGS reference stations is completely equivalent to the ITRF in orientation, translation and scale. In this way, the IGS final products can still be considered to be nominally in the current ITRF (Kouba 2009). Table 4 summarizes the different references frames used by the IGS since 1994.

Table 4. Reference frames used by the IGS since 1994.

Period of utilization	ITRF	IGS reference frame	Main characteristics	Documentation
1994-01-02 (week 0730) to 1994-12-31 (week 0781)	ITRF92			[IGSMAIL-0421]
1995-01-01 (week 0782) to 1996-01-29 (week 0859)	ITRF93			[IGSMAIL-0824]
1996-01-30 (week 0860) to 1998-02-28 (week 0946)	ITRF94			[IGSMAIL-1391]
1998-03-01 (week 0947) to 1999-07-31 (week 1020)	ITRF96			[IGSMAIL-1838]
1999-08-01 (week 1021) to 2000-06-10 (week 1065)	ITRF97			[IGSMAIL-2373]
2000-06-11 (week 1066) to 2001-12-01 (week 1142)	ITRF97	IGS97	To ensure a better internal consistency of the IGS products. The underlying reference frame is still ITRF97. Users can continue using ITRF97 station positions without problem. This change should not have any effect on the IGS products in terms of translation-, rotation- or scale-changes. Selection of 51 reference stations. Station positions and coordinates: IGS cumulative solution for week 1046 minimally constrained to the ITRF97 values.	[IGSMAIL-2899] [IGSMAIL-2904]
2001-12-02 (week 1143) to 2004-01-03 (week 1252)	ITRF2000	IGS00	54 reference stations, IGS cumulative solution for week 1131 minimally constrained to the ITRF2000 values.	[IGSMAIL-3605]
2004-01-04 (week 1253) to 2006-11-04 (week 1399)	ITRF2000	IGb00 (improved IGS00)	106 reference stations, IGS cumulative solution for week 1232 minimally constrained to the ITRF2000 values.	[IGSMAIL-4748]
2006-11-05 (week 1400) to 2011-04-16 (week 1631)	ITRF2005	IGS05	132 reference stations, parallel processing using absolute and relative phase centre corrections for weeks 1325 to 1364. Transformation parameters between ITRF2005 and IGS05 reflect the effect of the relative to absolute phase centre calibration change.	[IGSMAIL-5438] [IGSMAIL-5447] [IGSMAIL-5455]
2011-04-17 (week 1632) …	ITRF2008	IGS08	232 stations, 91 of them are core stations. Absolute corrections for the antenna phase center variations (IGS network reprocessing based on IGS05), with additional site-specific corrections due to calibration updates. Transformation parameters between ITRF2008 and IGS08 are zero. Differences between IGS08 and ITRF2008 coordinates are station-specific and they reflect antenna calibration updates.	[IGSMAIL-6354] [IGSMAIL-6355] [IGSMAIL-6356]

One exception is the ITRF2005 (Altamimi et al. 2005) and the corresponding IGS05 reference frame, since the IGS05 coordinates are computed with absolute corrections for the antenna phase centre variations (model igs05.atx, http://igscb.jpl.nasa.gov/igscb/ station/ general/), while the ITRF2005 coordinates are based on relative corrections (model igs_01.atx) (Ferland 2006). This produces changes of several millimetres in the station positions, making ITRF2005 and IGS05 inconsistent with each other, especially in the scale factor (mainly due to the station height changes). In April 2011, the IGS introduced a new reference frame closely related to ITRF2008 (Altamimi et al. 2011). It is called IGS08 and must be used in combination with an updated set of satellite and ground antenna calibrations, the model igs08.atx. The change from (IGS05 + igs05.atx) to (IGS08 + igs08.atx) became effective in GPS week 1632 (2011-04-17).

The analysis of the SIRGAS reference frame as a regional densification of the ITRF is based on the IGS final products. Consequently, the SIRGAS weekly solutions are given in the same reference frame applied by the IGS for the calculation of its products; namely, the IGS05 until week 1631 and the IGS08 since week 1632. Here it should be mentioned that the former SIRGAS weekly solutions from GPS week 1042 to 1399 using relative antenna phase centre corrections and referring to different ITRF or IGS reference frames were reprocessed using the igs05.atx model and the IGS05 frame (Seemüller et al. 2011).

According to the [IGSMAIL-6354], the switch to the IGS08 reference frame has two main consequences on the station positions:

a) Systematic effects due to the ITRF2005 and ITRF2008 datum changes, and

b) Station-dependent effects due to antenna calibration updates.

In the first case, "*the scale difference between IGS05 and IGS08 (due to the ITRF2005 to ITRF2008 datum shift) will cause a mean decrease of station heights by ~6 mm. The Z translation will accentuate this effect in the Southern hemisphere and attenuate it in the Northern hemisphere. The Z translation will also cause positive North shifts, especially at low latitudes*" (citation taken from [IGSMAIL-6354]). Table 5 and Fig. 11 show coordinate changes at the SIRGAS-CON stations due to the replacement of the IGS05 frame by the IGS08.

Table 5. Coordinate changes of the SIRGAS-CON stations due to the replacement of the IGS05 frame by the IGS08 in GPS week 1632.

	N [mm]	**E [mm]**	**h [mm]**
Min	0,0	-1,7	-12,0
Max	5,6	1,5	-1,0
Mean ± RMS	3,9 ± 1,2	-0,3 ± 0,7	-6,1 ± 3,1

Regarding the additional coordinate changes caused by antenna calibration updates, Table 6 summarizes the SIRGAS-CON stations having a GNSS antenna, whose phase centre corrections were modified by more than ±1 mm.

Changes described in Tables 5 and 6, as well as in Fig. 11 have an impact for SIRGAS users. However, this impact is much smaller than those caused by the switch from relative to absolute phase centre corrections in November, 2006. In applications of high-precision

requiring a long-term consistency with the IGS08 (+ igs08.atx) frame, the reprocessing of all old data in the new framework is necessary.

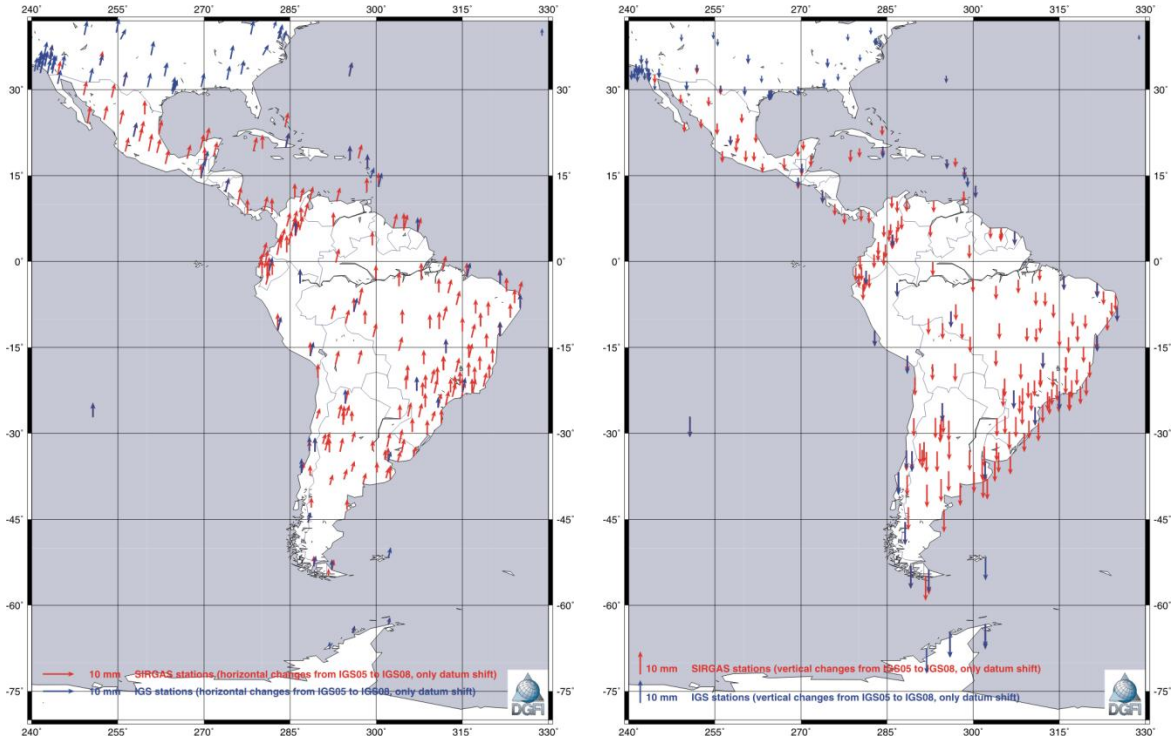


Fig. 11. Horizontal and vertical coordinate changes of the SIRGAS-CON stations due to the replacement of the IGS05 frame by the IGS08 in GPS week 1632.

Table 6. Antenna calibration updates affecting SIRGAS-CON stations (differences larger than ±1 mm between the models igs05.atx and the igs08.atx).

Antenna	**SIRGAS-CON station**
ASH700936D_M SNOW	ANTC, AUTF, COPO, COYQ, IGM1, IQQE, LHCL, PARC, VALP
ASH701945C_M NONE	CHPI
ASH701945E_M NONE	BOGT, PIE1
ASH701945E_M SNOW	APTO, BQLA, IBAG, MEDE
LEIAX1202GG NONE	ILHA, UYMO, UYRO
TPSCR3_GGD CONE	CONZ
TPSCR3_GGD NONE	UNSA

6. Multi-year solution SIR11P01 for the SIRGAS reference frame

DGFI as the IGS RNAAC SIR, yearly computes a cumulative solution containing all available weekly solutions delivered by the SIRGAS analysis centres. These cumulative solutions (Table 7) include those models, standards, and strategies widely applied at the time in which they were computed and cover different time spans depending on the availability of the weekly solutions. In this report, the computation of the multi-year solution SIR11P01 is described. It includes all the weekly solutions provided by the SIRGAS analysis centres from 2000-01-02 (GPS week 1043) to 2011-04-16 (GPS week 1631), when the IGS08 reference frame was introduced.

Table 7. Multi-year solutions computed by the IGS RNAAC SIR for the SIRGAS reference frame (Seemüller et al. 2010, modified).

Solution	No. Stations	ITRF	PCC*	Data start	Data end	Reference
DGF01P01	48	ITRF97, 2000.0	Rel	1996-06-30	2001-04-14	Seemüller et al. 2002
DGF02P01	53	ITRF2000, 2000.0	Rel	1996-06-30	2002-07-31	Seemüller, Drewes 2002
DGF04P01	69	ITRF2000, 2003.0	Rel	1996-06-30	2004-07-31	Seemüller et al. 2004
DGF05P01	95	ITRF2000, 2004.0	Rel	1996-06-30	2005-09-17	Seemüller 2005
DGF06P01	96	ITRF2000, 2004.0	Rel	1996-06-30	2006-06-17	Seemüller 2009
DGF07P03	106	IGS05, 2004.5	Abs	2002, 01/05-2005, 2006, 01/08-2007		Seemüller et al. 2007
DGF08P01	126	IGS05, 2004.5	Abs	2002-01-02	2008-03-31	Seemüller et al. 2008
SIR09P01	128	IGS05, 2005.0	Abs	2000-01-02	2009-01-03	Seemüller et al. 2009
SIR10P01	183	ITRF2008, 2005.0	Abs	2000-01-02	2010-06-05	Seemüller et al. 2010
SIR11P01	230	ITRF2008, 2005.0	Abs	2000-01-02	2011-04-16	This report

**Antenna phase centre corrections.*

Since the switch to IGS08 reference frame causes a discontinuity of some millimetres in the station position time series (see Section 5), this solution is the last one that can be computed with the available data. A new multi-year solution of the SIRGAS reference frame demands the re-processing of all previous weekly solutions using the IGS08 frame and the phase centre correction model igs08.atx. For that, it is necessary to wait until the IGS has generated the corresponding IGS08-related products (e.g. satellite orbits, EOPs, terrestrial reference station positions, etc.). Under this consideration, this solution includes all SIRGAS stations operating more than one year (instead of two years as usual), in order to have a preliminary estimation of their velocities. This is the main reason because the precision of this solution is a little worse than those of the former ones (Table 8).

The SIR11P01 solution was computed following the procedure described in Seemüller et al. 2011. The main parts of the analysis are:

a) Recovery of unconstrained (free) normal equations from the weekly solutions stored in SINEX format. This includes a comparison of the station information with the log files in order to review/correct possible equipment inconsistencies or erroneous antenna eccentricities. So, the input data for computation of the cumulative solution are unconstrained (non-deformed) normal equations and correct station information.

b) Computation of time series and time series analysis to identify outliers and discontinuities in station positions (see grey arrows in Fig. 12). In this case, the weekly normal equations are solved separately applying no-net-rotation (NNR) and no-net-translation (NNT) conditions with respect to ITRF2008. To generate residual position time series, the weekly solutions are transformed to an a-priori SIRGAS reference frame (i.e. the actual SIRGAS reference frame SIR10P01, Seemüller et al. 2010) by a 7-parameter similarity transformation. The residual time series of station positions are analysed and the detected discontinuities and outliers are taken into account for the computation of the new multi-year solution. The thresholds for outliers are defined by ±15 mm for North and East and ±30 mm for height (about fourfold the mean RMS). If outliers appear sporadically (without pattern), the station is reduced from the normal equation for the corresponding week. If outliers correspond to a discontinuity, a new

position is set up for the station. Annex 1 presents the discontinuities detected in this computation. Changes produced by the earthquakes in Chile (February 2010) and Baja California (April 2010) (Sánchez et al. 2011a) are excluded of these computations, because the corresponding post-seismic station movements occur very quickly and their modelling by means of constant velocities is unreliable (see Section 7).

c) Combination of weekly normal equations (NEQ) to compute the SIRGAS reference frame (see blue arrows in Fig. 12). The weekly normal equations are combined to a multi-year solution setting up station velocities. The estimated velocities represent linear station position variations only. Seasonal signals (e.g. loading) are not considered up to now. The geodetic datum is realized by applying NNR and NNT conditions with respect to the ITRF2008 using a set of reliable stations for datum realization (Fig. 13). After solving the first SIRGAS reference frame, step (b) and (c) are iterated: new station position residual time series are generated by transforming the weekly solutions to the computed SIRGAS reference frame. Discontinuity and outlier detection is repeated and the new information is introduced into the computation of a refined reference frame.

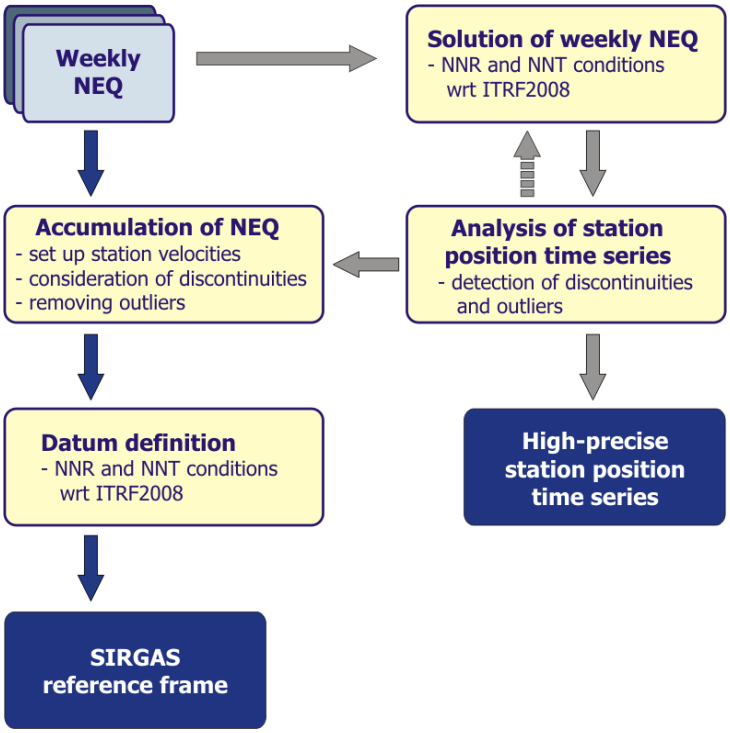


Fig. 12. Processing strategy for the computation of the SIRGAS reference frame (taken form Seemüller et al. 2010).

The final coordinates and velocities (Annex 1, Fig. 13 and 14) contained in the multi-year solution SIR11P01 refer to the ITRF2008, epoch 2005.0. It includes 230 stations with 269 occupations (due to the discontinuities summarized in Annex 1). It is well known, that the formal errors (included in the SINEX file) estimated in the GPS observation analysis are too small because physical correlations between the GPS observations are not well known and thus not considered. In addition, the stochastic model of the weekly solutions is not homogeneous: before week 1495 each station is included once (DGFI was the only one processing centre) and afterwards, each station is included as many times as processing

centres are computing it, i.e. the standard deviations of the coordinates are overestimated by a factor of about √ (number of processing centres including each station). Since these two aspects are until now omitted in our computations, standard deviations for station positions and velocities are derived from the residual position time series and not from the SINEX file. According to this, the precision of the SIR11P01 solution was estimated to be ±1,0 mm (horizontal) and ±2,4 mm (vertical) for the station positions, and ±0,7 mm/a (horizontal) and ±1,1 mm/a (vertical) for the constant velocities (Table 8).

To evaluate the consistency of the SIR11P01 solution with the ITRF2008, positions and velocities of those stations that were not used as fiducial points are compared. Results show mean discrepancies (offsets) under the millimetre level (Table 9).

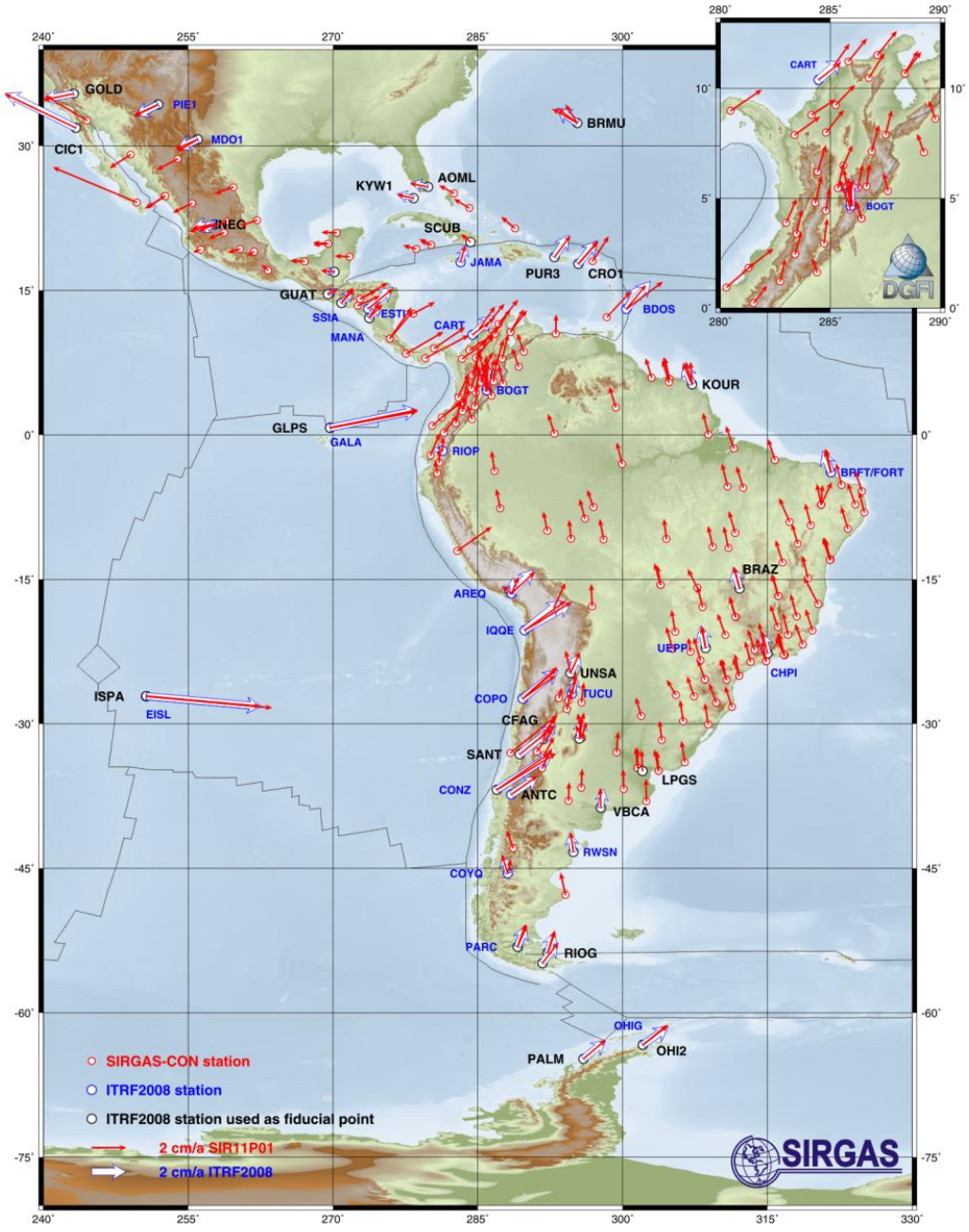


Fig. 13. Horizontal velocities of the SIR11P01 multi-year solution. Velocities of ITRF2008 stations are included for comparison.

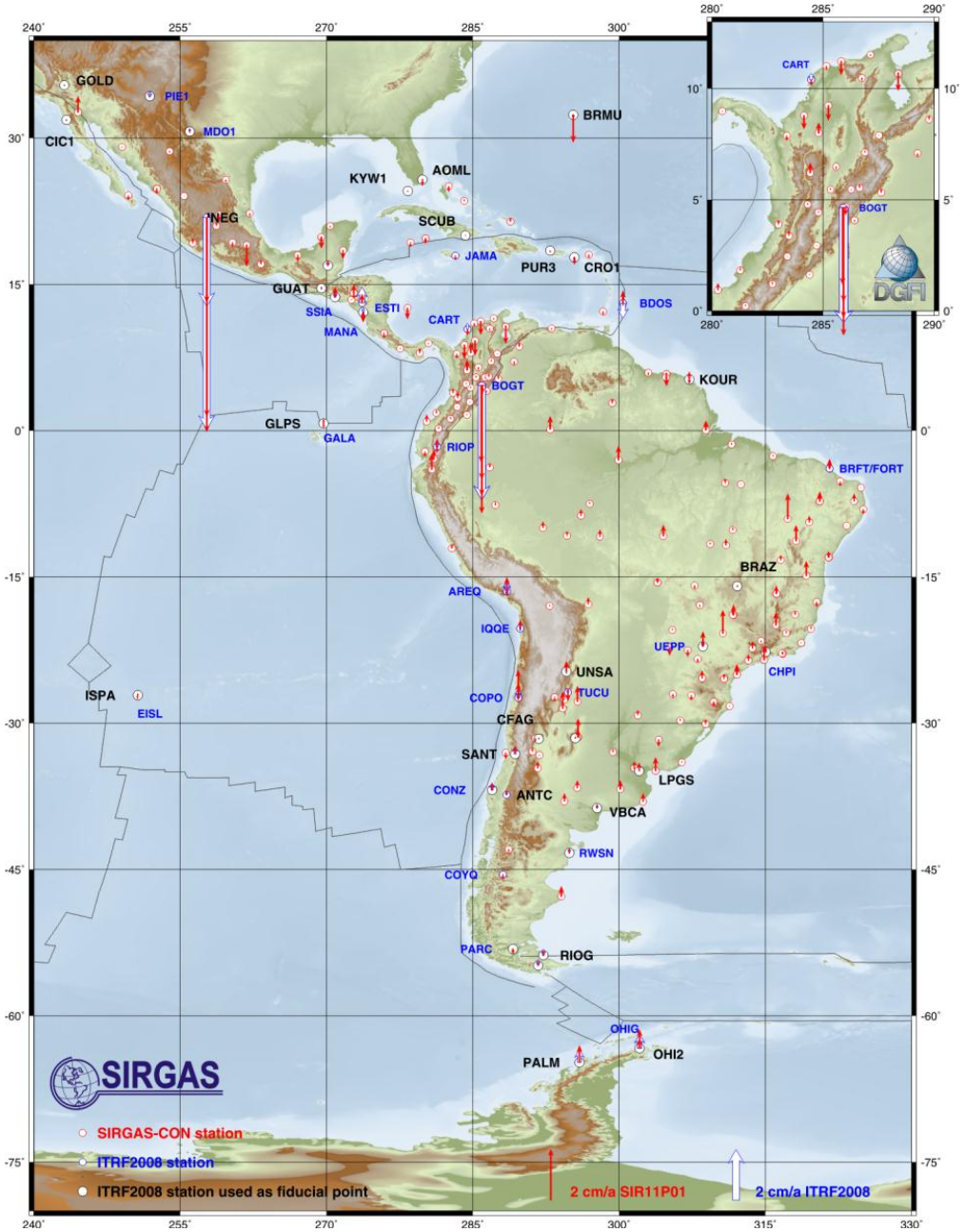


Fig. 14. Vertical velocities of the SIR11P01 multi-year solution. Velocities of ITRF2008 stations are included for comparison.

Table 8. Precision estimates for station positions and velocities computed within the multi-year solution SIR11P01.

Standard deviation in	Min	Max	Mean ± RMS	Standard deviation in	Min	Max	Mean ± RMS
X [mm]	0,3	3,9	1,0 ± 0,7	N [mm]	0,4	3,5	1,2 ± 0,8
Y [mm]	0,3	6,3	1,7 ± 1,2	E [mm]	0,5	3,7	1,4 ± 0,9
Z [mm]	0,3	3,2	0,8 ± 0,6	h [mm]	0,8	6,9	2,3 ± 1,2
vX [mm/a]	0,2	1,1	0,3 ± 0,0	vN [mm/a]	0,3	1,7	1,1 ± 0,3
vY [mm/a]	0,2	1,8	0,4 ± 0,1	vE [mm/a]	0,4	2,0	1,0 ± 0,4
vZ [mm/a]	0,1	0,8	0,3 ± 0,0	vh [mm/a]	0,8	2,6	1,6 ± 0,4

Table 9. Comparison of the different SIRGAS-CON multi-year solutions with the ITRF2008 (Seemüller et al. 2010, modified).

Solution	Common stations with ITRF2008	Comparison with the ITRF2008					
		Position deviations: Offsets ± RMS			Velocity deviations: Offsets ± RMS		
		N[mm]	E[mm]	h[mm]	VN[mm/a]	VE[mm/a]	Vh[mm/a]
DGF01P01	27	-16,3 ± 8,0	7,2 ± 19,5	27,9 ± 16,2	-0,4 ± 2,6	3,1 ± 4,7	1,3 ± 4,5
DGF02P01	24	-2,4 ± 3,7	-2,5 ± 5,8	4,0 ± 13,9	1,1 ± 1,6	1,4 ± 2,1	-3,7 ± 6,7
DGF04P01	35	-0,4 ± 4,3	-3,4 ± 5,0	1,3 ± 14,9	1,9 ± 2,3	1,3 ± 2,1	0,1 ± 3,6
DGF05P01	34	0,2 ± 3,8	-2,0 ± 5,0	0,1 ± 13,1	1,8 ± 2,1	1,1 ± 2,1	1,2 ± 3,6
DGF06P01	32	0,0 ± 3,9	-1,7 ± 4,9	1,1 ± 12,3	2,0 ± 2,2	1,0 ± 1,9	0,8 ± 3,0
DGF07P03	22	-1,3 ± 5,1	0,9 ± 6,2	-4,4 ± 19,5	0,5 ± 1,3	-0,4 ± 1,3	0,5 ± 2,7
DGF08P01	28	-3,2 ± 5,1	1,1 ± 8,9	-8,0 ± 10,0	0,5 ± 1,3	-0,5 ± 1,6	1,0 ± 2,3
SIR09P01	34	0,3 ± 4,0	-0,6 ± 6,7	-5,1 ± 12,0	0,3 ± 1,0	0,0 ± 1,1	-0,2 ± 1,9
SIR10P01	74	0,8 ± 5,0	0,3 ± 3,6	-4,9 ± 8,6	-0,1 ± 1,1	-0,1 ± 1,1	0,0 ± 2,2
SIR11P01	82	-0,3 ± 5,0	-0,1 ± 5,1	0,1 ± 7,5	-0,4 ± 1,9	0,1 ± 2,0	0,1 ± 1,4

The SIR11P01 multi-year solution is available at www.sirgas.org through the following files:

- SIR11P01.CRD: station positions
- SIR11P01.VEL: station velocities
- SIR11P01.SNX: SINEX file
- SIR11P01.PDF: residual time series

Please note that station positions included in SINEX file refer to the individual mean epoch of the total time span included for each station (see section "SOLUTION/EPOCHS"). Station positions included in Annex 2 and in the coordinate file are expressed at the epoch 2005.0. Additionally, as mentioned above, the standard deviations included in the SINEX file are not reliable. Realistic precision estimations are included together with the coordinates in Annex 2 as well as in the SIRGAS web site.

7. Analysis of non-linear station position variations

Usually, cumulative (multi-year) solutions of any terrestrial reference frame (including SIRGAS) take into consideration constant velocities only (linear coordinate changes). This presents the following main drawbacks:

a) Constant velocities are highly dependent on the considered time period. As an example, Fig. 15 shows absolute and relative time series for the vertical component at the SIRGAS-CON station BOGA (Bogotá, Colombia). In the previous SIRGAS multi-year solutions, the analysis of the time series made evident a change in the linear trend of the vertical component in June 2004. Consequently, a discontinuity was set up for the stations and two different sets of velocities were estimated, namely:

from February 2000 to June 2004: -0,0419 m/a, and

from June 2004 to December 2008: -0,0612 m/a.

Now, the time series are longer, and they show a long-term periodic variation with a half-period of about 8 years, which can be misinterpreted as a change of the vertical velocity trend of the station. A computation including all available data (February 2000 to April 2011) provides a velocity estimate of -0,0503 m/a; this differs by more than 1 cm/a from the previous results. According to this, the reliability of the position variation estimates can be improved only, if longer time series are available for the computations.

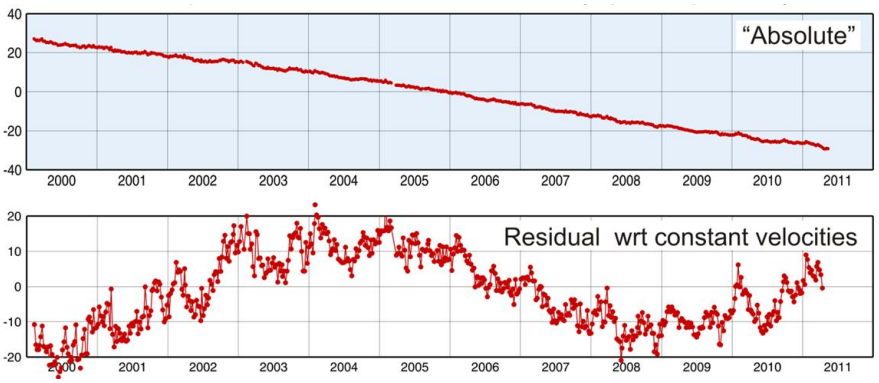


Fig. 15. Station position time series of BOGA (vertical component).

b) Most of the SIRGAS-CON stations present significant seasonal position variations, which are omitted when constant velocities are computed. These variations can reach several centimetres (up to 6 cm in the vertical component), especially in the Amazonas region (Fig. 16 and 17). To increase the reliability and long-term stability of SIRGAS as reference frame, it is necessary to analyse and model the seasonal variations within the reference frame computation.

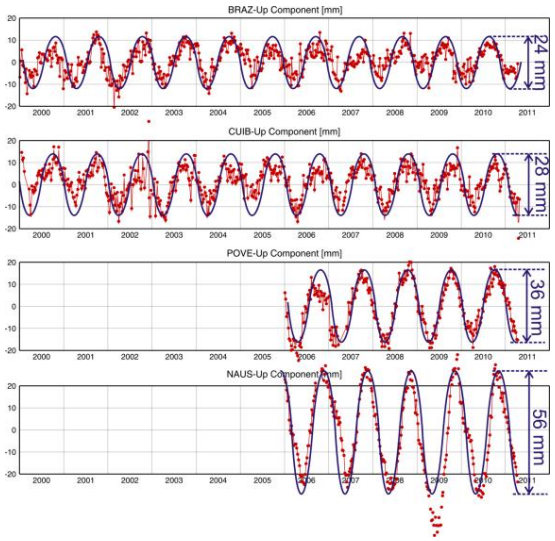


Fig. 16. Seasonal variations at selected SIRGAS-CON stations.

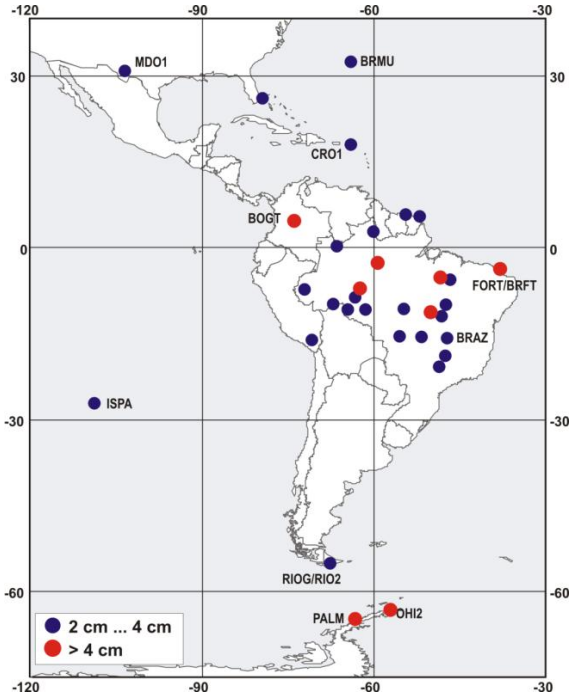


Fig. 17. SIRGAS-CON stations with seasonal movements with amplitude larger than 2 cm.

c) Deformation of the reference frame due to seismic events. The western part of the SIRGAS region, i.e. the plate boundary zone between the Pacific, Cocos, and Nazca plates in the West, and the North American, Caribbean, and South American plates in the East, is an extremely active seismic area. The frequent occurrence of earthquakes causes episodic station movements (Table 10), which influence the long-term stability of the SIRGAS frame. Earthquakes of big magnitudes generate not only jumps in the position of the reference stations, but also change their "normal" movement (constant velocities). As an example, Fig. 18 compares the constant velocities computed for the Southern SIRGAS-CON stations before and after the earthquake occurred in Chile on 2010-02-27. The post-seismic velocities should be understood as preliminary, because they are computed using one year of observations only. To improve their reliability, it is necessary to include at least one more year of measurements and to reprocess those weekly solutions referring to the IGS05 (before GPS week 1631), in order to get homogeneous weekly normal equations related to the IGS08 frame.

d) An additional drawback is related to the modelling of a non-linear station movement after an earthquake. In this case, the post-seismic period is usually cut into short time intervals ΔT_i to represent that movement by a sequence of constant velocities V_i. In this way, the transformation of the station positions before and after the seismic event is based on the sum of all the intervals ($\Delta X = \Sigma[\Delta V_i * \Delta T_i]$). This approximation considerably decreases the reliability of the reference frame, especially when the post-seismic movements occur very quickly. Fig. 16 shows the post-seismic time series for the East component at the stations ANTC, CONZ, MZAS, and VALP. The station positions are changing very quickly and a representation through constant velocities would imply the definition of too small time intervals (some weeks). Since this estimation is not reliable, velocities for the mentioned stations cannot be computed.

Table 10. Seismic events with high impact in the SIRGAS frame since 2000 (Sánchez et al. 2011a, modified).

Location	Date	M	Coordinate change	Affected stations
Concepción, Chile	2011-02-12	6,1	2 cm	CONZ
Mexicali, Mexico	2010-04-04	7,2	23 cm	MEXI
Chile	2010-02-27	8,8	1 to 305 cm	23 stations
Costa Rica	2008-01-08	6,1	2 cm	ETCG
Martinique	2007-11-29	7,4	1 cm	BDOS, GTK0
Copiapo, Chile	2006-04-30	5,3	2 cm	COPO
Tarapaca, Chile	2005-06-13	7,9	6 cm	IQQE
Managua, Nicaragua	2004-10-09	6,9	1 cm	MANA
Arequipa, Peru	2001-06-23	8,4	52 cm	AREQ
El Salvador	2001-02-13	7,8	4 cm	SSIA

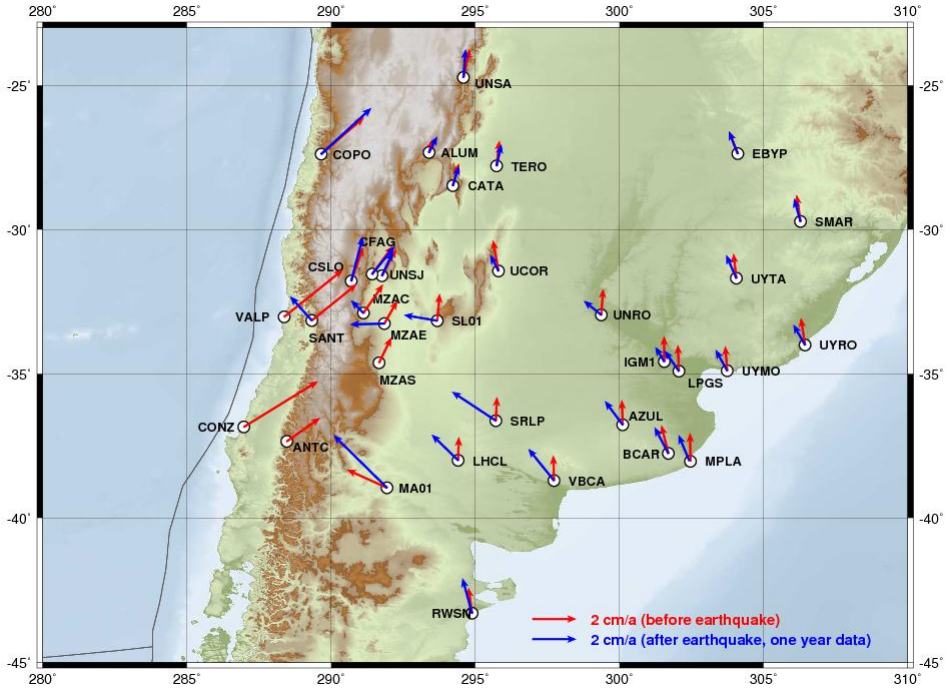


Fig. 18. Comparison of pre-seismic and post-seismic (constant) velocities one year after the earthquake on 2010-02-27 in Chile (velocities for ANTC, CONZ, MZAS and VALP are intentionally not included).

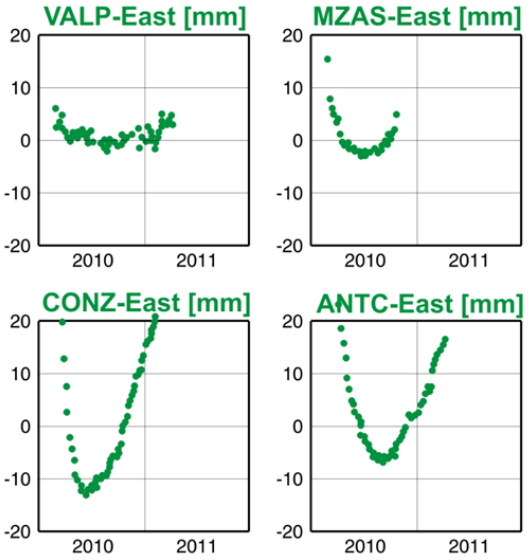


Fig. 19. Post-seismic time series for the East component at selected SIRGAS-CON stations. Relative values with respect to constant velocities are presented.

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Annex 1. Discontinuities identified in the station position time series within the computation of SIR11P01.

Station	ID-SNX	Start	End	Comments
AREQ 42202M005	A 0001	2000-01-02	2001-06-22	Arequipa earthquake (7,2)
AREQ 42202M005	A 0005	2002-08-27	2007-12-01	Cable change
AREQ 42202M005	A 0006	2007-12-02	2011-04-16	-
BDOS 43401M001	A 0002	2005-06-05	2007-12-01	Martinique earthquake (7,4)
BDOS 43401M001	A 0003	2007-12-02	2011-04-16	-
BOGT 41901M001	A 0003	2002-05-23	2005-07-15	Antenna swap
BOGT 41901M001	A 0005	2005-0717	2011-04-16	-
BRAZ 41606M001	A 0001	2000-01-02	2007-03-11	Antenna & receiver change
BRAZ 41606M001	A 0002	2007-03-18	2011-04-16	-
BRMU 42501S004	A 0001	2000-01-02	2003-02-12	Antenna & receiver change
BRMU 42501S004	A 0002	2003-03-12	2009-04-11	Jump
BRMU 42501S004	A 0003	2009-04-13	2011-04-16	-
CBSB 80402M001	A 0001	2005-11-19	2008-11-07	Jump
CBSB 80402M001	A 0002	2008-11-27	2011-04-16	-
CONZ 41719M002	A 0001	2002-06-10	2005-05-13	Antenna & receiver change
CONZ 41719M002	A 0002	2005-05-18	2010-02-26	-
COPO 41714S001	A 0001	2002-07-01	2006-04-28	Copiapo earthquake (5,3)
COPO 41714S001	A 0002	2006-05-03	2007-10-01	Antenna & receiver change
COPO 41714S001	A 0003	2008-07-05	2010-02-26	-
CORD 41511M001	A 0001	2000-01-02	2004-04-04	Receiver change
CORD 41511M001	A 0002	2005-03-03	2006-05-02	-
COYQ 41715S001	A 0001	2000-01-02	2004-09-07	Jump
COYQ 41715S001	A 0002	2007-12-06	2011-04-16	-
CRAT 41619M001	A 0001	2001-08-20	2005-06-29	Jump
CRAT 41619M001	A 0002	2005-08-16	2008-01-26	Jump
CRAT 41619M001	A 0003	2008-03-07	2010-12-28	-
CRO1 43201M001	A 0002	2000-01-02	2005-01-19	Antenna & receiver change
CRO1 43201M001	A 0003	2005-08-04	2011-04-16	-
CUIB 41603M001	A 0001	2000-01-21	2007-04-07	Antenna & receiver change
CUIB 41603M001	A 0002	2007-04-10	2011-04-16	-
ETCG 40602M001	A 0001	2003-02-11	2009-01-09	Costa Rica earthquake (6,1)
ETCG 40602M001	A 0002	2009-01-11	2011-04-16	-
GLPS 42005M002	A 0001	2003-01-07	2008-02-26	Receiver change
GLPS 42005M002	A 0002	2008-10-11	2010-12-28	-
INEG 40507M001	A 0003	2000-05-05	2001-05-05	Antenna swap
INEG 40507M001	A 0004	2001-05-06	2002-03-22	Jump
INEG 40507M001	A 0005	2004-11-15	2011-04-16	-
KOUR 97301M210	A 0001	2000-01-02	2002-01-16	Antenna change
KOUR 97301M210	A 0002	2002-02-06	2006-07-01	Jump
KOUR 97301M210	A 0003	2006-07-02	2011-04-16	-

MANA 41201S001	A 0001	2000-05-14	2004-10-10	Managua earthquake (6,9)
MANA 41201S001	A 0002	2004-10-11	2011-04-16	-
MARA 42402M001	A 0001	2000-01-21	2008-05-26	Antenna change
MARA 42402M001	A 0002	2008-07-16	2011-04-16	-
MDO1 40442M012	A 0001	2000-01-02	2004-12-02	Receiver change
MDO1 40442M012	A 0003	2004-12-08	2011-04-16	-
NEIA 41620M002	A 0001	2006-01-05	2009-11-16	Antenna & receiver change
NEIA 41620M002	A 0002	2010-01-02	2011-04-16	-
ONRJ 41635M001	A 0001	2007-04-01	2009-10-10	Antenna & receiver change
ONRJ 41635M001	A 0002	2009-10-11	2011-04-16	-
PARC 41716S001	A 0001	2000-01-02	2001-10-03	Antenna swap
PARC 41716S001	A 0002	2001-12-12	2011-04-16	-
PIE1 40456M001	A 0003	2000-01-02	2006-09-04	Antenna change
PIE1 40456M001	A 0005	2007-01-24	2011-04-16	-
PMB1 43702S001	A 0001	2005-12-30	2007-10-21	Antenna & receiver change
PMB1 43702S001	A 0002	2007-12-19	2011-04-16	-
RIOP 42006M001	A 0001	2000-01-02	2001-12-28	Antenna & receiver change
RIOP 42006M001	A 0002	2007-04-29	2011-04-16	-
SSIA 41401S001	A 0003	2001-02-13	2003-12-28	Jump
SSIA 41401S001	A 0004	2005-06-16	2010-07-25	-
TUCU 41520S001	A 0001	2002-01-01	2006-01-23	Change of trend in vertical velocity
TUCU 41520S001	A 0002	2006-08-31	2011-04-16	-
UBAT 41627M001	A 0001	2006-01-02	2008-04-11	Jump
UBAT 41627M001	A 0002	2008-04-14	2009-09-06	-
UCOR 41502M001	A 0001	2004-04-05	2008-11-13	Antenna & receiver change
UCOR 41502M001	A 0002	2008-11-23	2010-02-26	-
UNSA 41514M001	A 0001	2000-01-02	2008-07-27	Antenna swap
UNSA 41514M001	A 0002	2008-07-28	2010-02-26	-
UYMO 42301M001	A 0001	2007-11-01	2009-03-07	Antenna change
UYMO 42301M001	A 0002	2009-03-08	2010-02-26	-
VIVI 41931S001	A 0001	2005-09-18	2007-12-28	Jump
VIVI 41931S001	A 0002	2008-01-24	2011-03-03	-
VIVI 41931S001	A 0001	2005-09-18	2007-12-28	Jump
VIVI 41931S001	A 0002	2008-01-24	2011-03-03	-

Annex 2. Station positions and velocities of the SIR11P01 multi-year solution, epoch 2005.0.

Geocentric Cartesian coordinates [X, Y, Z] are converted to ellipsoidal coordinates [φ, φ, h] using the GRS80 ellipsoid.

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
ABCC 41939M001	A 0001	2010-02-21	2011-04-16	1739438,1614 ± 0,0025	-6117252,8033 ± 0,0060	515064,9106 ± 0,0014	-0,0141 ± 0,0003	0,0287 ± 0,0007	0,0125 ± 0,0003
ABPD 41941M001	A 0001	2010-02-21	2011-04-16	1742983,2620 ± 0,0024	-6118331,5093 ± 0,0060	494730,5358 ± 0,0013	-0,0013 ± 0,0003	0,0006 ± 0,0006	0,0149 ± 0,0003
ABPW 41940M001	A 0001	2010-02-21	2011-04-16	1753507,2433 ± 0,0032	-6113239,0789 ± 0,0060	518210,3994 ± 0,0016	-0,0038 ± 0,0003	0,0035 ± 0,0011	0,0153 ± 0,0003
ALAR 41653M001	A 0001	2008-04-11	2011-04-16	5043729,7074 ± 0,0015	-3753105,5516 ± 0,0012	-1072966,9959 ± 0,0005	-0,0006 ± 0,0003	-0,0044 ± 0,0003	0,0124 ± 0,0003
ALUM 41535M001	A 0001	2009-02-16	2010-02-26	2253309,6555 ± 0,0032	-5206250,7681 ± 0,0060	-2911357,3492 ± 0,0032	0,0020 ± 0,0004	-0,0004 ± 0,0007	0,0060 ± 0,0004
AMHU 41646M001	A 0001	2008-01-30	2011-04-16	2868209,9641 ± 0,0011	-5636111,8531 ± 0,0018	-827352,8439 ± 0,0005	-0,0023 ± 0,0003	-0,0034 ± 0,0003	0,0097 ± 0,0003
ANDS 41908S001	A 0001	2007-05-08	2008-08-07	898663,9935 ± 0,0018	-6160668,0793 ± 0,0060	1380782,8617 ± 0,0023	0,0116 ± 0,0003	0,0074 ± 0,0010	0,0056 ± 0,0003
ANTC 41713S001	A 0001	2002-07-01	2010-02-20	1608539,5688 ± 0,0003	-4816369,7107 ± 0,0004	-3847798,5367 ± 0,0003	0,0171 ± 0,0003	-0,0026 ± 0,0003	0,0076 ± 0,0003
AOML 49914S001	A 0001	2000-01-02	2004-04-05	982296,7209 ± 0,0003	-5664607,2137 ± 0,0005	2752614,5013 ± 0,0003	-0,0108 ± 0,0003	0,0012 ± 0,0003	0,0008 ± 0,0003
APTO 41933S001	A 0001	2007-11-04	2010-01-11	1460797,7994 ± 0,0010	-6147200,8309 ± 0,0029	868399,4411 ± 0,0007	0,0136 ± 0,0003	0,0066 ± 0,0003	0,0103 ± 0,0003
ARCA 41909S001	A 0001	2008-08-05	2011-04-07	2086018,6891 ± 0,0009	-5976299,5807 ± 0,0019	781400,4818 ± 0,0005	-0,0045 ± 0,0003	0,0012 ± 0,0003	0,0104 ± 0,0003
AREQ 42202M005	A 0001	2000-01-02	2001-06-22	1942826,8314 ± 0,0005	-5804070,2224 ± 0,0007	-1796893,8540 ± 0,0003	0,0136 ± 0,0003	0,0023 ± 0,0008	0,0125 ± 0,0003
AREQ 42202M005	A 0005	2002-08-27	2007-12-01	1942826,2138 ± 0,0005	-5804070,3129 ± 0,0009	-1796894,2591 ± 0,0003	-0,0031 ± 0,0003	-0,0077 ± 0,0003	0,0024 ± 0,0003
AREQ 42202M005	A 0006	2007-12-02	2011-04-16	1942826,1895 ± 0,0005	-5804070,3280 ± 0,0009	-1796894,2732 ± 0,0003	0,0050 ± 0,0003	-0,0026 ± 0,0003	0,0087 ± 0,0003
ASC1 30602M001	A 0001	2000-01-02	2007-09-03	6118526,0546 ± 0,0006	-1572344,7367 ± 0,0003	-876451,0672 ± 0,0003	0,0002 ± 0,0003	-0,0056 ± 0,0003	0,0108 ± 0,0003
AUTF 41515S001	A 0001	2002-01-10	2011-04-16	1360918,8664 ± 0,0003	-3420457,9172 ± 0,0003	-5191175,2216 ± 0,0004	0,0124 ± 0,0003	-0,0065 ± 0,0003	0,0057 ± 0,0003
AZUE 41301M001	A 0001	2008-10-20	2010-06-14	1049978,0683 ± 0,0011	-6229340,6564 ± 0,0038	876934,1647 ± 0,0009	0,0250 ± 0,0003	0,0044 ± 0,0004	0,0135 ± 0,0003
AZUL 41529M001	A 0001	2007-08-30	2010-02-26	2566993,1144 ± 0,0012	-4424962,7687 ± 0,0017	-3796807,7718 ± 0,0015	0,0044 ± 0,0003	-0,0085 ± 0,0003	0,0069 ± 0,0003
BAIR 41665M001	A 0001	2009-02-01	2011-04-16	4659351,6238 ± 0,0022	-4174512,1850 ± 0,0020	-1242318,9088 ± 0,0008	0,0038 ± 0,0003	-0,0079 ± 0,0003	0,0101 ± 0,0003
BANS 42403M001	A 0001	2006-05-21	2009-12-12	2132376,3733 ± 0,0009	-5935471,3246 ± 0,0020	948857,2330 ± 0,0005	-0,0035 ± 0,0003	-0,0012 ± 0,0003	0,0105 ± 0,0003
BATF 41666M001	A 0001	2009-02-01	2011-04-16	4677358,3410 ± 0,0025	-3889198,8010 ± 0,0022	-1911503,9695 ± 0,0012	-0,0029 ± 0,0003	-0,0083 ± 0,0003	0,0155 ± 0,0003
BAVC 41669M001	A 0001	2009-07-26	2011-04-16	4667609,3155 ± 0,0030	-4029356,4954 ± 0,0026	-1628384,8764 ± 0,0013	0,0047 ± 0,0003	-0,0081 ± 0,0003	0,0110 ± 0,0003
BDOS 43401M001	A 0002	2005-06-05	2007-12-01	3143382,1845 ± 0,0019	-5359714,8214 ± 0,0031	1434875,7847 ± 0,0010	0,0187 ± 0,0003	0,0097 ± 0,0004	0,0164 ± 0,0003
BDOS 43401M001	A 0003	2007-12-02	2011-04-16	3143382,2239 ± 0,0011	-5359714,8219 ± 0,0016	1434875,7964 ± 0,0006	0,0077 ± 0,0003	0,0092 ± 0,0003	0,0133 ± 0,0003
BELE 41622M001	A 0001	2004-01-01	2011-04-16	4228139,0387 ± 0,0006	-4772752,0878 ± 0,0005	-155761,3050 ± 0,0003	-0,0029 ± 0,0003	-0,0038 ± 0,0003	0,0129 ± 0,0003
BERR 41910S001	A 0001	2007-05-25	2011-04-16	1703223,6814 ± 0,0006	-6104502,3397 ± 0,0014	716436,9111 ± 0,0003	0,0044 ± 0,0003	0,0036 ± 0,0003	0,0114 ± 0,0003
BOAV 41636M001	A 0001	2007-09-05	2011-04-16	3117452,2158 ± 0,0010	-5555487,8340 ± 0,0015	314480,8077 ± 0,0003	-0,0027 ± 0,0003	-0,0027 ± 0,0003	0,0121 ± 0,0003
BOGA 41901M002	A 0001	2000-02-09	2011-04-16	1744517,3825 ± 0,0003	-6116051,5791 ± 0,0003	512580,8989 ± 0,0003	-0,0182 ± 0,0003	0,0487 ± 0,0003	0,0174 ± 0,0003
BOGT 41901M001	A 0003	2002-05-23	2005-07-15	1744399,0316 ± 0,0006	-6116037,5289 ± 0,0011	512731,7207 ± 0,0003	-0,0106 ± 0,0003	0,0366 ± 0,0003	0,0113 ± 0,0003
BOGT 41901M001	A 0005	2005-07-17	2011-04-16	1744399,0266 ± 0,0003	-6116037,5064 ± 0,0007	512731,7266 ± 0,0003	-0,0114 ± 0,0003	0,0430 ± 0,0003	0,0118 ± 0,0003
BOMJ 41612M001	A 0001	2000-01-21	2011-04-16	4510195,8254 ± 0,0003	-4268322,3332 ± 0,0003	-1453035,2259 ± 0,0003	0,0006 ± 0,0003	-0,0062 ± 0,0003	0,0121 ± 0,0003
BQLA 41934S001	A 0001	2007-09-29	2009-01-21	1636421,5053 ± 0,0018	-6043722,3641 ± 0,0054	1211155,1639 ± 0,0016	0,0078 ± 0,0003	0,0060 ± 0,0006	0,0124 ± 0,0003
BRAZ 41606M001	A 0001	2000-01-02	2007-03-11	4115014,0768 ± 0,0003	-4550641,5568 ± 0,0003	-1741443,9541 ± 0,0003	-0,0002 ± 0,0003	-0,0046 ± 0,0003	0,0120 ± 0,0003
BRAZ 41606M001	A 0002	2007-03-18	2011-04-16	4115014,0809 ± 0,0007	-4550641,5633 ± 0,0006	-1741443,9541 ± 0,0003	0,0001 ± 0,0003	-0,0051 ± 0,0003	0,0118 ± 0,0003

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
BRFT 41602M002	A 0003	2007-06-24	2011-04-16	4985393,5300 ± 0,0010	-3954993,4135 ± 0,0008	-428426,7079 ± 0,0003	-0,0002 ± 0,0003	-0,0043 ± 0,0003	0,0130 ± 0,0003
BRMU 42501S004	A 0001	2000-01-02	2003-02-12	2304703,4678 ± 0,0003	-4874817,1806 ± 0,0004	3395186,9627 ± 0,0003	-0,0152 ± 0,0003	-0,0015 ± 0,0003	0,0064 ± 0,0003
BRMU 42501S004	A 0002	2003-03-12	2009-04-11	2304703,4769 ± 0,0003	-4874817,1828 ± 0,0005	3395186,9609 ± 0,0004	-0,0119 ± 0,0003	-0,0007 ± 0,0003	0,0069 ± 0,0003
BRMU 42501S004	A 0003	2009-04-13	2011-04-16	2304703,4759 ± 0,0017	-4874817,2468 ± 0,0034	3395186,9793 ± 0,0024	-0,0124 ± 0,0003	0,0104 ± 0,0003	0,0033 ± 0,0003
BUCA 41911S001	A 0001	2005-09-28	2009-05-09	1838191,2874 ± 0,0006	-6057527,6731 ± 0,0013	785312,2032 ± 0,0003	0,0037 ± 0,0003	0,0023 ± 0,0003	0,0154 ± 0,0003
BUEN 41912S001	A 0001	2005-10-05	2011-01-27	1430383,8463 ± 0,0003	-6200818,1699 ± 0,0007	428933,9745 ± 0,0003	0,0059 ± 0,0003	0,0007 ± 0,0003	0,0139 ± 0,0003
CALI 41903S001	A 0001	2004-02-25	2011-04-16	1483099,9367 ± 0,0003	-6193060,1892 ± 0,0005	373124,0499 ± 0,0003	0,0032 ± 0,0003	-0,0003 ± 0,0003	0,0140 ± 0,0003
CALL 42205M001	A 0001	2009-07-26	2011-04-16	1387454,1062 ± 0,0011	-6081996,1852 ± 0,0033	-1324212,2686 ± 0,0010	0,0204 ± 0,0003	0,0002 ± 0,0003	0,0133 ± 0,0003
CAM2 40514M001	A 0001	2005-01-09	2008-12-13	-56581,3325 ± 0,0003	-6001449,5713 ± 0,0012	2151509,1620 ± 0,0005	-0,0082 ± 0,0003	0,0013 ± 0,0003	-0,0011 ± 0,0003
CART 41902M001	A 0001	2000-02-04	2008-08-20	1567348,5986 ± 0,0003	-6075293,5224 ± 0,0004	1142850,8168 ± 0,0003	0,0115 ± 0,0003	0,0070 ± 0,0003	0,0094 ± 0,0003
CASI 41914S001	A 0001	2009-01-04	2010-05-25	1613574,3800 ± 0,0016	-6107148,7807 ± 0,0048	880567,1534 ± 0,0012	0,0106 ± 0,0003	0,0005 ± 0,0005	0,0135 ± 0,0003
CATA 41534M001	A 0001	2009-02-15	2010-02-26	2302597,6343 ± 0,0035	-5117329,0301 ± 0,0060	-3022751,2899 ± 0,0032	0,0068 ± 0,0004	-0,0085 ± 0,0009	0,0056 ± 0,0005
CBSB 80402M001	A 0001	2005-11-19	2008-11-07	1060277,1879 ± 0,0006	-5912339,3959 ± 0,0018	2137708,3884 ± 0,0007	-0,0064 ± 0,0003	0,0008 ± 0,0003	0,0018 ± 0,0003
CBSB 80402M001	A 0002	2008-11-27	2011-04-16	1060277,1837 ± 0,0007	-5912339,4019 ± 0,0024	2137708,3841 ± 0,0010	-0,0070 ± 0,0003	0,0018 ± 0,0003	0,0026 ± 0,0003
CEEU 41602M003	A 0001	2008-04-15	2011-04-16	4985392,7374 ± 0,0015	-3954993,2792 ± 0,0013	-428437,9017 ± 0,0004	0,0018 ± 0,0003	-0,0049 ± 0,0003	0,0132 ± 0,0003
CEFE 41637M001	A 0001	2007-09-05	2011-04-16	4562488,4910 ± 0,0012	-3871935,7988 ± 0,0010	-2200001,5084 ± 0,0006	0,0014 ± 0,0003	-0,0064 ± 0,0003	0,0112 ± 0,0003
CFAG 41517S001	A 0001	2000-01-02	2010-02-26	2016584,8730 ± 0,0003	-5050165,6328 ± 0,0003	-3323308,7618 ± 0,0003	0,0085 ± 0,0003	-0,0039 ± 0,0003	0,0101 ± 0,0003
CHET 40526M001	A 0001	2005-01-09	2011-04-16	179584,7821 ± 0,0003	-6048080,6733 ± 0,0007	2010447,3600 ± 0,0003	-0,0084 ± 0,0003	0,0029 ± 0,0003	-0,0006 ± 0,0003
CHIH 40525M001	A 0001	2005-01-11	2011-04-16	-1552307,7944 ± 0,0003	-5382771,9616 ± 0,0006	3041779,7988 ± 0,0004	-0,0123 ± 0,0003	0,0010 ± 0,0003	-0,0059 ± 0,0003
CHPI 41609M003	A 0001	2003-05-08	2011-04-16	4164613,8796 ± 0,0003	-4162456,8746 ± 0,0003	-2445028,8014 ± 0,0003	0,0026 ± 0,0003	-0,0070 ± 0,0003	0,0105 ± 0,0003
CIC1 40508M002	A 0001	2000-01-02	2009-12-13	-2433177,0940 ± 0,0003	-4845044,8850 ± 0,0003	3348295,8775 ± 0,0003	-0,0323 ± 0,0003	0,0281 ± 0,0003	0,0167 ± 0,0003
COL2 40524M001	A 0001	2005-01-09	2011-04-16	-1427005,6230 ± 0,0003	-5852976,0380 ± 0,0007	2089088,9661 ± 0,0003	-0,0047 ± 0,0003	-0,0011 ± 0,0003	-0,0008 ± 0,0003
CONZ 41719M002	A 0001	2002-06-10	2005-05-13	1492007,5803 ± 0,0005	-4887910,7244 ± 0,0009	-3803639,9374 ± 0,0007	0,0333 ± 0,0003	-0,0052 ± 0,0003	0,0153 ± 0,0003
CONZ 41719M002	A 0002	2005-05-18	2010-02-26	1492007,5775 ± 0,0003	-4887910,7172 ± 0,0006	-3803639,9372 ± 0,0005	0,0366 ± 0,0003	-0,0021 ± 0,0003	0,0170 ± 0,0003
COPO 41714S001	A 0001	2002-07-01	2006-04-28	1907040,7607 ± 0,0005	-5337379,0115 ± 0,0008	-2916334,8400 ± 0,0005	0,0229 ± 0,0003	-0,0054 ± 0,0003	0,0125 ± 0,0003
COPO 41714S001	A 0002	2006-05-03	2007-10-01	1907040,7472 ± 0,0022	-5337379,0205 ± 0,0054	-2916334,8375 ± 0,0031	0,0215 ± 0,0003	-0,0005 ± 0,0008	0,0168 ± 0,0004
COPO 41714S001	A 0003	2008-07-05	2010-02-26	1907040,7413 ± 0,0015	-5337378,9869 ± 0,0036	-2916334,8000 ± 0,0021	0,0232 ± 0,0003	-0,0085 ± 0,0004	0,0070 ± 0,0003
CORD 41511M001	A 0001	2000-01-02	2004-04-04	2345503,8789 ± 0,0005	-4910842,8303 ± 0,0006	-3316365,3548 ± 0,0004	0,0035 ± 0,0003	-0,0052 ± 0,0003	0,0100 ± 0,0003
CORD 41511M001	A 0002	2005-03-03	2006-05-02	2345503,8758 ± 0,0025	-4910842,8331 ± 0,0046	-3316365,3547 ± 0,0032	0,0060 ± 0,0004	-0,0064 ± 0,0008	0,0124 ± 0,0006
COYQ 41715S001	A 0001	2000-01-02	2004-09-07	1391587,1928 ± 0,0003	-4255574,4718 ± 0,0003	-4527925,9499 ± 0,0003	-0,0009 ± 0,0003	-0,0082 ± 0,0003	0,0075 ± 0,0003
COYQ 41715S001	A 0002	2007-12-06	2011-04-16	1391587,1925 ± 0,0007	-4255574,4839 ± 0,0014	-4527925,9554 ± 0,0015	0,0031 ± 0,0003	-0,0037 ± 0,0003	0,0070 ± 0,0003
CRAT 41619M001	A 0001	2001-08-20	2005-06-29	4888826,0195 ± 0,0012	-4017957,4481 ± 0,0010	-798308,9436 ± 0,0003	-0,0001 ± 0,0003	-0,0033 ± 0,0003	0,0117 ± 0,0003
CRAT 41619M001	A 0002	2005-08-16	2008-01-26	4888826,0184 ± 0,0039	-4017957,4567 ± 0,0027	-798308,9456 ± 0,0008	0,0070 ± 0,0005	0,0020 ± 0,0004	0,0126 ± 0,0003
CRAT 41619M001	A 0003	2008-03-07	2010-12-28	4888826,0103 ± 0,0014	-4017957,4479 ± 0,0012	-798308,9413 ± 0,0004	0,0043 ± 0,0003	-0,0027 ± 0,0003	0,0108 ± 0,0003

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
CRCS 42401M001	A 0001	2006-05-21	2011-04-16	2459721,8653 ± 0,0006	-5770508,8867 ± 0,0010	1155112,0356 ± 0,0003	-0,0008 ± 0,0003	0,0023 ± 0,0003	0,0108 ± 0,0003
CRO1 43201M001	A 0002	2000-01-02	2005-01-19	2607771,2156 ± 0,0003	-5488076,6984 ± 0,0006	1932767,7925 ± 0,0003	0,0075 ± 0,0003	0,0107 ± 0,0003	0,0112 ± 0,0003
CRO1 43201M001	A 0003	2005-08-04	2011-04-16	2607771,2178 ± 0,0006	-5488076,6971 ± 0,0007	1932767,7927 ± 0,0003	0,0086 ± 0,0003	0,0090 ± 0,0003	0,0128 ± 0,0003
CRUZ 41641M001	A 0001	2007-09-05	2009-11-04	1883105,4491 ± 0,0024	-6035606,2568 ± 0,0060	-839206,2519 ± 0,0014	-0,0013 ± 0,0003	-0,0030 ± 0,0008	0,0109 ± 0,0003
CUCU 41904S001	A 0001	2004-03-12	2011-04-16	1901228,7061 ± 0,0004	-6025504,3035 ± 0,0006	870700,4714 ± 0,0003	0,0027 ± 0,0003	0,0030 ± 0,0003	0,0139 ± 0,0003
CUEC 42009M001	A 0001	2008-11-17	2011-04-16	1215704,3272 ± 0,0008	-6255712,1669 ± 0,0027	-318818,9896 ± 0,0005	0,0009 ± 0,0003	-0,0037 ± 0,0003	0,0073 ± 0,0003
CUIB 41603M001	A 0001	2000-01-21	2007-04-07	3430711,3980 ± 0,0004	-5099641,5731 ± 0,0003	-1699432,8678 ± 0,0003	-0,0003 ± 0,0003	-0,0059 ± 0,0003	0,0115 ± 0,0003
CUIB 41603M001	A 0002	2007-04-10	2011-04-16	3430711,3941 ± 0,0007	-5099641,5809 ± 0,0008	-1699432,8644 ± 0,0004	0,0010 ± 0,0003	-0,0049 ± 0,0003	0,0101 ± 0,0003
CULC 40529M001	A 0001	2007-10-04	2011-04-16	-1733738,9752 ± 0,0007	-5528108,5952 ± 0,0015	2658500,5649 ± 0,0008	-0,0114 ± 0,0003	0,0022 ± 0,0003	-0,0074 ± 0,0003
CULI 40523M001	A 0001	2005-01-09	2007-07-13	-1730936,7040 ± 0,0008	-5528855,2528 ± 0,0020	2658865,6295 ± 0,0010	-0,0109 ± 0,0003	0,0001 ± 0,0003	-0,0061 ± 0,0003
DAVI 41302M001	A 0001	2008-10-20	2011-04-16	830823,7036 ± 0,0008	-6254882,4771 ± 0,0030	928362,9843 ± 0,0007	0,0213 ± 0,0003	0,0044 ± 0,0003	0,0127 ± 0,0003
DORA 41915S001	A 0001	2006-02-16	2011-04-16	1679425,2187 ± 0,0003	-6123536,8699 ± 0,0008	602182,2432 ± 0,0003	0,0033 ± 0,0003	0,0018 ± 0,0003	0,0148 ± 0,0003
EBYP 41538M001	A 0001	2009-11-22	2011-04-16	3178529,9068 ± 0,0035	-4693288,1351 ± 0,0060	-2914645,4635 ± 0,0032	-0,0028 ± 0,0004	-0,0031 ± 0,0006	0,0109 ± 0,0004
EISL 41703M003	A 0001	2000-01-02	2003-01-26	-1884951,2154 ± 0,0007	-5357596,0257 ± 0,0014	-2892890,5486 ± 0,0008	0,0709 ± 0,0003	-0,0203 ± 0,0007	-0,0054 ± 0,0004
ELEN 40902S001	A 0001	2001-12-08	2011-04-16	14103,7805 ± 0,0004	-6103995,0181 ± 0,0004	1843981,7431 ± 0,0003	-0,0078 ± 0,0003	-0,0017 ± 0,0003	0,0013 ± 0,0003
ESMR 42011M001	A 0001	2009-06-28	2011-04-16	1137649,9139 ± 0,0012	-6275256,3283 ± 0,0040	103347,5991 ± 0,0007	0,0167 ± 0,0003	0,0007 ± 0,0004	0,0144 ± 0,0003
ESQU 41533M001	A 0001	2008-10-06	2011-04-16	1498229,0708 ± 0,0008	-4432287,0517 ± 0,0017	-4321164,2862 ± 0,0016	-0,0016 ± 0,0003	-0,0071 ± 0,0003	0,0082 ± 0,0003
ESTI 41202S001	A 0001	2000-05-12	2003-02-26	394283,5447 ± 0,0004	-6201541,4117 ± 0,0006	1436325,8515 ± 0,0003	0,0145 ± 0,0003	0,0003 ± 0,0003	0,0123 ± 0,0003
ETCG 40602M001	A 0001	2003-02-11	2009-01-09	645208,2376 ± 0,0004	-6249842,1967 ± 0,0008	1100399,4368 ± 0,0003	0,0129 ± 0,0003	0,0061 ± 0,0003	0,0155 ± 0,0003
ETCG 40602M001	A 0002	2009-01-11	2011-04-16	645208,2328 ± 0,0007	-6249842,1907 ± 0,0031	1100399,4501 ± 0,0008	0,0119 ± 0,0003	0,0049 ± 0,0003	0,0176 ± 0,0003
EXU0 43606M001	A 0001	2007-07-01	2011-04-16	1427635,0897 ± 0,0006	-5672506,8979 ± 0,0015	2534091,6871 ± 0,0008	-0,0089 ± 0,0003	-0,0007 ± 0,0003	0,0050 ± 0,0003
FLOR 41916S001	A 0001	2006-11-02	2011-04-16	1585141,1006 ± 0,0005	-6175731,4485 ± 0,0011	179144,8499 ± 0,0003	-0,0026 ± 0,0003	-0,0006 ± 0,0003	0,0081 ± 0,0003
FORT 41602M001	A 0002	2000-01-09	2006-04-08	4985386,5942 ± 0,0009	-3954998,5994 ± 0,0007	-428426,3732 ± 0,0003	0,0011 ± 0,0003	-0,0053 ± 0,0003	0,0122 ± 0,0003
FQNE 41936S001	A 0001	2007-09-30	2010-12-23	1779063,7791 ± 0,0009	-6097672,8891 ± 0,0024	603896,6839 ± 0,0004	0,0018 ± 0,0003	0,0023 ± 0,0003	0,0134 ± 0,0003
GALA 42005M001	A 0001	2000-02-04	2002-11-09	-33795,7045 ± 0,0004	-6377522,6295 ± 0,0006	-82120,8060 ± 0,0003	0,0507 ± 0,0003	0,0014 ± 0,0003	0,0095 ± 0,0003
GCGT 80401M001	A 0001	2005-06-09	2011-04-16	902661,6767 ± 0,0004	-5954125,6688 ± 0,0007	2093986,0159 ± 0,0003	-0,0077 ± 0,0003	0,0012 ± 0,0003	0,0013 ± 0,0003
GLPS 42005M002	A 0001	2003-01-07	2008-02-26	-33801,6544 ± 0,0004	-6377516,5230 ± 0,0006	-82154,3857 ± 0,0003	0,0511 ± 0,0003	-0,0012 ± 0,0003	0,0098 ± 0,0003
GLPS 42005M002	A 0002	2008-10-11	2010-12-28	-33801,6557 ± 0,0003	-6377516,5183 ± 0,0012	-82154,3875 ± 0,0003	0,0508 ± 0,0003	-0,0021 ± 0,0003	0,0103 ± 0,0003
GOJA 41654M001	A 0001	2008-06-10	2011-04-16	3761502,4068 ± 0,0013	-4767352,9918 ± 0,0015	-1946325,9199 ± 0,0008	-0,0005 ± 0,0003	-0,0042 ± 0,0003	0,0118 ± 0,0003
GOLD 40405S031	A 0005	2000-07-01	2011-04-16	-2353614,3179 ± 0,0004	-4641385,3272 ± 0,0003	3676976,4374 ± 0,0003	-0,0172 ± 0,0003	0,0060 ± 0,0003	-0,0030 ± 0,0003
GOUG 30608M001	A 0001	2000-01-02	2006-12-07	4795578,6672 ± 0,0006	-835299,3847 ± 0,0003	-4107633,9464 ± 0,0004	0,0175 ± 0,0003	0,0182 ± 0,0003	0,0135 ± 0,0003
GRE0 43501S001	A 0001	2007-07-01	2011-04-16	2961421,0249 ± 0,0008	-5486288,7810 ± 0,0012	1341394,3231 ± 0,0004	0,0102 ± 0,0003	0,0103 ± 0,0003	0,0143 ± 0,0003
GTK0 43602S007	A 0001	2007-07-01	2010-08-11	1919596,6633 ± 0,0008	-5620954,2318 ± 0,0019	2316053,9341 ± 0,0009	-0,0078 ± 0,0003	-0,0016 ± 0,0003	0,0067 ± 0,0003
GUAT 40901S001	A 0001	2000-07-30	2011-04-16	-56063,5816 ± 0,0004	-6174978,6718 ± 0,0003	1596665,2716 ± 0,0003	0,0054 ± 0,0003	0,0012 ± 0,0003	0,0029 ± 0,0003

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
GVAL 41623M001	A 0001	2004-07-02	2011-04-16	4490200,8014 ± 0,0006	-4036984,9470 ± 0,0004	-2048288,3345 ± 0,0003	0,0017 ± 0,0003	-0,0064 ± 0,0003	0,0117 ± 0,0003
GYEC 42007M001	A 0001	2008-09-01	2011-04-16	1118628,4034 ± 0,0007	-6274783,8341 ± 0,0020	-237610,3272 ± 0,0004	0,0049 ± 0,0003	0,0023 ± 0,0003	0,0130 ± 0,0003
HER2 40522M001	A 0001	2005-01-09	2011-04-16	-1996003,9577 ± 0,0004	-5208674,5182 ± 0,0006	3082959,5859 ± 0,0003	-0,0126 ± 0,0003	0,0009 ± 0,0003	-0,0068 ± 0,0003
IBAG 41918S001	A 0001	2006-02-18	2010-01-13	1623166,6349 ± 0,0009	-6149837,6522 ± 0,0025	489244,1722 ± 0,0005	0,0021 ± 0,0003	0,0012 ± 0,0003	0,0131 ± 0,0003
ICAM 40514M002	A 0001	2009-03-22	2011-04-16	-55248,5872 ± 0,0008	-6001113,5313 ± 0,0042	2152446,1918 ± 0,0017	-0,0086 ± 0,0003	0,0045 ± 0,0004	-0,0011 ± 0,0003
ICEP 40531M001	A 0001	2009-07-12	2011-04-16	-859277,3896 ± 0,0013	-5972129,1460 ± 0,0052	2067506,6891 ± 0,0021	-0,0031 ± 0,0003	0,0074 ± 0,0005	-0,0050 ± 0,0003
IDGO 40532M001	A 0001	2009-03-22	2011-04-16	-1469909,6533 ± 0,0013	-5640213,5971 ± 0,0041	2585866,5774 ± 0,0020	-0,0113 ± 0,0003	0,0006 ± 0,0004	-0,0050 ± 0,0003
IGM0 41505M002	A 0001	2000-01-21	2003-12-29	2751801,0615 ± 0,0004	-4479882,6976 ± 0,0004	-3598917,2165 ± 0,0003	0,0022 ± 0,0003	-0,0058 ± 0,0003	0,0100 ± 0,0003
IGM1 41505M003	A 0001	2003-11-09	2010-02-26	2751804,0355 ± 0,0005	-4479879,2919 ± 0,0005	-3598922,5202 ± 0,0004	0,0044 ± 0,0003	-0,0074 ± 0,0003	0,0080 ± 0,0003
IGN1 41303M001	A 0001	2008-10-20	2011-04-16	1144297,0230 ± 0,0006	-6195649,8360 ± 0,0017	989518,5078 ± 0,0004	0,0173 ± 0,0003	0,0054 ± 0,0003	0,0120 ± 0,0003
IMBT 41638M001	A 0001	2007-09-05	2011-04-16	3714771,5529 ± 0,0009	-4221851,0982 ± 0,0009	-2999473,8732 ± 0,0007	0,0006 ± 0,0003	-0,0068 ± 0,0003	0,0105 ± 0,0003
IMPZ 41615M001	A 0001	2000-01-21	2011-04-16	4289656,4299 ± 0,0003	-4680884,9431 ± 0,0003	-606347,2620 ± 0,0003	-0,0022 ± 0,0003	-0,0035 ± 0,0003	0,0123 ± 0,0003
INEG 40507M001	A 0003	2000-05-05	2001-05-05	-1260435,6648 ± 0,0006	-5788547,2255 ± 0,0016	2360340,0974 ± 0,0007	0,0026 ± 0,0005	0,0731 ± 0,0018	-0,0313 ± 0,0008
INEG 40507M001	A 0004	2001-05-06	2002-03-22	-1260435,6653 ± 0,0010	-5788547,2011 ± 0,0031	2360340,0791 ± 0,0014	0,0022 ± 0,0005	0,0782 ± 0,0017	-0,0355 ± 0,0008
INEG 40507M001	A 0005	2004-11-15	2011-04-16	-1260435,6795 ± 0,0004	-5788547,2646 ± 0,0005	2360340,0946 ± 0,0003	-0,0024 ± 0,0003	0,0308 ± 0,0003	-0,0163 ± 0,0003
IQQE 41708S002	A 0001	2002-07-01	2005-06-11	2034208,5009 ± 0,0007	-5629172,2686 ± 0,0013	-2196141,8490 ± 0,0006	0,0286 ± 0,0003	0,0012 ± 0,0003	0,0143 ± 0,0003
IQQE 41708S002	A 0003	2008-06-29	2011-04-16	2034208,4577 ± 0,0006	-5629172,3213 ± 0,0012	-2196141,8836 ± 0,0005	0,0246 ± 0,0003	0,0015 ± 0,0003	0,0156 ± 0,0003
IQUI 42204M001	A 0001	2009-07-26	2011-04-16	1832254,6529 ± 0,0014	-6095126,7354 ± 0,0041	-416285,4875 ± 0,0007	0,0028 ± 0,0003	-0,0157 ± 0,0004	0,0105 ± 0,0003
ISPA 41703M007	A 0001	2004-02-14	2011-04-16	-1881703,6606 ± 0,0004	-5359979,7243 ± 0,0005	-2890599,2407 ± 0,0003	0,0634 ± 0,0003	-0,0200 ± 0,0003	-0,0055 ± 0,0003
JAMA 42601S001	A 0001	2000-01-02	2003-09-05	1388059,8268 ± 0,0004	-5909149,0374 ± 0,0005	1951963,8843 ± 0,0003	0,0016 ± 0,0003	0,0050 ± 0,0003	0,0087 ± 0,0003
JBAL 41537M001	A 0001	2009-11-22	2011-04-16	2335115,5595 ± 0,0022	-5153171,4417 ± 0,0042	-2935953,1934 ± 0,0026	0,0043 ± 0,0003	-0,0028 ± 0,0004	0,0063 ± 0,0003
KOUR 97301M210	A 0001	2000-01-02	2002-01-16	3839591,3946 ± 0,0007	-5059567,5546 ± 0,0008	579957,0473 ± 0,0003	0,0003 ± 0,0005	-0,0019 ± 0,0007	0,0131 ± 0,0003
KOUR 97301M210	A 0002	2002-02-06	2006-07-01	3839591,3851 ± 0,0006	-5059567,5605 ± 0,0006	579957,0449 ± 0,0003	-0,0057 ± 0,0003	-0,0010 ± 0,0003	0,0116 ± 0,0003
KOUR 97301M210	A 0003	2006-07-02	2011-04-16	3839591,3906 ± 0,0006	-5059567,5610 ± 0,0006	579957,0458 ± 0,0003	-0,0031 ± 0,0003	-0,0023 ± 0,0003	0,0132 ± 0,0003
KYW1 49852S001	A 0001	2000-01-02	2007-10-10	842464,4314 ± 0,0004	-5741929,0079 ± 0,0003	2637061,5233 ± 0,0003	-0,0095 ± 0,0003	-0,0003 ± 0,0003	0,0018 ± 0,0003
LHCL 41518S001	A 0001	2002-07-04	2010-02-26	2079355,6121 ± 0,0004	-4582903,4576 ± 0,0004	-3905925,6682 ± 0,0004	0,0040 ± 0,0003	-0,0080 ± 0,0003	0,0065 ± 0,0003
LJEC 42010M001	A 0001	2009-02-02	2011-04-16	1192829,0155 ± 0,0008	-6252161,6209 ± 0,0023	-440799,2067 ± 0,0004	0,0000 ± 0,0003	-0,0066 ± 0,0003	0,0069 ± 0,0003
LPAZ 40521M001	A 0001	2005-01-09	2011-04-16	-2022283,3315 ± 0,0004	-5461274,2471 ± 0,0006	2592317,0954 ± 0,0003	-0,0424 ± 0,0003	0,0264 ± 0,0003	0,0179 ± 0,0003
LPGS 41510M001	A 0001	2000-01-02	2010-02-26	2780102,9966 ± 0,0004	-4437418,9174 ± 0,0003	-3629404,5123 ± 0,0003	0,0046 ± 0,0003	-0,0082 ± 0,0003	0,0081 ± 0,0003
MABA 41642M001	A 0001	2007-09-05	2011-04-16	4156055,6442 ± 0,0011	-4801656,5112 ± 0,0012	-592100,5928 ± 0,0003	-0,0006 ± 0,0003	-0,0044 ± 0,0003	0,0129 ± 0,0003
MAGA 41920S001	A 0001	2009-01-04	2010-09-02	1654991,2078 ± 0,0016	-6074533,3919 ± 0,0048	1017358,6376 ± 0,0013	0,0087 ± 0,0003	0,0103 ± 0,0005	0,0106 ± 0,0003
MANA 41201S001	A 0001	2000-05-14	2004-10-10	407981,8425 ± 0,0004	-6222925,6983 ± 0,0006	1333528,9835 ± 0,0003	0,0052 ± 0,0003	0,0057 ± 0,0003	0,0079 ± 0,0003
MANA 41201S001	A 0002	2004-10-11	2011-04-16	407981,8348 ± 0,0004	-6222925,7200 ± 0,0007	1333528,9681 ± 0,0003	0,0072 ± 0,0003	0,0058 ± 0,0003	0,0068 ± 0,0003
MAPA 41629M001	A 0001	2006-01-13	2011-04-16	4005461,1400 ± 0,0007	-4963550,3097 ± 0,0007	5162,3008 ± 0,0003	-0,0002 ± 0,0003	-0,0049 ± 0,0003	0,0126 ± 0,0003

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
MARA 42402M001	A 0001	2000-01-21	2008-05-26	1976117,1511 ± 0,0004	-5948895,1560 ± 0,0005	1173592,2353 ± 0,0003	0,0085 ± 0,0003	0,0046 ± 0,0003	0,0124 ± 0,0003
MARA 42402M001	A 0002	2008-07-16	2011-04-16	1976117,1681 ± 0,0011	-5948895,1686 ± 0,0028	1173592,2375 ± 0,0007	0,0044 ± 0,0003	0,0110 ± 0,0003	0,0118 ± 0,0003
MCLA 41624M001	A 0001	2004-07-02	2011-04-16	4404519,5842 ± 0,0006	-4235798,4055 ± 0,0004	-1823409,1066 ± 0,0003	0,0024 ± 0,0003	-0,0067 ± 0,0003	0,0108 ± 0,0003
MDO1 40442M012	A 0001	2000-01-02	2004-12-02	-1329998,7743 ± 0,0004	-5328393,3780 ± 0,0005	3236504,1709 ± 0,0003	-0,0133 ± 0,0003	-0,0003 ± 0,0003	-0,0044 ± 0,0003
MDO1 40442M012	A 0003	2004-12-08	2011-04-16	-1329998,7770 ± 0,0004	-5328393,3664 ± 0,0006	3236504,1689 ± 0,0004	-0,0119 ± 0,0003	-0,0003 ± 0,0003	-0,0062 ± 0,0003
MECO 41526M001	A 0001	2006-10-19	2011-04-16	2946968,5722 ± 0,0007	-4730056,9640 ± 0,0010	-3091865,0136 ± 0,0007	0,0011 ± 0,0003	-0,0074 ± 0,0003	0,0082 ± 0,0003
MEDE 41921S001	A 0001	2005-09-18	2011-04-16	1579608,4277 ± 0,0003	-6142783,8365 ± 0,0008	684352,2931 ± 0,0003	0,0051 ± 0,0003	-0,0009 ± 0,0003	0,0157 ± 0,0003
MERI 40520M001	A 0001	2005-01-09	2011-04-16	39480,7863 ± 0,0004	-5957733,1014 ± 0,0007	2269335,1275 ± 0,0003	-0,0087 ± 0,0003	0,0006 ± 0,0003	0,0001 ± 0,0003
MEXI 40519M001	A 0001	2005-01-09	2010-04-03	-2312590,9051 ± 0,0006	-4853743,6623 ± 0,0007	3419740,4546 ± 0,0005	-0,0209 ± 0,0003	0,0129 ± 0,0003	0,0155 ± 0,0003
MGBH 41667M001	A 0001	2009-02-01	2011-04-16	4320741,8030 ± 0,0023	-4161560,4614 ± 0,0022	-2161984,1696 ± 0,0013	0,0034 ± 0,0003	-0,0093 ± 0,0003	0,0101 ± 0,0003
MGIN 41647M001	A 0001	2008-02-13	2011-04-16	4076879,9428 ± 0,0011	-4270390,9211 ± 0,0011	-2407418,0595 ± 0,0007	0,0019 ± 0,0003	-0,0077 ± 0,0003	0,0099 ± 0,0003
MGMC 41624M002	A 0001	2008-04-06	2011-04-16	4406284,9411 ± 0,0017	-4234092,8312 ± 0,0016	-1822973,7496 ± 0,0008	0,0008 ± 0,0003	-0,0063 ± 0,0003	0,0114 ± 0,0003
MGUB 41652M001	A 0001	2008-01-13	2011-04-16	4019130,6027 ± 0,0010	-4504012,5453 ± 0,0011	-2055168,7300 ± 0,0006	0,0022 ± 0,0003	-0,0081 ± 0,0003	0,0099 ± 0,0003
MOTE 41922S001	A 0001	2006-03-21	2008-04-27	1539876,9063 ± 0,0016	-6112744,6278 ± 0,0050	968435,2678 ± 0,0012	0,0118 ± 0,0003	0,0097 ± 0,0007	0,0081 ± 0,0003
MPL2 41544M001	A 0001	2009-11-10	2011-04-16	2698449,9851 ± 0,0032	-4247372,1730 ± 0,0048	-3905981,3921 ± 0,0032	0,0009 ± 0,0003	-0,0100 ± 0,0004	0,0079 ± 0,0004
MPLA 41521M001	A 0001	2002-09-22	2008-02-03	2700316,8313 ± 0,0005	-4243736,7150 ± 0,0005	-3908569,7380 ± 0,0005	0,0054 ± 0,0003	-0,0088 ± 0,0003	0,0082 ± 0,0003
MSCG 41649M001	A 0001	2008-01-13	2011-04-16	3468912,0697 ± 0,0010	-4870550,4328 ± 0,0013	-2213735,4631 ± 0,0007	0,0010 ± 0,0003	-0,0052 ± 0,0003	0,0114 ± 0,0003
MSDO 41672M001	A 0001	2009-07-31	2011-04-16	3404321,3345 ± 0,0030	-4828421,5632 ± 0,0041	-2396836,9366 ± 0,0023	-0,0019 ± 0,0003	-0,0038 ± 0,0004	0,0129 ± 0,0003
MTBA 41663M001	A 0001	2008-09-01	2011-04-11	3755485,2863 ± 0,0012	-4852853,5215 ± 0,0014	-1735109,1924 ± 0,0006	-0,0032 ± 0,0003	-0,0048 ± 0,0003	0,0107 ± 0,0003
MTCO 41670M001	A 0001	2009-07-12	2011-04-16	3553110,8256 ± 0,0023	-5161363,4448 ± 0,0032	-1187759,9759 ± 0,0011	0,0024 ± 0,0003	-0,0060 ± 0,0003	0,0105 ± 0,0003
MTSF 41655M001	A 0001	2008-04-06	2011-04-16	3960733,8364 ± 0,0011	-4832787,7290 ± 0,0012	-1276215,1099 ± 0,0005	-0,0002 ± 0,0003	-0,0040 ± 0,0003	0,0117 ± 0,0003
MTY2 40518M001	A 0001	2005-01-09	2011-04-16	-1029483,4542 ± 0,0004	-5657637,2341 ± 0,0006	2750926,1223 ± 0,0003	-0,0106 ± 0,0003	0,0013 ± 0,0003	-0,0039 ± 0,0003
MZAC 41503M001	A 0001	2004-06-09	2010-02-26	1932262,6805 ± 0,0003	-5001226,5226 ± 0,0006	-3444667,8481 ± 0,0004	0,0113 ± 0,0003	-0,0044 ± 0,0003	0,0103 ± 0,0003
MZAE 41530M001	A 0001	2007-05-20	2010-02-26	1987261,2343 ± 0,0009	-4955975,7154 ± 0,0016	-3477976,9847 ± 0,0012	0,0075 ± 0,0003	-0,0030 ± 0,0003	0,0088 ± 0,0003
MZAS 41528M001	A 0001	2007-01-17	2010-02-26	1940230,1739 ± 0,0007	-4884145,4177 ± 0,0012	-3603203,7184 ± 0,0009	0,0084 ± 0,0003	-0,0060 ± 0,0003	0,0080 ± 0,0003
NAS0 43607S001	A 0001	2007-07-01	2010-12-25	1255070,8214 ± 0,0006	-5643661,8797 ± 0,0015	2684338,9740 ± 0,0008	-0,0091 ± 0,0003	0,0019 ± 0,0003	0,0034 ± 0,0003
NAUS 41614M002	A 0001	2006-01-01	2011-04-16	3179409,3657 ± 0,0006	-5519130,6554 ± 0,0006	-334110,1015 ± 0,0003	0,0004 ± 0,0003	-0,0068 ± 0,0003	0,0121 ± 0,0003
NEIA 41620M002	A 0001	2006-01-05	2009-11-16	3875254,9809 ± 0,0012	-4292588,7160 ± 0,0013	-2681108,7144 ± 0,0008	0,0042 ± 0,0003	-0,0082 ± 0,0003	0,0096 ± 0,0003
NEIA 41620M002	A 0002	2010-01-02	2011-04-16	3875254,9865 ± 0,0039	-4292588,7269 ± 0,0054	-2681108,7009 ± 0,0032	0,0027 ± 0,0005	-0,0079 ± 0,0005	0,0076 ± 0,0003
NEVA 41923S001	A 0001	2005-11-19	2011-04-16	1617259,9675 ± 0,0005	-6161575,1481 ± 0,0010	324674,6563 ± 0,0003	0,0015 ± 0,0003	0,0013 ± 0,0003	0,0143 ± 0,0003
OAX2 40517M001	A 0001	2005-01-09	2011-04-16	-713483,0346 ± 0,0004	-6058316,0827 ± 0,0006	1861594,6969 ± 0,0003	-0,0038 ± 0,0003	-0,0001 ± 0,0003	0,0034 ± 0,0003
OHI2 66008M005	A 0001	2002-02-15	2011-04-16	1525811,8704 ± 0,0004	-2432478,2152 ± 0,0003	-5676165,5919 ± 0,0003	0,0184 ± 0,0003	-0,0021 ± 0,0003	0,0017 ± 0,0003
OHIG 66008M001	A 0001	2000-01-21	2002-02-19	1525872,6288 ± 0,0003	-2432481,3202 ± 0,0004	-5676146,0905 ± 0,0008	0,0192 ± 0,0003	-0,0040 ± 0,0003	-0,0014 ± 0,0006
ONRJ 41635M001	A 0001	2007-04-01	2009-10-10	4283638,3607 ± 0,0017	-4026028,8380 ± 0,0016	-2466096,7769 ± 0,0011	0,0016 ± 0,0003	-0,0061 ± 0,0003	0,0117 ± 0,0003

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
ONRJ 41635M001	A 0002	2009-10-11	2011-04-16	4283638,3471 ± 0,0039	-4026028,8269 ± 0,0031	-2466096,7649 ± 0,0021	0,0000 ± 0,0003	-0,0071 ± 0,0003	0,0090 ± 0,0003
PALM 66005M002	A 0001	2000-01-21	2011-04-16	1192671,9088 ± 0,0005	-2450887,6102 ± 0,0003	-5747096,0336 ± 0,0003	0,0172 ± 0,0003	-0,0058 ± 0,0003	-0,0013 ± 0,0003
PARA 41610M001	A 0001	2000-01-21	2007-05-07	3763751,6524 ± 0,0005	-4365113,8176 ± 0,0003	-2724404,6358 ± 0,0003	0,0026 ± 0,0003	-0,0069 ± 0,0003	0,0101 ± 0,0003
PARC 41716S001	A 0001	2000-01-02	2001-10-03	1255992,4439 ± 0,0005	-3622975,1174 ± 0,0004	-5079719,2624 ± 0,0005	0,0073 ± 0,0003	-0,0073 ± 0,0004	0,0093 ± 0,0005
PARC 41716S001	A 0002	2001-12-12	2011-04-16	1255992,4423 ± 0,0004	-3622975,1192 ± 0,0003	-5079719,2669 ± 0,0003	0,0080 ± 0,0003	-0,0067 ± 0,0003	0,0086 ± 0,0003
PBCG 41656M001	A 0001	2008-04-09	2011-04-16	5125899,4032 ± 0,0015	-3711505,6221 ± 0,0012	-795650,5475 ± 0,0004	0,0010 ± 0,0003	-0,0060 ± 0,0003	0,0118 ± 0,0003
PDES 41524M001	A 0001	2005-05-05	2007-07-25	1753203,6621 ± 0,0011	-3922031,1020 ± 0,0021	-4698513,5123 ± 0,0025	0,0024 ± 0,0003	-0,0122 ± 0,0003	0,0057 ± 0,0004
PEPE 41650M001	A 0001	2008-01-13	2011-04-16	4785329,9259 ± 0,0013	-4087942,4777 ± 0,0012	-1033193,9405 ± 0,0004	0,0012 ± 0,0003	-0,0054 ± 0,0003	0,0120 ± 0,0003
PERA 41905S001	A 0001	2004-02-20	2010-12-22	1571418,6751 ± 0,0003	-6160208,4187 ± 0,0008	529446,4022 ± 0,0003	0,0034 ± 0,0003	0,0017 ± 0,0003	0,0156 ± 0,0003
PIE1 40456M001	A 0003	2000-01-02	2006-09-04	-1640916,9025 ± 0,0005	-5014781,2024 ± 0,0004	3575447,1094 ± 0,0003	-0,0149 ± 0,0003	0,0007 ± 0,0003	-0,0053 ± 0,0003
PIE1 40456M001	A 0005	2007-01-24	2011-04-16	-1640916,9057 ± 0,0005	-5014781,2011 ± 0,0008	3575447,1074 ± 0,0006	-0,0136 ± 0,0003	0,0011 ± 0,0003	-0,0057 ± 0,0003
PISR 41673M001	A 0001	2009-07-12	2011-04-16	4629725,2543 ± 0,0030	-4272600,2652 ± 0,0029	-994572,5595 ± 0,0010	0,0046 ± 0,0003	-0,0125 ± 0,0003	0,0121 ± 0,0003
PMB1 43702S001	A 0001	2005-12-30	2007-10-21	3626394,1876 ± 0,0029	-5206998,1778 ± 0,0041	643353,1162 ± 0,0009	-0,0058 ± 0,0004	0,0032 ± 0,0006	0,0118 ± 0,0003
PMB1 43702S001	A 0002	2007-12-19	2011-04-16	3626394,1603 ± 0,0013	-5206998,1338 ± 0,0018	643353,1096 ± 0,0004	-0,0033 ± 0,0003	-0,0014 ± 0,0003	0,0121 ± 0,0003
POAL 41616M001	A 0001	2000-01-21	2011-04-16	3467519,4094 ± 0,0005	-4300378,5489 ± 0,0003	-3177517,6738 ± 0,0003	0,0033 ± 0,0003	-0,0073 ± 0,0003	0,0097 ± 0,0003
POLI 41630M001	A 0001	2007-01-01	2011-04-16	4010099,5120 ± 0,0008	-4259927,3205 ± 0,0007	-2533538,7326 ± 0,0005	0,0023 ± 0,0003	-0,0071 ± 0,0003	0,0100 ± 0,0003
POPA 41924S001	A 0001	2006-06-29	2011-04-16	1477067,4389 ± 0,0005	-6200659,1073 ± 0,0010	270141,2823 ± 0,0003	0,0035 ± 0,0003	0,0015 ± 0,0003	0,0131 ± 0,0003
POVE 41628M001	A 0001	2006-01-04	2011-04-16	2774265,6202 ± 0,0005	-5662060,1295 ± 0,0006	-959415,9225 ± 0,0003	-0,0010 ± 0,0003	-0,0051 ± 0,0003	0,0108 ± 0,0003
PPTE 41611M002	A 0001	2006-01-01	2011-04-16	3687624,3551 ± 0,0006	-4620818,6750 ± 0,0006	-2386880,3035 ± 0,0003	0,0043 ± 0,0003	-0,0091 ± 0,0003	0,0089 ± 0,0003
PRGU 41671M001	A 0001	2009-07-12	2011-04-16	3590927,1184 ± 0,0023	-4512405,6420 ± 0,0028	-2718013,2956 ± 0,0018	0,0014 ± 0,0003	-0,0084 ± 0,0003	0,0088 ± 0,0003
PRMA 41674M001	A 0001	2009-07-12	2011-04-16	3610720,8381 ± 0,0030	-4611288,4069 ± 0,0038	-2518636,2872 ± 0,0022	-0,0005 ± 0,0003	-0,0056 ± 0,0004	0,0126 ± 0,0003
PSTO 41925S001	A 0001	2005-09-18	2011-04-16	1404951,7417 ± 0,0006	-6222655,0880 ± 0,0014	134028,6018 ± 0,0003	0,0029 ± 0,0003	0,0001 ± 0,0003	0,0128 ± 0,0003
PUR3 82001S003	A 0001	2000-01-02	2007-03-19	2358177,9110 ± 0,0005	-5573619,6423 ± 0,0004	2007083,9539 ± 0,0003	0,0066 ± 0,0003	0,0079 ± 0,0003	0,0115 ± 0,0003
QUI1 42003S003	A 0001	2004-01-01	2009-08-01	1272867,3191 ± 0,0005	-6252772,1250 ± 0,0006	-23801,7621 ± 0,0003	0,0078 ± 0,0003	0,0009 ± 0,0003	0,0102 ± 0,0003
RECF 41617M001	A 0001	2000-01-21	2011-04-16	5176588,6267 ± 0,0003	-3618162,1550 ± 0,0003	-887363,8491 ± 0,0003	-0,0018 ± 0,0003	-0,0024 ± 0,0003	0,0122 ± 0,0003
RIO2 41507M006	A 0001	2007-04-21	2011-04-16	1429907,7893 ± 0,0003	-3495354,8133 ± 0,0005	-5122698,6450 ± 0,0007	0,0078 ± 0,0003	-0,0076 ± 0,0003	0,0077 ± 0,0003
RIOB 41645M001	A 0001	2007-09-05	2011-04-16	2373576,7839 ± 0,0006	-5817088,3659 ± 0,0011	-1096515,6976 ± 0,0003	-0,0006 ± 0,0003	-0,0048 ± 0,0003	0,0104 ± 0,0003
RIOD 41608M001	A 0001	2001-08-20	2011-04-16	4280294,8827 ± 0,0003	-4034431,2409 ± 0,0003	-2458141,3191 ± 0,0003	0,0011 ± 0,0003	-0,0061 ± 0,0003	0,0115 ± 0,0003
RIOG 41507M004	A 0001	2000-01-02	2007-02-28	1429907,7937 ± 0,0005	-3495354,8112 ± 0,0003	-5122698,6433 ± 0,0003	0,0077 ± 0,0003	-0,0089 ± 0,0003	0,0060 ± 0,0003
RIOH 41927S001	A 0001	2005-10-24	2008-08-20	1841101,0035 ± 0,0008	-5973351,3534 ± 0,0018	1264686,5420 ± 0,0005	0,0099 ± 0,0003	0,0064 ± 0,0003	0,0137 ± 0,0003
RIOP 42006M001	A 0001	2000-01-02	2001-12-28	1255144,9542 ± 0,0006	-6253609,4543 ± 0,0018	-182569,8522 ± 0,0003	-0,0019 ± 0,0004	-0,0035 ± 0,0015	0,0011 ± 0,0003
RIOP 42006M001	A 0002	2007-04-29	2011-04-16	1255144,9675 ± 0,0005	-6253609,4556 ± 0,0013	-182569,8400 ± 0,0003	0,0000 ± 0,0003	0,0019 ± 0,0003	0,0080 ± 0,0003
RJCG 41657M001	A 0001	2008-04-11	2011-04-16	4450354,2551 ± 0,0014	-3913332,7924 ± 0,0012	-2350256,3191 ± 0,0008	0,0005 ± 0,0003	-0,0064 ± 0,0003	0,0108 ± 0,0003
RNMO 41664M001	A 0001	2009-02-01	2011-04-16	5051170,1796 ± 0,0023	-3851509,5015 ± 0,0018	-574681,3310 ± 0,0006	-0,0025 ± 0,0003	-0,0019 ± 0,0003	0,0125 ± 0,0003

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
RNNA 41668M001	A 0001	2009-02-01	2011-04-16	5184572,5152 ± 0,0025	-3658358,2481 ± 0,0018	-644238,5761 ± 0,0006	-0,0012 ± 0,0003	-0,0041 ± 0,0003	0,0117 ± 0,0003
ROGM 41651M001	A 0001	2008-01-13	2011-04-16	2615472,4330 ± 0,0008	-5694455,8927 ± 0,0013	-1185599,8599 ± 0,0004	0,0006 ± 0,0003	-0,0038 ± 0,0003	0,0103 ± 0,0003
ROJI 41658M001	A 0001	2008-04-04	2011-04-16	2945010,5671 ± 0,0007	-5529377,0106 ± 0,0011	-1194259,2558 ± 0,0004	0,0002 ± 0,0003	-0,0052 ± 0,0003	0,0110 ± 0,0003
ROSA 41632M001	A 0001	2009-09-13	2011-04-16	3551520,4988 ± 0,0028	-4704836,1481 ± 0,0036	-2428155,6537 ± 0,0021	-0,0006 ± 0,0003	-0,0014 ± 0,0003	0,0084 ± 0,0003
RWSN 41513M001	A 0001	2000-01-22	2010-02-26	1956973,4307 ± 0,0005	-4217335,3006 ± 0,0003	-4351745,4921 ± 0,0003	0,0024 ± 0,0003	-0,0089 ± 0,0003	0,0073 ± 0,0003
SAGA 41639M001	A 0001	2007-09-16	2011-04-16	2486243,7639 ± 0,0008	-5873685,3078 ± 0,0016	-15906,7581 ± 0,0003	-0,0015 ± 0,0003	-0,0061 ± 0,0003	0,0113 ± 0,0003
SALU 41640M001	A 0001	2007-09-05	2011-04-16	4566947,9012 ± 0,0010	-4443098,5038 ± 0,0009	-286674,7403 ± 0,0003	-0,0020 ± 0,0003	-0,0035 ± 0,0003	0,0120 ± 0,0003
SALV 41618M001	A 0001	2000-01-21	2008-09-05	4863495,7203 ± 0,0005	-3870312,3592 ± 0,0003	-1426347,7484 ± 0,0003	0,0023 ± 0,0003	-0,0050 ± 0,0003	0,0111 ± 0,0003
SAMA 41928S001	A 0001	2006-05-04	2011-04-16	1704996,1812 ± 0,0003	-6020152,3567 ± 0,0008	1233459,1961 ± 0,0003	0,0082 ± 0,0003	0,0103 ± 0,0003	0,0121 ± 0,0003
SANT 41705M003	A 0001	2000-01-02	2010-02-26	1769693,5198 ± 0,0005	-5044574,1629 ± 0,0003	-3468320,9408 ± 0,0003	0,0235 ± 0,0003	-0,0042 ± 0,0003	0,0125 ± 0,0003
SAVO 41643M001	A 0001	2007-09-06	2011-04-16	4870283,7531 ± 0,0010	-3864605,2871 ± 0,0008	-1418872,5595 ± 0,0004	-0,0001 ± 0,0003	-0,0048 ± 0,0003	0,0125 ± 0,0003
SCCH 41659M001	A 0001	2008-04-25	2011-04-16	3450305,4412 ± 0,0012	-4512731,6757 ± 0,0014	-2892128,1988 ± 0,0009	-0,0010 ± 0,0003	-0,0051 ± 0,0003	0,0109 ± 0,0003
SCLA 41660M001	A 0001	2008-04-04	2011-04-16	3606986,0604 ± 0,0012	-4345293,2526 ± 0,0013	-2956654,1463 ± 0,0009	-0,0009 ± 0,0003	-0,0051 ± 0,0003	0,0107 ± 0,0003
SCRZ 41801M001	A 0001	2009-12-27	2011-04-16	2743005,9135 ± 0,0025	-5420745,2426 ± 0,0045	-1937117,1514 ± 0,0020	0,0025 ± 0,0003	-0,0060 ± 0,0004	0,0115 ± 0,0003
SCUB 40701M001	A 0001	2000-01-06	2011-04-16	1474538,0930 ± 0,0005	-5811243,2726 ± 0,0003	2168958,8276 ± 0,0003	-0,0055 ± 0,0003	0,0002 ± 0,0003	0,0042 ± 0,0003
SJRP 41633M001	A 0001	2009-09-13	2011-04-16	3885706,8836 ± 0,0028	-4527123,9311 ± 0,0032	-2249400,0645 ± 0,0018	0,0049 ± 0,0003	-0,0127 ± 0,0003	0,0083 ± 0,0003
SLOR 41102S001	A 0001	2000-09-21	2002-08-05	277528,9886 ± 0,0005	-6198801,8011 ± 0,0012	1471065,6183 ± 0,0004	0,0126 ± 0,0003	0,0016 ± 0,0007	0,0054 ± 0,0003
SMAR 41621M001	A 0001	2002-07-19	2010-02-26	3280748,4118 ± 0,0003	-4468909,7577 ± 0,0004	-3143408,6331 ± 0,0003	0,0025 ± 0,0003	-0,0064 ± 0,0003	0,0102 ± 0,0003
SMRT 43102S001	A 0001	2007-05-25	2011-04-16	2743826,1916 ± 0,0008	-5410452,4899 ± 0,0012	1962822,9545 ± 0,0005	0,0057 ± 0,0003	0,0091 ± 0,0003	0,0133 ± 0,0003
SRLP 41532M001	A 0001	2008-09-15	2010-02-26	2224229,7241 ± 0,0029	-4617565,9091 ± 0,0058	-3783897,7502 ± 0,0032	0,0042 ± 0,0003	-0,0076 ± 0,0006	0,0070 ± 0,0005
SRNW 43703M001	A 0001	2006-01-09	2011-04-16	3455962,5031 ± 0,0007	-5320074,8926 ± 0,0009	656216,0431 ± 0,0003	-0,0040 ± 0,0003	-0,0001 ± 0,0003	0,0111 ± 0,0003
SRZN 43701S005	A 0001	2006-02-03	2011-04-16	3623419,9951 ± 0,0007	-5214015,4454 ± 0,0008	602359,1935 ± 0,0003	-0,0037 ± 0,0003	-0,0013 ± 0,0003	0,0124 ± 0,0003
SSA1 41644M001	A 0001	2007-09-05	2011-04-16	4863840,3159 ± 0,0014	-3871158,6100 ± 0,0011	-1422726,7233 ± 0,0005	0,0012 ± 0,0003	-0,0062 ± 0,0003	0,0118 ± 0,0003
SSIA 41401S001	A 0003	2001-02-13	2003-12-28	95567,0024 ± 0,0005	-6197785,5868 ± 0,0009	1500590,5376 ± 0,0003	0,0066 ± 0,0003	-0,0015 ± 0,0003	0,0094 ± 0,0003
SSIA 41401S001	A 0004	2005-06-16	2010-07-25	95566,9944 ± 0,0005	-6197785,5890 ± 0,0010	1500590,5387 ± 0,0003	0,0073 ± 0,0003	0,0004 ± 0,0003	0,0081 ± 0,0003
SVIC 41536M001	A 0001	2009-07-26	2011-04-16	3303870,0574 ± 0,0025	-4629721,6346 ± 0,0034	-2877846,0494 ± 0,0023	-0,0028 ± 0,0003	-0,0052 ± 0,0003	0,0083 ± 0,0003
TAMP 40516M001	A 0001	2005-01-09	2011-04-16	-807922,6341 ± 0,0005	-5849358,2546 ± 0,0007	2402967,6901 ± 0,0003	-0,0098 ± 0,0003	0,0011 ± 0,0003	-0,0031 ± 0,0003
TEG1 41101S002	A 0001	2001-10-25	2004-04-07	301692,7056 ± 0,0005	-6181037,6590 ± 0,0021	1542881,1759 ± 0,0006	0,0093 ± 0,0003	-0,0016 ± 0,0008	0,0055 ± 0,0003
TEGU 41101S001	A 0001	2000-07-18	2002-03-21	301697,4359 ± 0,0005	-6181025,0639 ± 0,0012	1542919,9085 ± 0,0004	0,0157 ± 0,0003	0,0051 ± 0,0008	0,0085 ± 0,0003
TERO 41531M001	A 0001	2009-02-16	2010-02-26	2452644,4546 ± 0,0035	-5086396,4614 ± 0,0060	-2955957,2602 ± 0,0032	0,0058 ± 0,0004	-0,0089 ± 0,0008	0,0073 ± 0,0005
TOGU 41661M001	A 0001	2008-04-16	2011-04-16	4093503,2475 ± 0,0011	-4717194,8350 ± 0,0011	-1290037,7857 ± 0,0005	0,0010 ± 0,0003	-0,0053 ± 0,0003	0,0118 ± 0,0003
TOL2 40515M001	A 0001	2005-01-09	2011-04-16	-1009229,1614 ± 0,0005	-5939511,4322 ± 0,0006	2094889,2376 ± 0,0003	-0,0067 ± 0,0003	0,0020 ± 0,0003	-0,0024 ± 0,0003
TOPL 41648M001	A 0001	2008-01-02	2011-04-16	4174345,6180 ± 0,0010	-4690236,7117 ± 0,0010	-1118921,3605 ± 0,0003	-0,0006 ± 0,0003	-0,0048 ± 0,0003	0,0121 ± 0,0003
TUCU 41520S001	A 0001	2002-01-01	2006-01-23	2386117,1864 ± 0,0006	-5171223,3032 ± 0,0008	-2862949,1213 ± 0,0005	0,0044 ± 0,0003	-0,0049 ± 0,0003	0,0096 ± 0,0003

Station	ID-SNX	Start	End	X [m]	Y [m]	Z [m]	Vel X [m/a]	Vel Y [m/a]	Vel Z [m/a]
TUCU 41520S001	A 0002	2006-08-31	2011-04-16	2386117,1899 ± 0,0008	-5171223,3022 ± 0,0014	-2862949,1138 ± 0,0008	0,0023 ± 0,0003	0,0000 ± 0,0003	0,0092 ± 0,0003
TUMA 41929S001	A 0001	2006-11-03	2007-11-29	1245829,9864 ± 0,0025	-6252040,1862 ± 0,0060	201464,1163 ± 0,0015	0,0144 ± 0,0003	0,0021 ± 0,0013	0,0112 ± 0,0003
TUNA 41930S001	A 0001	2005-10-18	2011-04-16	1818373,1668 ± 0,0005	-6085596,9101 ± 0,0006	610964,9883 ± 0,0003	0,0016 ± 0,0003	0,0006 ± 0,0003	0,0131 ± 0,0003
UBAT 41627M001	A 0001	2006-01-02	2008-04-11	4129567,6806 ± 0,0039	-4146742,9555 ± 0,0050	-2527616,4326 ± 0,0032	0,0051 ± 0,0007	-0,0083 ± 0,0007	0,0086 ± 0,0004
UBAT 41627M001	A 0002	2008-04-14	2009-09-06	4129567,7300 ± 0,0039	-4146742,9346 ± 0,0060	-2527616,4408 ± 0,0032	0,0005 ± 0,0011	-0,0087 ± 0,0011	0,0116 ± 0,0007
UBER 41625M001	A 0001	2004-07-14	2011-04-16	4014997,2223 ± 0,0006	-4509022,4383 ± 0,0004	-2052040,6402 ± 0,0003	0,0012 ± 0,0003	-0,0064 ± 0,0003	0,0101 ± 0,0003
UCOR 41502M001	A 0001	2004-04-05	2008-11-13	2371430,0355 ± 0,0010	-4904119,9738 ± 0,0017	-3307377,4509 ± 0,0012	0,0055 ± 0,0003	-0,0054 ± 0,0003	0,0062 ± 0,0003
UCOR 41502M001	A 0002	2008-11-23	2010-02-26	2371430,0459 ± 0,0021	-4904119,9412 ± 0,0038	-3307377,4437 ± 0,0027	0,0036 ± 0,0003	-0,0132 ± 0,0004	0,0082 ± 0,0003
UEPP 41611M001	A 0001	2000-01-21	2005-12-08	3687624,3174 ± 0,0003	-4620818,6196 ± 0,0003	-2386880,2814 ± 0,0003	0,0026 ± 0,0003	-0,0070 ± 0,0003	0,0109 ± 0,0003
UFPR 41610M002	A 0001	2007-09-05	2011-04-16	3763751,6751 ± 0,0009	-4365113,8348 ± 0,0009	-2724404,6483 ± 0,0006	0,0005 ± 0,0003	-0,0065 ± 0,0003	0,0105 ± 0,0003
UGTO 40528M001	A 0001	2007-07-26	2011-04-16	-1164730,1277 ± 0,0006	-5843944,6753 ± 0,0015	2272414,2447 ± 0,0006	-0,0092 ± 0,0003	-0,0009 ± 0,0003	-0,0026 ± 0,0003
UNRO 41525M001	A 0001	2004-04-02	2010-02-26	2627448,1904 ± 0,0005	-4668383,1735 ± 0,0005	-3450213,4990 ± 0,0004	0,0044 ± 0,0003	-0,0060 ± 0,0003	0,0093 ± 0,0003
UNSA 41514M001	A 0001	2000-01-02	2008-07-27	2412830,4285 ± 0,0005	-5271936,7234 ± 0,0003	-2652209,0349 ± 0,0003	0,0070 ± 0,0003	-0,0023 ± 0,0003	0,0109 ± 0,0003
UNSA 41514M001	A 0002	2008-07-28	2010-02-26	2412830,4475 ± 0,0014	-5271936,6975 ± 0,0028	-2652209,0296 ± 0,0015	0,0012 ± 0,0003	-0,0094 ± 0,0003	0,0100 ± 0,0003
UNSJ 41527M001	A 0001	2007-05-06	2010-02-26	1987485,0129 ± 0,0009	-5065493,3471 ± 0,0019	-3317557,5055 ± 0,0013	0,0110 ± 0,0003	-0,0017 ± 0,0003	0,0117 ± 0,0003
URUS 41802M001	A 0001	2010-02-24	2011-04-16	2361785,5038 ± 0,0027	-5595048,6590 ± 0,0056	-1954576,7478 ± 0,0024	0,0078 ± 0,0003	-0,0018 ± 0,0005	0,0135 ± 0,0003
USLP 40530M001	A 0001	2008-09-01	2011-04-16	-1129695,0439 ± 0,0007	-5803303,9102 ± 0,0023	2389927,0081 ± 0,0011	-0,0093 ± 0,0003	0,0028 ± 0,0003	-0,0038 ± 0,0003
UYMO 42301M001	A 0001	2007-11-01	2009-03-07	2909132,9994 ± 0,0031	-4355451,2748 ± 0,0044	-3627801,2034 ± 0,0032	0,0052 ± 0,0004	-0,0094 ± 0,0005	0,0061 ± 0,0004
UYMO 42301M001	A 0002	2009-03-08	2010-02-26	2909133,0043 ± 0,0039	-4355451,2799 ± 0,0063	-3627801,2056 ± 0,0032	0,0021 ± 0,0004	-0,0076 ± 0,0006	0,0098 ± 0,0005
UYRO 42303M001	A 0001	2008-02-24	2010-02-26	3144469,6507 ± 0,0021	-4258022,0672 ± 0,0027	-3546571,9697 ± 0,0023	0,0028 ± 0,0003	-0,0069 ± 0,0003	0,0100 ± 0,0003
UYTA 42302M001	A 0001	2008-10-27	2010-02-26	3042868,1912 ± 0,0033	-4500645,4584 ± 0,0051	-3330675,3998 ± 0,0032	0,0009 ± 0,0004	-0,0037 ± 0,0005	0,0108 ± 0,0004
VALL 41906S001	A 0001	2004-03-24	2011-04-16	1807579,7281 ± 0,0005	-6006678,3530 ± 0,0005	1151876,7916 ± 0,0003	0,0076 ± 0,0003	0,0060 ± 0,0003	0,0139 ± 0,0003
VALP 41712S001	A 0001	2000-05-11	2010-02-26	1687310,2819 ± 0,0005	-5079964,5219 ± 0,0005	-3456509,3401 ± 0,0003	0,0290 ± 0,0003	-0,0009 ± 0,0003	0,0197 ± 0,0003
VARG 41626M001	A 0001	2004-07-02	2009-09-06	4165518,2820 ± 0,0010	-4229235,7934 ± 0,0009	-2327739,5888 ± 0,0005	0,0007 ± 0,0003	-0,0042 ± 0,0003	0,0107 ± 0,0003
VBCA 41512M001	A 0001	2000-03-08	2010-02-26	2319240,8133 ± 0,0005	-4411743,9265 ± 0,0003	-3966484,1134 ± 0,0003	0,0034 ± 0,0003	-0,0073 ± 0,0003	0,0081 ± 0,0003
VESL 66009M001	A 0001	2000-01-26	2011-04-16	2009329,7883 ± 0,0005	-99741,4743 ± 0,0003	-6033158,4300 ± 0,0004	0,0104 ± 0,0003	-0,0003 ± 0,0003	0,0037 ± 0,0003
VICO 41613M001	A 0001	2000-01-21	2011-04-16	4373283,3118 ± 0,0005	-4059639,0606 ± 0,0003	-2246959,6638 ± 0,0003	0,0021 ± 0,0003	-0,0059 ± 0,0003	0,0114 ± 0,0003
VIL2 40527M001	A 0001	2005-01-09	2011-04-16	-310300,6360 ± 0,0005	-6060324,0202 ± 0,0007	1957383,6108 ± 0,0003	-0,0079 ± 0,0003	0,0029 ± 0,0003	-0,0004 ± 0,0003
VIVI 41931S001	A 0001	2005-09-18	2007-12-28	1798110,7450 ± 0,0011	-6103160,6753 ± 0,0028	450209,5859 ± 0,0005	-0,0036 ± 0,0003	0,0001 ± 0,0004	0,0102 ± 0,0003
VIVI 41931S001	A 0002	2008-01-24	2011-03-03	1798110,7454 ± 0,0010	-6103160,6738 ± 0,0025	450209,5826 ± 0,0004	-0,0032 ± 0,0003	0,0005 ± 0,0003	0,0088 ± 0,0003
YOPA 41932S001	A 0001	2005-12-03	2008-05-04	1921562,4143 ± 0,0013	-6053497,5397 ± 0,0036	587652,0656 ± 0,0007	-0,0023 ± 0,0003	-0,0011 ± 0,0005	0,0106 ± 0,0003

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
ABCC 41939M001	A 0001	2010-02-21	2011-04-16	04 39 40,439841 ± 0,0028	-74 07 36,917887 ± 0,0033	2576,6001 ± 0,0066	0,0150 ± 0,0015	-0,0057 ± 0,0014	-0,0304 ± 0,0025
ABPD 41941M001	A 0001	2010-02-21	2011-04-16	04 28 35,636221 ± 0,0027	-74 05 55,924967 ± 0,0033	2958,3754 ± 0,0066	0,0149 ± 0,0014	-0,0011 ± 0,0014	0,0003 ± 0,0025
ABPW 41940M001	A 0001	2010-02-21	2011-04-16	04 41 22,446313 ± 0,0035	-73 59 42,411959 ± 0,0036	2837,1211 ± 0,0066	0,0156 ± 0,0010	-0,0026 ± 0,0012	-0,0032 ± 0,0024
ALAR 41653M001	A 0001	2008-04-11	2011-04-16	-09 44 57,206216 ± 0,0016	-36 39 12,311845 ± 0,0020	266,2008 ± 0,0021	0,0126 ± 0,0012	-0,0039 ± 0,0013	0,0001 ± 0,0018
ALUM 41535M001	A 0001	2009-02-16	2010-02-26	-27 19 24,335895 ± 0,0035	-66 35 47,861491 ± 0,0036	2736,9531 ± 0,0066	0,0059 ± 0,0012	0,0017 ± 0,0014	-0,0018 ± 0,0024
AMHU 41646M001	A 0001	2008-01-30	2011-04-16	-07 30 11,685406 ± 0,0011	-63 01 42,658470 ± 0,0015	68,9521 ± 0,0022	0,0099 ± 0,0015	-0,0036 ± 0,0015	0,0007 ± 0,0018
ANDS 41908S001	A 0001	2007-05-08	2008-08-07	12 35 10,846688 ± 0,0029	-81 42 2,631946 ± 0,0033	16,2357 ± 0,0066	0,0067 ± 0,0015	0,0126 ± 0,0014	-0,0043 ± 0,0025
ANTC 41713S001	A 0001	2002-07-01	2010-02-20	-37 20 19,329931 ± 0,0004	-71 31 55,378419 ± 0,0006	745,3913 ± 0,0008	0,0108 ± 0,0007	0,0153 ± 0,0006	0,0017 ± 0,0008
AOML 49914S001	A 0001	2000-01-02	2004-04-05	25 44 4,890112 ± 0,0004	-80 09 43,917093 ± 0,0006	0,0891 ± 0,0008	0,0020 ± 0,0007	-0,0104 ± 0,0006	-0,0024 ± 0,0010
APTO 41933S001	A 0001	2007-11-04	2010-01-11	07 52 40,033182 ± 0,0011	-76 37 56,609951 ± 0,0014	45,2012 ± 0,0034	0,0106 ± 0,0015	0,0147 ± 0,0015	-0,0018 ± 0,0021
ARCA 41909S001	A 0001	2008-08-05	2011-04-07	07 05 3,392534 ± 0,0009	-70 45 30,719422 ± 0,0012	133,3238 ± 0,0023	0,0106 ± 0,0012	-0,0038 ± 0,0012	-0,0013 ± 0,0018
AREQ 42202M005	A 0001	2000-01-02	2001-06-22	-16 27 55,847413 ± 0,0004	-71 29 34,046413 ± 0,0005	2488,9015 ± 0,0012	0,0126 ± 0,0007	0,0136 ± 0,0005	-0,0015 ± 0,0015
AREQ 42202M005	A 0005	2002-08-27	2007-12-01	-16 27 55,861062 ± 0,0005	-71 29 34,067119 ± 0,0006	2488,9105 ± 0,0017	0,0041 ± 0,0008	-0,0053 ± 0,0006	0,0054 ± 0,0017
AREQ 42202M005	A 0006	2007-12-02	2011-04-16	-16 27 55,861440 ± 0,0005	-71 29 34,068058 ± 0,0006	2488,9209 ± 0,0016	0,0095 ± 0,0008	0,0040 ± 0,0007	0,0014 ± 0,0017
ASC1 30602M001	A 0001	2000-01-02	2007-09-03	-07 57 4,368744 ± 0,0005	-14 24 43,460659 ± 0,0007	105,1163 ± 0,0008	0,0110 ± 0,0009	-0,0053 ± 0,0007	0,0000 ± 0,0008
AUTF 41515S001	A 0001	2002-01-10	2011-04-16	-54 50 22,290474 ± 0,0005	-68 18 12,841059 ± 0,0007	71,8888 ± 0,0008	0,0119 ± 0,0009	0,0091 ± 0,0007	0,0015 ± 0,0008
AZUE 41301M001	A 0001	2008-10-20	2010-06-14	07 57 20,473800 ± 0,0014	-80 25 57,058656 ± 0,0018	55,1580 ± 0,0045	0,0134 ± 0,0016	0,0254 ± 0,0018	0,0017 ± 0,0023
AZUL 41529M001	A 0001	2007-08-30	2010-02-26	-36 46 1,280557 ± 0,0019	-59 52 52,608424 ± 0,0024	158,2957 ± 0,0021	0,0113 ± 0,0014	-0,0004 ± 0,0015	0,0035 ± 0,0017
BAIR 41665M001	A 0001	2009-02-01	2011-04-16	-11 18 20,328586 ± 0,0024	-41 51 30,670165 ± 0,0031	723,8752 ± 0,0024	0,0115 ± 0,0012	-0,0034 ± 0,0019	0,0060 ± 0,0019
BANS 42403M001	A 0001	2006-05-21	2009-12-12	08 36 45,546583 ± 0,0010	-70 14 19,233344 ± 0,0013	204,9841 ± 0,0025	0,0104 ± 0,0013	-0,0037 ± 0,0013	0,0015 ± 0,0019
BATF 41666M001	A 0001	2009-02-01	2011-04-16	-17 33 17,535740 ± 0,0028	-39 44 36,039928 ± 0,0033	108,8763 ± 0,0026	0,0157 ± 0,0015	-0,0083 ± 0,0014	-0,0018 ± 0,0019
BAVC 41669M001	A 0001	2009-07-26	2011-04-16	-14 53 17,922145 ± 0,0033	-40 48 9,729031 ± 0,0034	875,1514 ± 0,0032	0,0129 ± 0,0017	-0,0031 ± 0,0016	0,0057 ± 0,0020
BDOS 43401M001	A 0002	2005-06-05	2007-12-01	13 05 16,633396 ± 0,0021	-59 36 32,750291 ± 0,0028	-38,6264 ± 0,0037	0,0158 ± 0,0011	0,0211 ± 0,0017	0,0048 ± 0,0021
BDOS 43401M001	A 0003	2007-12-02	2011-04-16	13 05 16,633618 ± 0,0011	-59 36 32,749171 ± 0,0015	-38,6039 ± 0,0029	0,0139 ± 0,0015	0,0113 ± 0,0015	-0,0009 ± 0,0022
BELE 41622M001	A 0001	2004-01-01	2011-04-16	-01 24 31,661215 ± 0,0005	-48 27 45,178901 ± 0,0006	9,0721 ± 0,0008	0,0129 ± 0,0008	-0,0047 ± 0,0007	0,0006 ± 0,0010
BERR 41910S001	A 0001	2007-05-25	2011-04-16	06 29 33,660328 ± 0,0005	-74 24 37,114734 ± 0,0007	159,0692 ± 0,0024	0,0116 ± 0,0009	0,0052 ± 0,0007	-0,0010 ± 0,0019
BOAV 41636M001	A 0001	2007-09-05	2011-04-16	02 50 42,658664 ± 0,0009	-60 42 4,014018 ± 0,0012	69,4945 ± 0,0027	0,0120 ± 0,0013	-0,0037 ± 0,0012	0,0016 ± 0,0019
BOGA 41901M002	A 0001	2000-02-09	2011-04-16	04 38 19,249228 ± 0,0004	-74 04 47,816248 ± 0,0006	2610,3695 ± 0,0008	0,0215 ± 0,0007	-0,0041 ± 0,0006	-0,0503 ± 0,0008
BOGT 41901M001	A 0003	2002-05-23	2005-07-15	04 38 24,262173 ± 0,0005	-74 04 51,382381 ± 0,0006	2576,7457 ± 0,0020	0,0143 ± 0,0008	-0,0001 ± 0,0006	-0,0370 ± 0,0017
BOGT 41901M001	A 0005	2005-07-17	2011-04-16	04 38 24,262427 ± 0,0004	-74 04 51,382338 ± 0,0006	2576,7233 ± 0,0013	0,0154 ± 0,0007	0,0008 ± 0,0006	-0,0434 ± 0,0016
BOMJ 41612M001	A 0001	2000-01-21	2011-04-16	-13 15 20,007952 ± 0,0004	-43 25 18,247226 ± 0,0005	419,3825 ± 0,0008	0,0129 ± 0,0007	-0,0040 ± 0,0005	0,0018 ± 0,0008
BQLA 41934S001	A 0001	2007-09-29	2009-01-21	11 01 10,950255 ± 0,0024	-74 50 58,708766 ± 0,0031	47,5584 ± 0,0059	0,0129 ± 0,0012	0,0091 ± 0,0019	-0,0014 ± 0,0024
BRAZ 41606M001	A 0001	2000-01-02	2007-03-11	-15 56 50,909199 ± 0,0004	-47 52 40,328711 ± 0,0006	1106,0028 ± 0,0008	0,0125 ± 0,0007	-0,0032 ± 0,0006	-0,0002 ± 0,0008
BRAZ 41606M001	A 0002	2007-03-18	2011-04-16	-15 56 50,909132 ± 0,0006	-47 52 40,328756 ± 0,0008	1106,0102 ± 0,0010	0,0124 ± 0,0010	-0,0034 ± 0,0008	0,0004 ± 0,0013

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
BRFT 41602M002	A 0003	2007-06-24	2011-04-16	-03 52 38,808473 ± 0,0010	-38 25 31,934021 ± 0,0013	21,6701 ± 0,0014	0,0132 ± 0,0014	-0,0035 ± 0,0013	0,0016 ± 0,0017
BRMU 42501S004	A 0001	2000-01-02	2003-02-12	32 22 13,435795 ± 0,0004	-64 41 46,583546 ± 0,0006	-11,6142 ± 0,0008	0,0082 ± 0,0007	-0,0144 ± 0,0006	-0,0009 ± 0,0009
BRMU 42501S004	A 0002	2003-03-12	2009-04-11	32 22 13,435641 ± 0,0005	-64 41 46,583267 ± 0,0006	-11,6102 ± 0,0009	0,0083 ± 0,0008	-0,0110 ± 0,0006	-0,0001 ± 0,0011
BRMU 42501S004	A 0003	2009-04-13	2011-04-16	32 22 13,435147 ± 0,0029	-64 41 46,584347 ± 0,0033	-11,5518 ± 0,0041	0,0107 ± 0,0015	-0,0068 ± 0,0015	-0,0107 ± 0,0023
BUCA 41911S001	A 0001	2005-09-28	2009-05-09	07 07 8,163944 ± 0,0006	-73 07 9,409589 ± 0,0007	1005,5495 ± 0,0024	0,0154 ± 0,0009	0,0042 ± 0,0007	0,0008 ± 0,0019
BUEN 41912S001	A 0001	2005-10-05	2011-01-27	03 52 55,281123 ± 0,0004	-77 00 37,514210 ± 0,0006	57,7469 ± 0,0012	0,0138 ± 0,0007	0,0059 ± 0,0006	0,0016 ± 0,0015
CALI 41903S001	A 0001	2004-02-25	2011-04-16	03 22 32,831278 ± 0,0004	-76 31 57,232970 ± 0,0006	1027,4921 ± 0,0009	0,0139 ± 0,0007	0,0031 ± 0,0006	0,0019 ± 0,0011
CALL 42205M001	A 0001	2009-07-26	2011-04-16	-12 03 46,352401 ± 0,0014	-77 08 57,554447 ± 0,0018	33,7822 ± 0,0039	0,0140 ± 0,0016	0,0199 ± 0,0019	0,0015 ± 0,0020
CAM2 40514M001	A 0001	2005-01-09	2008-12-13	19 50 39,937892 ± 0,0006	-90 32 24,595498 ± 0,0008	12,1902 ± 0,0022	-0,0007 ± 0,0010	-0,0082 ± 0,0008	-0,0015 ± 0,0018
CART 41902M001	A 0001	2000-02-04	2008-08-20	10 23 28,803713 ± 0,0004	-75 32 1,873195 ± 0,0006	4,0699 ± 0,0008	0,0100 ± 0,0007	0,0129 ± 0,0006	-0,0022 ± 0,0008
CASI 41914S001	A 0001	2009-01-04	2010-05-25	07 59 19,820716 ± 0,0020	-75 12 0,124060 ± 0,0027	69,0770 ± 0,0053	0,0130 ± 0,0016	0,0103 ± 0,0016	0,0041 ± 0,0022
CATA 41534M001	A 0001	2009-02-15	2010-02-26	-28 28 15,546286 ± 0,0035	-65 46 26,835230 ± 0,0036	547,1328 ± 0,0066	0,0100 ± 0,0014	0,0027 ± 0,0016	0,0066 ± 0,0024
CBSB 80402M001	A 0001	2005-11-19	2008-11-07	19 42 43,230317 ± 0,0009	-79 49 58,983661 ± 0,0011	-7,1668 ± 0,0022	0,0023 ± 0,0012	-0,0062 ± 0,0012	-0,0012 ± 0,0018
CBSB 80402M001	A 0002	2008-11-27	2011-04-16	19 42 43,230130 ± 0,0012	-79 49 58,983836 ± 0,0015	-7,1633 ± 0,0029	0,0034 ± 0,0016	-0,0066 ± 0,0016	-0,0020 ± 0,0020
CEEU 41602M003	A 0001	2008-04-15	2011-04-16	-03 52 39,173610 ± 0,0016	-38 25 31,946576 ± 0,0020	21,7242 ± 0,0023	0,0135 ± 0,0012	-0,0027 ± 0,0012	0,0036 ± 0,0018
CEFE 41637M001	A 0001	2007-09-05	2011-04-16	-20 18 38,858018 ± 0,0013	-40 19 10,037835 ± 0,0017	14,2864 ± 0,0017	0,0123 ± 0,0015	-0,0040 ± 0,0017	0,0010 ± 0,0017
CFAG 41517S001	A 0001	2000-01-02	2010-02-26	-31 36 7,802185 ± 0,0004	-68 13 57,533102 ± 0,0006	702,5431 ± 0,0008	0,0122 ± 0,0007	0,0064 ± 0,0006	0,0005 ± 0,0008
CHET 40526M001	A 0001	2005-01-09	2011-04-16	18 29 42,996342 ± 0,0004	-88 17 57,208024 ± 0,0005	2,9689 ± 0,0013	0,0004 ± 0,0007	-0,0083 ± 0,0005	-0,0031 ± 0,0016
CHIH 40525M001	A 0001	2005-01-11	2011-04-16	28 39 43,894380 ± 0,0005	-106 05 12,261593 ± 0,0006	1413,1885 ± 0,0011	-0,0063 ± 0,0008	-0,0121 ± 0,0006	-0,0007 ± 0,0013
CHPI 41609M003	A 0001	2003-05-08	2011-04-16	-22 41 13,724665 ± 0,0004	-44 59 6,570141 ± 0,0005	617,4037 ± 0,0008	0,0124 ± 0,0007	-0,0031 ± 0,0005	0,0022 ± 0,0008
CIC1 40508M002	A 0001	2000-01-02	2009-12-13	31 52 14,441281 ± 0,0004	-116 39 56,739543 ± 0,0006	64,3372 ± 0,0008	0,0198 ± 0,0007	-0,0414 ± 0,0006	-0,0002 ± 0,0008
COL2 40524M001	A 0001	2005-01-09	2011-04-16	19 14 39,994956 ± 0,0004	-103 42 6,781315 ± 0,0005	528,7649 ± 0,0012	-0,0015 ± 0,0007	-0,0043 ± 0,0005	0,0018 ± 0,0014
CONZ 41719M002	A 0001	2002-06-10	2005-05-13	-36 50 37,540338 ± 0,0008	-73 01 31,733342 ± 0,0010	180,7033 ± 0,0017	0,0210 ± 0,0011	0,0303 ± 0,0011	0,0026 ± 0,0017
CONZ 41719M002	A 0002	2005-05-18	2010-02-26	-36 50 37,540482 ± 0,0005	-73 01 31,733369 ± 0,0007	180,6970 ± 0,0010	0,0212 ± 0,0009	0,0344 ± 0,0007	0,0000 ± 0,0012
COPO 41714S001	A 0001	2002-07-01	2006-04-28	-27 23 4,296871 ± 0,0006	-70 20 17,651546 ± 0,0008	479,0899 ± 0,0015	0,0170 ± 0,0010	0,0198 ± 0,0008	0,0056 ± 0,0017
COPO 41714S001	A 0002	2006-05-03	2007-10-01	-27 23 4,296742 ± 0,0035	-70 20 17,652119 ± 0,0036	479,0922 ± 0,0060	0,0184 ± 0,0010	0,0201 ± 0,0011	-0,0009 ± 0,0024
COPO 41714S001	A 0003	2008-07-05	2010-02-26	-27 23 4,296161 ± 0,0025	-70 20 17,651910 ± 0,0033	479,0451 ± 0,0043	0,0135 ± 0,0013	0,0190 ± 0,0013	0,0108 ± 0,0023
CORD 41511M001	A 0001	2000-01-02	2004-04-04	-31 31 42,365289 ± 0,0005	-64 28 12,173873 ± 0,0007	746,8405 ± 0,0011	0,0118 ± 0,0009	0,0009 ± 0,0007	0,0000 ± 0,0014
CORD 41511M001	A 0002	2005-03-03	2006-05-02	-31 31 42,365265 ± 0,0035	-64 28 12,174024 ± 0,0036	746,8414 ± 0,0051	0,0150 ± 0,0011	0,0026 ± 0,0012	0,0006 ± 0,0022
COYQ 41715S001	A 0001	2000-01-02	2004-09-07	-45 30 51,627963 ± 0,0005	-71 53 31,490998 ± 0,0006	476,1690 ± 0,0008	0,0106 ± 0,0007	-0,0034 ± 0,0006	-0,0001 ± 0,0008
COYQ 41715S001	A 0002	2007-12-06	2011-04-16	-45 30 51,627824 ± 0,0016	-71 53 31,491186 ± 0,0020	476,1810 ± 0,0026	0,0081 ± 0,0012	0,0018 ± 0,0012	-0,0018 ± 0,0019
CRAT 41619M001	A 0001	2001-08-20	2005-06-29	-07 14 16,865035 ± 0,0012	-39 24 56,180000 ± 0,0015	436,0253 ± 0,0017	0,0119 ± 0,0016	-0,0026 ± 0,0016	0,0005 ± 0,0017
CRAT 41619M001	A 0002	2005-08-16	2008-01-26	-07 14 16,865081 ± 0,0033	-39 24 56,180241 ± 0,0034	436,0302 ± 0,0032	0,0130 ± 0,0017	0,0060 ± 0,0016	0,0026 ± 0,0020
CRAT 41619M001	A 0003	2008-03-07	2010-12-28	-07 14 16,864990 ± 0,0015	-39 24 56,180188 ± 0,0019	436,0179 ± 0,0021	0,0113 ± 0,0017	0,0006 ± 0,0019	0,0036 ± 0,0018

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
CRCS 42401M001	A 0001	2006-05-21	2011-04-16	10 30 9,107147 ± 0,0005	-66 54 48,657764 ± 0,0007	913,0379 ± 0,0017	0,0111 ± 0,0009	0,0002 ± 0,0007	-0,0005 ± 0,0017
CRO1 43201M001	A 0002	2000-01-02	2005-01-19	17 45 24,833660 ± 0,0004	-64 35 3,551264 ± 0,0005	-31,9497 ± 0,0011	0,0127 ± 0,0007	0,0114 ± 0,0006	-0,0027 ± 0,0013
CRO1 43201M001	A 0003	2005-08-04	2011-04-16	17 45 24,833668 ± 0,0005	-64 35 3,551178 ± 0,0006	-31,9498 ± 0,0013	0,0135 ± 0,0008	0,0116 ± 0,0006	-0,0003 ± 0,0015
CRUZ 41641M001	A 0001	2007-09-05	2009-11-04	-07 36 40,183388 ± 0,0028	-72 40 19,596926 ± 0,0033	236,0200 ± 0,0066	0,0111 ± 0,0014	-0,0022 ± 0,0014	0,0010 ± 0,0025
CUCU 41904S001	A 0001	2004-03-12	2011-04-16	07 53 54,448218 ± 0,0004	-72 29 16,583039 ± 0,0006	311,1739 ± 0,0010	0,0141 ± 0,0007	0,0035 ± 0,0006	-0,0001 ± 0,0012
CUEC 42009M001	A 0001	2008-11-17	2011-04-16	-02 52 59,869456 ± 0,0009	-79 00 8,989510 ± 0,0012	2631,1379 ± 0,0032	0,0074 ± 0,0012	0,0002 ± 0,0012	0,0034 ± 0,0020
CUIB 41603M001	A 0001	2000-01-21	2007-04-07	-15 33 18,944776 ± 0,0004	-56 04 11,519949 ± 0,0006	237,4297 ± 0,0008	0,0123 ± 0,0007	-0,0036 ± 0,0006	0,0015 ± 0,0008
CUIB 41603M001	A 0002	2007-04-10	2011-04-16	-15 33 18,944633 ± 0,0007	-56 04 11,520203 ± 0,0009	237,4330 ± 0,0015	0,0110 ± 0,0009	-0,0019 ± 0,0009	0,0018 ± 0,0017
CULC 40529M001	A 0001	2007-10-04	2011-04-16	24 47 42,308662 ± 0,0009	-107 24 45,345596 ± 0,0012	36,1471 ± 0,0027	-0,0073 ± 0,0013	-0,0115 ± 0,0012	-0,0019 ± 0,0019
CULI 40523M001	A 0001	2005-01-09	2007-07-13	24 47 54,788651 ± 0,0012	-107 23 2,193435 ± 0,0016	75,4038 ± 0,0023	-0,0068 ± 0,0014	-0,0105 ± 0,0016	0,0003 ± 0,0019
DAVI 41302M001	A 0001	2008-10-20	2011-04-16	08 25 31,699689 ± 0,0010	-82 26 1,696837 ± 0,0013	67,2211 ± 0,0035	0,0128 ± 0,0014	0,0217 ± 0,0013	0,0003 ± 0,0021
DORA 41915S001	A 0001	2006-02-16	2011-04-16	05 27 13,838957 ± 0,0004	-74 39 47,928110 ± 0,0005	204,4880 ± 0,0014	0,0149 ± 0,0007	0,0036 ± 0,0005	0,0006 ± 0,0017
EBYP 41538M001	A 0001	2009-11-22	2011-04-16	-27 22 8,199355 ± 0,0035	-55 53 31,827772 ± 0,0037	139,8749 ± 0,0066	0,0102 ± 0,0015	-0,0041 ± 0,0017	-0,0041 ± 0,0026
EISL 41703M003	A 0001	2000-01-02	2003-01-26	-27 08 53,553807 ± 0,0010	-109 22 59,841618 ± 0,0013	114,5294 ± 0,0025	-0,0068 ± 0,0013	0,0736 ± 0,0013	-0,0014 ± 0,0019
ELEN 40902S001	A 0001	2001-12-08	2011-04-16	16 54 57,801752 ± 0,0004	-89 52 3,409116 ± 0,0006	118,1249 ± 0,0008	0,0008 ± 0,0007	-0,0078 ± 0,0006	0,0020 ± 0,0008
ESMR 42011M001	A 0001	2009-06-28	2011-04-16	00 56 4,731484 ± 0,0013	-79 43 27,744897 ± 0,0017	251,6694 ± 0,0048	0,0143 ± 0,0015	0,0165 ± 0,0017	0,0026 ± 0,0023
ESQU 41533M001	A 0001	2008-10-06	2011-04-16	-42 55 1,609379 ± 0,0018	-71 19 24,241537 ± 0,0023	589,4354 ± 0,0021	0,0103 ± 0,0014	-0,0038 ± 0,0014	-0,0011 ± 0,0017
ESTI 41202S001	A 0001	2000-05-12	2003-02-26	13 05 58,330233 ± 0,0004	-86 21 43,658501 ± 0,0006	852,6749 ± 0,0011	0,0118 ± 0,0007	0,0145 ± 0,0006	0,0034 ± 0,0013
ETCG 40602M001	A 0001	2003-02-11	2009-01-09	09 59 58,136951 ± 0,0004	-84 06 21,229760 ± 0,0006	1193,6272 ± 0,0014	0,0161 ± 0,0007	0,0134 ± 0,0006	-0,0019 ± 0,0017
ETCG 40602M001	A 0002	2009-01-11	2011-04-16	09 59 58,137413 ± 0,0010	-84 06 21,229897 ± 0,0013	1193,6232 ± 0,0037	0,0180 ± 0,0013	0,0124 ± 0,0013	-0,0005 ± 0,0021
EXU0 43606M001	A 0001	2007-07-01	2011-04-16	23 33 50,576645 ± 0,0009	-75 52 24,244982 ± 0,0012	-20,0551 ± 0,0028	0,0052 ± 0,0012	-0,0088 ± 0,0012	0,0007 ± 0,0019
FLOR 41916S001	A 0001	2006-11-02	2011-04-16	01 37 12,945337 ± 0,0005	-75 36 16,206974 ± 0,0006	314,2532 ± 0,0020	0,0081 ± 0,0008	-0,0027 ± 0,0006	0,0002 ± 0,0017
FORT 41602M001	A 0002	2000-01-09	2006-04-08	-03 52 38,802468 ± 0,0009	-38 25 32,205424 ± 0,0011	19,4418 ± 0,0012	0,0124 ± 0,0012	-0,0034 ± 0,0012	0,0033 ± 0,0014
FQNE 41936S001	A 0001	2007-09-30	2010-12-23	05 28 2,433884 ± 0,0009	-73 44 5,311410 ± 0,0012	2602,0343 ± 0,0029	0,0135 ± 0,0013	0,0024 ± 0,0012	-0,0004 ± 0,0022
GALA 42005M001	A 0001	2000-02-04	2002-11-09	00 44 33,702052 ± 0,0004	-90 18 13,026180 ± 0,0006	7,4257 ± 0,0010	0,0094 ± 0,0007	0,0507 ± 0,0006	-0,0017 ± 0,0012
GCGT 80401M001	A 0001	2005-06-09	2011-04-16	19 17 34,614599 ± 0,0004	-81 22 46,008800 ± 0,0005	8,4335 ± 0,0012	0,0020 ± 0,0007	-0,0074 ± 0,0005	-0,0018 ± 0,0014
GLPS 42005M002	A 0001	2003-01-07	2008-02-26	00 44 34,797784 ± 0,0004	-90 18 13,219655 ± 0,0006	1,7867 ± 0,0011	0,0098 ± 0,0007	0,0511 ± 0,0006	0,0008 ± 0,0014
GLPS 42005M002	A 0002	2008-10-11	2010-12-28	00 44 34,797847 ± 0,0004	-90 18 13,219698 ± 0,0005	1,7821 ± 0,0022	0,0104 ± 0,0007	0,0508 ± 0,0006	0,0017 ± 0,0018
GOJA 41654M001	A 0001	2008-06-10	2011-04-16	-17 52 59,802117 ± 0,0015	-51 43 33,992429 ± 0,0019	755,2946 ± 0,0027	0,0121 ± 0,0017	-0,0030 ± 0,0019	-0,0007 ± 0,0019
GOLD 40405S031	A 0005	2000-07-01	2011-04-16	35 25 30,561987 ± 0,0004	-116 53 21,300348 ± 0,0006	986,6623 ± 0,0008	-0,0038 ± 0,0007	-0,0180 ± 0,0006	0,0002 ± 0,0008
GOUG 30608M001	A 0001	2000-01-02	2006-12-07	-40 20 55,798397 ± 0,0006	-9 52 50,579053 ± 0,0008	81,2630 ± 0,0008	0,0194 ± 0,0011	0,0210 ± 0,0009	0,0021 ± 0,0008
GRE0 43501S001	A 0001	2007-07-01	2011-04-16	12 13 18,418409 ± 0,0008	-61 38 25,636362 ± 0,0010	16,6836 ± 0,0021	0,0149 ± 0,0011	0,0139 ± 0,0010	-0,0011 ± 0,0018
GTK0 43602S007	A 0001	2007-07-01	2010-08-11	21 25 58,038026 ± 0,0011	-71 08 40,529659 ± 0,0014	-31,0740 ± 0,0022	0,0066 ± 0,0015	-0,0079 ± 0,0015	0,0015 ± 0,0018
GUAT 40901S001	A 0001	2000-07-30	2011-04-16	14 35 25,454954 ± 0,0004	-90 31 12,658463 ± 0,0006	1519,8763 ± 0,0008	0,0031 ± 0,0007	0,0053 ± 0,0006	-0,0004 ± 0,0008

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
GVAL 41623M001	A 0001	2004-07-02	2011-04-16	-18 51 20,182949 ± 0,0005	-41 57 27,429397 ± 0,0007	178,6446 ± 0,0008	0,0129 ± 0,0009	-0,0037 ± 0,0007	0,0014 ± 0,0009
GYEC 42007M001	A 0001	2008-09-01	2011-04-16	-02 08 57,686246 ± 0,0007	-79 53 30,715092 ± 0,0009	35,2177 ± 0,0024	0,0129 ± 0,0011	0,0052 ± 0,0009	-0,0019 ± 0,0019
HER2 40522M001	A 0001	2005-01-09	2011-04-16	29 05 33,169809 ± 0,0005	-110 58 1,973901 ± 0,0006	186,9526 ± 0,0010	-0,0077 ± 0,0008	-0,0121 ± 0,0006	-0,0002 ± 0,0012
IBAG 41918S001	A 0001	2006-02-18	2010-01-13	04 25 40,959273 ± 0,0010	-75 12 53,004914 ± 0,0013	1216,0854 ± 0,0030	0,0131 ± 0,0013	0,0023 ± 0,0013	0,0004 ± 0,0020
ICAM 40514M002	A 0001	2009-03-22	2011-04-16	19 51 12,446820 ± 0,0018	-90 31 38,900451 ± 0,0024	2,6090 ± 0,0046	0,0005 ± 0,0014	-0,0086 ± 0,0015	-0,0045 ± 0,0023
ICEP 40531M001	A 0001	2009-07-12	2011-04-16	19 01 58,885124 ± 0,0024	-98 11 15,350666 ± 0,0031	2150,3642 ± 0,0057	-0,0025 ± 0,0012	-0,0041 ± 0,0019	-0,0082 ± 0,0024
IDGO 40532M001	A 0001	2009-03-22	2011-04-16	24 04 2,832151 ± 0,0024	-104 36 25,480666 ± 0,0031	1863,1218 ± 0,0049	-0,0055 ± 0,0012	-0,0110 ± 0,0019	0,0001 ± 0,0023
IGM0 41505M002	A 0001	2000-01-21	2003-12-29	-34 34 19,911429 ± 0,0004	-58 26 21,718857 ± 0,0006	48,7820 ± 0,0008	0,0117 ± 0,0007	-0,0012 ± 0,0006	-0,0006 ± 0,0008
IGM1 41505M003	A 0001	2003-11-09	2010-02-26	-34 34 20,077923 ± 0,0005	-58 26 21,549508 ± 0,0007	50,6839 ± 0,0009	0,0115 ± 0,0009	-0,0001 ± 0,0007	0,0025 ± 0,0011
IGN1 41303M001	A 0001	2008-10-20	2011-04-16	08 59 5,586636 ± 0,0007	-79 32 8,721298 ± 0,0008	47,5655 ± 0,0021	0,0122 ± 0,0011	0,0180 ± 0,0009	-0,0003 ± 0,0018
IMBT 41638M001	A 0001	2007-09-05	2011-04-16	-28 14 5,420109 ± 0,0011	-48 39 20,597149 ± 0,0014	31,3734 ± 0,0017	0,0118 ± 0,0015	-0,0040 ± 0,0014	-0,0001 ± 0,0017
IMPZ 41615M001	A 0001	2000-01-21	2011-04-16	-05 29 30,356244 ± 0,0004	-47 29 50,044769 ± 0,0005	104,9930 ± 0,0008	0,0124 ± 0,0007	-0,0039 ± 0,0005	-0,0001 ± 0,0008
INEG 40507M001	A 0003	2000-05-05	2001-05-05	21 51 22,154029 ± 0,0008	-102 17 3,130521 ± 0,0011	1887,9498 ± 0,0029	-0,0022 ± 0,0012	-0,0130 ± 0,0011	-0,0784 ± 0,0022
INEG 40507M001	A 0004	2001-05-06	2002-03-22	21 51 22,153764 ± 0,0017	-102 17 3,130720 ± 0,0022	1887,9209 ± 0,0038	-0,0043 ± 0,0013	-0,0145 ± 0,0013	-0,0846 ± 0,0021
INEG 40507M001	A 0005	2004-11-15	2011-04-16	21 51 22,153445 ± 0,0004	-102 17 3,130730 ± 0,0005	1887,9871 ± 0,0010	-0,0041 ± 0,0007	-0,0089 ± 0,0005	-0,0335 ± 0,0012
IQQE 41708S002	A 0001	2002-07-01	2005-06-11	-20 16 24,748841 ± 0,0008	-70 07 54,170275 ± 0,0010	38,9407 ± 0,0024	0,0164 ± 0,0011	0,0273 ± 0,0010	0,0031 ± 0,0019
IQQE 41708S002	A 0003	2008-06-29	2011-04-16	-20 16 24,749503 ± 0,0007	-70 07 54,172292 ± 0,0009	38,9855 ± 0,0021	0,0171 ± 0,0010	0,0237 ± 0,0009	0,0011 ± 0,0018
IQUI 42204M001	A 0001	2009-07-26	2011-04-16	-03 46 2,445597 ± 0,0016	-73 16 7,350846 ± 0,0021	122,0516 ± 0,0049	0,0115 ± 0,0012	-0,0019 ± 0,0013	0,0151 ± 0,0023
ISPA 41703M007	A 0001	2004-02-14	2011-04-16	-27 07 29,938031 ± 0,0004	-109 20 39,881764 ± 0,0005	112,4917 ± 0,0009	-0,0059 ± 0,0007	0,0665 ± 0,0005	0,0007 ± 0,0011
JAMA 42601S001	A 0001	2000-01-02	2003-09-05	17 56 20,484383 ± 0,0004	-76 46 51,139392 ± 0,0006	-2,9446 ± 0,0009	0,0097 ± 0,0007	0,0027 ± 0,0006	-0,0016 ± 0,0010
JBAL 41537M001	A 0001	2009-11-22	2011-04-16	-27 35 3,869830 ± 0,0034	-65 37 21,898592 ± 0,0036	409,1701 ± 0,0047	0,0076 ± 0,0009	0,0028 ± 0,0017	0,0009 ± 0,0023
KOUR 97301M210	A 0001	2000-01-02	2002-01-16	05 15 7,852751 ± 0,0007	-52 48 21,454437 ± 0,0009	-25,7644 ± 0,0014	0,0129 ± 0,0011	-0,0009 ± 0,0009	0,0029 ± 0,0016
KOUR 97301M210	A 0002	2002-02-06	2006-07-01	05 15 7,852678 ± 0,0006	-52 48 21,454800 ± 0,0007	-25,7656 ± 0,0011	0,0118 ± 0,0009	-0,0052 ± 0,0008	-0,0016 ± 0,0013
KOUR 97301M210	A 0003	2006-07-02	2011-04-16	05 15 7,852697 ± 0,0006	-52 48 21,454666 ± 0,0008	-25,7619 ± 0,0012	0,0131 ± 0,0010	-0,0038 ± 0,0008	0,0012 ± 0,0014
KYW1 49852S001	A 0001	2000-01-02	2007-10-10	24 34 56,181313 ± 0,0004	-81 39 10,918565 ± 0,0006	-13,7870 ± 0,0008	0,0021 ± 0,0007	-0,0094 ± 0,0006	-0,0003 ± 0,0008
LHCL 41518S001	A 0001	2002-07-04	2010-02-26	-38 00 9,574850 ± 0,0005	-65 35 42,889933 ± 0,0006	404,5349 ± 0,0008	0,0106 ± 0,0008	0,0003 ± 0,0006	0,0030 ± 0,0009
LJEC 42010M001	A 0001	2009-02-02	2011-04-16	-03 59 17,738287 ± 0,0008	-79 11 54,734903 ± 0,0010	2143,4799 ± 0,0028	0,0074 ± 0,0011	-0,0012 ± 0,0010	0,0060 ± 0,0019
LPAZ 40521M001	A 0001	2005-01-09	2011-04-16	24 08 19,671982 ± 0,0004	-110 19 9,647345 ± 0,0005	-6,8357 ± 0,0010	0,0205 ± 0,0007	-0,0489 ± 0,0006	-0,0019 ± 0,0013
LPGS 41510M001	A 0001	2000-01-02	2010-02-26	-34 54 24,283044 ± 0,0004	-57 55 56,278206 ± 0,0006	29,8649 ± 0,0008	0,0120 ± 0,0007	-0,0005 ± 0,0006	0,0031 ± 0,0008
MABA 41642M001	A 0001	2007-09-05	2011-04-16	-05 21 44,561049 ± 0,0011	-49 07 20,271915 ± 0,0014	79,8045 ± 0,0021	0,0132 ± 0,0014	-0,0033 ± 0,0014	0,0017 ± 0,0018
MAGA 41920S001	A 0001	2009-01-04	2010-09-02	09 14 23,455431 ± 0,0021	-74 45 35,295855 ± 0,0027	24,6397 ± 0,0053	0,0116 ± 0,0016	0,0111 ± 0,0017	-0,0058 ± 0,0022
MANA 41201S001	A 0001	2000-05-14	2004-10-10	12 08 56,178882 ± 0,0004	-86 14 56,378013 ± 0,0006	71,0312 ± 0,0011	0,0089 ± 0,0007	0,0056 ± 0,0006	-0,0036 ± 0,0013
MANA 41201S001	A 0002	2004-10-11	2011-04-16	12 08 56,178248 ± 0,0004	-86 14 56,378314 ± 0,0006	71,0487 ± 0,0013	0,0077 ± 0,0007	0,0075 ± 0,0006	-0,0038 ± 0,0016
MAPA 41629M001	A 0001	2006-01-13	2011-04-16	00 02 48,070712 ± 0,0006	-51 05 50,412679 ± 0,0008	-4,2442 ± 0,0012	0,0125 ± 0,0011	-0,0032 ± 0,0008	0,0037 ± 0,0015

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
MARA 42402M001	A 0001	2000-01-21	2008-05-26	10 40 26,323612 ± 0,0004	-71 37 27,950243 ± 0,0006	28,3867 ± 0,0008	0,0125 ± 0,0007	0,0095 ± 0,0006	0,0006 ± 0,0010
MARA 42402M001	A 0002	2008-07-16	2011-04-16	10 40 26,323579 ± 0,0012	-71 37 27,949842 ± 0,0016	28,4041 ± 0,0034	0,0132 ± 0,0014	0,0077 ± 0,0016	-0,0067 ± 0,0021
MCLA 41624M001	A 0001	2004-07-02	2011-04-16	-16 43 13,420355 ± 0,0005	-43 52 52,738628 ± 0,0007	656,5354 ± 0,0008	0,0122 ± 0,0009	-0,0032 ± 0,0007	0,0030 ± 0,0010
MDO1 40442M012	A 0001	2000-01-02	2004-12-02	30 40 49,840540 ± 0,0004	-104 00 53,974877 ± 0,0005	2004,5042 ± 0,0009	-0,0056 ± 0,0007	-0,0128 ± 0,0006	0,0008 ± 0,0010
MDO1 40442M012	A 0003	2004-12-08	2011-04-16	30 40 49,840660 ± 0,0005	-104 00 53,975082 ± 0,0006	2004,4941 ± 0,0010	-0,0069 ± 0,0008	-0,0115 ± 0,0006	-0,0004 ± 0,0013
MECO 41526M001	A 0001	2006-10-19	2011-04-16	-29 11 5,594178 ± 0,0009	-58 04 33,042820 ± 0,0012	116,5084 ± 0,0017	0,0105 ± 0,0012	-0,0030 ± 0,0012	0,0020 ± 0,0017
MEDE 41921S001	A 0001	2005-09-18	2011-04-16	06 11 57,853966 ± 0,0004	-75 34 44,100494 ± 0,0005	1553,4076 ± 0,0014	0,0154 ± 0,0007	0,0047 ± 0,0005	0,0039 ± 0,0017
MERI 40520M001	A 0001	2005-01-09	2011-04-16	20 58 48,163431 ± 0,0004	-89 37 13,141600 ± 0,0005	7,8659 ± 0,0012	0,0003 ± 0,0007	-0,0087 ± 0,0006	-0,0006 ± 0,0015
MEXI 40519M001	A 0001	2005-01-09	2010-04-03	32 37 58,768935 ± 0,0006	-115 28 32,530443 ± 0,0008	-22,4529 ± 0,0013	0,0145 ± 0,0011	-0,0244 ± 0,0008	0,0062 ± 0,0016
MGBH 41667M001	A 0001	2009-02-01	2011-04-16	-19 56 30,840946 ± 0,0027	-43 55 29,629196 ± 0,0033	974,8110 ± 0,0027	0,0126 ± 0,0014	-0,0043 ± 0,0013	0,0049 ± 0,0019
MGIN 41647M001	A 0001	2008-02-13	2011-04-16	-22 19 6,821174 ± 0,0012	-46 19 40,886709 ± 0,0016	883,6770 ± 0,0019	0,0118 ± 0,0014	-0,0039 ± 0,0016	0,0026 ± 0,0017
MGMC 41624M002	A 0001	2008-04-06	2011-04-16	-16 42 59,009649 ± 0,0019	-43 51 29,939968 ± 0,0024	618,1382 ± 0,0029	0,0123 ± 0,0015	-0,0040 ± 0,0015	0,0015 ± 0,0022
MGUB 41652M001	A 0001	2008-01-13	2011-04-16	-18 55 8,985815 ± 0,0011	-48 15 21,777930 ± 0,0015	869,2041 ± 0,0019	0,0118 ± 0,0015	-0,0038 ± 0,0015	0,0039 ± 0,0017
MOTE 41922S001	A 0001	2006-03-21	2008-04-27	08 47 31,073653 ± 0,0020	-75 51 38,410289 ± 0,0026	33,2202 ± 0,0055	0,0090 ± 0,0016	0,0138 ± 0,0016	-0,0052 ± 0,0022
MPL2 41544M001	A 0001	2009-11-10	2011-04-16	-38 00 20,762948 ± 0,0035	-57 34 16,669990 ± 0,0036	53,5649 ± 0,0053	0,0117 ± 0,0012	-0,0046 ± 0,0014	0,0022 ± 0,0022
MPLA 41521M001	A 0001	2002-09-22	2008-02-03	-38 02 8,173254 ± 0,0006	-57 31 52,110970 ± 0,0008	20,1085 ± 0,0009	0,0129 ± 0,0010	-0,0002 ± 0,0008	0,0031 ± 0,0011
MSCG 41649M001	A 0001	2008-01-13	2011-04-16	-20 26 27,240470 ± 0,0012	-54 32 26,529734 ± 0,0015	676,4779 ± 0,0023	0,0124 ± 0,0016	-0,0022 ± 0,0015	0,0005 ± 0,0018
MSDO 41672M001	A 0001	2009-07-31	2011-04-16	-22 13 0,677601 ± 0,0035	-54 48 50,080426 ± 0,0036	467,8810 ± 0,0045	0,0127 ± 0,0010	-0,0037 ± 0,0011	-0,0031 ± 0,0023
MTBA 41663M001	A 0001	2008-09-01	2011-04-11	-15 53 23,894076 ± 0,0013	-52 15 53,033608 ± 0,0017	322,8351 ± 0,0025	0,0108 ± 0,0015	-0,0055 ± 0,0017	-0,0012 ± 0,0019
MTCO 41670M001	A 0001	2009-07-12	2011-04-16	-10 48 13,912468 ± 0,0025	-55 27 22,547974 ± 0,0033	307,1953 ± 0,0038	0,0115 ± 0,0013	-0,0014 ± 0,0013	0,0042 ± 0,0020
MTSF 41655M001	A 0001	2008-04-06	2011-04-16	-11 37 9,406994 ± 0,0011	-50 39 48,624999 ± 0,0014	181,8408 ± 0,0022	0,0120 ± 0,0015	-0,0027 ± 0,0015	0,0006 ± 0,0018
MTY2 40518M001	A 0001	2005-01-09	2011-04-16	25 42 55,824374 ± 0,0004	-100 18 46,460745 ± 0,0006	521,7435 ± 0,0011	-0,0038 ± 0,0007	-0,0106 ± 0,0006	-0,0011 ± 0,0014
MZAC 41503M001	A 0001	2004-06-09	2010-02-26	-32 53 42,550625 ± 0,0005	-68 52 32,065585 ± 0,0006	859,8355 ± 0,0010	0,0131 ± 0,0008	0,0090 ± 0,0006	0,0013 ± 0,0013
MZAE 41530M001	A 0001	2007-05-20	2010-02-26	-33 15 17,436049 ± 0,0014	-68 09 0,221298 ± 0,0018	635,7167 ± 0,0020	0,0104 ± 0,0016	0,0059 ± 0,0019	-0,0002 ± 0,0017
MZAS 41528M001	A 0001	2007-01-17	2010-02-26	-34 36 53,650947 ± 0,0011	-68 20 4,254650 ± 0,0014	729,3542 ± 0,0022	0,0115 ± 0,0015	0,0056 ± 0,0015	0,0026 ± 0,0018
NAS0 43607S001	A 0001	2007-07-01	2010-12-25	25 03 9,140244 ± 0,0009	-77 27 44,121324 ± 0,0012	-21,2361 ± 0,0027	0,0047 ± 0,0012	-0,0085 ± 0,0012	-0,0020 ± 0,0019
NAUS 41614M002	A 0001	2006-01-01	2011-04-16	-03 01 22,508849 ± 0,0005	-60 03 18,059892 ± 0,0006	93,8662 ± 0,0012	0,0124 ± 0,0008	-0,0031 ± 0,0007	0,0055 ± 0,0014
NEIA 41620M002	A 0001	2006-01-05	2009-11-16	-25 01 12,859561 ± 0,0014	-47 55 29,886756 ± 0,0019	6,0499 ± 0,0023	0,0125 ± 0,0017	-0,0024 ± 0,0019	0,0040 ± 0,0018
NEIA 41620M002	A 0002	2010-01-02	2011-04-16	-25 01 12,858999 ± 0,0035	-47 55 29,886869 ± 0,0037	6,0549 ± 0,0060	0,0101 ± 0,0015	-0,0033 ± 0,0018	0,0037 ± 0,0024
NEVA 41923S001	A 0001	2005-11-19	2011-04-16	02 56 14,280195 ± 0,0004	-75 17 34,913579 ± 0,0006	472,7327 ± 0,0017	0,0143 ± 0,0007	0,0018 ± 0,0006	-0,0001 ± 0,0017
OAX2 40517M001	A 0001	2005-01-09	2011-04-16	17 04 42,023269 ± 0,0004	-96 43 0,261516 ± 0,0006	1607,2466 ± 0,0011	0,0031 ± 0,0007	-0,0037 ± 0,0006	0,0015 ± 0,0013
OHI2 66008M005	A 0001	2002-02-15	2011-04-16	-63 19 15,892417 ± 0,0004	-57 54 4,797409 ± 0,0005	32,4648 ± 0,0008	0,0111 ± 0,0007	0,0145 ± 0,0005	0,0037 ± 0,0008
OHIG 66008M001	A 0001	2000-01-21	2002-02-19	-63 19 14,602009 ± 0,0008	-57 54 1,218655 ± 0,0011	30,7169 ± 0,0008	0,0115 ± 0,0011	0,0142 ± 0,0011	0,0073 ± 0,0008
ONRJ 41635M001	A 0001	2007-04-01	2009-10-10	-22 53 44,520075 ± 0,0020	-43 13 27,594100 ± 0,0026	35,6255 ± 0,0029	0,0128 ± 0,0016	-0,0033 ± 0,0016	0,0004 ± 0,0022

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
ONRJ 41635M001	A 0002	2009-10-11	2011-04-16	-22 53 44,519937 ± 0,0035	-43 13 27,594143 ± 0,0036	35,6047 ± 0,0037	0,0102 ± 0,0010	-0,0052 ± 0,0012	0,0010 ± 0,0021
PALM 66005M002	A 0001	2000-01-21	2011-04-16	-64 46 30,324777 ± 0,0004	-64 03 4,041007 ± 0,0006	31,0512 ± 0,0008	0,0110 ± 0,0007	0,0129 ± 0,0006	0,0066 ± 0,0008
PARA 41610M001	A 0001	2000-01-21	2007-05-07	-25 26 54,124985 ± 0,0004	-49 13 51,437635 ± 0,0006	925,7498 ± 0,0008	0,0121 ± 0,0007	-0,0025 ± 0,0006	0,0019 ± 0,0008
PARC 41716S001	A 0001	2000-01-02	2001-10-03	-53 08 13,037617 ± 0,0006	-70 52 47,575520 ± 0,0007	22,2816 ± 0,0008	0,0130 ± 0,0009	0,0045 ± 0,0007	-0,0019 ± 0,0008
PARC 41716S001	A 0002	2001-12-12	2011-04-16	-53 08 13,037674 ± 0,0004	-70 52 47,575634 ± 0,0006	22,2859 ± 0,0008	0,0123 ± 0,0007	0,0054 ± 0,0006	-0,0015 ± 0,0008
PBCG 41656M001	A 0001	2008-04-09	2011-04-16	-07 12 49,237870 ± 0,0016	-35 54 25,695906 ± 0,0020	534,0695 ± 0,0021	0,0122 ± 0,0012	-0,0043 ± 0,0012	0,0028 ± 0,0017
PDES 41524M001	A 0001	2005-05-05	2007-07-25	-47 45 12,938541 ± 0,0027	-65 54 52,839999 ± 0,0033	17,9978 ± 0,0026	0,0128 ± 0,0014	-0,0028 ± 0,0013	0,0039 ± 0,0019
PEPE 41650M001	A 0001	2008-01-13	2011-04-16	-09 23 3,903418 ± 0,0014	-40 30 22,045434 ± 0,0018	369,0824 ± 0,0021	0,0125 ± 0,0016	-0,0033 ± 0,0018	0,0024 ± 0,0017
PERA 41905S001	A 0001	2004-02-20	2010-12-22	04 47 32,983344 ± 0,0004	-75 41 22,234050 ± 0,0005	1496,7381 ± 0,0015	0,0156 ± 0,0007	0,0037 ± 0,0005	0,0005 ± 0,0017
PIE1 40456M001	A 0003	2000-01-02	2006-09-04	34 18 5,421659 ± 0,0004	-108 07 8,137408 ± 0,0005	2347,7347 ± 0,0008	-0,0066 ± 0,0007	-0,0143 ± 0,0005	0,0003 ± 0,0008
PIE1 40456M001	A 0005	2007-01-24	2011-04-16	34 18 5,421611 ± 0,0007	-108 07 8,137544 ± 0,0009	2347,7334 ± 0,0014	-0,0065 ± 0,0011	-0,0133 ± 0,0009	-0,0006 ± 0,0017
PISR 41673M001	A 0001	2009-07-12	2011-04-16	-09 01 50,494426 ± 0,0032	-42 42 9,931689 ± 0,0034	366,7184 ± 0,0034	0,0138 ± 0,0017	-0,0060 ± 0,0016	0,0098 ± 0,0021
PMB1 43702S001	A 0001	2005-12-30	2007-10-21	05 49 41,379104 ± 0,0030	-55 08 41,508927 ± 0,0033	-29,3205 ± 0,0049	0,0124 ± 0,0016	-0,0029 ± 0,0015	-0,0047 ± 0,0023
PMB1 43702S001	A 0002	2007-12-19	2011-04-16	05 49 41,379062 ± 0,0014	-55 08 41,508838 ± 0,0018	-29,3726 ± 0,0022	0,0121 ± 0,0016	-0,0035 ± 0,0018	0,0005 ± 0,0018
POAL 41616M001	A 0001	2000-01-21	2011-04-16	-30 04 26,550928 ± 0,0004	-51 07 11,153364 ± 0,0006	76,7304 ± 0,0008	0,0122 ± 0,0007	-0,0020 ± 0,0006	0,0018 ± 0,0008
POLI 41630M001	A 0001	2007-01-01	2011-04-16	-23 33 20,330070 ± 0,0008	-46 43 49,123429 ± 0,0011	730,6112 ± 0,0013	0,0118 ± 0,0011	-0,0032 ± 0,0011	0,0022 ± 0,0016
POPA 41924S001	A 0001	2006-06-29	2011-04-16	02 26 35,209148 ± 0,0004	-76 36 4,341788 ± 0,0006	1782,2457 ± 0,0018	0,0131 ± 0,0007	0,0037 ± 0,0006	-0,0001 ± 0,0017
POVE 41628M001	A 0001	2006-01-04	2011-04-16	-08 42 33,609679 ± 0,0005	-63 53 46,751163 ± 0,0006	119,5801 ± 0,0011	0,0113 ± 0,0008	-0,0031 ± 0,0006	0,0024 ± 0,0014
PPTE 41611M002	A 0001	2006-01-01	2011-04-16	-22 07 11,654915 ± 0,0006	-51 24 30,722660 ± 0,0008	431,0077 ± 0,0011	0,0120 ± 0,0010	-0,0023 ± 0,0008	0,0058 ± 0,0013
PRGU 41671M001	A 0001	2009-07-12	2011-04-16	-25 23 2,391913 ± 0,0029	-51 29 15,280294 ± 0,0033	1043,1206 ± 0,0033	0,0111 ± 0,0015	-0,0041 ± 0,0014	0,0029 ± 0,0020
PRMA 41674M001	A 0001	2009-07-12	2011-04-16	-23 24 34,876013 ± 0,0035	-51 56 18,327264 ± 0,0036	543,3506 ± 0,0045	0,0132 ± 0,0010	-0,0038 ± 0,0011	-0,0012 ± 0,0023
PSTO 41925S001	A 0001	2005-09-18	2011-04-16	01 12 42,159400 ± 0,0005	-77 16 37,489581 ± 0,0007	2569,1070 ± 0,0026	0,0128 ± 0,0009	0,0029 ± 0,0007	0,0009 ± 0,0019
PUR3 82001S003	A 0001	2000-01-02	2007-03-19	18 27 46,716138 ± 0,0004	-67 04 1,046491 ± 0,0006	89,5471 ± 0,0008	0,0124 ± 0,0007	0,0092 ± 0,0006	-0,0008 ± 0,0008
QUI1 42003S003	A 0001	2004-01-01	2009-08-01	00 12 54,565616 ± 0,0004	-78 29 36,989010 ± 0,0006	2922,5358 ± 0,0011	0,0102 ± 0,0007	0,0079 ± 0,0006	0,0007 ± 0,0013
RECF 41617M001	A 0001	2000-01-21	2011-04-16	-08 03 3,467552 ± 0,0004	-34 57 5,459385 ± 0,0005	20,1439 ± 0,0008	0,0121 ± 0,0007	-0,0030 ± 0,0005	-0,0018 ± 0,0008
RIO2 41507M006	A 0001	2007-04-21	2011-04-16	-53 47 7,699585 ± 0,0008	-67 45 4,024839 ± 0,0010	32,0338 ± 0,0010	0,0126 ± 0,0010	0,0043 ± 0,0010	-0,0003 ± 0,0011
RIOB 41645M001	A 0001	2007-09-05	2011-04-16	-09 57 55,650276 ± 0,0006	-67 48 10,122326 ± 0,0008	172,6093 ± 0,0021	0,0110 ± 0,0010	-0,0023 ± 0,0008	0,0024 ± 0,0017
RIOD 41608M001	A 0001	2001-08-20	2011-04-16	-22 49 4,237926 ± 0,0004	-43 18 22,596084 ± 0,0005	8,6193 ± 0,0008	0,0126 ± 0,0007	-0,0037 ± 0,0005	0,0002 ± 0,0008
RIOG 41507M004	A 0001	2000-01-02	2007-02-28	-53 47 7,699560 ± 0,0004	-67 45 4,024570 ± 0,0006	32,0323 ± 0,0008	0,0126 ± 0,0007	0,0038 ± 0,0006	0,0018 ± 0,0008
RIOH 41927S001	A 0001	2005-10-24	2008-08-20	11 30 47,576651 ± 0,0009	-72 52 10,928413 ± 0,0011	12,4723 ± 0,0022	0,0140 ± 0,0012	0,0113 ± 0,0011	-0,0005 ± 0,0018
RIOP 42006M001	A 0001	2000-01-02	2001-12-28	-01 39 2,145110 ± 0,0005	-78 39 3,985926 ± 0,0007	2817,1883 ± 0,0021	0,0012 ± 0,0009	-0,0025 ± 0,0007	0,0030 ± 0,0018
RIOP 42006M001	A 0002	2007-04-29	2011-04-16	-01 39 2,144711 ± 0,0005	-78 39 3,985514 ± 0,0006	2817,1918 ± 0,0024	0,0079 ± 0,0008	0,0003 ± 0,0006	-0,0021 ± 0,0019
RJCG 41657M001	A 0001	2008-04-11	2011-04-16	-21 45 53,514826 ± 0,0016	-41 19 34,160878 ± 0,0021	9,9281 ± 0,0022	0,0118 ± 0,0013	-0,0045 ± 0,0013	0,0002 ± 0,0018
RNMO 41664M001	A 0001	2009-02-01	2011-04-16	-05 12 15,239992 ± 0,0024	-37 19 31,673349 ± 0,0031	23,3950 ± 0,0022	0,0124 ± 0,0013	-0,0031 ± 0,0012	-0,0019 ± 0,0018

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
RNNA 41668M001	A 0001	2009-02-01	2011-04-16	-05 50 10,103955 ± 0,0026	-35 12 27,748690 ± 0,0033	45,9499 ± 0,0022	0,0117 ± 0,0013	-0,0040 ± 0,0013	0,0001 ± 0,0018
ROGM 41651M001	A 0001	2008-01-13	2011-04-16	-10 47 3,273194 ± 0,0008	-65 19 50,187547 ± 0,0010	157,7648 ± 0,0023	0,0108 ± 0,0011	-0,0011 ± 0,0010	0,0017 ± 0,0019
ROJI 41658M001	A 0001	2008-04-04	2011-04-16	-10 51 50,040914 ± 0,0007	-61 57 34,975903 ± 0,0009	182,8807 ± 0,0019	0,0117 ± 0,0010	-0,0023 ± 0,0010	0,0026 ± 0,0017
ROSA 41632M001	A 0001	2009-09-13	2011-04-16	-22 31 23,890588 ± 0,0035	-52 57 7,518910 ± 0,0036	299,6973 ± 0,0044	0,0080 ± 0,0009	-0,0013 ± 0,0018	-0,0025 ± 0,0023
RWSN 41513M001	A 0001	2000-01-22	2010-02-26	-43 17 55,971046 ± 0,0004	-65 06 26,093834 ± 0,0006	27,3767 ± 0,0008	0,0115 ± 0,0007	-0,0016 ± 0,0006	0,0016 ± 0,0008
SAGA 41639M001	A 0001	2007-09-16	2011-04-16	00 08 37,873892 ± 0,0008	-67 03 28,011964 ± 0,0010	94,8772 ± 0,0028	0,0113 ± 0,0011	-0,0037 ± 0,0010	0,0051 ± 0,0019
SALU 41640M001	A 0001	2007-09-05	2011-04-16	-02 35 36,451796 ± 0,0010	-44 12 44,924344 ± 0,0013	18,9811 ± 0,0017	0,0120 ± 0,0014	-0,0039 ± 0,0013	0,0004 ± 0,0017
SALV 41618M001	A 0001	2000-01-21	2008-09-05	-13 00 31,209590 ± 0,0004	-38 30 44,493285 ± 0,0006	35,7392 ± 0,0008	0,0119 ± 0,0007	-0,0025 ± 0,0006	0,0023 ± 0,0008
SAMA 41928S001	A 0001	2006-05-04	2011-04-16	11 13 30,888463 ± 0,0004	-74 11 13,536917 ± 0,0005	22,7302 ± 0,0015	0,0133 ± 0,0007	0,0107 ± 0,0005	-0,0052 ± 0,0017
SANT 41705M003	A 0001	2000-01-02	2010-02-26	-33 09 1,037776 ± 0,0004	-70 40 6,794689 ± 0,0006	723,0575 ± 0,0008	0,0168 ± 0,0007	0,0208 ± 0,0006	0,0030 ± 0,0008
SAVO 41643M001	A 0001	2007-09-06	2011-04-16	-12 56 21,286562 ± 0,0010	-38 25 56,113667 ± 0,0013	76,3069 ± 0,0014	0,0128 ± 0,0014	-0,0039 ± 0,0013	0,0001 ± 0,0017
SCCH 41659M001	A 0001	2008-04-25	2011-04-16	-27 08 15,234654 ± 0,0014	-52 35 58,224540 ± 0,0018	744,2183 ± 0,0025	0,0113 ± 0,0017	-0,0039 ± 0,0019	-0,0019 ± 0,0019
SCLA 41660M001	A 0001	2008-04-04	2011-04-16	-27 47 34,206498 ± 0,0014	-50 18 15,340948 ± 0,0018	940,6956 ± 0,0023	0,0110 ± 0,0016	-0,0040 ± 0,0019	-0,0020 ± 0,0018
SCRZ 41801M001	A 0001	2009-12-27	2011-04-16	-17 47 48,449980 ± 0,0032	-63 09 34,826079 ± 0,0034	442,0708 ± 0,0050	0,0129 ± 0,0016	-0,0005 ± 0,0016	0,0026 ± 0,0023
SCUB 40701M001	A 0001	2000-01-06	2011-04-16	20 00 43,428145 ± 0,0004	-75 45 44,338679 ± 0,0006	20,9176 ± 0,0008	0,0045 ± 0,0007	-0,0053 ± 0,0006	0,0000 ± 0,0008
SJRP 41633M001	A 0001	2009-09-13	2011-04-16	-20 47 7,866257 ± 0,0033	-49 21 35,822461 ± 0,0034	535,8518 ± 0,0038	0,0123 ± 0,0017	-0,0046 ± 0,0016	0,0090 ± 0,0020
SLOR 41102S001	A 0001	2000-09-21	2002-08-05	13 25 26,106892 ± 0,0005	-87 26 11,400278 ± 0,0006	11,9976 ± 0,0022	0,0055 ± 0,0008	0,0127 ± 0,0006	0,0002 ± 0,0018
SMAR 41621M001	A 0001	2002-07-19	2010-02-26	-29 43 8,124323 ± 0,0004	-53 42 59,735608 ± 0,0005	113,0969 ± 0,0008	0,0121 ± 0,0007	-0,0018 ± 0,0005	0,0007 ± 0,0008
SMRT 43102S001	A 0001	2007-05-25	2011-04-16	18 02 32,157603 ± 0,0008	-63 06 31,929681 ± 0,0011	-32,4632 ± 0,0022	0,0143 ± 0,0012	0,0092 ± 0,0011	-0,0012 ± 0,0018
SRLP 41532M001	A 0001	2008-09-15	2010-02-26	-36 37 17,398520 ± 0,0035	-64 16 49,456507 ± 0,0036	223,8308 ± 0,0064	0,0107 ± 0,0011	0,0005 ± 0,0013	0,0028 ± 0,0025
SRNW 43703M001	A 0001	2006-01-09	2011-04-16	05 56 42,302265 ± 0,0007	-56 59 30,946912 ± 0,0009	-18,5197 ± 0,0017	0,0112 ± 0,0009	-0,0034 ± 0,0009	-0,0009 ± 0,0017
SRZN 43701S005	A 0001	2006-02-03	2011-04-16	05 27 20,314899 ± 0,0007	-55 12 11,074133 ± 0,0009	-17,2562 ± 0,0015	0,0125 ± 0,0011	-0,0038 ± 0,0009	0,0002 ± 0,0017
SSA1 41644M001	A 0001	2007-09-05	2011-04-16	-12 58 30,567580 ± 0,0015	-38 30 59,344987 ± 0,0019	-2,1082 ± 0,0021	0,0125 ± 0,0012	-0,0041 ± 0,0020	0,0020 ± 0,0017
SSIA 41401S001	A 0003	2001-02-13	2003-12-28	13 41 49,505638 ± 0,0004	-89 06 59,743614 ± 0,0005	626,6343 ± 0,0016	0,0088 ± 0,0007	0,0065 ± 0,0005	0,0038 ± 0,0017
SSIA 41401S001	A 0004	2005-06-16	2010-07-25	13 41 49,505656 ± 0,0004	-89 06 59,743880 ± 0,0006	626,6366 ± 0,0018	0,0079 ± 0,0007	0,0073 ± 0,0006	0,0016 ± 0,0017
SVIC 41536M001	A 0001	2009-07-26	2011-04-16	-26 59 37,369324 ± 0,0034	-54 29 15,073096 ± 0,0036	553,2480 ± 0,0041	0,0086 ± 0,0009	-0,0053 ± 0,0017	-0,0014 ± 0,0023
TAMP 40516M001	A 0001	2005-01-09	2011-04-16	22 16 41,955936 ± 0,0004	-97 51 50,496988 ± 0,0006	21,0513 ± 0,0013	-0,0030 ± 0,0007	-0,0098 ± 0,0006	-0,0010 ± 0,0016
TEG1 41101S002	A 0001	2001-10-25	2004-04-07	14 05 24,263281 ± 0,0007	-87 12 20,323208 ± 0,0009	951,3516 ± 0,0025	0,0049 ± 0,0010	0,0093 ± 0,0009	0,0033 ± 0,0019
TEGU 41101S001	A 0001	2000-07-18	2002-03-21	14 05 25,583268 ± 0,0005	-87 12 20,145266 ± 0,0006	948,8031 ± 0,0021	0,0093 ± 0,0008	0,0159 ± 0,0006	-0,0022 ± 0,0018
TERO 41531M001	A 0001	2009-02-16	2010-02-26	-27 47 20,923053 ± 0,0035	-64 15 24,410472 ± 0,0036	221,9296 ± 0,0066	0,0114 ± 0,0013	0,0013 ± 0,0015	0,0060 ± 0,0024
TOGU 41661M001	A 0001	2008-04-16	2011-04-16	-11 44 48,140316 ± 0,0011	-49 02 56,755271 ± 0,0015	272,5830 ± 0,0021	0,0125 ± 0,0015	-0,0027 ± 0,0015	0,0022 ± 0,0017
TOL2 40515M001	A 0001	2005-01-09	2011-04-16	19 17 35,643800 ± 0,0004	-99 38 36,499228 ± 0,0006	2651,7280 ± 0,0011	-0,0020 ± 0,0007	-0,0069 ± 0,0006	-0,0016 ± 0,0013
TOPL 41648M001	A 0001	2008-01-02	2011-04-16	-10 10 15,790493 ± 0,0009	-48 19 50,445045 ± 0,0012	256,5413 ± 0,0017	0,0125 ± 0,0013	-0,0036 ± 0,0012	0,0009 ± 0,0017
TUCU 41520S001	A 0001	2002-01-01	2006-01-23	-26 50 35,718875 ± 0,0006	-65 13 49,265791 ± 0,0008	485,0500 ± 0,0015	0,0114 ± 0,0011	0,0019 ± 0,0009	0,0013 ± 0,0017

Station	ID-SNX	Start	End	Latitude [° ' "] ± [m]	Longitude [° ' "] ± [m]	Ellipsoidal height [m]	Vel N [m/a]	Vel E [m/a]	Vel h [m/a]
TUCU 41520S001	A 0002	2006-08-31	2011-04-16	-26 50 35,718650 ± 0,0010	-65 13 49,265663 ± 0,0013	485,0472 ± 0,0025	0,0086 ± 0,0014	0,0021 ± 0,0014	-0,0033 ± 0,0019
TUMA 41929S001	A 0001	2006-11-03	2007-11-29	01 49 20,184966 ± 0,0029	-78 43 49,491621 ± 0,0033	25,7586 ± 0,0066	0,0112 ± 0,0015	0,0145 ± 0,0014	0,0011 ± 0,0025
TUNA 41930S001	A 0001	2005-10-18	2011-04-16	05 31 52,782492 ± 0,0004	-73 21 49,975470 ± 0,0006	2831,8549 ± 0,0012	0,0130 ± 0,0007	0,0017 ± 0,0006	0,0012 ± 0,0014
UBAT 41627M001	A 0001	2006-01-02	2008-04-11	-23 30 0,635452 ± 0,0035	-45 07 8,046967 ± 0,0037	6,0492 ± 0,0055	0,0117 ± 0,0015	-0,0022 ± 0,0018	0,0053 ± 0,0024
UBAT 41627M001	A 0002	2008-04-14	2009-09-06	-23 30 0,635437 ± 0,0035	-45 07 8,045212 ± 0,0037	6,0708 ± 0,0066	0,0132 ± 0,0015	-0,0058 ± 0,0018	0,0013 ± 0,0026
UBER 41625M001	A 0001	2004-07-14	2011-04-16	-18 53 22,326868 ± 0,0005	-48 19 1,097632 ± 0,0006	791,7845 ± 0,0008	0,0114 ± 0,0008	-0,0034 ± 0,0006	0,0020 ± 0,0009
UCOR 41502M001	A 0001	2004-04-05	2008-11-13	-31 26 5,856632 ± 0,0014	-64 11 36,620393 ± 0,0019	462,7674 ± 0,0020	0,0091 ± 0,0017	0,0025 ± 0,0019	0,0030 ± 0,0017
UCOR 41502M001	A 0002	2008-11-23	2010-02-26	-31 26 5,856851 ± 0,0034	-64 11 36,619503 ± 0,0036	462,7424 ± 0,0045	0,0140 ± 0,0009	-0,0025 ± 0,0017	0,0072 ± 0,0023
UEPP 41611M001	A 0001	2000-01-21	2005-12-08	-22 07 11,655068 ± 0,0004	-51 24 30,722480 ± 0,0005	430,9374 ± 0,0008	0,0128 ± 0,0007	-0,0024 ± 0,0005	0,0025 ± 0,0008
UFPR 41610M002	A 0001	2007-09-05	2011-04-16	-25 26 54,124963 ± 0,0010	-49 13 51,437422 ± 0,0012	925,7802 ± 0,0016	0,0117 ± 0,0013	-0,0038 ± 0,0013	0,0003 ± 0,0017
UGTO 40528M001	A 0001	2007-07-26	2011-04-16	21 00 9,755041 ± 0,0007	-101 16 17,990896 ± 0,0010	2062,2662 ± 0,0026	-0,0034 ± 0,0010	-0,0089 ± 0,0010	0,0016 ± 0,0019
UNRO 41525M001	A 0001	2004-04-02	2010-02-26	-32 57 33,671120 ± 0,0005	-60 37 42,330730 ± 0,0006	66,8678 ± 0,0009	0,0118 ± 0,0008	0,0008 ± 0,0007	0,0011 ± 0,0011
UNSA 41514M001	A 0001	2000-01-02	2008-07-27	-24 43 38,843359 ± 0,0004	-65 24 27,516157 ± 0,0006	1257,7914 ± 0,0008	0,0120 ± 0,0007	0,0054 ± 0,0006	0,0000 ± 0,0008
UNSA 41514M001	A 0002	2008-07-28	2010-02-26	-24 43 38,843418 ± 0,0021	-65 24 27,515159 ± 0,0027	1257,7749 ± 0,0033	0,0129 ± 0,0016	-0,0028 ± 0,0017	0,0040 ± 0,0021
UNSJ 41527M001	A 0001	2007-05-06	2010-02-26	-31 32 28,528779 ± 0,0015	-68 34 37,419066 ± 0,0020	708,9144 ± 0,0022	0,0129 ± 0,0012	0,0096 ± 0,0020	-0,0013 ± 0,0018
URUS 41802M001	A 0001	2010-02-24	2011-04-16	-17 57 10,084919 ± 0,0035	-67 06 51,797904 ± 0,0036	3767,3083 ± 0,0062	0,0143 ± 0,0009	0,0065 ± 0,0011	0,0003 ± 0,0024
USLP 40530M001	A 0001	2008-09-01	2011-04-16	22 08 39,239383 ± 0,0012	-101 00 56,405689 ± 0,0016	1892,8670 ± 0,0028	-0,0031 ± 0,0016	-0,0097 ± 0,0016	-0,0024 ± 0,0019
UYMO 42301M001	A 0001	2007-11-01	2009-03-07	-34 53 17,946799 ± 0,0035	-56 15 35,576635 ± 0,0036	158,0778 ± 0,0049	0,0111 ± 0,0012	-0,0009 ± 0,0013	0,0052 ± 0,0023
UYMO 42301M001	A 0002	2009-03-08	2010-02-26	-34 53 17,946729 ± 0,0035	-56 15 35,576587 ± 0,0037	158,0846 ± 0,0069	0,0123 ± 0,0014	-0,0025 ± 0,0016	0,0006 ± 0,0026
UYRO 42303M001	A 0001	2008-02-24	2010-02-26	-34 00 3,618484 ± 0,0031	-53 33 17,372654 ± 0,0034	58,9684 ± 0,0033	0,0123 ± 0,0016	-0,0019 ± 0,0015	0,0004 ± 0,0020
UYTA 42302M001	A 0001	2008-10-27	2010-02-26	-31 40 59,037848 ± 0,0035	-55 56 15,120004 ± 0,0036	186,9733 ± 0,0056	0,0111 ± 0,0013	-0,0013 ± 0,0015	-0,0026 ± 0,0024
VALL 41906S001	A 0001	2004-03-24	2011-04-16	10 28 26,276361 ± 0,0004	-73 15 7,092954 ± 0,0006	208,4954 ± 0,0010	0,0143 ± 0,0007	0,0090 ± 0,0006	-0,0010 ± 0,0012
VALP 41712S001	A 0001	2000-05-11	2010-02-26	-33 01 38,076774 ± 0,0004	-71 37 33,931774 ± 0,0006	31,3732 ± 0,0008	0,0219 ± 0,0007	0,0273 ± 0,0006	-0,0024 ± 0,0010
VARG 41626M001	A 0001	2004-07-02	2009-09-06	-21 32 33,662359 ± 0,0010	-45 26 5,552445 ± 0,0013	958,6351 ± 0,0016	0,0112 ± 0,0014	-0,0024 ± 0,0014	-0,0007 ± 0,0017
VBCA 41512M001	A 0001	2000-03-08	2010-02-26	-38 42 2,766021 ± 0,0004	-62 16 9,217619 ± 0,0006	59,4636 ± 0,0008	0,0114 ± 0,0007	-0,0003 ± 0,0006	0,0012 ± 0,0008
VESL 66009M001	A 0001	2000-01-26	2011-04-16	-71 40 25,666676 ± 0,0005	-2 50 30,417718 ± 0,0006	862,3583 ± 0,0008	0,0110 ± 0,0008	0,0002 ± 0,0006	-0,0003 ± 0,0008
VICO 41613M001	A 0001	2000-01-21	2011-04-16	-20 45 41,399941 ± 0,0004	-42 52 11,962497 ± 0,0006	665,9395 ± 0,0008	0,0126 ± 0,0007	-0,0029 ± 0,0006	0,0011 ± 0,0008
VIL2 40527M001	A 0001	2005-01-09	2011-04-16	17 59 25,478331 ± 0,0004	-92 55 51,953359 ± 0,0005	27,7499 ± 0,0013	0,0004 ± 0,0007	-0,0081 ± 0,0005	-0,0025 ± 0,0015
VIVI 41931S001	A 0001	2005-09-18	2007-12-28	04 04 28,780675 ± 0,0011	-73 35 2,376145 ± 0,0014	407,2761 ± 0,0034	0,0103 ± 0,0015	-0,0034 ± 0,0014	-0,0003 ± 0,0021
VIVI 41931S001	A 0002	2008-01-24	2011-03-03	04 04 28,780571 ± 0,0009	-73 35 2,376118 ± 0,0012	407,2746 ± 0,0030	0,0089 ± 0,0013	-0,0030 ± 0,0012	-0,0008 ± 0,0020
YOPA 41932S001	A 0001	2005-12-03	2008-05-04	05 19 18,339770 ± 0,0015	-72 23 20,379345 ± 0,0020	334,3519 ± 0,0043	0,0105 ± 0,0012	-0,0025 ± 0,0020	0,0014 ± 0,0023