

ARA-DAC Weekly Analysis Result: 1929 (GFA)

Technical Report

GPS Week: 1929 (GFA)

<http://geolabpasaia.org/gnss/ARA-euref/>

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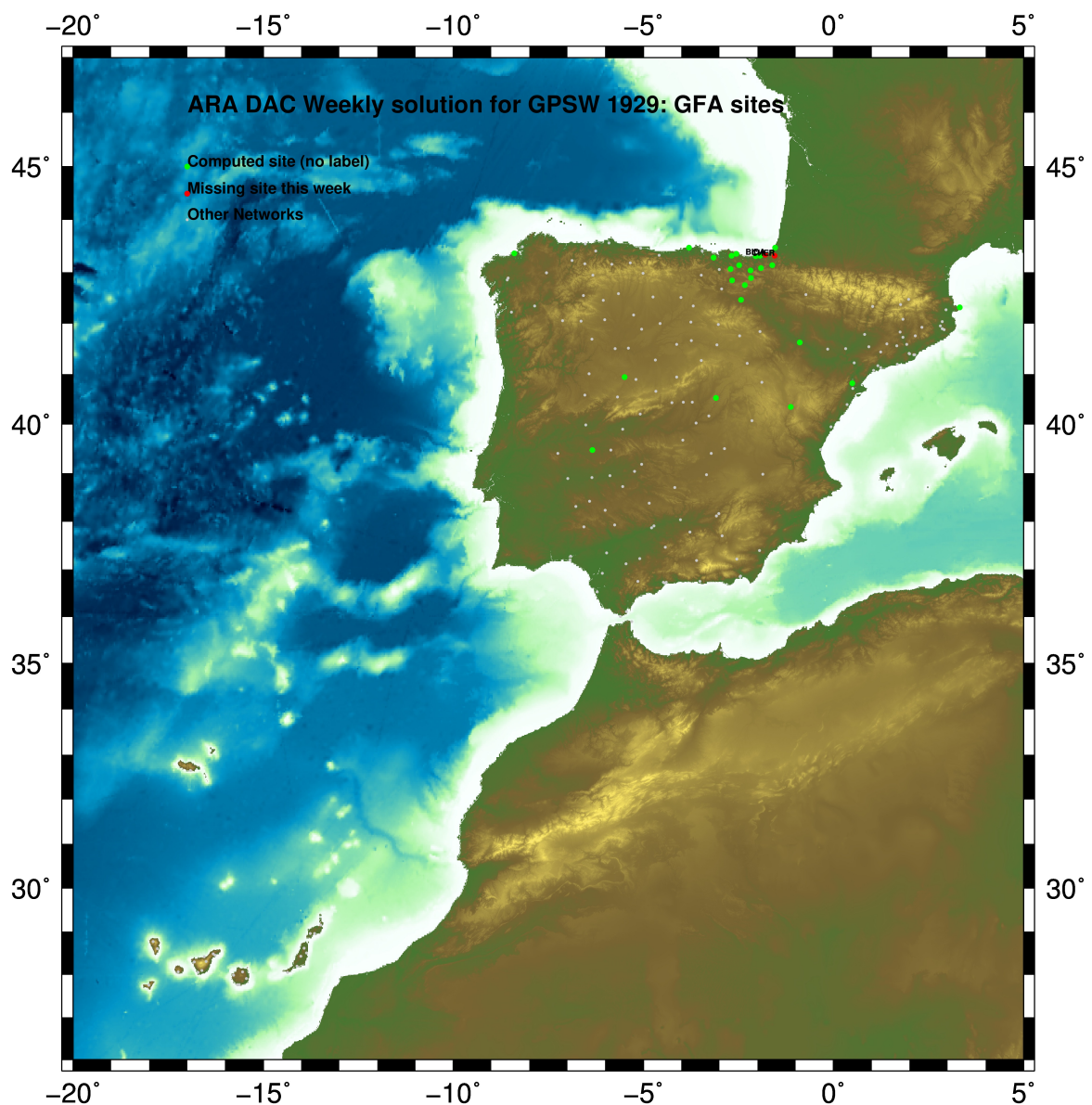
Report generated on 2017/01/08 at 11:24:36



1 Introduction

In may 2015 ARA (EUREF's acronym of the ARANZADI's Department of Applied Geodesy), kicks off as a EUREF's Operational Center. In July 2015, the Densification solutions ARA computes routinely in a weekly basis start being submitted to the EUREF's EPN Densification Project.

2 Map of Computed Sites



GM 2017 Jan 08 11:24:26

Fig.1: Computed Sites for GPS Week1929 (GFA)

3 Main Computation Parameters

The main parameters considered in the ARA analysis follow strictly the EPN recommendations.

- Reprocessing: Independent baselines are defined by the criterion of maximum common observations. Cycle slips are fixed with the MAUPRP program, analysing triple phase differences for each independent baseline. If MAUPRP does not fix all slips for one station, that station is edited out.
- Basic Observable : Carrier phase, L_1 and L_2 ; a priori sigma of single differences:0.002 m.
 - sampling (for ambiguity resolution) : 30 s
 - sampling (for final processing) : 180 s
 - Systems: GPS+GLONASS observations are used
- Modelled observable: Double differences of carrier phase in QIF or L_3 combinations (respectively for ambiguity resolution in baseline mode, and final network solution). In the final network solution the double differenced data are sampled at 180 sec. intervals.
- Ground antenna phase center calibrations: Group APCV used from the PCV_COD.I08 file and individual calibrations from EPNC_08.ATX. EPN_A class sites (CRD + VEL) IGB08 used to define the reference frame. If individual calibrations, other from these, are available, they are also included in the analysis.
- Troposphere:
 - 3 deg elev. cutoff; elevation dependent weighting
 - VMF1_DRY mapping function. ZPD parameters are estimated using WET VMF1 mapping function.
 - CHENHER gradient estimation model.
- Ionosphere: no a priori model, ionospheric effect almost removed by iono free combination.
- Ocean Loading: FES2004 (Scherneck).
- Atmosph. Loading: computed from a global grid using the GRDS1S2 program of Bernese 5.2.

4 Estimated Parameters

- Adjustment: Least Squares
- Rejection Criteria: 3^* rms of single differences, in the weekly combination of daily normal equations (ADDNEQ)
- Station coordinates: minimum constraints (MC) to EPN A class sites (only translations).
- Troposphere: 3 deg. After having obtained coordinates valid for the entire week, tropospheric zenith delay is solved at each site at intervals of 1 hour throughout the week, holding the coordinates constrained at the weekly values.
- Ionospheric: second and third "High Order Ionosphere (HOI)" corrections used, using CODE files, to improve Ambiguity Resolution.
- Satellite clock bias: not estimated because are eliminated by double differencing the phase data.
- Receiver clock bias: not estimated because are eliminated by double differencing the phase data.
- Orbits and ERPs: CODE's orbits and ERP for both rapid and final solutions. DE405 planetary ephemeris and JGM3 Earth geopotential model is used.
- Tidal displacements: according to IERS2010 Conventions. Atmospheric loading corrections used.

- Ambiguity: an advanced ambiguity resolution (AR) scheme is included:
 - Code-Based Widelane (WL) AR for baselines shorter than 6000km, a Melbourne-Wuebbena wide-lane and narrow-lane AR is computed.
 - Phase-Based Widelane (L_5) AR for baselines shorter than 200km, the code-based wide-lane AR is replaced by a phase-only wide-lane with a subsequent narrow-lane AR.
 - Quasi-Ionosphere-Free (QIF)AR for the remaining real-valued ambiguities for baselines shorter than 2000km.
 - Direct L_1/L_2 AR for baselines shorter than 20km
- AR Verification: Each baseline is processed by introducing the resolved integer ambiguities and checking the residuals. If there is any problem, the ambiguities are re-initialized.

5 Computed Coordinates

In this section the adjusted coordinates are summarized. Note that the sites with an A flag are the computed ones, whereas sites flagged as W are the ones used in the Minimal Constraints condition.

5.1 IGB08

The Reference Frame considered in this section is IGB08, release C1890.

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ARA LAC 1929 WEEK COMBINATION: PRECISE ORBITS                                08-JAN-17 10:06
-----
LOCAL GEODETIC DATUM: IGB08                                EPOCH: 2016-12-28 12:00:00
-----
NUM STATION NAME          X (M)          Y (M)          Z (M)          FLAG
-----
 1 ACDR 13434M001         4594489.58736        -678367.49871        4357066.26951        W
 22 ALDA 19383M001         4687280.18775        -190876.61082        4308106.92655        A
 28 ALSA 19419M001         4677250.86719        -176770.44133        4319079.84809        A
 51 BIAZ 10074M002         4634456.08820        -124345.02466        4365785.43623        A
 54 BRZR 19387M001         4662221.01687        -220769.94512        4333309.41199        A
 7 CACE 13447M001         4899866.52666        -544567.07926        4033770.17683        W
 8 CANT 13438M001         4625924.34160        -307096.27854        4365771.52973        W
 11 CREU 13432M001         4715420.16207        273178.01103        4271946.81569        A
 12 EBRE 13410M001         4833520.01718         41537.34243        4147461.68873        W
 77 ELGE 19353S001         4657557.43126        -202241.52114        4338991.84500        A
 87 GERN 19389M001         4642811.33796        -217222.97756        4353278.85517        A
 101 IGEL 19352S001         4645951.45781        -165574.54763        4352550.39443        A
 105 ISPS 19484M001         4640596.51120        -206963.82151        4356391.88862        A
 109 LAZK 19354S001         4666098.37199        -178186.23792        4330463.64932        A
 112 LEIT 19428M001         4663520.96521        -155858.76200        4334519.85694        A
 141 ORDN 19427M001         4659695.61846        -130864.78340        4338948.86170        A
 146 PASZ 19351S001         4644909.08859        -156645.11395        4353623.05244        A
 147 PASA 19351S001         4644909.08846        -156645.11374        4353623.05246        A
 27 RI01 13448M002         4708446.85205        -199490.32887        4284089.70909        W
 28 SALA 13469M001         4803054.50438        -462131.11578        4158379.04794        W
 172 SOPU 19386M001         4643997.93828        -255913.95219        4350063.11872        A
 31 TERU 13487M001         4867391.34550        -95523.40132        4108341.65757        W
 204 VITO 19385M001         4679397.72770        -218436.54984        4314898.33614        A
 35 YEBE 13420M001         4848724.59138        -261631.97600        4123094.30256        W
 36 ZARA 13462M001         4773803.19359        -73506.03155        4215454.06929        W
    
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5.2 ETRS89 Coordinates

European Terrestrial Reference System, 1989 (ETRS89) is realized by ETRF2000 (Boucher and Altamimi, 2011).

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ETRF2000 COORD. wk 1929                                                    08-JAN-17 10:06
-----
LOCAL GEODETIC DATUM: ETRF2000                                EPOCH: 2016-12-28 12:00:00
-----
NUM STATION NAME          X (M)          Y (M)          Z (M)          FLAG
-----
 1 ACDR 13434M001         4594489.87029        -678367.99168        4357065.86919        W
 22 ALDA 19383M001         4687280.52008        -190877.11191        4308106.53428        A
 28 ALSA 19419M001         4677251.20174        -176770.94143        4319079.45767        A
 51 BIAZ 10074M002         4634456.43137        -124345.52053        4365785.04936        A
 54 BRZR 19387M001         4662221.34759        -220770.44388        4333309.02213        A
 7 CACE 13447M001         4899866.80330        -544567.60114        4033769.76680        W
 8 CANT 13438M001         4625924.66510        -307096.77398        4365771.14142        W
 11 CREU 13432M001         4715420.54195        273177.50856        4271946.42756        A
 12 EBRE 13410M001         4833520.36420         41536.82801        4147461.28986        W
 77 ELGE 19353S001         4657557.76434        -202242.01941        4338991.45567        A
 87 GERN 19389M001         4642811.70334        -217223.47444        4353278.46669        A
 101 IGEL 19352S001         4645951.79570        -165575.04470        4352550.00631        A
 105 ISPS 19484M001         4640596.84488        -206964.31816        4356391.50041        A
 109 LAZK 19354S001         4666098.70711        -178186.73695        4330463.25966        A
 112 LEIT 19428M001         4663521.30299        -155859.26073        4334519.46771        A
 141 ORDN 19427M001         4659696.15921        -130865.28170        4338948.47301        A
 146 PASZ 19351S001         4644909.42751        -156645.61090        4353622.66449        A
 147 PASA 19351S001         4644909.42738        -156645.61069        4353622.66451        A
 27 RI01 13448M002         4708447.18191        -199490.83200        4284089.31626        W
 28 SALA 13469M001         4803054.79791        -462131.62840        4158378.64559        W
 172 SOPU 19386M001         4643998.26629        -255914.44927        4350062.72973        A
 31 TERU 13487M001         4867391.67528        -95523.91932        4108341.25483        W
 204 VITO 19385M001         4679398.05749        -218437.05023        4314897.94511        A
 35 YEBE 13420M001         4848724.90423        -261632.49260        4123093.89928        W
 36 ZARA 13462M001         4773803.53260        -73506.54061        4215453.67331        W
    
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5.3 Mean and Daily Repeatabilities

In this section, the mean and daily repeatabilities of the sites are shown. Repeatabilities refer to the IGB08 solution and are given with respect the Local fram (North-East-Up).

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ARA LAC 1929 WEEK COMBINATION: PRECISE ORBITS                                08-JAN-17 10:06
-----
Station      #Days      Weekday      Repeatability (mm)
              0123456      N      E      U
-----
ACDR 13434M001      5      XXXXX      0.89      0.47      2.37
ALDA 19383M001      6      XX XXXX      0.73      0.57      1.84
ALSA 19419M001      7      XXXXXXX      2.41      0.92      2.41
    
```

BIAZ	10074M002	7	XXXXXX	0.40	0.71	3.65
BRZR	19387M001	6	XX XXXX	0.50	0.60	1.61
CACE	13447M001	4	XXXX	0.26	0.64	1.67
CANT	13438M001	5	XXXXX	0.27	0.67	2.61
CREU	13432M001	7	XXXXXXXX	0.49	0.56	1.65
EBRE	13410M001	7	XXXXXXXX	0.38	0.34	1.67
ELGE	19353S001	7	XXXXXXXX	0.51	1.05	1.11
GERN	19389M001	6	XX XXXX	0.61	0.94	2.24
IGEL	19352S001	7	XXXXXXXX	0.58	0.86	2.07
ISPS	19484M001	5	XXXXX	0.43	0.71	1.74
LAZK	19354S001	7	XXXXXXXX	0.64	0.70	2.55
LEIT	19428M001	7	XXXXXXXX	1.39	0.57	3.05
ORDN	19427M001	7	XXXXXXXX	0.58	1.26	2.63
PAS2	19351S001	7	XXXXXXXX	0.68	0.71	2.33
PASA	19351S001	7	XXXXXXXX	0.48	0.65	1.55
RID1	13448M002	4	XXXX	0.36	0.65	1.22
SALA	13469M001	4	XXXX	0.35	0.33	1.44
SOPU	19386M001	6	XX XXXX	0.36	0.71	2.02
TERU	13487M001	5	XXXXX	0.54	0.22	1.34
VITO	19385M001	6	XX XXXX	0.43	0.38	1.90
YEBE	13420M001	7	XXXXXXXX	0.36	0.23	0.87
ZARA	13462M001	5	XXXXX	0.39	0.26	1.50

Comparison of individual solutions:

ACDR	13434M001	N	0.89	-1.36	0.43	-0.16	0.40	-0.96			
ACDR	13434M001	E	0.47	-0.50	0.36	-0.01	0.54	0.44			
ACDR	13434M001	U	2.37	1.09	0.34	0.07	3.81	-2.59			
ALDA	19383M001	N	0.73	0.23	0.48		-1.35	0.53	0.41	0.27	
ALDA	19383M001	E	0.57	0.32	0.16		-0.15	-0.48	-0.77	-0.80	
ALDA	19383M001	U	1.84	-2.30	-0.46		-1.99	1.61	2.21	0.17	
ALSA	19419M001	N	2.41	2.67	1.79	0.90	-4.63	1.34	-0.44	-0.43	
ALSA	19419M001	E	0.92	0.64	0.75	0.64	-0.31	-0.84	-0.84	-1.46	
ALSA	19419M001	U	2.41	-3.30	-1.15	0.40	-1.34	-1.06	1.54	4.16	
BIAZ	10074M002	N	0.40	-0.22	0.65	-0.31	0.46	0.05	-0.42	0.05	
BIAZ	10074M002	E	0.71	1.12	-0.58	-0.03	-0.61	-0.41	-0.68	-0.63	
BIAZ	10074M002	U	3.65	-6.46	-1.01	-0.29	-1.62	4.63	3.40	1.32	
BRZR	19387M001	N	0.50	0.20	-0.19		0.13	-0.67	0.25	0.80	
BRZR	19387M001	E	0.60	0.13	-0.26		0.18	-0.03	-0.58	-1.15	
BRZR	19387M001	U	1.61	-2.31	-1.38		-0.55	1.93	1.25	0.40	
CACE	13447M001	N	0.26	-0.29	-0.03	0.31	0.15				
CACE	13447M001	E	0.64	0.20	-0.90	0.61	0.12				
CACE	13447M001	U	1.67	2.15	-1.13	-1.16	1.07				
CANT	13438M001	N	0.27	0.19	-0.43	0.12	0.24	-0.05			
CANT	13438M001	E	0.67	0.87	-0.02	-0.58	0.79	0.28			
CANT	13438M001	U	2.61	-4.74	0.22	1.89	-0.65	0.84			
CREU	13432M001	N	0.49	-0.72	0.59	0.06	-0.17	0.04	0.65	0.33	
CREU	13432M001	E	0.56	-0.65	-0.02	-0.32	-0.18	0.03	0.10	1.15	
CREU	13432M001	U	1.65	2.73	-1.64	2.04	-0.32	-0.81	-1.03	-0.39	
EBRE	13410M001	N	0.38	0.64	0.23	-0.04	-0.08	0.02	0.35	-0.53	
EBRE	13410M001	E	0.34	-0.52	0.19	-0.10	0.11	-0.03	0.45	0.41	
EBRE	13410M001	U	1.67	1.50	2.76	-0.17	0.04	-2.45	0.83	0.40	
ELGE	19353S001	N	0.51	-0.40	-0.03	0.21	1.16	0.16	0.01	-0.11	
ELGE	19353S001	E	1.05	1.14	0.78	0.27	-0.73	-0.47	-0.85	-1.78	
ELGE	19353S001	U	1.11	-1.02	-0.42	-1.16	-0.93	0.32	1.94	0.35	
GERN	19389M001	N	0.61	-0.77	-0.01		-0.50	0.44	0.80	0.42	
GERN	19389M001	E	0.94	0.66	0.64		-1.08	-0.09	-0.38	-1.48	
GERN	19389M001	U	2.24	-1.82	-1.08		-2.78	-0.40	1.26	3.33	
IGEL	19352S001	N	0.58	-0.15	0.13	-1.00	0.01	0.97	0.22	-0.04	
IGEL	19352S001	E	0.86	1.27	-0.00	0.13	-0.54	-0.81	-0.49	-1.29	
IGEL	19352S001	U	2.07	-3.06	-1.28	2.63	0.42	-0.42	2.68	-0.39	
ISPS	19484M001	N	0.43	-0.36	0.02	0.61	0.28	0.39			
ISPS	19484M001	E	0.71	-0.09	1.19	0.15	-0.32	-0.71			
ISPS	19484M001	U	1.74	-1.49	0.96	-1.57	-2.34	1.00			
LAZK	19354S001	N	0.64	-0.63	0.65	0.99	0.45	0.39	-0.22	-0.49	
LAZK	19354S001	E	0.70	0.67	0.32	-0.23	0.16	-0.58	-0.83	-1.14	
LAZK	19354S001	U	2.55	-1.10	-3.05	0.67	-1.89	0.67	-0.75	4.86	
LEIT	19428M001	N	1.39	-1.01	0.88	0.75	-0.06	1.45	0.70	-2.57	
LEIT	19428M001	E	0.57	-0.11	0.09	-0.40	0.69	-0.56	-0.74	-0.65	
LEIT	19428M001	U	3.05	2.04	-1.90	1.28	-4.50	0.02	4.93	-1.30	
ORDN	19427M001	N	0.58	-0.17	-0.07	-0.20	1.25	-0.01	-0.62	-0.03	
ORDN	19427M001	E	1.26	1.54	0.93	0.33	-1.48	-0.78	-0.54	-1.76	
ORDN	19427M001	U	2.63	-1.25	0.81	1.33	-4.99	-0.01	3.33	1.25	
PAS2	19351S001	N	0.68	0.11	0.37	-1.08	-0.56	-0.01	0.31	1.05	
PAS2	19351S001	E	0.71	0.52	0.09	0.11	-0.33	-0.12	-0.45	-1.54	
PAS2	19351S001	U	2.33	-2.69	-3.20	1.62	1.83	0.38	2.97	-0.39	
PASA	19351S001	N	0.48	-0.14	0.06	-0.94	0.06	0.18	0.49	0.46	
PASA	19351S001	E	0.65	0.50	0.44	0.01	-0.66	-0.45	-0.51	-1.09	
PASA	19351S001	U	1.55	-2.21	-1.57	0.85	-0.06	0.12	2.32	0.98	
RID1	13448M002	N	0.36	0.35	0.13	-0.48	0.15				
RID1	13448M002	E	0.65	0.85	0.23	0.02	-0.71				
RID1	13448M002	U	1.22	-1.39	-0.66	0.17	-1.44				
SALA	13469M001	N	0.35	0.26	-0.19	-0.50	-0.05				
SALA	13469M001	E	0.33	-0.26	-0.30	0.37	-0.17				
SALA	13469M001	U	1.44	0.15	-1.87	-0.47	1.59				
SOPU	19386M001	N	0.36	-0.32	-0.19		0.65	0.02	-0.23	-0.23	
SOPU	19386M001	E	0.71	0.18	0.74		-0.38	-0.36	-0.78	-1.03	
SOPU	19386M001	U	2.02	-1.40	2.03		0.61	-2.28	2.73	-1.12	
TERU	13487M001	N	0.54	0.41	-0.46	-0.02	0.26	0.86			
TERU	13487M001	E	0.22	0.13	0.16	-0.29	-0.24	0.07			
TERU	13487M001	U	1.34	1.66	1.75	0.75	0.89	-0.19			
VITO	19385M001	N	0.43	-0.19	-0.29		0.02	-0.44	0.40	0.66	
VITO	19385M001	E	0.38	0.63	-0.18		-0.20	-0.26	-0.41	0.16	
VITO	19385M001	U	1.90	-2.17	-1.10		-1.28	1.18	2.77	-1.23	
YEBE	13420M001	N	0.36	-0.21	0.20	0.12	0.64	-0.40	-0.08	-0.32	
YEBE	13420M001	E	0.23	-0.08	-0.19	-0.02	-0.35	0.09	0.21	0.31	
YEBE	13420M001	U	0.87	0.33	-0.48	-1.13	1.12	0.68	-0.48	1.00	
ZARA	13462M001	N	0.39	0.47	0.16	0.29	0.19	-0.50			
ZARA	13462M001	E	0.26	0.08	0.32	0.05	-0.39	-0.12			
ZARA	13462M001	U	1.50	0.45	2.27	0.79	1.63	0.60			

5.4 Datum verification

In this section, the datum verification is shown. A 3 parameter Helmert 3D (3 translations) is computed to the minimally constrained sites.

LOCAL GEODETIC DATUM: Icb08
RESIDUALS IN LOCAL SYSTEM (NORTH, EAST, UP)

NUM	NAME	FLG	RESIDUALS IN MILLIMETERS		
1	ACOR 13434M001	I W	0.62	-0.53	-0.79
3	ALBA 13452M001	I W	-1.19	0.89	3.21
4	ALME 13437M001	I W	-2.16	-0.46	2.28
6	BRST 10004M004	I W	1.79	-1.33	2.18
7	CACE 13447M001	I W	0.98	-2.58	0.88
8	CANT 13438M001	I W	0.88	-2.10	-1.00
9	CEU1 13449M002	I W	0.63	1.70	2.48
10	COBA 13453M001	I W	-0.38	-0.55	-2.84
12	EBRE 13410M001	I W	2.35	1.68	0.98
16	HUEL 13451M001	I W	-2.75	2.03	-0.43
17	IZAN 31309M002	I W	-5.85	-1.14	-1.52
18	LLIV 13436M001	I W	3.90	-1.98	-4.15
20	LRDC 10023M001	I W	1.32	-1.70	2.35
21	MALA 13443M001	I W	-5.49	2.89	-3.76
22	MALL 13444M001	I W	-0.29	1.21	0.99
24	MELI 19379M001	I W	-2.80	1.07	-2.42
25	PDEL 31906M004	I W	-2.64	-4.43	-4.25
27	RIO1 13448M002	I W	1.33	-0.37	-0.84
28	SALA 13469M001	I W	0.04	-0.35	3.68
29	SCDA 10088M002	I W	-0.74	-1.91	-0.02
30	SONS 13446M001	I W	1.44	0.45	-3.86
31	TERU 13487M001	I W	2.91	2.09	0.72
32	VALE 13439M001	I W	0.34	3.16	0.74
33	VIGO 13450M001	I W	-0.42	-1.75	-1.97
34	VILL 13406M001	I W	0.39	0.87	-2.82
35	YEBE 13420M001	I W	1.22	-0.11	3.33
36	ZARA 13462M001	I W	1.21	1.11	2.69
37	ZIMM 14001M004	I W	3.35	2.15	4.16
	RMS / COMPONENT		2.35	1.84	2.58
	MEAN		-0.00	-0.00	-0.00
	MIN		-5.85	-4.43	-4.25
	MAX		3.90	3.16	4.16

NUMBER OF PARAMETERS : 3
 NUMBER OF COORDINATES : 84
 RMS OF TRANSFORMATION : 2.28 MM

5.5 Adjustment Statistics

In this section, the summary of the global adjustment and not subnetworks are shown. Also, the Helmert parameters of the combined solution with respect the daily solutions are shown.

```
* STATISTICAL PARAMETER-----VALUE(S)-----
NUMBER OF OBSERVATIONS          5672751
NUMBER OF UNKNOWN               79248
NUMBER OF DEGREES OF FREEDOM    5593503
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                  1.590613549800905
```

Helmert Transformation Parameters With Respect to Combined Solution:

```
-----
Sol  Rms (m)      Translation (m)      Rotation (")      Scale (ppm)
      X          Y          Z          X          Y          Z
-----
 1  0.00140    -0.0050 -0.0186  0.0038  0.0003 -0.0002 -0.0005  0.00014
 2  0.00137    -0.0078 -0.0075  0.0108  0.0001 -0.0004 -0.0002 -0.00023
 3  0.00096     0.0024  0.0044 -0.0012 -0.0001  0.0001  0.0001 -0.00015
 4  0.00123    -0.0003 -0.0052  0.0042  0.0002 -0.0001 -0.0000 -0.00029
 5  0.00128     0.0114  0.0063 -0.0124 -0.0001  0.0005  0.0002 -0.00014
 6  0.00132     0.0016  0.0129 -0.0035 -0.0002  0.0001  0.0003  0.00007
 7  0.00119     0.0058  0.0025 -0.0077 -0.0001  0.0002  0.0000 -0.00004
```

Statistics of individual solutions:

```
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
 1  0.00124    950546      1.55      964421      3      399      13479      0
 2  0.00124    935825      1.53      949433      3      393      13218      0
 3  0.00124    875381      1.53      888144      3      372      12394      0
 4  0.00128    930605      1.63      944681      3      393      13686      0
 5  0.00130    653306      1.70      662949      3      282      9364      0
 6  0.00129    620198      1.66      628852      3      264      8393      0
 7  0.00126    625695      1.58      634271      3      264      8315      0
```

6 Equipment

6.1 Receiver List

Serial numbers not shown.

```
*SITE PT SOLN T DATA_START__ DATA_END_____ DESCRIPTION_____ S/N__ FIRMWARE___
ACOR  A  1 P 16:360:00000 16:364:86370 LEICA GRX1200PRO -----
ALDA  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
ALSA  A  1 P 16:360:00000 16:366:86370 LEICA GRX1200GGPRO -----
BIAZ  A  1 P 16:360:00000 16:366:86370 LEICA GRX1200GGPRO -----
BRZR  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
CACE  A  1 P 16:360:00000 16:363:86370 TRIMBLE NETR9 -----
CANT  A  1 P 16:360:00000 16:364:86370 LEICA GR10 -----
CREU  A  1 P 16:360:00000 16:366:86370 LEICA GR50 -----
EBRE  A  1 P 16:360:00030 16:366:86370 LEICA GR50 -----
ELGE  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
GERN  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
IGEL  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
ISPS  A  1 P 16:360:00000 16:364:86370 TRIMBLE NETR9 -----
LAZK  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
LEIT  A  1 P 16:360:00000 16:366:86370 LEICA GRX1200+GNSS -----
ORDN  A  1 P 16:360:00000 16:366:86370 LEICA GRX1200GGPRO -----
PAS2  A  1 P 16:360:00000 16:366:86370 TPS NET-G3A -----
PASA  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
RIO1  A  1 P 16:360:00000 16:363:86370 LEICA GR25 -----
SALA  A  1 P 16:360:00000 16:363:86370 LEICA GRX1200+GNSS -----
SOPU  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
TERU  A  1 P 16:360:00000 16:364:86370 LEICA GRX1200GGPRO -----
VITO  A  1 P 16:360:00000 16:366:86370 LEICA GR10 -----
YEBE  A  1 P 16:360:00000 16:366:86370 TRIMBLE NETR5 -----
ZARA  A  1 P 16:360:00000 16:364:86370 TRIMBLE NETR9 -----
```

6.2 Antennas

Serial number ONLY provided in case individual calibrations are available.

```
*SITE PT SOLN T DATA_START__ DATA_END_____ DESCRIPTION_____ S/N__
ACOR  A  1 P 16:360:00000 16:364:86370 LEIAT504      LEIS -----
ALDA  A  1 P 16:360:00000 16:366:86370 LEIAS10      NONE -----
ALSA  A  1 P 16:360:00000 16:366:86370 LEIAX1202GG  NONE -----
BIAZ  A  1 P 16:360:00000 16:366:86370 LEIAR25     LEIT -----
BRZR  A  1 P 16:360:00000 16:366:86370 LEIAS10      NONE -----
CACE  A  1 P 16:360:00000 16:363:86370 TRM29659.00 NONE -----
CANT  A  1 P 16:360:00000 16:364:86370 LEIAR25.R4  LEIT 25066
CREU  A  1 P 16:360:00000 16:366:86370 LEIAR25.R4  NONE 26357
EBRE  A  1 P 16:360:00030 16:366:86370 LEIAR25.R4  NONE 26359
ELGE  A  1 P 16:360:00000 16:366:86370 LEIAR25.R4  LEIT -----
GERN  A  1 P 16:360:00000 16:366:86370 LEIAS10      NONE -----
```



```

IGEL A 1 P 16:360:00000 16:366:86370 LEIAR20 LEIM -----
ISPS A 1 P 16:360:00000 16:364:86370 TRM59900.00 SCIS -----
LAZK A 1 P 16:360:00000 16:366:86370 LEIAR25_R4 LEIT -----
LEIT A 1 P 16:360:00000 16:366:86370 LEIAX1203+GNSS NONE -----
ORDN A 1 P 16:360:00000 16:366:86370 LEIAX1202GG NONE -----
PAS2 A 1 P 16:360:00000 16:366:86370 LEIAR20 LEIM 73034
PASA A 1 P 16:360:00000 16:366:86370 LEIAR20 LEIM 73034
RIO1 A 1 P 16:360:00000 16:363:86370 LEIAR25_R4 LEIT 25138
SALA A 1 P 16:360:00000 16:363:86370 LEIAR25 NONE -----
SOPU A 1 P 16:360:00000 16:366:86370 LEIAS10 NONE -----
TERU A 1 P 16:360:00000 16:364:86370 LEIAT504GG LEIS -----
VITO A 1 P 16:360:00000 16:366:86370 LEIAS10 NONE -----
YEBE A 1 P 16:360:00000 16:366:86370 TRM29659.00 NONE -----
ZARA A 1 P 16:360:00000 16:364:86370 TRM29659.00 NONE -----
    
```

6.3 Eccentricities

```

*
*SITE PT SOLN T DATA_START_ DATA_END_ AXE ARP->BENCHMARK(M) UP_ NORTH_ EAST_
ACOR A 1 P 16:360:00000 16:364:86370 UNE 3.0460 0.0000 0.0000
ALDA A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
ALSA A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
BIAZ A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
BRZR A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
CACE A 1 P 16:360:00000 16:363:86370 UNE 0.0600 0.0000 0.0000
CANT A 1 P 16:360:00000 16:364:86370 UNE 3.0490 0.0000 0.0000
CREU A 1 P 16:360:00000 16:366:86370 UNE 0.0770 0.0000 0.0000
EBRE A 1 P 16:360:00030 16:366:86370 UNE 0.0770 0.0000 0.0000
ELGE A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
GERN A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
IGEL A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
ISPS A 1 P 16:360:00000 16:364:86370 UNE 0.0350 0.0000 0.0000
LAZK A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
LEIT A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
ORDN A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
PAS2 A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
PASA A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
RIO1 A 1 P 16:360:00000 16:363:86370 UNE 0.0606 0.0000 0.0000
SALA A 1 P 16:360:00000 16:363:86370 UNE 0.0600 0.0000 0.0000
SOPU A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
TERU A 1 P 16:360:00000 16:364:86370 UNE 0.0600 0.0000 0.0000
VITO A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
YEBE A 1 P 16:360:00000 16:366:86370 UNE 0.0000 0.0000 0.0000
ZARA A 1 P 16:360:00000 16:364:86370 UNE 3.2590 0.0000 0.0000
    
```

7 Inconsistencies (logsheet-RINEX metadata)

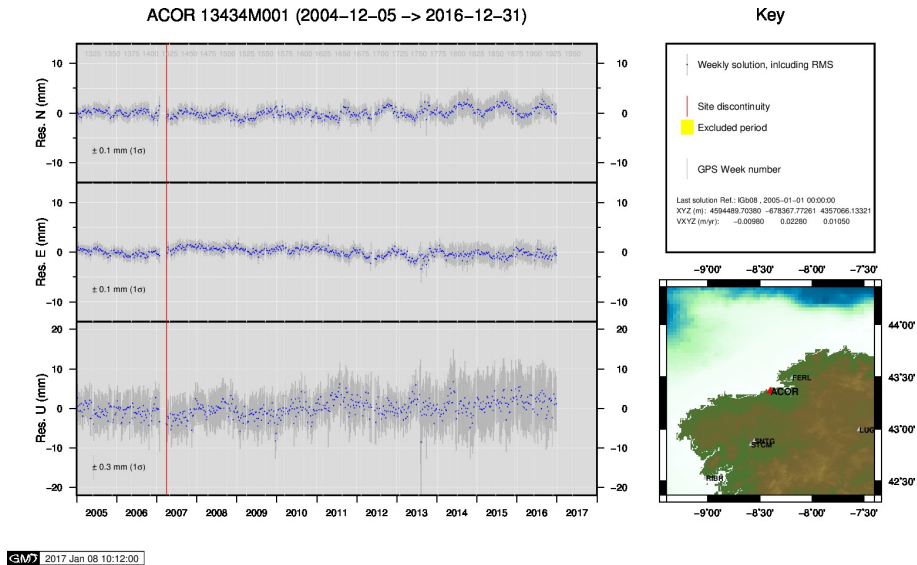
The following inconsistencies were found comparing the data available in the logsheets and the RINEX headers:

```

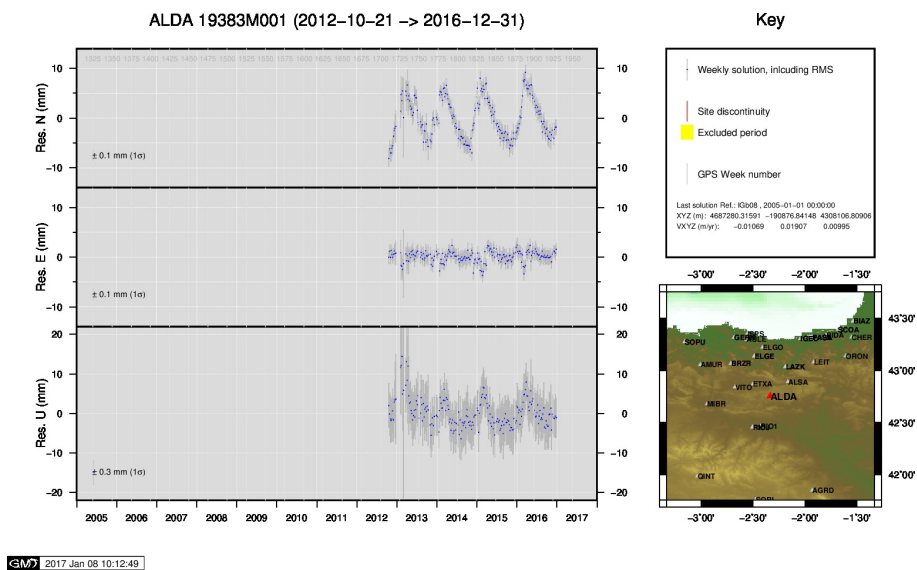
2017-01-08 04:10 UTC | BIA23600.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2017-01-08 04:10 UTC | BIA23600.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2017-01-08 04:10 UTC | LEIT3600.160 | RECEIVER FIRM. VERS. | 8.20/6.112 -> 8.20/4.007
2017-01-08 05:12 UTC | BIA23610.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2017-01-08 05:12 UTC | BIA23610.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2017-01-08 05:12 UTC | LEIT3610.160 | RECEIVER FIRM. VERS. | 8.20/6.112 -> 8.20/4.007
2017-01-08 06:11 UTC | BIA23620.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2017-01-08 06:11 UTC | BIA23620.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2017-01-08 06:11 UTC | LEIT3620.160 | RECEIVER FIRM. VERS. | 8.20/6.112 -> 8.20/4.007
2017-01-08 07:13 UTC | BIA23630.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2017-01-08 07:13 UTC | BIA23630.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2017-01-08 07:13 UTC | LEIT3630.160 | RECEIVER FIRM. VERS. | 8.20/6.112 -> 8.20/4.007
2017-01-08 08:09 UTC | BIA23640.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2017-01-08 08:09 UTC | BIA23640.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2017-01-08 08:09 UTC | LEIT3640.160 | RECEIVER FIRM. VERS. | 8.20/6.112 -> 8.20/4.007
2017-01-08 09:07 UTC | BIA23650.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2017-01-08 09:07 UTC | BIA23650.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2017-01-08 09:07 UTC | LEIT3650.160 | RECEIVER FIRM. VERS. | 8.20/6.112 -> 8.20/4.007
2017-01-08 10:06 UTC | BIA23660.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2017-01-08 10:06 UTC | BIA23660.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2017-01-08 10:06 UTC | LEIT3660.160 | RECEIVER FIRM. VERS. | 8.20/6.112 -> 8.20/4.007
    
```

8 Cumulative Time Series

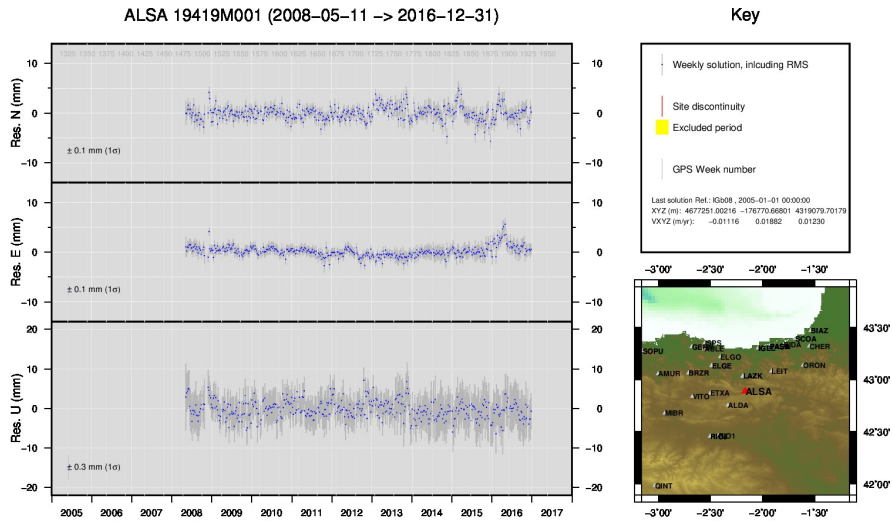
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

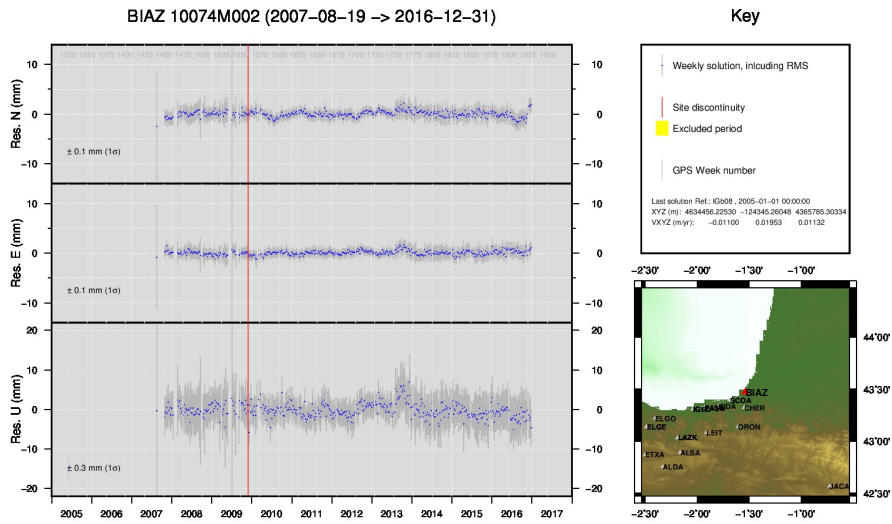


2) ALDA



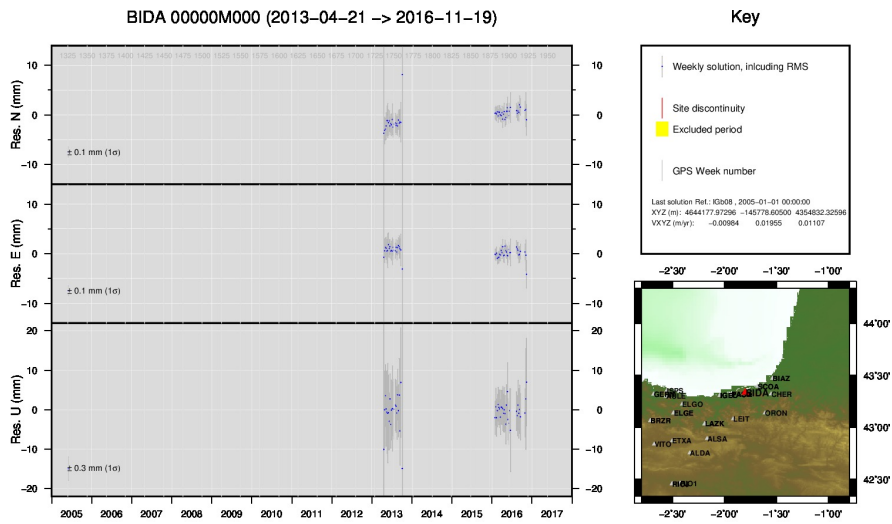
GMW 2017 Jan 08 10:13:32

3) ALSA



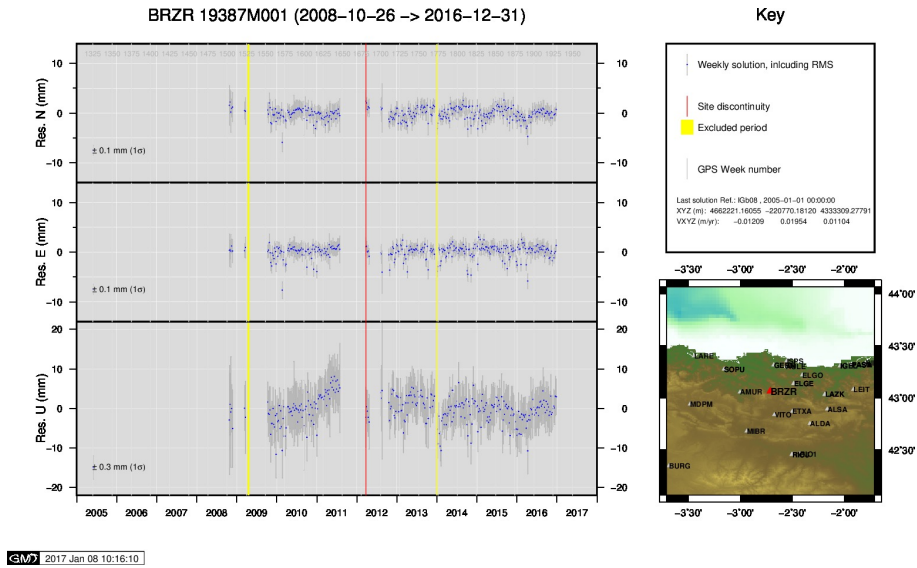
GMW 2017 Jan 08 10:15:45

4) BIAZ

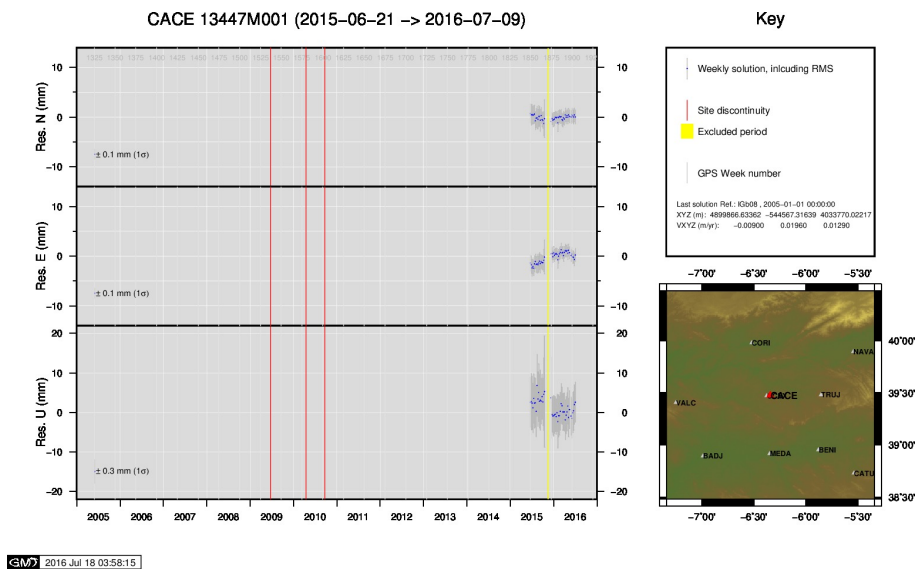


GMW 2017 Jan 08 10:15:51

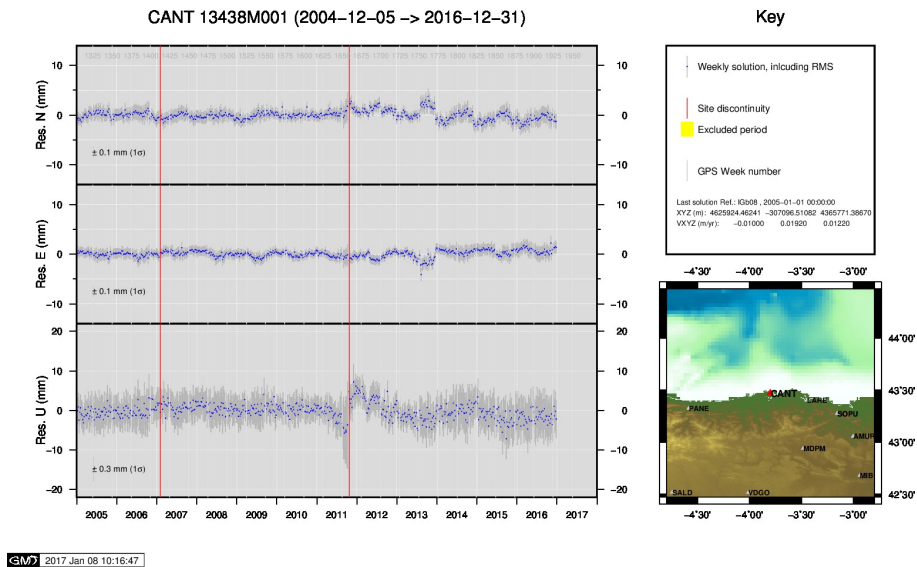
5) BIDA



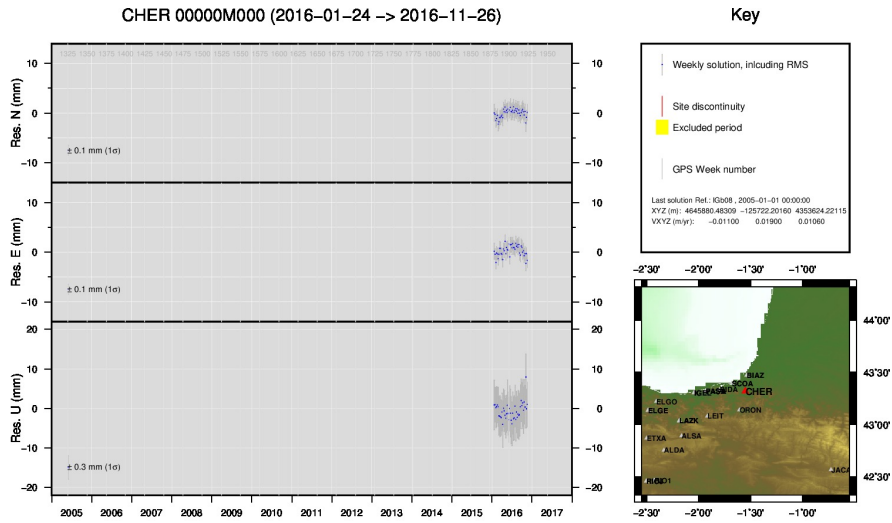
6) BRZR



7) CACE

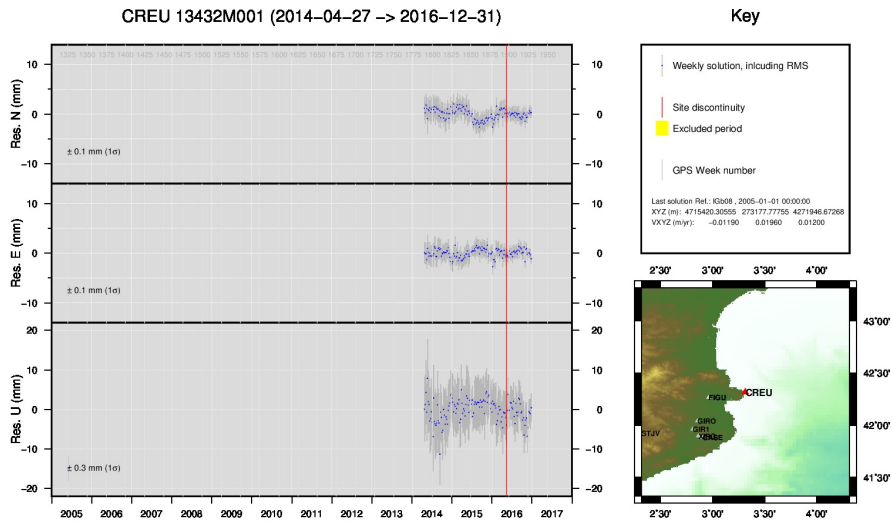


8) CANT



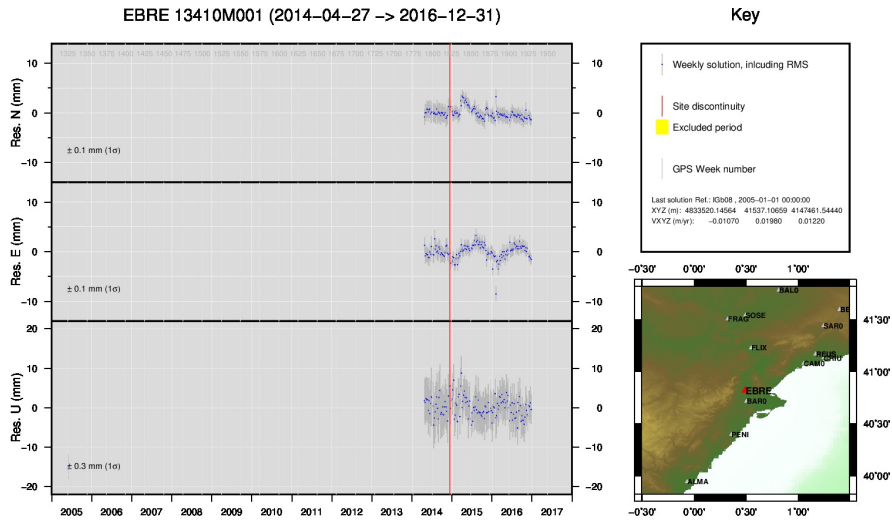
GMW 2017 Jan 08 10:17:49

9) CHER



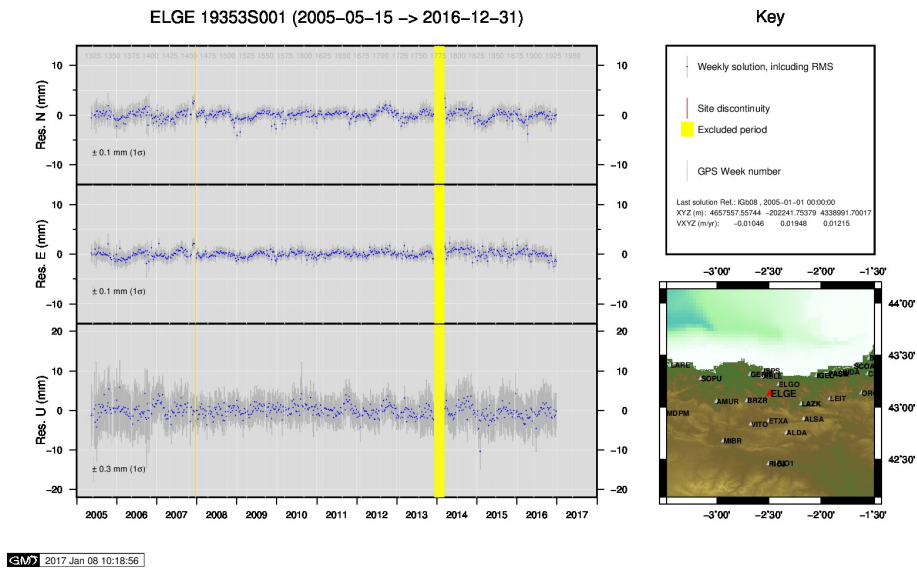
GMW 2017 Jan 08 10:18:20

10) CREU

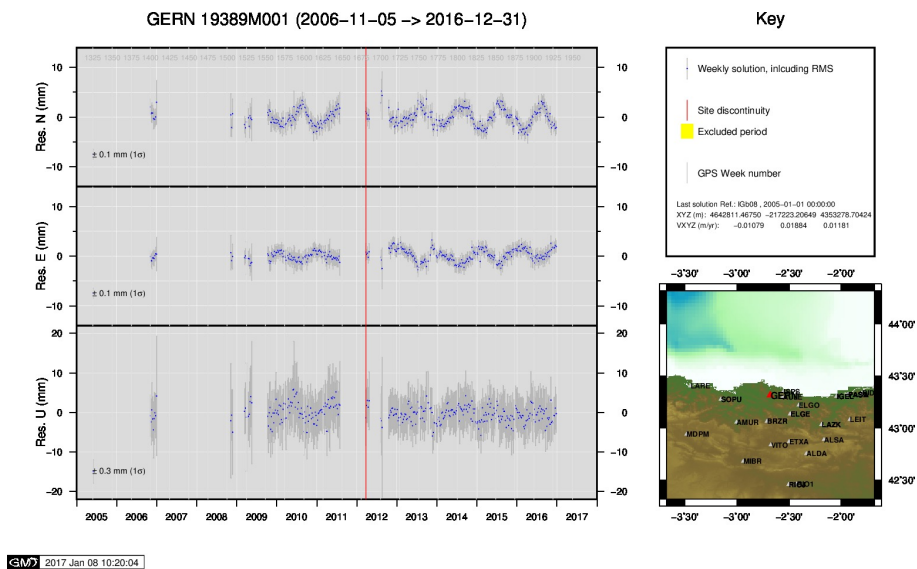


GMW 2017 Jan 08 10:18:44

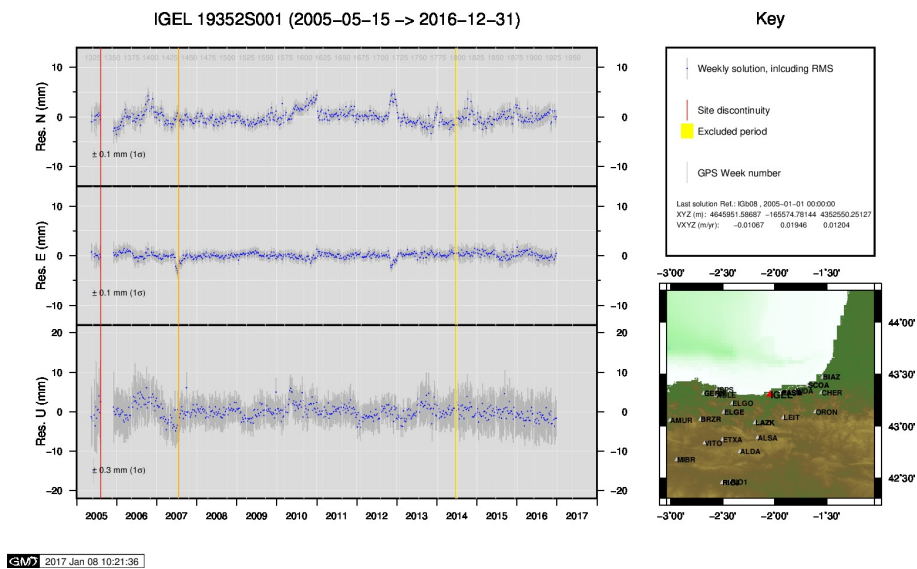
11) EBRE



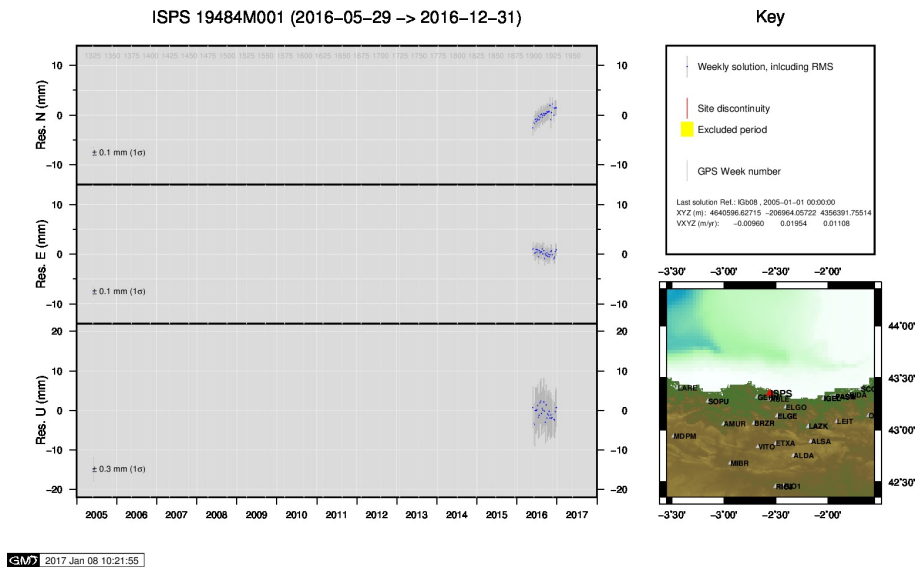
12) ELGE



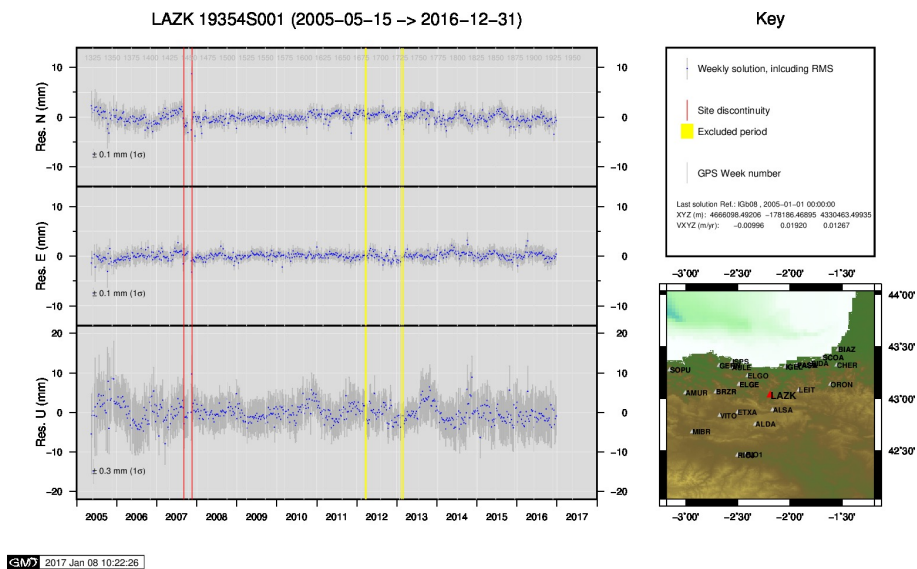
13) GERN



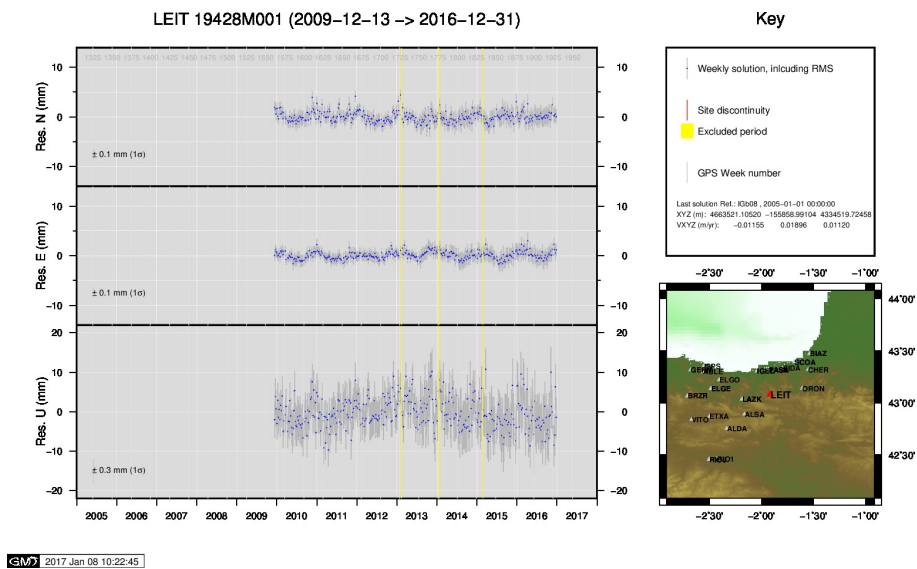
14) IGEL



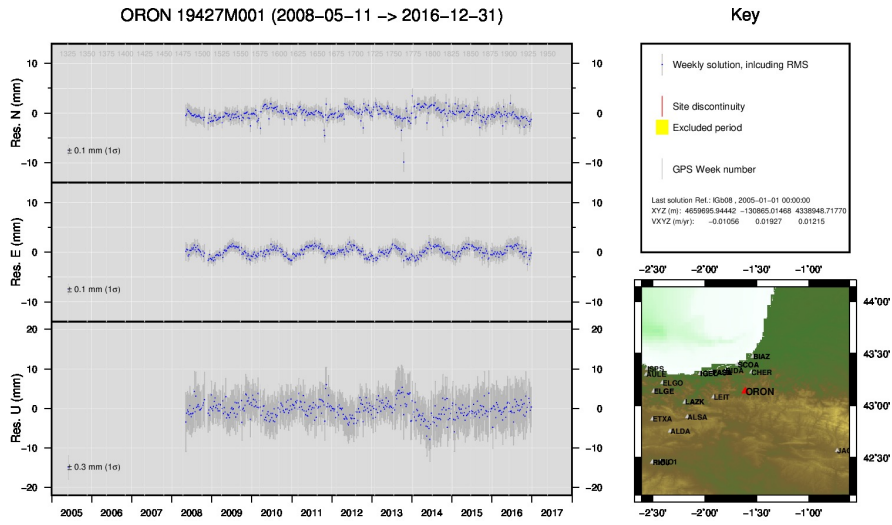
15) ISPS



16) LAZK

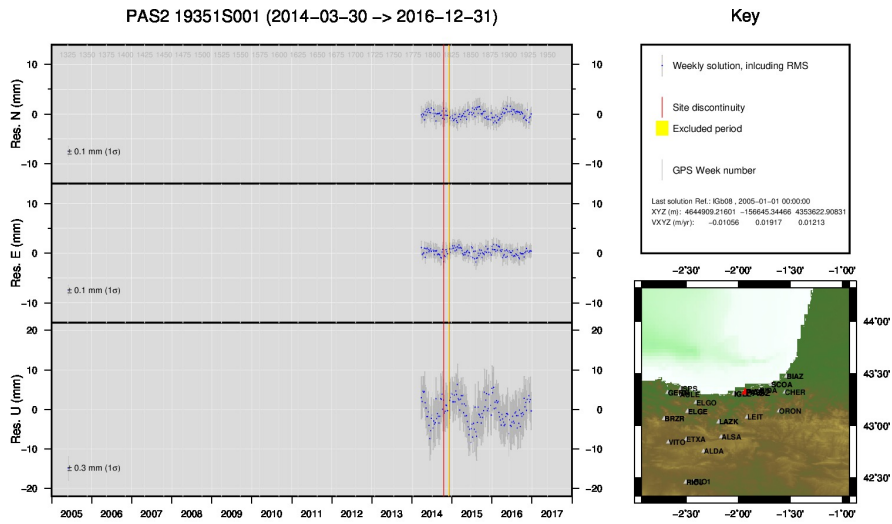


17) LEIT



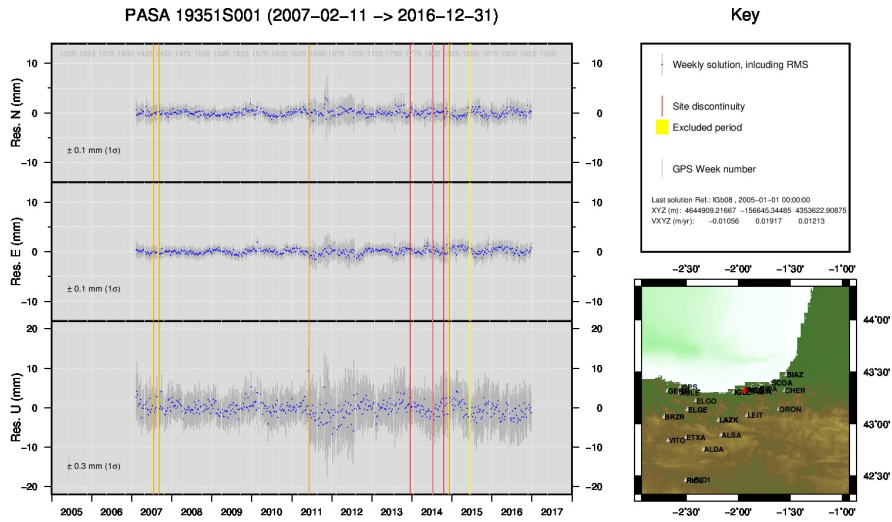
GMW 2017 Jan 08 10:26:32

18) ORON



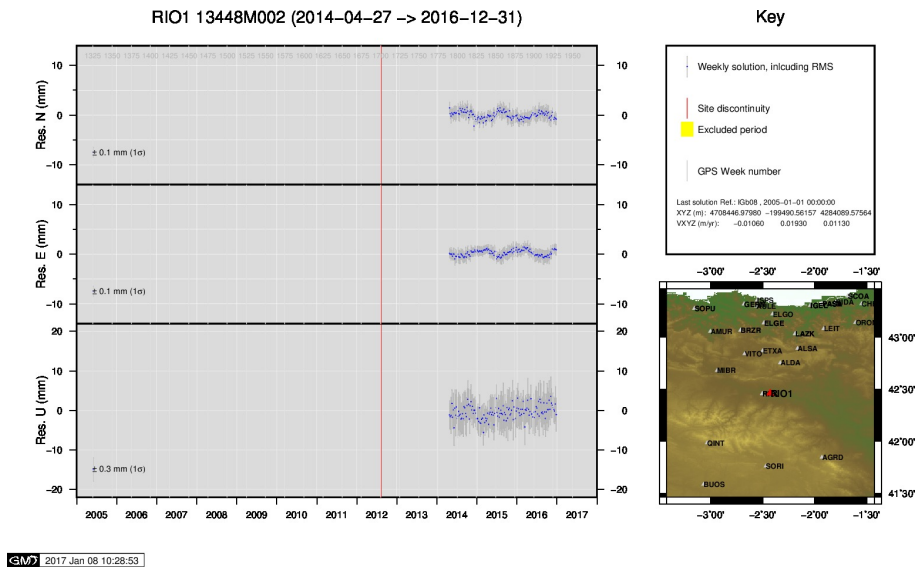
GMW 2017 Jan 08 10:27:03

19) PAS2

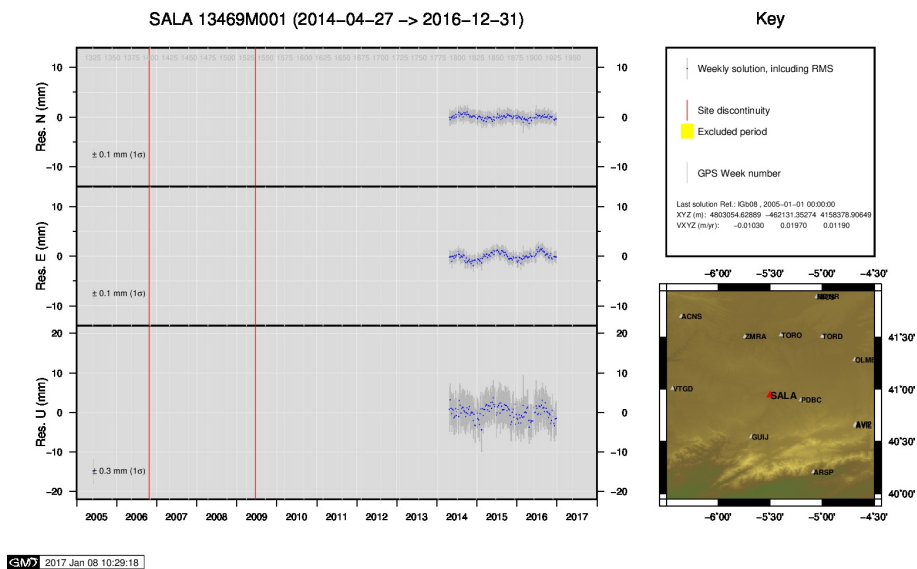


GMW 2017 Jan 08 10:27:10

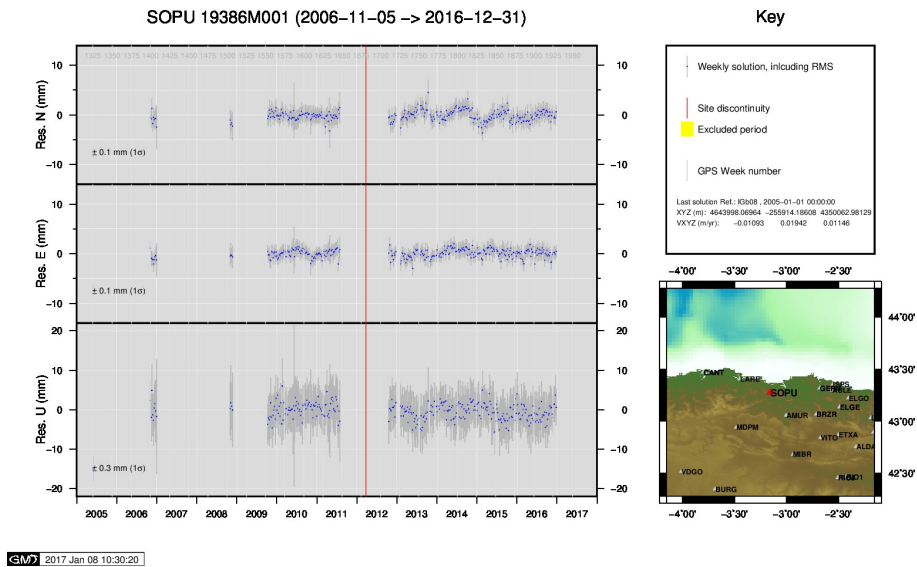
20) PASA



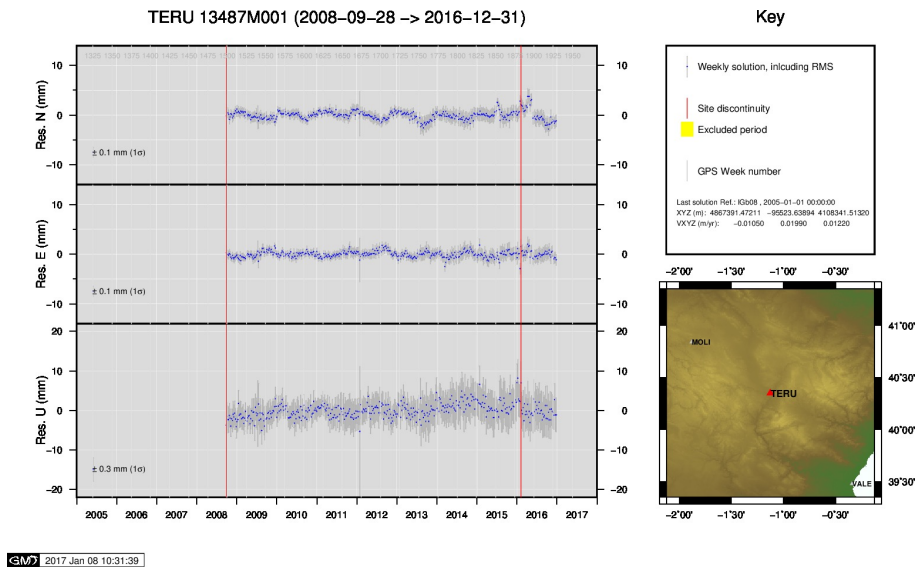
21) RIO1



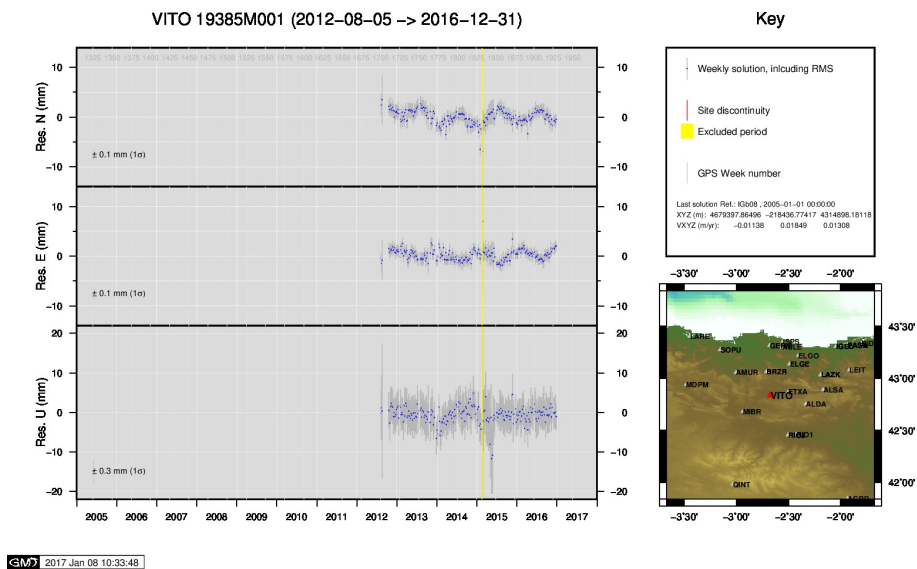
22) SALA



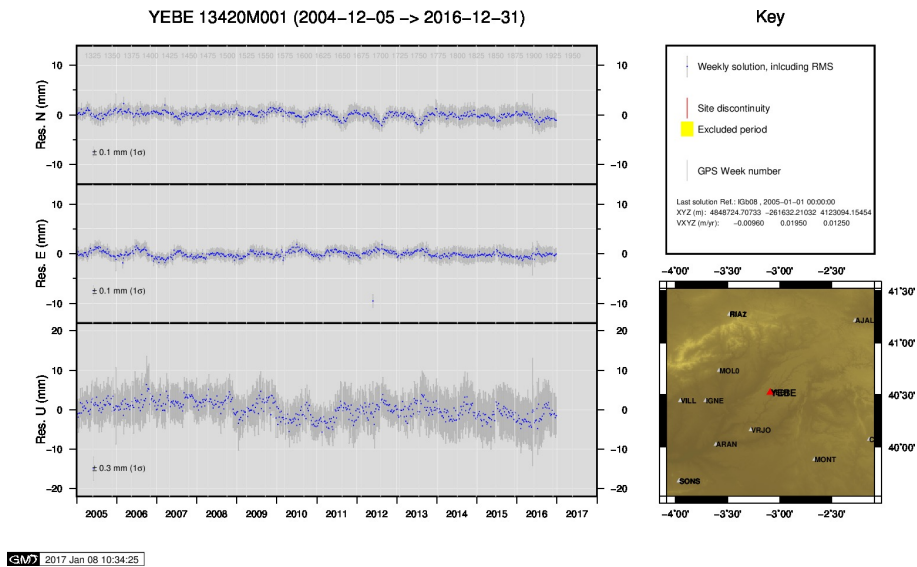
23) SOPU



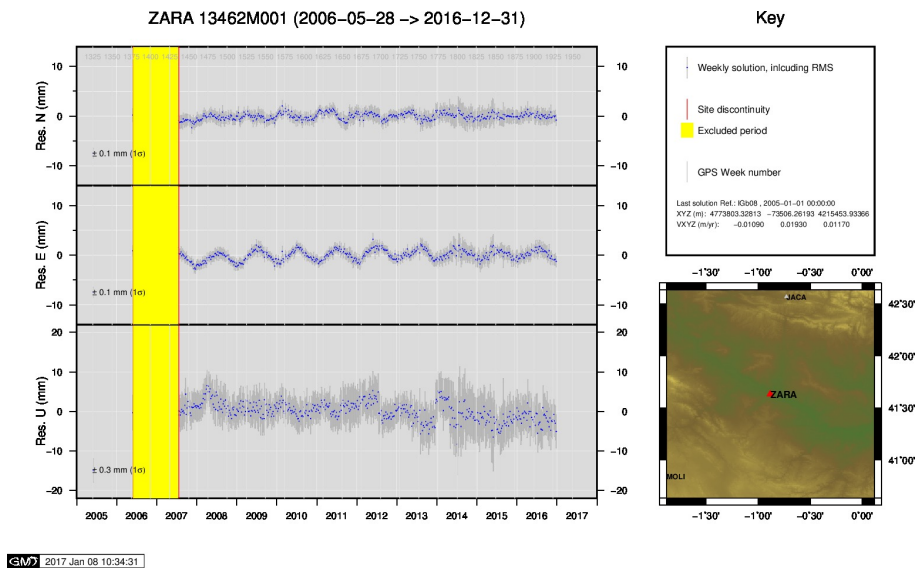
24) TERU



25) VITO



26) YEBE



27) ZARA