

ARA-DAC Weekly Analysis Result: 1912 (GFA)

Technical Report

GPS Week: 1912 (GFA)

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

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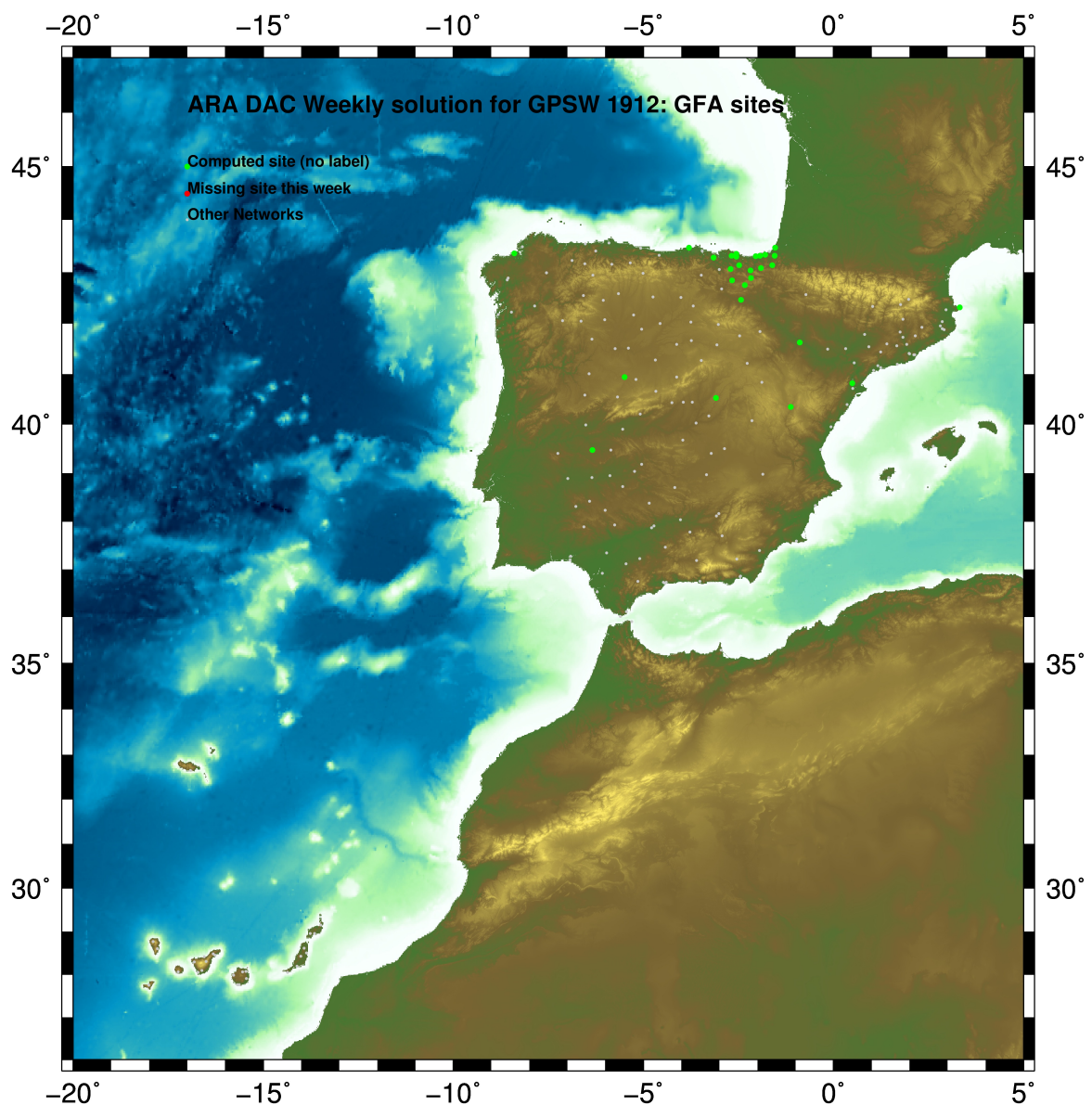
Report generated on 2016/09/11 at 12:54:40



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 2016 Sep 11 12:54:31

Fig.1: Computed Sites for GPS Week1912 (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: 3σ 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 Wideline (WL) AR for baselines shorter than 6000km, a Melbourne-Wuebbena wide-lane and narrow-lane AR is computed.
 - Phase-Based Wideline (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.

ARA LAC 1912 WEEK COMBINATION: PRECISE ORBITS 11-SEP-16 11:49

LOCAL GEODETIC DATUM: IGB08 EPOCH: 2016-08-31 12:00:00

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG
1	ACDR 13434M001	4594489.58859	-678367.50758	4357066.25736	W
22	ALDA 19383M001	4687280.19202	-190876.61885	4308106.92424	A
28	ALSA 19419M001	4677250.87244	-176770.44874	4319079.84551	A
40	AULE 00000M000	4644762.15635	-207777.70502	4351758.45323	A
51	BIAZ 10074M002	4634456.09590	-124345.03240	4365785.43194	A
55	BIDA 00000M000	4644177.85871	-145778.37612	4354832.45656	A
54	BRZR 19387M001	4662221.02226	-220769.95286	4333309.41039	A
7	CACE 13447M001	4899866.53034	-544567.08918	4033770.17330	W
8	CANT 13438M001	4625924.34561	-307096.28660	4365771.52881	W
69	CHER 00000M000	4645880.35401	-125721.97883	4353624.34393	A
11	CREU 13432M001	4715420.16715	273178.00703	4271946.81286	A
12	EBRE 13410M001	4833520.02270	41537.33878	4147461.68762	W
77	ELGE 19353S001	4657557.43668	-202241.52651	4338991.84354	A
87	GERN 19389M001	4642811.33940	-217222.98664	4353278.85624	A
101	IGEL 19352S001	4645951.46266	-165574.55540	4352550.39193	A
105	ISPS 19484M001	4640596.51532	-206963.82913	4356391.88444	A
109	LAZK 19354S001	4666098.37533	-178186.24476	4330463.64673	A
112	LEIT 19428M001	4663520.96925	-155858.77079	4334519.85362	A
141	ORON 19427M001	4659695.82182	-130864.78900	4338948.85856	A
146	PAS2 19351S001	4644909.09164	-156645.12140	4353623.04905	A
147	PASA 19351S001	4644909.09122	-156645.12145	4353623.04902	A
27	RIO1 13448M002	4708446.85548	-199490.33695	4284089.70711	W
28	SALA 13469M001	4803054.50921	-462131.12198	4158379.04587	W
172	SOPU 19386M001	4643997.94057	-255913.95912	4350063.11478	A
31	TERU 13487M001	4867391.34981	-95523.40680	4108341.65446	W
204	VITO 19385M001	4679397.73155	-218436.55952	4314898.33471	A
35	YEBE 13420M001	4848724.59638	-261631.98311	4123094.29975	W
36	ZARA 13462M001	4773803.20217	-73506.03554	4215454.07086	W

5.2 ETRS89 Coordinates

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

ETRF2000 COORD. wk 1912 11-SEP-16 11:49

LOCAL GEODETIC DATUM: ETRF2000 EPOCH: 2016-08-31 12:00:00

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG
1	ACDR 13434M001	4594489.86885	-678367.99426	4357065.87115	W
22	ALDA 19383M001	4687280.52110	-190877.11355	4308106.53710	A
28	ALSA 19419M001	4677251.20371	-176770.94246	4319079.45921	A
40	AULE 00000M000	4644762.48639	-207778.19573	4351758.06882	A
51	BIAZ 10074M002	4634456.43569	-124345.52194	4365785.04915	A
55	BIDA 00000M000	4644178.19553	-145778.86663	4354832.07287	A
54	BRZR 19387M001	4662221.34975	-220770.44526	4333309.02464	A
7	CACE 13447M001	4899866.80438	-544567.60443	4033769.76761	W
8	CANT 13438M001	4625924.66597	-307096.77572	4365771.14459	W
69	CHER 00000M000	4645880.69289	-125722.46946	4353623.96034	A
11	CREU 13432M001	4715420.54322	273177.51097	4271946.42881	A
12	EBRE 13410M001	4833520.36630	41536.83091	4147461.29296	W
77	ELGE 19353S001	4657557.76650	-202242.01842	4338991.45831	A
87	GERN 19389M001	4642811.66853	-217223.47718	4353278.47186	A
101	IGEL 19352S001	4645951.79723	-165575.04613	4352550.00790	A
105	ISPS 19484M001	4640596.84574	-206964.31944	4356391.50032	A
109	LAZK 19354S001	4666098.70717	-178186.73742	4330463.26118	A
112	LEIT 19428M001	4663521.30372	-155859.26316	4334519.46849	A
141	ORON 19427M001	4659696.15923	-130865.28095	4338948.47397	A
146	PAS2 19351S001	4644909.42723	-156645.61201	4353622.66519	A
147	PASA 19351S001	4644909.42681	-156645.61206	4353622.66516	A
27	RIO1 13448M002	4708447.18212	-199490.83366	4284089.31842	W
28	SALA 13469M001	4803054.79994	-462131.62808	4158378.64777	W
172	SOPU 19386M001	4643998.26538	-255914.44986	4350062.72989	A
31	TERU 13487M001	4867391.67637	-95523.91821	4108341.25698	W
204	VITO 19385M001	4679398.05812	-218437.05353	4314897.94781	A
35	YEBE 13420M001	4848724.90621	-261632.49314	4123093.90073	W
36	ZARA 13462M001	4773803.53786	-73506.53812	4215453.67906	W

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).

Station	#Days	Weekday 0123456	Repeatability (mm)		
			N	E	U
ACDR 13434M001	7	XXXXXX	0.88	1.25	3.20
ALDA 19383M001	7	XXXXXX	0.51	0.61	2.42
ALSA 19419M001	7	XXXXXX	0.88	0.55	3.20
AULE 00000M000	4	XXXX	1.07	0.71	3.60
BIAZ 10074M002	7	XXXXXX	0.70	0.83	5.33
BIDA 00000M000	7	XXXXXX	0.98	0.75	4.51
BRZR 19387M001	7	XXXXXX	0.71	0.59	3.42
CACE 13447M001	7	XXXXXX	0.99	0.92	5.05
CANT 13438M001	7	XXXXXX	0.50	0.62	3.78
CHER 00000M000	7	XXXXXX	0.58	1.03	4.35
CREU 13432M001	7	XXXXXX	1.24	0.72	4.47
EBRE 13410M001	7	XXXXXX	0.83	0.81	4.00
ELGE 19353S001	7	XXXXXX	0.73	0.73	3.10
GERN 19389M001	7	XXXXXX	1.26	0.85	2.64
IGEL 19352S001	7	XXXXXX	0.96	0.47	4.57
ISPS 19484M001	7	XXXXXX	0.87	0.73	2.98
LAZK 19354S001	7	XXXXXX	0.63	0.74	2.57
LEIT 19428M001	7	XXXXXX	0.86	0.67	3.69
ORDN 19427M001	7	XXXXXX	1.14	0.89	4.67
PAS2 19351S001	7	XXXXXX	0.54	0.32	5.25
PASA 19351S001	7	XXXXXX	1.10	0.46	5.41
RID1 13448M002	7	XXXXXX	0.48	0.52	2.36
SALA 13469M001	7	XXXXXX	0.51	0.47	2.28
SOPU 19386M001	7	XXXXXX	1.18	0.84	2.87
TERU 13487M001	7	XXXXXX	1.00	0.85	3.24
VITO 19385M001	7	XXXXXX	0.82	0.68	3.40
YEBE 13420M001	7	XXXXXX	0.46	0.91	5.49
ZARA 13462M001	7	XXXXXX	0.35	0.88	4.75

Comparison of individual solutions:

ACDR 13434M001	N	0.88	0.64	0.57	0.88	1.38	0.31	0.58	0.88
ACDR 13434M001	E	1.25	-1.46	-1.98	0.53	-0.20	0.98	0.56	1.34
ACDR 13434M001	U	3.20	-6.08	2.22	3.15	0.96	1.22	-1.30	-2.31
ALDA 19383M001	N	0.51	0.16	-1.03	0.14	-0.60	0.21	-0.23	0.17
ALDA 19383M001	E	0.61	-0.42	1.01	0.26	-0.48	0.79	0.18	0.28
ALDA 19383M001	U	2.42	1.31	-1.53	-2.15	-0.66	-3.48	1.63	3.35
ALSA 19419M001	N	0.88	0.49	-0.15	0.23	-1.04	-1.67	0.35	0.63
ALSA 19419M001	E	0.55	-0.30	0.82	0.52	0.23	0.69	-0.47	0.20
ALSA 19419M001	U	3.20	2.89	0.37	1.04	-1.21	-3.51	3.55	-5.05
AULE 00000M000	N	1.07				-1.73	-0.49	-0.05	0.47
AULE 00000M000	E	0.71				0.92	0.49	0.64	0.10
AULE 00000M000	U	3.60				4.06	-3.68	-1.05	-2.78
BIAZ 10074M002	N	0.70	-0.09	0.50	-0.10	-0.46	-0.97	-1.06	0.65
BIAZ 10074M002	E	0.83	-1.04	0.52	0.38	0.21	0.94	-0.51	1.22
BIAZ 10074M002	U	5.33	7.25	1.52	-1.50	-2.04	-10.32	1.51	0.82
BIDA 00000M000	N	0.98	0.24	0.39	0.27	0.16	-1.74	-0.46	-1.50
BIDA 00000M000	E	0.75	0.39	1.11	-0.32	-0.13	-1.17	-0.26	-0.63
BIDA 00000M000	U	4.51	5.05	1.32	-3.25	1.14	-9.00	0.99	1.03
BRZR 19387M001	N	0.71	0.20	-1.51	-0.13	-0.09	-0.48	0.37	0.53
BRZR 19387M001	E	0.59	-0.59	-0.11	-0.10	0.42	0.89	0.66	0.58
BRZR 19387M001	U	3.42	6.53	-1.32	-1.04	-3.99	-2.10	1.87	-0.90
CACE 13447M001	N	0.99	-1.40	-0.00	-0.67	1.40	1.18	-0.02	-0.35
CACE 13447M001	E	0.92	0.15	0.27	0.81	-0.79	0.26	1.21	-1.47
CACE 13447M001	U	5.05	-3.39	-0.53	-8.31	6.31	-5.08	2.43	-0.89
CANT 13438M001	N	0.50	-0.84	-0.07	0.10	-0.12	0.84	0.03	0.29
CANT 13438M001	E	0.62	-0.81	0.72	0.19	0.55	0.19	0.33	-0.79
CANT 13438M001	U	3.78	-3.33	4.33	-2.53	1.65	-4.63	-0.93	4.92
CHER 00000M000	N	0.58	-0.67	-0.49	0.36	-0.35	-0.51	-0.51	0.75
CHER 00000M000	E	1.03	-1.53	-0.42	0.27	0.50	1.50	0.59	0.99
CHER 00000M000	U	4.35	4.52	-0.09	1.13	-1.86	-9.18	1.88	0.62
CREU 13432M001	N	1.24	-2.50	0.70	-0.49	0.54	0.98	-0.18	-0.97
CREU 13432M001	E	0.72	-1.33	-0.32	-0.93	0.06	0.06	0.52	0.22
CREU 13432M001	U	4.47	2.66	7.53	-3.03	3.50	-1.97	-5.09	-2.24
EBRE 13410M001	N	0.83	-0.09	-0.91	-0.99	0.50	0.74	0.82	0.93
EBRE 13410M001	E	0.81	0.33	-0.77	-1.35	0.43	-0.37	1.01	0.28
EBRE 13410M001	U	4.00	-2.90	-0.58	7.41	0.33	-1.30	-4.63	-3.02
ELGE 19353S001	N	0.73	-0.12	-0.82	-0.06	-1.12	0.75	-0.49	0.69
ELGE 19353S001	E	0.73	0.05	0.25	0.42	-0.26	0.95	-0.84	1.11
ELGE 19353S001	U	3.10	2.57	-0.13	0.30	-3.01	-4.15	4.58	-1.92
GERN 19389M001	N	1.26	2.20	-0.89	-0.67	-1.10	-1.20	-0.30	0.83
GERN 19389M001	E	0.85	-0.86	1.43	-0.22	-0.39	0.88	0.72	0.28
GERN 19389M001	U	2.64	1.86	2.55	2.06	-1.88	-3.83	-0.79	-2.96
IGEL 19352S001	N	0.96	0.82	-1.81	0.39	-1.17	0.19	0.20	0.06
IGEL 19352S001	E	0.47	-0.26	0.65	-0.06	0.04	0.83	0.33	0.16
IGEL 19352S001	U	4.57	3.23	2.72	1.10	-2.30	-9.65	2.74	0.50
ISPS 19484M001	N	0.87	1.32	-0.76	0.28	-0.80	-1.21	-0.15	0.15
ISPS 19484M001	E	0.73	-0.09	-0.07	-0.07	-0.39	1.49	0.07	0.90
ISPS 19484M001	U	2.98	-0.27	-0.76	5.38	-0.06	-4.08	-1.02	-2.43
LAZK 19354S001	N	0.63	0.79	-0.37	0.45	-0.98	-0.46	-0.26	-0.46
LAZK 19354S001	E	0.74	-0.74	0.04	0.39	0.17	0.99	-0.37	1.21
LAZK 19354S001	U	2.57	3.41	-0.72	1.12	-3.10	-3.06	2.16	-1.64
LEIT 19428M001	N	0.86	0.05	-1.71	0.11	-0.42	-0.60	0.93	0.33
LEIT 19428M001	E	0.67	-0.49	-0.26	0.59	-0.40	0.43	0.88	0.97
LEIT 19428M001	U	3.69	5.82	0.06	-0.96	-2.72	-3.70	3.42	-3.74
ORDN 19427M001	N	1.14	0.55	-0.05	0.66	-0.01	-2.49	-0.75	0.58
ORDN 19427M001	E	0.89	-0.86	0.88	0.18	-0.06	0.21	-0.39	1.73
ORDN 19427M001	U	4.67	7.02	1.91	-0.86	0.17	-8.55	-1.99	-0.14
PAS2 19351S001	N	0.54	-0.10	-0.79	0.30	-0.66	-0.51	-0.21	0.58
PAS2 19351S001	E	0.32	0.16	0.31	0.30	-0.15	0.44	0.27	0.35
PAS2 19351S001	U	5.25	7.17	2.54	-0.11	1.09	-10.12	-0.48	-1.89
PASA 19351S001	N	1.10	-0.88	2.16	0.15	-0.91	-0.75	-0.67	-0.06
PASA 19351S001	E	0.46	0.86	0.03	0.11	-0.27	0.48	0.44	-0.08
PASA 19351S001	U	5.41	7.20	-4.42	0.83	2.10	-9.92	0.55	0.64
RID1 13448M002	N	0.48	0.24	-0.62	-0.43	0.05	-0.81	0.15	0.29
RID1 13448M002	E	0.52	-0.36	0.59	0.60	0.04	0.85	-0.26	0.15
RID1 13448M002	U	2.36	4.34	0.77	0.87	-1.46	-2.12	-2.03	-1.57
SALA 13469M001	N	0.51	0.62	-0.17	-0.08	-0.11	0.64	0.73	0.45
SALA 13469M001	E	0.47	0.33	-0.31	-0.26	-0.05	-0.30	-0.82	0.55
SALA 13469M001	U	2.28	-1.09	1.05	0.16	3.31	3.62	0.16	-2.18
SOPU 19386M001	N	1.18	0.45	0.53	-0.69	-0.67	-2.35	0.55	1.08
SOPU 19386M001	E	0.84	-1.02	0.08	0.09	-0.54	1.65	0.32	0.18
SOPU 19386M001	U	2.87	-1.67	-4.08	2.40	-3.11	-2.69	-0.00	2.70
TERU 13487M001	N	1.00	1.51	0.72	-0.46	0.88	-0.59	-1.27	-0.47
TERU 13487M001	E	0.85	-0.04	-0.27	0.34	-0.39	-1.44	-0.57	1.25
TERU 13487M001	U	3.24	2.99	1.59	1.43	0.23	0.34	-6.99	0.66
VITO 19385M001	N	0.82	1.23	-0.34	0.02	-0.98	-1.09	-0.17	0.45
VITO 19385M001	E	0.68	-0.80	-0.24	0.47	0.25	1.21	0.01	0.59
VITO 19385M001	U	3.40	4.49	1.65	-2.84	-0.68	-5.76	-2.12	0.73
YEBE 13420M001	N	0.46	0.15	0.05	0.95	-0.37	-0.10	-0.38	-0.29

YEBE 13420M001	E	0.91	-0.22	-0.98	1.20	0.71	-0.80	1.17	-0.23
YEBE 13420M001	U	5.49	-6.54	4.16	-4.19	-4.72	2.07	3.42	8.07
ZARA 13462M001	N	0.35	0.18	-0.16	-0.69	0.16	0.15	0.40	-0.01
ZARA 13462M001	E	0.88	-0.90	-0.58	-1.37	0.55	0.10	1.08	0.36
ZARA 13462M001	U	4.75	-7.79	1.62	6.63	-0.34	3.61	-2.65	-2.80

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: Igb08
RESIDUALS IN LOCAL SYSTEM (NORTH, EAST, UP)

NUM	NAME	FLG	RESIDUALS IN MILLIMETERS		
1	ACOR 13434M001	I W	-1.50	1.11	-0.20
2	ALAC 13433M001	I W	0.95	1.30	1.79
3	ALBA 13452M001	I W	0.07	2.03	1.81
4	ALME 13437M001	I W	0.09	1.32	8.89
6	BRST 10004M004	I W	-1.37	-0.63	-1.59
7	CACE 13447M001	I W	1.16	0.92	-0.35
8	CANT 13438M001	I W	-0.89	-0.34	-3.64
9	CEU1 13449M002	I W	0.92	3.06	11.75
10	COBA 13453M001	I W	1.86	-0.51	-2.92
12	EBRE 13410M001	I W	1.34	-1.26	-2.27
14	FUNC 13911S001	I W	-0.59	1.69	1.75
16	HUEL 13451M001	I W	0.22	-0.38	-0.06
17	IZAN 31309M002	I W	-2.99	0.41	4.91
18	LLIV 13436M001	I W	5.45	-2.20	-6.57
19	LPAL 81701M001	I W	-3.24	0.09	2.57
20	LROC 10023M001	I W	0.73	-2.07	-1.10
21	MALA 13443M001	I W	-3.30	2.07	0.70
22	MALL 13444M001	I W	0.13	-1.24	-1.86
24	MELI 19379M001	I W	-0.61	-1.43	-2.20
25	PDEL 31906M004	I W	-4.15	-4.35	5.46
26	RABT 35001M002	I W	0.26	1.16	-0.56
27	RID1 13448M002	I W	0.13	1.43	-2.04
28	SALA 13469M001	I W	-0.34	-0.61	1.41
29	SCOA 10088M002	I W	0.54	-0.64	-5.40
30	SONS 13446M001	I W	-1.19	-1.38	-4.76
31	TERU 13487M001	I W	2.82	1.03	-0.51
32	VALE 13439M001	I W	-0.89	0.19	-0.83
33	VIGO 13450M001	I W	0.61	-0.00	3.01
34	VILL 13406M001	I W	0.71	0.77	-0.74
35	YEBE 13420M001	I W	1.56	0.55	1.02
36	ZARA 13462M001	I W	0.21	-1.56	-4.48
37	ZIMM 14001M004	I W	1.31	-0.54	-2.99
	RMS / COMPONENT		1.86	1.52	3.89
	MEAN		-0.00	-0.00	-0.00
	MIN		-4.15	-4.35	-6.57
	MAX		5.45	3.06	11.75

NUMBER OF PARAMETERS : 3
NUMBER OF COORDINATES : 96
RMS OF TRANSFORMATION : 2.64 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          8792094
NUMBER OF UNKNOWN(S)           131211
NUMBER OF DEGREES OF FREEDOM    8660873
PHASE MEASUREMENTS SIGMA       0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                 2.262457963518377
```

Helmert Transformation Parameters With Respect to Combined Solution:

```
-----
Sol  Rms (m)      Translation (m)      Rotation (")
      X          Y          Z          X          Y          Z          Scale (ppm)
-----
 1  0.00226  -0.0016  0.0050 -0.0038  -0.0001  0.0001  0.0001  0.00046
 2  0.00175  -0.0162  0.0175  0.0229  0.0003  -0.0009  -0.0005  -0.00036
 3  0.00230  -0.0043  -0.0048  0.0063  0.0001  -0.0003  -0.0001  -0.00020
 4  0.00282   0.0175  0.0037  -0.0121  -0.0001  0.0007  0.0001  -0.00094
 5  0.00265   0.0120  -0.0073  -0.0118  0.0003  0.0005  -0.0001  -0.00030
 6  0.00228   0.0173  0.0149  -0.0221  -0.0001  0.0009  0.0006  0.00007
 7  0.00202   0.0249  0.0111  -0.0292  -0.0001  0.0012  0.0004  0.00007
```

Statistics of individual solutions:

```
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
 1  0.00158  1267690  2.49  1287383  3  576  19120  0
 2  0.00148  1223437  2.18  1241647  3  531  17682  0
 3  0.00144  1191884  2.07  1209688  3  519  17288  0
 4  0.00149  1196742  2.22  1215909  3  519  18651  0
 5  0.00153  1265850  2.33  1286638  3  579  20212  0
 6  0.00149  1264003  2.23  1283751  3  582  19169  0
 7  0.00150  1247994  2.24  1267068  3  579  18498  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 16:241:00000 16:247:86370 LEICA GRX1200PRO -----
ALDA  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
ALSA  A  1 P 16:241:00000 16:247:86370 LEICA GRX1200GGPRO -----
AULE  A  1 P 16:244:54450 16:247:86370 LEICA GRX1200+GNSS -----
AULE  A  1 P 16:244:54450 16:247:86370 LEICA GRX1200+GNSS -----
BIAZ  A  1 P 16:241:00000 16:247:86370 LEICA GRX1200GGPRO -----
BIDA  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
BIDA  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
BRZR  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
CACE  A  1 P 16:241:00000 16:247:86370 TRIMBLE NETR9 -----
CANT  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
CHER  A  1 P 16:241:00000 16:247:86370 LEICA GRX1200+GNSS -----
CREU  A  1 P 16:241:00000 16:247:86370 LEICA GR25 -----
EBRE  A  1 P 16:241:00000 16:247:86370 TRIMBLE NETR9 -----
ELGE  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
GERN  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
IGEL  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
ISPS  A  1 P 16:241:00000 16:247:86370 TRIMBLE NETR9 -----
LAZK  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
LEIT  A  1 P 16:241:00000 16:247:86370 LEICA GRX1200+GNSS -----
ORON  A  1 P 16:241:00000 16:247:86370 LEICA GRX1200GGPRO -----
PAS2  A  1 P 16:241:00000 16:247:86370 TPS NET-G3A -----
PASA  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
RIO1  A  1 P 16:241:00000 16:247:86370 LEICA GR25 -----
SALA  A  1 P 16:241:00000 16:247:86370 LEICA GRX1200+GNSS -----
SOPU  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
TERU  A  1 P 16:241:00000 16:247:86370 LEICA GRX1200GGPRO -----
VITO  A  1 P 16:241:00000 16:247:86370 LEICA GR10 -----
YEBE  A  1 P 16:241:00000 16:247:86370 TRIMBLE NETR9 -----
ZARA  A  1 P 16:241:00000 16:247:86370 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 16:241:00000 16:247:86370 LEIAT504 LEIS -----
ALDA  A  1 P 16:241:00000 16:247:86370 LEIAS10 NONE -----
ALSA  A  1 P 16:241:00000 16:247:86370 LEIAX1202GG NONE -----
AULE  A  1 P 16:244:54450 16:247:86370 LEIAS10 NONE -----
AULE  A  1 P 16:244:54450 16:247:86370 LEIAS10 NONE -----
BIAZ  A  1 P 16:241:00000 16:247:86370 LEIAR25 LEIT -----
```

BIDA	A	1	P	16:241:00000	16:247:86370	LEIAS10	NONE	----
BIDA	A	1	P	16:241:00000	16:247:86370	LEIAS10	NONE	----
BRZR	A	1	P	16:241:00000	16:247:86370	LEIAS10	NONE	----
CACE	A	1	P	16:241:00000	16:247:86370	TRM29659.00	NONE	----
CANT	A	1	P	16:241:00000	16:247:86370	LEIAR25_R4	LEIT	25066
CHER	A	1	P	16:241:00000	16:247:86370	LEIAX1203+GNSS	NONE	----
CREU	A	1	P	16:241:00000	16:247:86370	LEIAR25_R4	NONE	26357
EBRE	A	1	P	16:241:00000	16:247:86370	TRM57971.00	NONE	25503
ELGE	A	1	P	16:241:00000	16:247:86370	LEIAR25_R4	LEIT	----
GERN	A	1	P	16:241:00000	16:247:86370	LEIAS10	NONE	----
IGEL	A	1	P	16:241:00000	16:247:86370	LEIAR20	LEIM	----
ISPS	A	1	P	16:241:00000	16:247:86370	TRM59900.00	SCIS	----
LAZK	A	1	P	16:241:00000	16:247:86370	LEIAR25_R4	LEIT	----
LEIT	A	1	P	16:241:00000	16:247:86370	LEIAX1203+GNSS	NONE	----
ORDN	A	1	P	16:241:00000	16:247:86370	LEIAX1202GG	NONE	----
PAS2	A	1	P	16:241:00000	16:247:86370	LEIAR20	LEIM	73034
PASA	A	1	P	16:241:00000	16:247:86370	LEIAR20	LEIM	73034
RIO1	A	1	P	16:241:00000	16:247:86370	LEIAR25_R4	LEIT	25138
SALA	A	1	P	16:241:00000	16:247:86370	LEIAR25	NONE	----
SOPU	A	1	P	16:241:00000	16:247:86370	LEIAS10	NONE	----
TERU	A	1	P	16:241:00000	16:247:86370	LEIAT504GG	LEIS	----
VITO	A	1	P	16:241:00000	16:247:86370	LEIAS10	NONE	----
YEBE	A	1	P	16:241:00000	16:247:86370	TRM29659.00	NONE	----
ZARA	A	1	P	16:241:00000	16:247:86370	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	16:241:00000	16:247:86370	UNE	3.0460	0.0000	0.0000	0.0000
ALDA	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
ALSA	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
AULE	A	1	P	16:244:54450	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
AULE	A	1	P	16:244:54450	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
BIAZ	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
BIDA	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
BIDA	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
BRZR	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
CACE	A	1	P	16:241:00000	16:247:86370	UNE	0.0600	0.0000	0.0000	0.0000
CANT	A	1	P	16:241:00000	16:247:86370	UNE	3.0490	0.0000	0.0000	0.0000
CHER	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
CREU	A	1	P	16:241:00000	16:247:86370	UNE	0.0770	0.0000	0.0000	0.0000
EBRE	A	1	P	16:241:00000	16:247:86370	UNE	0.0770	0.0000	0.0000	0.0000
ELGE	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
GERN	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
IGEL	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
ISPS	A	1	P	16:241:00000	16:247:86370	UNE	0.0350	0.0000	0.0000	0.0000
LAZK	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
LEIT	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
ORDN	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
PAS2	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
PASA	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
RIO1	A	1	P	16:241:00000	16:247:86370	UNE	0.0606	0.0000	0.0000	0.0000
SALA	A	1	P	16:241:00000	16:247:86370	UNE	0.0600	0.0000	0.0000	0.0000
SOPU	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
TERU	A	1	P	16:241:00000	16:247:86370	UNE	0.0600	0.0000	0.0000	0.0000
VITO	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
YEBE	A	1	P	16:241:00000	16:247:86370	UNE	0.0000	0.0000	0.0000	0.0000
ZARA	A	1	P	16:241:00000	16:247:86370	UNE	3.2590	0.0000	0.0000	0.0000

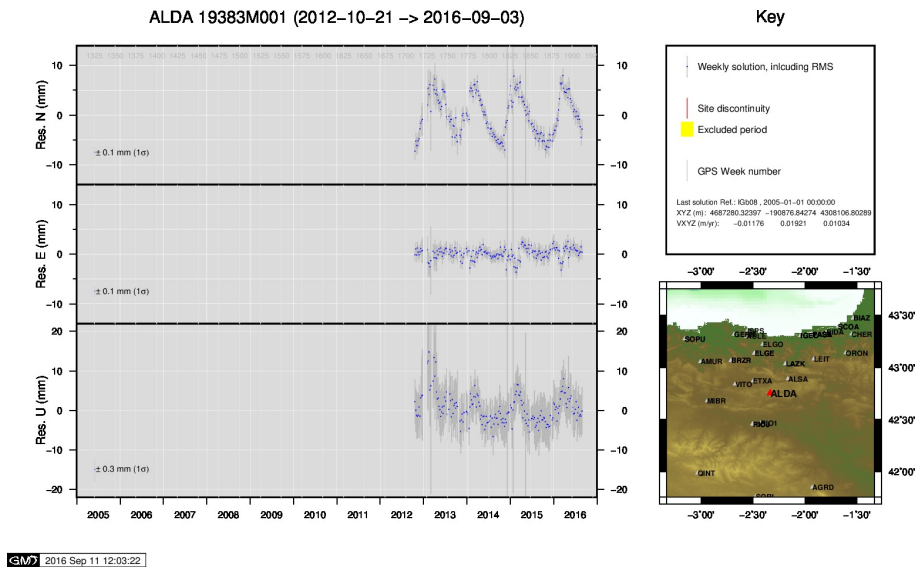
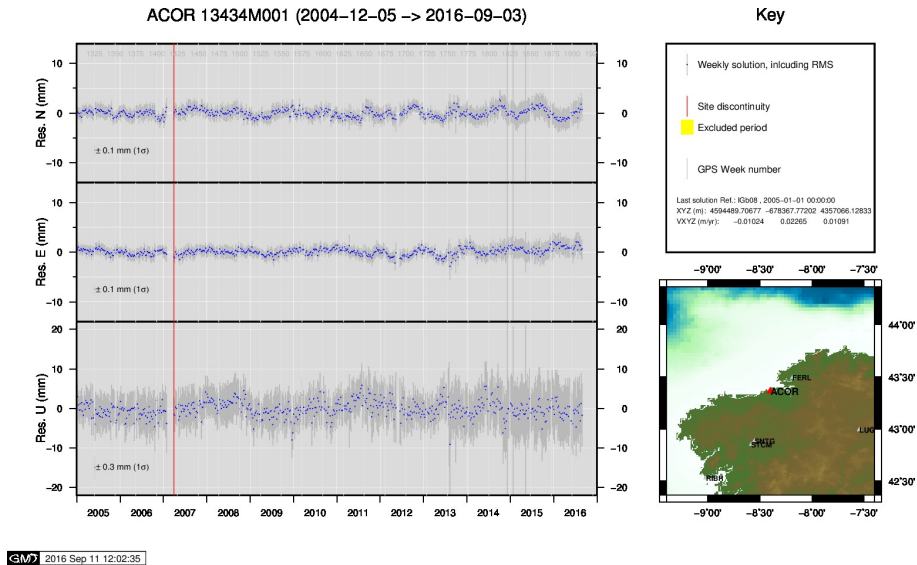
7 Inconsistencies (logsheet-RINEX metadata)

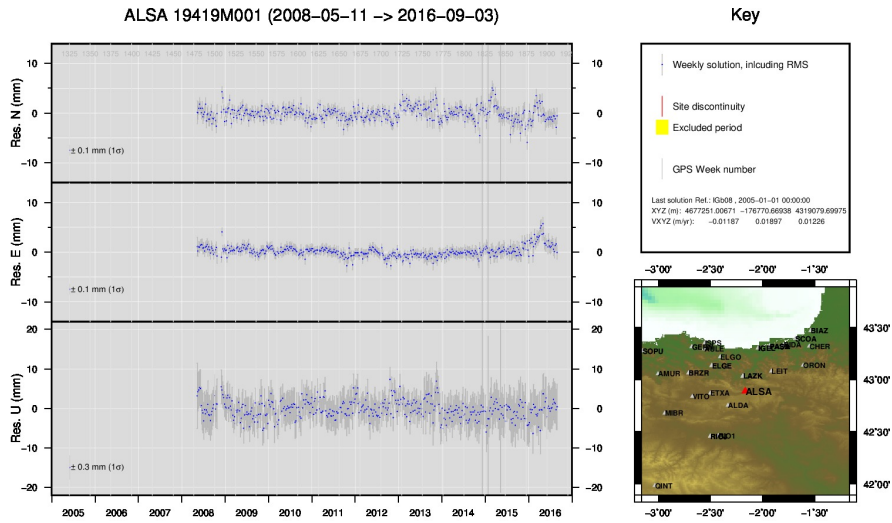
The following inconsistencies were found comparing the data available in the logsheets and the RINEX headers:

2016-09-11 04:24 UTC		ISPS2410.160		RECEIVER FIRM. VERS.		5.14 -> NP 5.10 / SP 5.10
2016-09-11 05:37 UTC		ISPS2420.160		RECEIVER FIRM. VERS.		5.14 -> NP 5.10 / SP 5.10
2016-09-11 06:46 UTC		ISPS2430.160		RECEIVER FIRM. VERS.		5.14 -> NP 5.10 / SP 5.10
2016-09-11 07:57 UTC		ISPS2440.160		RECEIVER FIRM. VERS.		5.14 -> NP 5.10 / SP 5.10
2016-09-11 09:13 UTC		ISPS2450.160		RECEIVER FIRM. VERS.		5.14 -> NP 5.10 / SP 5.10
2016-09-11 10:33 UTC		ISPS2460.160		RECEIVER FIRM. VERS.		5.14 -> NP 5.10 / SP 5.10
2016-09-11 11:49 UTC		ISPS2470.160		RECEIVER FIRM. VERS.		5.14 -> NP 5.10 / SP 5.10

8 Cumulative Time Series

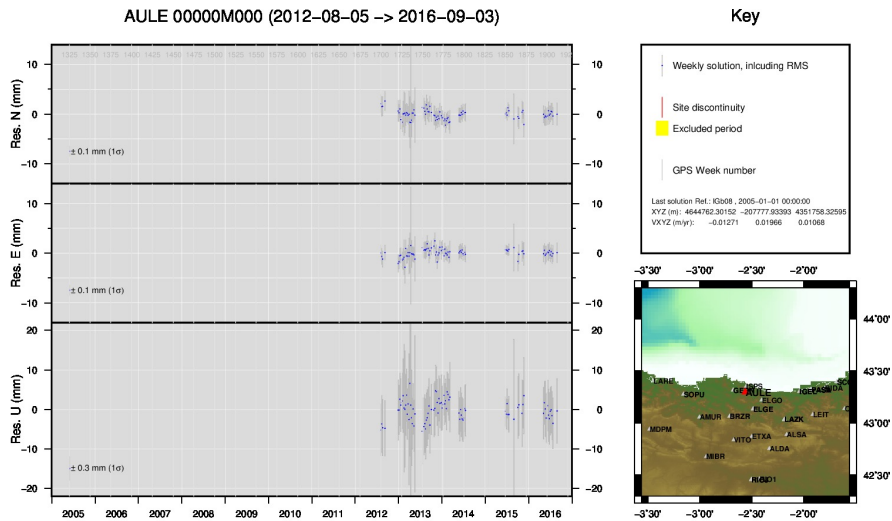
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.





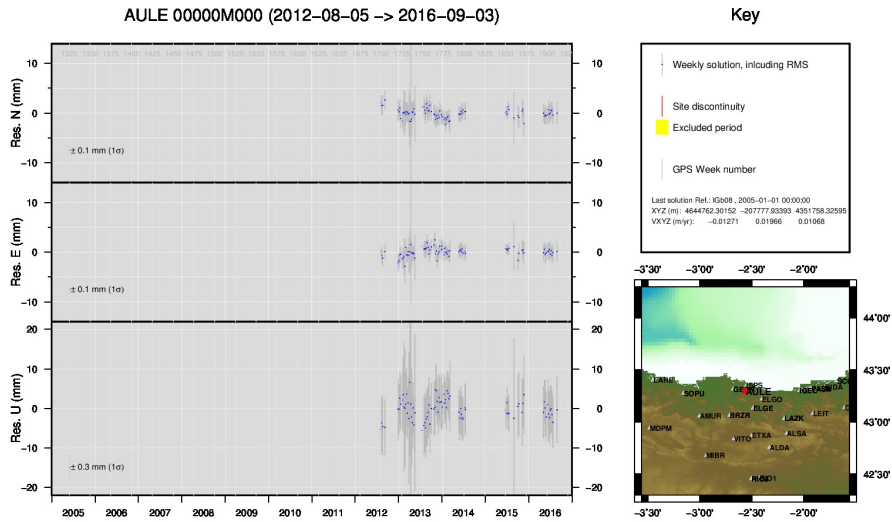
GMW 2016 Sep 11 12:04:02

3) ALSA



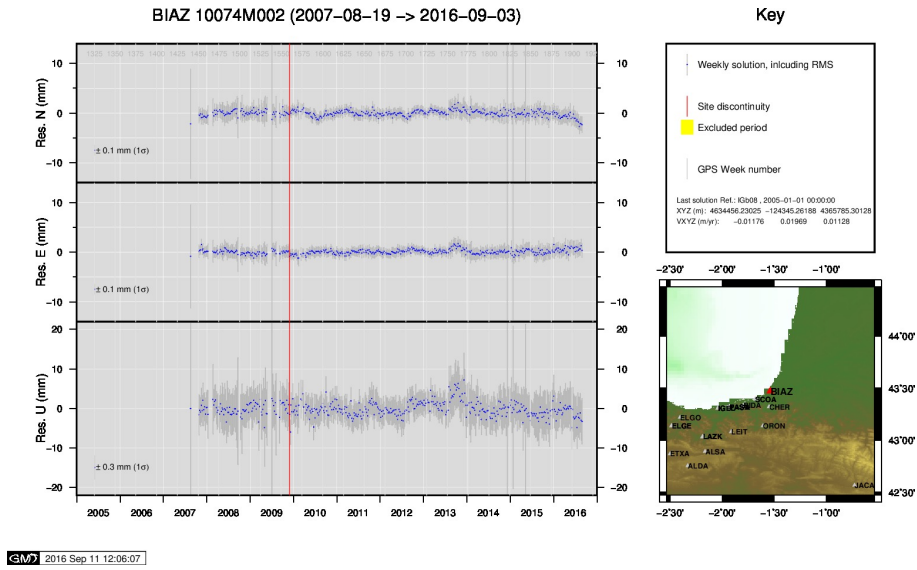
GMW 2016 Sep 11 12:05:05

4) AULE

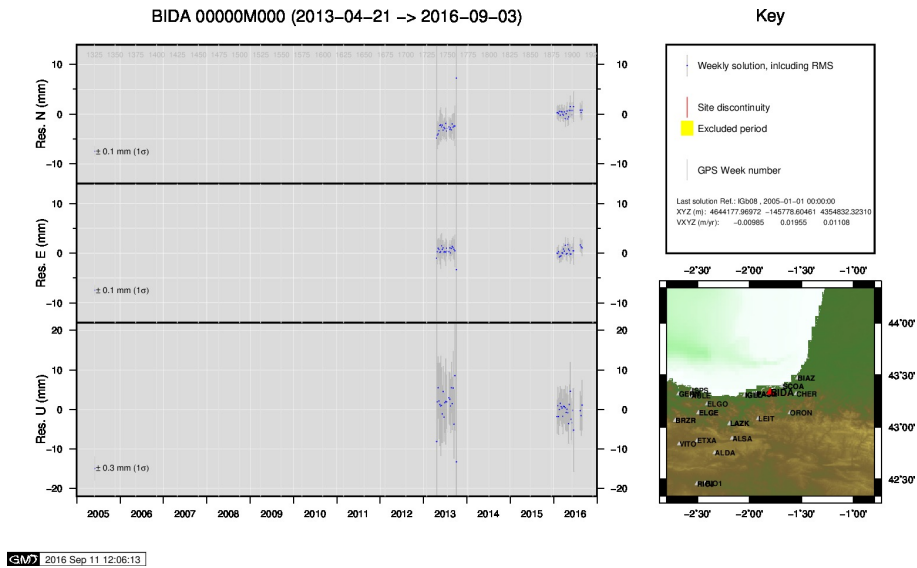


GMW 2016 Sep 11 12:05:05

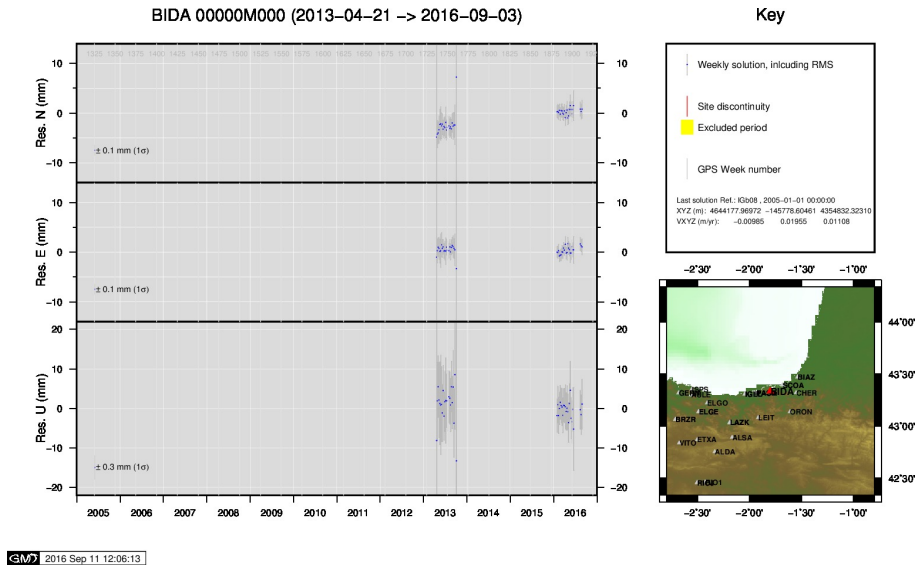
5) AULE



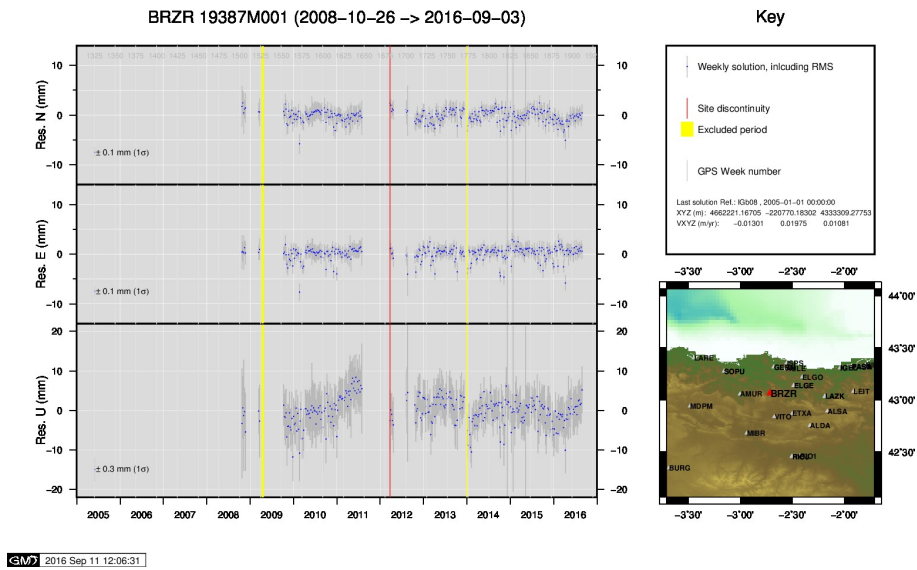
6) BIAZ



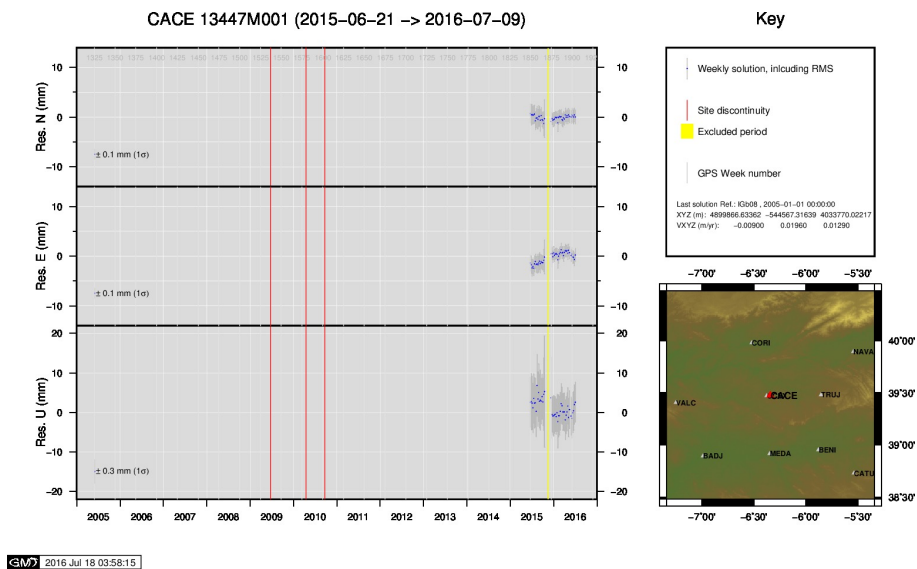
7) BIDA



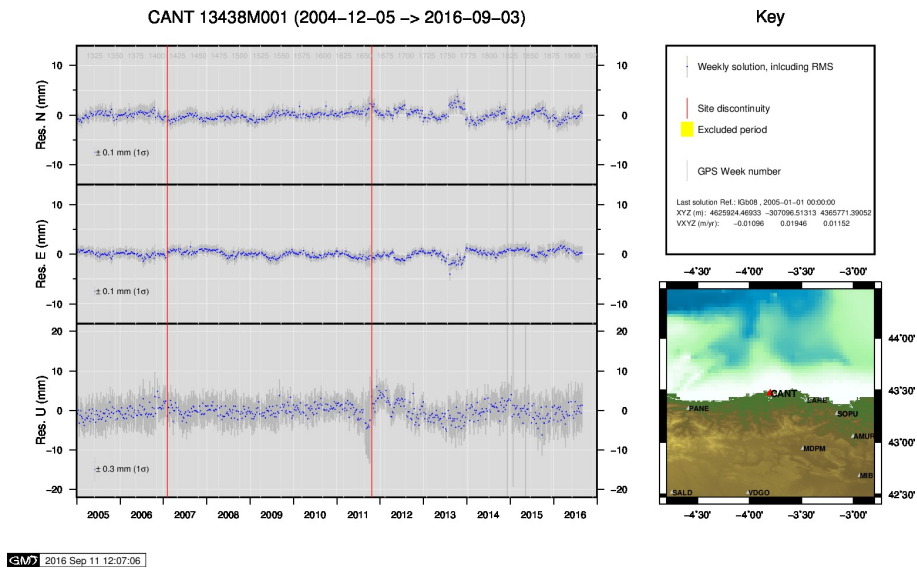
8) BIDA



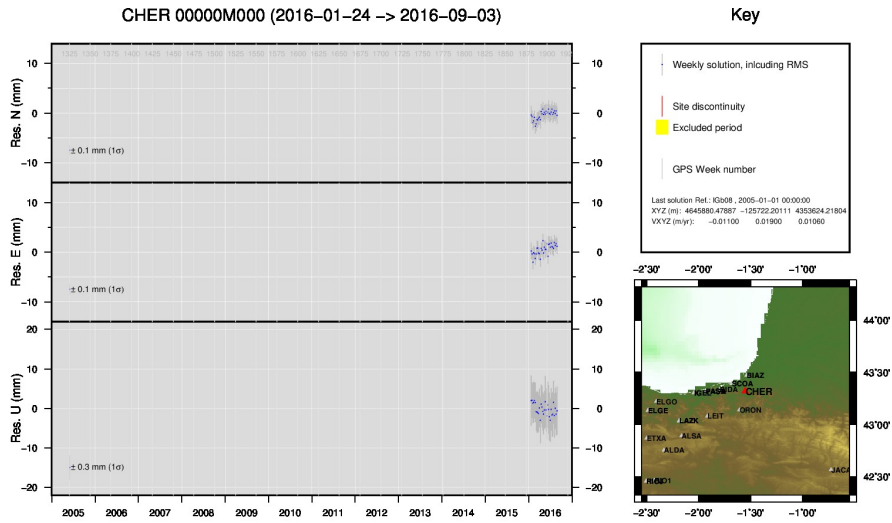
9) BRZR



10) CACE

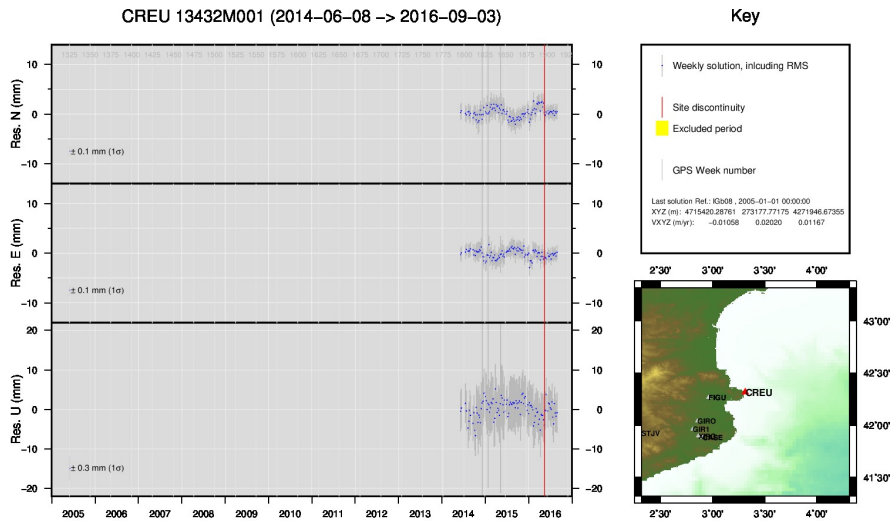


11) CANT



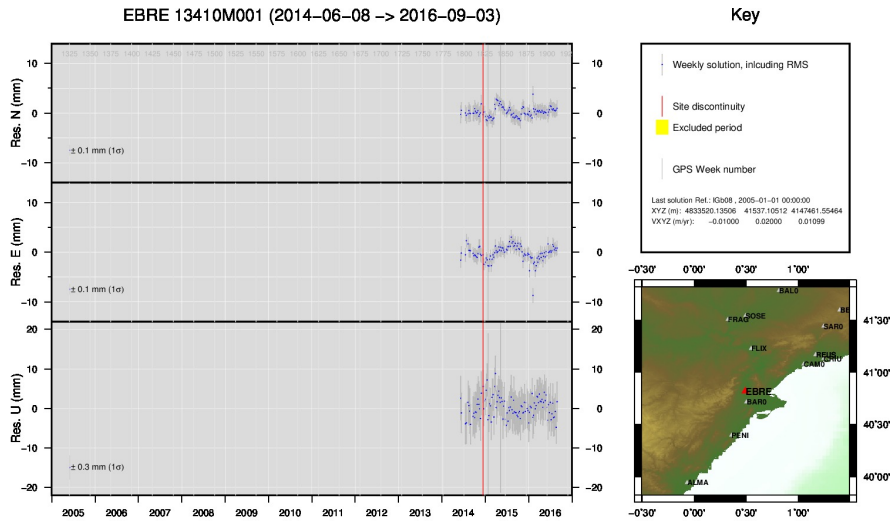
GMW 2016 Sep 11 12:08:03

12) CHER



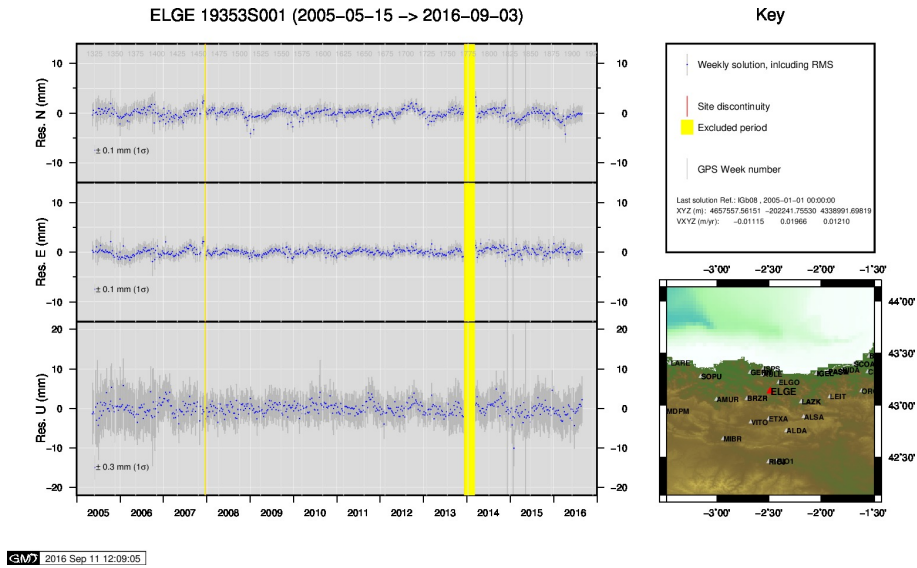
GMW 2016 Sep 11 12:08:31

13) CREU

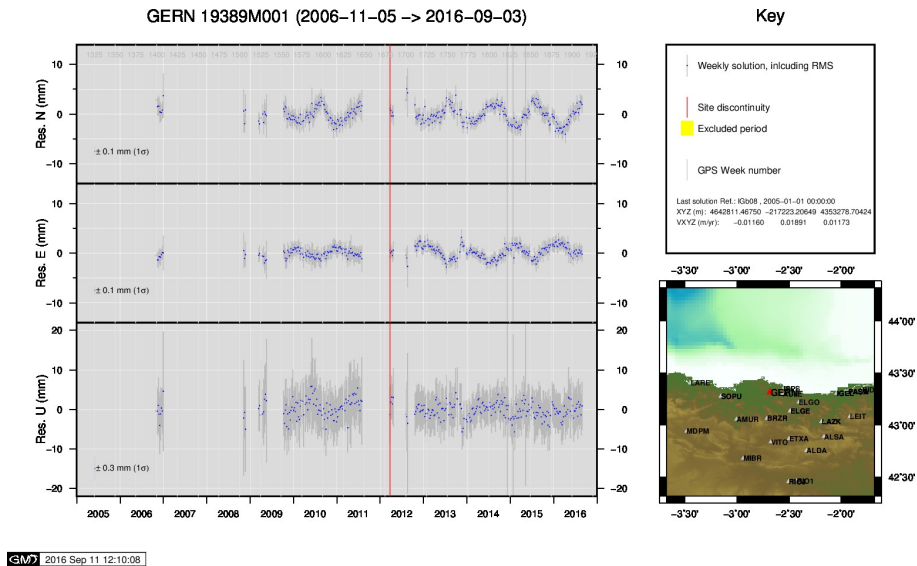


GMW 2016 Sep 11 12:08:54

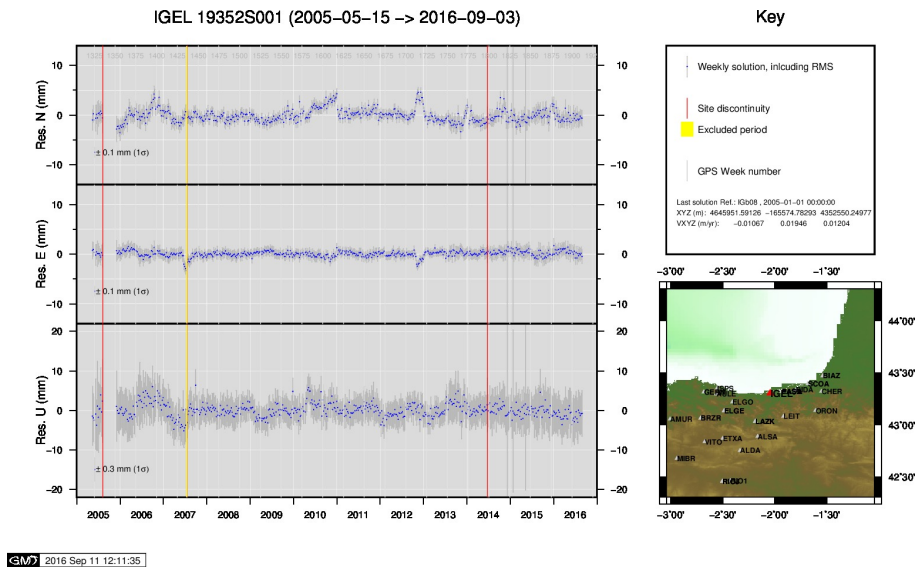
14) EBRE



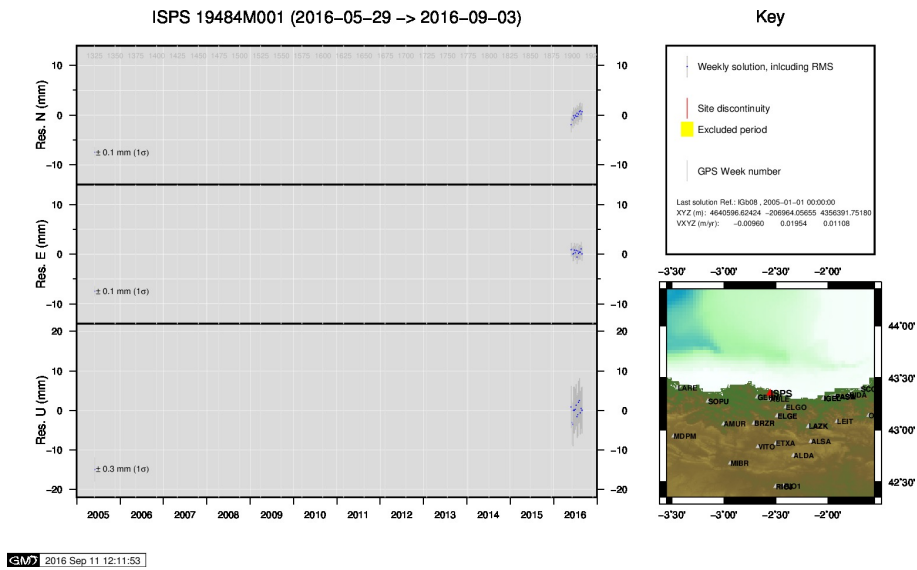
15) ELGE



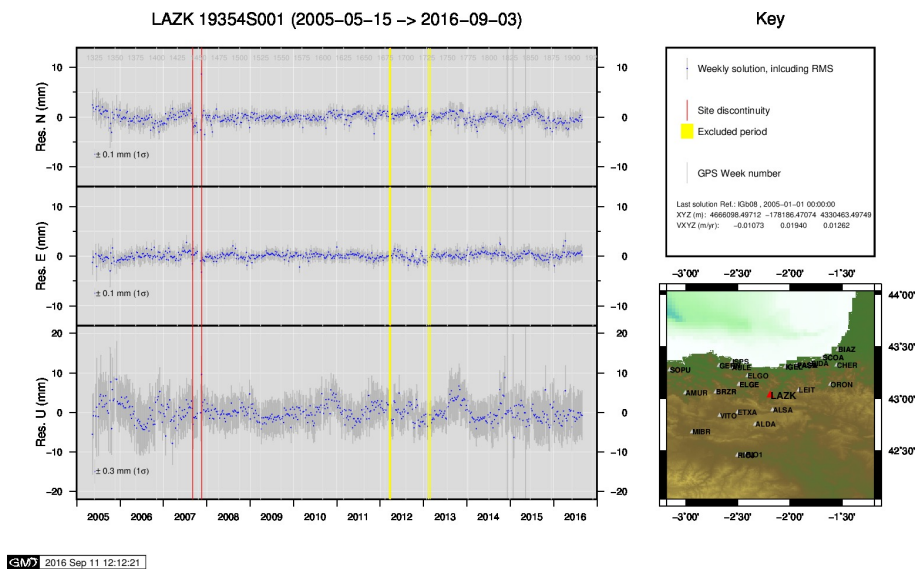
16) GERN



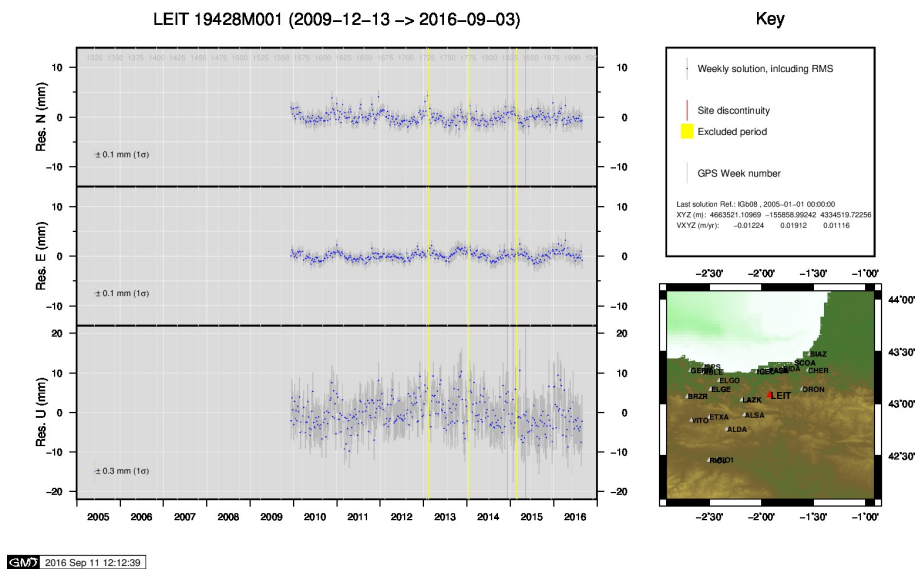
17) IGEL



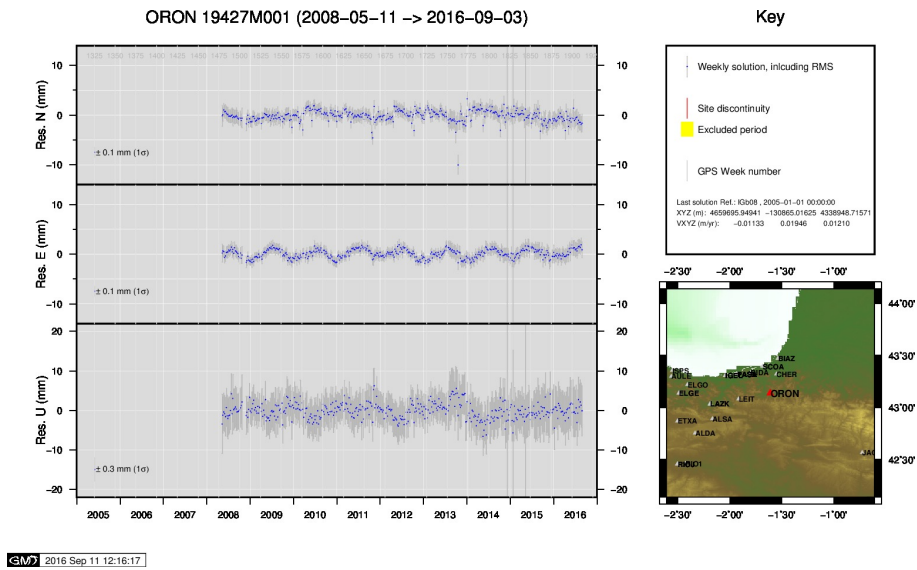
18) ISPS



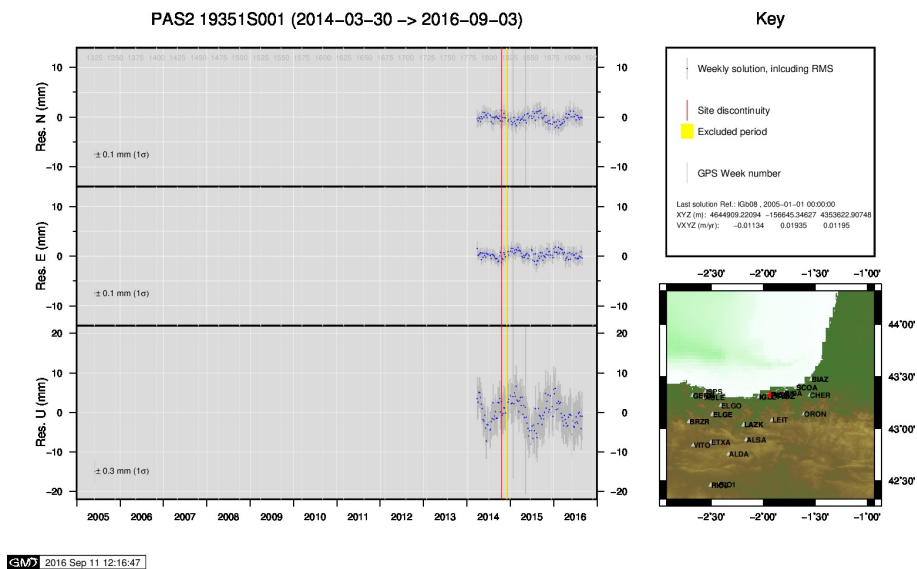
19) LAZK



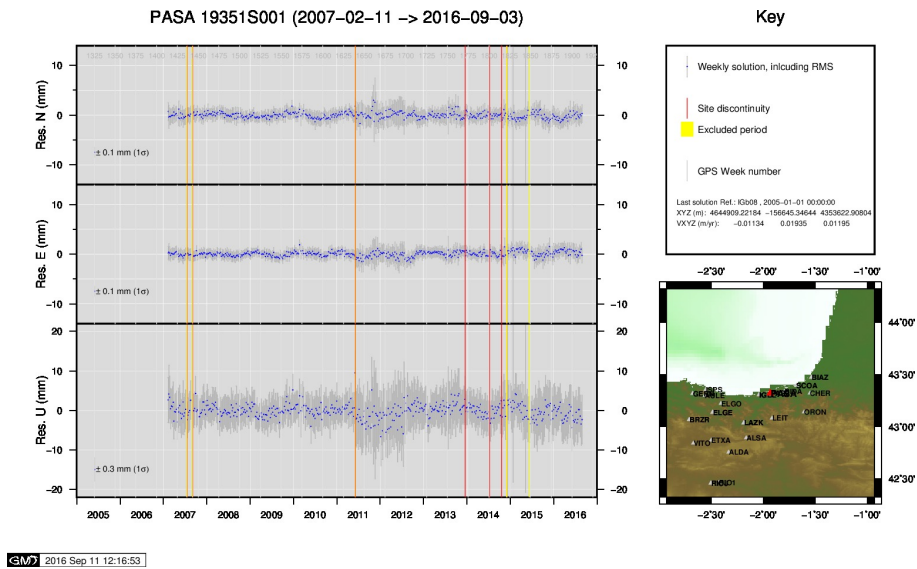
20) LEIT



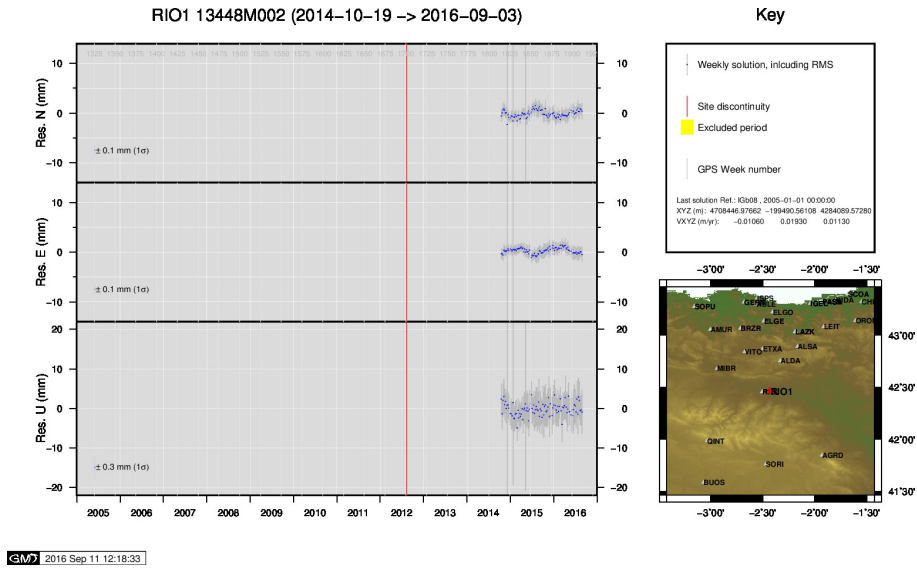
21) ORON



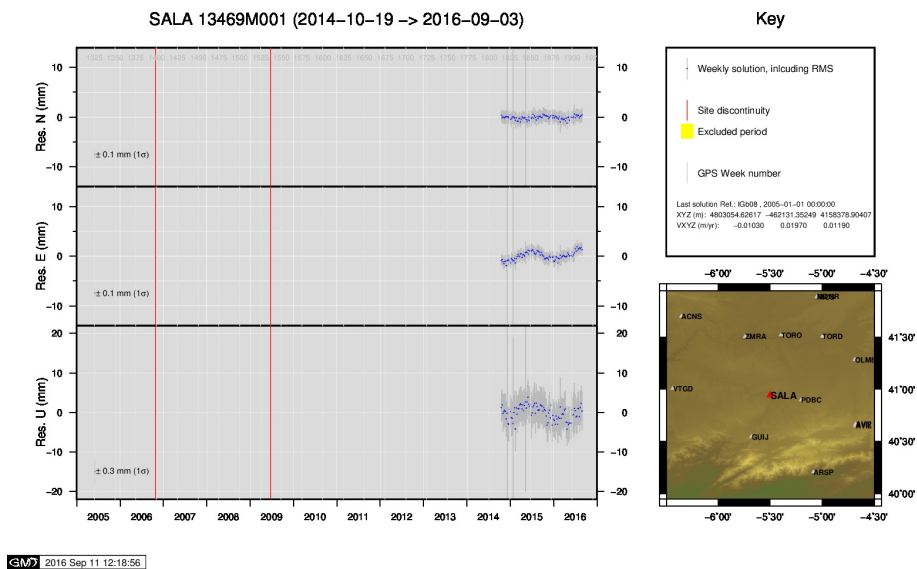
22) PAS2



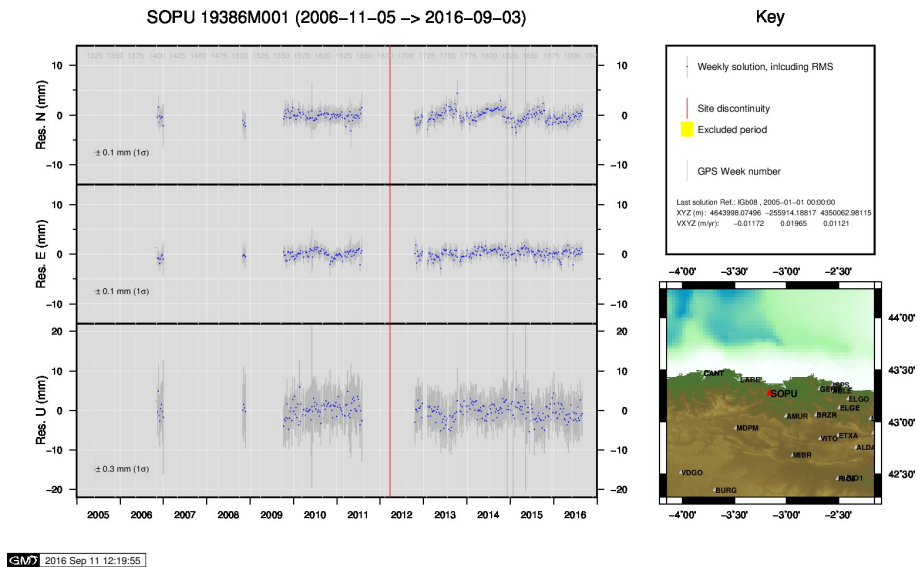
23) PASA



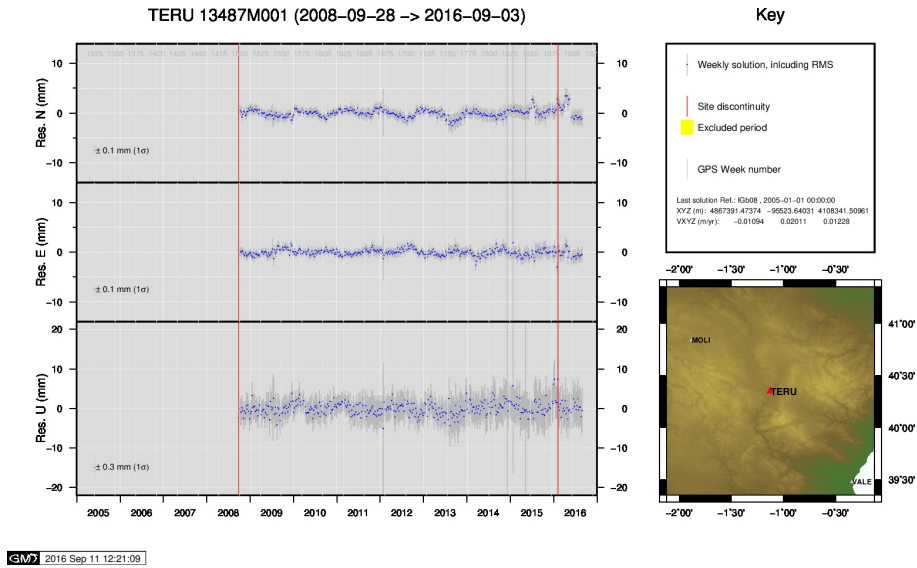
24) RIO1



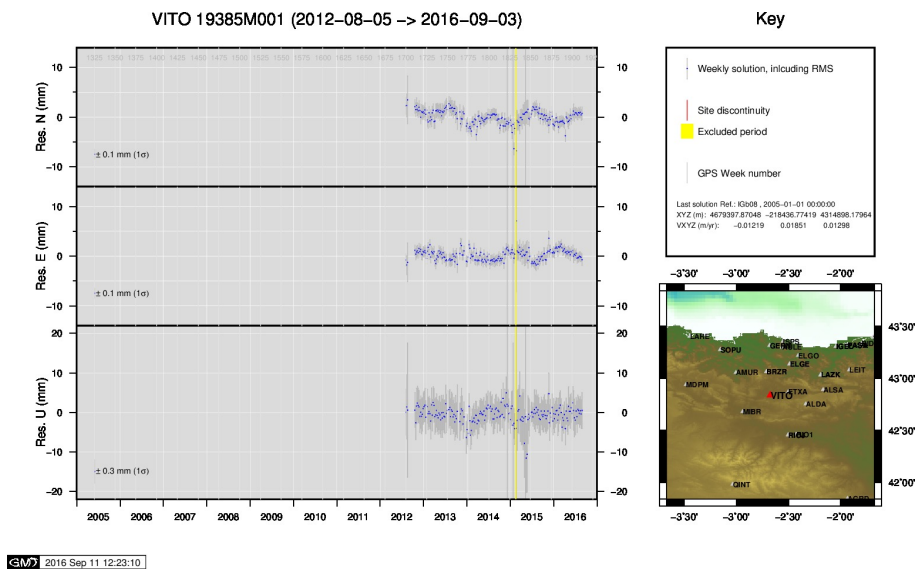
25) SALA



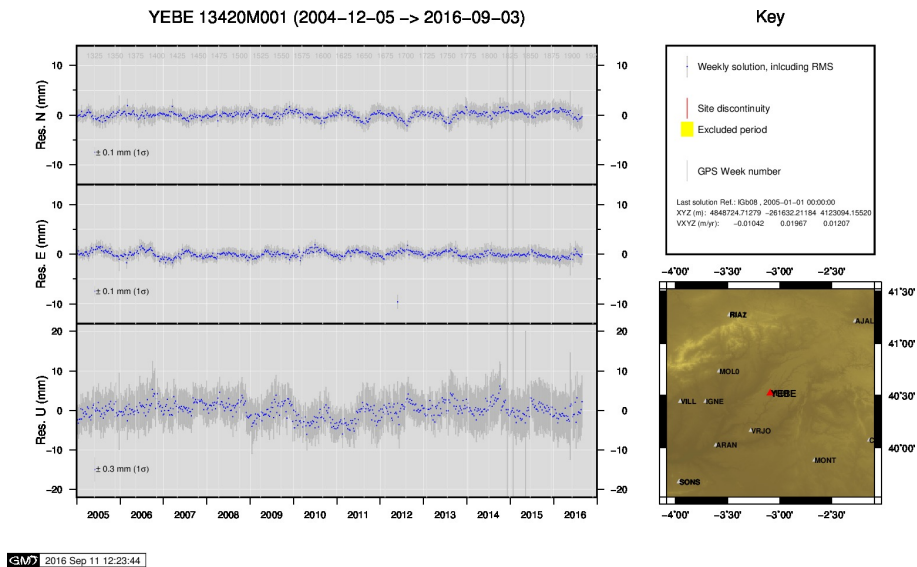
26) SOPU



27) TERU



28) VITO



29) YEBE

