

ARA-DAC Weekly Analysis Result: 1984 (GFA)

Technical Report

GPS Week: 1984 (GFA)

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

ARA-DAC details:

Contact person: J. Zurutuza

Contact mail: geodesia@aranzadi.eus

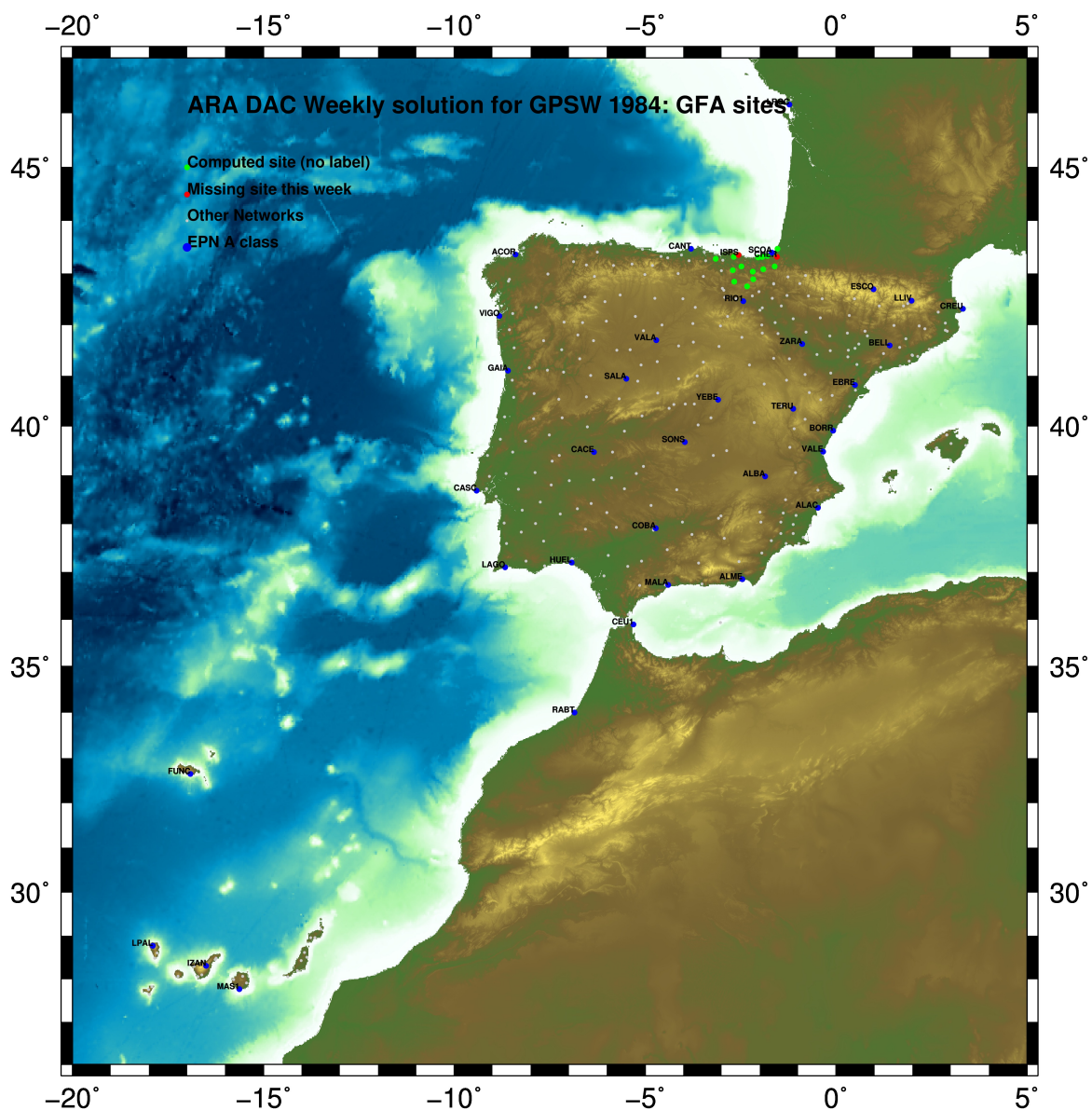
Report generated on 2018/01/28 at 17:57:25



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 2018 Jan 28 17:14:12

Fig.1: Computed Sites for GPS Week1984 (GFA)

3 Main Computation Parameters

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

- Preprocessing: 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 using different combinations based on the distance.
- Ground antenna phase center calibrations: Group APCV used from the PCV_COD.I14 file and individual calibrations from EPNC_14.ATX. EPN_A class sites (CRD + VEL) IGS14 used to define the reference frame (from GPSW 1934). If individual calibrations, other from these, are available, they are also included in the analysis.
- Troposphere:
 - 3 deg elev. cutoff; elevation dependent weighting
 - VMF1 mapping function. ZPD parameters are estimated using the 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 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 IGS14

The Reference Frame considered in this section is IGS14, release C1950.

ARA LAC 1984 WEEK FINAL COMBINATION: PRECISE ORBITS 28-JAN-18 13:27

LOCAL GEODETIC DATUM: IGS14 EPOCH: 2018-01-17 12:00:00

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG
3	ACOR 19434M001	4594489.57253	-678367.47803	4357066.26662	W
24	ALDA 19383M001	4687280.16745	-190876.59367	4308106.94171	A
30	ALSA 19419M001	4677250.84720	-176770.42347	4319079.85797	A
54	BLAZ 10074M002	4634456.06535	-124345.00431	4365785.44148	A
55	BIDA 00000M000	4644177.83758	-145778.35207	4354832.46699	A
58	BRZR 19387M001	4662221.00117	-220769.92838	4333309.41955	A
95	CACE 13447M001	4899866.61570	-544567.06240	4033770.18765	W
106	CANT 19438M001	4625924.32782	-307096.25981	4365771.53998	W
150	CREU 19432M001	4715420.14587	273178.03262	4271946.82511	W
186	EBRE 19410M001	4833520.00688	41537.36248	4147461.70000	W
85	ELGE 19353S001	4657557.41795	-202241.50235	4338991.85393	A
98	GERN 19389M001	4642811.32165	-217222.96037	4353278.86288	A
115	IGEL 19352S001	4645951.44135	-165574.53127	4352550.40262	A
126	LAZK 19354S001	4666098.35575	-178186.21968	4330463.65988	A
129	LEIT 19428M001	4663520.95611	-155858.74528	4334519.87280	A
158	ORDN 19427M001	4659695.80570	-130864.76533	4338948.87547	A
165	PAS2 19351S001	4644909.07460	-156645.09571	4353623.06380	A
173	PASA 19351S001	4644909.07294	-156645.09579	4353623.06253	A
491	RI01 13448M002	4708447.83849	-199490.31090	4284089.72015	W
496	SALA 13469M001	4803054.49375	-462131.09746	4158379.05954	W
200	SOPU 19386M001	4643997.92379	-255913.93587	4350063.12751	A
569	TERU 13487M001	4867391.33536	-95523.37993	4108341.66720	W
232	VITD 19385M001	4679397.71435	-218436.53276	4314898.34874	A
671	YEBE 13420M001	4848724.57982	-261631.95868	4123094.31380	W
674	ZARA 13462M001	4773803.18303	-73506.01206	4215454.08224	W

5.2 ETRF2000 (ETRS89) Coordinates

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

ETRF2000 FINAL COORD. wk 1984 28-JAN-18 13:27

LOCAL GEODETIC DATUM: ETRF2000 EPOCH: 2018-01-17 12:00:00

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG
3	ACOR 19434M001	4594489.86769	-678367.98927	4357065.86714	W
24	ALDA 19383M001	4687280.51390	-190877.11312	4308106.54122	A
30	ALSA 19419M001	4677251.19595	-176770.94188	4319079.45837	A
54	BLAZ 10074M002	4634456.42303	-124345.51831	4365785.04559	A
55	BIDA 00000M000	4644178.19215	-145778.86710	4354832.07015	A
58	BRZR 19387M001	4662221.34595	-220770.44542	4333309.02053	A
95	CACE 13447M001	4899866.80447	-544567.60358	4033769.76757	W
106	CANT 19438M001	4625924.66509	-307096.77345	4365771.14259	W
150	CREU 19432M001	4715420.54168	273177.51196	4271946.42786	W
186	EBRE 19410M001	4833520.36865	41536.82931	4147461.29155	W
85	ELGE 19353S001	4657557.76517	-202242.01887	4338991.45547	A
98	GERN 19389M001	4642811.66814	-217223.47546	4353278.46531	A
115	IGEL 19352S001	4645951.79356	-165575.04653	4352550.00542	A
126	LAZK 19354S001	4666098.70509	-178186.73698	4330463.26107	A
129	LEIT 19428M001	4663521.30821	-155859.26226	4334519.47444	A
158	ORDN 19427M001	4659696.16089	-130865.28186	4338948.47767	A
165	PAS2 19351S001	4644909.42787	-156645.61084	4353622.66678	A
173	PASA 19351S001	4644909.42621	-156645.61092	4353622.66551	A
491	RI01 13448M002	4708447.18239	-199490.83246	4284089.31803	W
496	SALA 13469M001	4803054.80000	-462131.62899	4158378.64748	W
200	SOPU 19386M001	4643998.26574	-255914.45118	4350062.72941	A
569	TERU 13487M001	4867391.67925	-95523.91688	4108341.25472	W
232	VITD 19385M001	4679398.05817	-218437.05149	4314897.94851	A
671	YEBE 13420M001	4848724.90614	-261632.49425	4123093.90076	W
674	ZARA 13462M001	4773803.53646	-73506.53972	4215453.67682	W

5.3 ETRF2014 (ETRS89) Coordinates

European Terrestrial Reference System, 1989 (ETRS89) is realized by ETRF2014 (Boucher and Altamimi, 2011) and (Altamimi, 2017).

ETRF2014 FINAL COORD. wk 1984 28-JAN-18 13:27

LOCAL GEODETIC DATUM: ETRF2014 EPOCH: 2018-01-17 12:00:00

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG
3	ACOR 13434M001	4594489.82478	-678368.02839	4357065.91493	W
24	ALDA 19383M001	4687280.46890	-190877.15350	4308106.58892	A
30	ALSA 19419M001	4677251.15100	-176770.98235	4319079.50610	A
54	BIAZ 10074M002	4634456.37833	-124345.55911	4365785.09344	A
55	BIDA 00000M000	4644178.14742	-145778.90779	4354832.11796	A
58	BRZR 19387M001	4662221.30127	-220770.48580	4333309.06828	A
95	CACE 13447M001	4899866.75829	-544567.64200	4033769.81473	W
106	CANT 13438M001	4625924.62098	-307096.81368	4365771.19039	W
150	CREU 13432M001	4715420.49494	273177.47017	4271946.47577	W
186	EBRE 13410M001	4833520.32152	41536.78871	4147461.33906	W
85	ELGE 19353S001	4657557.72048	-202242.05933	4338991.50323	A
98	GERN 19389M001	4642811.62363	-217223.51592	4353278.51310	A
115	IGEL 19352S001	4645951.74887	-165575.08716	4352550.05322	A
126	LAZK 19354S001	4666098.66025	-178186.77749	4330463.30883	A
129	LEIT 19428M001	4663521.26334	-155859.30285	4334519.52221	A
158	ORON 19427M001	4659696.11597	-130865.32254	4338948.52546	A
165	PAS2 19351S001	4644909.38317	-156645.65150	4353622.71459	A
173	PASA 19351S001	4644909.38151	-156645.65158	4353622.71332	A
491	RI01 13448M002	4708447.13721	-199490.87274	4284089.36567	W
496	SALA 13469M001	4803054.75459	-462131.66806	4158378.69485	W
200	SOPU 19386M001	4643998.22133	-255914.49151	4350062.77718	A
569	TERU 13487M001	4867391.63222	-95523.95690	4108341.30208	W
232	VITO 19385M001	4679398.01332	-218437.09182	4314897.99621	A
671	YEBE 13420M001	4848724.85977	-261632.53381	4123093.94809	W
674	ZARA 13462M001	4773803.49028	-73506.58017	4215453.72438	W

5.4 Mean and Daily Repeatabilities

In this section, the mean and daily repeatabilities of the sites are shown. Repeatabilities refer to the IGS14 solution and are given with respect the Local frame (North-East-Up).

ARA LAC 1984 WEEK FINAL COMBINATION: PRECISE ORBITS 28-JAN-18 13:27

Station	#Days	Weekday 0123456	Repeatability (mm)		
			N	E	U
ACOR 13434M001	7	XXXXXX	0.85	0.94	2.25
ALDA 19383M001	7	XXXXXX	1.16	2.72	4.79
ALSA 19419M001	7	XXXXXX	0.82	0.77	2.98
BIAZ 10074M002	7	XXXXXX	1.05	0.45	2.14
BIDA 00000M000	7	XXXXXX	1.14	0.88	3.27
BRZR 19387M001	7	XXXXXX	0.97	0.47	2.62
CACE 13447M001	7	XXXXXX	0.54	0.55	1.10
CANT 13438M001	7	XXXXXX	1.00	0.43	3.07
CREU 13432M001	7	XXXXXX	0.90	1.10	3.00
EBRE 13410M001	7	XXXXXX	1.27	2.65	4.36
ELGE 19353S001	7	XXXXXX	0.61	0.96	1.79
GERN 19389M001	7	XXXXXX	1.09	1.57	2.46
IGEL 19352S001	7	XXXXXX	1.13	0.71	1.43
LAZK 19354S001	7	XXXXXX	0.96	0.75	3.31
LEIT 19428M001	7	XXXXXX	2.44	1.11	7.01
ORON 19427M001	7	XXXXXX	1.46	1.02	1.79
PAS2 19351S001	5	XXX XX	0.86	0.68	3.60
PASA 19351S001	7	XXXXXX	0.74	0.35	2.03
RI01 13448M002	7	XXXXXX	1.71	0.43	3.20
SALA 13469M001	7	XXXXXX	0.95	0.39	2.22
SOPU 19386M001	7	XXXXXX	1.27	0.76	1.47
TERU 13487M001	7	XXXXXX	0.87	0.63	2.28
VITO 19385M001	7	XXXXXX	0.92	0.76	1.66
YEBE 13420M001	7	XXXXXX	0.45	0.41	2.38
ZARA 13462M001	7	XXXXXX	1.24	1.22	2.71

Comparison of individual solutions:

ACOR 13434M001	N	0.85	0.44	1.36	0.25	1.03	0.78	0.14	0.72
ACOR 13434M001	E	0.94	0.37	-1.18	-0.80	1.12	0.96	-0.47	-0.89
ACOR 13434M001	U	2.25	-1.03	-2.50	-1.87	3.54	-0.17	0.18	2.64
ALDA 19383M001	N	1.16	-0.21	-1.32	-0.47	2.37	0.15	-0.49	-0.41
ALDA 19383M001	E	2.72	-6.11	-0.29	0.66	0.94	-1.90	1.35	-0.24
ALDA 19383M001	U	4.79	-0.33	6.46	-4.25	-2.48	5.39	6.36	-1.54
ALSA 19419M001	N	0.82	-0.90	-1.20	-0.35	0.18	-0.86	0.82	0.42
ALSA 19419M001	E	0.77	0.02	-0.72	0.31	0.90	-0.45	-1.03	0.92
ALSA 19419M001	U	2.98	1.04	3.20	2.96	-5.00	2.28	-1.44	-0.97
BIAZ 10074M002	N	1.05	2.02	-1.14	0.80	-0.54	0.50	-0.21	0.19
BIAZ 10074M002	E	0.45	0.62	0.04	-0.02	0.72	-0.17	0.04	0.51
BIAZ 10074M002	U	2.14	0.00	3.10	-2.27	-2.94	0.35	1.24	1.56
BIDA 00000M000	N	1.14	1.74	0.75	0.88	-0.97	-0.35	0.82	-1.31
BIDA 00000M000	E	0.88	-1.39	1.43	0.53	0.60	0.12	0.13	0.18

BIDA	0000M000	U	3.27	4.65	-5.49	-0.25	1.24	-0.95	-0.95	2.97
BRZR	19387M001	N	0.97	-0.26	1.05	1.69	-0.23	0.28	-1.21	0.17
BRZR	19387M001	E	0.47	0.09	1.04	0.29	-0.09	-0.00	0.33	-0.19
BRZR	19387M001	U	2.62	3.93	2.79	-2.09	-2.29	-1.88	1.99	-0.94
CACE	13447M001	N	0.54	-0.82	-0.43	-0.47	0.70	0.19	0.36	0.01
CACE	13447M001	E	0.55	-0.31	0.35	1.01	-0.20	0.66	-0.29	0.13
CACE	13447M001	U	1.10	-0.48	-0.71	2.49	-0.40	-0.16	0.24	-0.26
CANT	13438M001	N	1.00	0.49	0.79	1.75	-0.49	0.46	0.60	1.11
CANT	13438M001	E	0.43	0.21	-0.76	0.15	0.36	-0.49	-0.16	0.23
CANT	13438M001	U	3.07	1.66	-2.79	1.56	3.62	4.93	2.43	-0.59
CREU	13432M001	N	0.90	-0.38	-0.16	0.05	-0.47	-0.25	-1.78	1.11
CREU	13432M001	E	1.10	-1.07	-1.28	-0.61	1.82	-0.62	-0.22	0.64
CREU	13432M001	U	3.00	-0.49	-2.90	2.54	-1.82	-0.92	-0.73	5.84
EBRE	13410M001	N	1.27	0.19	-0.08	0.91	-2.78	0.04	-1.05	-0.09
EBRE	13410M001	E	2.65	-0.89	-0.55	0.14	5.10	-0.91	-0.56	-3.74
EBRE	13410M001	U	4.36	-1.11	-3.46	7.26	1.73	-1.62	3.49	-5.52
ELGE	19353S001	N	0.61	0.47	0.41	0.34	-0.21	1.13	0.50	-0.42
ELGE	19353S001	E	0.96	-0.08	-1.44	0.17	1.21	-0.06	-0.28	1.38
ELGE	19353S001	U	1.79	1.96	1.33	-2.70	1.40	-0.32	1.30	-1.58
GERN	19389M001	N	1.09	2.24	0.44	0.54	-1.21	-0.32	-0.26	0.06
GERN	19389M001	E	1.57	2.63	-0.61	-2.30	0.61	1.26	0.13	-0.42
GERN	19389M001	U	2.46	4.70	1.73	-2.51	1.15	-1.44	-0.32	-1.23
IGEL	19352S001	N	1.13	0.37	1.54	1.46	-1.11	0.38	-1.26	0.17
IGEL	19352S001	E	0.71	0.18	-0.58	0.00	1.40	-0.45	0.68	0.22
IGEL	19352S001	U	1.43	0.39	1.16	-1.21	-1.98	1.54	-0.53	1.68
LAZK	19354S001	N	0.96	-0.27	-1.71	0.57	0.22	-1.36	0.04	0.59
LAZK	19354S001	E	0.75	-0.39	0.85	1.00	-0.20	0.22	-1.08	-0.52
LAZK	19354S001	U	3.31	2.24	1.06	-1.97	-5.11	-1.30	2.83	4.46
LEIT	19428M001	N	2.44	4.37	-1.66	0.78	-3.06	0.60	-1.02	1.57
LEIT	19428M001	E	1.11	0.87	-0.21	-1.40	1.56	-0.88	1.13	0.41
LEIT	19428M001	U	7.01	11.88	-2.19	-10.55	4.41	-3.92	1.52	0.80
ORON	19427M001	N	1.46	-1.16	-0.50	1.06	2.24	-0.42	1.80	-1.32
ORON	19427M001	E	1.02	-0.10	-1.37	0.73	1.25	0.16	-0.49	1.41
ORON	19427M001	U	1.79	0.06	0.27	1.11	-2.12	1.13	-2.48	2.43
PAS2	19351S001	N	0.86		0.34	-0.14	-0.87		-0.46	1.36
PAS2	19351S001	E	0.68		0.53	0.62	-0.41		0.92	-0.45
PAS2	19351S001	U	3.60		3.61	1.25	-1.32		2.09	-5.58
PASA	19351S001	N	0.74	0.56	0.77	0.73	-0.95	0.82	0.07	-0.51
PASA	19351S001	E	0.35	0.20	0.06	0.47	-0.06	0.02	0.67	0.08
PASA	19351S001	U	2.03	-2.60	1.27	-1.38	-1.04	0.05	1.82	3.15
RID1	13448M002	N	1.71	0.31	-0.24	0.71	-3.53	-0.49	-0.13	2.03
RID1	13448M002	E	0.43	0.36	0.39	0.46	-0.56	0.17	-0.27	-0.42
RID1	13448M002	U	3.20	1.69	-0.07	2.82	-0.10	-3.38	-3.75	5.00
SALA	13469M001	N	0.95	1.63	1.16	0.91	0.00	0.06	0.26	0.71
SALA	13469M001	E	0.39	-0.02	-0.52	-0.28	0.03	-0.17	-0.02	0.74
SALA	13469M001	U	2.22	-1.96	1.92	-0.77	2.09	2.02	-2.73	-2.36
SOPU	19386M001	N	1.27	-0.88	-0.10	1.96	-1.51	1.66	0.24	0.11
SOPU	19386M001	E	0.76	-0.77	0.90	0.55	0.01	1.09	-0.71	0.25
SOPU	19386M001	U	1.47	-1.06	3.30	-0.12	-0.70	0.66	0.08	-0.20
TERU	13487M001	N	0.87	-0.46	-0.01	-1.21	0.33	-0.36	-1.07	-1.20
TERU	13487M001	E	0.63	0.36	-0.25	0.20	-0.28	-0.51	0.07	-1.36
TERU	13487M001	U	2.28	-1.65	0.15	1.99	3.97	-0.85	0.24	-2.82
VITO	19385M001	N	0.92	-0.29	0.25	1.53	-0.39	0.62	0.10	-1.42
VITO	19385M001	E	0.76	1.25	-0.13	0.66	0.36	-0.43	-1.03	-0.21
VITO	19385M001	U	1.66	1.63	-0.56	-2.28	1.73	-1.45	0.85	1.57
YEBE	13420M001	N	0.45	-0.57	-0.19	-0.25	-0.88	-0.15	-0.10	-0.00
YEBE	13420M001	E	0.41	-0.70	-0.38	-0.13	0.49	0.19	0.32	-0.08
YEBE	13420M001	U	2.38	4.59	-1.94	1.77	0.82	-0.56	0.27	-2.26
ZARA	13462M001	N	1.24	0.27	0.49	0.22	0.15	-1.00	-0.41	-2.76
ZARA	13462M001	E	1.22	-0.77	-0.87	0.12	0.66	-1.04	0.36	2.43
ZARA	13462M001	U	2.71	2.14	-1.31	-1.60	0.02	-0.06	2.93	5.17

5.5 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: IGS14
RESIDUALS IN LOCAL SYSTEM (NORTH, EAST, UP)

NUM	NAME	FLG	RESIDUALS IN MILLIMETERS		
3	ACOR 13434M001	I W	0.03	0.74	1.00
10	ALAC 13433M001	I W	-0.26	0.55	-2.18
13	ALBA 13452M001	I W	-0.91	0.03	1.78
18	ALME 13437M001	I W	-1.67	-0.30	2.13
43	BELL 13431M001	I W	-0.39	-0.91	0.29
61	BORR 13480M001	I W	0.17	-2.73	-1.67
65	BRST 10004M004	I W	-0.18	0.27	0.60
95	CACE 13447M001	I W	0.53	-0.01	-0.74
106	CANT 13438M001	I W	-0.02	-1.78	-0.67
110	CASC 13909S001	I W	-0.36	-0.12	1.56
117	CEU1 13449M002	I W	0.27	-0.77	0.15
131	COBA 13453M001	I W	-0.23	0.78	-4.47
150	CREU 13432M001	I W	-0.75	-1.65	0.62
186	EBRE 13410M001	I W	1.83	0.34	-4.50
203	ESCO 13435M001	I W	0.45	0.19	0.21
213	FUNC 13911S001	I W	3.59	-1.62	-0.98
215	GAIA 13902M001	I W	-0.39	-0.28	3.10
271	HUEL 13451M001	I W	-1.68	2.03	1.61
282	IZAN 31309M002	I W	-0.14	0.27	2.39
317	LAGO 13903M001	I W	-1.59	-2.21	0.27
337	LLIV 13436M001	I W	-4.02	4.36	3.53
341	LPAL 81701M001	I W	-2.02	2.50	0.64
344	LROC 10023M001	I W	0.46	0.20	-0.77
353	MALA 13443M001	I W	-2.35	1.77	0.54
371	MAS1 31303M002	I W	-0.21	0.74	2.91
442	PDEL 31906M004	I W	0.86	0.47	-0.27
475	RABT 35001M002	I W	0.57	0.40	-0.15
491	RID1 13448M002	I W	-0.66	-0.71	-1.42
496	SALA 13469M001	I W	-0.15	-0.81	0.52
504	SCOA 10088M002	I W	-2.04	-0.45	3.81
532	SONS 13446M001	I W	0.58	0.68	-0.66
562	TERC 31909M001	I W	4.36	-3.47	-0.23
569	TERU 13487M001	I W	2.95	-1.36	-2.38
629	VALA 13463M002	I W	-0.03	-0.33	-1.95
633	VALE 13439M001	I W	0.01	1.07	-2.23
643	VIGO 13450M001	I W	0.60	-0.42	-2.03
671	YEBE 13420M001	I W	0.71	1.65	1.60
674	ZARA 13462M001	I W	0.67	0.87	-2.86
683	ZIMM 14001M004	I W	1.41	0.02	0.92
	RMS / COMPONENT		1.54	1.44	1.98
	MEAN		0.00	0.00	0.00
	MIN		-4.02	-3.47	-4.50
	MAX		4.36	4.36	3.81

NUMBER OF PARAMETERS : 3
NUMBER OF COORDINATES : 117
RMS OF TRANSFORMATION : 1.67 MM

BARYCENTER COORDINATES:

LATITUDE : 39 38 22.11
LONGITUDE : - 5 53 51.37
HEIGHT : -50.253 KM

PARAMETERS:

TRANSLATION IN N : 0.00 +- 0.27 MM
TRANSLATION IN E : 0.00 +- 0.27 MM
TRANSLATION IN U : 0.00 +- 0.27 MM

5.6 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          15209110
NUMBER OF UNKNOWN               212831
NUMBER OF DEGREES OF FREEDOM    14996279
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                  1.788541913110915

Helmert Transformation Parameters With Respect to Combined Solution:
-----
Sol  Rms (m)      Translation (m)      Rotation (")      Scale (ppm)
      X          Y          Z          X          Y          Z
-----
 1  0.00208      0.0009  0.0172  0.0025  -0.0004 -0.0000  0.0004  -0.00028
 2  0.00233     -0.0068  0.0142  0.0080  -0.0004 -0.0003  0.0003   0.00005
 3  0.00222     -0.0064  0.0040  0.0060  -0.0000 -0.0003  0.0001   0.00038
 4  0.00196      0.0205 -0.0039 -0.0328  0.0002  0.0012  0.0000   0.00078
 5  0.00242      0.0008 -0.0026 -0.0009  0.0001  0.0000 -0.0000   0.00001
 6  0.00217     -0.0038 -0.0138  0.0028  0.0003 -0.0002 -0.0004   0.00013
 7  0.00250     -0.0249 -0.0374  0.0281  0.0005 -0.0012 -0.0011  -0.00008
```

Statistics of individual solutions:

```
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
 1  0.00129      2161579      1.67                2191357      3          939      28842      0
 2  0.00132      2134760      1.75                2165757      3          942      30058      0
 3  0.00138      2077970      1.91                2111712      3          954      32791      0
 4  0.00139      2191690      1.92                2223599      3          960      30952      0
 5  0.00128      2184275      1.65                2214767      3          957      29538      0
 6  0.00134      2087965      1.78                2118085      3          921      29202      0
 7  0.00132      2152415      1.75                2183833      3          939      30482      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 18:014:00000 18:020:86370 LEICA GRX1200PRO -----
ALDA  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
ALSA  A  1 P 18:014:00000 18:020:86370 LEICA GRX1200GGPRO -----
BIAZ  A  1 P 18:014:00000 18:020:86370 TRI SP90M -----
BIDA  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
BRZR  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
CACE  A  1 P 18:014:00000 18:020:86370 TRIMBLE NETR9 -----
CANT  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
CREU  A  1 P 18:014:00000 18:020:86370 LEICA GR50 -----
EBRE  A  1 P 18:014:00000 18:020:86370 LEICA GR50 -----
ELGE  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
GERN  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
IGEL  A  1 P 18:014:00000 18:020:86370 LEICA GRX1200GGPRO -----
LAZK  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
LEIT  A  1 P 18:014:00000 18:020:86370 LEICA GRX1200+GNSS -----
ORON  A  1 P 18:014:00000 18:020:86370 LEICA GRX1200GGPRO -----
PAS2  A  1 P 18:015:00000 18:020:86370 TPS NET-G3A -----
PASA  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
RIO1  A  1 P 18:014:00000 18:020:86370 LEICA GR25 -----
SALA  A  1 P 18:014:00000 18:020:86370 LEICA GRX1200+GNSS -----
SOPU  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
TERU  A  1 P 18:014:00000 18:020:86370 LEICA GRX1200GGPRO -----
VITO  A  1 P 18:014:00000 18:020:86370 LEICA GR10 -----
YEBE  A  1 P 18:014:00000 18:020:86370 TRIMBLE NETRS -----
ZARA  A  1 P 18:014:00000 18:020:86370 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 18:014:00000 18:020:86370 LEIAT504      LEIS -----
ALDA  A  1 P 18:014:00000 18:020:86370 LEIAS10      NONE -----
ALSA  A  1 P 18:014:00000 18:020:86370 LEIAX1202GG  NONE -----
BIAZ  A  1 P 18:014:00000 18:020:86370 LEIAR25     LEIT -----
BIDA  A  1 P 18:014:00000 18:020:86370 LEIAS10     NONE -----
BRZR  A  1 P 18:014:00000 18:020:86370 LEIAS10     NONE -----
CACE  A  1 P 18:014:00000 18:020:86370 TRM29659.00 NONE -----
CANT  A  1 P 18:014:00000 18:020:86370 LEIAR25.R4  LEIT 25066
CREU  A  1 P 18:014:00000 18:020:86370 LEIAR25.R4  NONE 26357
EBRE  A  1 P 18:014:00000 18:020:86370 LEIAR25.R4  NONE 26359
ELGE  A  1 P 18:014:00000 18:020:86370 LEIAR25.R4  LEIT -----
```

```

GERN A 1 P 18:014:00000 18:020:86370 LELAS10 NONE -----
IGEL A 1 P 18:014:00000 18:020:86370 LELAR20 LEIM -----
LAZK A 1 P 18:014:00000 18:020:86370 LELAR25_R4 LEIT -----
LEIT A 1 P 18:014:00000 18:020:86370 LELAX1203+GNSS NONE -----
ORON A 1 P 18:014:00000 18:020:86370 LELAX1202GG NONE -----
PAS2 A 1 P 18:015:00000 18:020:86370 LELAR20 LEIM 73034
PASA A 1 P 18:014:00000 18:020:86370 LELAR20 LEIM 73034
RIO1 A 1 P 18:014:00000 18:020:86370 LELAR25_R4 LEIT 25138
SALA A 1 P 18:014:00000 18:020:86370 LELAR25 NONE -----
SOPU A 1 P 18:014:00000 18:020:86370 LELAS10 NONE -----
TERU A 1 P 18:014:00000 18:020:86370 LELAT504GG LEIS -----
VITO A 1 P 18:014:00000 18:020:86370 LELAS10 NONE -----
YEBE A 1 P 18:014:00000 18:020:86370 TRM29659.00 NONE -----
ZARA A 1 P 18:014:00000 18:020:86370 TRM29659.00 NONE -----

```

6.3 Eccentricities

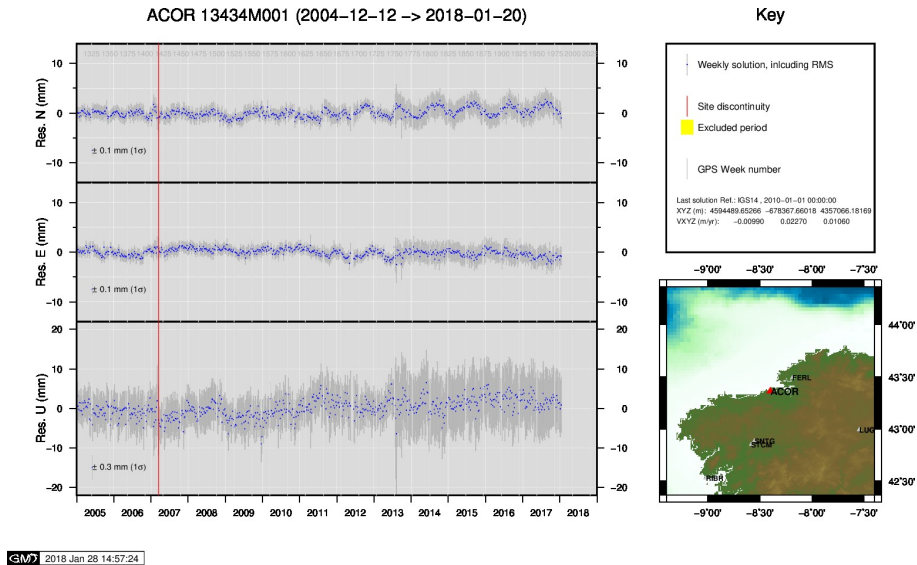
```

*
*SITE PT SOLN T DATA_START_ DATA_END_ AXE ARP->BENCHMARK(M) UP_ NORTH_ EAST_
ACOR A 1 P 18:014:00000 18:020:86370 UNE 3.0460 0.0000 0.0000
ALDA A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
ALSA A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
BIAZ A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
BIDA A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
BRZR A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
CACE A 1 P 18:014:00000 18:020:86370 UNE 0.0600 0.0000 0.0000
CANT A 1 P 18:014:00000 18:020:86370 UNE 3.0490 0.0000 0.0000
CREU A 1 P 18:014:00000 18:020:86370 UNE 0.0770 0.0000 0.0000
EBRE A 1 P 18:014:00000 18:020:86370 UNE 0.0770 0.0000 0.0000
ELGE A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
GERN A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
IGEL A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
LAZK A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
LEIT A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
ORON A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
PAS2 A 1 P 18:015:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
PASA A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
RIO1 A 1 P 18:014:00000 18:020:86370 UNE 0.0606 0.0000 0.0000
SALA A 1 P 18:014:00000 18:020:86370 UNE 0.0600 0.0000 0.0000
SOPU A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
TERU A 1 P 18:014:00000 18:020:86370 UNE 0.0600 0.0000 0.0000
VITO A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
YEBE A 1 P 18:014:00000 18:020:86370 UNE 0.0000 0.0000 0.0000
ZARA A 1 P 18:014:00000 18:020:86370 UNE 3.2590 0.0000 0.0000

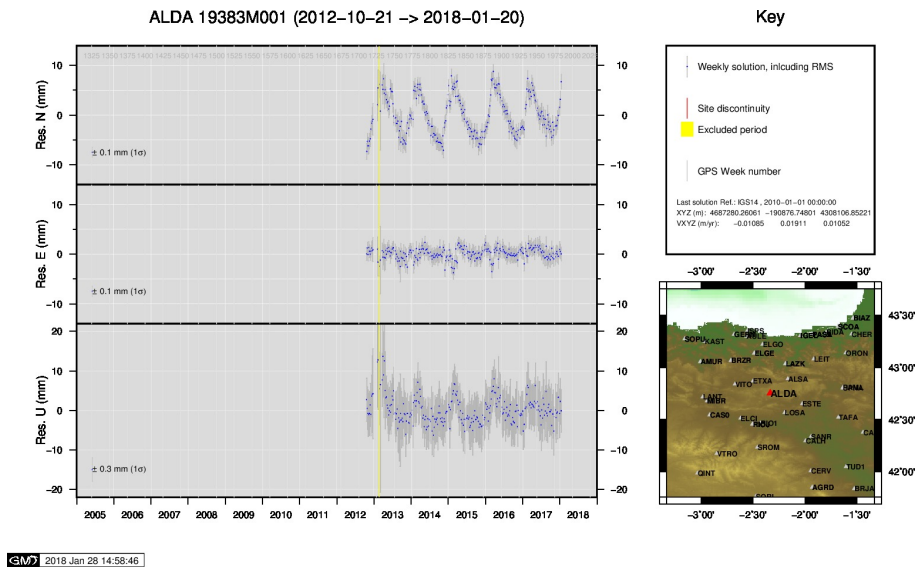
```

7 Cumulative Time Series

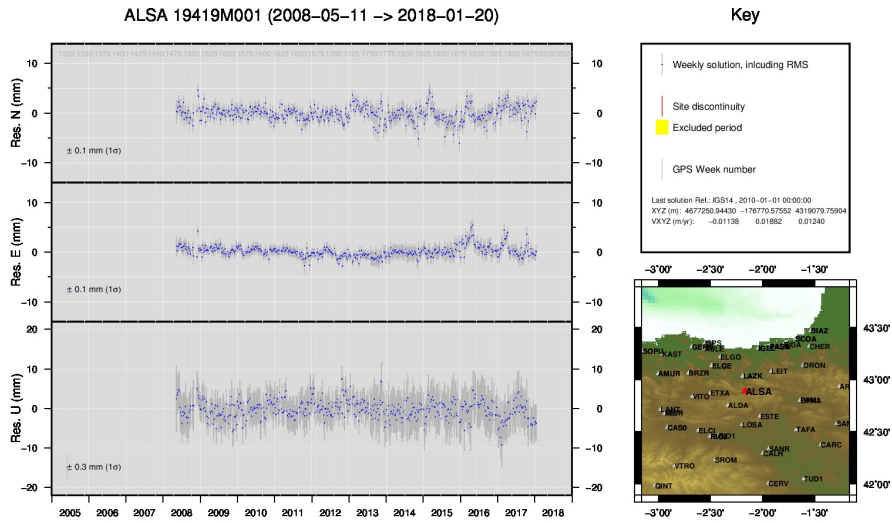
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

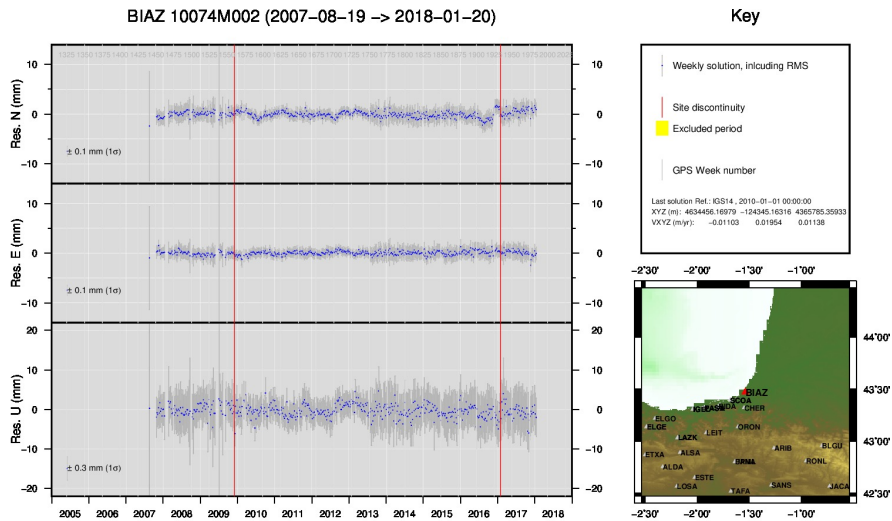


2) ALDA



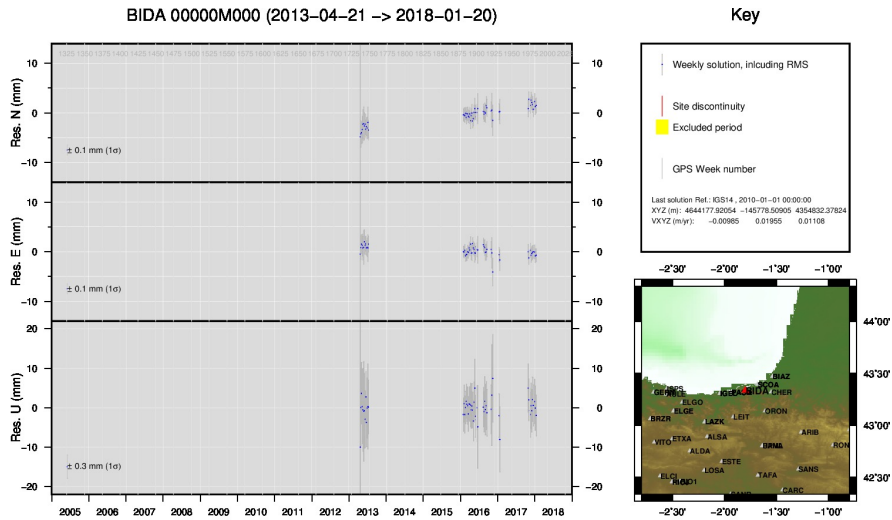
GMW 2018 Jan 28 14:59:48

3) ALSA



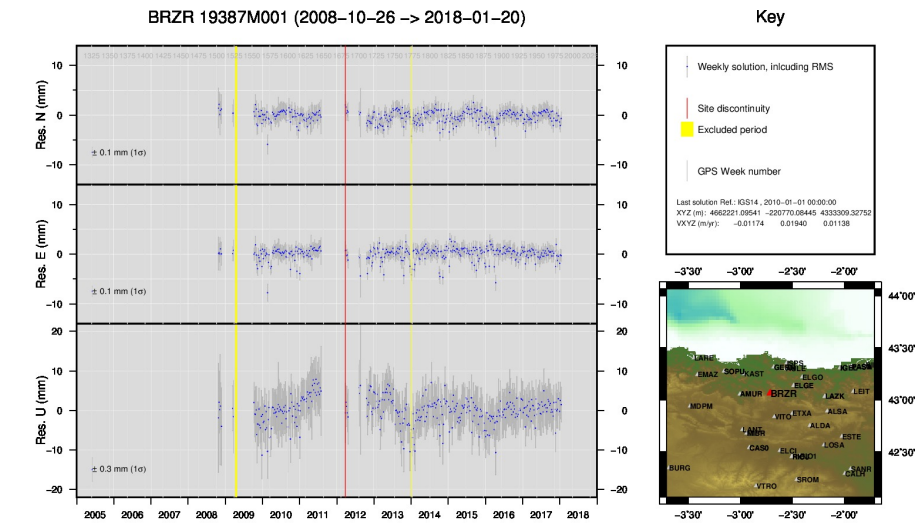
GMW 2018 Jan 28 15:03:14

4) BIAZ



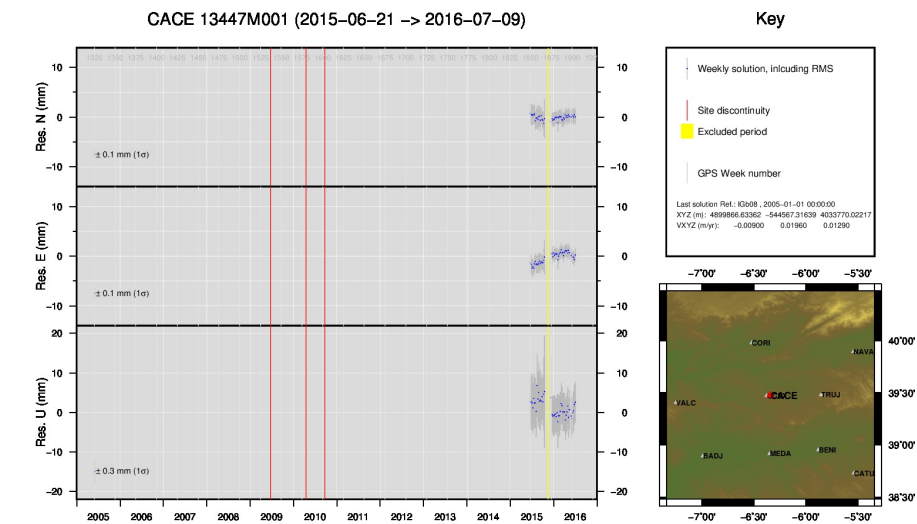
GMW 2018 Jan 28 15:03:21

5) BIDA



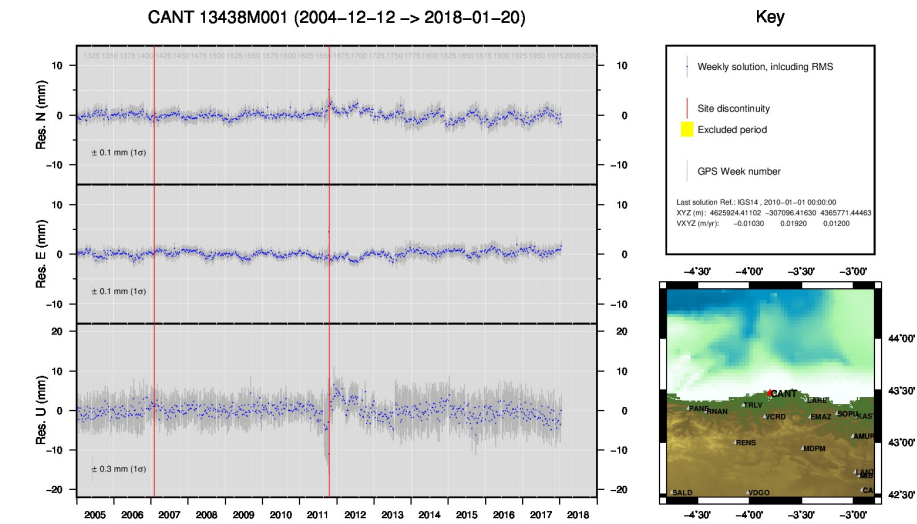
GMW 2018 Jan 28 15:04:34

6) BRZR



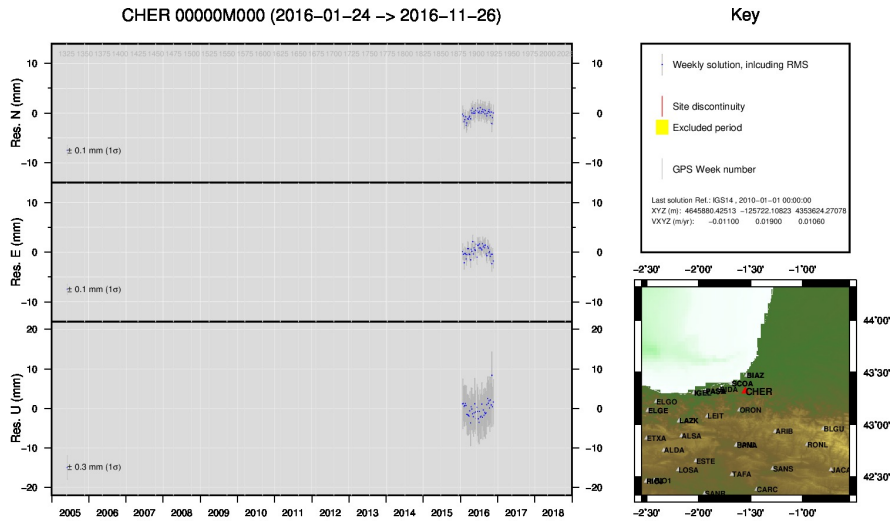
GMW 2016 Jul 18 03:58:15

7) CACE



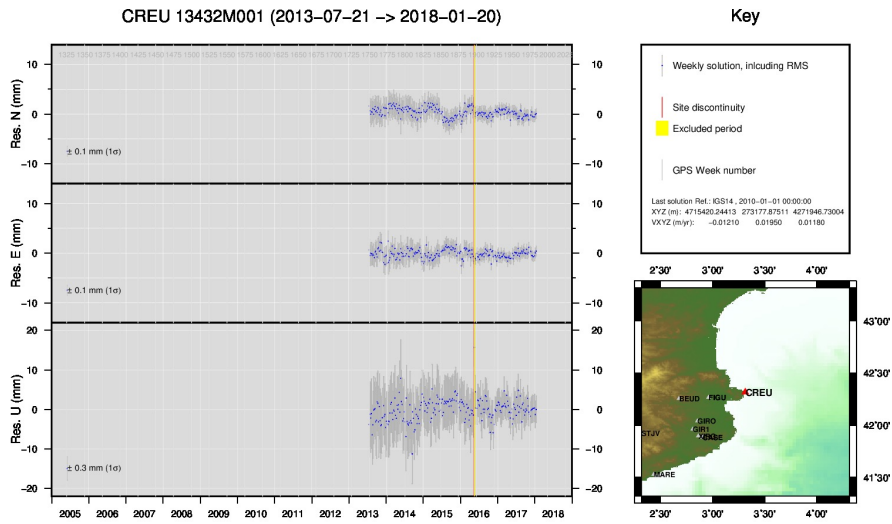
GMW 2018 Jan 28 15:05:30

8) CANT



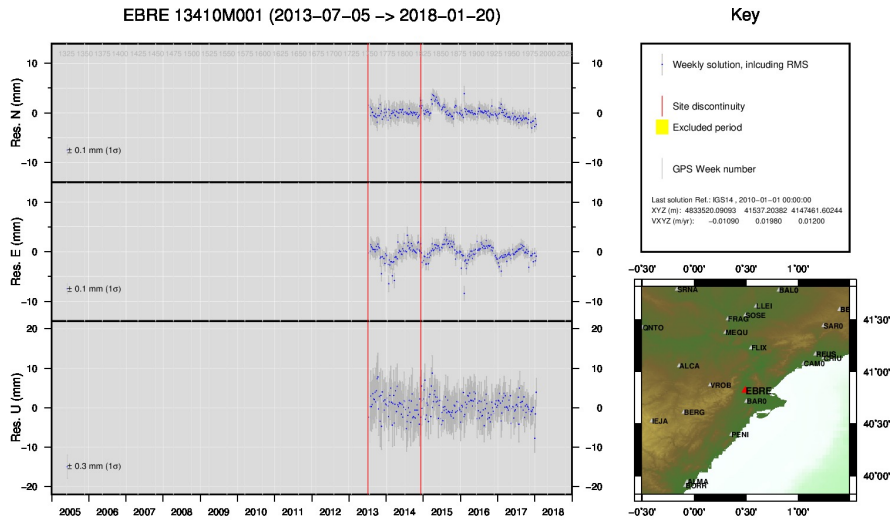
GMW 2018 Jan 28 15:07:22

9) CHER



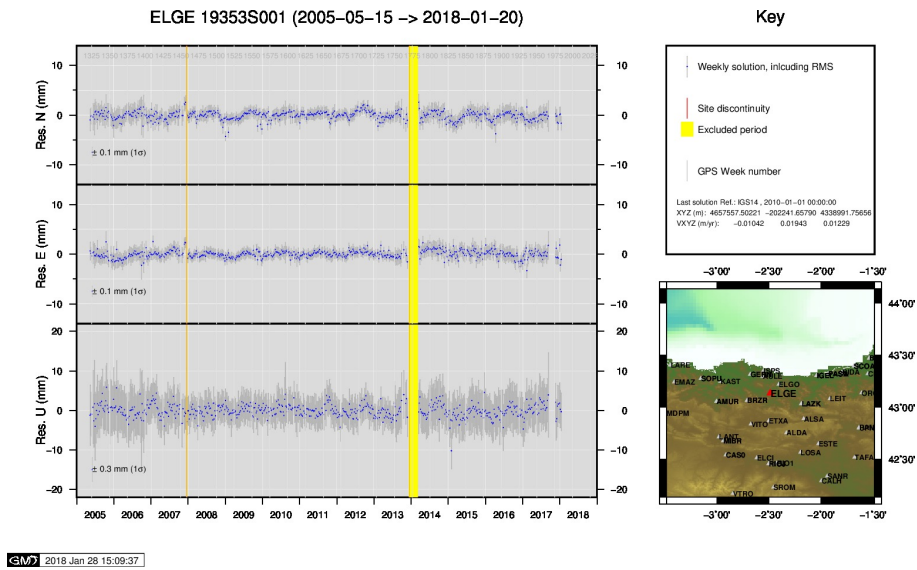
GMW 2018 Jan 28 15:08:00

10) CREU

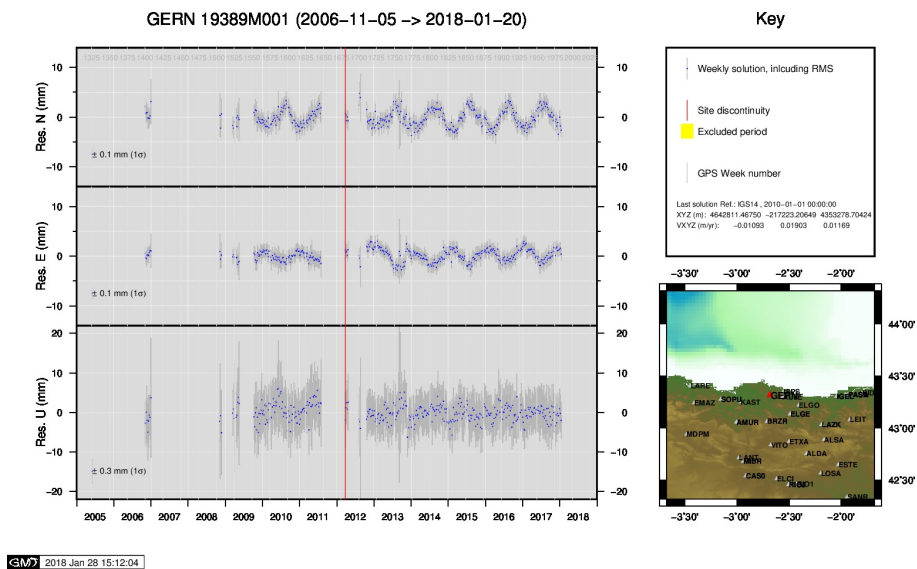


GMW 2018 Jan 28 15:08:54

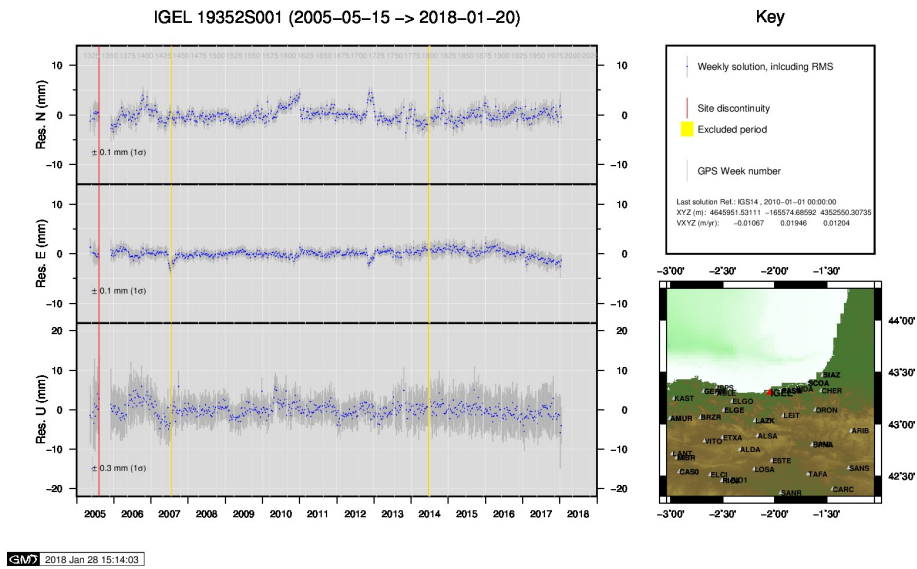
11) EBRE



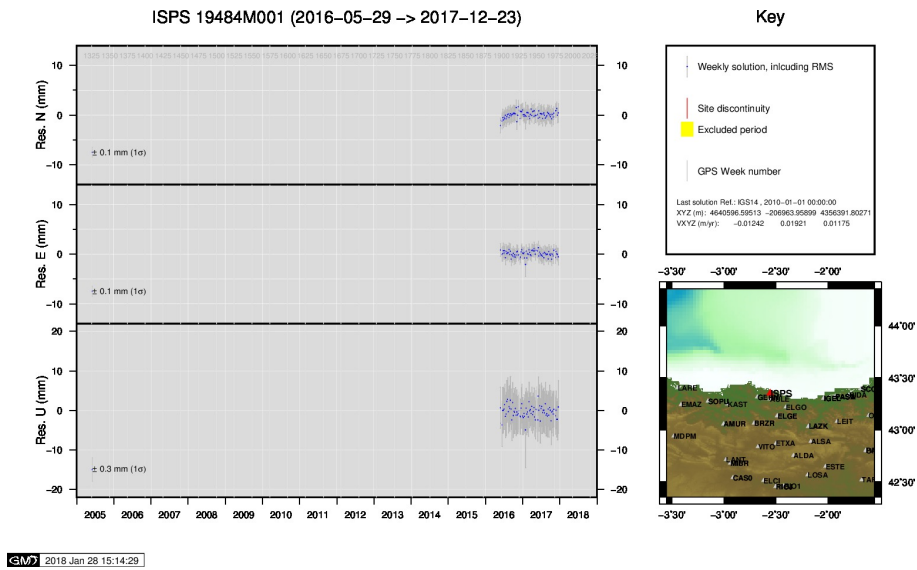
12) ELGE



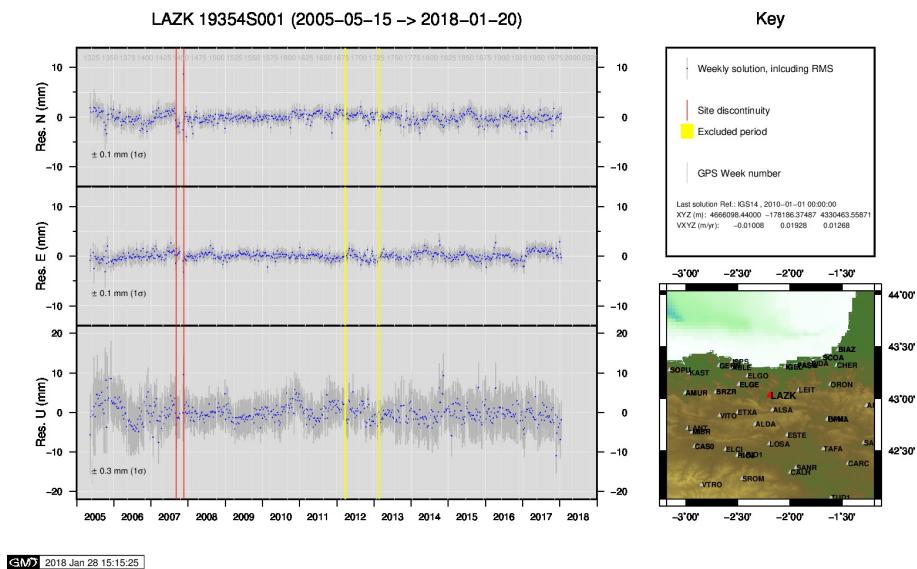
13) GERN



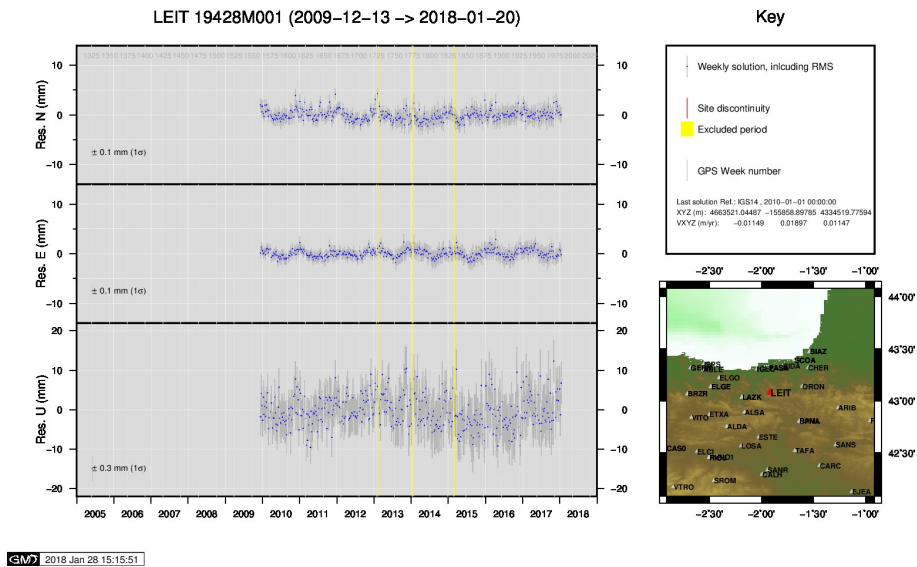
14) IGEL



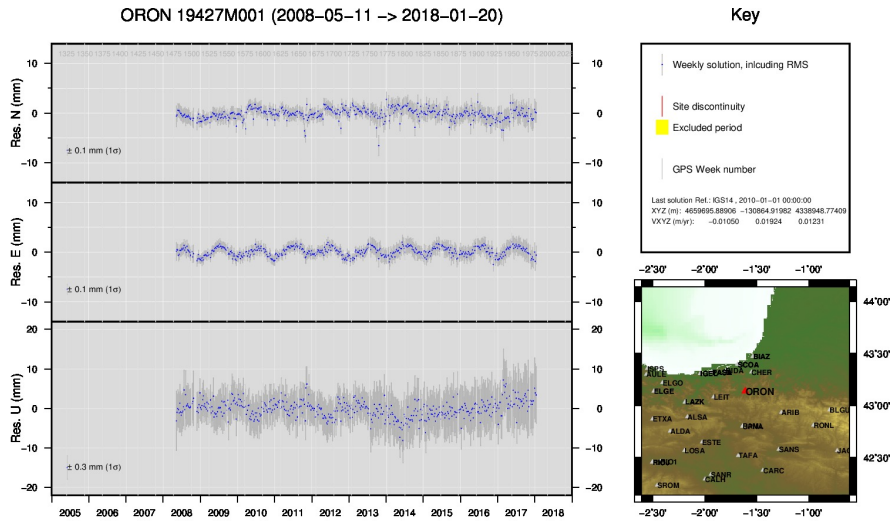
15) ISPS



16) LAZK

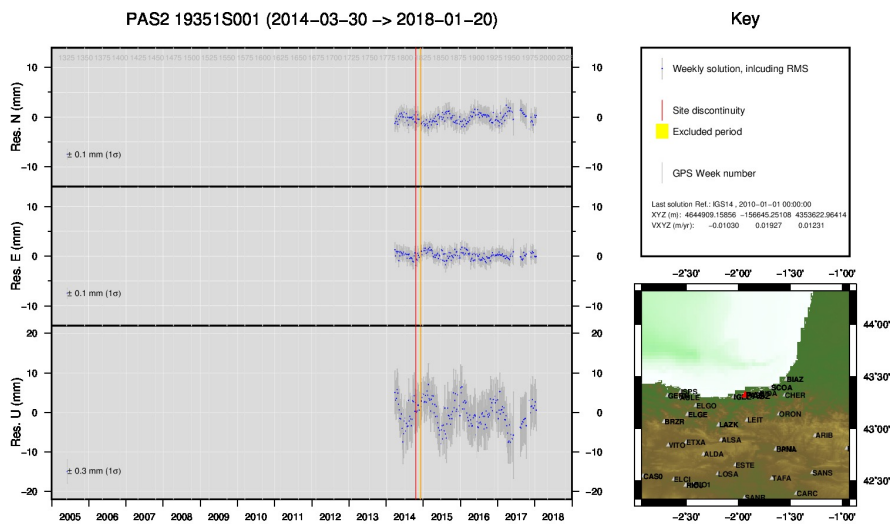


17) LEIT



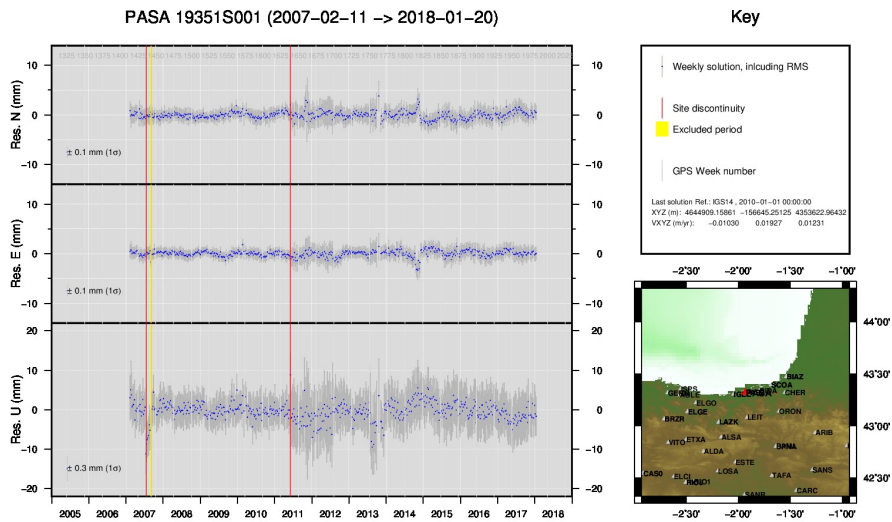
GMW 2018 Jan 28 15:21:53

18) ORON



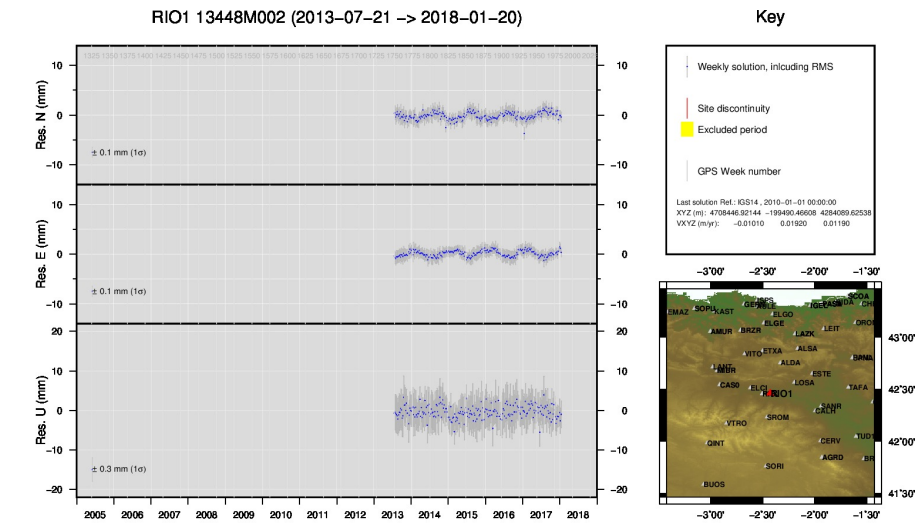
GMW 2018 Jan 28 15:22:37

19) PAS2



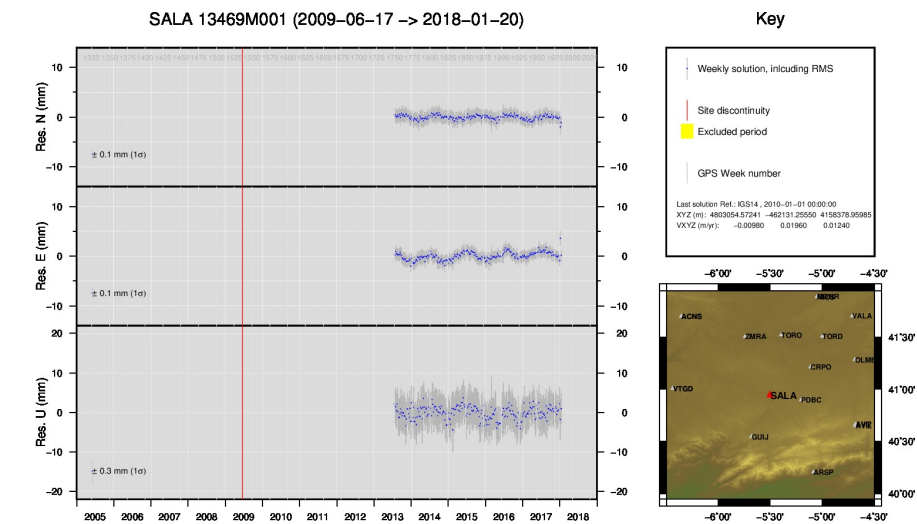
GMW 2018 Jan 28 15:22:43

20) PASA



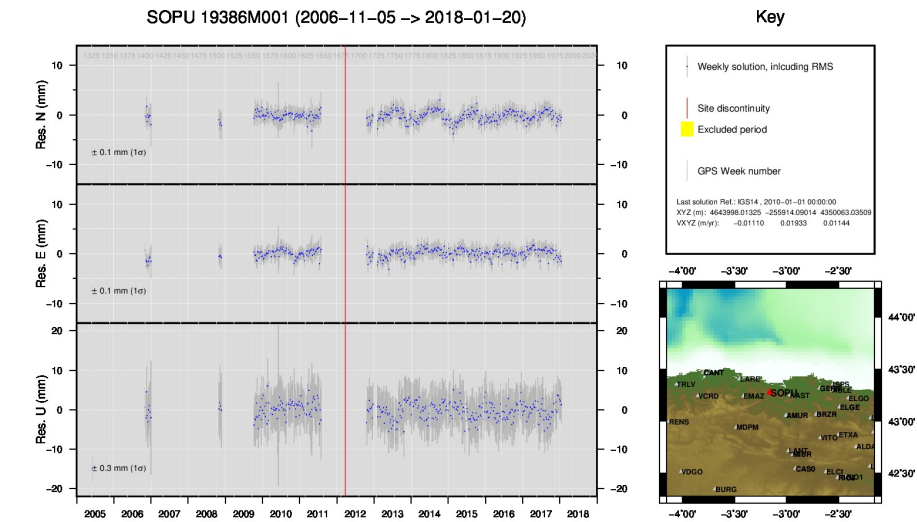
GMW 2018 Jan 28 15:25:14

21) RIO1



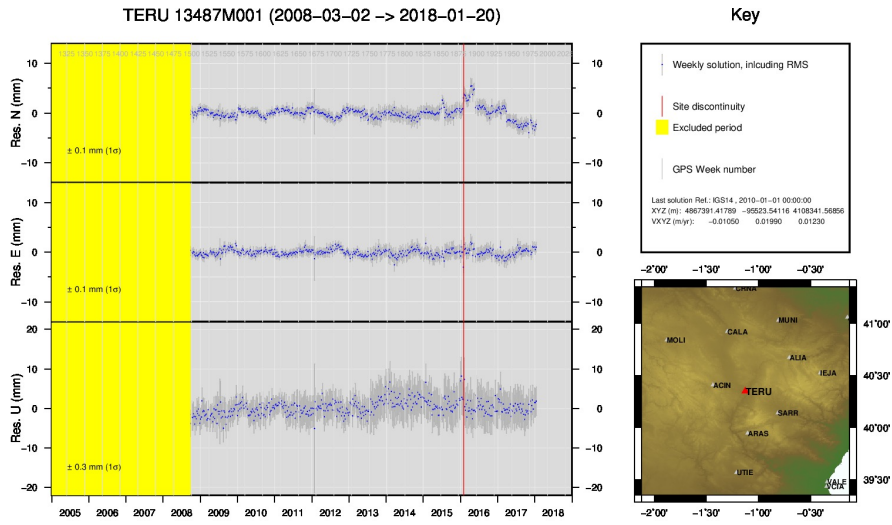
GMW 2018 Jan 28 15:26:05

22) SALA



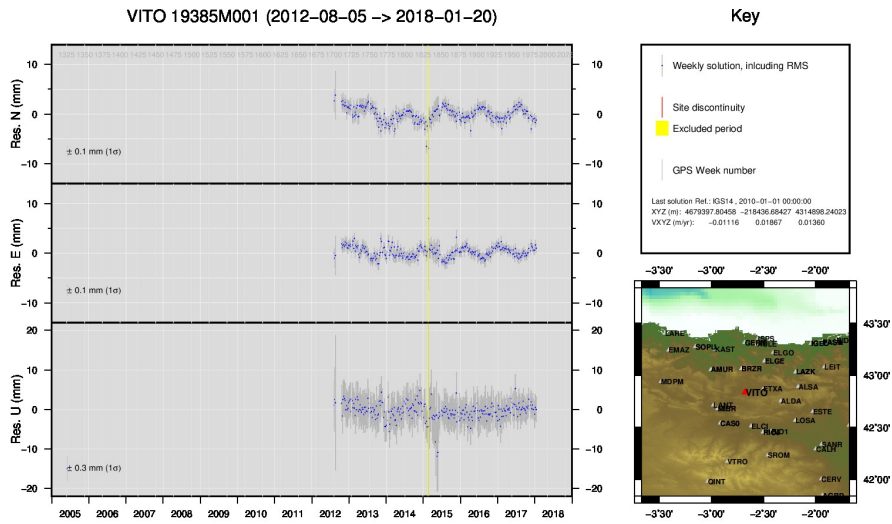
GMW 2018 Jan 28 15:28:11

23) SOPU



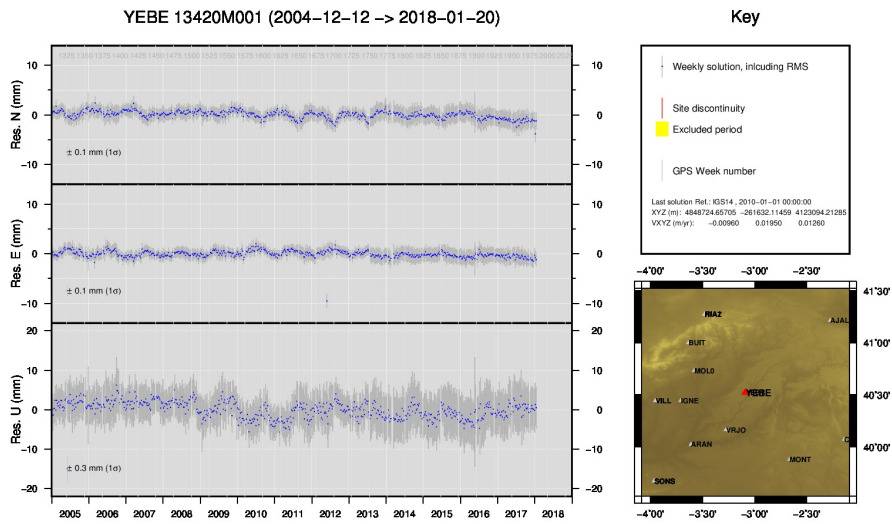
GMW 2018 Jan 28 15:30:09

24) TERU



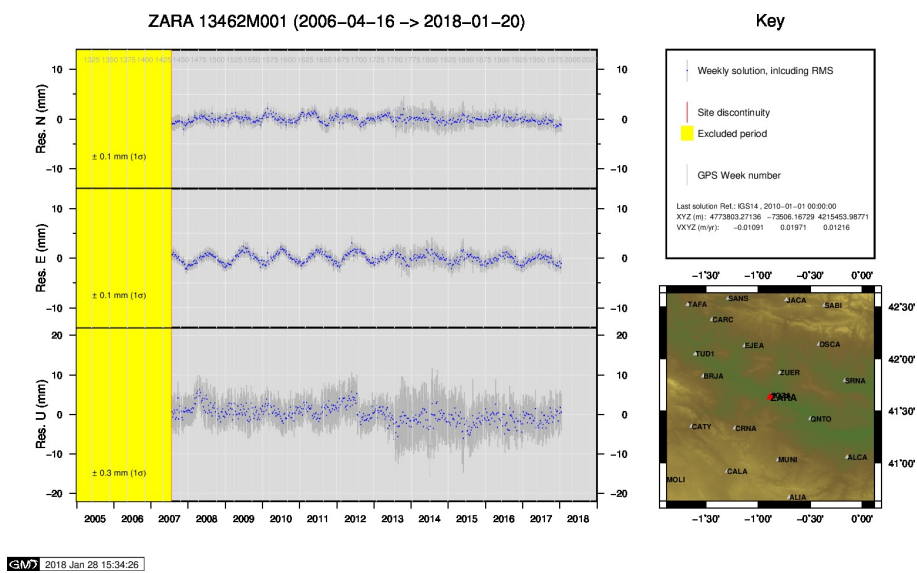
GMW 2018 Jan 28 15:33:20

25) VITO



GMW 2018 Jan 28 15:34:19

26) YEBE



27) ZARA