

ARA-DAC Weekly Analysis Result: 1997 (GFA)

Technical Report

GPS Week: 1997 (GFA)

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

ARA-DAC details:

Contact person: J. Zurutuza

Contact mail: geodesia@aranzadi.eus

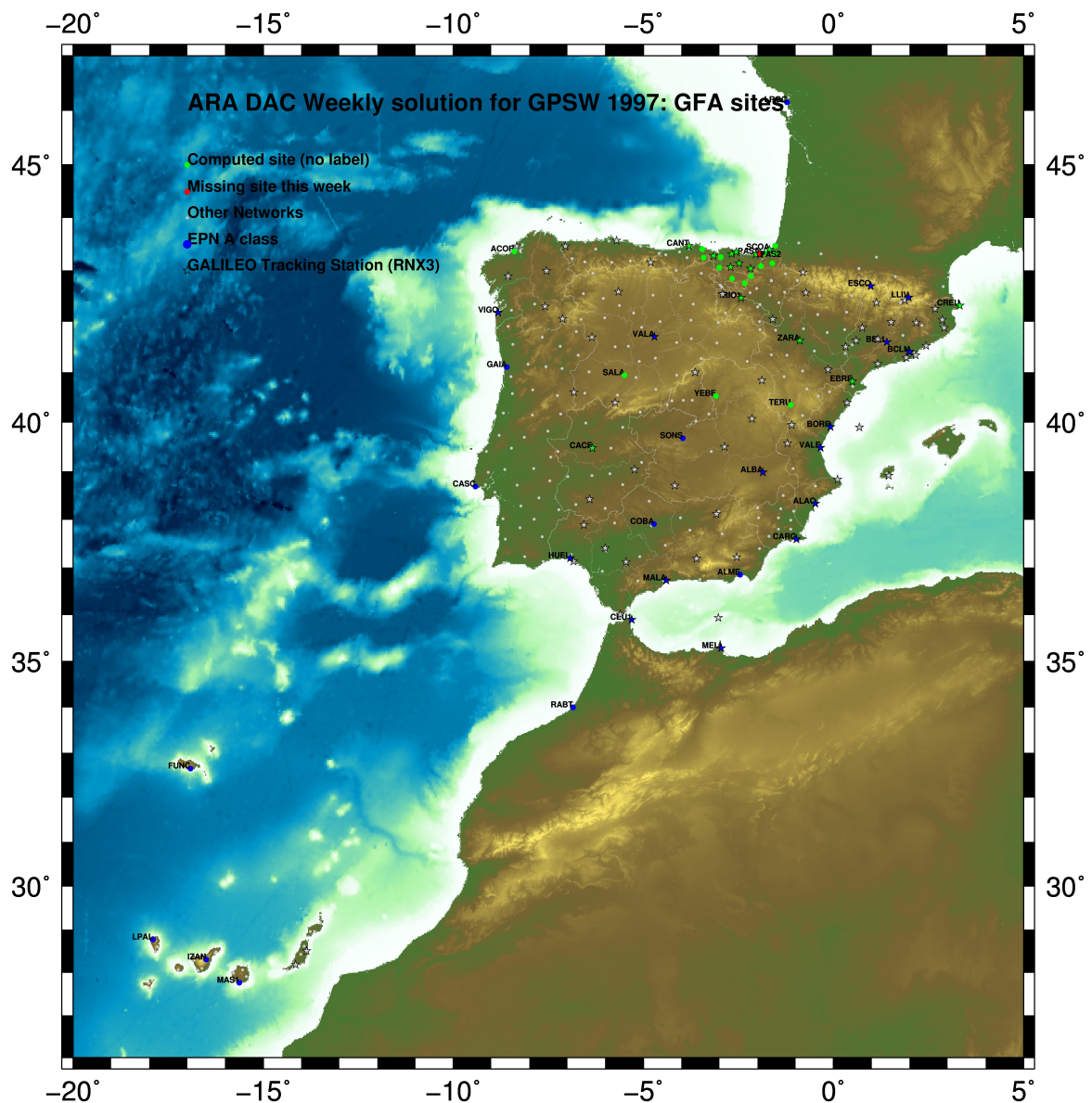
Report generated on 2018/05/07 at 08:51:46



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 May 07 08:51:32

Fig.1: Computed Sites for GPS Week1997 (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 (GALILEO also used if available from GPSW 1986 on)
- 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 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 IGS14

The Reference Frame considered in this section is IGS14, release C1980.

```
ARA LAC 1997 WEEK FINAL COMBINATION: PRECISE ORBITS          06-MAY-18 19:52
-----
LOCAL GEODETIC DATUM: IGS14          EPOCH: 2018-04-18 12:00:00
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NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG	
1	ACOR	13434M001	4594489.56940	-678367.47292	4357066.27030	W
33	ALDA	19383M001	4687280.16853	-190876.58953	4308106.95086	A
42	ALSA	19419M001	4677250.84202	-176770.41722	4319079.85891	A
44	AMUR	19388M001	4661499.45710	-244591.28207	4332269.86964	A
77	BLAZ	10074M002	4634456.06387	-124344.99954	4365785.44655	A
78	BIDA	00000M000	4644177.83438	-145778.34506	4354832.46707	A
88	BRZR	19387M001	4662220.99940	-220769.92378	4333309.42298	A
9	CACE	13447M001	4899866.51137	-544567.05752	4033770.18923	W
10	CANT	13438M001	4625924.32367	-307096.25599	4365771.54252	W
112	CHER	00000M000	4645880.33192	-125721.94897	4353624.35974	A
15	CREU	13432M001	4715420.14337	273178.03580	4271946.82976	W
16	EBRE	13410M001	4833520.00195	41537.36513	4147461.70317	W
131	ELGE	19353S001	4657557.41483	-202241.49823	4338991.85577	A
133	EMAZ	17001M001	4645924.21843	-276949.88822	4347759.56534	A
153	GERN	19389M001	4642811.32201	-217222.95428	4353278.87017	A
173	IGEL	19352S001	4645951.43801	-165574.52640	4352550.40421	A
178	ISPS	19484M001	4640596.49090	-206963.79852	4356391.90010	A
182	KAST	19499M001	4646949.09140	-240747.30084	4348014.97590	A
185	LARE	19440M001	4632831.96155	-279026.15939	4360314.41427	A
186	LAZK	19354S001	4666098.35622	-178186.21501	4330463.65739	A
190	LEIT	19428M001	4663520.94576	-155858.73916	4334519.86711	A
242	ORDN	19427M001	4659695.80022	-130864.76017	4338948.87510	A
31	PASA	19351S001	4644909.06788	-156645.09021	4353623.06268	W
34	RID1	13448M002	4708446.83461	-199490.30580	4284089.72198	W
35	SALA	13469M001	4803054.49242	-462131.09243	4158379.06343	W
36	SCDA	10088M002	4639940.51035	-136224.96258	4359552.40308	W
298	SOPU	19386M001	4643997.92260	-255913.92936	4350063.13108	A
40	TERU	13487M001	4867391.32981	-95523.37799	4108341.66878	W
349	VITO	19385M001	4679397.70992	-218436.52872	4314898.35104	A
44	YEBE	13420M001	4848724.57604	-261631.95316	4123094.31506	W
45	ZARA	13462M001	4773803.17520	-73506.00700	4215454.08225	W

5.2 ETRF2000 (ETRS89) Coordinates

European Terrestrial Reference System, 1989 (ETRS89) is realized by ETRF2000 (Boucher and Altamimi, 2011) and (Altamimi, 2017).

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ETRF2000 FINAL COORD. wk 1997          06-MAY-18 19:52
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LOCAL GEODETIC DATUM: ETRF2000        EPOCH: 2018-04-18 12:00:00
-----
```

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG	
1	ACOR	13434M001	4594489.86665	-678367.98898	4357065.86769	W
33	ALDA	19383M001	4687280.51752	-190877.11386	4308106.54724	A
42	ALSA	19419M001	4677251.19332	-176770.94050	4319079.45618	A
44	AMUR	19388M001	4661499.80164	-244591.80396	4332269.46727	A
77	BLAZ	10074M002	4634456.42418	-124345.51838	4365785.04656	A
78	BIDA	00000M000	4644178.19155	-145778.86493	4354832.06712	A
88	BRZR	19387M001	4662221.34670	-220770.44568	4333309.02084	A
9	CACE	13447M001	4899866.80218	-544567.60377	4033769.76584	W
10	CANT	13438M001	4625924.66339	-307096.77447	4365771.14202	W
112	CHER	00000M000	4645880.69127	-125722.46896	4353623.95990	A
15	CREU	13432M001	4715420.54213	273177.51024	4271946.42940	W
16	EBRE	13410M001	4833520.36638	41536.82696	4147461.29152	W
131	ELGE	19353S001	4657557.76459	-202242.01961	4338991.45419	A
133	EMAZ	17001M001	4645924.56036	-276950.40864	4347759.16374	A
153	GERN	19389M001	4642811.67103	-217223.47422	4353278.46949	A
173	IGEL	19352S001	4645951.79280	-165575.04651	4352550.00390	A
178	ISPS	19484M001	4640596.84128	-206964.31851	4356391.49970	A
182	KAST	19499M001	4646949.43742	-240747.82126	4348014.57564	A
185	LARE	19440M001	4632832.30407	-279026.67849	4360314.01359	A
186	LAZK	19354S001	4666098.70452	-178186.73718	4330463.25546	A
190	LEIT	19428M001	4663521.30045	-155859.26101	4334519.46563	A
242	ORDN	19427M001	4659696.15801	-130865.28156	4338948.47419	A
31	PASA	19351S001	4644909.42375	-156645.61019	4353622.66255	W
34	RID1	13448M002	4708447.18103	-199490.83227	4284089.31671	W
35	SALA	13469M001	4803054.80085	-462131.62896	4158378.64814	W
36	SCDA	10088M002	4639940.86891	-136225.48200	4359552.00355	W
298	SOPU	19386M001	4643998.26705	-255914.44952	4350062.72986	A
40	TERU	13487M001	4867391.67621	-95523.91997	4108341.25306	W
349	VITO	19385M001	4679398.05625	-218437.05233	4314897.94767	A
44	YEBE	13420M001	4848724.90472	-261632.49376	4123093.89878	W
45	ZARA	13462M001	4773803.53123	-73506.53961	4215453.67365	W

5.3 ETRF2014 (ETRS89) Coordinates

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

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ETRF2014 FINAL COORD. wk 1997                                06-MAY-18 19:52
-----
LOCAL GEODETIC DATUM: ETRF2014          EPOCH: 2018-04-18 12:00:00
NUM STATION NAME          X (M)          Y (M)          Z (M)          FLAG
1  ACRD 13434M001        4594489.82382      -678368.02800    4357065.91560    W
33 ALDA 19383M001        4687280.47257      -190877.15417    4308106.59504    A
42 ALSA 19419M001        4677251.14843      -176770.98089    4319079.50402    A
44 AMUR 19388M001        4661499.75709      -244591.84418    4332269.51512    A
77 BIAZ 10074M002        4634456.37954      -124345.55910    4365785.09452    A
78 BIDA 00000M000        4644178.14688      -145778.90555    4354832.11505    A
88 BRZR 19387M001        4662221.30207      -220770.48598    4333309.06869    A
9  CACE 13447M001        4899866.75604      -544567.64209    4033769.81311    W
10 CANT 13438M001        4625924.61935      -307096.81461    4365771.18993    W
112 CHER 00000M000        4645880.64652      -125722.50963    4353624.00783    A
15 CREU 13432M001        4715420.49543      273177.46852    4271946.47742    W
16 EBRE 13410M001        4833520.31929      41536.78644    4147461.33913    W
131 ELGE 19353S001        4657557.71996      -202242.05999    4338991.50206    A
133 EMAZ 17001M001        4645924.51605      -276950.44881    4347759.21160    A
153 GERN 19389M001        4642811.62658      -217223.51460    4353278.51739    A
173 IGEL 19352S001        4645951.74817      -165575.08705    4352550.05182    A
178 ISPS 19484M001        4640596.79682      -206964.35893    4356391.54761    A
182 KAST 19499M001        4646949.39300      -240747.86155    4348014.62352    A
185 LARE 19440M001        4632832.25989      -279026.71870    4360314.06150    A
186 LAZK 19354S001        4666098.65973      -178186.77760    4330463.30332    A
190 LEIT 19428M001        4663521.25562      -155859.30152    4334519.51351    A
242 ORDN 19427M001        4659696.11315      -130865.32216    4338948.52209    A
31 PASA 19351S001        4644909.37910      -156645.65076    4353622.71047    W
34 RIO1 13448M002        4708447.13590      -199490.87246    4284089.36446    W
35 SALA 13469M001        4803054.75550      -462131.66792    4158378.69561    W
36 SOA1 10088M002        4639940.82425      -136225.52266    4359552.05149    W
298 SOPU 19386M001        4643998.22269      -255914.48977    4350062.77774    A
40 TERU 13487M001        4867391.62921      -95523.95991    4108341.30053    W
349 VITO 19385M001        4679398.01146      -218437.09258    4314897.99549    A
44 YEBE 13420M001        4848724.85839      -261632.53322    4123093.94621    W
45 ZARA 13462M001        4773803.48509      -73506.57998    4215453.72133    W

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LEIT 19428M001	N	0.93	0.26	1.55	0.53	-0.08	-1.45	-0.28	-0.50
LEIT 19428M001	E	1.11	-0.78	-0.76	-0.78	1.71	-0.39	0.29	1.55
LEIT 19428M001	U	7.22	0.82	12.89	0.41	-7.85	-2.71	0.85	-8.73
ORDN 19427M001	N	1.58	0.90	0.54	0.01	-0.20	-2.28	2.47	-1.57
ORDN 19427M001	E	1.47	0.28	0.93	1.73	-0.87	-0.78	1.90	-1.99
ORDN 19427M001	U	3.50	-3.13	-1.76	-4.74	-0.79	5.29	-1.14	2.88
PASA 19351S001	N	1.12		-0.43	-0.29	-1.09	-0.89	1.69	1.08
PASA 19351S001	E	0.99		0.99	0.78	0.19	0.04	0.53	-1.72
PASA 19351S001	U	2.01		-1.25	-3.91	1.21	-0.41	1.21	-0.54
RIO1 13448M002	N	0.52	0.17	0.03	0.47	-0.58	0.30	-0.09	-0.96
RIO1 13448M002	E	0.38	0.51	0.44	0.08	0.01	0.51	-0.16	-0.31
RIO1 13448M002	U	1.76	0.83	-1.08	-1.08	0.61	-1.02	-2.68	2.63
SALA 13469M001	N	0.35	-0.24	0.40	0.27	0.22	-0.46	-0.39	0.15
SALA 13469M001	E	0.45	-0.13	0.10	-0.27	0.48	-0.82	-0.44	-0.13
SALA 13469M001	U	0.60	1.09	0.26	0.16	0.87	-0.03	0.10	0.30
SCDA 10088M002	N	1.35		0.71	1.30	0.46	-0.91	-2.39	0.42
SCDA 10088M002	E	0.60		-0.18	0.23	1.04	0.47	-0.63	-0.07
SCDA 10088M002	U	3.59		-3.12	-1.42	-0.87	-3.93	6.04	-0.40
SOPU 19386M001	N	0.47	0.06	-0.02	0.32	0.59	-0.12	0.19	-0.90
SOPU 19386M001	E	1.40	0.21	-0.39	1.37	1.69	0.17	1.37	-2.23
SOPU 19386M001	U	2.05	1.47	-1.75	-2.30	1.68	0.08	-3.10	1.48
TERU 13487M001	N	0.64	-0.32	-1.07	-0.12	-0.57	0.16	0.85	0.32
TERU 13487M001	E	0.74	0.02	-0.88	1.06	-0.67	-0.00	-0.98	0.11
TERU 13487M001	U	2.14	-0.84	4.59	-0.70	-0.31	-2.07	0.84	0.24
VITO 19385M001	N	3.03	-0.47	-0.11	-0.18	-0.75	-7.29	0.59	-0.87
VITO 19385M001	E	2.95	1.28	1.96	0.84	-0.32	-6.27	-0.86	-2.39
VITO 19385M001	U	2.14	-2.07	-0.93	-3.31	-2.39	1.46	-0.11	1.91
YEBE 13420M001	N	0.67	0.64	-0.67	0.46	-0.90	0.55	0.24	-0.68
YEBE 13420M001	E	0.47	0.48	-0.17	-0.70	0.30	0.51	-0.16	0.44
YEBE 13420M001	U	1.91	1.00	-1.29	3.12	-0.02	-2.94	0.93	0.30
ZARA 13462M001	N	0.45		0.30	0.12		0.61	-0.39	
ZARA 13462M001	E	0.85		1.17	0.11		0.81	-0.35	
ZARA 13462M001	U	3.96		-2.18	4.82		-2.02	-3.85	

6.2 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		
1	ACOR 13434M001	I W	-0.26	1.50	1.02
2	ALAC 13433M001	I W	-0.43	1.12	-1.67
3	ALBA 13452M001	I W	0.30	-0.38	0.84
4	ALME 13437M001	I W	-1.37	0.54	-1.02
5	BCLN 13412M001	I W	-1.27	1.15	-2.09
6	BELL 13431M001	I W	0.55	2.25	-2.49
7	BORR 13480M001	I W	-0.78	-0.83	-3.33
8	BRST 10004M004	I W	-1.66	-0.40	-1.85
9	CACE 13447M001	I W	0.68	-0.32	1.84
10	CANT 13438M001	I W	0.09	-0.45	0.22
11	CARG 19412M001	I W	0.87	-0.23	0.23
12	CASC 13909S001	I W	-1.54	-1.75	0.54
13	CEU1 13449M002	I W	-0.19	-0.21	-1.79
14	COBA 13453M001	I W	0.41	0.28	-0.52
15	CREU 13432M001	I W	-1.12	1.45	-1.28
16	EBRE 13410M001	I W	0.37	2.79	-2.85
17	ESCO 13435M001	I W	0.81	-2.11	9.09
18	FUNC 13911S001	I W	0.35	-2.76	5.21
19	GAIA 13902M001	I W	0.07	-2.38	6.27
21	HUEL 13451M001	I W	-1.25	1.39	0.95
22	IZAN 31309M002	I W	1.79	-0.73	-2.65
24	LLIV 13436M001	I W	-1.05	1.57	2.71
25	LPAL 81701M001	I W	-1.24	1.78	-6.84
26	LR0C 10023M001	I W	0.04	-0.93	-0.57
27	MALA 13443M001	I W	-2.59	1.85	1.92
28	MAS1 31303M002	I W	0.52	0.60	-3.12
30	MELI 19379M001	I W	-0.27	0.81	-3.31
31	PASA 19351S001	I W	0.16	-0.66	3.94
32	PDEL 31906M004	I W	-1.08	-2.24	-3.70
33	RABT 35001M002	I W	-0.14	-0.23	-4.12
34	RID1 13448M002	I W	0.42	-1.13	0.99
35	SALA 13469M001	I W	0.28	0.09	-0.31
36	SCOA 10088M002	I W	-2.98	-1.86	-1.42
38	SONS 13446M001	I W	1.90	1.83	-0.02
39	TERC 31909M001	I W	6.82	-4.44	-6.86
40	TERU 13487M001	I W	1.07	2.15	0.66
41	VALA 13463M002	I W	0.01	-0.55	1.71
42	VALE 13439M001	I W	-0.19	1.26	-1.08
43	VIGO 13450M001	I W	0.12	-1.68	4.30
44	YEBE 13420M001	I W	1.09	0.00	4.08
45	ZARA 13462M001	I W	-0.88	1.10	3.13
46	ZIMM 14001M004	I W	1.53	0.77	3.24
	RMS / COMPONENT		1.51	1.56	3.28
	MEAN		0.00	0.00	0.00
	MIN		-2.98	-4.44	-6.86
	MAX		6.82	2.79	9.09

NUMBER OF PARAMETERS : 3
NUMBER OF COORDINATES : 126
RMS OF TRANSFORMATION : 2.27 MM

BARYCENTER COORDINATES:

LATITUDE : 39 41 12.90
LONGITUDE : - 5 21 29.58
HEIGHT : -48.657 KM

PARAMETERS:

TRANSLATION IN N : -0.00 +- 0.35 MM
TRANSLATION IN E : -0.00 +- 0.35 MM
TRANSLATION IN U : -0.00 +- 0.35 MM

6.3 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          16480265
NUMBER OF UNKNOWN              221796
NUMBER OF DEGREES OF FREEDOM    16258469
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)      180
VARIANCE FACTOR                  2.349940334010649

Helmert Transformation Parameters With Respect to Combined Solution:
-----
Sol  Rms (m)      Translation (m)      Rotation (")      Scale (ppm)
      X          Y          Z          X          Y          Z
-----
 1  0.00218      0.0248  0.0100 -0.0224 -0.0001  0.0011  0.0003 -0.00059
 2  0.00241      0.0235  0.0182 -0.0192 -0.0003  0.0010  0.0006 -0.00074
 3  0.00193     -0.0009  0.0033  0.0023  0.0000 -0.0001  0.0001 -0.00001
 4  0.00172      0.0024 -0.0049 -0.0032  0.0001  0.0001 -0.0001  0.00002
 5  0.00184     -0.0023 -0.0016  0.0019 -0.0000 -0.0001 -0.0001  0.00009
 6  0.00215     -0.0144 -0.0121  0.0154  0.0002 -0.0007 -0.0004  0.00018
 7  0.00277     -0.0128 -0.0209  0.0157  0.0003 -0.0007 -0.0006 -0.00036
```

```
Statistics of individual solutions:
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
 1  0.00143      2289454      2.03          2322243      3          984      31808      0
 2  0.00215      2359464      4.64          2391303      3          999      30843      0
 3  0.00135      2419836      1.84          2451193      3          1008      30352      0
 4  0.00136      2312834      1.84          2344683      3          1005      30847      0
 5  0.00143      2242816      2.03          2275614      3          999      31802      0
 6  0.00143      2320925      2.04          2354482      3          1014      32546      0
 7  0.00139      2307176      1.92          2340747      3          1002      32572      0
```

7 Equipment

7.1 Receiver List

Serial numbers not shown.

```
*SITE PT SOLN T DATA_START__ DATA_END____ DESCRIPTION_____ S/N__ FIRMWARE___
ACOR  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200PRO -----
ALDA  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
ALSA  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200GGPRO -----
AMUR  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
BIAZ  A   1 P 18:105:00000 18:111:86370 TRI SP90M -----
BIDA  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
BRZR  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
CACE  A   1 P 18:105:00000 18:111:86370 TRIMBLE NETR9 -----
CANT  A   1 P 18:105:00000 18:110:86370 LEICA GR10 -----
CHER  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200+GNSS -----
CREU  A   1 P 18:105:00000 18:111:86370 LEICA GR50 -----
EBRE  A   1 P 18:105:00000 18:111:86370 LEICA GR50 -----
ELGE  A   1 P 18:105:00000 18:110:86370 LEICA GR10 -----
EMAZ  A   1 P 18:105:00000 18:111:86370 LEICA GR30 -----
GERN  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
IGEL  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
ISPS  A   1 P 18:105:00000 18:111:86370 TRIMBLE NETR9 -----
KAST  A   1 P 18:105:00000 18:111:86370 LEICA GR30 -----
LARE  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200GGPRO -----
LAZK  A   1 P 18:106:00000 18:111:86370 LEICA GR10 -----
LEIT  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200+GNSS -----
ORON  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200GGPRO -----
PASA  A   1 P 18:106:00000 18:111:86370 LEICA GR10 -----
RIO1  A   1 P 18:105:00000 18:111:86370 LEICA GR25 -----
SALA  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200+GNSS -----
SCOA  A   1 P 18:106:00000 18:111:86370 LEICA GR25 -----
SOPU  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
TERU  A   1 P 18:105:00000 18:111:86370 LEICA GRX1200GGPRO -----
VITO  A   1 P 18:105:00000 18:111:86370 LEICA GR10 -----
YEBE  A   1 P 18:105:00000 18:111:86370 TRIMBLE NETR9 -----
ZARA  A   1 P 18:106:00000 18:110:86370 TRIMBLE NETR9 -----
```

7.2 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 18:105:00000 18:111:86370 LEIAT504      LEIS -----
ALDA  A   1 P 18:105:00000 18:111:86370 LEIAS10      NONE -----
ALSA  A   1 P 18:105:00000 18:111:86370 LEIAX1202GG NONE -----
AMUR  A   1 P 18:105:00000 18:111:86370 LEIAS10      NONE -----
BIAZ  A   1 P 18:105:00000 18:111:86370 LEIAR25      LEIT -----
```

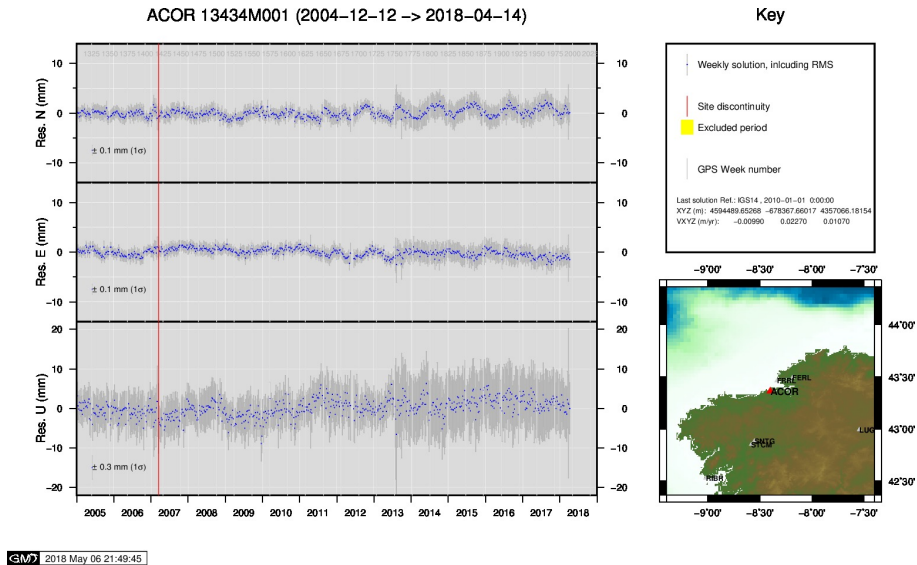
BIDA	A	1 P	18:105:00000	18:111:86370	LEIAS10	NONE	----
BRZR	A	1 P	18:105:00000	18:111:86370	LEIAS10	NONE	----
CACE	A	1 P	18:105:00000	18:111:86370	TRM29659.00	NONE	----
CANT	A	1 P	18:105:00000	18:110:86370	LEIAR25.R4	LEIT	25066
CHER	A	1 P	18:105:00000	18:111:86370	LEIAX1203+GNSS	NONE	----
CREU	A	1 P	18:105:00000	18:111:86370	LEIAR25.R4	NONE	26357
EBRE	A	1 P	18:105:00000	18:111:86370	LEIAR25.R4	NONE	26359
ELGE	A	1 P	18:105:00000	18:110:86370	LEIAR25.R4	LEIT	----
EMAZ	A	1 P	18:105:00000	18:111:86370	LEIAS10	NONE	----
GERN	A	1 P	18:105:00000	18:111:86370	LEIAS10	NONE	----
IGEL	A	1 P	18:105:00000	18:111:86370	LEIAR20	LEIM	----
ISPS	A	1 P	18:105:00000	18:111:86370	TRM59900.00	SCIS	----
KAST	A	1 P	18:105:00000	18:111:86370	LEIAS10	NONE	----
LARE	A	1 P	18:105:00000	18:111:86370	LEIAT504	NONE	----
LAZK	A	1 P	18:106:00000	18:111:86370	LEIAR25.R4	LEIT	----
LEIT	A	1 P	18:105:00000	18:111:86370	LEIAX1203+GNSS	NONE	----
ORDN	A	1 P	18:105:00000	18:111:86370	LEIAX1202GG	NONE	----
PASA	A	1 P	18:106:00000	18:111:86370	LEIAR20	LEIM	73034
RIO1	A	1 P	18:105:00000	18:111:86370	LEIAR25.R4	LEIT	25138
SALA	A	1 P	18:105:00000	18:111:86370	LEIAR25	NONE	----
SCDA	A	1 P	18:106:00000	18:111:86370	TRM55971.00	NONE	----
SOPU	A	1 P	18:105:00000	18:111:86370	LEIAS10	NONE	----
TERU	A	1 P	18:105:00000	18:111:86370	LEIAT504GG	LEIS	----
VITO	A	1 P	18:105:00000	18:111:86370	LEIAS10	NONE	----
YEBE	A	1 P	18:105:00000	18:111:86370	TRM29659.00	NONE	----
ZARA	A	1 P	18:106:00000	18:110:86370	TRM29659.00	NONE	----

7.3 Eccentricities

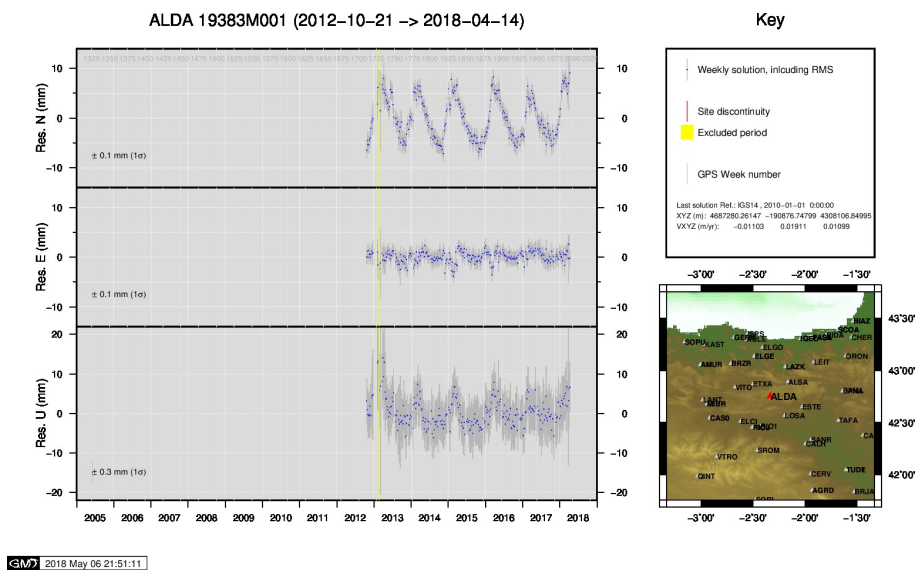
*SITE	PT	SOLN	T	DATA_START_	DATA_END_	AXE	ARP->BENCHMARK(M)	UP_	NORTH_	EAST_
ACOR	A	1 P	18:105:00000	18:111:86370	UNE	3.0460	0.0000	0.0000	0.0000	0.0000
ALDA	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ALSA	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
AMUR	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
BIAZ	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
BIDA	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
BRZR	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
CACE	A	1 P	18:105:00000	18:111:86370	UNE	0.0600	0.0000	0.0000	0.0000	0.0000
CANT	A	1 P	18:105:00000	18:110:86370	UNE	3.0490	0.0000	0.0000	0.0000	0.0000
CHER	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
CREU	A	1 P	18:105:00000	18:111:86370	UNE	0.0770	0.0000	0.0000	0.0000	0.0000
EBRE	A	1 P	18:105:00000	18:111:86370	UNE	0.0770	0.0000	0.0000	0.0000	0.0000
ELGE	A	1 P	18:105:00000	18:110:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
EMAZ	A	1 P	18:105:00000	18:111:86370	UNE	0.0350	0.0000	0.0000	0.0000	0.0000
GERN	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
IGEL	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ISPS	A	1 P	18:105:00000	18:111:86370	UNE	0.0350	0.0000	0.0000	0.0000	0.0000
KAST	A	1 P	18:105:00000	18:111:86370	UNE	0.0350	0.0000	0.0000	0.0000	0.0000
LARE	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
LAZK	A	1 P	18:106:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
LEIT	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ORDN	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
PASA	A	1 P	18:106:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
RIO1	A	1 P	18:105:00000	18:111:86370	UNE	0.0606	0.0000	0.0000	0.0000	0.0000
SALA	A	1 P	18:105:00000	18:111:86370	UNE	0.0600	0.0000	0.0000	0.0000	0.0000
SCDA	A	1 P	18:106:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
SOPU	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
TERU	A	1 P	18:105:00000	18:111:86370	UNE	0.0600	0.0000	0.0000	0.0000	0.0000
VITO	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
YEBE	A	1 P	18:105:00000	18:111:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ZARA	A	1 P	18:106:00000	18:110:86370	UNE	3.2590	0.0000	0.0000	0.0000	0.0000

8 Cumulative Time Series

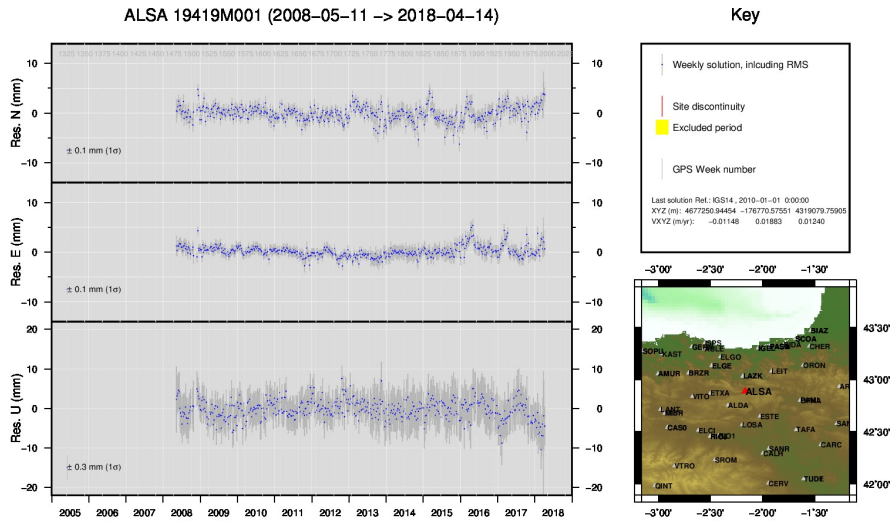
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

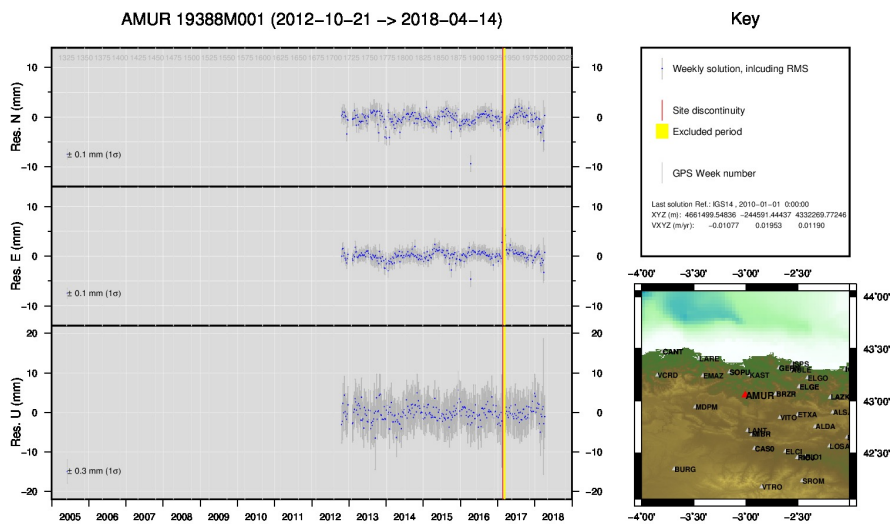


2) ALDA



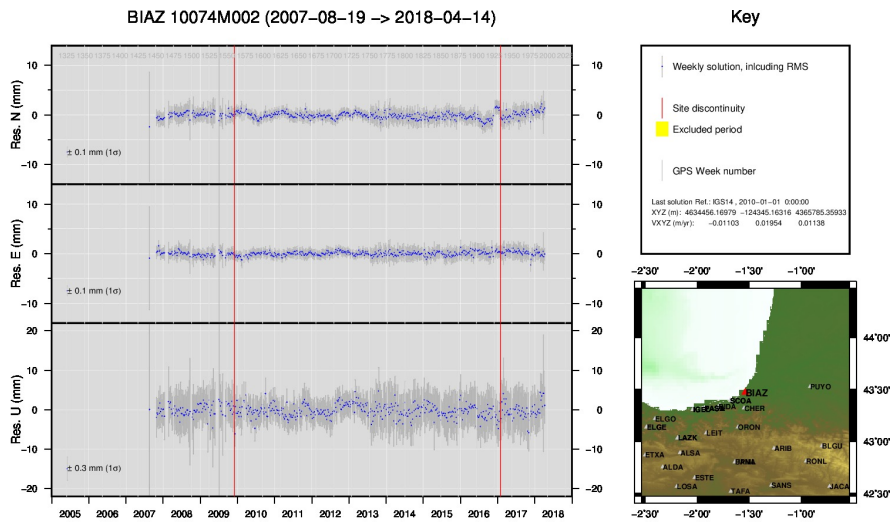
GMW 2018 May 06 21:52:13

3) ALSA



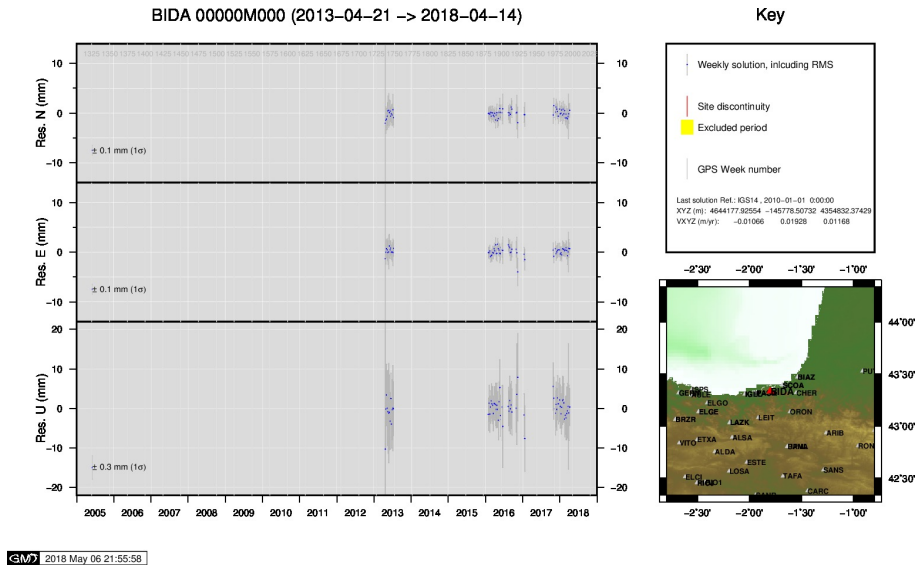
GMW 2018 May 06 21:52:28

4) AMUR

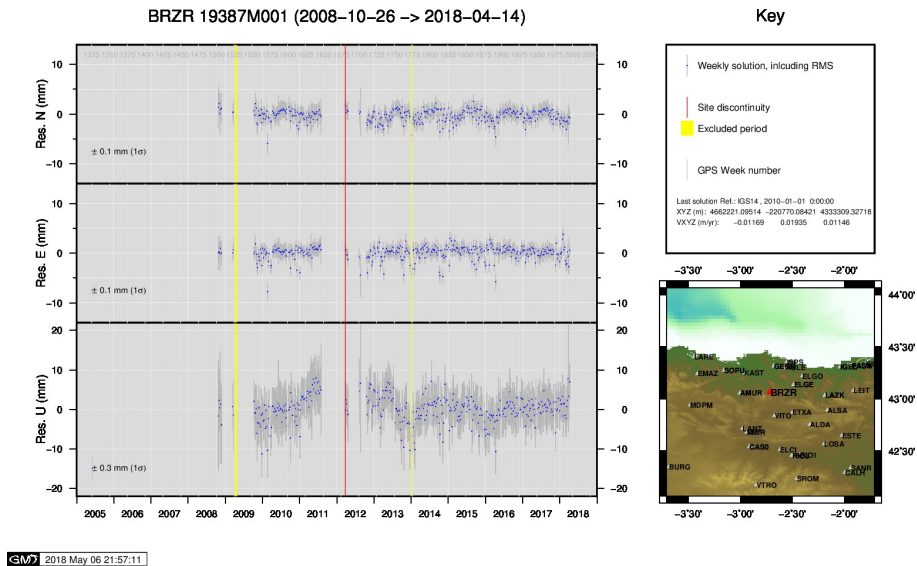


GMW 2018 May 06 21:55:51

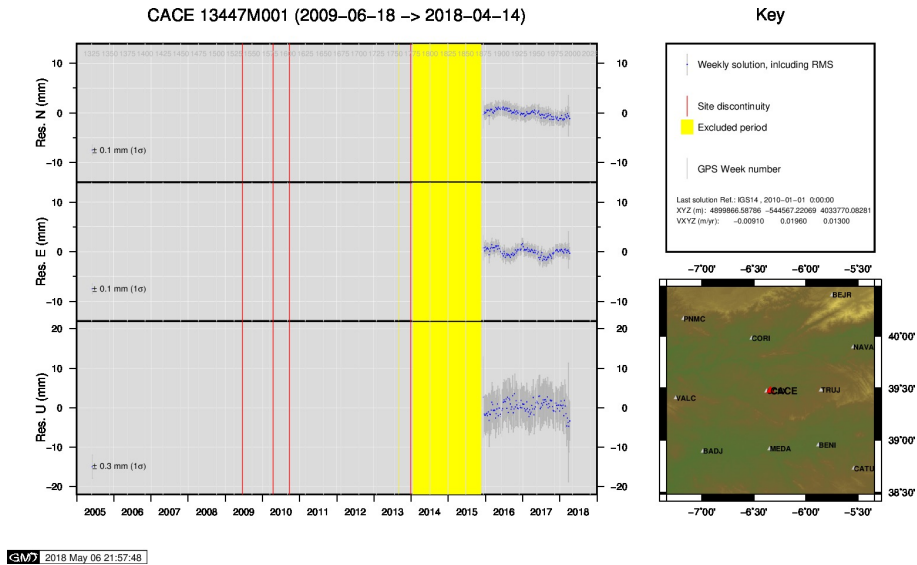
5) BIAZ



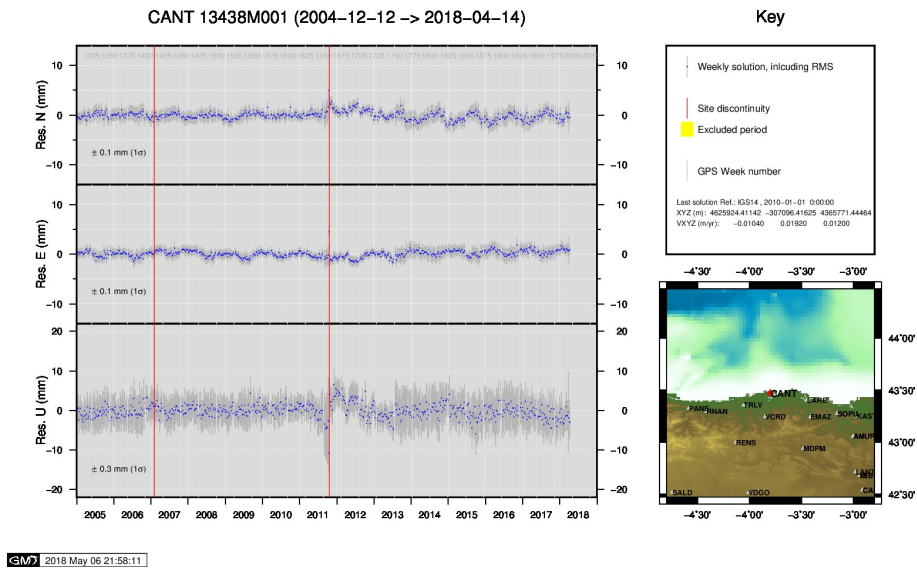
6) BIDA



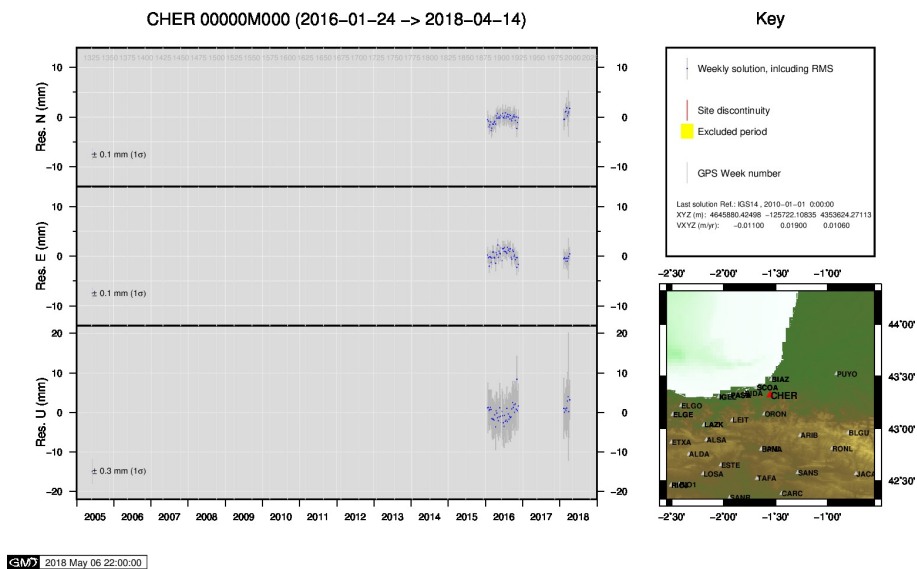
7) BRZR



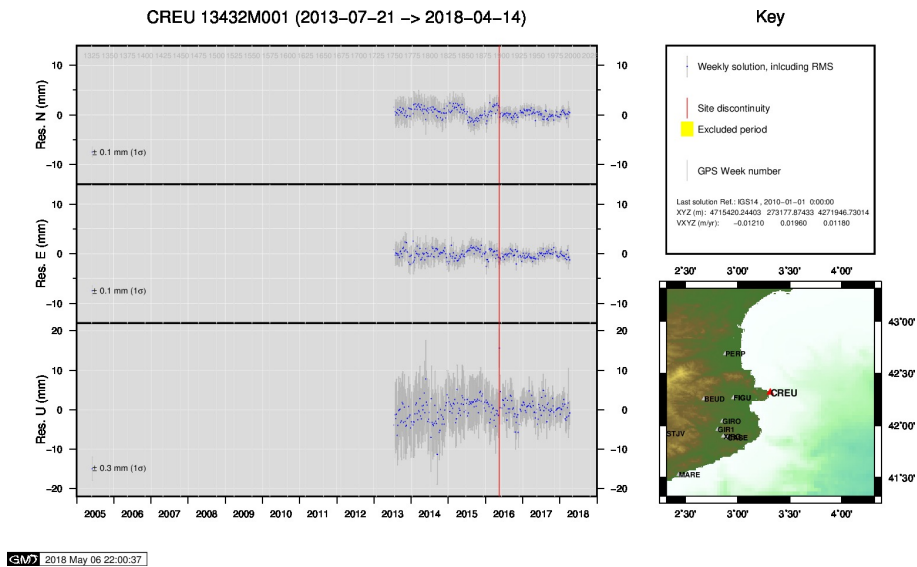
8) CACE



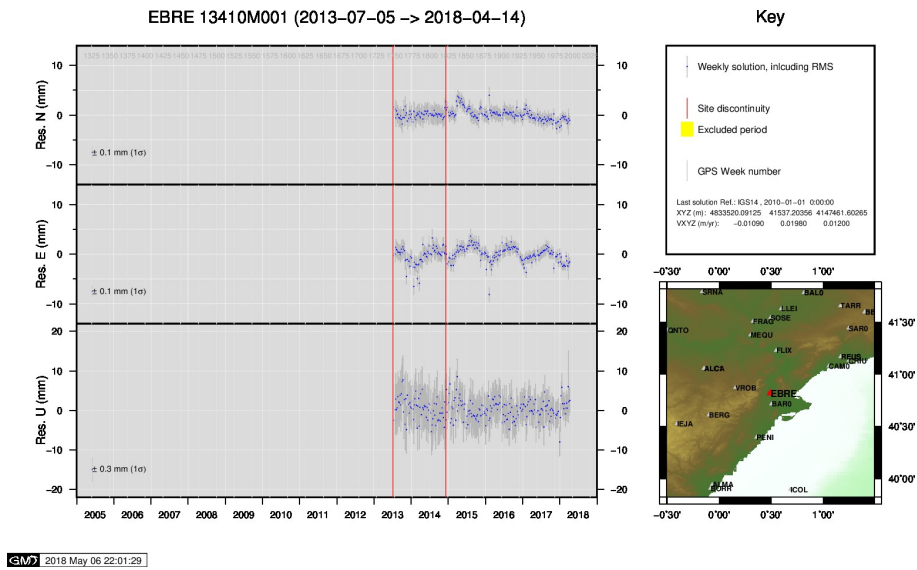
9) CANT



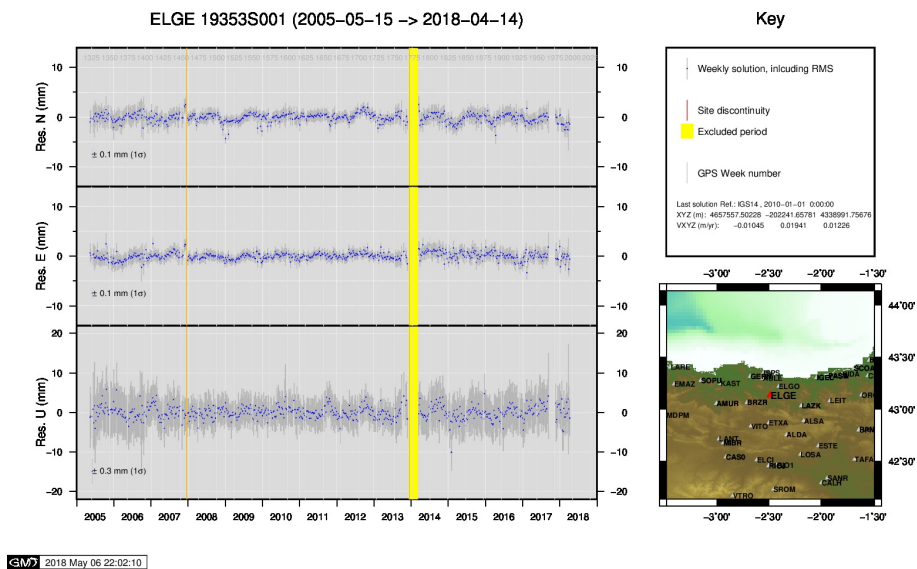
10) CHER



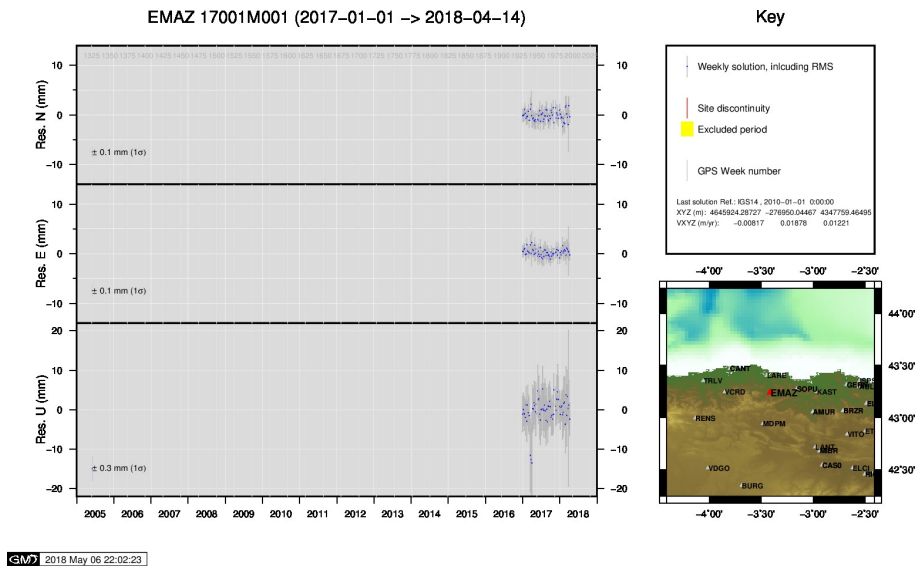
11) CREU



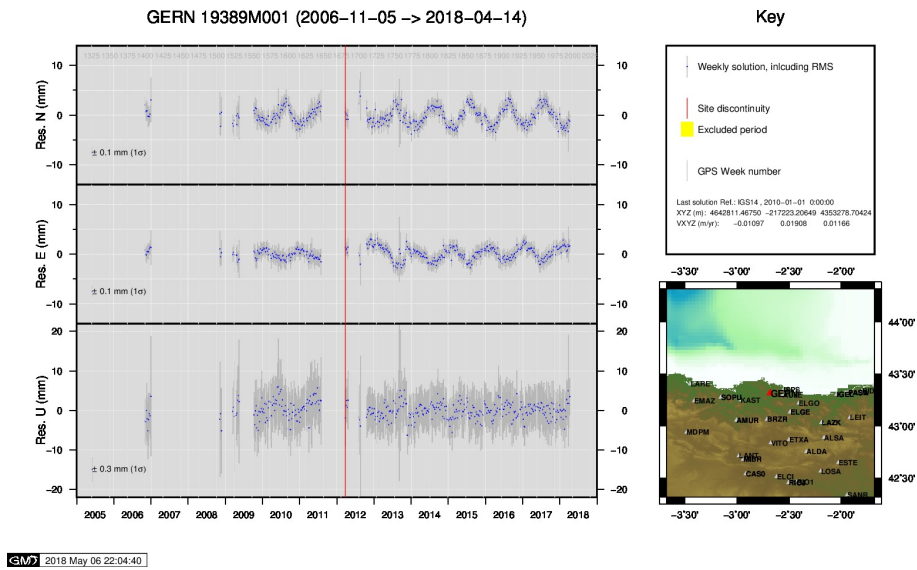
12) EBRE



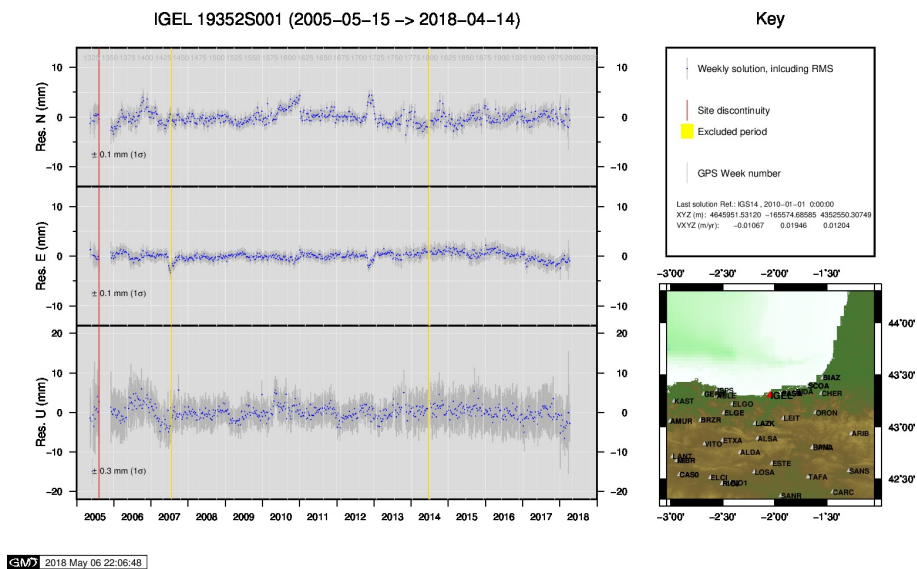
13) ELGE



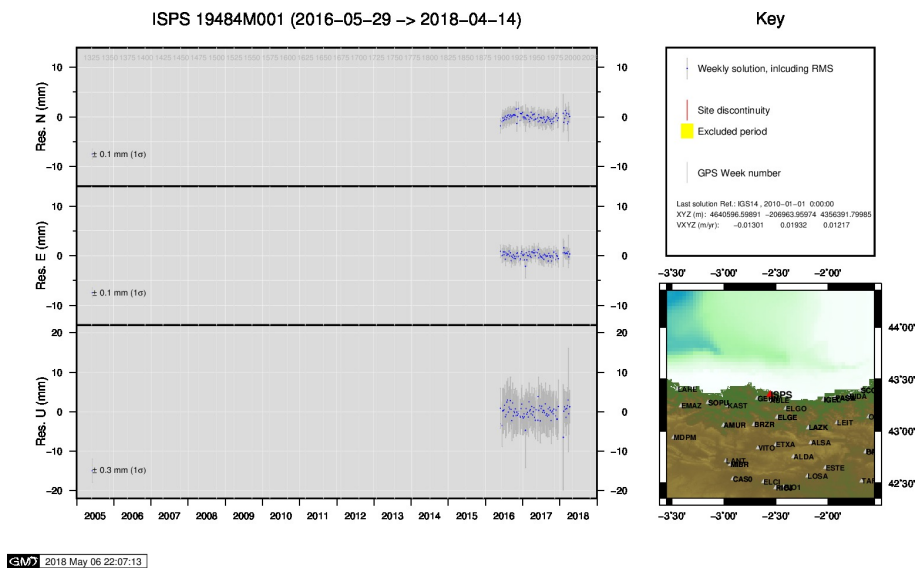
14) EMAZ



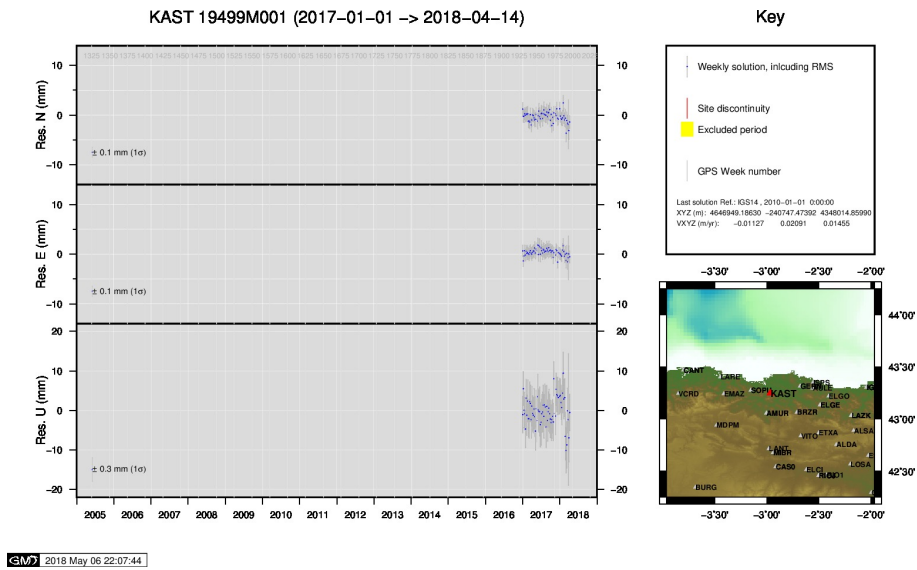
15) GERN



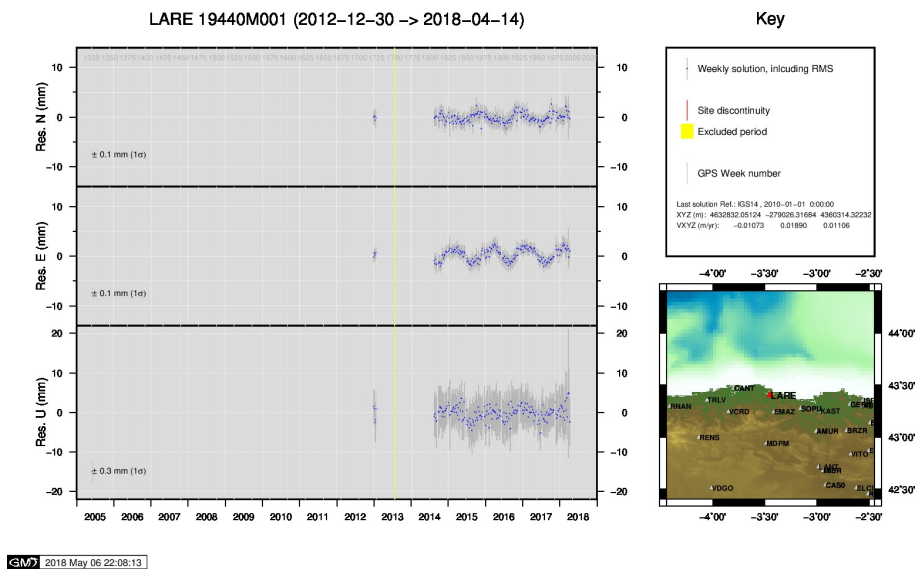
16) IGEL



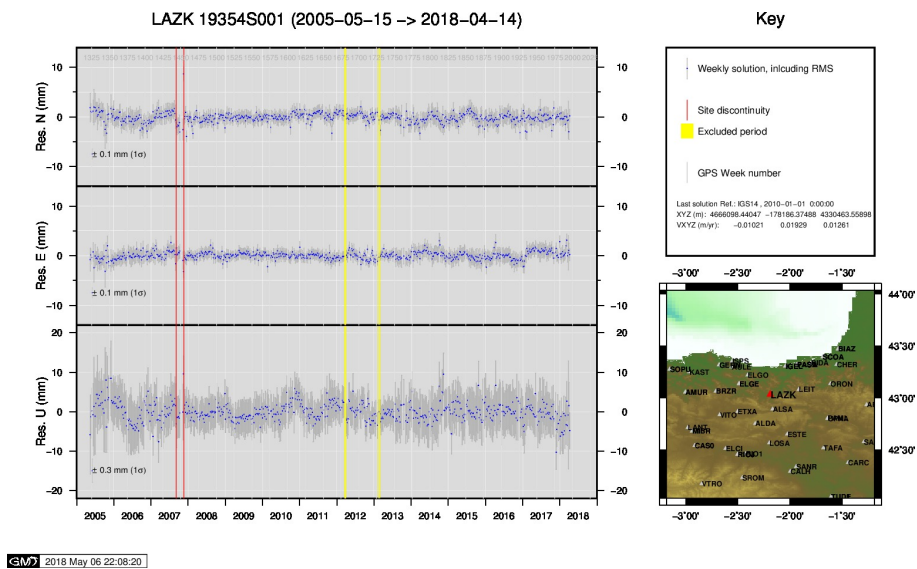
17) ISPS



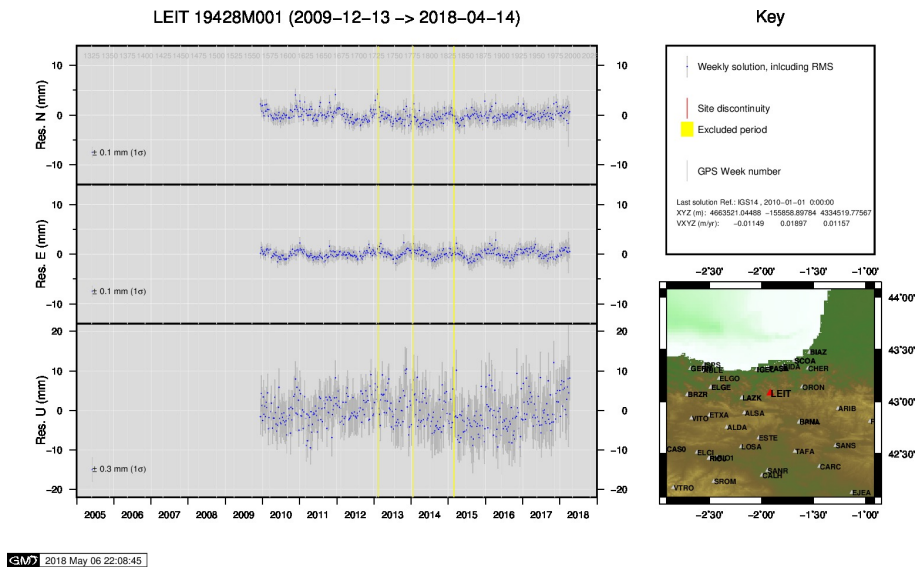
18) KAST



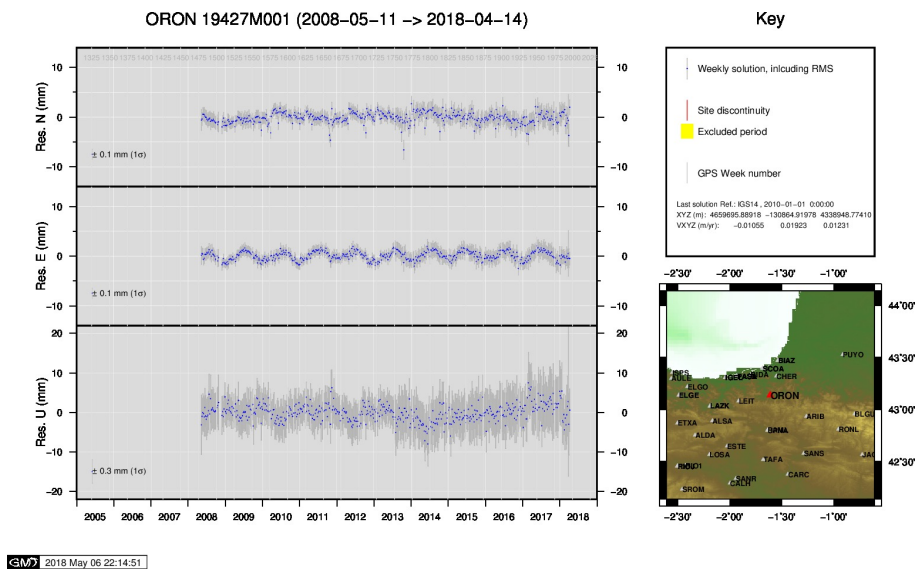
19) LARE



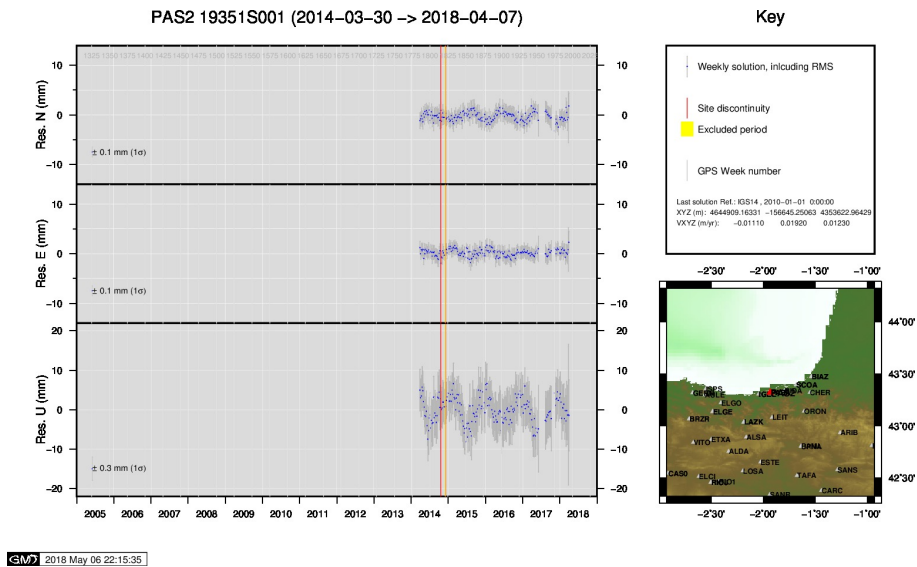
20) LAZK



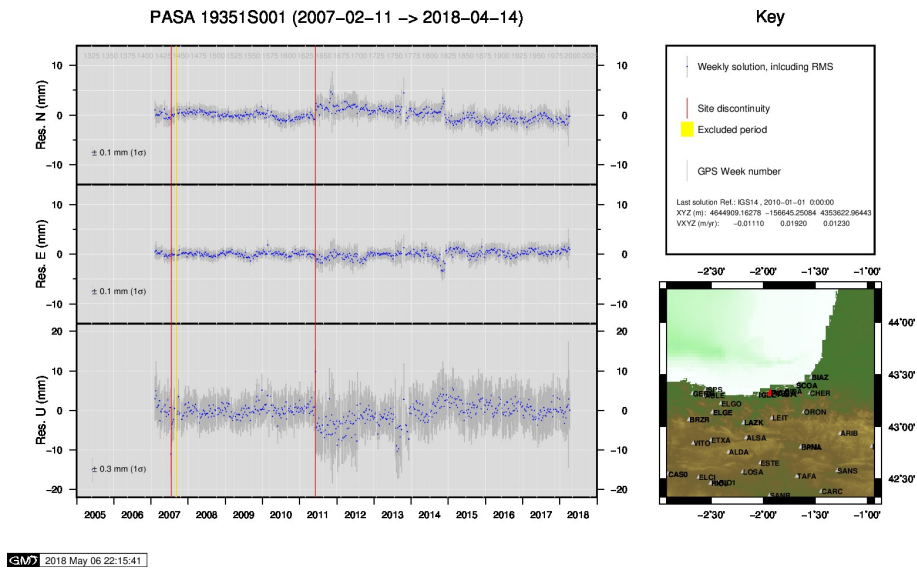
21) LEIT



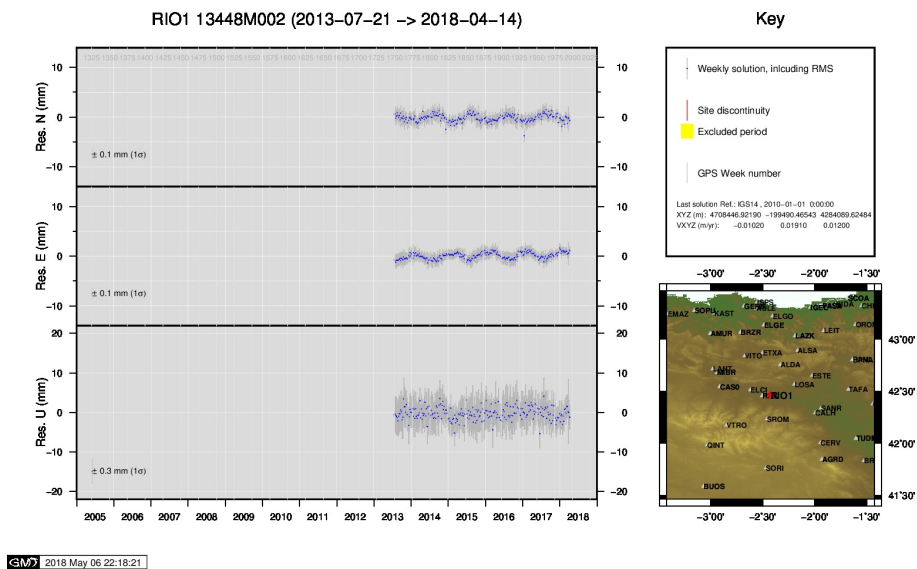
22) ORON



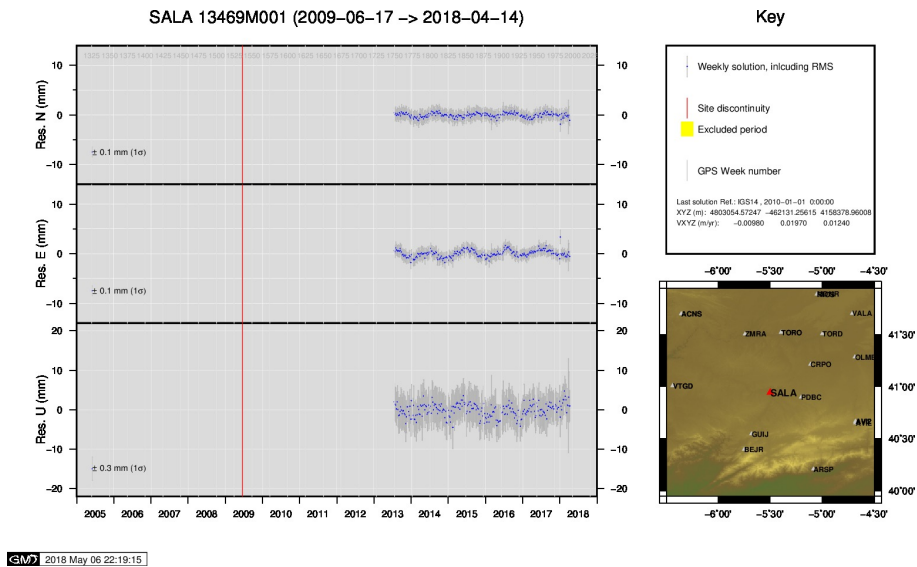
23) PAS2



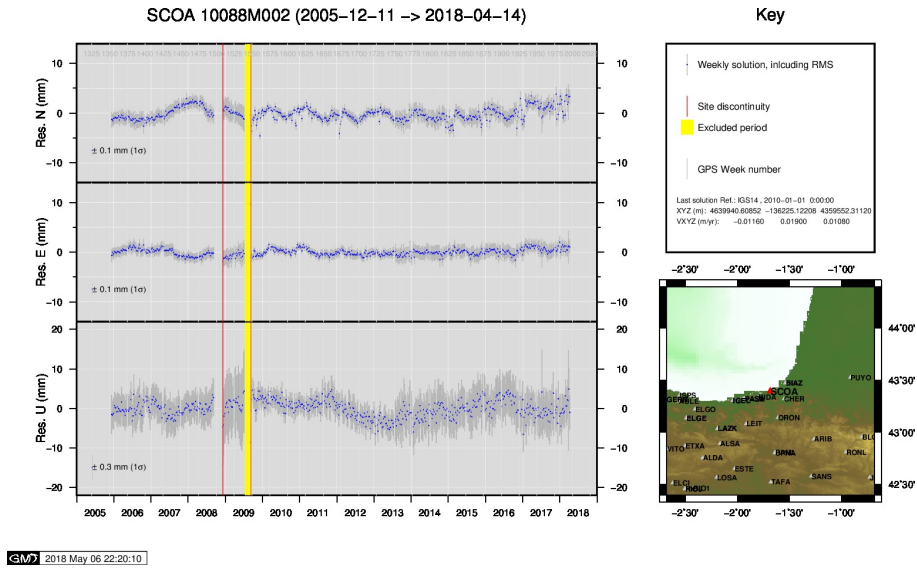
24) PASA



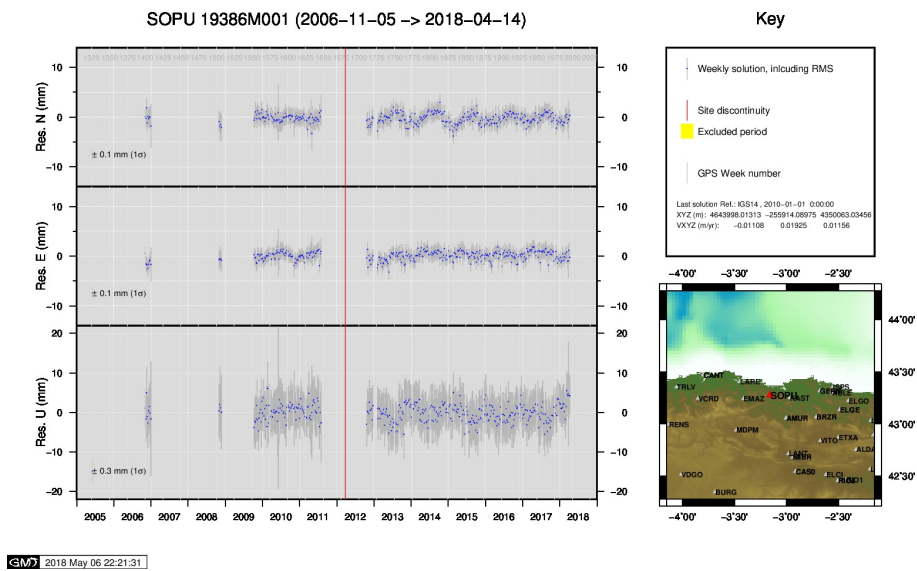
25) RIO1



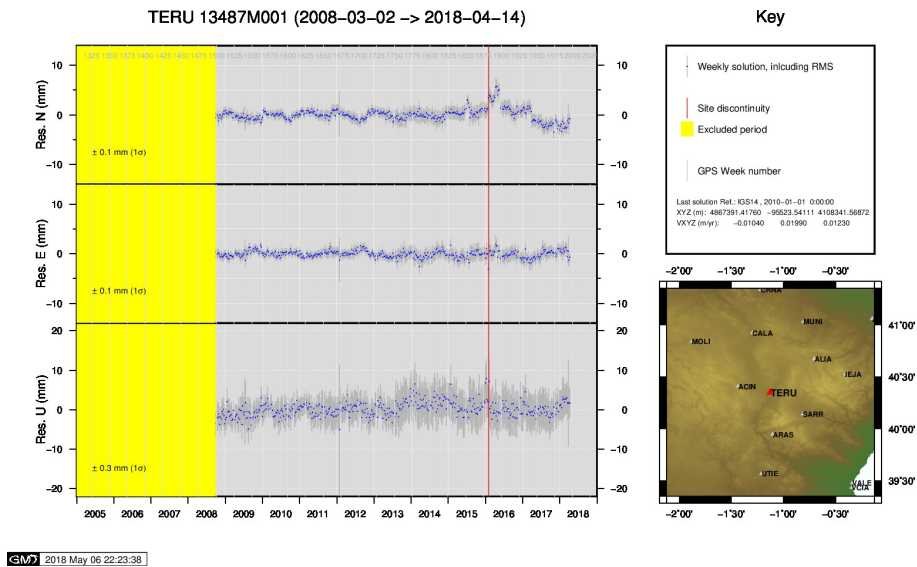
26) SALA



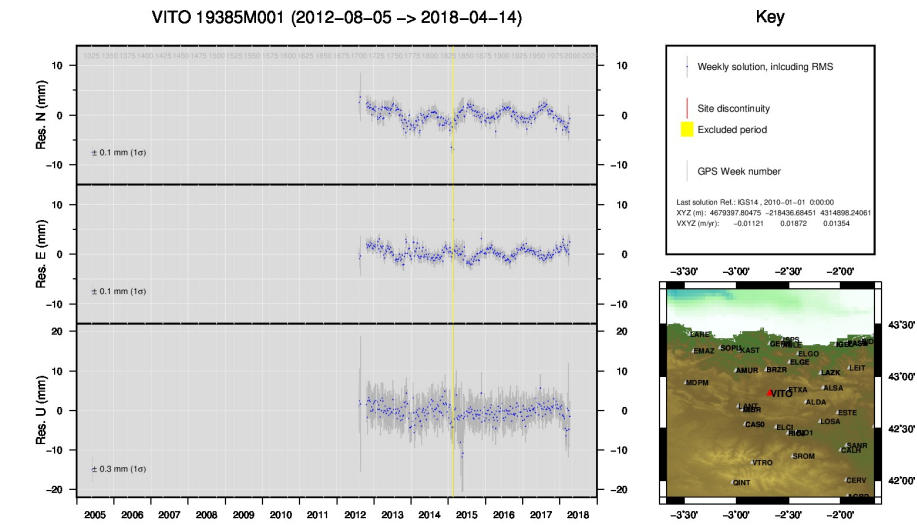
27) SCOA



28) SOPU

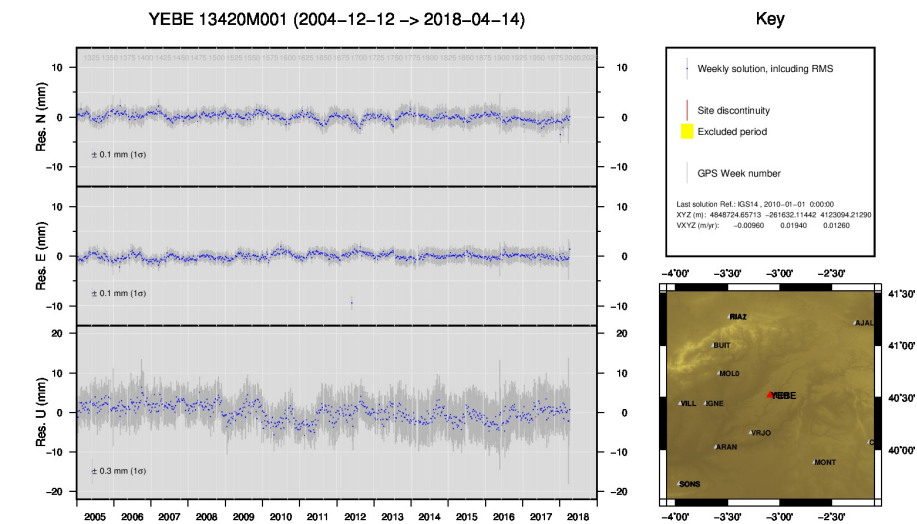


29) TERU



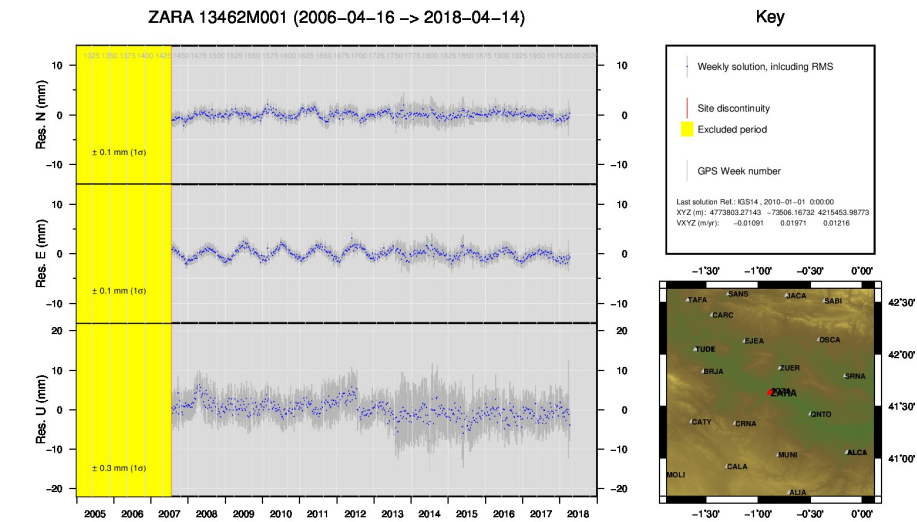
GMW 2018 May 06 22:27:05

30) VITO



GMW 2018 May 06 22:28:12

31) YEBE



GMW 2018 May 06 22:28:19

32) ZARA

