

ARA-DAC Weekly Analysis Result: 1986 (GFA)

Technical Report

GPS Week: 1986 (GFA)

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

ARA-DAC details:

Contact person: J. Zurutuza

Contact mail: geodesia@aranzadi.eus

Report generated on 2018/02/11 at 21:48:51



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 C1950.

```

ARA LAC 1986 WEEK FINAL COMBINATION: PRECISE ORBITS                11-FEB-18 18:06
-----
LOCAL GEODETIC DATUM: IGS14                EPOCH: 2018-01-31 12:00:00
-----
NUM STATION NAME          X (M)          Y (M)          Z (M)          FLAG
-----
  3 ACRD 13434M001        4594489.57193      -678367.47649      4357066.26787      W
 24 ALDA 19383M001        4687280.16782      -190876.59361      4308106.94549      A
 30 ALSA 19419M001        4677250.84987      -176770.41901      4319079.85788      A
 54 BIAZ 10074M002        4634456.06566      -124345.00326      4365785.44297      A
 55 BIDA 00000M000        4644177.83986      -145778.35036      4354832.46907      A
 58 BRZR 19387M001        4662221.00361      -220769.92470      4333309.41953      A
 95 CACE 13447M001        4899866.51385      -544567.06190      4033770.18652      W
106 CANT 13438M001        4625924.32480      -307096.25899      4365771.53818      W
150 CREU 13432M001        4715420.14570      273178.03282      4271946.82639      W
186 EBRE 13410M001        4833520.00351      41537.36154      4147461.70007      W
 85 ELGE 19353S001        4657557.41431      -202241.49988      4338991.85099      A
 98 GERN 19389M001        4642811.32275      -217222.95801      4353278.86390      A
115 IGEL 19352S001        4645951.44224      -165574.52979      4352550.40341      A
126 LAZK 19354S001        4666098.35313      -178186.21758      4330463.65629      A
129 LEIT 19428M001        4663520.95136      -155858.74340      4334519.86948      A
158 ORDN 19427M001        4659695.80046      -130864.76396      4338948.87227      A
165 PAS2 19351S001        4644909.07313      -156645.09384      4353623.06297      A
173 PASA 19351S001        4644909.07270      -156645.09422      4353623.06221      A
491 RID1 13448M002        4708446.83656      -199490.30940      4284089.71858      W
496 SALA 13469M001        4803054.49373      -462131.09662      4158379.06052      W
200 SOPU 19386M001        4643997.92437      -255913.93321      4350063.12714      A
569 TERU 13487M001        4867391.33522      -95523.37987      4108341.66826      W
232 VITO 19385M001        4679397.71411      -218436.53042      4314898.34634      A
 671 YEBE 13420M001        4848724.57867      -261631.95813      4123094.31396      W
 674 ZARA 13462M001        4773803.18085      -73506.01176      4215454.08167      W

```

5.2 ETRF2000 (ETRS89) Coordinates

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

```

ETRF2000 FINAL COORD. wk 1986                11-FEB-18 18:06
-----
LOCAL GEODETIC DATUM: ETRF2000            EPOCH: 2018-01-31 12:00:00
-----
NUM STATION NAME          X (M)          Y (M)          Z (M)          FLAG
-----
  3 ACRD 13434M001        4594489.86741      -678367.98847      4357065.86790      W
 24 ALDA 19383M001        4687280.51466      -190877.11381      4308106.54452      A
 30 ALSA 19419M001        4677251.19901      -176770.93817      4319079.45780      A
 54 BIAZ 10074M002        4634456.42375      -124345.51800      4365785.04660      A
 55 BIDA 00000M000        4644178.19483      -145778.86613      4354832.07175      A
 58 BRZR 19387M001        4662221.34877      -220770.44249      4333309.02003      A
 95 CACE 13447M001        4899866.80293      -544567.60386      4033769.76593      W
106 CANT 13438M001        4625924.66245      -307096.77337      4365771.14031      W
150 CREU 13432M001        4715420.54196      273177.51140      4271946.42866      W
186 EBRE 13410M001        4833520.36569      41536.82760      4147461.29113      W
 85 ELGE 19353S001        4657557.76192      -202242.01715      4338991.45205      A
 98 GERN 19389M001        4642811.66963      -217223.47384      4353278.46585      A
115 IGEL 19352S001        4645951.79485      -165575.04580      4352550.00573      A
126 LAZK 19354S001        4666098.70292      -178186.73563      4330463.25700      A
129 LEIT 19428M001        4663521.30386      -155859.26113      4334519.47064      A
158 ORDN 19427M001        4659696.15605      -130865.28123      4338948.47399      A
165 PAS2 19351S001        4644909.42637      -156645.61009      4353622.66471      A
173 PASA 19351S001        4644909.42637      -156645.61009      4353622.66471      A
491 RID1 13448M002        4708447.18085      -199490.83172      4284089.31597      W
496 SALA 13469M001        4803054.80031      -462131.62892      4158378.64797      W
200 SOPU 19386M001        4643998.26671      -255914.44927      4350062.72856      A
569 TERU 13487M001        4867391.67950      -95523.91759      4108341.25529      W
232 VITO 19385M001        4679398.05832      -218437.04991      4314897.94562      A
 671 YEBE 13420M001        4848724.90535      -261632.49448      4123093.90043      W
 674 ZARA 13462M001        4773803.53468      -73506.54018      4215453.67576      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).

```

ETRF2014 FINAL COORD. wk 1986                11-FEB-18 18:06
-----
LOCAL GEODETIC DATUM: ETRF2014            EPOCH: 2018-01-31 12:00:00
-----

```

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG
3	ACDR 13434M001	4594489.82452	-678368.02758	4357065.91572	W
24	ALDA 19383M001	4687280.46967	-190877.15418	4308106.59223	A
30	ALSA 19419M001	4677251.15408	-176770.97863	4319079.50554	A
54	BIAZ 10074M002	4634456.37905	-124345.55879	4365785.09447	A
55	BIDA 00000M000	4644178.15011	-145778.90681	4354832.11958	A
58	BRZR 19387M001	4662221.30410	-220770.48285	4333309.06779	A
95	CACE 13447M001	4899866.75676	-544567.64227	4033769.81311	W
106	CANT 13438M001	4625924.61835	-307096.81359	4365771.18813	W
150	CREU 13432M001	4715420.49523	273177.46962	4271946.47659	W
186	EBRE 13410M001	4833520.31857	41536.78701	4147461.33865	W
85	ELGE 19353S001	4657557.71724	-202242.05760	4338991.49982	A
98	GERN 19389M001	4642811.62512	-217223.51430	4353278.51366	A
115	IGEL 19352S001	4645951.75017	-165575.08641	4352550.05355	A
126	LAZK 19354S001	4666098.65808	-178186.77612	4330463.30477	A
129	LEIT 19428M001	4663521.25899	-155859.30171	4334519.51842	A
158	ORON 19427M001	4659696.11114	-130865.32191	4338948.52180	A
165	PAS2 19351S001	4644909.38211	-156645.65036	4353622.71330	A
173	PASA 19351S001	4644909.38168	-156645.65074	4353622.71254	A
491	RI01 13448M002	4708447.13568	-199490.87198	4284089.36364	W
496	SALA 13469M001	4803054.75492	-462131.66797	4158378.69534	W
200	SOPU 19386M001	4643998.22230	-255914.48959	4350062.77635	A
569	TERU 13487M001	4867391.63247	-95523.95761	4108341.30266	W
232	VITO 19385M001	4679398.01348	-218437.09022	4314897.99334	A
671	YEBE 13420M001	4848724.85899	-261632.53402	4123093.94777	W
674	ZARA 13462M001	4773803.48851	-73506.58062	4215453.72334	W

6 Quality Control

6.1 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 1986 WEEK FINAL COMBINATION: PRECISE ORBITS 11-FEB-18 18:06

Station	#Days	Weekday 0123456	Repeatability (mm)		
			N	E	U
ACOR 13434M001	7	XXXXXX	0.97	0.80	3.01
ALDA 19383M001	7	XXXXXX	0.94	1.26	1.95
ALSA 19419M001	7	XXXXXX	2.16	4.31	3.37
BLAZ 10074M002	7	XXXXXX	0.67	0.59	2.75
BIDA 00000M000	7	XXXXXX	2.27	0.80	2.99
BRZR 19387M001	7	XXXXXX	3.29	2.19	3.12
CACE 13447M001	7	XXXXXX	0.66	0.61	1.47
CANT 13438M001	7	XXXXXX	0.64	0.72	4.07
CREU 13432M001	7	XXXXXX	0.75	1.45	1.35
EBRE 13410M001	5	XXXX	1.02	0.80	2.19
ELGE 19353S001	7	XXXXXX	1.03	1.92	6.82
GERN 19389M001	7	XXXXXX	1.83	0.80	5.09
IGEL 19352S001	7	XXXXXX	0.81	0.49	2.16
LAZK 19354S001	7	XXXXXX	2.25	0.68	11.90
LEIT 19428M001	7	XXXXXX	5.93	4.98	5.68
ORON 19427M001	7	XXXXXX	1.20	0.77	5.33
PAS2 19351S001	6	XXXXX	2.25	1.12	6.44
PASA 19351S001	7	XXXXXX	0.97	0.38	3.27
RI01 13448M002	7	XXXXXX	0.89	0.42	4.32
SALA 13469M001	7	XXXXXX	0.66	0.50	2.14
SOPU 19386M001	7	XXXXXX	1.11	1.82	4.03
TERU 13487M001	7	XXXXXX	0.66	0.36	2.10
VITO 19385M001	7	XXXXXX	4.34	1.60	3.70
YEBE 13420M001	7	XXXXXX	0.54	0.71	2.42
ZARA 13462M001	7	XXXXXX	0.50	0.38	1.03

Comparison of individual solutions:

ACOR 13434M001	N	0.97	-0.14	0.36	-0.63	0.99	0.65	1.33	1.40
ACOR 13434M001	E	0.80	-0.69	-0.70	-0.37	-0.96	-1.14	-0.16	0.71
ACOR 13434M001	U	3.01	-0.08	1.96	0.06	3.05	1.10	5.52	-3.08
ALDA 19383M001	N	0.94	-1.03	-1.03	0.21	0.08	1.07	0.82	-1.13
ALDA 19383M001	E	1.26	-0.55	-0.42	-0.91	-1.10	1.45	-0.62	2.11
ALDA 19383M001	U	1.95	0.72	1.89	-2.30	2.55	-1.76	-0.11	1.95
ALSA 19419M001	N	2.16	-0.66	0.39	1.28	1.57	0.45	-4.76	-0.67
ALSA 19419M001	E	4.31	-2.43	-2.91	-3.31	-3.08	0.15	8.03	3.49
ALSA 19419M001	U	3.37	-2.77	0.15	1.16	0.02	-3.75	6.14	-2.73
BLAZ 10074M002	N	0.67	-0.83	-0.15	0.12	-0.72	0.19	1.12	0.45
BLAZ 10074M002	E	0.59	0.27	0.34	0.24	0.36	0.27	-1.15	0.57
BLAZ 10074M002	U	2.75	-2.99	-1.30	3.23	2.99	1.93	-3.16	-1.28
BIDA 00000M000	N	2.27	-2.91	-1.59	-0.90	-0.65	3.46	2.07	1.53
BIDA 00000M000	E	0.80	0.55	0.77	0.25	0.82	-1.09	-0.90	0.45
BIDA 00000M000	U	2.99	-4.71	-1.10	4.14	-1.35	3.14	-1.20	0.20
BRZR 19387M001	N	3.29	1.59	1.48	3.53	2.73	-0.42	-5.49	-3.17
BRZR 19387M001	E	2.19	-1.50	-1.51	-1.44	-1.02	0.68	4.39	1.22
BRZR 19387M001	U	3.12	-3.58	-0.34	1.92	2.69	-5.30	2.49	0.62
CACE 13447M001	N	0.66	-0.38	-0.31	-0.06	-1.17	0.81	0.54	-0.05
CACE 13447M001	E	0.61	0.33	1.16	0.87	-0.06	-0.11	0.13	-0.04
CACE 13447M001	U	1.47	-2.07	-1.11	0.17	-0.10	-1.70	-1.84	-1.09
CANT 13438M001	N	0.64	0.31	-0.55	0.82	0.36	1.04	0.28	0.36
CANT 13438M001	E	0.72	-0.66	-0.53	0.17	-0.25	0.05	-1.26	0.86
CANT 13438M001	U	4.07	-3.95	1.07	6.57	3.64	-1.54	4.87	-0.32
CREU 13432M001	N	0.75	-0.42	-0.45	-0.15	-1.31	-0.84	-0.21	-0.68
CREU 13432M001	E	1.45	-1.64	-1.34	-1.06	-0.03	1.16	1.79	1.57
CREU 13432M001	U	1.35	0.25	0.45	1.28	-0.91	-1.76	1.29	1.84
EBRE 13410M001	N	1.02			-0.16	-0.87	-1.39	-1.04	0.63
EBRE 13410M001	E	0.80			-0.18	0.10	0.69	0.68	-1.26
EBRE 13410M001	U	2.19			0.15	-1.46	3.59	-0.73	-1.91
ELGE 19353S001	N	1.03	-1.23	-1.03	-0.04	0.26	0.68	1.77	0.32
ELGE 19353S001	E	1.92	-0.96	-0.90	-0.68	0.10	-0.88	4.34	-0.44
ELGE 19353S001	U	6.82	0.72	2.41	8.28	6.09	-5.96	-11.41	-1.33
GERN 19389M001	N	1.83	-1.47	-1.11	-0.38	0.99	2.72	2.09	1.94
GERN 19389M001	E	0.80	-0.78	-0.63	0.01	-1.04	-1.30	-0.04	-0.27
GERN 19389M001	U	5.09	-5.16	-2.07	1.06	-4.95	8.44	0.62	5.25
IGEL 19352S001	N	0.81	-1.03	-0.33	-0.71	0.73	1.16	0.63	0.09
IGEL 19352S001	E	0.49	0.34	-0.36	-0.67	0.50	0.38	0.56	0.10
IGEL 19352S001	U	2.16	-2.12	-0.84	3.71	-0.12	-0.11	0.05	-3.00
LAZK 19354S001	N	2.25	-2.29	-0.97	-0.57	-0.79	0.89	4.70	0.64
LAZK 19354S001	E	0.68	-0.05	-0.81	0.02	1.18	-0.64	0.54	-0.11
LAZK 19354S001	U	11.90	-2.27	5.58	7.66	5.55	3.35	-26.45	3.66
LEIT 19428M001	N	5.93	-2.11	-1.61	-1.69	-1.73	7.79	10.80	-4.54
LEIT 19428M001	E	4.98	-0.84	-0.38	-0.35	0.25	4.87	8.52	-7.20
LEIT 19428M001	U	5.68	-4.89	-1.49	1.92	-3.41	9.13	3.58	7.46
ORON 19427M001	N	1.20	-0.87	-2.02	-1.06	0.25	1.10	1.03	0.55
ORON 19427M001	E	0.77	-0.11	0.60	-0.79	-0.82	0.80	-0.94	0.60
ORON 19427M001	U	5.33	-3.18	5.98	9.46	1.06	-4.93	2.89	1.28
PAS2 19351S001	N	2.25		-2.30	-0.79	-1.71	2.39	0.93	3.15
PAS2 19351S001	E	1.12		1.65	-0.49	-0.76	0.37	-0.98	1.28
PAS2 19351S001	U	6.44		1.10	6.69	7.80	-2.89	-3.63	-8.87
PASA 19351S001	N	0.97	-1.43	-0.81	-0.22	0.21	0.94	0.95	1.02
PASA 19351S001	E	0.38	0.08	0.03	-0.16	0.29	0.32	-0.42	0.70
PASA 19351S001	U	3.27	-1.27	-0.34	3.88	2.95	0.00	-6.11	-1.11
RI01 13448M002	N	0.89	-0.41	-0.34	0.41	0.47	0.20	-1.50	1.34
RI01 13448M002	E	0.42	-0.08	-0.38	0.09	-0.41	-0.66	-0.26	0.49
RI01 13448M002	U	4.32	-2.91	-0.71	-2.86	-0.10	3.44	8.74	2.61
SALA 13469M001	N	0.66	0.60	0.01	0.71	0.85	0.23	-0.24	0.97
SALA 13469M001	E	0.50	-0.95	-0.53	-0.09	-0.28	-0.07	-0.43	0.13
SALA 13469M001	U	2.14	-0.01	1.62	-3.52	0.50	3.40	0.73	0.51
SOPU 19386M001	N	1.11	0.46	1.70	1.16	1.51	0.46	0.19	-0.68
SOPU 19386M001	E	1.82	0.30	1.32	0.43	-0.06	-3.31	-0.69	-2.56
SOPU 19386M001	U	4.03	-2.92	-1.22	3.15	-5.21	4.12	-0.31	5.76
TERU 13487M001	N	0.66	-0.36	-0.20	-0.47	-0.82	-1.00	-0.70	-0.21
TERU 13487M001	E	0.36	-0.75	-0.30	0.13	0.08	0.10	0.29	-0.06
TERU 13487M001	U	2.10	4.45	0.26	0.01	-1.46	1.02	-1.43	-1.18

VITO 19385M001	N	4.34	0.83	1.30	0.62	2.84	-2.20	-7.00	-6.94
VITO 19385M001	E	1.60	-0.25	-0.58	-0.24	-1.63	2.44	0.88	2.35
VITO 19385M001	U	3.70	-3.18	-1.06	-1.72	-0.78	-1.92	7.76	1.83
YEBE 13420M001	N	0.54	0.79	0.09	-0.23	-0.81	-0.61	-0.01	-0.18
YEBE 13420M001	E	0.71	-0.61	0.92	0.64	0.65	0.72	0.12	0.68
YEBE 13420M001	U	2.42	-2.71	-2.91	-1.20	-2.95	-2.01	2.26	0.37
ZARA 13462M001	N	0.50	-0.32	-0.24	0.47	-0.39	-0.41	-0.80	0.40
ZARA 13462M001	E	0.38	-0.02	-0.22	-0.53	-0.40	0.26	0.57	-0.04
ZARA 13462M001	U	1.03	-0.25	0.22	0.49	1.30	0.75	-0.12	1.92

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		
3	ACOR 13434M001	I W	-0.81	0.08	0.68
10	ALAC 13433M001	I W	0.23	0.87	-3.36
13	ALBA 13452M001	I W	-0.81	0.05	1.43
18	ALME 13437M001	I W	-1.57	0.34	0.57
43	BELL 13431M001	I W	-0.49	-0.75	0.25
61	BORR 13480M001	I W	-0.52	-1.91	-2.71
65	BRST 10004M004	I W	0.06	-1.06	0.48
95	CACE 13447M001	I W	0.84	0.39	1.43
106	CANT 13438M001	I W	0.04	-1.62	2.78
110	CASC 13909S001	I W	-0.60	-0.26	2.23
117	CEU1 13449M002	I W	0.73	-0.04	-0.30
131	COBA 13453M001	I W	-0.30	0.70	-3.83
150	CREU 13432M001	I W	-1.15	-1.14	-0.19
186	EBRE 13410M001	I W	0.37	2.35	-2.10
203	ESCO 13435M001	I W	0.24	-0.09	3.99
215	GAIA 13902M001	I W	0.01	-0.40	1.94
271	HUEL 13451M001	I W	-0.58	1.12	0.57
317	LAGO 13903M001	I W	-2.58	-2.98	-0.05
337	LLIV 13436M001	I W	-2.32	-0.19	2.38
341	LPAL 81701M001	I W	-3.51	3.20	1.41
344	LRDC 10023M001	I W	0.01	-1.47	0.20
353	MALA 13443M001	I W	-1.70	1.57	-2.07
371	MAS1 31303M002	I W	2.16	3.48	-1.87
442	PDEL 31906M004	I W	0.47	-0.31	-0.05
475	RABT 35001M002	I W	1.11	1.17	-2.37
491	RID1 13448M002	I W	-0.13	-1.32	1.10
496	SALA 13469M001	I W	-0.31	-0.94	-0.08
504	SCOA 10088M002	I W	-0.56	-1.87	-0.16
532	SONS 13446M001	I W	1.29	0.88	-0.28
562	TERC 31909M001	I W	5.34	-3.31	-3.52
569	TERU 13487M001	I W	2.74	-0.64	-3.00
629	VALA 13463M002	I W	-0.37	-0.26	0.38
633	VALE 13439M001	I W	-0.14	1.17	-2.68
643	VIGO 13450M001	I W	1.00	-0.60	-0.01
671	YEBE 13420M001	I W	0.44	1.91	2.41
674	ZARA 13462M001	I W	0.37	1.50	-0.88
683	ZIMM 14001M004	I W	1.02	0.37	5.26
RMS / COMPONENT			1.51	1.50	2.11
MEAN			0.00	-0.00	-0.00
MIN			-3.51	-3.31	-3.83
MAX			5.34	3.48	5.26

NUMBER OF PARAMETERS : 3
NUMBER OF COORDINATES : 111
RMS OF TRANSFORMATION : 1.73 MM

BARYCENTER COORDINATES:

LATITUDE : 40 6 10.90
LONGITUDE : - 5 14 23.23
HEIGHT : -43.901 KM

PARAMETERS:

TRANSLATION IN N : 0.00 +- 0.28 MM
TRANSLATION IN E : 0.00 +- 0.28 MM
TRANSLATION IN U : 0.00 +- 0.28 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          15793376
NUMBER OF UNKNOWN               213008
NUMBER OF DEGREES OF FREEDOM    15580368
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)      180
VARIANCE FACTOR                  2.182467402485335

Helmert Transformation Parameters With Respect to Combined Solution:
-----
Sol  Rms (m)      Translation (m)      Rotation (")
      X          Y          Z          X          Y          Z      Scale (ppm)
-----
  1  0.00265     -0.0173  0.0212  0.0205  -0.0006 -0.0009  0.0004  0.00023
  2  0.00251     0.0170  0.0327 -0.0212  -0.0006  0.0009  0.0009  0.00040
  3  0.00231     0.0092  0.0094 -0.0104  -0.0002  0.0004  0.0003  0.00009
  4  0.00216     0.0280 -0.0073 -0.0364  0.0003  0.0015 -0.0001  0.00029
  5  0.00324     0.0289 -0.0197 -0.0393  0.0006  0.0016 -0.0004  0.00025
  6  0.00372     -0.0034 -0.0048  0.0034  0.0003 -0.0002  0.0000  0.00004
  7  0.00311     -0.0006 -0.0100  0.0004  0.0003 -0.0000 -0.0002 -0.00019
```

```
Statistics of individual solutions:
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
  1  0.00137      2141190  1.88          2170715      3          918      28610      0
  2  0.00135      2169274  1.81          2198398      3          927      28200      0
  3  0.00140      2288332  1.95          2319371      3          954      30088      0
  4  0.00135      2261219  1.84          2293107      3          960      30931      0
  5  0.00142      2241577  2.02          2275166      3          957      32635      0
  6  0.00137      2212647  1.89          2244876      3          951      31281      0
  7  0.00193      2260504  3.74          2291743      3          945      30297      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 18:028:00000 18:034:86370 LEICA GRX1200PRO -----
ALDA A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
ALSA A 1 P 18:028:00000 18:034:86370 LEICA GRX1200GGPRO -----
BIAZ A 1 P 18:028:00000 18:034:86370 TRI SP90M -----
BIDA A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
BRZR A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
CACE A 1 P 18:028:00000 18:034:86370 TRIMBLE NETR9 -----
CANT A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
CREU A 1 P 18:028:00000 18:034:86370 LEICA GR50 -----
EBRE A 1 P 18:030:00000 18:034:86370 LEICA GR50 -----
ELGE A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
GERN A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
IGEL A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
LAZK A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
LEIT A 1 P 18:028:00000 18:034:86370 LEICA GRX1200+GNSS -----
ORON A 1 P 18:028:00000 18:034:86370 LEICA GRX1200GGPRO -----
PAS2 A 1 P 18:029:00000 18:034:86370 TPS NET-G3A -----
PASA A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
RIO1 A 1 P 18:028:00000 18:034:86370 LEICA GR25 -----
SALA A 1 P 18:028:00000 18:034:86370 LEICA GRX1200+GNSS -----
SOPU A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
TERU A 1 P 18:028:00000 18:034:86370 LEICA GRX1200GGPRO -----
VITO A 1 P 18:028:00000 18:034:86370 LEICA GR10 -----
YEBE A 1 P 18:028:00030 18:034:86370 TRIMBLE NETRS -----
ZARA A 1 P 18:028:00000 18:034:86370 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 18:028:00000 18:034:86370 LEIAT504 LEIS -----
ALDA A 1 P 18:028:00000 18:034:86370 LEIAS10 NONE -----
ALSA A 1 P 18:028:00000 18:034:86370 LEIAX1202GG NONE -----
BIAZ A 1 P 18:028:00000 18:034:86370 LEIAR25 LEIT -----
BIDA A 1 P 18:028:00000 18:034:86370 LEIAS10 NONE -----
BRZR A 1 P 18:028:00000 18:034:86370 LEIAS10 NONE -----
CACE A 1 P 18:028:00000 18:034:86370 TRM29659.00 NONE -----
CANT A 1 P 18:028:00000 18:034:86370 LEIAR25.R4 LEIT 25066
CREU A 1 P 18:028:00000 18:034:86370 LEIAR25.R4 NONE 26357
EBRE A 1 P 18:030:00000 18:034:86370 LEIAR25.R4 NONE 26359
ELGE A 1 P 18:028:00000 18:034:86370 LEIAR25.R4 LEIT -----
```

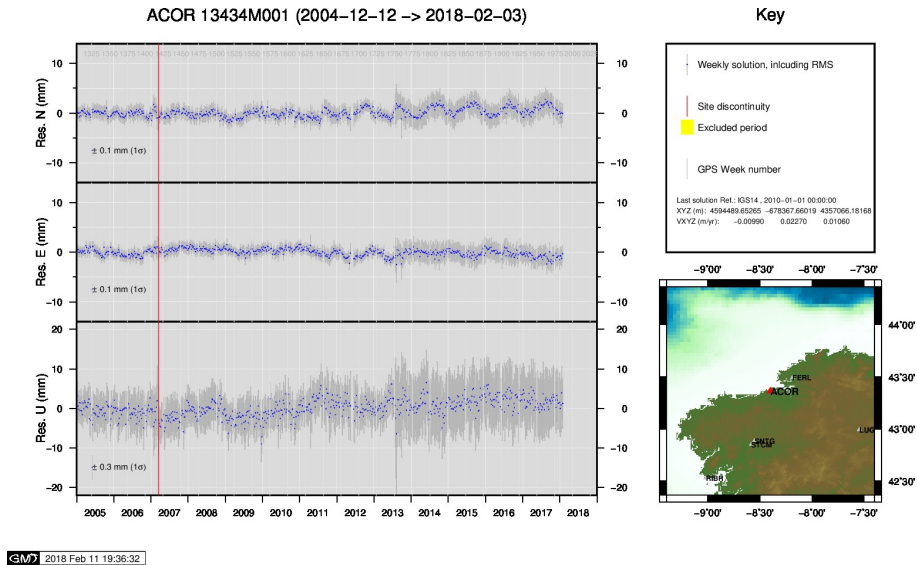
GERN	A	1	P	18:028:00000	18:034:86370	LEIAS10	NONE	----
IGEL	A	1	P	18:028:00000	18:034:86370	LEIAR20	LEIM	----
LAZK	A	1	P	18:028:00000	18:034:86370	LEIAR25_R4	LEIT	----
LEIT	A	1	P	18:028:00000	18:034:86370	LEIAX1203+GNSS	NONE	----
ORON	A	1	P	18:028:00000	18:034:86370	LEIAX1202GG	NONE	----
PAS2	A	1	P	18:029:00000	18:034:86370	LEIAR20	LEIM	73034
PASA	A	1	P	18:028:00000	18:034:86370	LEIAR20	LEIM	73034
RI01	A	1	P	18:028:00000	18:034:86370	LEIAR25_R4	LEIT	25138
SALA	A	1	P	18:028:00000	18:034:86370	LEIAR25	NONE	----
SOPU	A	1	P	18:028:00000	18:034:86370	LEIAS10	NONE	----
TERU	A	1	P	18:028:00000	18:034:86370	LEIAT504GG	LEIS	----
VITO	A	1	P	18:028:00000	18:034:86370	LEIAS10	NONE	----
YEBE	A	1	P	18:028:00030	18:034:86370	TRM29659.00	NONE	----
ZARA	A	1	P	18:028:00000	18:034:86370	TRM29659.00	NONE	----

7.3 Eccentricities

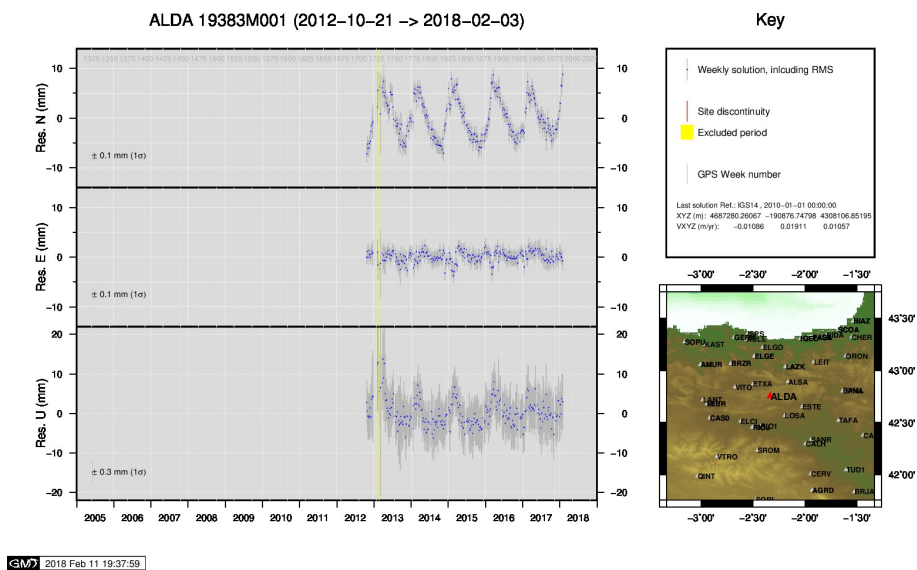
				UP	NORTH	EAST	
*SITE	PT	SOLN	T	DATA_START	DATA_END	AXE	ARP->BENCHMARK(M)
ACOR	A	1	P	18:028:00000	18:034:86370	UNE	3.0460 0.0000 0.0000
ALDA	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
ALSA	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
BIAZ	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
BIDA	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
BRZR	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
CACE	A	1	P	18:028:00000	18:034:86370	UNE	0.0600 0.0000 0.0000
CANT	A	1	P	18:028:00000	18:034:86370	UNE	3.0490 0.0000 0.0000
CREU	A	1	P	18:028:00000	18:034:86370	UNE	0.0770 0.0000 0.0000
EBRE	A	1	P	18:030:00000	18:034:86370	UNE	0.0770 0.0000 0.0000
ELGE	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
GERN	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
IGEL	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
LAZK	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
LEIT	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
ORON	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
PAS2	A	1	P	18:029:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
PASA	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
RI01	A	1	P	18:028:00000	18:034:86370	UNE	0.0606 0.0000 0.0000
SALA	A	1	P	18:028:00000	18:034:86370	UNE	0.0600 0.0000 0.0000
SOPU	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
TERU	A	1	P	18:028:00000	18:034:86370	UNE	0.0600 0.0000 0.0000
VITO	A	1	P	18:028:00000	18:034:86370	UNE	0.0000 0.0000 0.0000
YEBE	A	1	P	18:028:00030	18:034:86370	UNE	0.0000 0.0000 0.0000
ZARA	A	1	P	18:028:00000	18:034:86370	UNE	3.2590 0.0000 0.0000

8 Cumulative Time Series

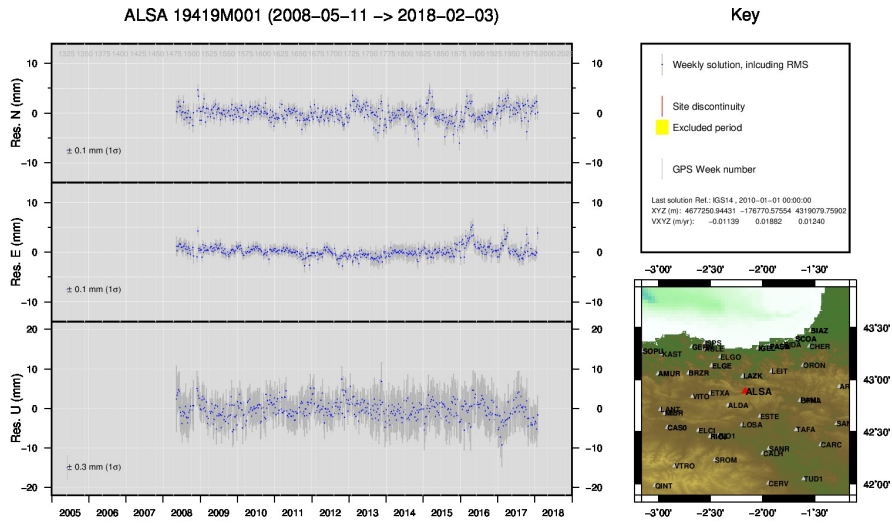
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

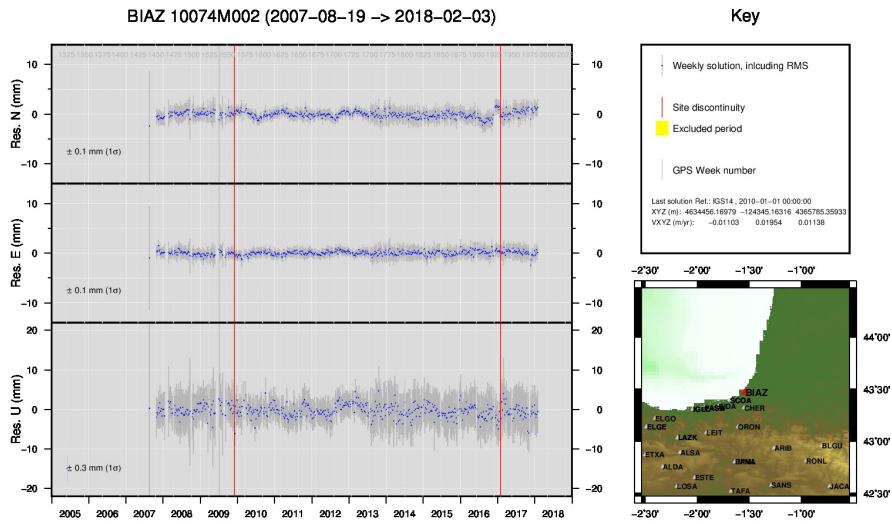


2) ALDA



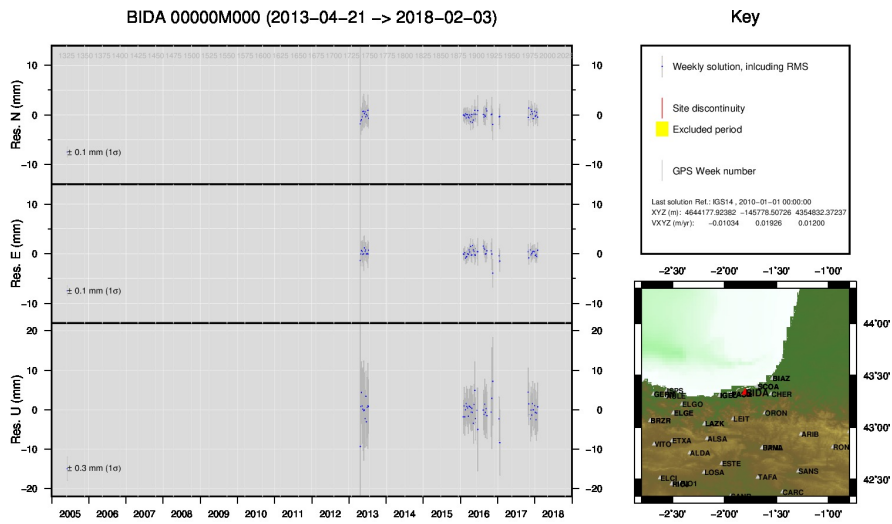
GMW 2018 Feb 11 19:39:01

3) ALSA



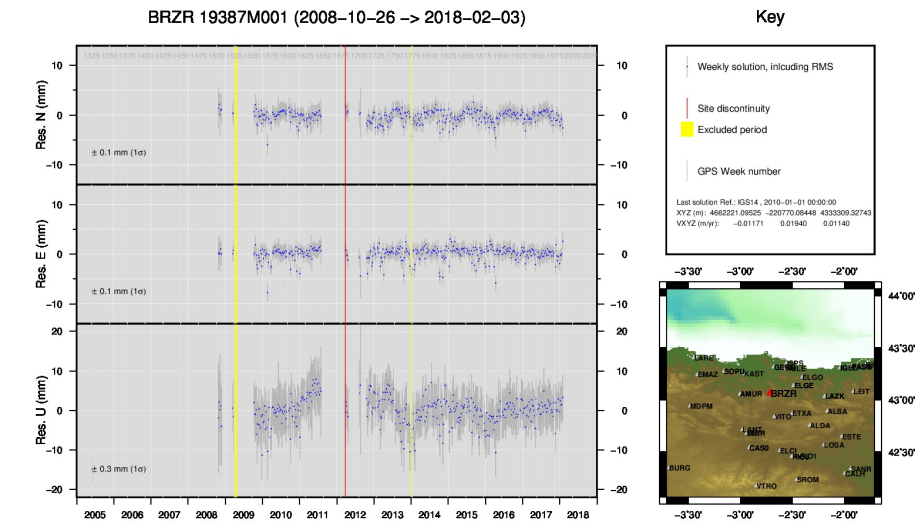
GMW 2018 Feb 11 19:42:28

4) BIAZ



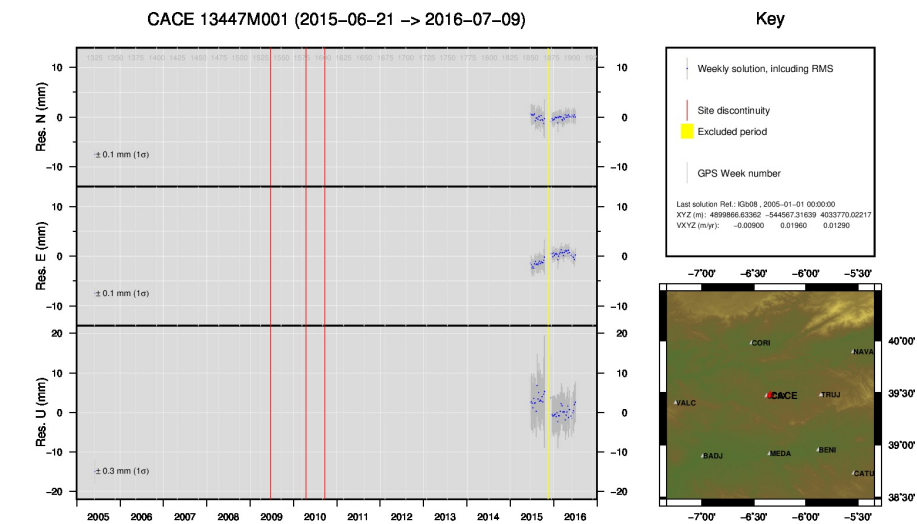
GMW 2018 Feb 11 19:42:35

5) BIDA



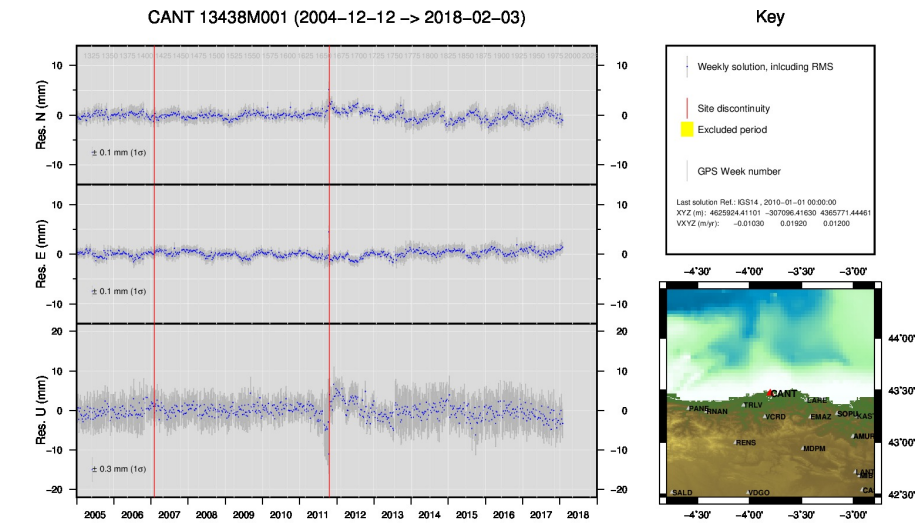
GMW 2018 Feb 11 19:43:46

6) BRZR



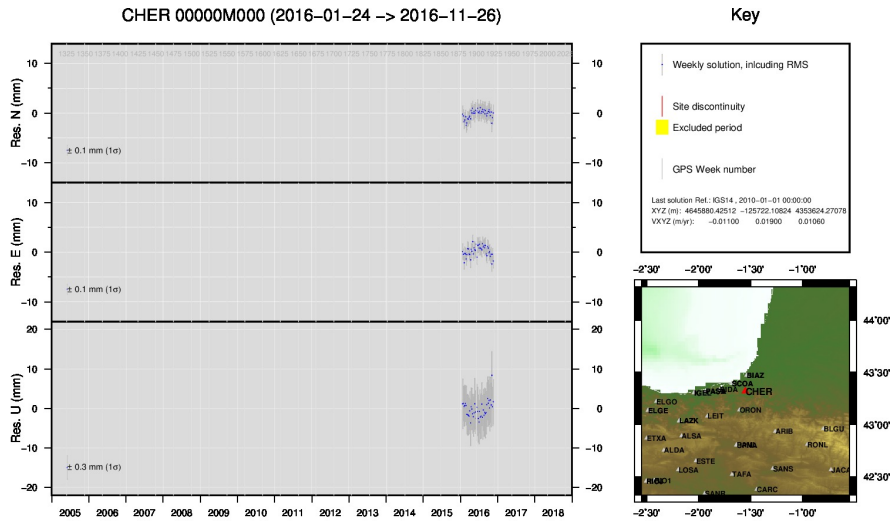
GMW 2016 Jul 18 03:58:15

7) CACE



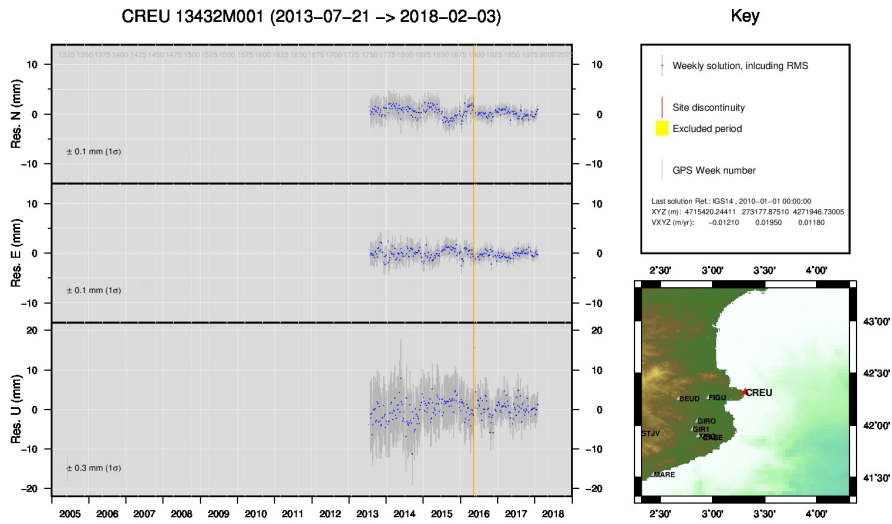
GMW 2018 Feb 11 19:44:39

8) CANT



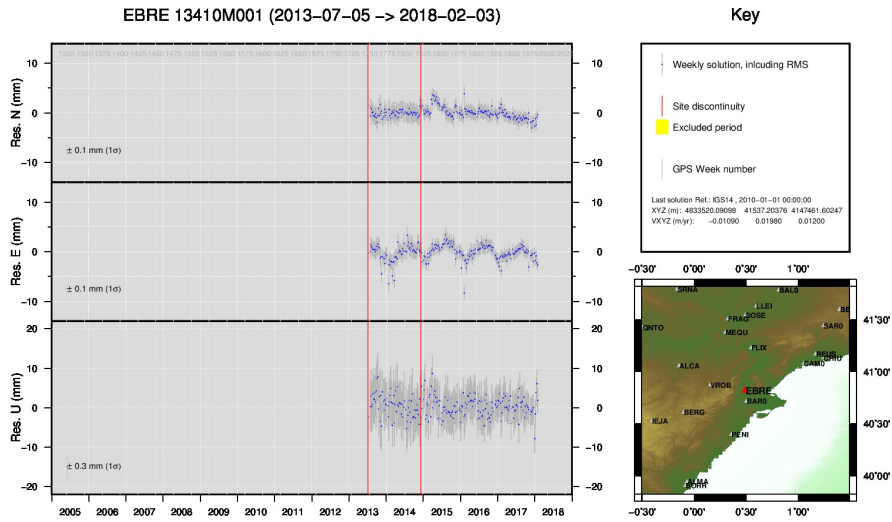
GMW 2018 Feb 11 19:46:27

9) CHER



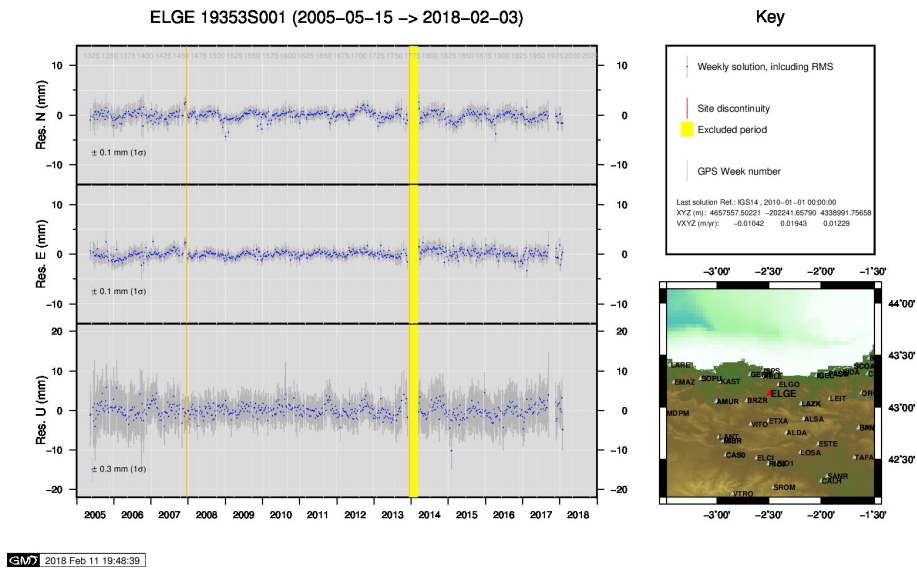
GMW 2018 Feb 11 19:47:04

10) CREU

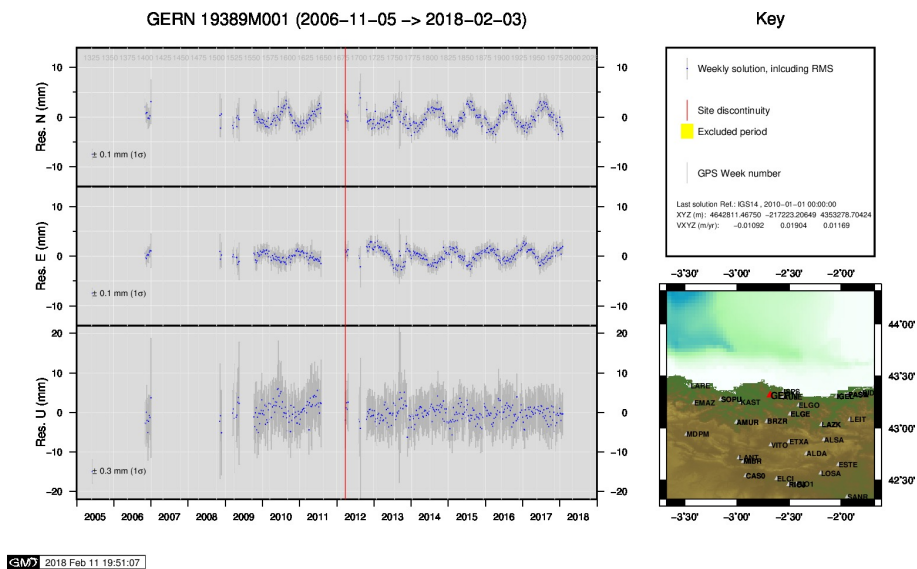


GMW 2018 Feb 11 19:47:58

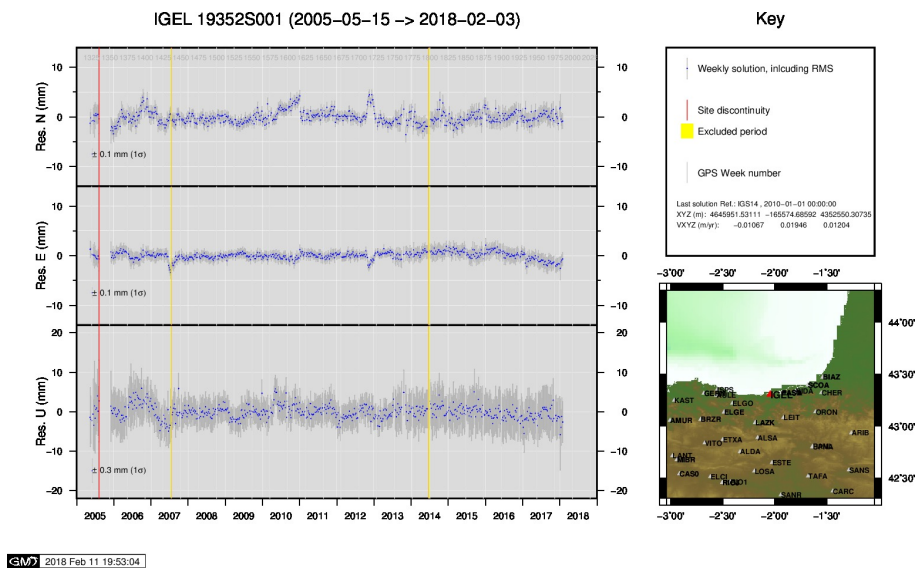
11) EBRE



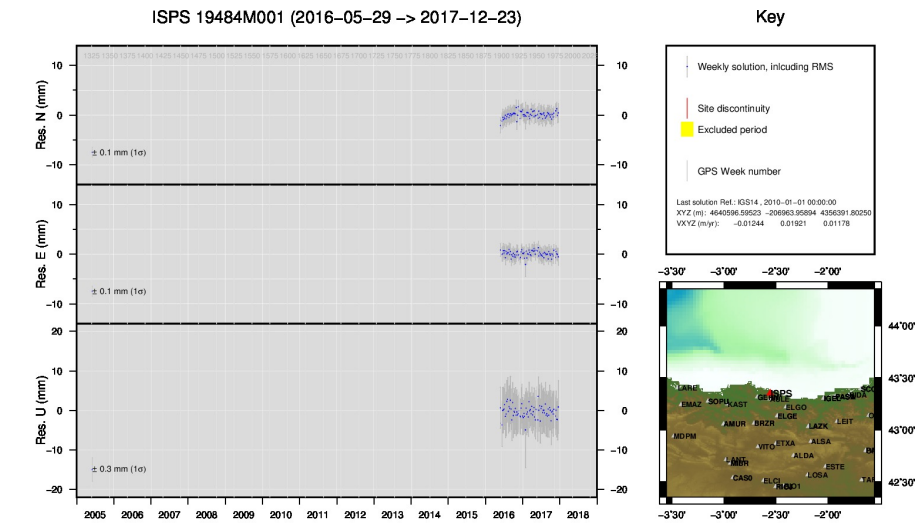
12) ELGE



13) GERN

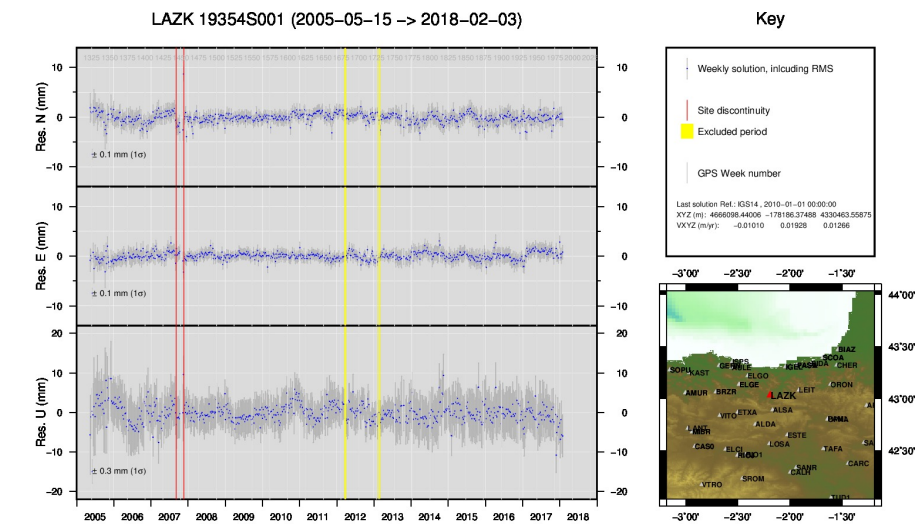


14) IGEL



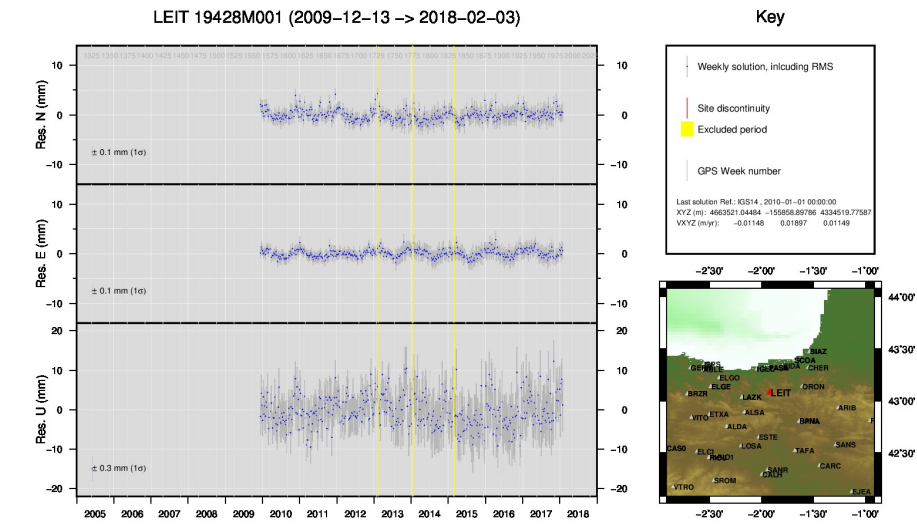
GMW 2018 Feb 11 19:53:28

15) ISPS



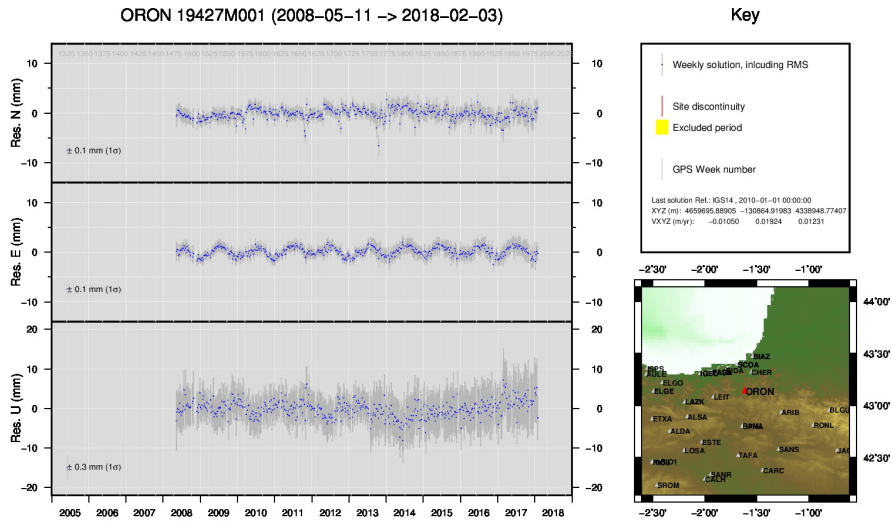
GMW 2018 Feb 11 19:54:21

16) LAZK



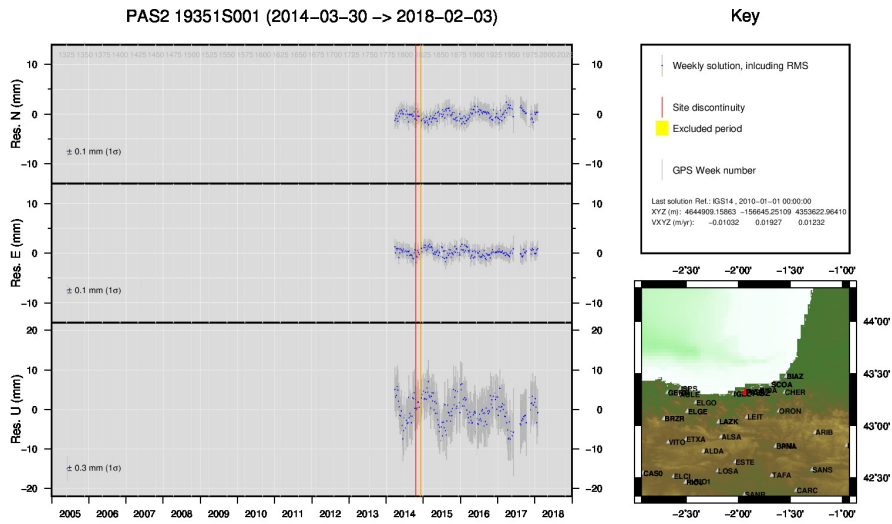
GMW 2018 Feb 11 19:54:46

17) LEIT



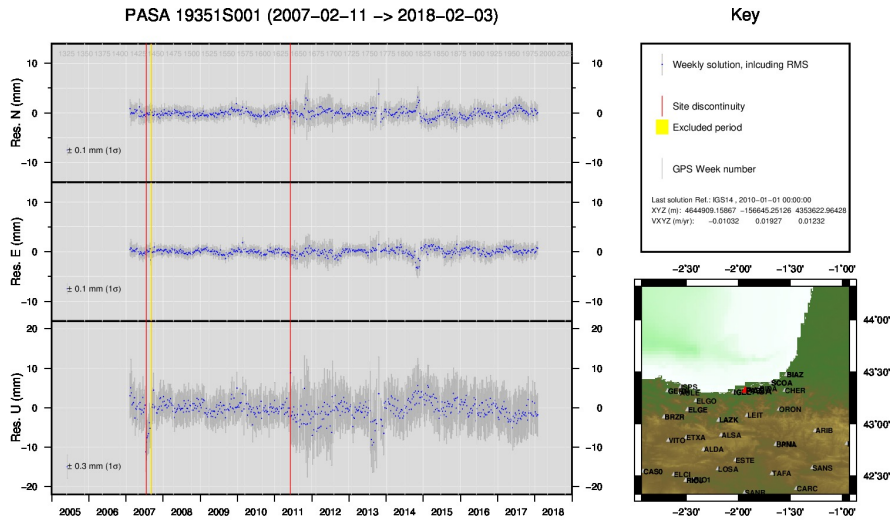
GMW 2018 Feb 11 20:00:36

18) ORON



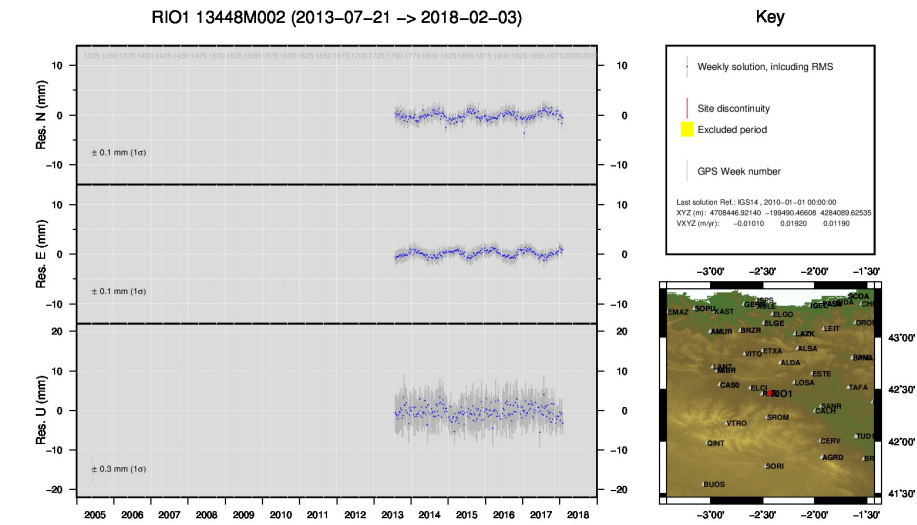
GMW 2018 Feb 11 20:01:18

19) PAS2



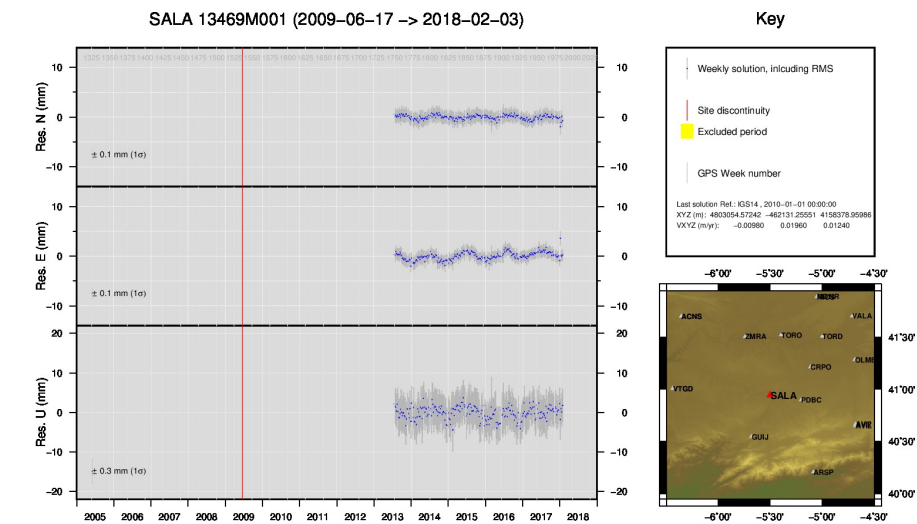
GMW 2018 Feb 11 20:01:25

20) PASA



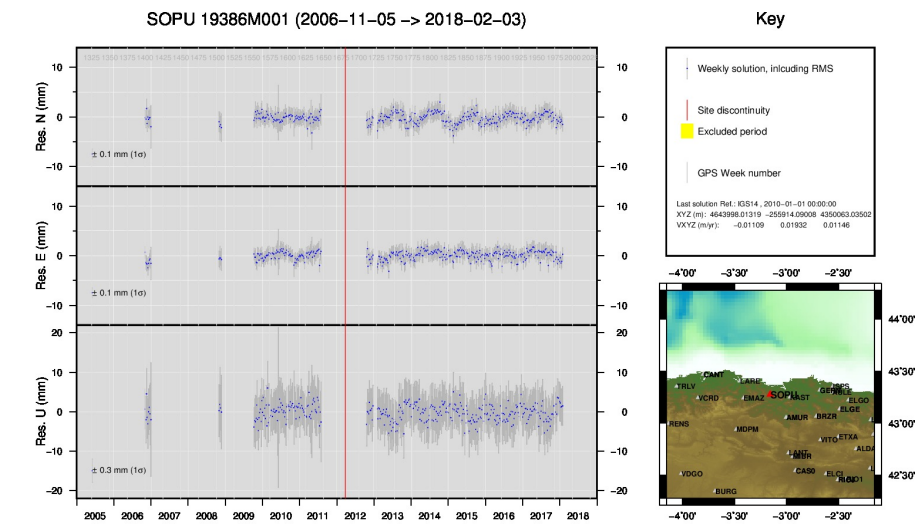
GMW 2018 Feb 11 20:03:50

21) RIO1



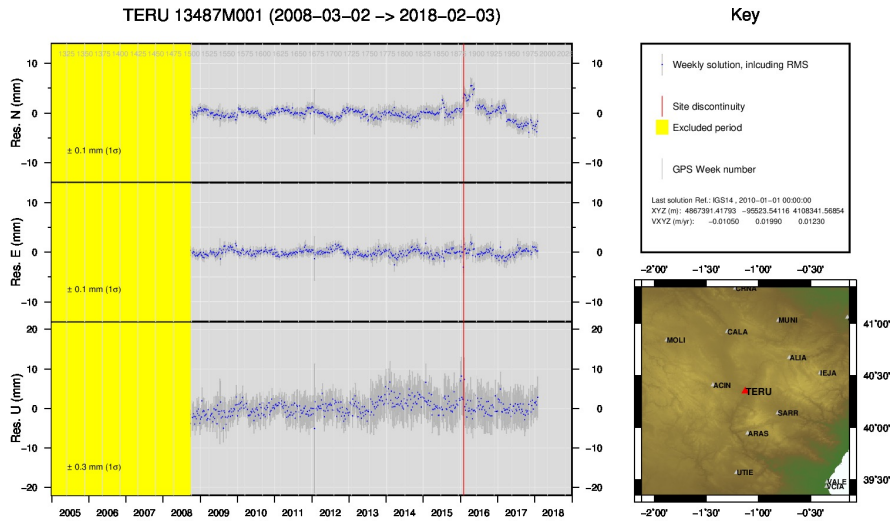
GMW 2018 Feb 11 20:04:39

22) SALA

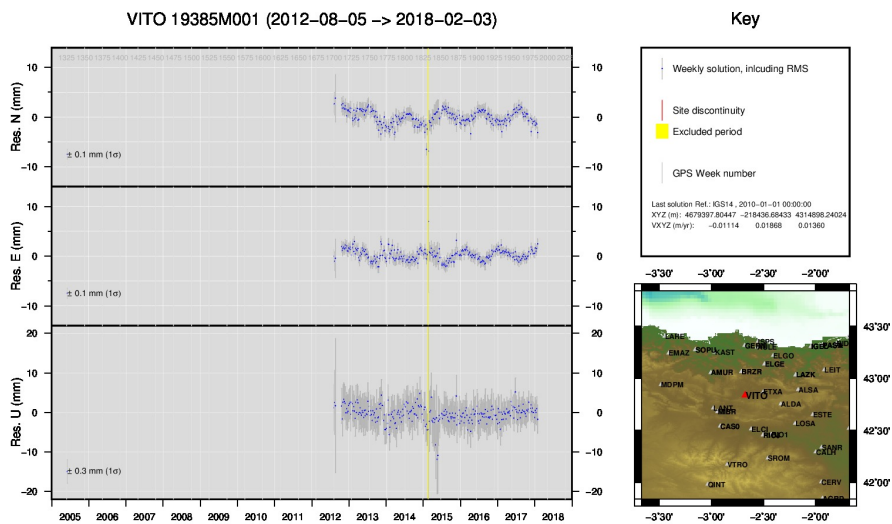


GMW 2018 Feb 11 20:06:45

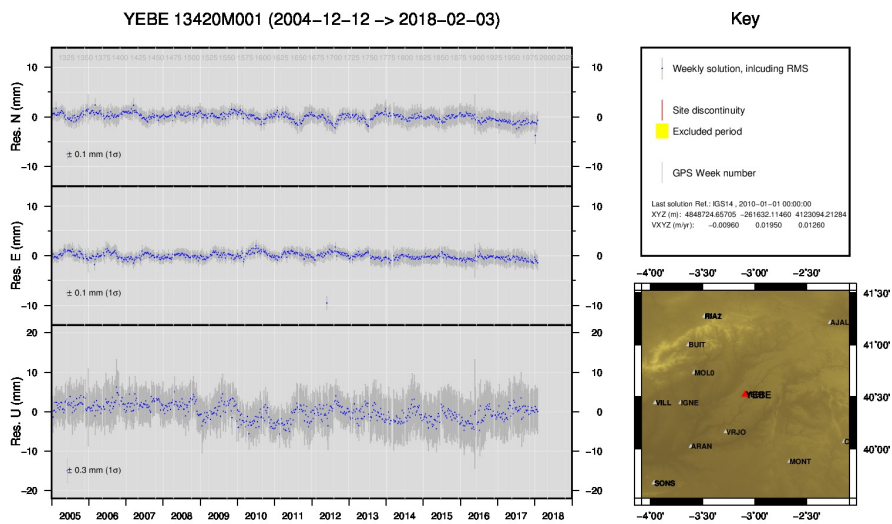
23) SOPU



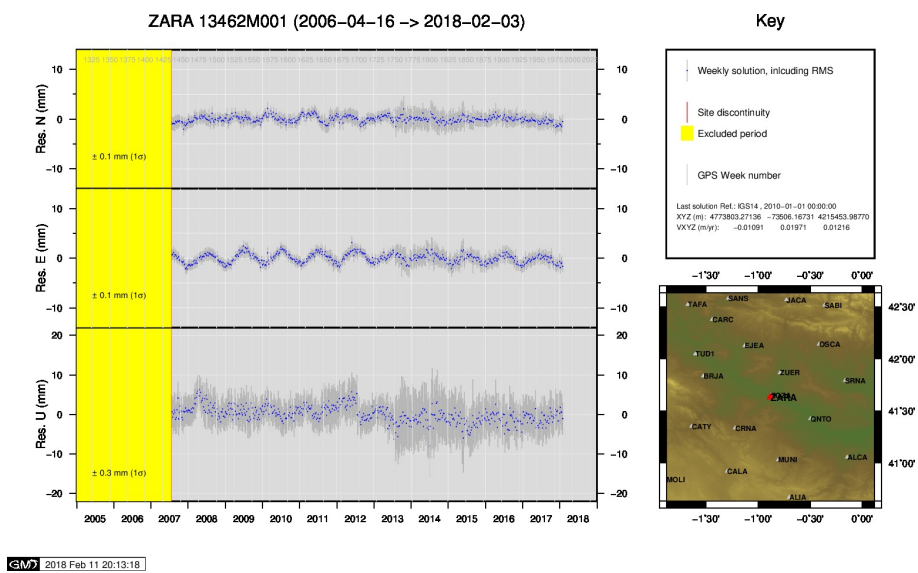
GMW 2018 Feb 11 20:08:51



GMW 2018 Feb 11 20:12:11



GMW 2018 Feb 11 20:13:11



27) ZARA