

ARA-DAC Weekly Analysis Result: 1910 (GFA)

Technical Report

GPS Week: 1910 (GFA)

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

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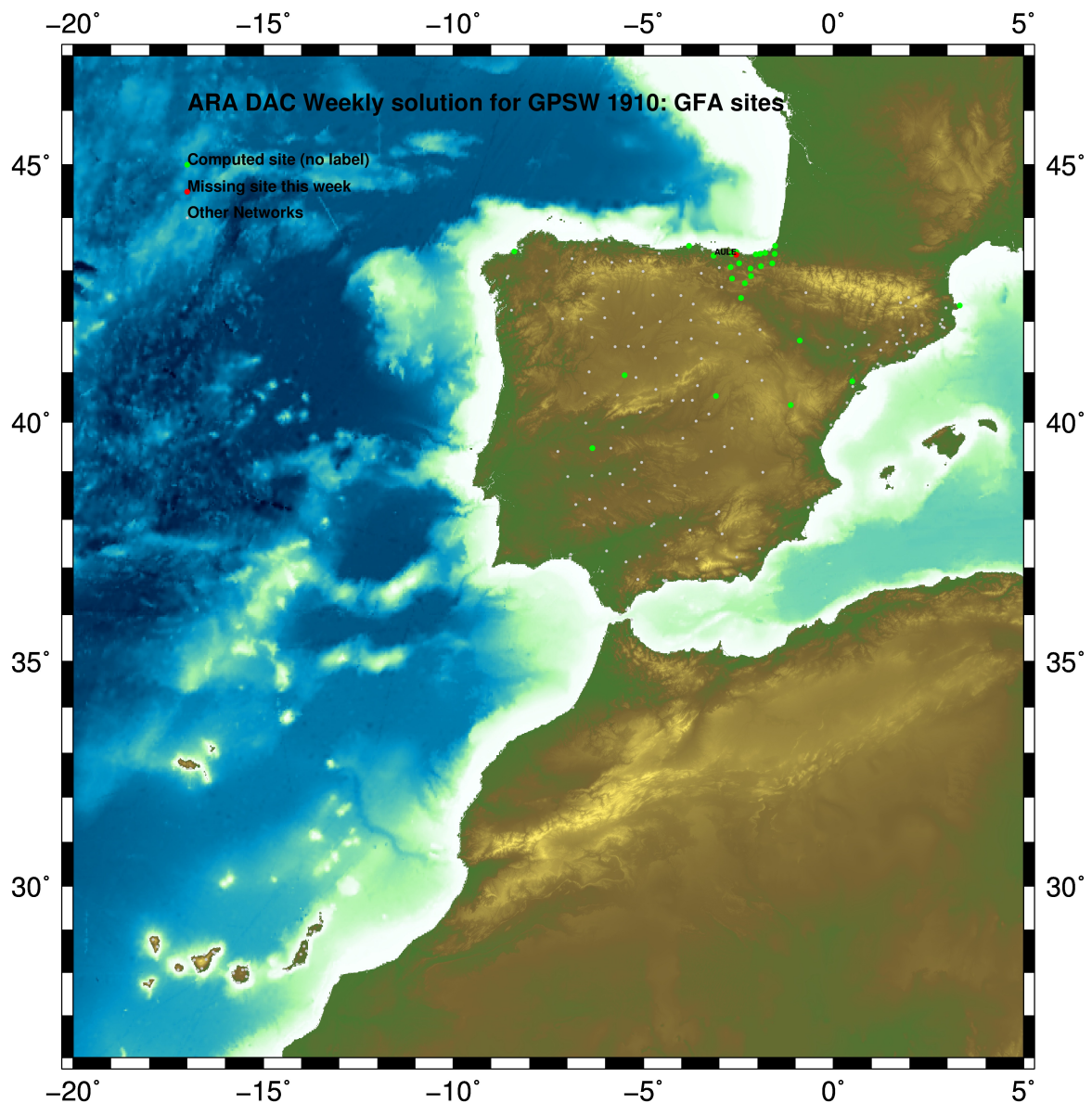
Report generated on 2016/08/28 at 13:04:34



1 Introduction

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

2 Map of Computed Sites



GM 2016 Aug 28 13:04:26

Fig.1: Computed Sites for GPS Week1910 (GFA)

3 Main Computation Parameters

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

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

4 Estimated Parameters

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

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

5 Computed Coordinates

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

5.1 IGB08

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

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ARA LAC 1910 WEEK COMBINATION: PRECISE ORBITS                28-AUG-16 11:58
-----
LOCAL GEODETIC DATUM: IGB08                                EPOCH: 2016-08-17 12:00:00
-----
NUM STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
 1 ACDR 13434M001     4594489.58761 -678367.50770 4357066.26636 W
 22 ALDA 19383M001     4687280.19091 -190876.61909 4308106.92377 A
 28 ALSA 19419M001     4677250.87338 -176770.44767 4319079.84539 A
 51 BIAZ 10074M002     4634456.09695 -124345.03236 4365785.43329 A
 55 BIDA 00000M000     4644177.85731 -145778.37578 4354832.45634 A
 54 BRZR 19387M001     4662221.01970 -220769.95307 4333309.40729 A
 7 CACE 13447M001     4899866.52862 -544567.08935 4033770.17132 W
 8 CANT 13438M001     4625924.34513 -307096.28705 4365771.52862 W
 69 CHER 00000M000     4645880.35391 -125721.97891 4353624.34437 A
 11 CREU 13432M001     4715420.16675 273178.00692 4271946.81235 A
 12 EBRE 13410M001     4833520.02122 41537.33862 4147461.68530 W
 77 ELGE 19353S001     4657557.43945 -202241.52729 4338991.84257 A
 87 GERN 19389M001     4642811.33896 -217222.98672 4353278.85666 A
 101 IGEL 19352S001     4645951.46177 -165574.55532 4352550.39156 A
 105 ISPS 19484M001     4640596.51437 -206963.82907 4356391.88393 A
 109 LAZK 19354S001     4666098.37501 -178186.24463 4330463.64742 A
 112 LEIT 19428M001     4663520.96802 -155859.77050 4334519.85240 A
 141 ORDN 19427M001     4659695.82310 -130864.78883 4338948.85989 A
 146 PAS2 19351S001     4644909.09132 -156645.12154 4353623.04881 A
 147 PASA 19351S001     4644909.09172 -156645.12115 4353623.04928 A
 27 RID1 13448M002     4708446.85532 -199490.33678 4284089.70746 W
 28 SALA 13469M001     4803054.51038 -462131.12246 4158379.04619 W
 172 SOPU 19386M001     4643997.94318 -255913.95999 4350063.11664 A
 31 TERU 13487M001     4867391.35053 -95523.40725 4108341.65516 W
 204 VITO 19385M001     4679397.73127 -218436.55925 4314898.33457 A
 35 YEBE 13420M001     4848724.59471 -261631.98373 4123094.29744 W
 36 ZARA 13462M001     4773803.19781 -73506.03550 4215454.06723 W
    
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5.2 ETRS89 Coordinates

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

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ETRF2000 COORD. wk 1910                                    28-AUG-16 11:58
-----
LOCAL GEODETIC DATUM: ETRF2000                            EPOCH: 2016-08-17 12:00:00
-----
NUM STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
 1 ACDR 13434M001     4594489.86755 -678367.99364 4357065.87064 W
 22 ALDA 19383M001     4687280.51960 -190877.11304 4308106.53711 A
 28 ALSA 19419M001     4677251.20426 -176770.94064 4319079.45958 A
 51 BIAZ 10074M002     4634456.43635 -124345.52116 4365785.05098 A
 55 BIDA 00000M000     4644178.19374 -145778.86555 4354832.07213 A
 54 BRZR 19387M001     4662221.34681 -220770.44472 4333309.02202 A
 7 CACE 13447M001     4899866.80235 -544567.60382 4033769.76614 W
 8 CANT 13438M001     4625924.66512 -307096.77543 4365771.14488 W
 69 CHER 00000M000     4645880.69239 -125722.46879 4353623.96126 A
 11 CREU 13432M001     4715420.54238 273177.51161 4271946.42879 A
 12 EBRE 13410M001     4833520.36442 41536.83152 4147461.29114 W
 77 ELGE 19353S001     4657557.76489 -202242.01846 4338991.45782 A
 87 GERN 19389M001     4642811.66771 -217223.47652 4353278.47276 A
 101 IGEL 19352S001     4645951.79595 -165575.04530 4352550.00801 A
 105 ISPS 19484M001     4640596.84440 -206964.31864 4356391.50029 A
 109 LAZK 19354S001     4666098.70646 -178186.73654 4330463.26235 A
 112 LEIT 19428M001     4663521.30210 -155859.26213 4334519.46775 A
 141 ORDN 19427M001     4659696.16011 -130865.28003 4338948.47578 A
 146 PAS2 19351S001     4644909.42652 -156645.61140 4353622.66543 A
 147 PASA 19351S001     4644909.42692 -156645.61101 4353622.66590 A
 27 RID1 13448M002     4708447.18158 -199490.83274 4284089.31926 W
 28 SALA 13469M001     4803054.80078 -462131.62779 4158378.64859 W
 172 SOPU 19386M001     4643998.26761 -255914.44998 4350062.73223 A
 31 TERU 13487M001     4867391.67671 -95523.91789 4108341.25718 W
 204 VITO 19385M001     4679398.05746 -218437.05251 4314897.94815 A
 35 YEBE 13420M001     4848724.90419 -261632.49299 4123093.89893 W
 36 ZARA 13462M001     4773803.53311 -73506.53731 4215453.67592 W
    
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5.3 Mean and Daily Repeatabilities

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

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ARA LAC 1910 WEEK COMBINATION: PRECISE ORBITS                28-AUG-16 11:58
-----
Station      #Days  Weekday  Repeatability (mm)
              0123456      N     E     U
    
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ACDR 13434M001	7	XXXXXX	0.66	0.68	4.75
ALDA 19383M001	7	XXXXXX	1.15	1.08	3.54
ALSA 19419M001	7	XXXXXX	1.09	0.84	4.31
BIAZ 10074M002	7	XXXXXX	1.15	0.51	2.05
BIDA 00000M000	7	XXXXXX	0.84	0.73	2.70
BRZR 19387M001	7	XXXXXX	0.74	0.67	2.17
CACE 13447M001	7	XXXXXX	0.38	0.32	3.65
CANT 13438M001	7	XXXXXX	0.97	0.60	2.86
CHER 00000M000	7	XXXXXX	0.92	1.32	2.59
CREU 13432M001	7	XXXXXX	0.69	0.55	4.81
EBRE 13410M001	7	XXXXXX	0.61	0.71	3.76
ELGE 19353S001	7	XXXXXX	0.50	0.62	2.77
GERN 19389M001	7	XXXXXX	1.19	0.93	3.12
IGEL 19352S001	7	XXXXXX	1.09	0.59	1.85
ISPS 19484M001	5	XXXXX	0.71	0.62	3.12
LAZK 19354S001	7	XXXXXX	1.10	0.68	3.06
LEIT 19428M001	7	XXXXXX	0.83	0.71	2.25
ORDN 19427M001	7	XXXXXX	0.84	0.89	2.18
PAS2 19351S001	7	XXXXXX	0.79	0.78	2.15
PASA 19351S001	7	XXXXXX	1.44	0.45	3.86
RID1 13448M002	7	XXXXXX	1.31	0.90	2.76
SALA 13469M001	7	XXXXXX	0.64	0.40	3.03
SOPU 19386M001	7	XXXXXX	0.55	0.86	5.93
TERU 13487M001	7	XXXXXX	1.16	0.75	2.98
VITO 19385M001	7	XXXXXX	1.10	0.86	2.66
YEBE 13420M001	7	XXXXXX	0.61	0.73	4.78
ZARA 13462M001	7	XXXXXX	0.92	0.79	1.90

Comparison of individual solutions:

ACDR 13434M001	N	0.66	-0.62	1.05	0.08	-0.85	-0.25	0.56	-0.01
ACDR 13434M001	E	0.68	-0.72	0.25	0.67	0.44	0.25	1.18	0.22
ACDR 13434M001	U	4.75	1.60	-6.44	-3.27	6.75	0.69	-5.15	2.81
ALDA 19383M001	N	1.15	-1.49	-0.96	-0.56	-0.44	0.32	-0.57	1.97
ALDA 19383M001	E	1.08	0.67	1.10	-0.03	-1.00	-1.28	1.05	-1.25
ALDA 19383M001	U	3.54	3.33	-4.59	6.32	-0.58	-1.46	-0.62	-0.47
ALSA 19419M001	N	1.09	-1.42	-0.37	-0.71	-0.88	-0.03	1.92	-0.11
ALSA 19419M001	E	0.84	0.20	0.59	0.11	-1.53	-1.04	0.41	0.52
ALSA 19419M001	U	4.31	1.98	5.06	6.99	-2.14	-4.50	-2.54	-1.24
BIAZ 10074M002	N	1.15	-0.87	1.03	1.48	-1.48	-0.53	-0.02	-1.18
BIAZ 10074M002	E	0.51	-0.25	-0.13	-0.23	-0.44	-0.83	0.40	0.61
BIAZ 10074M002	U	2.05	-0.22	2.28	2.63	-2.56	1.25	-1.74	1.35
BIDA 00000M000	N	0.84	-1.00	0.14	0.56	-1.10	0.30	-1.08	0.66
BIDA 00000M000	E	0.73	0.16	0.50	-0.38	-0.03	-1.47	0.78	-0.24
BIDA 00000M000	U	2.70	-1.70	0.36	2.89	-2.42	0.87	-1.37	4.88
BRZR 19387M001	N	0.74	-0.15	-0.52	0.38	-0.73	-0.37	0.99	-1.08
BRZR 19387M001	E	0.67	-0.34	0.85	0.10	-0.19	-1.23	0.43	-0.33
BRZR 19387M001	U	2.17	1.62	-1.34	-0.47	3.02	0.88	2.24	-2.95
CACE 13447M001	N	0.38	0.44	-0.18	-0.08	0.67	0.10	-0.38	0.17
CACE 13447M001	E	0.32	-0.12	0.13	-0.21	-0.09	-0.50	-0.46	-0.28
CACE 13447M001	U	3.65	-6.15	3.04	-0.41	3.00	0.13	-0.59	4.81
CANT 13438M001	N	0.97	-1.30	-1.57	0.80	0.21	-0.49	0.75	0.25
CANT 13438M001	E	0.60	-0.08	0.46	0.73	0.99	-0.31	0.00	-0.58
CANT 13438M001	U	2.86	-1.60	2.93	1.76	-0.44	-3.70	4.30	1.52
CHER 00000M000	N	0.92	-0.14	0.38	1.30	-1.40	-0.28	-0.90	-0.59
CHER 00000M000	E	1.32	0.80	1.05	-0.14	-0.51	-1.97	1.26	-1.74
CHER 00000M000	U	2.59	0.82	5.60	-0.80	-2.63	-0.57	0.59	0.28
CREU 13432M001	N	0.69	0.33	0.21	0.15	-0.28	-0.02	-1.32	0.95
CREU 13432M001	E	0.55	-0.03	-0.07	-0.06	1.25	0.26	-0.26	0.39
CREU 13432M001	U	4.81	-4.76	3.94	1.28	-4.34	-2.18	-0.78	8.66
EBRE 13410M001	N	0.61	0.42	0.48	-1.24	0.39	-0.05	0.07	0.36
EBRE 13410M001	E	0.71	0.25	-0.52	0.06	0.13	1.60	0.06	-0.33
EBRE 13410M001	U	3.76	-5.17	-4.40	3.82	0.40	0.01	4.84	-0.76
ELGE 19353S001	N	0.50	-0.21	0.49	-0.19	-1.00	-0.29	-0.15	-0.27
ELGE 19353S001	E	0.62	-0.85	-0.69	0.30	0.56	-0.70	0.12	0.42
ELGE 19353S001	U	2.77	3.02	0.51	2.31	1.10	-2.52	2.10	-4.41
GERN 19389M001	N	1.19	-2.15	0.98	1.36	-0.84	-0.32	-0.43	-0.17
GERN 19389M001	E	0.95	-0.36	-1.10	-0.99	0.14	-1.03	1.68	0.06
GERN 19389M001	U	3.12	3.59	1.22	3.58	-2.09	-0.81	1.84	-4.78
IGEL 19352S001	N	1.09	-0.24	1.45	0.83	-1.79	-0.68	-0.65	-0.42
IGEL 19352S001	E	0.59	-0.67	-0.06	0.14	0.43	-1.15	0.03	0.37
IGEL 19352S001	U	1.85	0.03	1.10	2.98	-0.39	-2.08	2.24	-0.96
ISPS 19484M001	N	0.71			0.54	-1.00	-0.28	-0.68	0.42
ISPS 19484M001	E	0.62			-0.43	-0.33	-0.66	0.05	0.89
ISPS 19484M001	U	3.12			4.45	-0.73	-0.43	0.82	-4.23
LAZK 19354S001	N	1.10	-0.23	-1.11	1.84	-1.34	-0.79	-0.26	0.26
LAZK 19354S001	E	0.68	-0.70	0.61	0.18	0.09	-1.30	0.39	-0.04
LAZK 19354S001	U	3.06	0.62	4.61	1.89	1.50	-1.93	1.31	-4.82
LEIT 19428M001	N	0.83	-0.29	0.61	0.10	-1.05	-0.34	0.80	-1.33
LEIT 19428M001	E	0.71	-0.16	-0.10	0.77	-0.34	-0.82	0.74	-1.03
LEIT 19428M001	U	2.25	-1.52	-3.03	2.28	2.06	1.54	-1.56	2.16
ORON 19427M001	N	0.84	0.33	0.14	0.35	-1.56	0.05	-1.02	0.68
ORON 19427M001	E	0.89	0.53	0.65	0.27	-0.70	-1.56	0.55	-0.84
ORON 19427M001	U	2.18	-1.57	-1.16	2.46	-0.69	-0.85	4.18	-0.03
PAS2 19351S001	N	0.79	-0.55	0.89	0.27	-0.10	-0.60	0.05	-1.48
PAS2 19351S001	E	0.78	-0.59	-0.73	0.23	0.72	-1.12	0.90	-0.33
PAS2 19351S001	U	2.15	-3.58	0.17	1.95	-1.08	1.19	2.59	1.30
PASA 19351S001	N	1.44	-2.24	0.02	0.35	-0.37	2.22	-0.09	-1.52
PASA 19351S001	E	0.45	-0.16	-0.69	-0.23	0.21	-0.41	0.60	-0.32
PASA 19351S001	U	3.86	-0.37	4.54	1.07	-0.04	-7.35	3.20	1.83
RID1 13448M002	N	1.31	-0.93	2.14	0.00	-1.58	-1.41	0.53	-0.40
RID1 13448M002	E	0.90	-0.66	-1.10	0.97	-0.00	-1.06	1.07	-0.07
RID1 13448M002	U	2.76	3.05	0.92	-1.08	-1.83	-1.88	-0.18	5.23
SALA 13469M001	N	0.64	0.10	-0.43	-0.78	1.00	-0.08	0.68	-0.44
SALA 13469M001	E	0.40	0.19	-0.37	0.11	-0.26	-0.45	-0.45	-0.55
SALA 13469M001	U	3.03	4.33	1.34	-4.22	2.35	-3.08	1.29	-0.54
SOPU 19386M001	N	0.55	-0.04	0.03	-0.19	-0.84	0.30	0.71	-0.69
SOPU 19386M001	E	0.86	1.46	0.71	0.58	-0.24	-1.01	0.04	-0.61
SOPU 19386M001	U	5.93	0.63	10.72	4.88	-2.34	-6.24	-0.67	-5.22
TERU 13487M001	N	1.16	1.61	-1.68	-0.88	0.30	1.33	-0.26	-0.04
TERU 13487M001	E	0.75	0.96	0.09	0.59	0.69	0.63	-0.74	-0.82
TERU 13487M001	U	2.98	-4.20	1.02	0.49	-1.93	5.41	0.50	-1.04
VITO 19385M001	N	1.10	-0.20	-1.60	1.79	0.49	-0.05	0.01	-1.09
VITO 19385M001	E	0.86	-0.20	-0.34	-0.70	0.44	-1.18	0.50	1.41
VITO 19385M001	U	2.66	2.54	-0.65	3.51	-0.43	-1.43	2.62	-3.76
YEBE 13420M001	N	0.61	-0.19	0.48	-0.04	0.27	1.02	-0.93	-0.06
YEBE 13420M001	E	0.73	0.09	-0.09	1.19	1.14	-0.33	-0.26	0.52
YEBE 13420M001	U	4.78	1.97	-7.63	8.27	-2.10	-0.98	-0.63	-0.84
ZARA 13462M001	N	0.92	0.68	-1.08	-0.02	0.66	-0.55	1.45	-0.78
ZARA 13462M001	E	0.79	0.06	-0.77	-0.04	0.02	1.69	0.56	-0.09
ZARA 13462M001	U	1.90	0.46	-1.53	0.46	-0.23	1.25	2.76	-3.10

5.4 Datum verification

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

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

NUM	NAME	FLG	RESIDUALS IN MILLIMETERS		
1	ACDR 13434M001	I W	-1.94	0.48	1.27
2	ALAC 13433M001	I W	0.33	0.38	0.85
3	ALBA 13452M001	I W	-0.43	1.69	-0.62
4	ALME 13437M001	I W	0.73	0.09	3.70
6	BRST 10004M004	I W	-0.96	-0.41	-1.10
7	CACE 13447M001	I W	0.96	0.52	2.22
8	CANT 13436M001	I W	-1.67	-0.55	-3.13
9	CEU1 13449M002	I W	2.77	3.01	5.46
10	COBA 13453M001	I W	1.48	-0.07	-2.97
12	EBRE 13410M001	I W	1.54	-1.69	0.40
14	FUNC 13911S001	I W	-0.32	0.01	2.18
16	HUEL 13451M001	I W	0.87	0.31	-0.87
17	IZAN 31309M002	I W	-1.46	2.42	-0.18
18	LLIV 13436M001	I W	4.30	-1.84	-3.10
19	LPAL 81701M001	I W	-1.53	1.01	-0.25
20	LROC 10023M001	I W	1.65	-2.15	-1.86
21	MALA 13443M001	I W	-2.66	2.10	-0.63
22	MALL 13444M001	I W	-0.11	-1.34	1.00
24	MELI 13379M001	I W	-0.93	-0.59	-1.76
25	FDEL 31906M004	I W	-2.83	-1.84	4.20
26	RABT 35001M002	I W	0.97	1.22	-0.26
27	RID1 13448M002	I W	-0.89	0.58	-2.05
28	SALA 13469M001	I W	-0.46	-0.96	0.34
29	SCDA 10088M002	I W	-0.16	-1.63	-5.84
30	SDNS 13446M001	I W	-1.92	-1.10	-2.90
31	TERU 13487M001	I W	2.10	0.70	-1.48
32	VALE 13439M001	I W	-0.23	0.80	0.95
33	VIGO 13450M001	I W	-1.00	0.30	4.15
34	VILL 13406M001	I W	0.47	1.62	-1.95
35	YEBE 13420M001	I W	1.67	0.61	3.76
36	ZARA 13462M001	I W	-0.41	-1.91	1.27
37	ZIMM 14001M004	I W	0.08	-1.76	-0.81
	RMS / COMPONENT		1.59	1.37	2.54
	MEAN		0.00	-0.00	-0.00
	MIN		-2.83	-2.15	-5.84
	MAX		4.30	3.01	5.46

NUMBER OF PARAMETERS : 3
NUMBER OF COORDINATES : 96
RMS OF TRANSFORMATION : 1.90 MM

5.5 Adjustment Statistics

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

```
* STATISTICAL PARAMETER-----VALUE(S)-----
NUMBER OF OBSERVATIONS          8731487
NUMBER OF UNKNOWN              131116
NUMBER OF DEGREES OF FREEDOM    8600371
PHASE MEASUREMENTS SIGMA       0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                 2.358850411495964

Helmert Transformation Parameters With Respect to Combined Solution:
-----
Sol  Rms (m)      Translation (m)      Rotation (")      Scale (ppm)
      X          Y          Z          X          Y          Z
-----
 1  0.00204      0.0176  0.0374 -0.0194 -0.0006  0.0008  0.0011  0.00011
 2  0.00234     -0.0153  0.0202  0.0208 -0.0005 -0.0008  0.0004  0.00006
 3  0.00218     -0.0057  0.0065  0.0071 -0.0002 -0.0003  0.0001  0.00013
 4  0.00199      0.0022  0.0158 -0.0066 -0.0002  0.0002  0.0005  0.00055
 5  0.00169     -0.0041 -0.0276  0.0088  0.0005 -0.0003 -0.0008 -0.00068
 6  0.00210      0.0252 -0.0070 -0.0250  0.0002  0.0011 -0.0001 -0.00076
 7  0.00205     -0.0082 -0.0159  0.0042  0.0002 -0.0003 -0.0005  0.00043
```

```
Statistics of individual solutions:
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
 1  0.00147      1259987      2.16      1279914      3      579      19351      0
 2  0.00161      1238010      2.60      1258448      3      579      19862      0
 3  0.00154      1240901      2.38      1260184      3      585      18701      0
 4  0.00153      1195680      2.35      1213878      3      540      17661      0
 5  0.00147      1188845      2.17      1206284      3      522      16920      0
 6  0.00156      1217619      2.42      1236685      3      579      18490      0
 7  0.00154      1255972      2.37      1276094      3      582      19543      0
```

6 Equipment

6.1 Receiver List

Serial numbers not shown.

```
*SITE PT SOLN T DATA_START__ DATA_END_____ DESCRIPTION_____ S/N__ FIRMWARE___
ACOR  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200PRO -----
ALDA  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
ALSA  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200GGPRO -----
BIAZ  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200GGPRO -----
BIDA  A  1 P 16:227:00000 16:233:85470 LEICA GR10 -----
BIDA  A  1 P 16:227:00000 16:233:85470 LEICA GR10 -----
BRZR  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
CACE  A  1 P 16:227:00000 16:233:86370 TRIMBLE NETR9 -----
CANT  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
CHER  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200+GNSS -----
CREU  A  1 P 16:227:00030 16:233:86370 LEICA GR25 -----
EBRE  A  1 P 16:227:00000 16:233:86370 TRIMBLE NETR9 -----
ELGE  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
GERN  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
IGEL  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
ISPS  A  1 P 16:229:00000 16:233:86370 TRIMBLE NETR9 -----
LAZK  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
LEIT  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200+GNSS -----
ORON  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200GGPRO -----
PAS2  A  1 P 16:227:00000 16:233:86370 TPS NET-G3A -----
PASA  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
RIO1  A  1 P 16:227:00000 16:233:86370 LEICA GR25 -----
SALA  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200+GNSS -----
SOPU  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
TERU  A  1 P 16:227:00000 16:233:86370 LEICA GRX1200GGPRO -----
VITO  A  1 P 16:227:00000 16:233:86370 LEICA GR10 -----
YEBE  A  1 P 16:227:00000 16:233:86370 TRIMBLE NETRS -----
ZARA  A  1 P 16:227:00000 16:233:86370 TRIMBLE NETR9 -----
```

6.2 Antennas

Serial number ONLY provided in case individual calibrations are available.

```
*SITE PT SOLN T DATA_START__ DATA_END_____ DESCRIPTION_____ S/N__
ACOR  A  1 P 16:227:00000 16:233:86370 LEIAT504      LEIS -----
ALDA  A  1 P 16:227:00000 16:233:86370 LEIAS10      NONE -----
ALSA  A  1 P 16:227:00000 16:233:86370 LEIAX1202GG  NONE -----
BIAZ  A  1 P 16:227:00000 16:233:86370 LEIAR25      LEIT -----
BIDA  A  1 P 16:227:00000 16:233:85470 LEIAS10      NONE -----
BIDA  A  1 P 16:227:00000 16:233:85470 LEIAS10      NONE -----
BRZR  A  1 P 16:227:00000 16:233:86370 LEIAS10      NONE -----
CACE  A  1 P 16:227:00000 16:233:86370 TRM29659.00  NONE -----
```

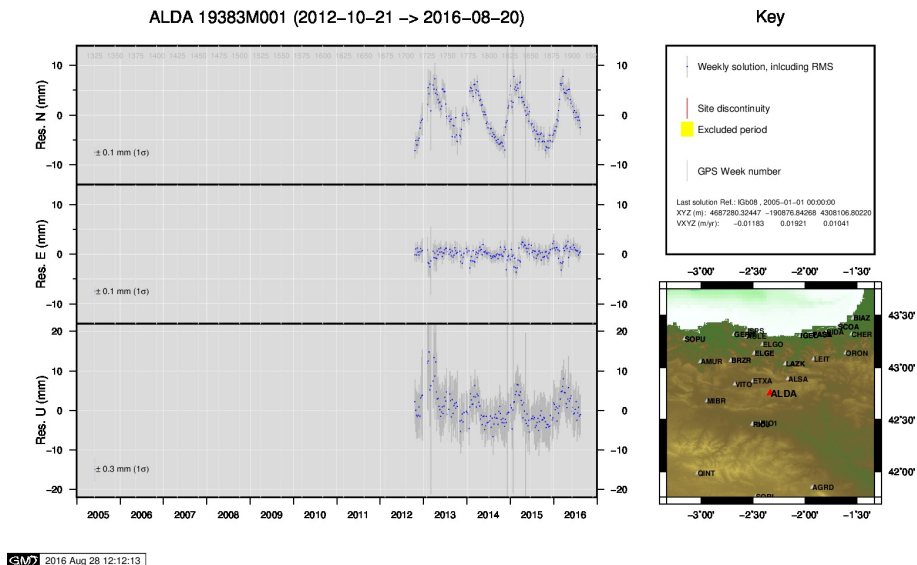
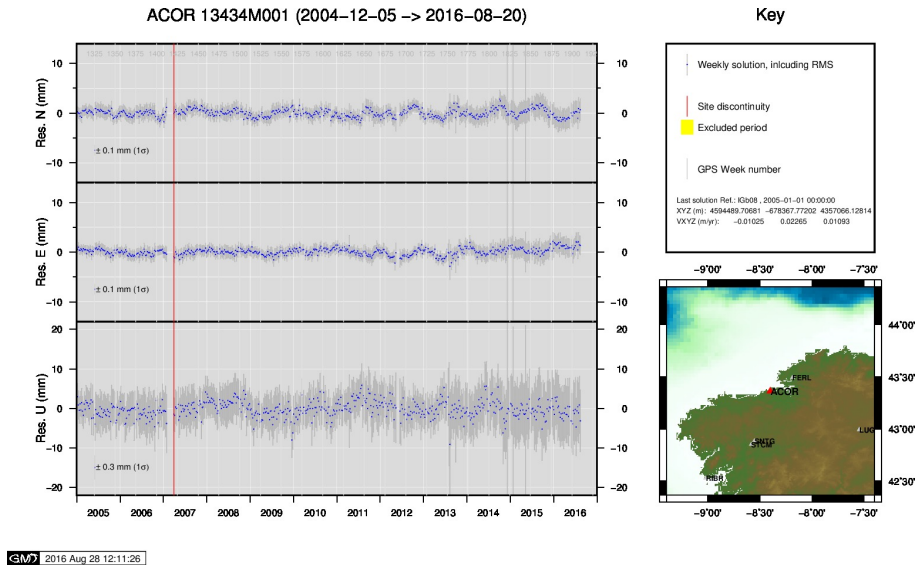
CANT	A	1 P	16:227:00000	16:233:86370	LEIAR25_R4	LEIT	25066
CHER	A	1 P	16:227:00000	16:233:86370	LEIAX1203+GNSS	NONE	-----
CREU	A	1 P	16:227:00030	16:233:86370	LEIAR25_R4	NONE	26357
EBRE	A	1 P	16:227:00000	16:233:86370	TRM57971.00	NONE	25503
ELGE	A	1 P	16:227:00000	16:233:86370	LEIAR25_R4	LEIT	-----
GERN	A	1 P	16:227:00000	16:233:86370	LEIAS10	NONE	-----
IGEL	A	1 P	16:227:00000	16:233:86370	LEIAR20	LEIM	-----
ISPS	A	1 P	16:229:00000	16:233:86370	TRM59900.00	SCIS	-----
LAZK	A	1 P	16:227:00000	16:233:86370	LEIAR25_R4	LEIT	-----
LEIT	A	1 P	16:227:00000	16:233:86370	LEIAX1203+GNSS	NONE	-----
ORON	A	1 P	16:227:00000	16:233:86370	LEIAX1202GG	NONE	-----
PAS2	A	1 P	16:227:00000	16:233:86370	LEIAR20	LEIM	73034
PASA	A	1 P	16:227:00000	16:233:86370	LEIAR20	LEIM	73034
RID1	A	1 P	16:227:00000	16:233:86370	LEIAR25_R4	LEIT	25138
SALA	A	1 P	16:227:00000	16:233:86370	LEIAR25	NONE	-----
SOPU	A	1 P	16:227:00000	16:233:86370	LEIAS10	NONE	-----
TERU	A	1 P	16:227:00000	16:233:86370	LEIAT504GG	LEIS	-----
VITO	A	1 P	16:227:00000	16:233:86370	LEIAS10	NONE	-----
YEBE	A	1 P	16:227:00000	16:233:86370	TRM29659.00	NONE	-----
ZARA	A	1 P	16:227:00000	16:233:86370	TRM29659.00	NONE	-----

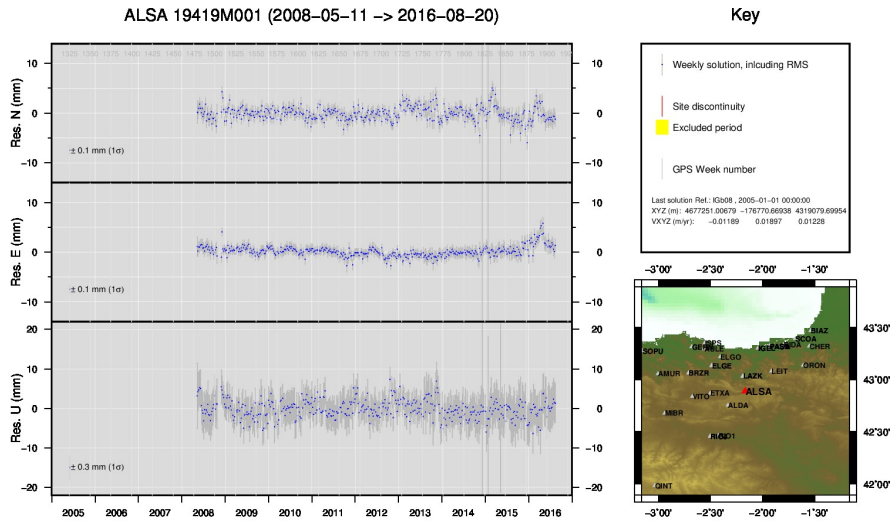
6.3 Eccentricities

*SITE	PT	SOLN	T	DATA_START_	DATA_END_	AXE	ARP->BENCHMARK(M)	UP_	NORTH_	EAST_
ACOR	A	1 P	16:227:00000	16:233:86370	UNE	3.0460	0.0000	0.0000	0.0000	0.0000
ALDA	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ALSA	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
BIAZ	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
BIDA	A	1 P	16:227:00000	16:233:85470	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
BIDA	A	1 P	16:227:00000	16:233:85470	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
BRZR	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
CACE	A	1 P	16:227:00000	16:233:86370	UNE	0.0600	0.0000	0.0000	0.0000	0.0000
CANT	A	1 P	16:227:00000	16:233:86370	UNE	3.0490	0.0000	0.0000	0.0000	0.0000
CHER	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
CREU	A	1 P	16:227:00030	16:233:86370	UNE	0.0770	0.0000	0.0000	0.0000	0.0000
EBRE	A	1 P	16:227:00000	16:233:86370	UNE	0.0770	0.0000	0.0000	0.0000	0.0000
ELGE	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
GERN	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
IGEL	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ISPS	A	1 P	16:229:00000	16:233:86370	UNE	0.0350	0.0000	0.0000	0.0000	0.0000
LAZK	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
LEIT	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ORON	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
PAS2	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
PASA	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
RID1	A	1 P	16:227:00000	16:233:86370	UNE	0.0606	0.0000	0.0000	0.0000	0.0000
SALA	A	1 P	16:227:00000	16:233:86370	UNE	0.0600	0.0000	0.0000	0.0000	0.0000
SOPU	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
TERU	A	1 P	16:227:00000	16:233:86370	UNE	0.0600	0.0000	0.0000	0.0000	0.0000
VITO	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
YEBE	A	1 P	16:227:00000	16:233:86370	UNE	0.0000	0.0000	0.0000	0.0000	0.0000
ZARA	A	1 P	16:227:00000	16:233:86370	UNE	3.2590	0.0000	0.0000	0.0000	0.0000

7 Cumulative Time Series

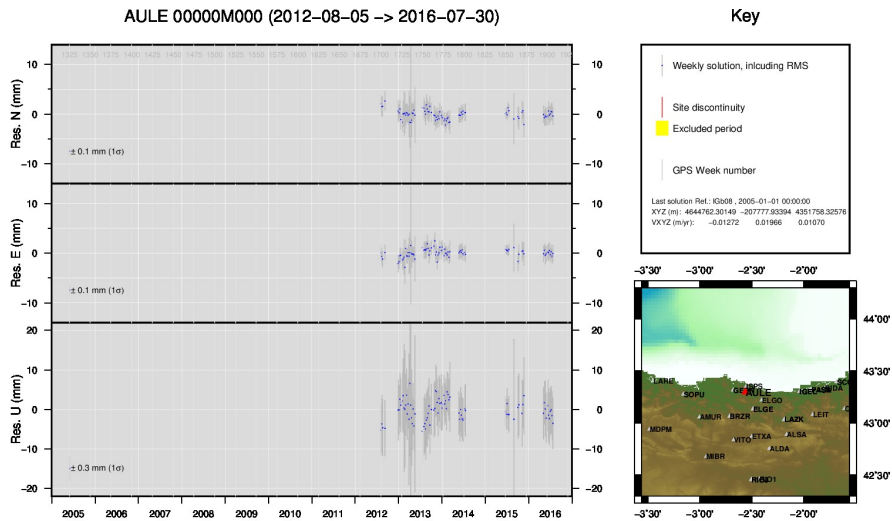
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.





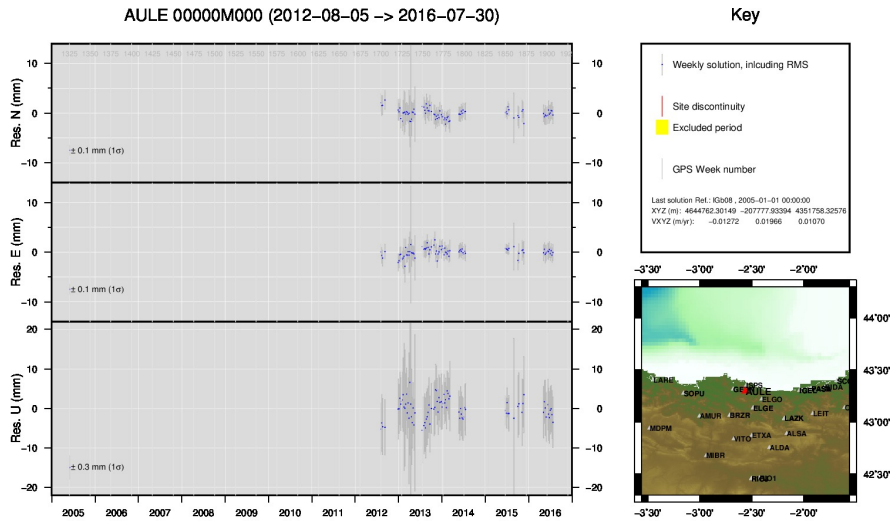
GMW 2016 Aug 28 12:12:53

3) ALSA



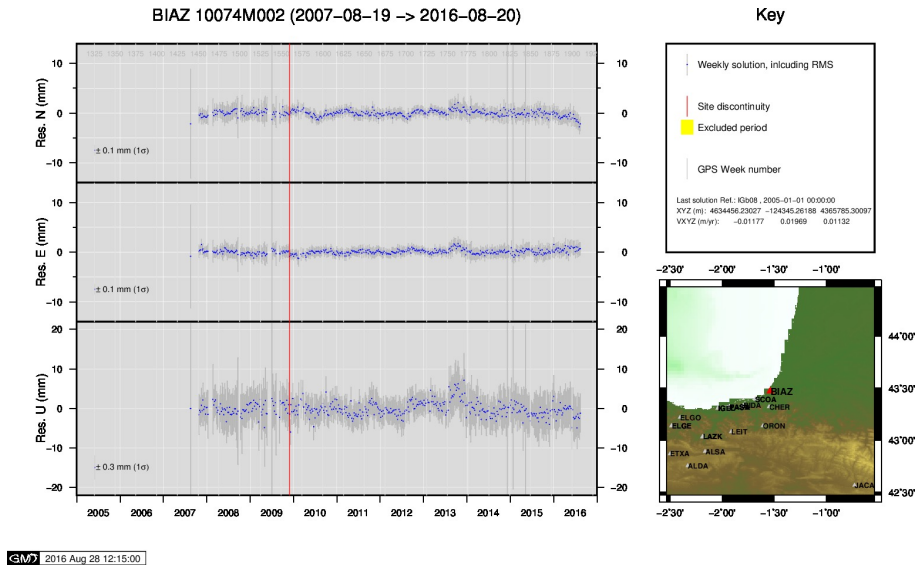
GMW 2016 Aug 28 12:13:57

4) AULE

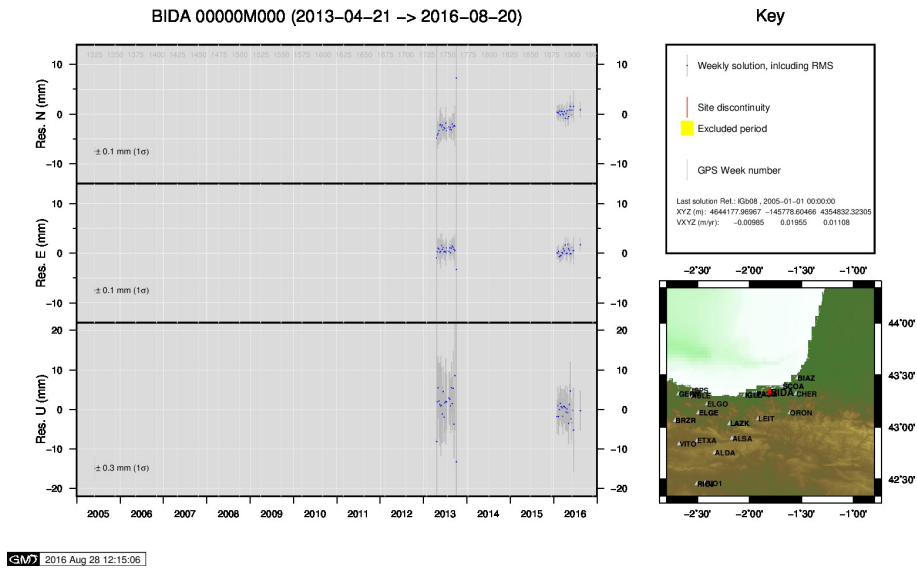


GMW 2016 Aug 28 12:13:57

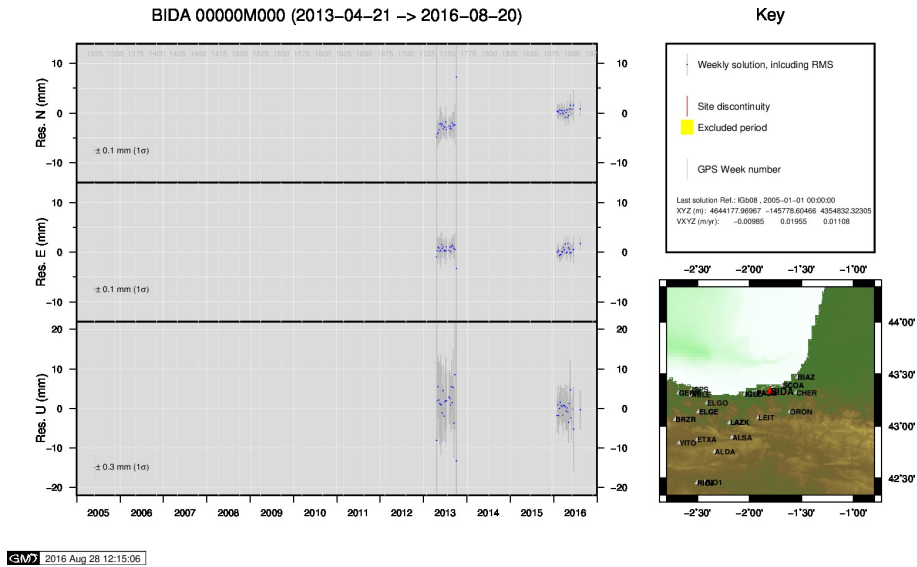
5) AULE



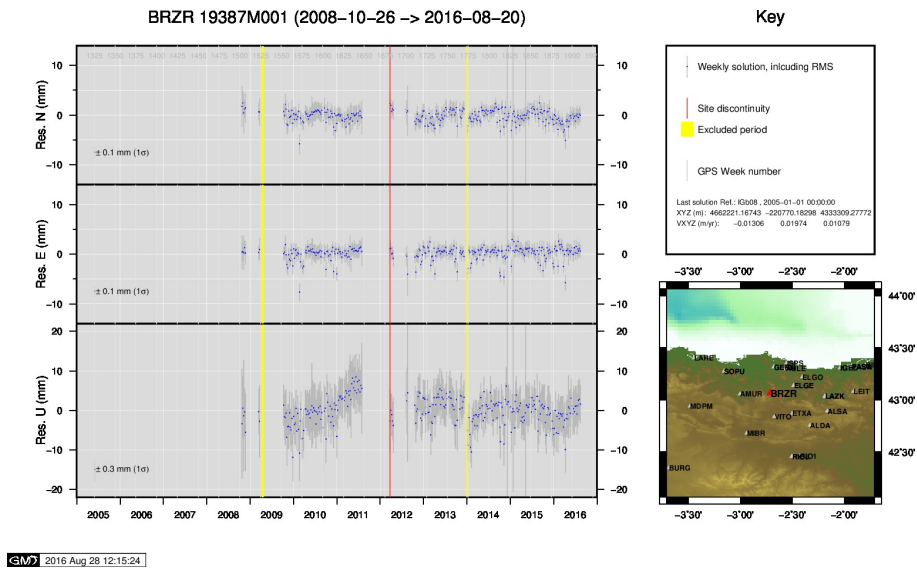
6) BIAZ



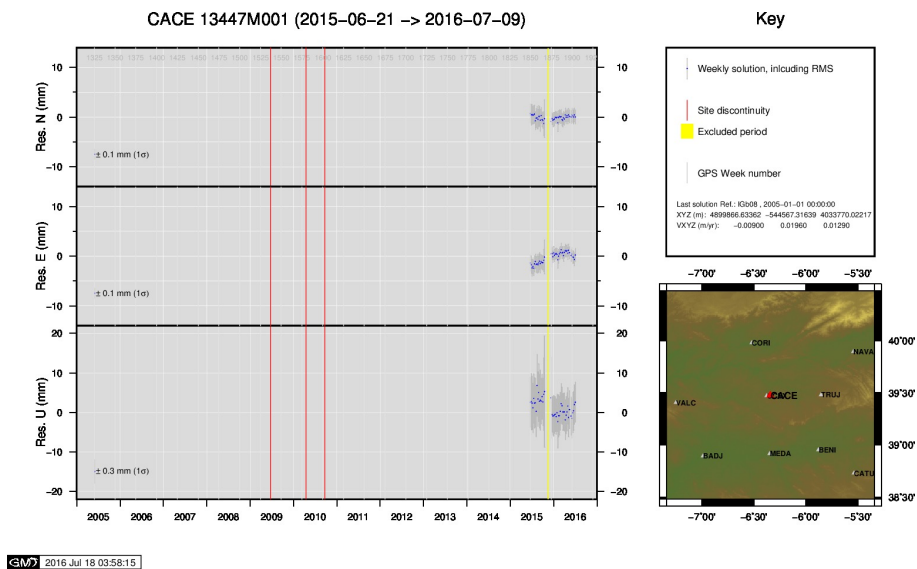
7) BIDA



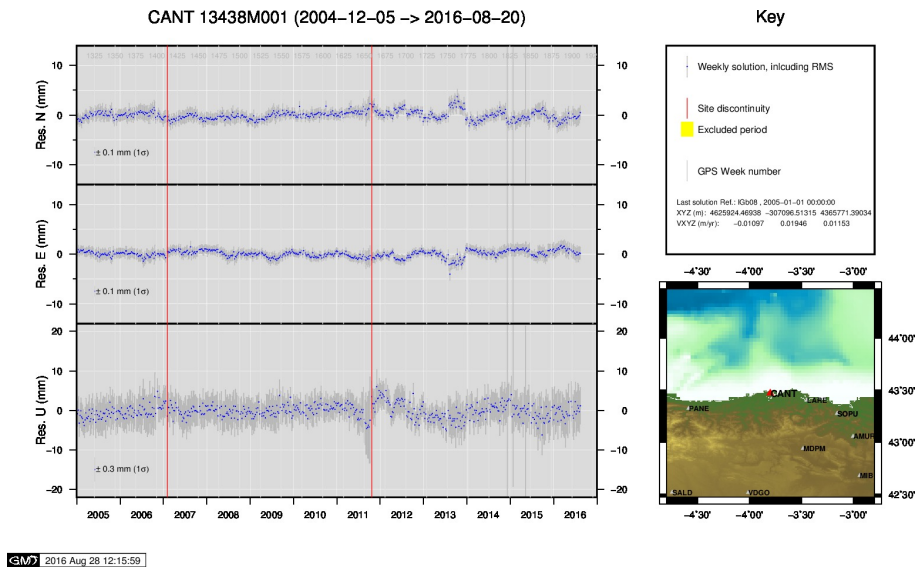
8) BIDA



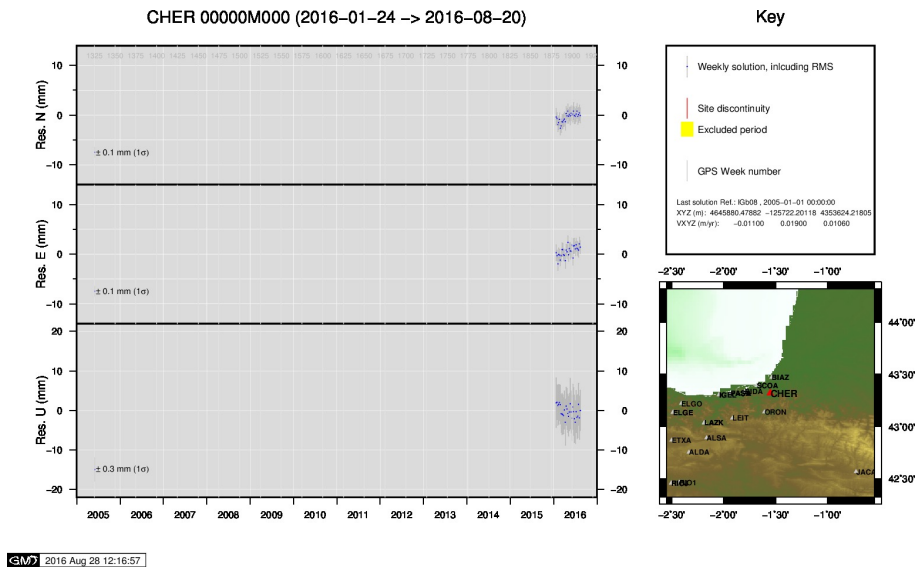
9) BRZR



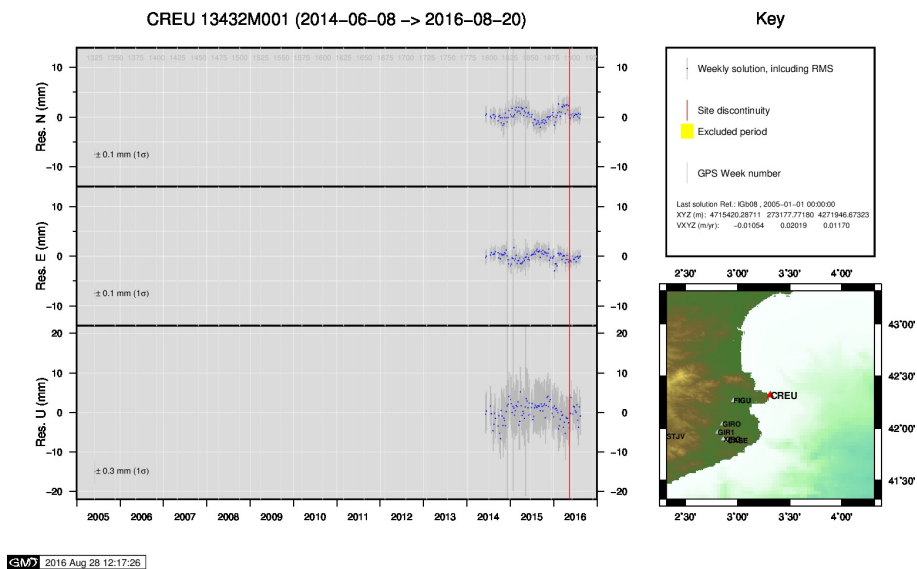
10) CACE



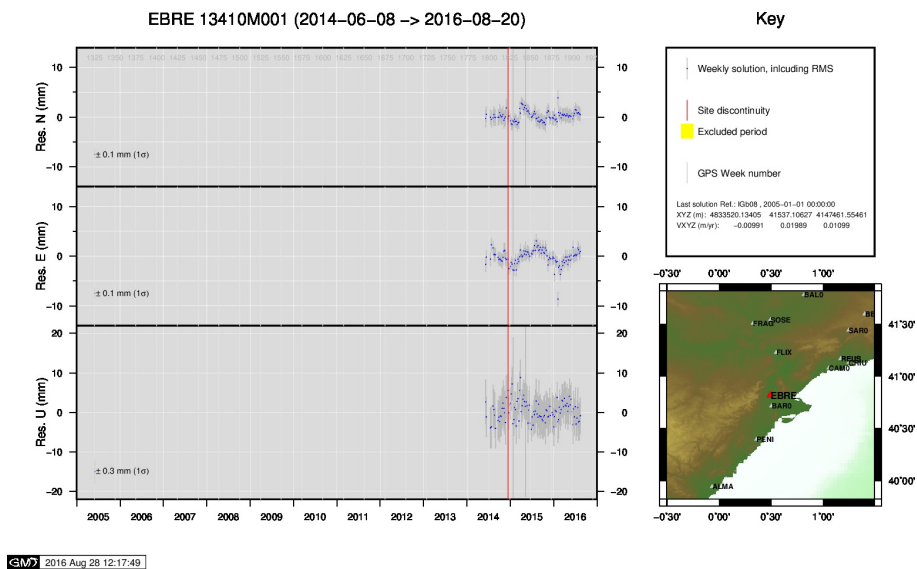
11) CANT



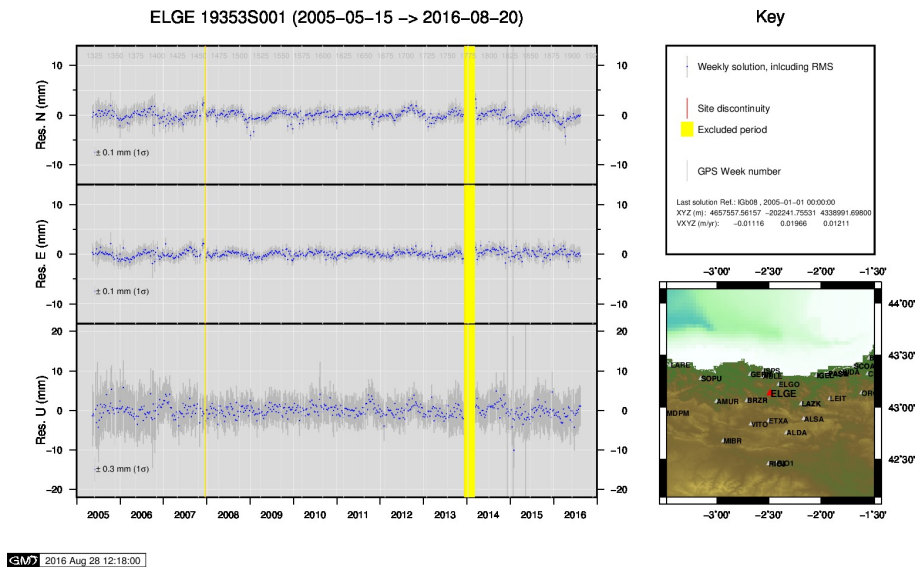
12) CHER



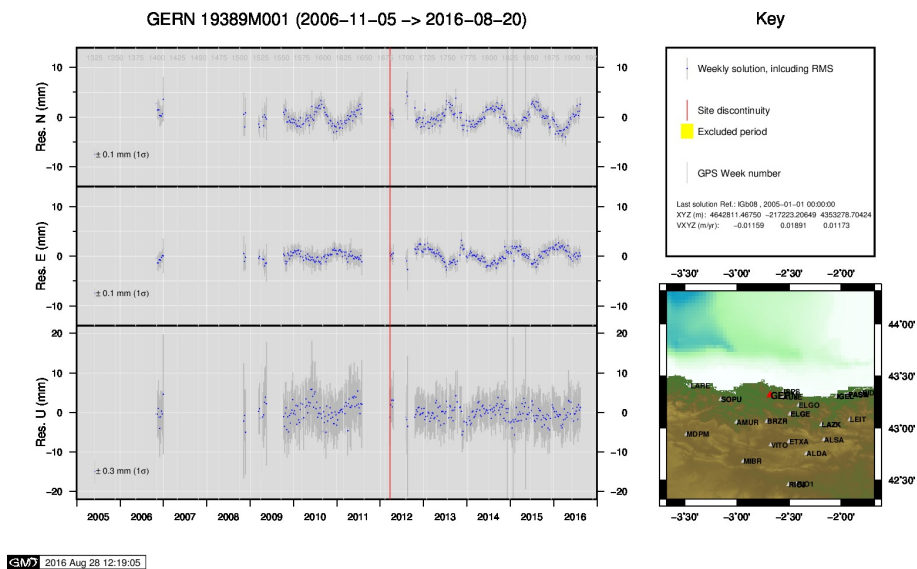
13) CREU



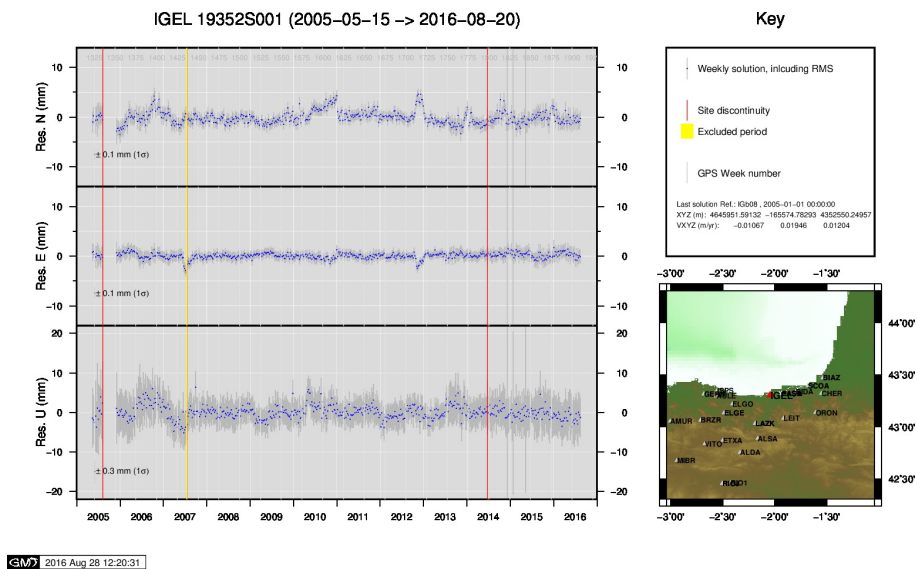
14) EBRE



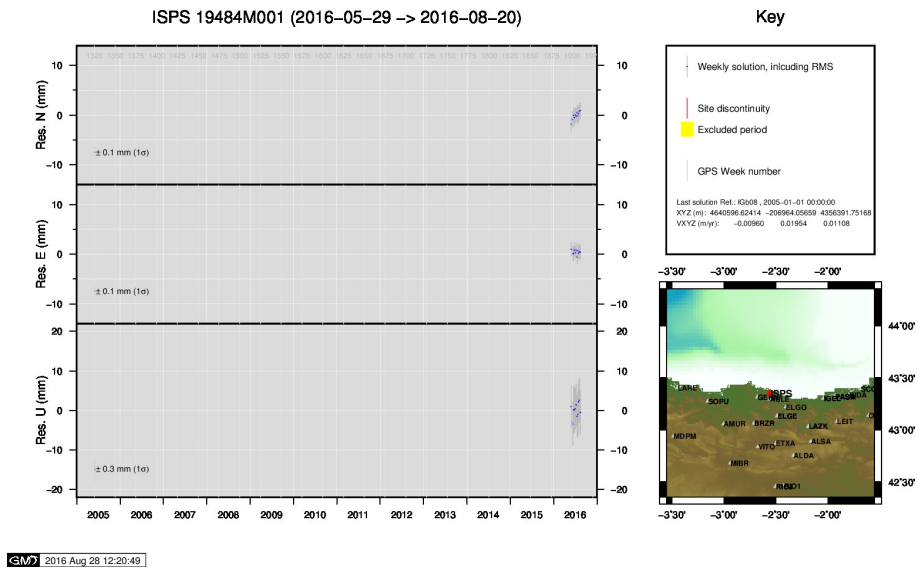
15) ELGE



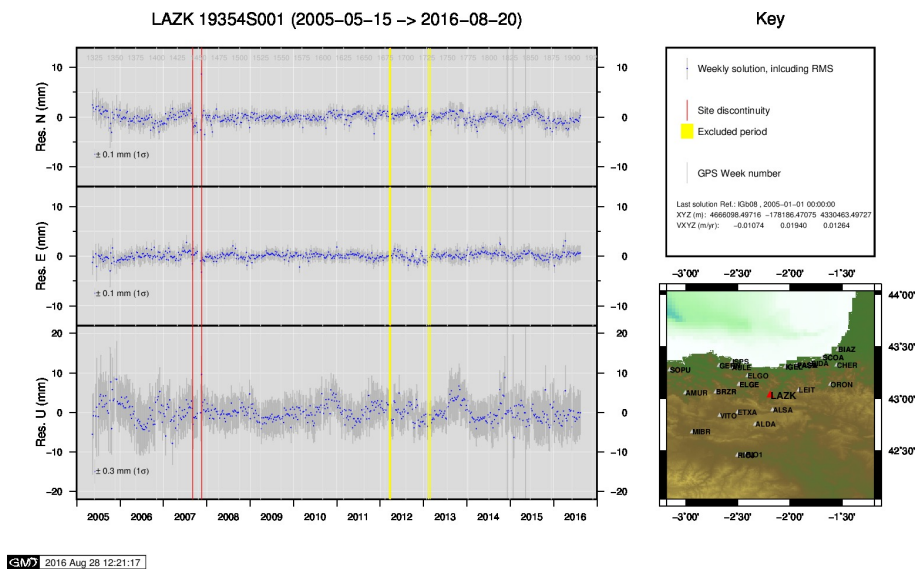
16) GERN



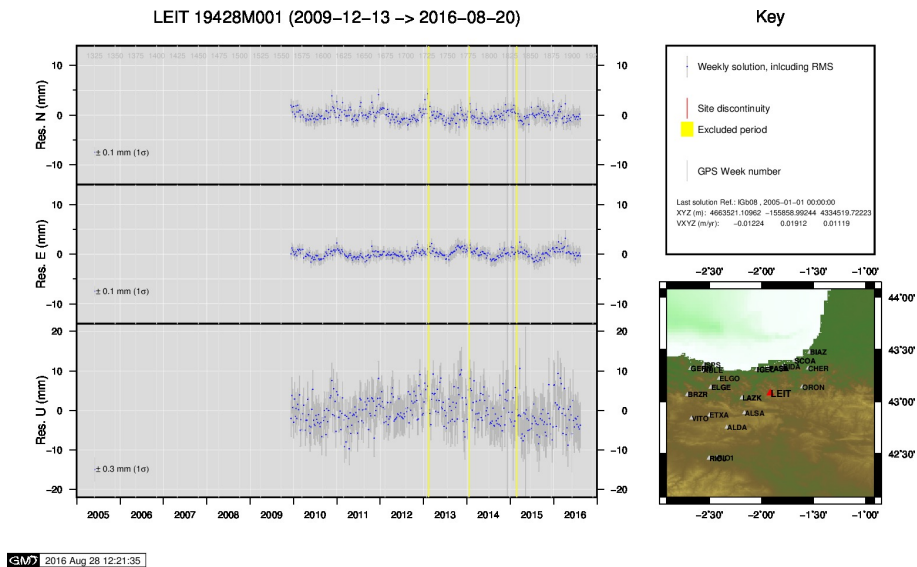
17) IGEL



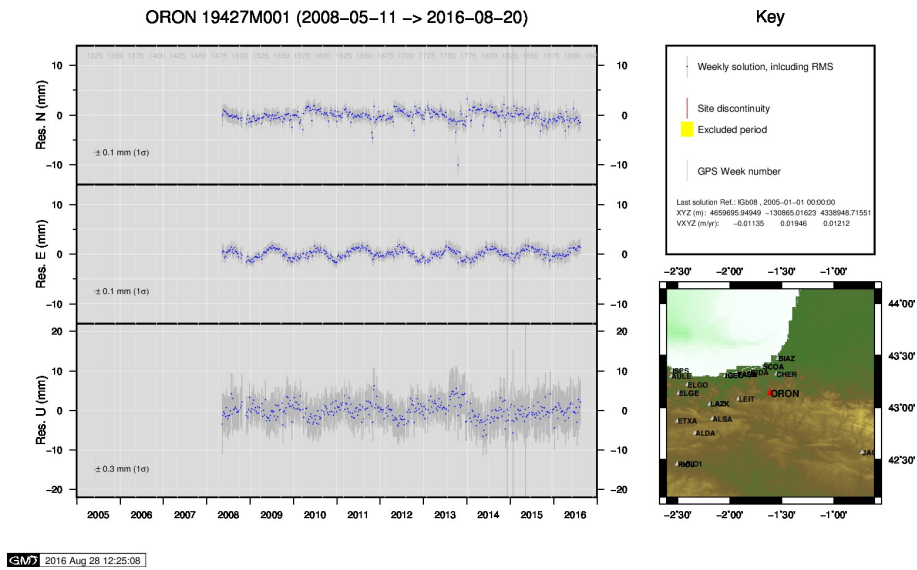
18) ISPS



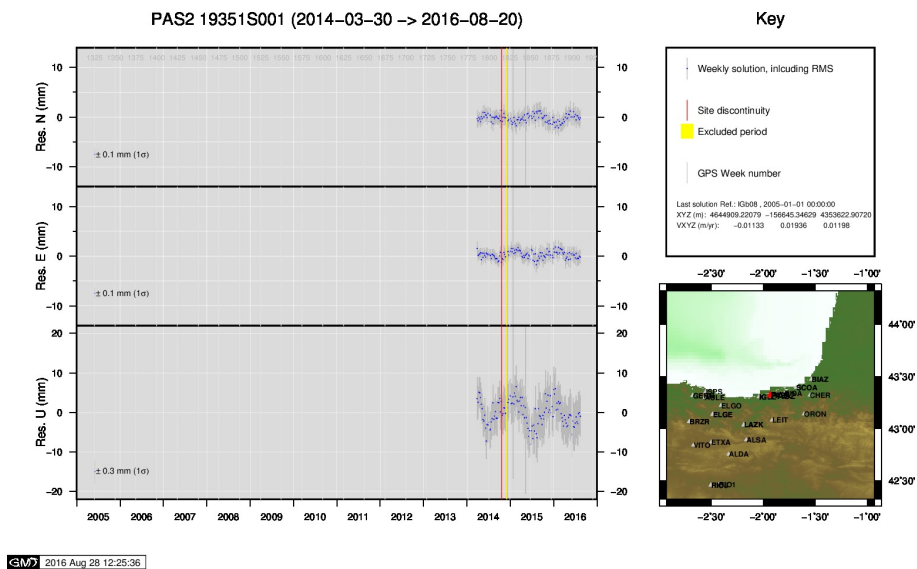
19) LAZK



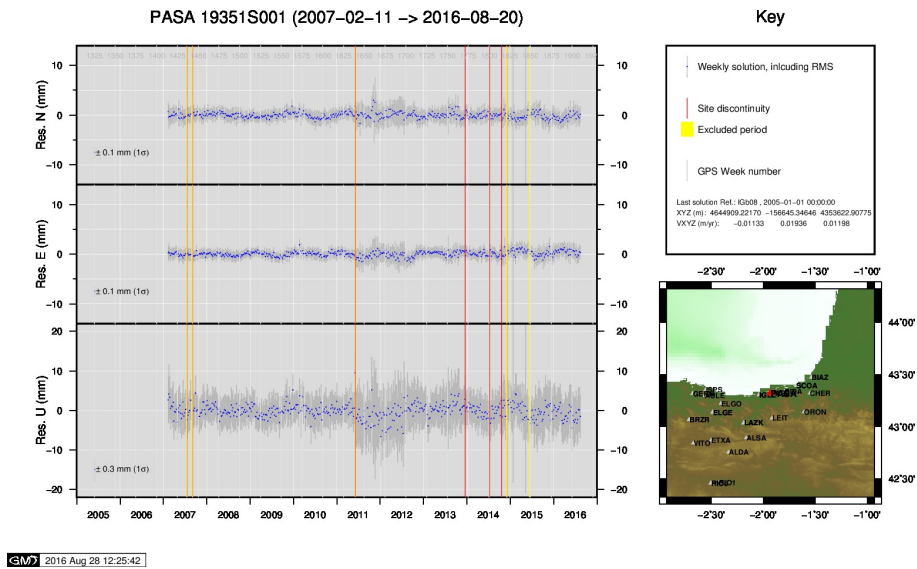
20) LEIT



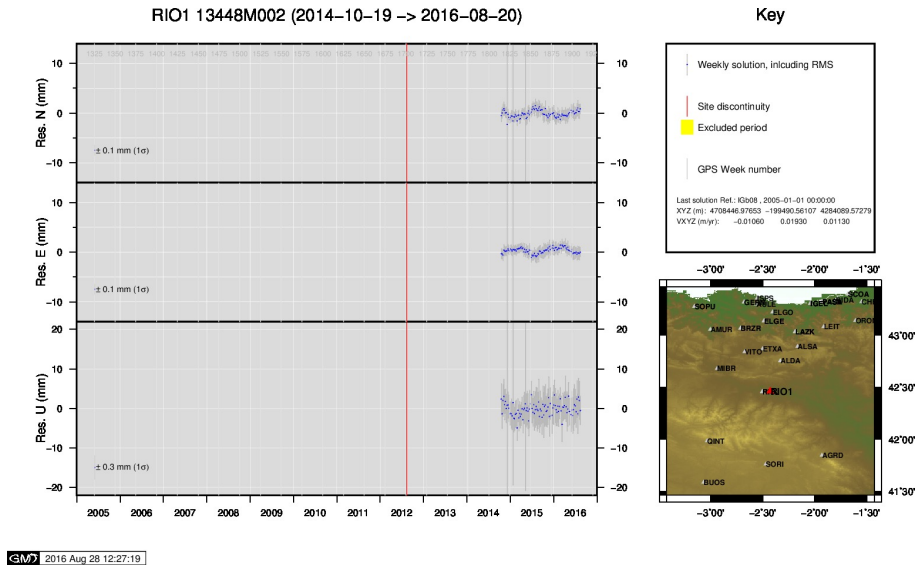
21) ORON



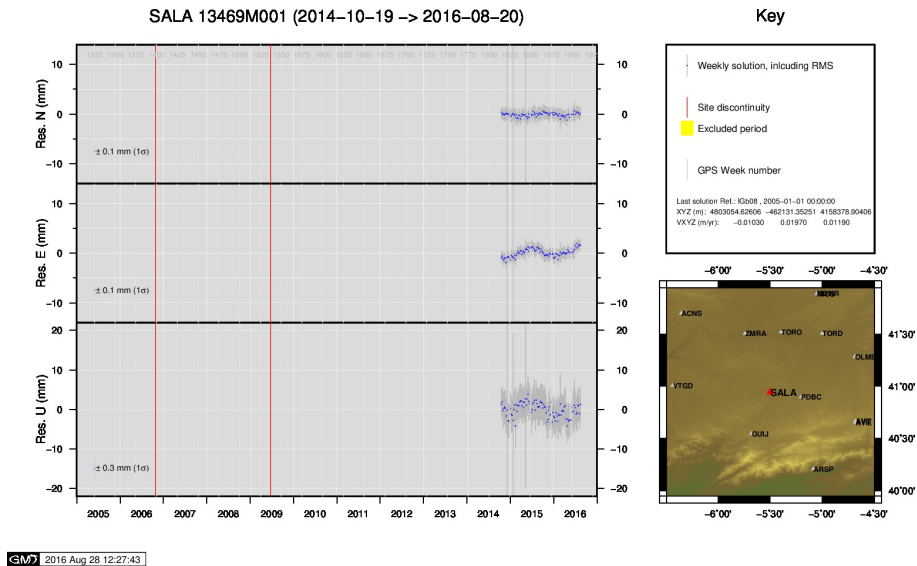
22) PAS2



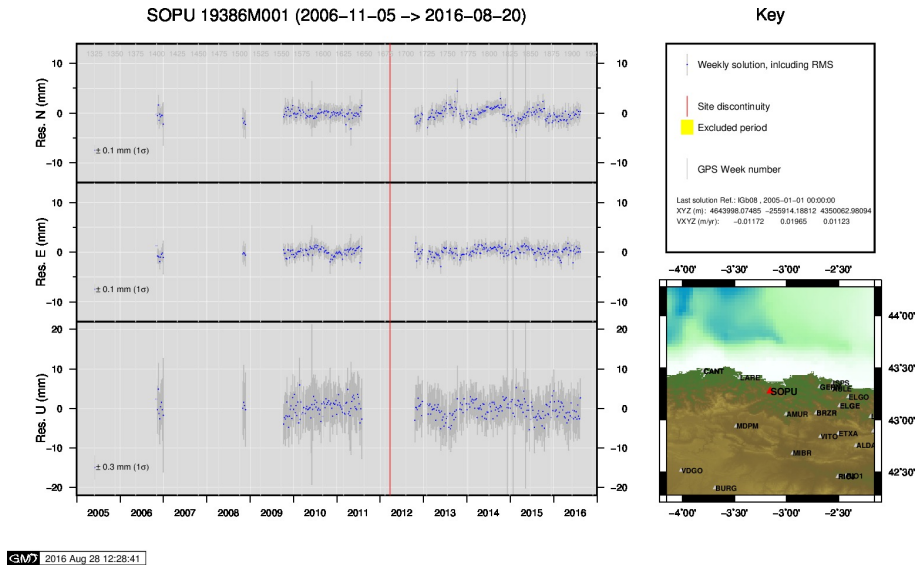
23) PASA



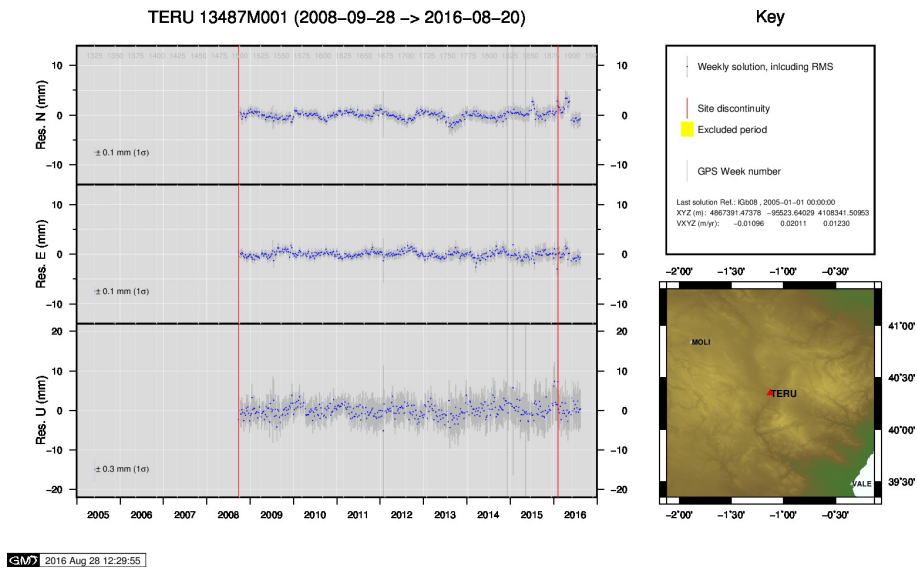
24) RIO1



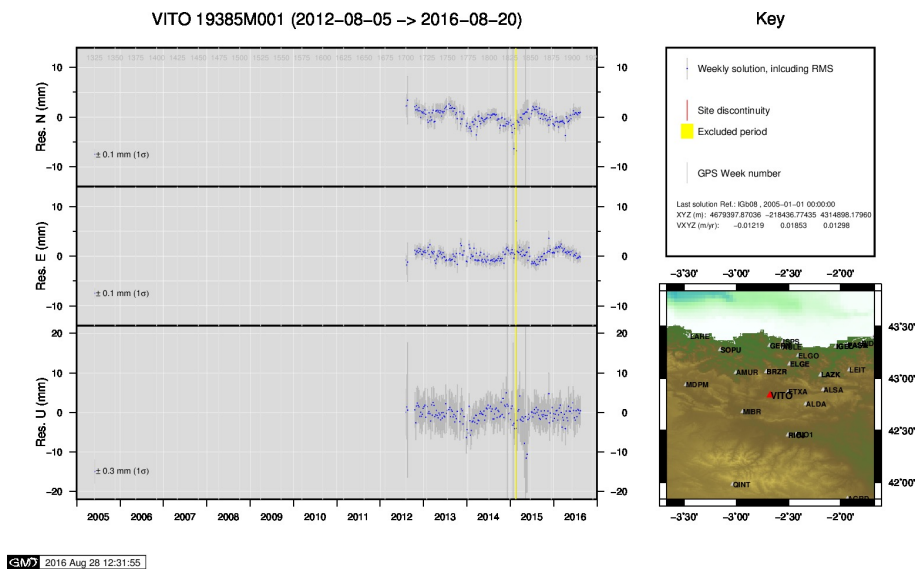
25) SALA



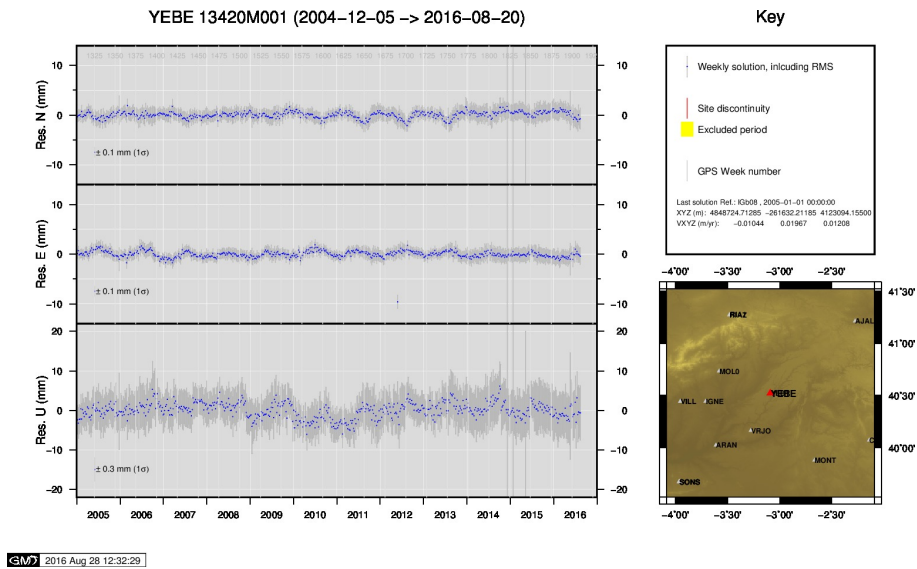
26) SOPU



27) TERU



28) VITO



29) YEBE

