

ARA-DAC Weekly Analysis Result: 1927 (GFA)

Technical Report

GPS Week: 1927 (GFA)

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

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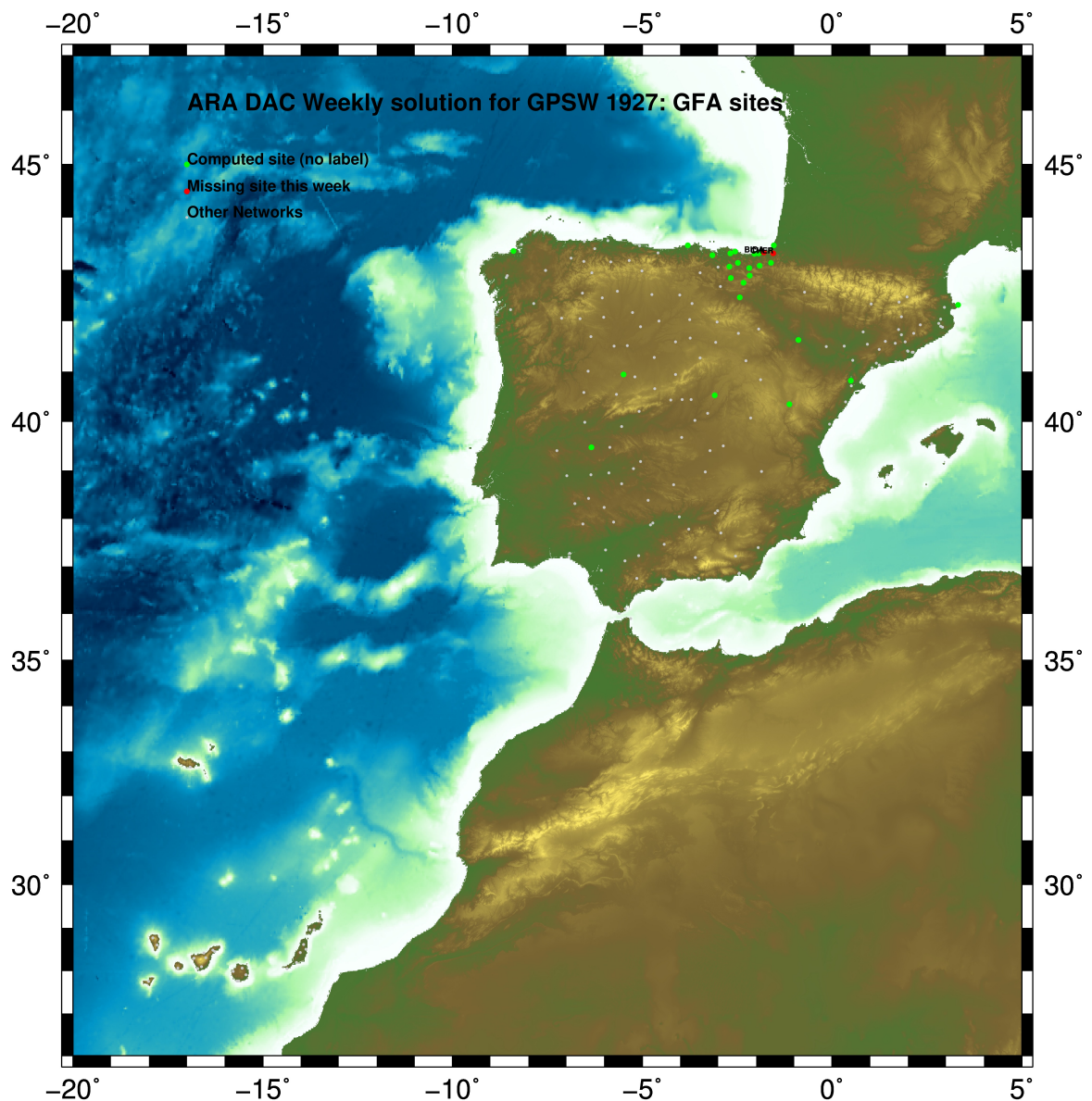
Report generated on 2016/12/25 at 12:03:37



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 Dec 25 12:03:18

Fig.1: Computed Sites for GPS Week1927 (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 1927 WEEK COMBINATION: PRECISE ORBITS                25-DEC-16 10:44
-----
LOCAL GEODETIC DATUM: IGB08                                EPOCH: 2016-12-14 12:00:00
-----
NUM  STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
  1  ACDR 13434M001    4594489.58717  -678367.49983  4357066.25937  W
  22  ALDA 19383M001    4687280.18872  -190876.61202  4308106.92631  A
  28  ALSA 19419M001    4677250.86782  -176770.44205  4319079.84669  A
  51  BIAZ 10074M002    4634456.09059  -124345.02586  4365785.43777  A
  54  BRZR 19387M001    4662221.01631  -220769.94746  4333309.40957  A
  7   CACE 13447M001    4899866.52700  -544567.08141  4033770.17593  W
  8   CANT 13438M001    4625924.34221  -307096.27944  4365771.53113  W
  11  CREU 13432M001    4715420.16226  273178.01186  4271946.81577  A
  12  EBRE 13410M001    4833520.01858  41537.34261  4147461.68960  W
  77  ELGE 19353S001    4657557.43118  -202241.52193  4338991.84414  A
  87  GERN 19389M001    4642811.33784  -217222.97852  4353278.85555  A
  101 IGEL 19352S001    4645951.45637  -165574.54939  4352550.39418  A
  105 ISPS 19484M001    4640596.50955  -206963.82365  4356391.88667  A
  109 LAZK 19354S001    4666098.37140  -178186.23944  4330463.64775  A
  112 LEIT 19428M001    4663520.96264  -155858.76253  4334519.85440  A
  141 ORDN 19427M001    4659695.62080  -130864.78539  4338948.86204  A
  146 PASZ 19351S001    4644909.09173  -156645.11474  4353623.05385  A
  147 PASA 19351S001    4644909.08961  -156645.11525  4353623.05332  A
  27  RI01 13448M002    4708446.85329  -199490.32933  4284089.71018  W
  28  SALA 13469M001    4803054.50359  -462131.11652  4158379.04620  W
  172 SOPU 19386M001    4643997.94034  -255913.95335  4350063.11879  A
  31  TERU 13487M001    4867391.34969  -95523.40151  4108341.65964  W
  204 VITO 19385M001    4679397.72939  -218436.55124  4314898.33671  A
  35  YEBE 13420M001    4848724.59232  -261631.97720  4123094.30269  W
  36  ZARA 13462M001    4773803.19609  -73506.03180  4215454.07174  W
    
```

5.2 ETRS89 Coordinates

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

```

ETRF2000 COORD. wk 1927                                    25-DEC-16 10:44
-----
LOCAL GEODETIC DATUM: ETRF2000                            EPOCH: 2016-12-14 12:00:00
-----
NUM  STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
  1  ACDR 13434M001    4594489.86979  -678367.99206  4357065.86953  W
  22  ALDA 19383M001    4687280.52066  -190877.11236  4308106.53453  A
  28  ALSA 19419M001    4677251.20198  -176770.94140  4319079.45576  A
  51  BIAZ 10074M002    4634456.43336  -124345.52098  4365785.05138  A
  54  BRZR 19387M001    4662221.34665  -220770.44547  4333309.02019  A
  7   CACE 13447M001    4899866.80333  -544567.60251  4033769.76641  W
  8   CANT 13438M001    4625924.66534  -307096.77414  4365771.14330  W
  11  CREU 13432M001    4715420.54169  273177.51015  4271946.42812  A
  12  EBRE 13410M001    4833520.36520  41536.82896  4147461.29122  W
  77  ELGE 19353S001    4657557.76388  -202242.01945  4338991.45529  A
  87  GERN 19389M001    4642811.66984  -217223.47465  4353278.46755  A
  101 IGEL 19352S001    4645951.79387  -165575.04571  4352550.00654  A
  105 ISPS 19484M001    4640596.84285  -206964.31955  4356391.49894  A
  109 LAZK 19354S001    4666098.70613  -178186.73772  4330463.25857  A
  112 LEIT 19428M001    4663521.30003  -155859.26052  4334519.46565  A
  141 ORDN 19427M001    4659696.16116  -130865.28295  4338948.47383  A
  146 PASZ 19351S001    4644909.43026  -156645.61094  4353622.66638  A
  147 PASA 19351S001    4644909.42814  -156645.61145  4353622.66585  A
  27  RI01 13448M002    4708447.18277  -199490.83170  4284089.31783  W
  28  SALA 13469M001    4803054.79679  -462131.62837  4158378.64435  W
  172 SOPU 19386M001    4643998.26797  -255914.44968  4350062.73028  A
  31  TERU 13487M001    4867391.67909  -95523.91873  4108341.25741  W
  204 VITO 19385M001    4679398.05881  -218437.05088  4314897.94617  A
  35  YEBE 13420M001    4848724.90482  -261632.49303  4123093.89991  W
  36  ZARA 13462M001    4773803.53471  -73506.54009  4215453.67625  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 1927 WEEK COMBINATION: PRECISE ORBITS                25-DEC-16 10:44
-----
Station      #Days  Weekday  Repeatability (mm)
              0123456      N     E     U
-----
ACDR 13434M001  7  XXXXXX  0.82  0.83  3.53
ALDA 19383M001  7  XXXXXX  0.74  1.10  2.54
ALSA 19419M001  7  XXXXXX  3.41  0.85  3.46
    
```

BIAZ 10074M002	7	XXXXXX	0.66	0.37	1.91
BRZR 19387M001	7	XXXXXX	1.11	1.08	2.82
CACE 13447M001	7	XXXXXX	0.92	0.43	2.53
CANT 13438M001	7	XXXXXX	0.56	0.47	2.17
CREU 13432M001	7	XXXXXX	0.69	0.71	2.11
EBRE 13410M001	6	XXX XXX	1.18	0.56	2.65
ELGE 19353S001	7	XXXXXX	0.66	0.47	1.17
GERN 19389M001	7	XXXXXX	0.82	0.37	2.12
IGEL 19352S001	7	XXXXXX	1.91	0.55	3.29
ISPS 19484M001	7	XXXXXX	0.88	1.23	2.81
LAZK 19354S001	7	XXXXXX	0.37	1.23	2.90
LEIT 19428M001	7	XXXXXX	2.43	1.09	3.26
ORDN 19427M001	7	XXXXXX	1.51	0.84	3.72
PAS2 19351S001	7	XXXXXX	0.57	0.87	1.64
PASA 19351S001	7	XXXXXX	0.68	0.37	1.72
RID1 13448M002	7	XXXXXX	0.44	0.58	2.39
SALA 13469M001	7	XXXXXX	0.44	0.45	1.79
SOPU 19386M001	7	XXXXXX	0.72	0.83	2.28
TERU 13487M001	7	XXXXXX	0.66	0.45	1.88
VITO 19385M001	7	XXXXXX	0.66	0.95	1.42
YEBE 13420M001	7	XXXXXX	0.32	0.57	2.87
ZARA 13462M001	7	XXXXXX	0.18	0.38	1.42

Comparison of individual solutions:

ACDR 13434M001	N	0.82	1.35	0.15	0.20	0.63	0.23	0.30	-1.28
ACDR 13434M001	E	0.83	-1.68	-0.70	-0.59	-0.28	0.33	0.03	0.54
ACDR 13434M001	U	3.53	1.92	5.89	-1.86	-4.98	0.71	2.75	-0.35
ALDA 19383M001	N	0.74	-0.95	0.42	-0.97	-0.13	1.10	-0.22	-0.12
ALDA 19383M001	E	1.10	-1.32	-1.24	-0.56	-0.59	0.26	1.69	0.57
ALDA 19383M001	U	2.54	2.33	1.06	1.84	-3.29	-3.60	1.27	-1.85
ALSA 19419M001	N	3.41	-0.37	0.97	-7.32	-0.92	2.45	2.07	2.04
ALSA 19419M001	E	0.85	-0.32	0.18	1.30	-1.20	-0.09	-1.01	0.05
ALSA 19419M001	U	3.46	1.76	1.92	3.05	-2.90	-6.64	1.64	-0.76
BIAZ 10074M002	N	0.66	-0.34	-0.63	0.45	-1.14	0.80	-0.03	0.08
BIAZ 10074M002	E	0.37	-0.26	0.19	0.30	-0.23	-0.72	-0.21	0.03
BIAZ 10074M002	U	1.91	-0.39	1.02	0.90	-0.26	2.00	-2.81	-2.81
BRZR 19387M001	N	1.11	-1.07	-0.45	1.26	-1.87	-0.02	0.50	0.83
BRZR 19387M001	E	1.08	-0.45	1.06	0.03	0.64	-1.25	-1.82	0.67
BRZR 19387M001	U	2.82	1.66	4.38	-3.77	0.03	-3.09	-1.27	-0.76
CACE 13447M001	N	0.92	0.66	1.11	0.41	-0.17	-0.31	0.87	-1.55
CACE 13447M001	E	0.43	0.72	0.17	0.44	-0.21	0.33	0.05	-0.45
CACE 13447M001	U	2.53	-1.23	-2.57	0.51	3.10	-1.10	-2.96	3.20
CANT 13438M001	N	0.56	-0.09	-0.95	0.42	-0.05	-0.23	-0.19	-0.85
CANT 13438M001	E	0.47	-0.14	0.03	-0.26	-0.41	0.69	-0.33	0.71
CANT 13438M001	U	2.17	1.27	-0.77	-3.84	2.65	0.90	-0.83	-1.67
CREU 13432M001	N	0.69	-1.07	0.74	0.87	0.36	-0.32	-0.45	0.01
CREU 13432M001	E	0.71	0.24	-0.77	-0.66	-0.32	0.28	1.32	0.03
CREU 13432M001	U	2.11	-0.12	2.07	0.33	-2.41	-3.92	1.00	0.22
EBRE 13410M001	N	1.18	1.30	0.67	1.22		-1.47	-0.85	-0.64
EBRE 13410M001	E	0.56	0.48	-0.76	-0.24		0.14	-0.68	0.46
EBRE 13410M001	U	2.65	1.16	-1.10	-3.49		-2.50	2.84	2.49
ELGE 19353S001	N	0.66	-0.04	-0.85	1.08	0.00	-0.83	-0.18	0.05
ELGE 19353S001	E	0.47	-0.65	0.32	0.52	-0.39	-0.04	-0.41	-0.45
ELGE 19353S001	U	1.17	0.24	0.42	0.51	-0.23	-0.78	-0.05	-2.66
GERN 19389M001	N	0.82	-0.75	-1.17	0.38	1.20	-0.30	0.48	-0.41
GERN 19389M001	E	0.37	-0.52	-0.41	0.09	0.25	0.13	-0.51	-0.18
GERN 19389M001	U	2.12	0.70	-0.99	2.90	0.93	-2.55	-0.87	-2.97
IGEL 19352S001	N	1.91	-1.73	-2.40	1.40	2.96	0.82	-0.33	-1.32
IGEL 19352S001	E	0.55	-0.13	0.76	-0.31	-0.35	-0.73	-0.62	0.29
IGEL 19352S001	U	3.29	1.42	2.11	4.58	-0.42	-4.98	-3.30	-1.19
ISPS 19484M001	N	0.88	-0.09	-0.20	-0.97	-1.05	1.21	0.89	-0.50
ISPS 19484M001	E	1.23	0.22	0.56	-1.68	-1.96	0.77	-0.29	1.14
ISPS 19484M001	U	2.81	3.15	2.79	-4.28	-0.52	-1.85	-2.72	0.52
LAZK 19354S001	N	0.37	-0.20	-0.50	0.23	-0.58	0.05	-0.15	0.32
LAZK 19354S001	E	1.23	0.51	1.15	1.30	-0.79	-1.02	-2.02	-0.20
LAZK 19354S001	U	2.90	0.90	-1.89	3.22	-3.13	-2.26	3.69	-2.68
LEIT 19428M001	N	2.43	3.68	0.88	-2.57	-3.58	0.84	0.56	-0.73
LEIT 19428M001	E	1.09	-0.32	-0.13	1.78	0.83	-1.09	-0.87	-1.11
LEIT 19428M001	U	3.25	-1.94	-2.78	-1.54	-1.08	-3.03	1.20	6.18
ORDN 19427M001	N	1.51	-0.29	-0.27	-2.01	-1.99	1.87	0.63	1.27
ORDN 19427M001	E	0.84	-0.65	0.59	-1.13	-0.34	-0.84	0.92	0.71
ORDN 19427M001	U	3.72	-2.45	-1.83	5.87	3.40	-4.98	-0.53	-1.61
PAS2 19351S001	N	0.57	0.29	-0.60	-1.15	-0.04	0.37	0.25	-0.01
PAS2 19351S001	E	0.87	-0.73	0.67	0.51	-0.22	0.14	0.41	-1.76
PAS2 19351S001	U	1.64	-0.60	2.04	-0.06	-1.15	-0.22	0.64	-3.15
PASA 19351S001	N	0.68	-0.29	-0.88	0.21	-0.47	0.87	0.57	-0.74
PASA 19351S001	E	0.37	-0.21	0.02	0.42	-0.60	-0.39	-0.26	0.01
PASA 19351S001	U	1.72	0.72	1.32	0.56	0.86	-3.42	-1.17	-1.14
RID1 13448M002	N	0.44	-0.25	-0.49	0.11	0.07	0.40	-0.58	-0.58
RID1 13448M002	E	0.58	-0.98	0.19	0.15	-0.57	-0.78	0.06	0.23
RID1 13448M002	U	2.39	3.78	0.33	0.38	-3.41	0.19	-1.96	-2.03
SALA 13469M001	N	0.44	0.62	-0.26	-0.02	0.22	0.14	0.74	-0.29
SALA 13469M001	E	0.45	-0.69	0.14	-0.42	-0.66	0.10	-0.27	-0.01
SALA 13469M001	U	1.79	0.76	-1.13	3.10	-1.96	0.52	0.88	1.72
SOPU 19386M001	N	0.72	1.00	-0.46	0.80	-0.67	-0.84	-0.24	-0.27
SOPU 19386M001	E	0.83	0.99	0.52	0.27	-0.56	-0.93	-1.26	-0.17
SOPU 19386M001	U	2.28	-1.05	0.46	2.18	-0.13	1.86	-1.67	-4.35
TERU 13487M001	N	0.66	-0.60	0.08	-0.58	-0.61	-0.07	0.88	0.87
TERU 13487M001	E	0.45	0.12	-0.25	0.20	0.38	-0.02	-0.90	-0.35
TERU 13487M001	U	1.88	-1.78	-0.61	-2.60	-1.33	0.06	1.29	2.73
VITO 19385M001	N	0.66	-1.33	-0.36	-0.08	0.37	0.72	0.25	-0.14
VITO 19385M001	E	0.95	-0.77	-0.28	1.43	0.14	-0.85	-1.00	0.97
VITO 19385M001	U	1.42	-0.64	-0.59	-1.32	2.35	-1.96	-0.48	-0.11
YEBE 13420M001	N	0.32	0.34	-0.21	-0.23	0.36	-0.50	-0.03	-0.20
YEBE 13420M001	E	0.57	-0.01	0.25	1.20	0.35	0.15	-0.15	-0.50
YEBE 13420M001	U	2.87	-4.40	2.04	-2.41	-1.96	1.93	1.41	3.27
ZARA 13462M001	N	0.18	0.09	0.21	0.30	0.03	-0.13	-0.10	-0.12
ZARA 13462M001	E	0.38	-0.29	-0.26	-0.43	-0.42	0.44	-0.08	0.37
ZARA 13462M001	U	1.42	0.57	-0.73	0.85	0.19	-3.02	-0.83	-0.80

5.4 Datum verification

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

LOCAL GEODETIC DATUM: Icb08
RESIDUALS IN LOCAL SYSTEM (NORTH, EAST, UP)

NUM	NAME	FLG	RESIDUALS IN MILLIMETERS		
1	ACOR 13434M001	I W	0.11	-0.20	-0.55
2	ALAC 13433M001	I W	0.62	0.70	-1.18
3	ALBA 13452M001	I W	-0.53	1.31	0.96
4	ALME 13437M001	I W	-0.95	-0.88	3.75
6	BRST 10004M004	I W	0.80	-1.40	-0.28
7	CACE 13447M001	I W	1.39	-1.14	1.06
8	CANT 13438M001	I W	-0.35	-1.90	-2.40
9	CEU1 13449M002	I W	1.07	2.73	9.99
10	COBA 13453M001	I W	0.25	-0.13	-4.23
12	EBRE 13410M001	I W	1.96	0.72	-0.59
16	HUEL 13451M001	I W	-2.58	3.83	1.88
17	IZAN 31309M002	I W	-3.55	-0.68	0.15
18	LLIV 13436M001	I W	4.00	-3.21	-4.22
20	LRDC 10023M001	I W	0.42	-1.60	-1.81
21	MALA 13443M001	I W	-4.35	2.15	-0.53
22	MALL 13444M001	I W	0.20	0.18	0.64
24	MELI 19379M001	I W	-2.21	1.21	0.04
25	PDEL 31906M004	I W	-3.99	-4.57	2.33
27	RIO1 13448M002	I W	0.73	-0.66	-2.45
28	SALA 13469M001	I W	0.30	-0.25	5.41
29	SCOA 10088M002	I W	-3.21	-1.32	0.28
30	SONS 13446M001	I W	1.47	0.40	-3.19
31	TERU 13487M001	I W	3.43	1.30	-3.77
32	VALE 13439M001	I W	0.36	1.93	-0.87
33	VIGO 13450M001	I W	0.05	-1.02	-1.66
34	VILL 13406M001	I W	0.62	1.17	-1.29
35	YEBE 13420M001	I W	1.19	0.34	2.48
36	ZARA 13462M001	I W	0.37	0.52	-0.75
37	ZIMM 14001M004	I W	2.39	0.46	0.80
	RMS / COMPONENT		2.05	1.73	2.95
	MEAN		-0.00	-0.00	-0.00
	MIN		-4.35	-4.57	-4.23
	MAX		4.00	3.83	9.99

NUMBER OF PARAMETERS : 3
 NUMBER OF COORDINATES : 87
 RMS OF TRANSFORMATION : 2.30 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          6323954
NUMBER OF UNKNOWN               93424
NUMBER OF DEGREES OF FREEDOM    6230530
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                  1.733492178159391

Helmert Transformation Parameters With Respect to Combined Solution:
-----
Sol  Rms (m)      Translation (m)      Rotation (")      Scale (ppm)
      X          Y          Z          X          Y          Z
-----
 1  0.00245    0.0087  0.0061 -0.0113  -0.0002  0.0005  0.0001  0.00015
 2  0.00220    0.0086 -0.0172 -0.0166  -0.0004  0.0006 -0.0004  0.00052
 3  0.00196    0.0082  0.0065 -0.0135  -0.0001  0.0005  0.0002  0.00039
 4  0.00254    0.0072  0.0207 -0.0084  -0.0003  0.0004  0.0006  0.00001
 5  0.00171    0.0134  0.0203 -0.0130  -0.0003  0.0006  0.0006  -0.00031
 6  0.00167   -0.0053  0.0012  0.0062   0.0001 -0.0003  0.0001  -0.00001
 7  0.00249   -0.0193  0.0166  0.0200  -0.0005 -0.0009  0.0003  0.00057
```

```
Statistics of individual solutions:
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
 1  0.00127    878677    1.61      892198      3      426  13098  0
 2  0.00126    844985    1.58      857932      3      411  12539  0
 3  0.00127    841709    1.62      855011      3      438  12867  0
 4  0.00133    871737    1.76      886009      3      450  13825  0
 5  0.00133    937124    1.78      950868      3      396  13351  0
 6  0.00136    923807    1.85      938084      3      396  13884  0
 7  0.00137    930088    1.86      943852      3      393  13374  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 16:346:00000 16:352:86370 LEICA GRX1200PRO -----
ALDA  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
ALSA  A  1 P 16:346:00000 16:352:86370 LEICA GRX1200GGPRO -----
BIAZ  A  1 P 16:346:00000 16:352:86370 LEICA GRX1200GGPRO -----
BRZR  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
CACE  A  1 P 16:346:00000 16:352:86370 TRIMBLE NETR9 -----
CANT  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
CREU  A  1 P 16:346:00000 16:352:86370 LEICA GR50 -----
EBRE  A  1 P 16:346:00000 16:352:86370 LEICA GR50 -----
ELGE  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
GERN  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
IGEL  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
ISPS  A  1 P 16:346:00000 16:352:86370 TRIMBLE NETR9 -----
LAZK  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
LEIT  A  1 P 16:346:00000 16:352:86370 LEICA GRX1200+GNSS -----
ORON  A  1 P 16:346:00000 16:352:86370 LEICA GRX1200GGPRO -----
PAS2  A  1 P 16:346:00000 16:352:86370 TPS NET-G3A -----
PASA  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
RIO1  A  1 P 16:346:00000 16:352:86370 LEICA GR25 -----
SALA  A  1 P 16:346:00000 16:352:86370 LEICA GRX1200+GNSS -----
SOPU  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
TERU  A  1 P 16:346:00000 16:352:86370 LEICA GRX1200GGPRO -----
VITO  A  1 P 16:346:00000 16:352:86370 LEICA GR10 -----
YEBE  A  1 P 16:346:00000 16:352:86370 TRIMBLE NETR5 -----
ZARA  A  1 P 16:346:00000 16:352:86370 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 16:346:00000 16:352:86370 LEIAT504      LEIS -----
ALDA  A  1 P 16:346:00000 16:352:86370 LEIAS10      NONE -----
ALSA  A  1 P 16:346:00000 16:352:86370 LEIAX1202GG  NONE -----
BIAZ  A  1 P 16:346:00000 16:352:86370 LEIAR25     LEIT -----
BRZR  A  1 P 16:346:00000 16:352:86370 LEIAS10      NONE -----
CACE  A  1 P 16:346:00000 16:352:86370 TRM29659.00 NONE -----
CANT  A  1 P 16:346:00000 16:352:86370 LEIAR25.R4  LEIT 25066
CREU  A  1 P 16:346:00000 16:352:86370 LEIAR25.R4  NONE 26357
EBRE  A  1 P 16:346:00000 16:352:86370 LEIAR25.R4  NONE 26359
ELGE  A  1 P 16:346:00000 16:352:86370 LEIAR25.R4  LEIT -----
GERN  A  1 P 16:346:00000 16:352:86370 LEIAS10      NONE -----
```



```

IGEL A 1 P 16:346:00000 16:352:86370 LEIAR20 LEIM -----
ISPS A 1 P 16:346:00000 16:352:86370 TRM59900.00 SCIS -----
LAZK A 1 P 16:346:00000 16:352:86370 LEIAR25.R4 LEIT -----
LEIT A 1 P 16:346:00000 16:352:86370 LEIAX1203+GNSS NONE -----
ORDN A 1 P 16:346:00000 16:352:86370 LEIAX1202GG NONE -----
PAS2 A 1 P 16:346:00000 16:352:86370 LEIAR20 LEIM 73034
PASA A 1 P 16:346:00000 16:352:86370 LEIAR20 LEIM 73034
RIO1 A 1 P 16:346:00000 16:352:86370 LEIAR25.R4 LEIT 25138
SALA A 1 P 16:346:00000 16:352:86370 LEIAR25 NONE -----
SOPU A 1 P 16:346:00000 16:352:86370 LEIAS10 NONE -----
TERU A 1 P 16:346:00000 16:352:86370 LEIAT504GG LEIS -----
VITO A 1 P 16:346:00000 16:352:86370 LEIAS10 NONE -----
YEBE A 1 P 16:346:00000 16:352:86370 TRM29659.00 NONE -----
ZARA A 1 P 16:346:00000 16:352:86370 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 16:346:00000 16:352:86370 UNE 3.0460 0.0000 0.0000
ALDA A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
ALSA A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
BIAZ A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
BRZR A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
CACE A 1 P 16:346:00000 16:352:86370 UNE 0.0600 0.0000 0.0000
CANT A 1 P 16:346:00000 16:352:86370 UNE 3.0490 0.0000 0.0000
CREU A 1 P 16:346:00000 16:352:86370 UNE 0.0770 0.0000 0.0000
EBRE A 1 P 16:346:00000 16:352:86370 UNE 0.0770 0.0000 0.0000
ELGE A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
GERN A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
IGEL A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
ISPS A 1 P 16:346:00000 16:352:86370 UNE 0.0350 0.0000 0.0000
LAZK A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
LEIT A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
ORDN A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
PAS2 A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
PASA A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
RIO1 A 1 P 16:346:00000 16:352:86370 UNE 0.0606 0.0000 0.0000
SALA A 1 P 16:346:00000 16:352:86370 UNE 0.0600 0.0000 0.0000
SOPU A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
TERU A 1 P 16:346:00000 16:352:86370 UNE 0.0600 0.0000 0.0000
VITO A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
YEBE A 1 P 16:346:00000 16:352:86370 UNE 0.0000 0.0000 0.0000
ZARA A 1 P 16:346:00000 16:352:86370 UNE 3.2590 0.0000 0.0000

```

7 Inconsistencies (logsheet-RINEX metadata)

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

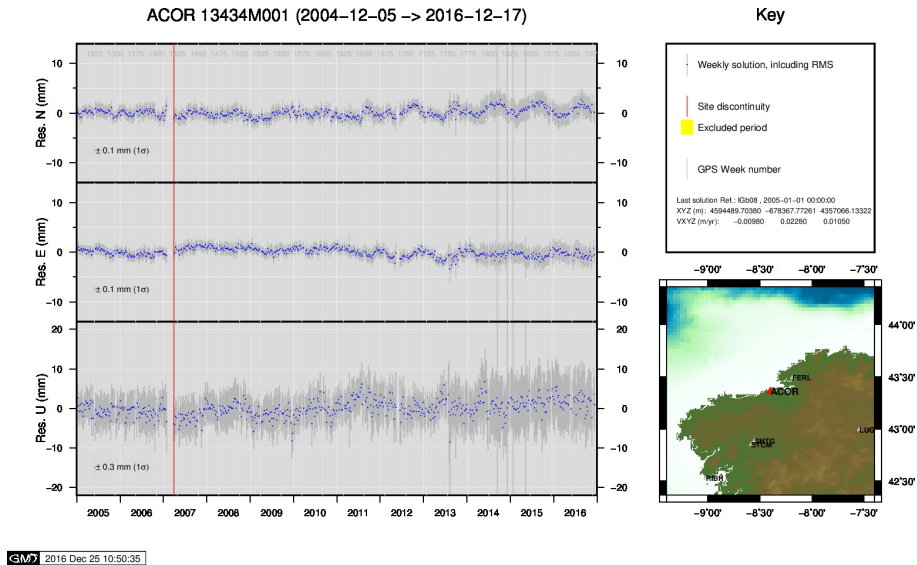
```

2016-12-25 09:39 UTC | BIAZ3510.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2016-12-25 09:39 UTC | BIAZ3510.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5
2016-12-25 10:43 UTC | BIAZ3520.160 | RECEIVER TYPE | LEICA GRX1200+GNSS -> LEICA GRX1200GGPRO
2016-12-25 10:43 UTC | BIAZ3520.160 | RECEIVER FIRM. VERS. | 8.51 -> 7.5

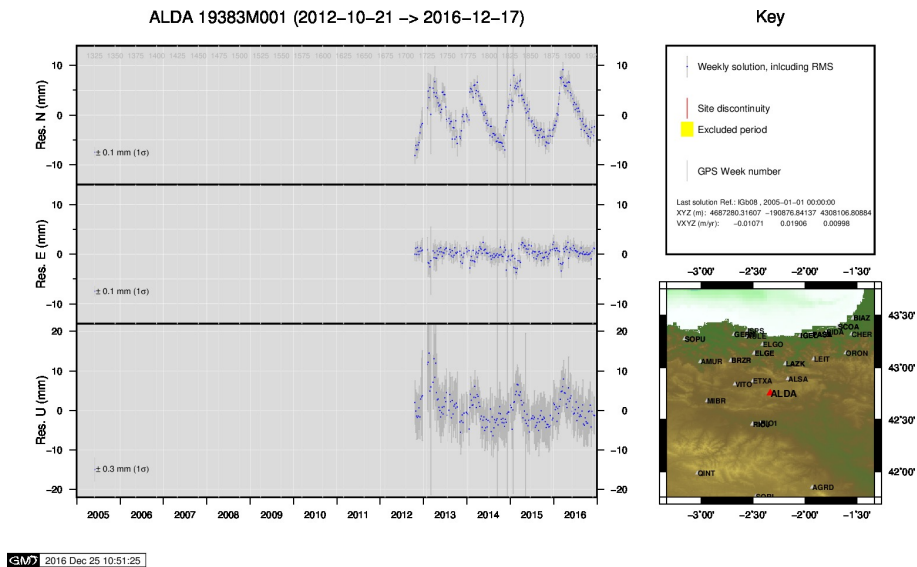
```

8 Cumulative Time Series

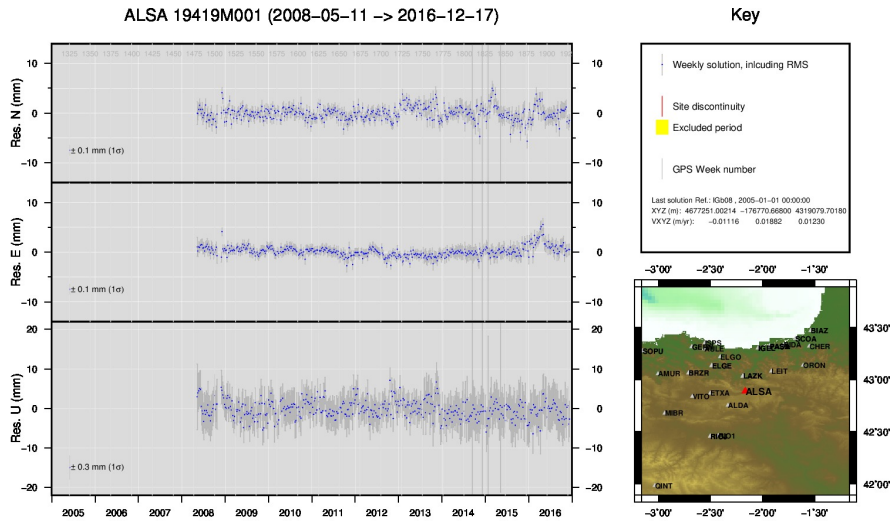
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

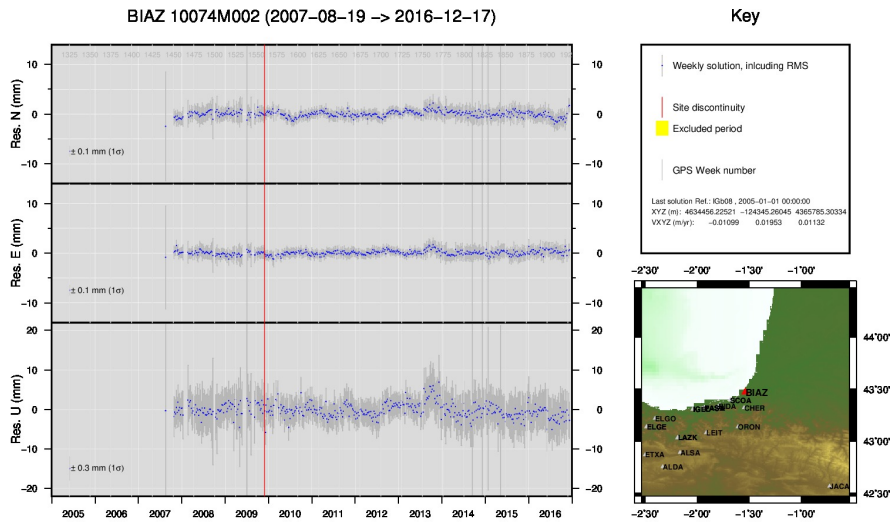


2) ALDA



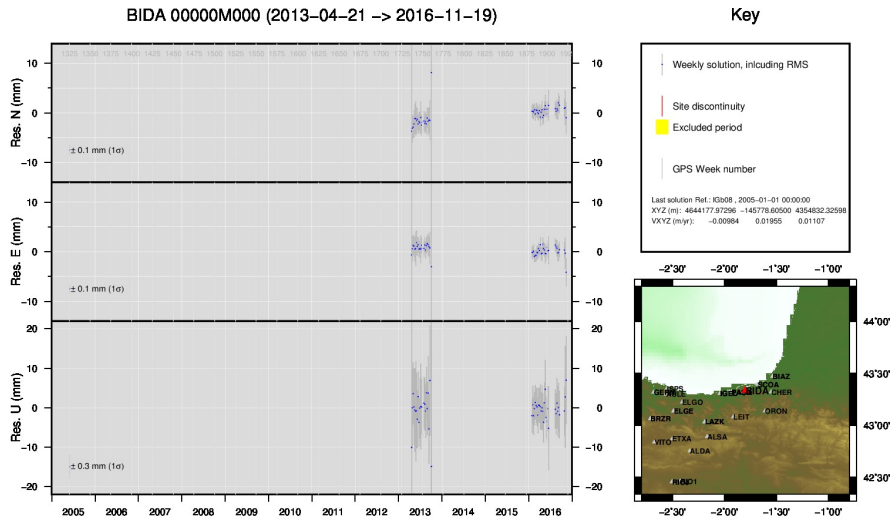
GMW 2016 Dec 25 10:52:09

3) ALSA



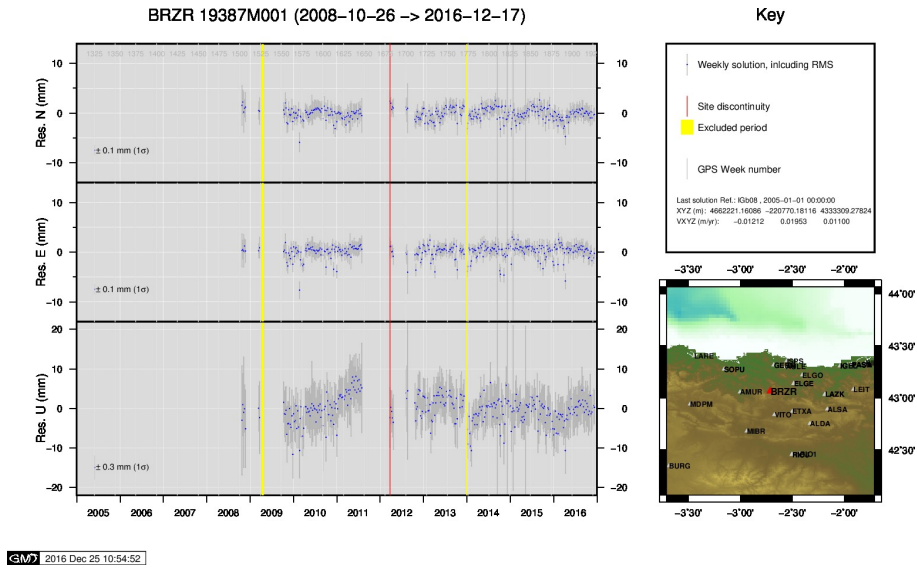
GMW 2016 Dec 25 10:54:26

4) BIAZ

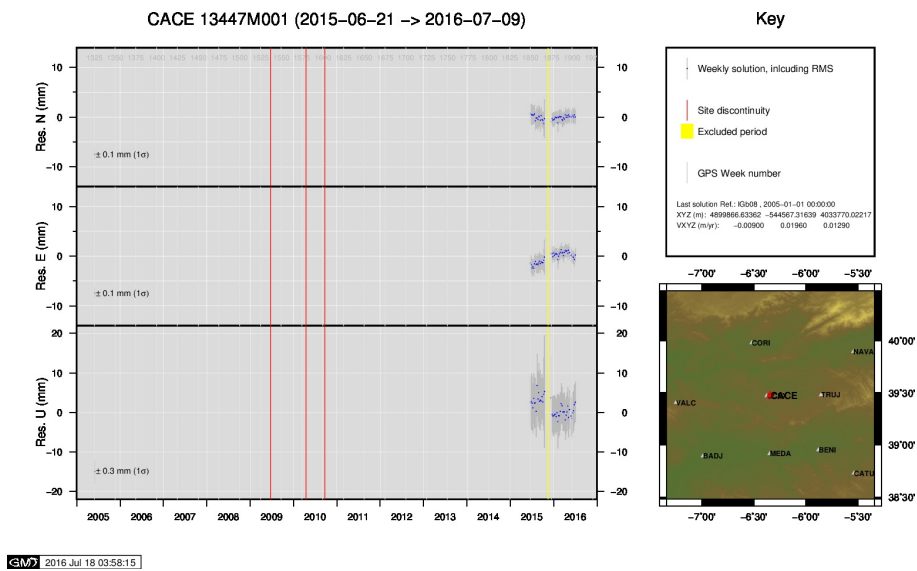


GMW 2016 Dec 25 10:54:32

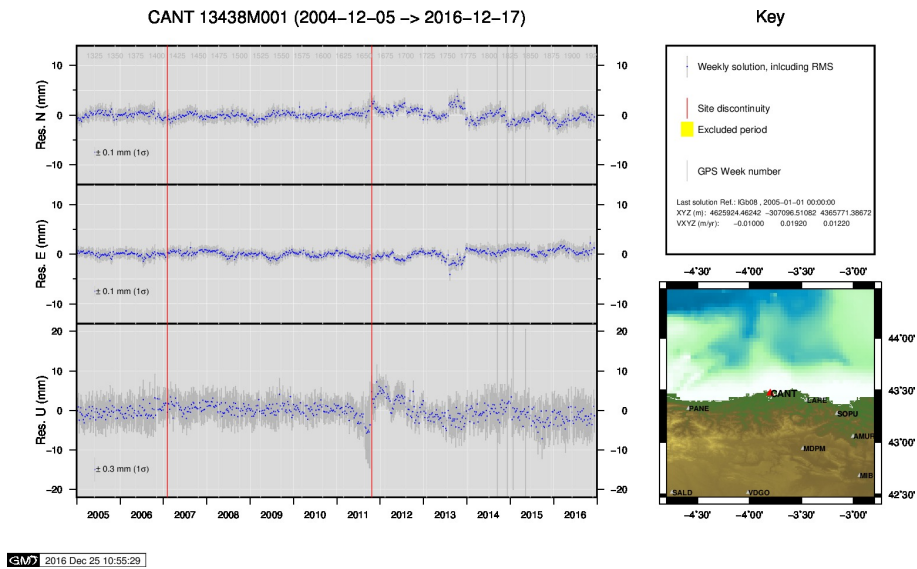
5) BIDA



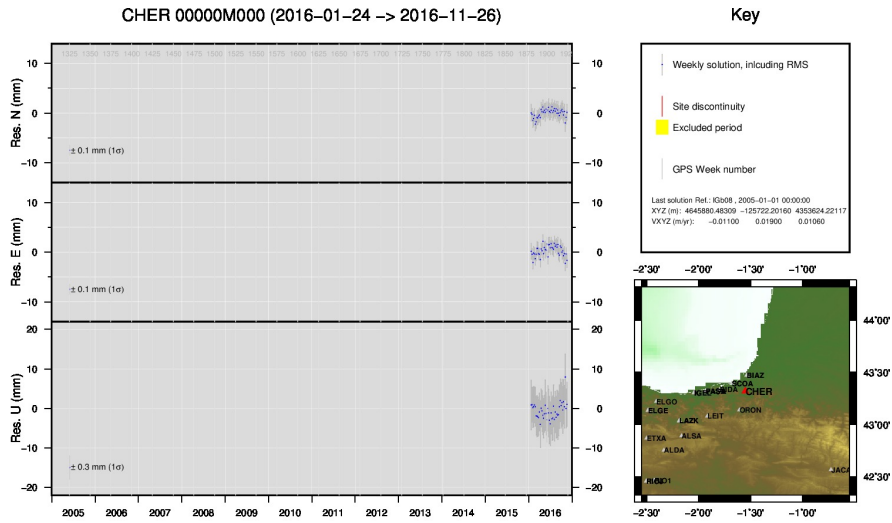
6) BRZR



7) CACE

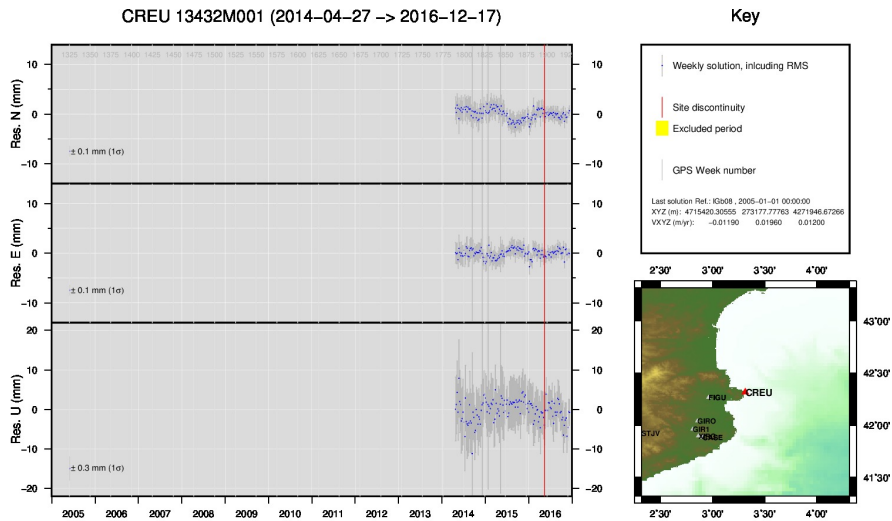


8) CANT



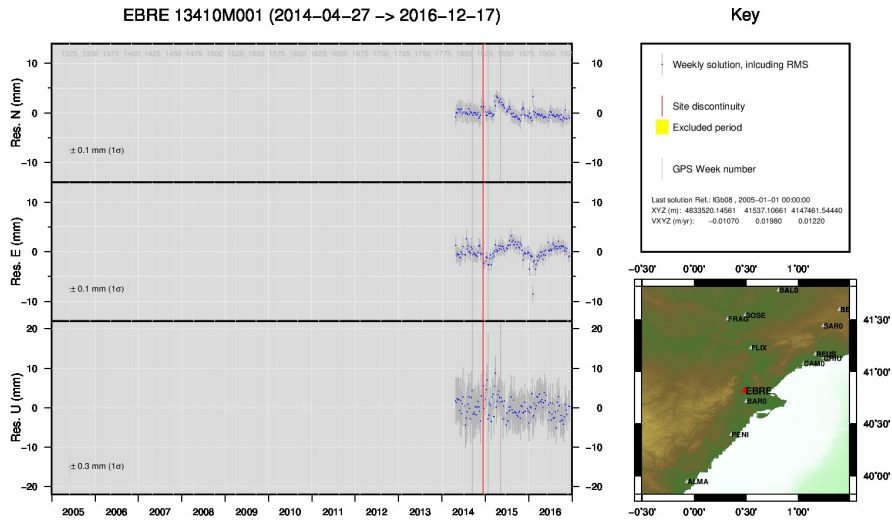
GMW 2016 Dec 25 10:56:31

9) CHER



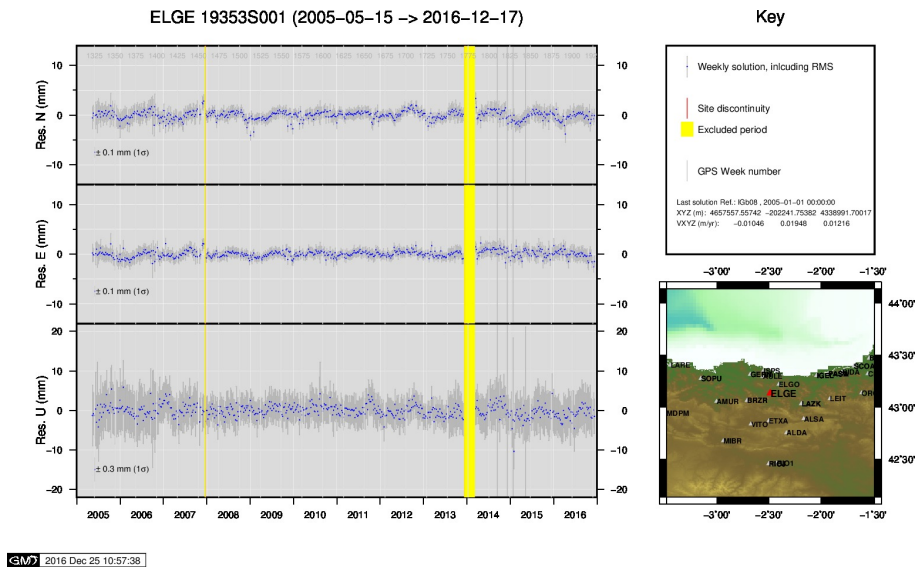
GMW 2016 Dec 25 10:57:02

10) CREU

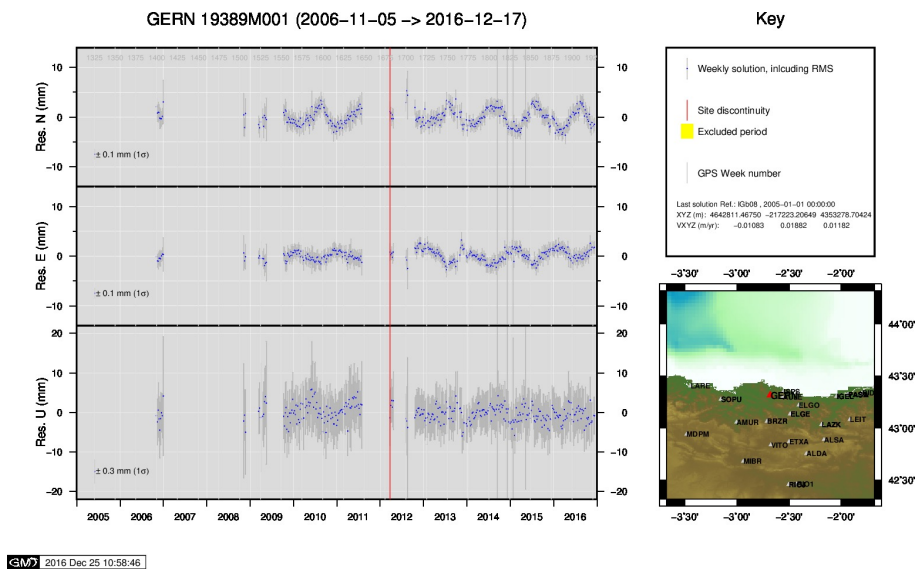


GMW 2016 Dec 25 10:57:26

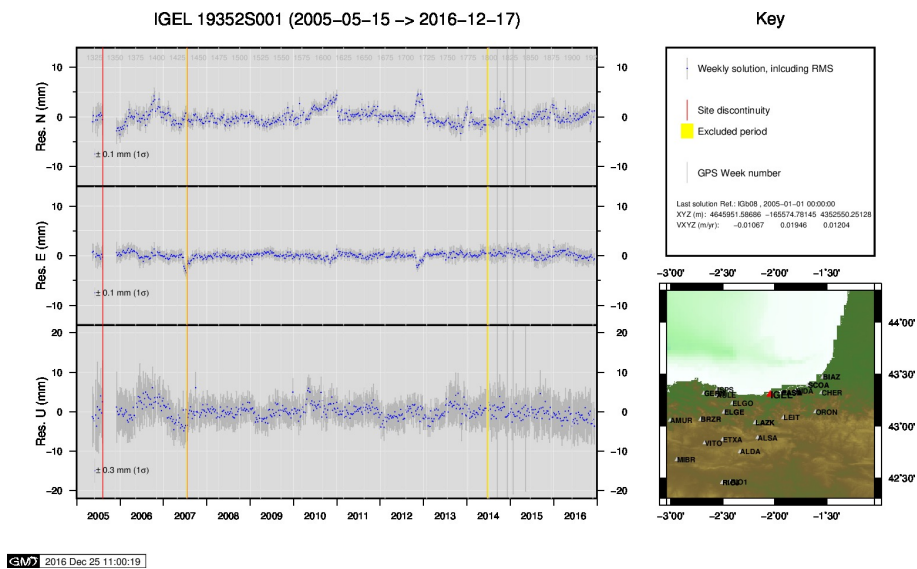
11) EBRE



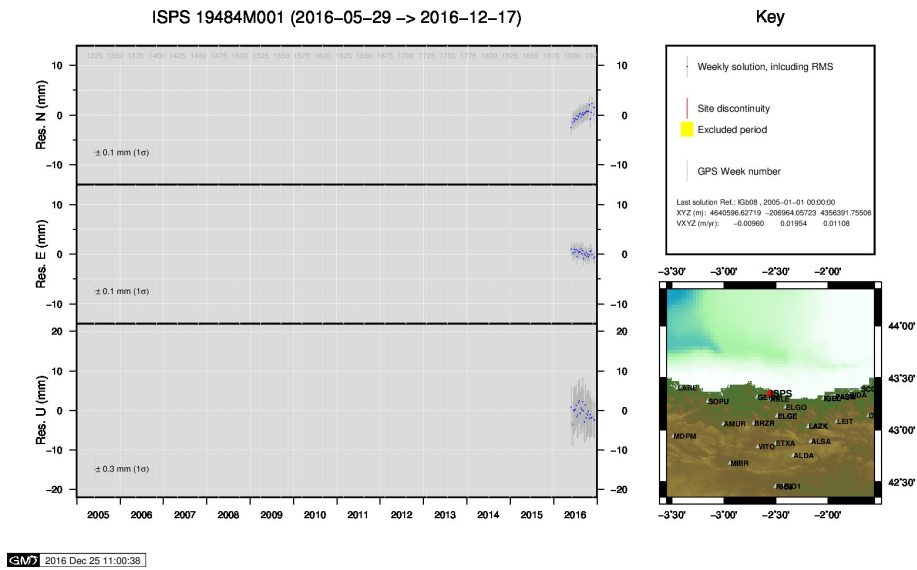
12) ELGE



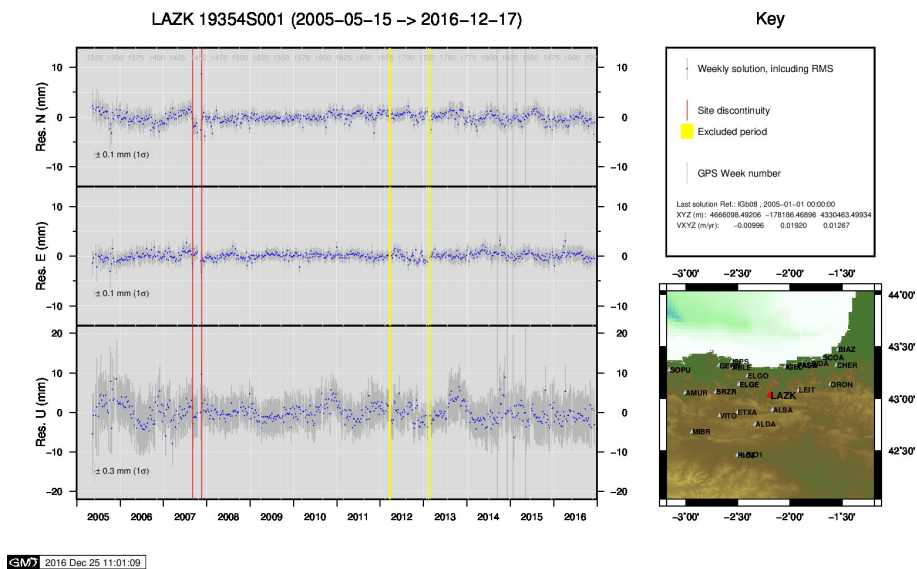
13) GERN



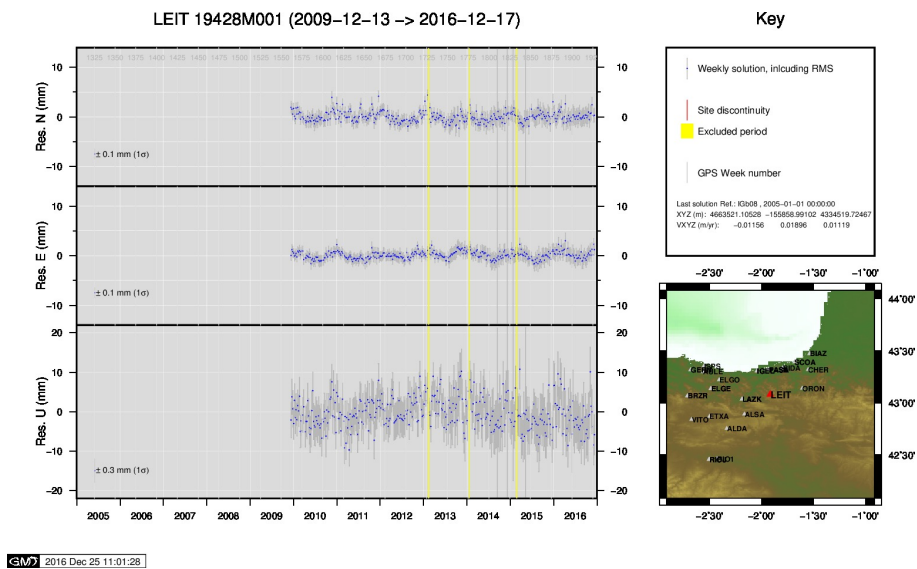
14) IGEL



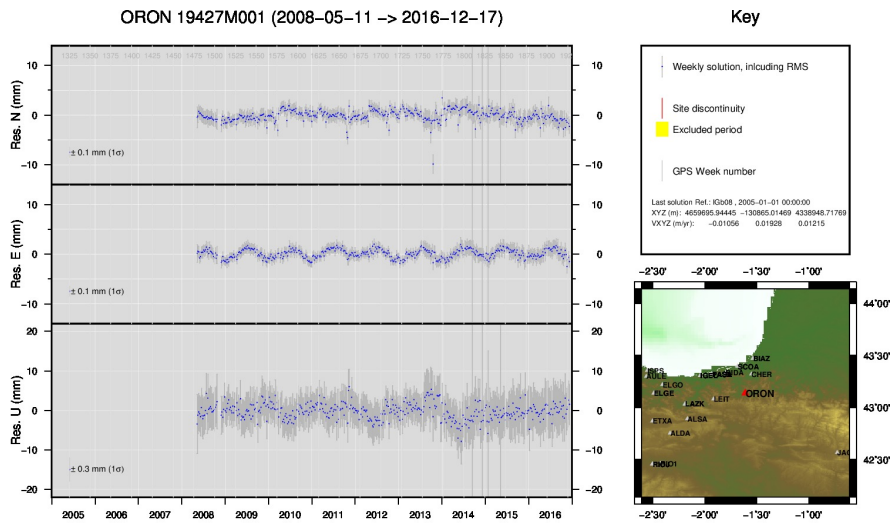
15) ISPS



16) LAZK

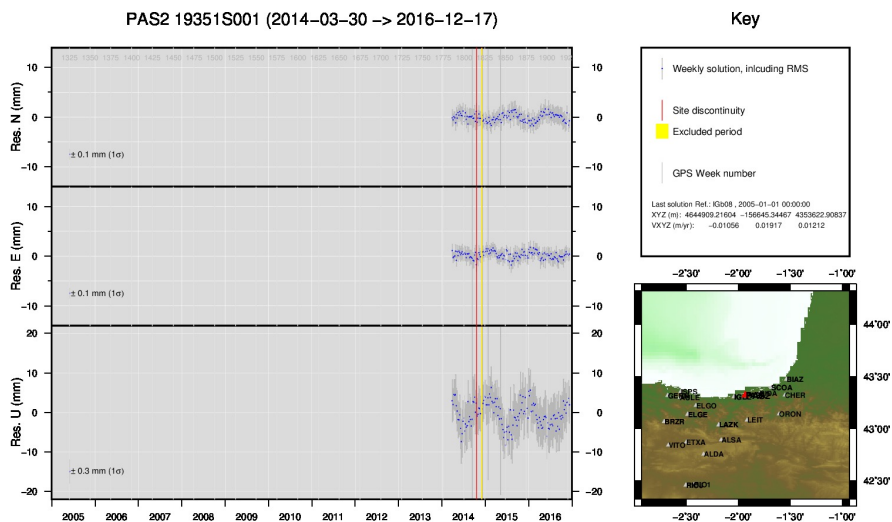


17) LEIT



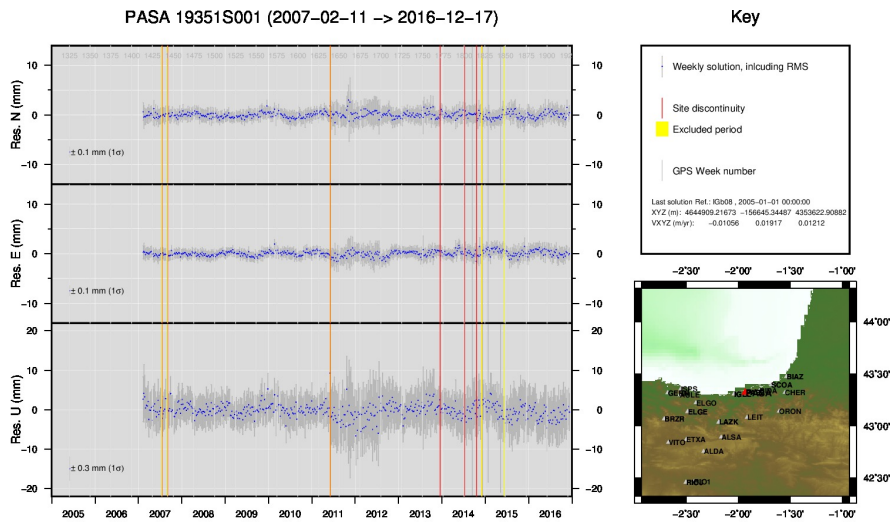
GMW 2016 Dec 25 11:05:18

18) ORON



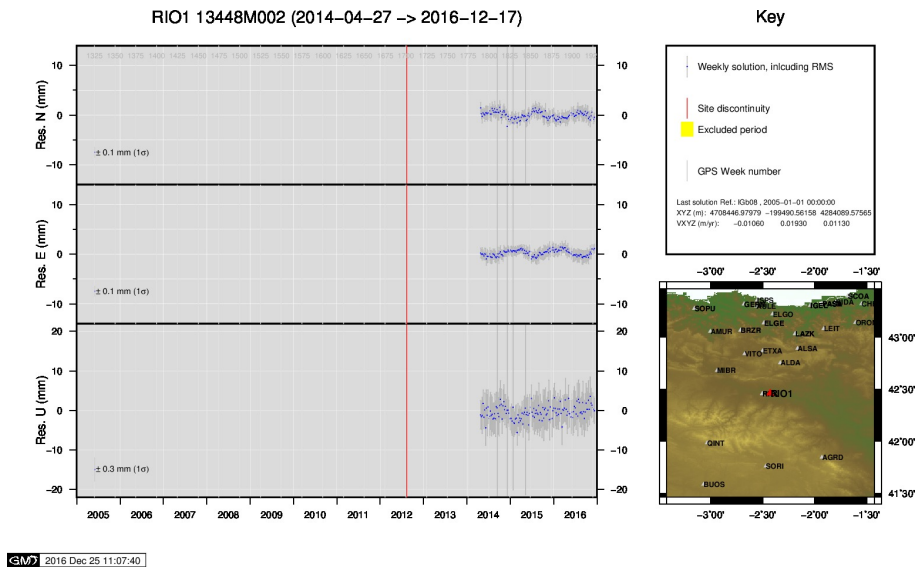
GMW 2016 Dec 25 11:05:49

19) PAS2

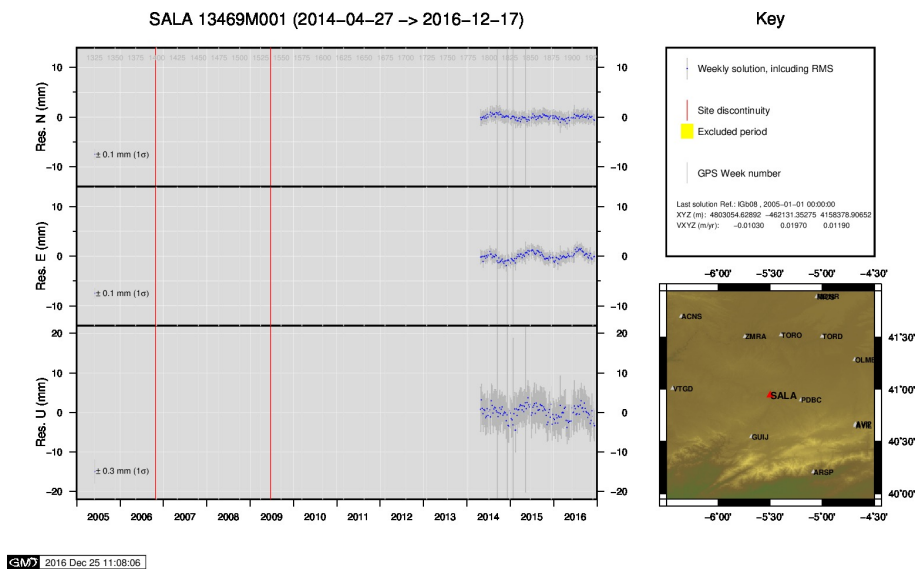


GMW 2016 Dec 25 11:05:55

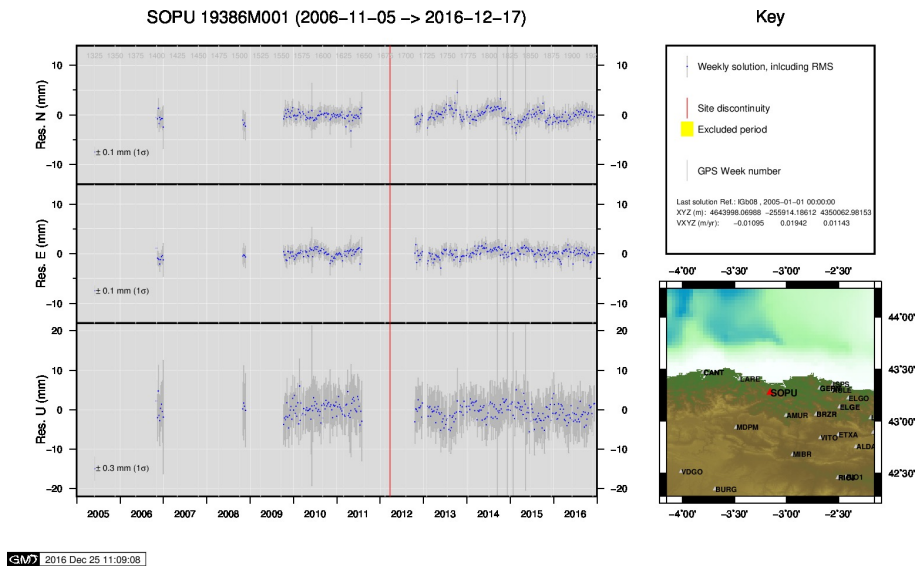
20) PASA



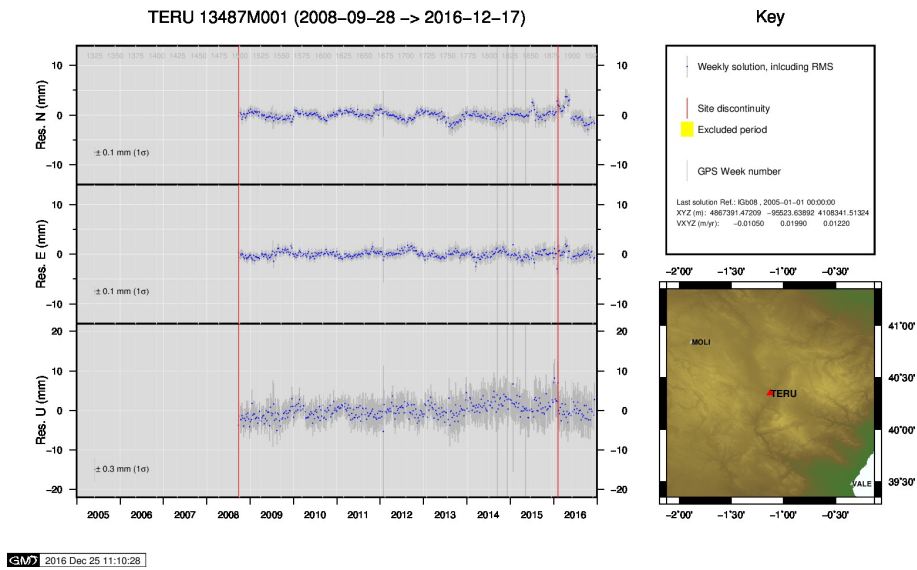
21) RIO1



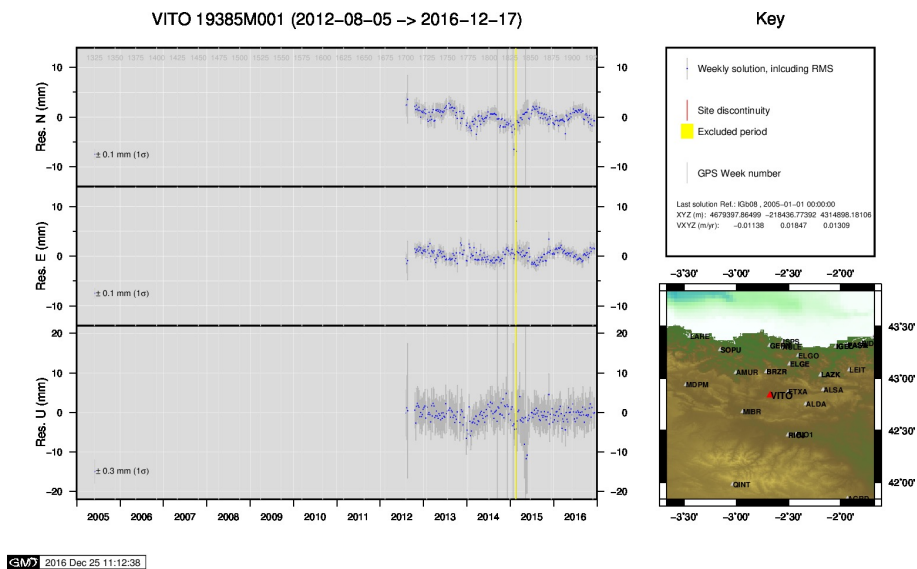
22) SALA



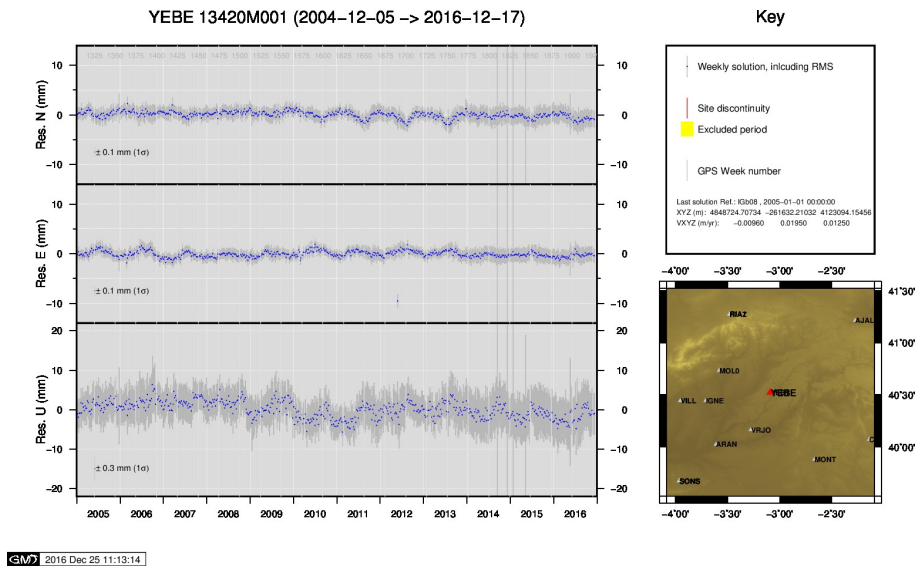
23) SOPU



24) TERU



25) VITO



26) YEBE

