

ARA-DAC Weekly Analysis Result: 1925 (GFA)

Technical Report

GPS Week: 1925 (GFA)

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

ARA-DAC details:

Contact person: J. Zurutuza

Contact mail: geodesia@aranzadi.eus

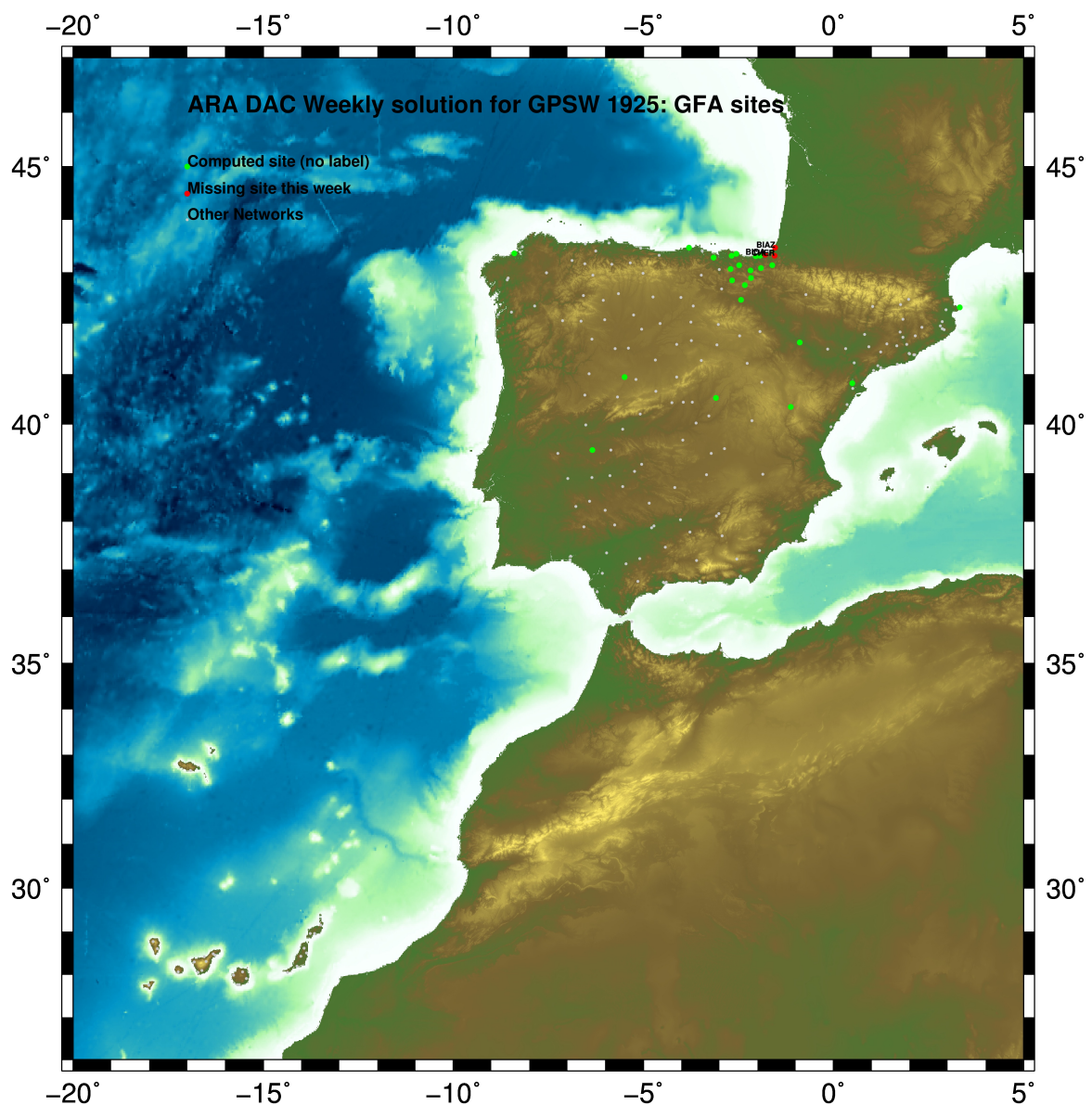
Report generated on 2016/12/11 at 11:36:35



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 11 11:36:26

Fig.1: Computed Sites for GPS Week1925 (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 Wideline (WL) AR for baselines shorter than 6000km, a Melbourne-Wuebbena wide-lane and narrow-lane AR is computed.
 - Phase-Based Wideline (L_5) AR for baselines shorter than 200km, the code-based wide-lane AR is replaced by a phase-only wide-lane with a subsequent narrow-lane AR.
 - Quasi-Ionosphere-Free (QIF)AR for the remaining real-valued ambiguities for baselines shorter than 2000km.
 - Direct L_1/L_2 AR for baselines shorter than 20km
- AR Verification: Each baseline is processed by introducing the resolved integer ambiguities and checking the residuals. If there is any problem, the ambiguities are re-initialized.

5 Computed Coordinates

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

5.1 IGB08

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

```

ARA LAC 1925 WEEK COMBINATION: PRECISE ORBITS                      11-DEC-16 10:12
-----
LOCAL GEODETIC DATUM: IGB08                      EPOCH: 2016-11-30 12:00:00
-----
NUM  STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
  1  ACDR 13434M001    4594489.58752  -678367.50109  4357066.25967  W
  22  ALDA 19383M001    4687280.19087  -190876.61321  4308106.92409  A
  28  ALSA 19419M001    4677250.87073  -176770.44314  4319079.84809  A
  54  BRZR 19387M001    4662221.01672  -220769.94872  4333309.40936  A
   7  CACE 13447M001    4899866.52802  -544567.08252  4033770.17678  W
   8  CANT 13438M001    4625924.34268  -307096.28073  4365771.52970  W
  11  CREU 13432M001    4715420.16072  273178.01092  4271946.81260  A
  12  EBRE 13410M001    4833520.01738  41537.34209  4147461.68790  W
  77  ELGE 19353S001    4657557.43186  -202241.52326  4338991.84425  A
  87  GERN 19389M001    4642811.33773  -217222.97924  4353278.85366  A
 101  IGEL 19352S001    4645951.45848  -165574.55017  4352550.39450  A
 105  ISPS 19484M001    4640596.51135  -206963.82404  4356391.88755  A
 109  LAZK 19354S001    4666098.37545  -178186.24075  4330463.64995  A
 112  LEIT 19428M001    4663520.96494  -155858.76459  4334519.85547  A
 141  ORDN 19427M001    4659695.82009  -130864.78584  4338948.86243  A
 146  PAS2 19351S001    4644909.09330  -156645.11561  4353623.05388  A
 147  PASA 19351S001    4644909.09094  -156645.11609  4353623.05318  A
 27  RIO1 13448M002    4708446.85484  -199490.33050  4284089.71030  W
  28  SALA 13469M001    4803054.50586  -462131.11804  4158379.04743  W
 172  SOPU 19386M001    4643997.93863  -255913.95419  4350063.11617  A
  31  TERU 13487M001    4867391.34757  -95523.40212  4108341.65761  W
 204  VITO 19385M001    4679397.73002  -218436.55199  4314898.33662  A
  35  YEBE 13420M001    4848724.59292  -261631.97804  4123094.30237  W
  36  ZARA 13462M001    4773803.19703  -73506.03268  4215454.07162  W
    
```

5.2 ETRS89 Coordinates

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

```

ETRF2000 COORD. wk 1925                      11-DEC-16 10:12
-----
LOCAL GEODETIC DATUM: ETRF2000                      EPOCH: 2016-11-30 12:00:00
-----
NUM  STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
  1  ACDR 13434M001    4594489.86982  -678367.99258  4357065.87031  W
  22  ALDA 19383M001    4687280.52243  -190877.11280  4308106.53379  A
  28  ALSA 19419M001    4677251.20450  -176770.94174  4319079.45864  A
  54  BRZR 19387M001    4662221.34668  -220770.44598  4333309.02047  A
   7  CACE 13447M001    4899866.80405  -544567.60284  4033769.76777  W
   8  CANT 13438M001    4625924.66544  -307096.77469  4365771.14235  W
  11  CREU 13432M001    4715420.53970  273177.50996  4271946.42543  A
  12  EBRE 13410M001    4833520.36359  41536.82921  4147461.29002  W
  77  ELGE 19353S001    4657557.76417  -202242.02003  4338991.45588  A
  87  GERN 19389M001    4642811.66934  -217223.47463  4353278.46615  A
 101  IGEL 19352S001    4645951.79559  -165575.04575  4352550.00734  A
 105  ISPS 19484M001    4640596.84426  -206964.31920  4356391.50030  A
 109  LAZK 19354S001    4666098.70980  -178186.73828  4330463.26126  A
 112  LEIT 19428M001    4663521.30194  -155859.26183  4334519.46720  A
 141  ORDN 19427M001    4659696.16006  -130865.28265  4338948.47470  A
 146  PAS2 19351S001    4644909.43144  -156645.61106  4353622.66689  A
 147  PASA 19351S001    4644909.42908  -156645.61154  4353622.66619  A
  27  RIO1 13448M002    4708447.18394  -199490.83212  4284089.31844  W
  28  SALA 13469M001    4803054.79873  -462131.62913  4158378.64608  W
 172  SOPU 19386M001    4643998.26589  -255914.44977  4350062.72814  A
  31  TERU 13487M001    4867391.67659  -95523.91857  4108341.25588  W
 204  VITO 19385M001    4679398.05906  -218437.05088  4314897.94656  A
  35  YEBE 13420M001    4848724.90506  -261632.49310  4123093.90009  W
  36  ZARA 13462M001    4773803.53526  -73506.54021  4215453.67662  W
    
```

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).

```

ARA LAC 1925 WEEK COMBINATION: PRECISE ORBITS                      11-DEC-16 10:12
-----
Station      #Days  Weekday  Repeatability (mm)
              0123456      N      E      U
-----
ACDR 13434M001  7  XXXXXXX  0.70  0.69  2.58
ALDA 19383M001  7  XXXXXXX  1.23  0.87  2.17
ALSA 19419M001  7  XXXXXXX  2.41  0.39  5.30
BRZR 19387M001  7  XXXXXXX  1.07  1.57  4.09
CACE 13447M001  7  XXXXXXX  0.69  0.46  1.86
    
```

CANT 13438M001	7	XXXXXX	0.26	0.40	2.29
CREU 13432M001	7	XXXXXX	0.53	0.33	2.73
EBRE 13410M001	7	XXXXXX	0.52	0.70	3.07
ELGE 19353S001	7	XXXXXX	0.75	0.63	1.57
GERN 19389M001	7	XXXXXX	0.98	0.60	1.94
IGEL 19352S001	7	XXXXXX	1.24	0.62	1.65
ISPS 19484M001	7	XXXXXX	0.95	0.95	2.18
LAZK 19354S001	7	XXXXXX	1.31	0.88	3.69
LEIT 19428M001	7	XXXXXX	1.84	0.50	2.92
ORON 19427M001	7	XXXXXX	0.37	0.48	2.81
PAS2 19351S001	7	XXXXXX	0.88	0.48	2.68
PASA 19351S001	7	XXXXXX	1.02	0.50	2.02
RIO1 13448M002	7	XXXXXX	0.42	0.40	2.54
SALA 13469M001	7	XXXXXX	0.37	0.27	1.70
SOPU 19386M001	7	XXXXXX	1.58	0.62	3.62
TERU 13487M001	7	XXXXXX	0.50	0.52	3.63
VITO 19385M001	7	XXXXXX	0.60	0.61	2.96
YEBE 13420M001	7	XXXXXX	0.49	0.35	1.90
ZARA 13462M001	7	XXXXXX	0.38	0.57	4.04

Comparison of individual solutions:

ACDR 13434M001	N	0.70	-0.33	-0.60	-0.86	0.42	1.04	0.66	0.14
ACDR 13434M001	E	0.69	-1.25	-0.82	0.68	0.20	0.36	-0.14	-0.14
ACDR 13434M001	U	2.58	-2.73	-1.77	1.79	2.03	3.10	-0.55	3.46
ALDA 19383M001	N	1.23	0.56	1.00	-0.66	-1.94	0.89	1.59	-0.45
ALDA 19383M001	E	0.87	0.92	-1.23	-0.05	0.72	-1.08	-0.64	-0.25
ALDA 19383M001	U	2.17	-0.36	1.25	-1.04	3.94	-3.06	0.55	0.66
ALSA 19419M001	N	2.41	0.32	3.28	-0.29	-2.06	-2.35	3.53	-1.35
ALSA 19419M001	E	0.39	-0.29	-0.13	-0.05	-0.71	0.15	-0.53	0.12
ALSA 19419M001	U	5.30	-0.64	-2.69	-1.23	7.56	-7.87	-0.40	6.33
BRZR 19387M001	N	1.07	0.53	-0.28	-0.41	-1.73	0.24	0.49	1.75
BRZR 19387M001	E	1.57	0.16	0.80	0.46	-2.98	0.67	1.84	-1.14
BRZR 19387M001	U	4.09	2.02	5.16	0.04	-5.73	1.43	4.78	-3.47
CACE 13447M001	N	0.69	0.37	-0.09	0.22	0.40	0.45	-0.69	-1.35
CACE 13447M001	E	0.46	0.43	0.34	0.13	0.55	-0.29	0.06	-0.74
CACE 13447M001	U	1.86	0.59	1.09	-0.33	-3.49	1.09	2.38	-0.30
CANT 13438M001	N	0.26	0.27	0.07	-0.04	-0.17	0.37	-0.23	0.32
CANT 13438M001	E	0.40	-0.18	-0.23	-0.54	-0.47	0.52	-0.16	-0.20
CANT 13438M001	U	2.29	0.45	0.79	-1.40	-0.38	0.26	4.27	-3.21
CREU 13432M001	N	0.53	-1.06	-0.19	-0.34	0.39	-0.47	0.05	-0.03
CREU 13432M001	E	0.33	-0.08	0.45	0.04	0.12	-0.57	0.12	0.32
CREU 13432M001	U	2.73	-4.15	-1.23	1.73	-3.77	1.52	0.70	-2.42
EBRE 13410M001	N	0.52	0.30	0.32	0.02	-0.33	-0.71	-0.86	-0.22
EBRE 13410M001	E	0.70	1.15	0.82	-0.11	-0.20	-0.73	-0.54	0.26
EBRE 13410M001	U	3.07	-1.20	1.29	-0.28	-6.87	-0.56	2.18	-1.14
ELGE 19353S001	N	0.75	-0.50	-0.54	-0.37	-0.41	0.69	0.20	1.43
ELGE 19353S001	E	0.63	-0.15	0.79	0.27	-0.97	-0.82	-0.21	-0.16
ELGE 19353S001	U	1.57	-0.98	1.15	-0.74	1.76	2.30	0.15	-1.86
GERN 19389M001	N	0.98	-1.00	-0.48	-1.12	0.99	0.45	-0.10	1.44
GERN 19389M001	E	0.60	-0.04	0.53	-0.76	0.62	-0.52	-0.47	-0.65
GERN 19389M001	U	1.94	-0.61	-0.72	-2.16	2.46	2.19	2.09	-1.39
IGEL 19352S001	N	1.24	-0.29	-1.30	-1.51	1.35	0.12	0.35	1.81
IGEL 19352S001	E	0.62	0.58	0.34	0.08	-1.10	-0.40	-0.45	-0.54
IGEL 19352S001	U	1.65	-0.87	0.27	-0.55	2.83	1.92	0.13	-1.86
ISPS 19484M001	N	0.95	0.35	-1.44	-0.94	0.74	-0.02	0.45	1.25
ISPS 19484M001	E	0.95	0.48	0.11	1.09	-1.89	-0.43	-0.42	-0.29
ISPS 19484M001	U	2.18	-1.52	3.19	0.10	-2.40	2.57	1.11	-1.55
LAZK 19354S001	N	1.31	0.15	1.28	-0.15	-2.40	0.41	1.63	-0.03
LAZK 19354S001	E	0.88	-0.54	0.76	0.29	-0.63	0.61	-0.26	-1.67
LAZK 19354S001	U	3.69	-2.95	0.18	-2.82	6.34	-0.61	-2.90	4.00
LEIT 19428M001	N	1.84	0.37	1.01	-0.30	-2.98	-1.49	2.32	1.59
LEIT 19428M001	E	0.50	0.10	-0.57	-0.33	-0.08	-0.53	-0.65	0.60
LEIT 19428M001	U	2.92	1.42	1.51	-0.73	0.52	3.13	1.59	-5.79
ORON 19427M001	N	0.37	0.24	-0.22	-0.35	0.08	0.75	-0.02	0.10
ORON 19427M001	E	0.48	0.01	-0.10	0.22	-0.83	0.08	-0.12	-0.79
ORON 19427M001	U	2.81	-3.12	-0.55	-0.52	5.07	2.92	-1.66	0.03
PAS2 19351S001	N	0.88	0.04	-0.33	-0.90	0.96	-0.60	-0.16	1.55
PAS2 19351S001	E	0.48	0.02	0.27	0.01	-0.63	-0.34	0.04	-0.88
PAS2 19351S001	U	2.68	-4.12	-0.13	0.22	0.84	2.92	3.77	-1.63
PASA 19351S001	N	1.02	-0.64	-0.65	-1.11	0.75	0.14	0.36	1.86
PASA 19351S001	E	0.50	0.54	0.01	-0.16	-0.67	-0.59	0.01	-0.60
PASA 19351S001	U	2.02	-2.75	0.83	-0.46	0.85	2.50	2.44	-1.76
RIO1 13448M002	N	0.42	0.15	-0.40	0.68	-0.07	0.47	-0.37	0.25
RIO1 13448M002	E	0.40	-0.23	-0.69	-0.15	0.08	0.12	-0.29	-0.58
RIO1 13448M002	U	2.54	0.68	2.35	0.25	0.88	1.73	0.32	-5.37
SALA 13469M001	N	0.37	0.46	-0.13	0.50	0.52	0.17	0.12	-0.12
SALA 13469M001	E	0.27	0.07	0.06	0.01	-0.33	-0.44	0.34	-0.09
SALA 13469M001	U	1.70	-1.30	0.06	-1.60	-0.45	2.02	0.22	2.94
SOPU 19386M001	N	1.58	-1.14	-0.17	0.88	-2.20	-0.20	0.72	2.75
SOPU 19386M001	E	0.62	-0.28	-0.99	-0.53	-0.54	0.09	0.68	0.42
SOPU 19386M001	U	3.62	2.43	3.73	-3.32	-4.43	2.52	4.03	-2.34
TERU 13487M001	N	0.50	-0.47	-0.19	-0.43	-0.15	-0.85	0.24	0.51
TERU 13487M001	E	0.52	0.63	-0.15	0.43	-0.35	-0.72	0.26	0.56
TERU 13487M001	U	3.63	4.75	1.16	0.92	4.98	-3.02	-4.43	-0.70
VITO 19385M001	N	0.60	-0.17	-0.96	0.52	0.15	-0.05	-0.48	0.83
VITO 19385M001	E	0.61	-0.44	0.45	-0.49	-1.13	0.18	0.14	0.50
VITO 19385M001	U	2.96	0.62	0.66	-2.29	5.67	-1.26	1.31	-3.30
YEBE 13420M001	N	0.49	0.73	-0.31	-0.17	-0.16	-0.74	-0.28	-0.39
YEBE 13420M001	E	0.35	-0.33	0.61	-0.02	0.06	0.11	0.39	-0.30
YEBE 13420M001	U	1.90	1.41	1.83	-2.11	2.67	-1.13	-1.02	-1.50
ZARA 13462M001	N	0.38	-0.27	-0.26	0.08	0.19	-0.75	-0.30	-0.12
ZARA 13462M001	E	0.57	0.70	0.47	0.20	0.61	-0.75	-0.54	0.02
ZARA 13462M001	U	4.04	4.74	-2.20	0.41	-7.57	-3.37	1.26	0.53

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	-0.44	0.18	-1.00
2	ALAC	13433M001	I	W	0.68	0.68	0.86
3	ALBA	13452M001	I	W	-0.34	1.41	-0.33
4	ALME	13437M001	I	W	-0.62	-0.52	1.39
6	BRST	10004M004	I	W	0.82	-1.39	1.18
7	CACE	13447M001	I	W	0.81	-0.84	-0.34
8	CANT	13438M001	I	W	0.44	-1.37	-1.86
9	CEU1	13449M002	I	W	0.88	2.09	9.80
10	COBA	13453M001	I	W	0.70	-0.29	-6.15
12	EBRE	13410M001	I	W	1.86	0.59	1.43
16	HUEL	13451M001	I	W	-0.02	1.70	1.40
17	IZAN	31309M002	I	W	-4.16	-0.56	1.10
18	LLIV	13436M001	I	W	4.16	-2.88	-2.84
19	LPAL	81701M001	I	W	-3.86	-0.40	1.22
20	LROC	10023M001	I	W	1.00	-1.75	0.44
21	MALA	13443M001	I	W	-3.86	2.44	-0.77
22	MALL	13444M001	I	W	0.04	0.63	1.44
24	MELI	19379M001	I	W	-2.97	1.67	0.86
25	PDEL	31906M004	I	W	-5.68	-7.40	6.26
27	RIO1	13448M002	I	W	1.04	-0.35	-3.70
28	SALA	13469M001	I	W	0.27	0.40	2.85
29	SCDA	10088M002	I	W	0.61	-1.14	-3.98
30	SONS	13446M001	I	W	0.76	0.41	-4.52
31	TERU	13487M001	I	W	2.98	1.30	-0.86
32	VALE	13439M001	I	W	0.16	1.77	-1.87
33	VIGO	13450M001	I	W	-0.00	0.27	-1.82
34	VILL	13406M001	I	W	0.92	1.17	-3.34
35	YEBE	13420M001	I	W	1.23	0.42	2.18
36	ZARA	13462M001	I	W	0.45	0.60	-1.37
37	ZIMM	14001M004	I	W	2.11	1.18	2.35

	RMS /	COMPONENT			2.13	1.86	3.16
	MEAN				-0.00	0.00	0.00
	MIN				-5.68	-7.40	-6.15
	MAX				4.16	2.44	9.80

NUMBER OF PARAMETERS : 3
 NUMBER OF COORDINATES : 90
 RMS OF TRANSFORMATION : 2.45 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          6504266
NUMBER OF UNKNOWN               101665
NUMBER OF DEGREES OF FREEDOM    6402603
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)      180
VARIANCE FACTOR                  1.682099665164566

Helmert Transformation Parameters With Respect to Combined Solution:
-----
Sol  Rms (m)      Translation (m)      Rotation (")      Scale (ppm)
      X          Y          Z          X          Y          Z
-----
 1  0.00206     0.0042 -0.0156  0.0016  0.0003  0.0001 -0.0004  -0.00071
 2  0.00199     -0.0039 -0.0202 -0.0077  0.0005  0.0001 -0.0004   0.00087
 3  0.00163     0.0044 -0.0017 -0.0082  0.0001  0.0003 -0.0000   0.00033
 4  0.00311     -0.0162  0.0124  0.0169 -0.0003 -0.0008  0.0003   0.00036
 5  0.00201     0.0173  0.0526 -0.0159 -0.0009  0.0007  0.0015   0.00006
 6  0.00162     0.0035 -0.0010 -0.0010 -0.0000  0.0001 -0.0000  -0.00031
 7  0.00222     0.0051 -0.0066  0.0083  0.0001 -0.0001 -0.0002  -0.00165
```

Statistics of individual solutions:

```
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
 1  0.00133      945879  1.76          961224      3          477  14871  0
 2  0.00129      908723  1.65          923151      3          474  13957  0
 3  0.00127      922947  1.62          938496      3          477  15075  0
 4  0.00128      912687  1.63          927439      3          468  14287  0
 5  0.00129      853404  1.67          866980      3          465  13114  0
 6  0.00125      926994  1.57          942431      3          474  14966  0
 7  0.00135      929179  1.83          944547      3          465  14906  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 16:332:00000 16:338:86370 LEICA GRX1200PRO -----
ALDA  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
ALSA  A  1 P 16:332:00000 16:338:86370 LEICA GRX1200GGPRO -----
BRZR  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
CACE  A  1 P 16:332:00000 16:338:86370 TRIMBLE NETR9 -----
CANT  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
CREU  A  1 P 16:332:00030 16:338:86370 LEICA GR50 -----
EBRE  A  1 P 16:332:00000 16:338:86370 TRIMBLE NETR9 -----
ELGE  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
GERN  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
IGEL  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
ISPS  A  1 P 16:332:00000 16:338:86370 TRIMBLE NETR9 -----
LAZK  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
LEIT  A  1 P 16:332:00000 16:338:86370 LEICA GRX1200+GNSS -----
ORON  A  1 P 16:332:00000 16:338:86370 LEICA GRX1200GGPRO -----
PAS2  A  1 P 16:332:00000 16:338:86370 TPS NET-G3A -----
PASA  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
RIO1  A  1 P 16:332:00000 16:338:86370 LEICA GR25 -----
SALA  A  1 P 16:332:00000 16:338:86370 LEICA GRX1200+GNSS -----
SOPU  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
TERU  A  1 P 16:332:00000 16:338:86370 LEICA GRX1200GGPRO -----
VITO  A  1 P 16:332:00000 16:338:86370 LEICA GR10 -----
YEBE  A  1 P 16:332:00000 16:338:86370 TRIMBLE NETRS -----
ZARA  A  1 P 16:332:00000 16:338:86370 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 16:332:00000 16:338:86370 LEIAT504      LEIS -----
ALDA  A  1 P 16:332:00000 16:338:86370 LEIAS10       NONE -----
ALSA  A  1 P 16:332:00000 16:338:86370 LEIAX1202GG  NONE -----
BRZR  A  1 P 16:332:00000 16:338:86370 LEIAS10       NONE -----
CACE  A  1 P 16:332:00000 16:338:86370 TRM29659.00  NONE -----
CANT  A  1 P 16:332:00000 16:338:86370 LEIAR25.R4   LEIT 25066
CREU  A  1 P 16:332:00030 16:338:86370 LEIAR25.R4   NONE 26357
EBRE  A  1 P 16:332:00000 16:338:86370 TRM57971.00  NONE 25503
ELGE  A  1 P 16:332:00000 16:338:86370 LEIAR25.R4   LEIT -----
GERN  A  1 P 16:332:00000 16:338:86370 LEIAS10       NONE -----
IGEL  A  1 P 16:332:00000 16:338:86370 LEIAR20       LEIM -----
ISPS  A  1 P 16:332:00000 16:338:86370 TRM59900.00  SCIS -----
```



```

LAZK A 1 P 16:332:00000 16:338:86370 LEIAR25.R4 LEIT -----
LEIT A 1 P 16:332:00000 16:338:86370 LEIAX1203+GNSS NONE -----
ORDN A 1 P 16:332:00000 16:338:86370 LEIAX1202GG NONE -----
PAS2 A 1 P 16:332:00000 16:338:86370 LEIAR20 LEIM 73034
PASA A 1 P 16:332:00000 16:338:86370 LEIAR20 LEIM 73034
RIO1 A 1 P 16:332:00000 16:338:86370 LEIAR25.R4 LEIT 25138
SALA A 1 P 16:332:00000 16:338:86370 LEIAR25 NONE -----
SOPU A 1 P 16:332:00000 16:338:86370 LEIAS10 NONE -----
TERU A 1 P 16:332:00000 16:338:86370 LEIAT504GG LEIS -----
VITO A 1 P 16:332:00000 16:338:86370 LEIAS10 NONE -----
YEBE A 1 P 16:332:00000 16:338:86370 TRM29659.00 NONE -----
ZARA A 1 P 16:332:00000 16:338:86370 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 16:332:00000 16:338:86370 UNE 3.0460 0.0000 0.0000
ALDA A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
ALSA A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
BRZR A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
CACE A 1 P 16:332:00000 16:338:86370 UNE 0.0600 0.0000 0.0000
CANT A 1 P 16:332:00000 16:338:86370 UNE 3.0490 0.0000 0.0000
CREU A 1 P 16:332:00030 16:338:86370 UNE 0.0770 0.0000 0.0000
EBRE A 1 P 16:332:00000 16:338:86370 UNE 0.0770 0.0000 0.0000
ELGE A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
GERN A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
IGEL A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
ISPS A 1 P 16:332:00000 16:338:86370 UNE 0.0350 0.0000 0.0000
LAZK A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
LEIT A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
ORDN A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
PAS2 A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
PASA A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
RIO1 A 1 P 16:332:00000 16:338:86370 UNE 0.0606 0.0000 0.0000
SALA A 1 P 16:332:00000 16:338:86370 UNE 0.0600 0.0000 0.0000
SOPU A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
TERU A 1 P 16:332:00000 16:338:86370 UNE 0.0600 0.0000 0.0000
VITO A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
YEBE A 1 P 16:332:00000 16:338:86370 UNE 0.0000 0.0000 0.0000
ZARA A 1 P 16:332:00000 16:338:86370 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:

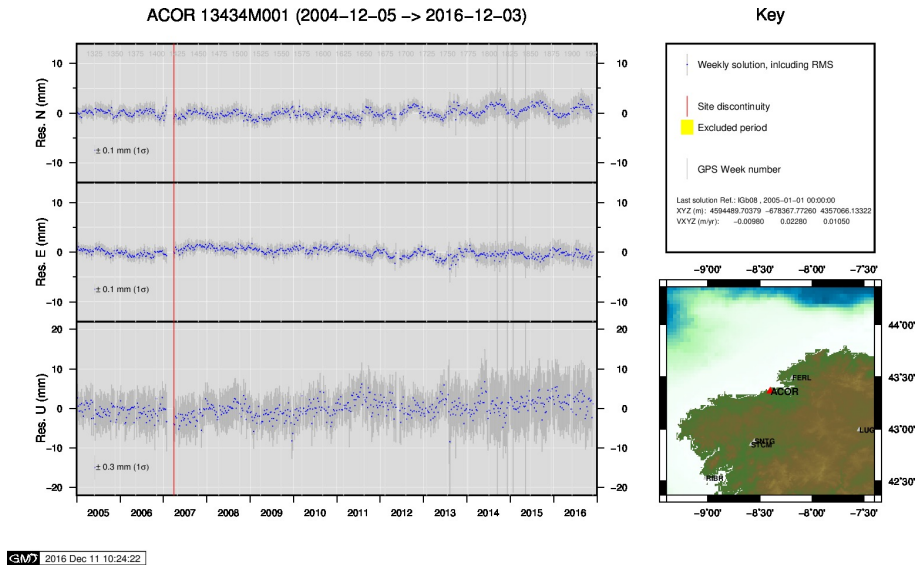
```

2016-12-11 05:15 UTC | BRZR3330.160 | RECEIVER FIRM. VERS. | 3.11/6.403 -> 4.02/6.522
2016-12-11 05:15 UTC | GERN3330.160 | RECEIVER FIRM. VERS. | 3.11/6.403 -> 4.02/6.522
2016-12-11 05:15 UTC | SOPU3330.160 | RECEIVER FIRM. VERS. | 3.11/6.403 -> 4.02/6.522
2016-12-11 05:15 UTC | VITO3330.160 | RECEIVER FIRM. VERS. | 3.11/6.403 -> 4.02/6.522

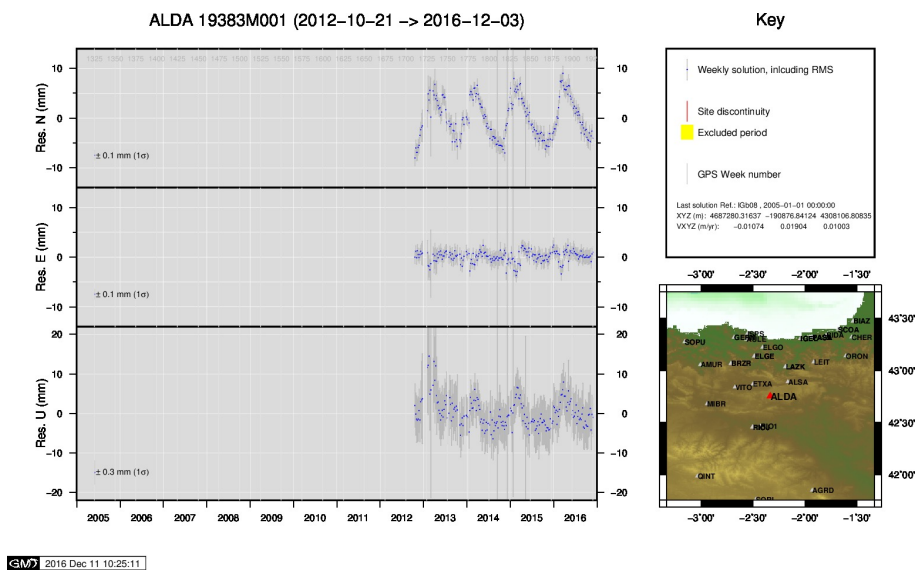
```

8 Cumulative Time Series

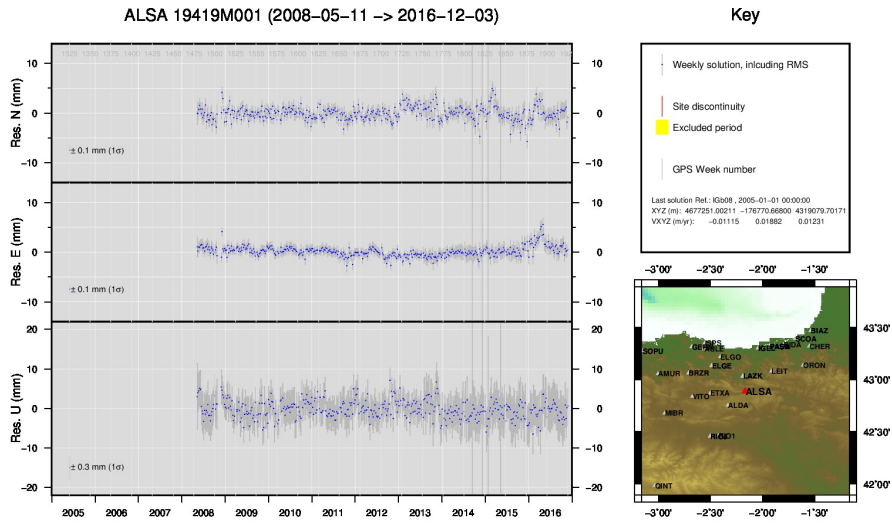
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

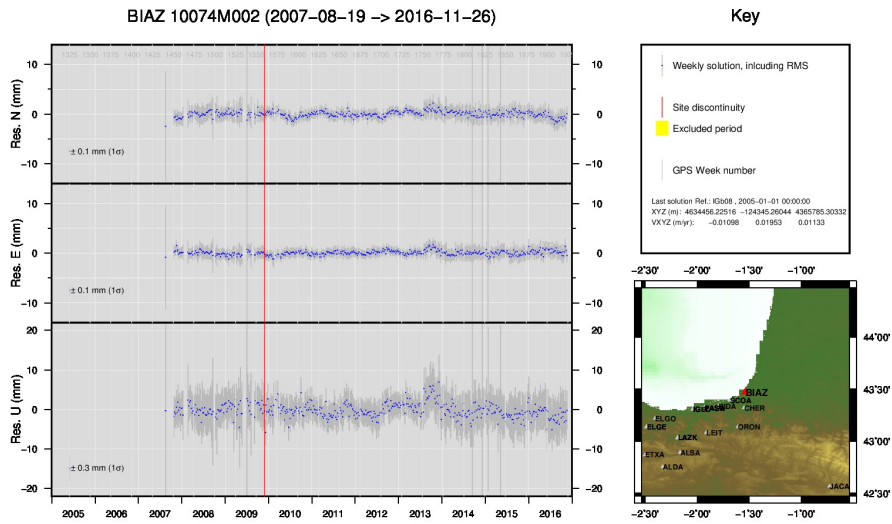


2) ALDA



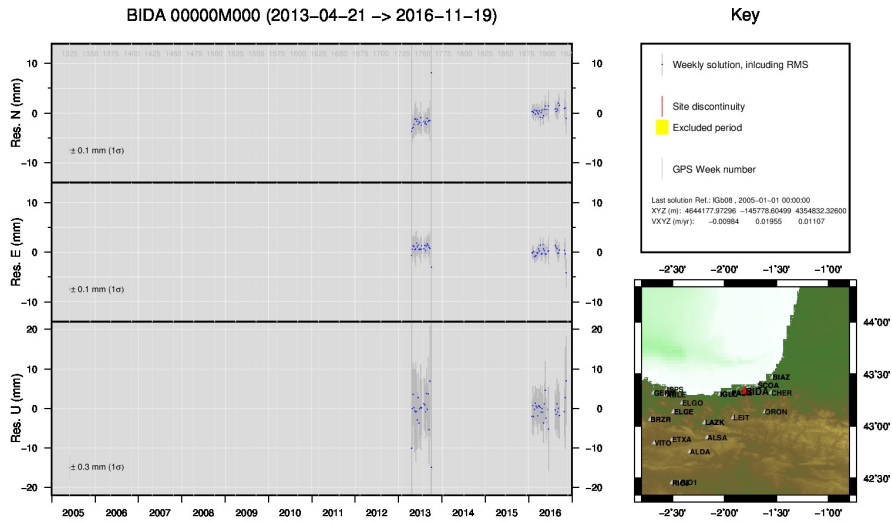
GMW 2016 Dec 11 10:25:52

3) ALSA



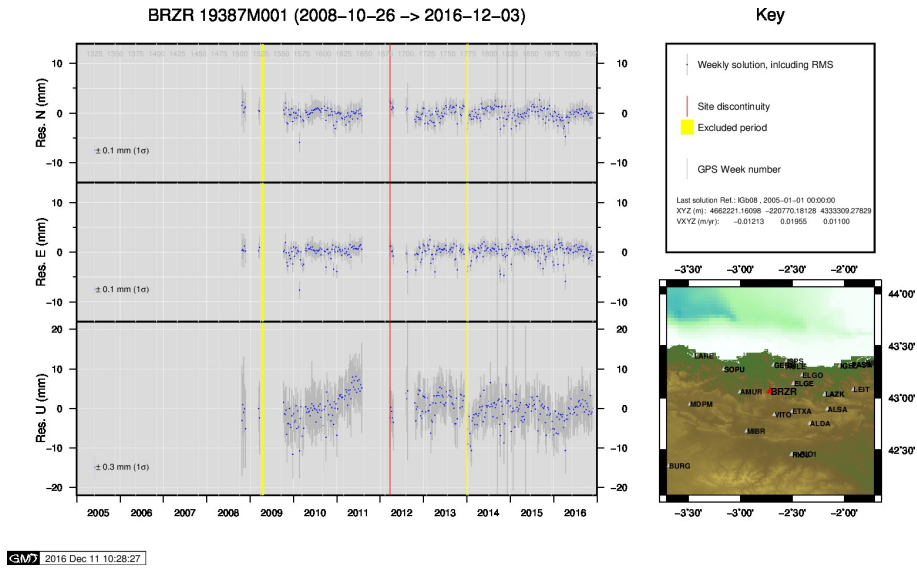
GMW 2016 Dec 11 10:28:02

4) BIAZ

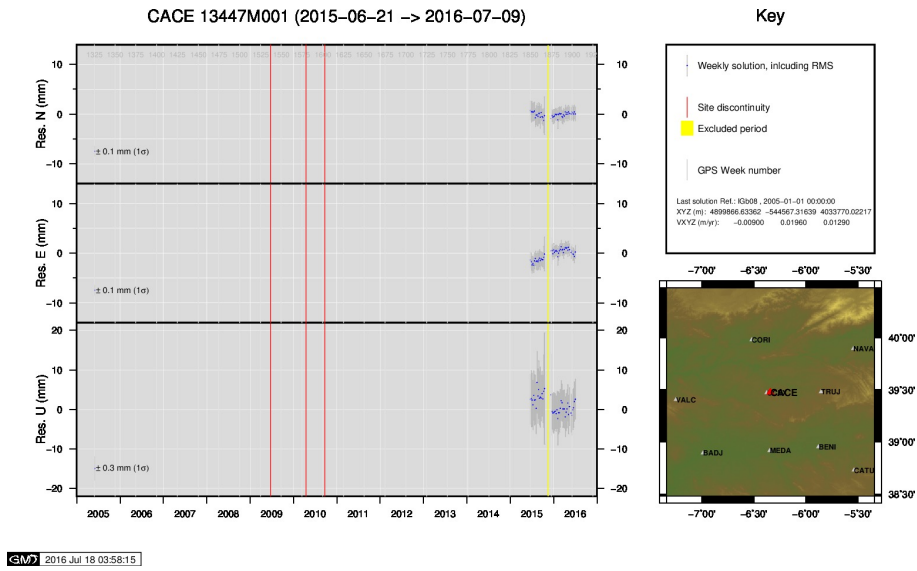


GMW 2016 Dec 11 10:28:08

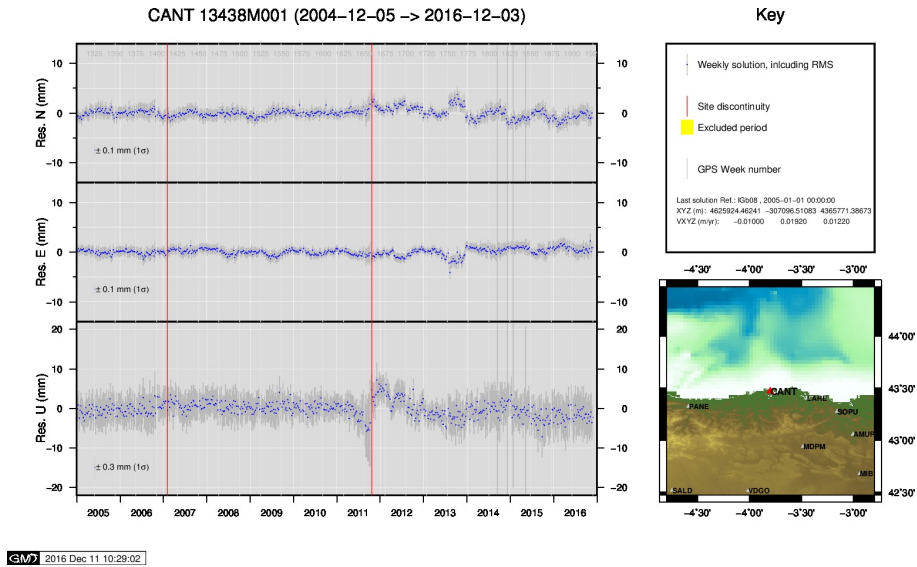
5) BIDA



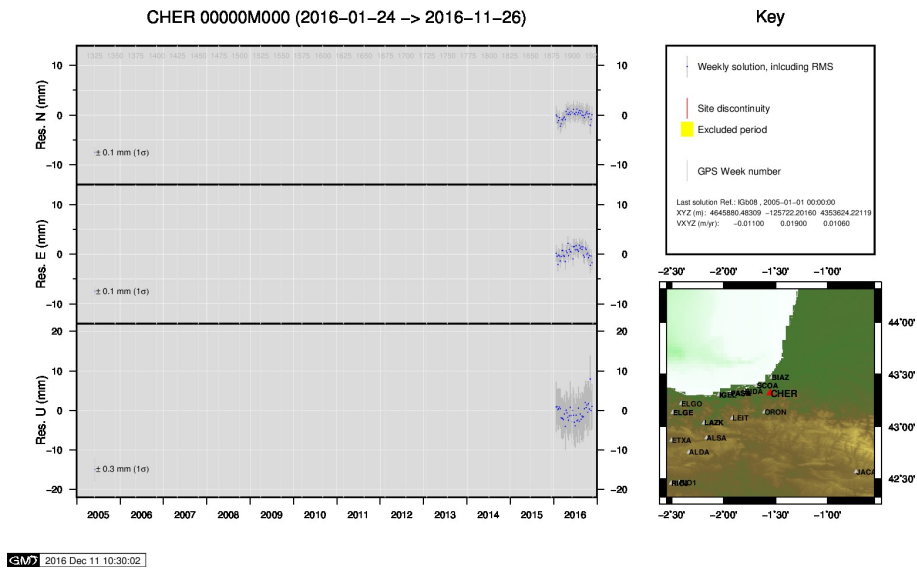
6) BRZR



7) CACE

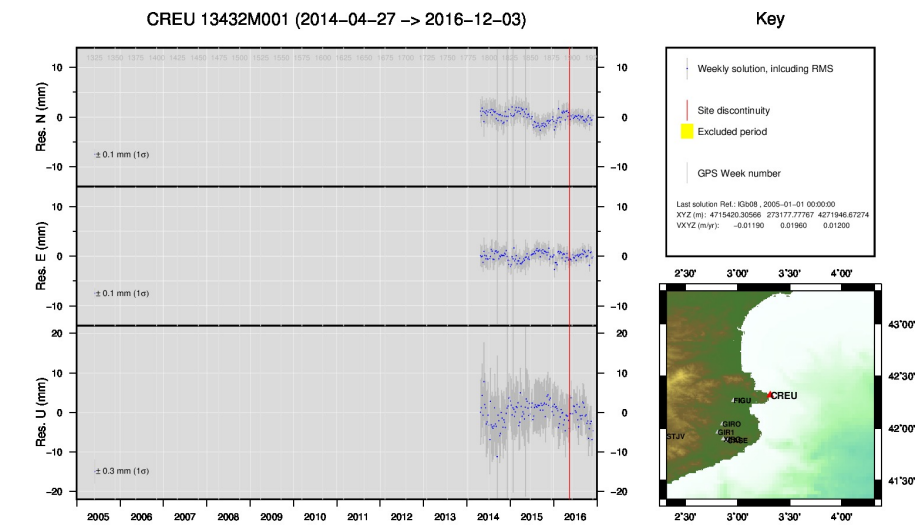


8) CANT



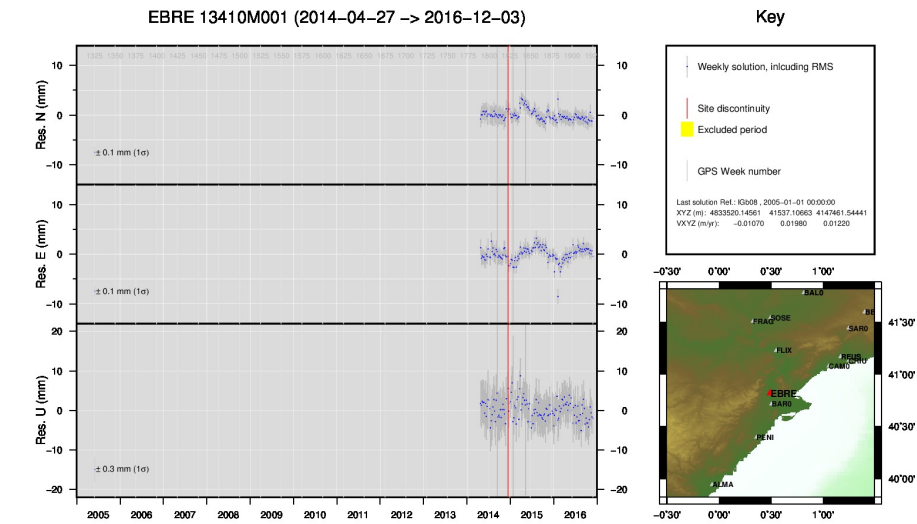
GMW 2016 Dec 11 10:30:02

9) CHER



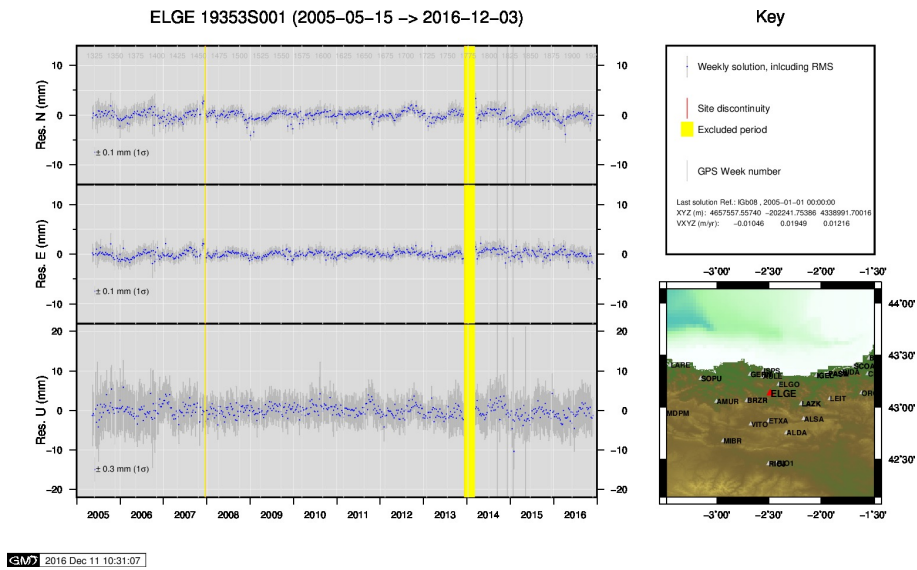
GMW 2016 Dec 11 10:30:32

10) CREU

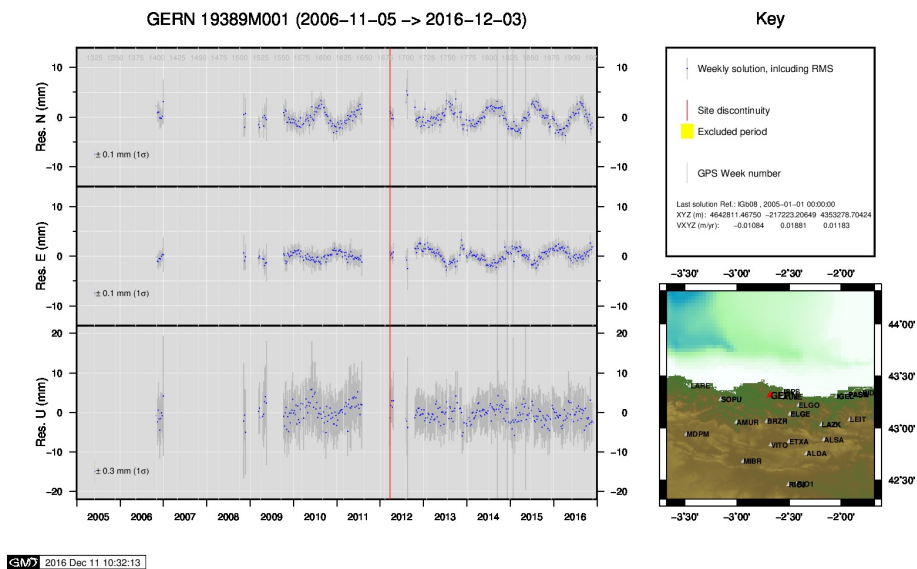


GMW 2016 Dec 11 10:30:55

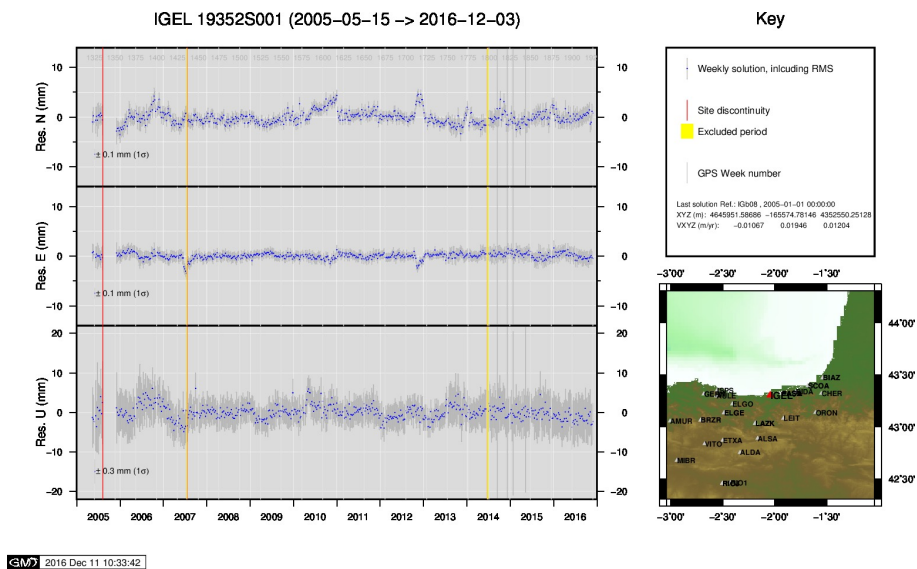
11) EBRE



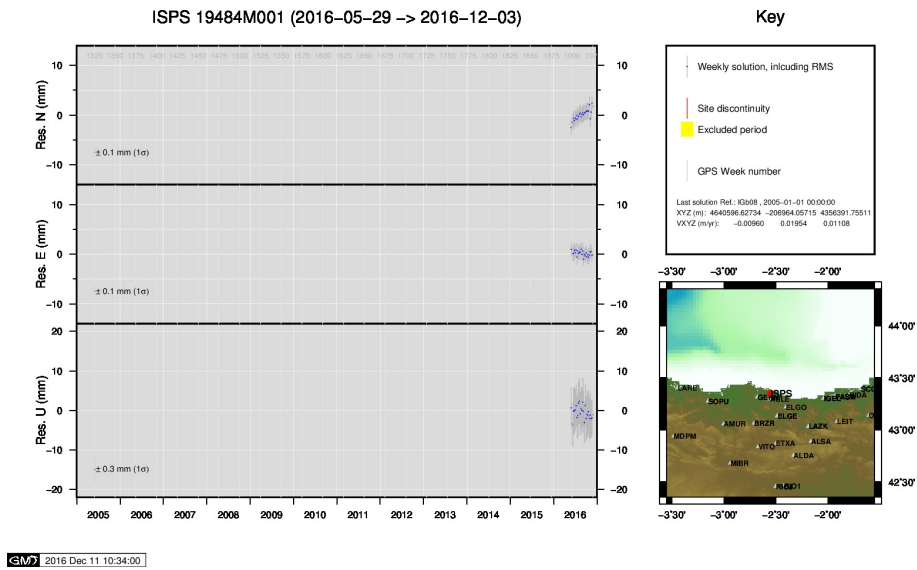
12) ELGE



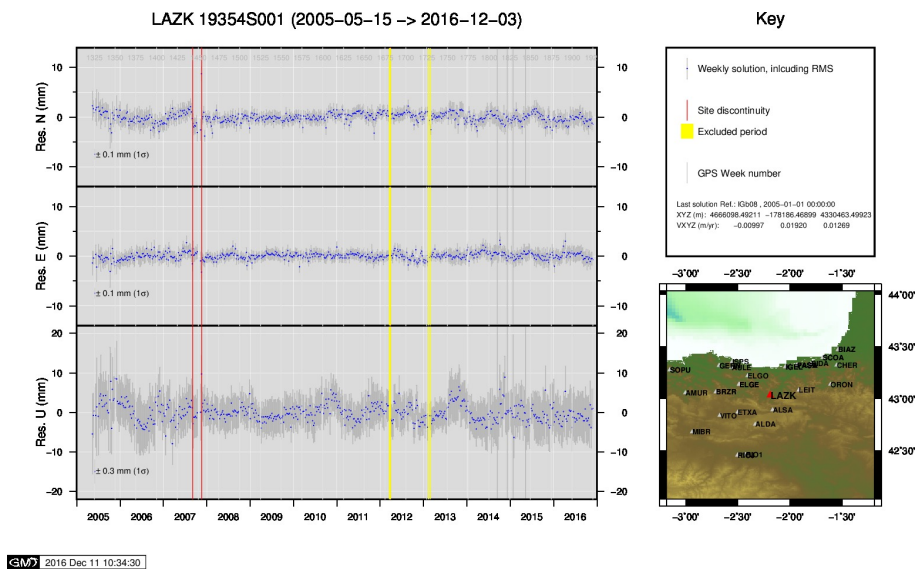
13) GERN



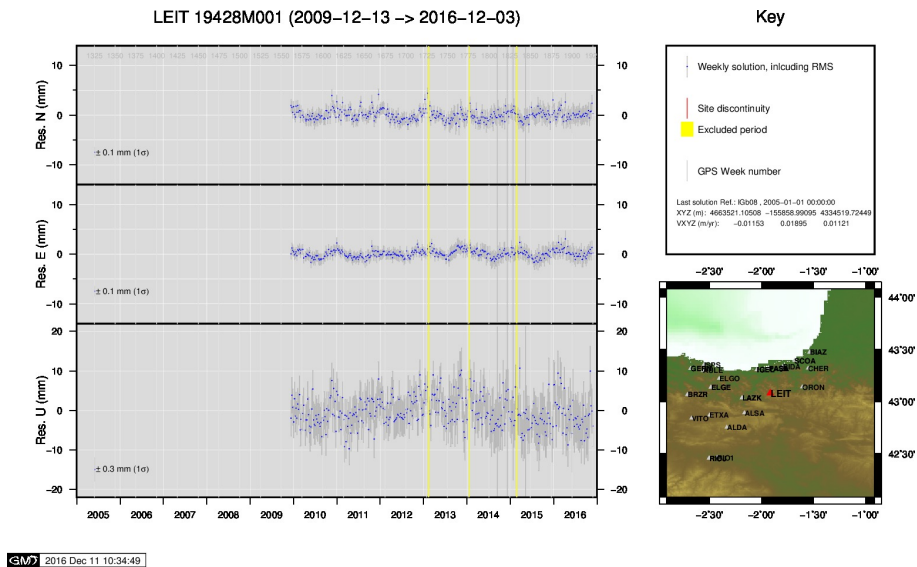
14) IGEL



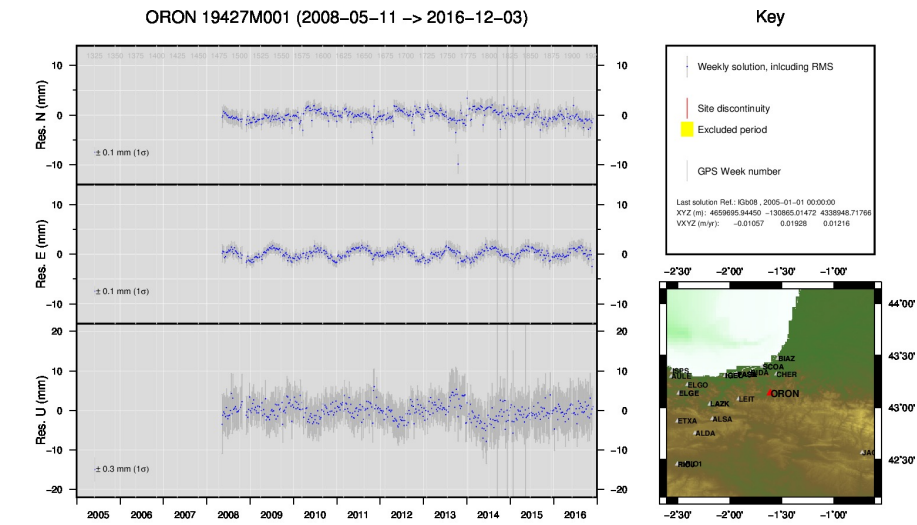
15) ISPS



16) LAZK

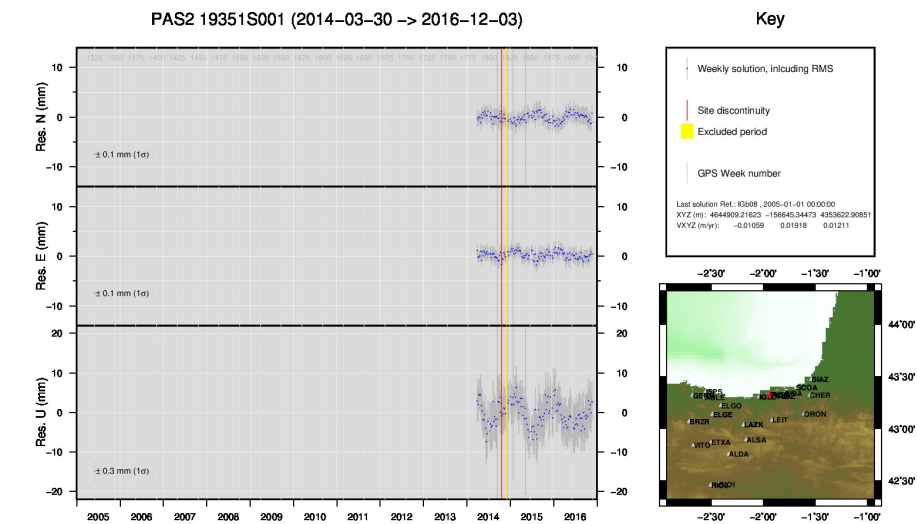


17) LEIT



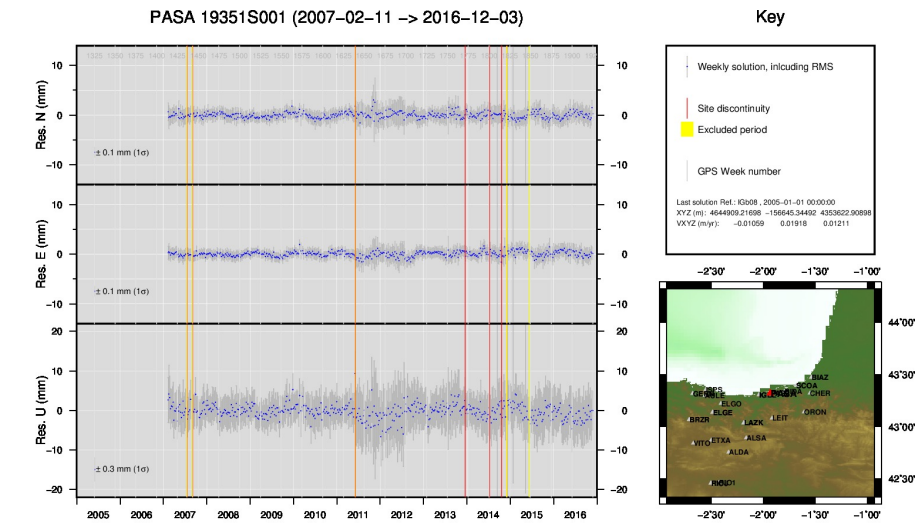
GMW 2016 Dec 11 10:38:30

18) ORON



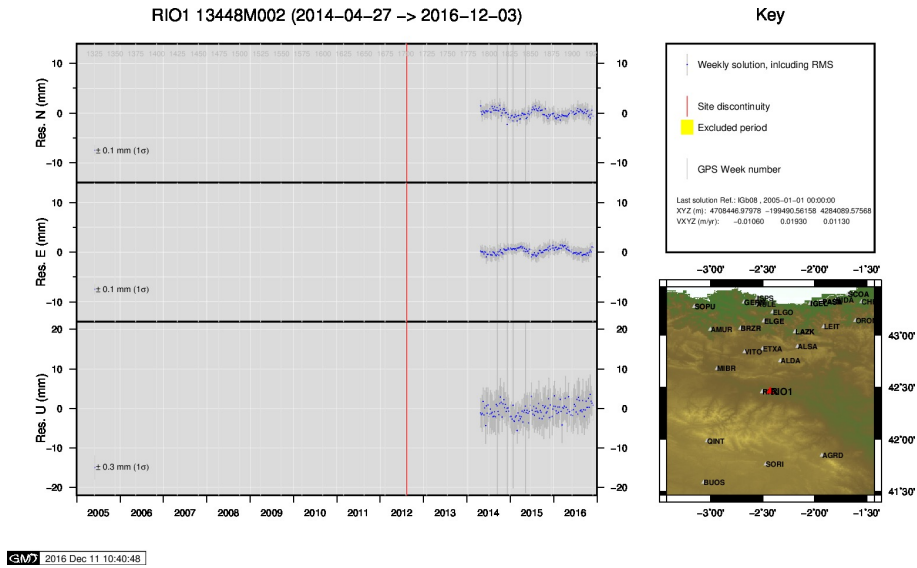
GMW 2016 Dec 11 10:39:00

19) PAS2

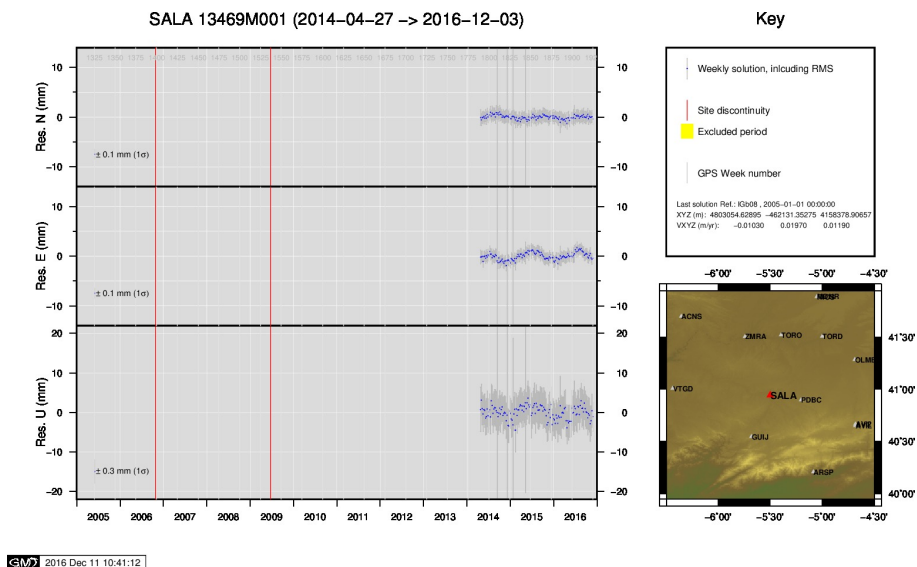


GMW 2016 Dec 11 10:39:06

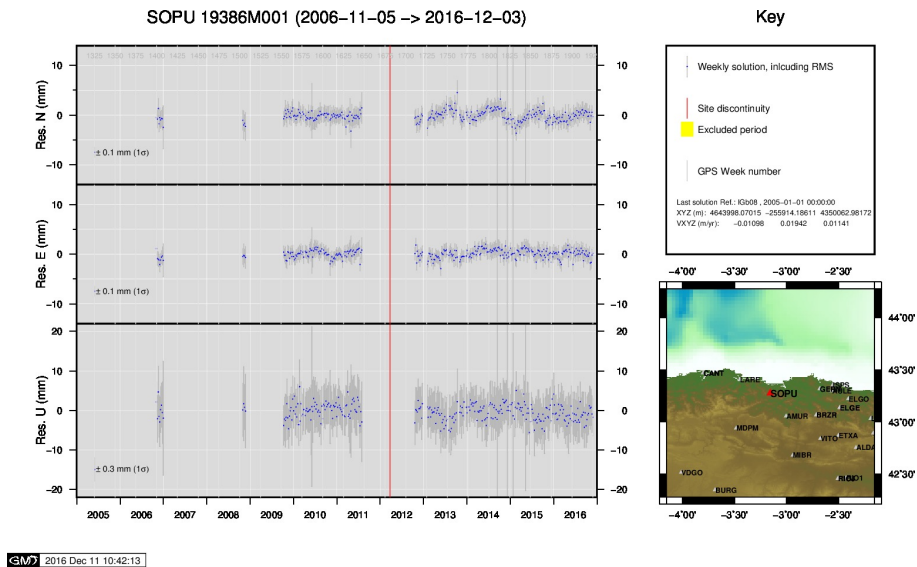
20) PASA



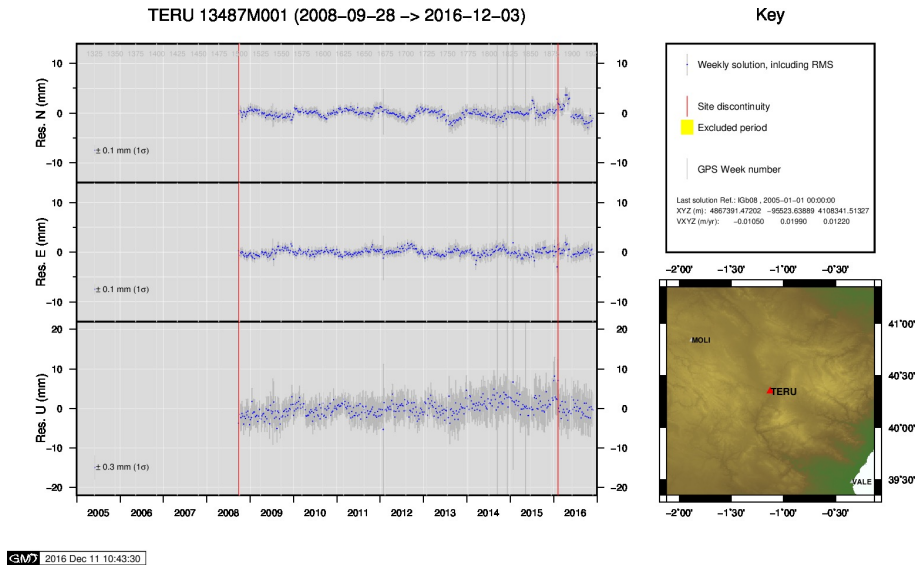
21) RIO1



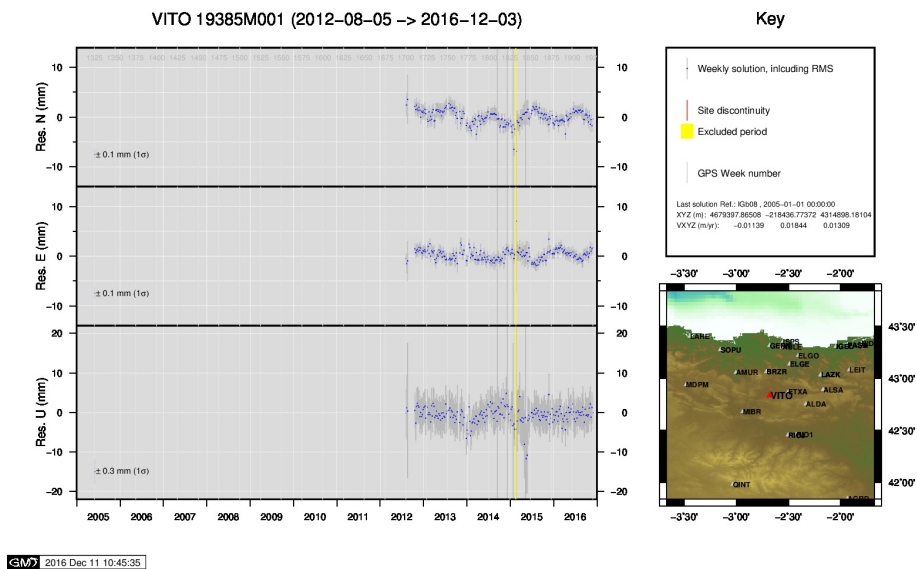
22) SALA



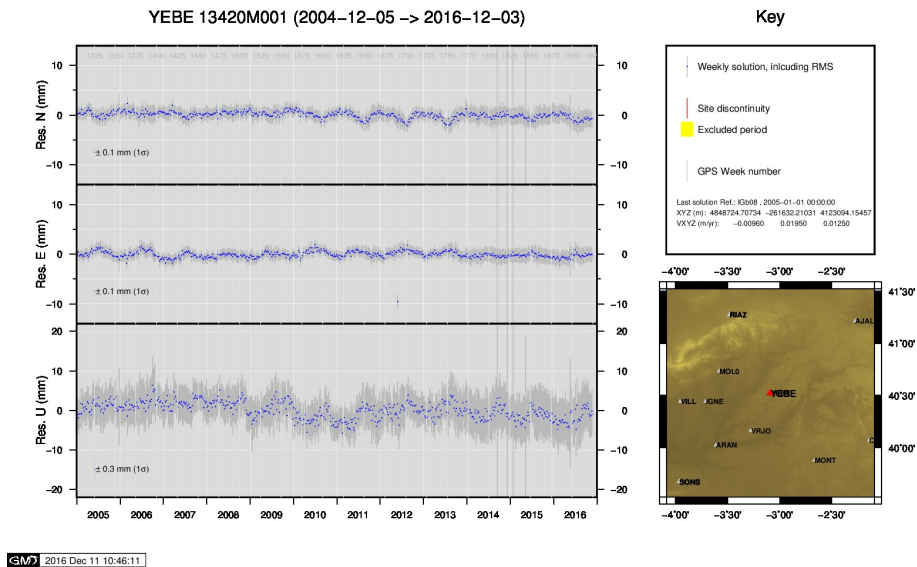
23) SOPU



24) TERU



25) VITO



26) YEBE

