

ARA-DAC Weekly Analysis Result: 1922 (GFA)

Technical Report

GPS Week: 1922 (GFA)

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

ARA-DAC details:

Contact person: J. Zurutuza

Contact mail: geodesia@aranzadi.eus

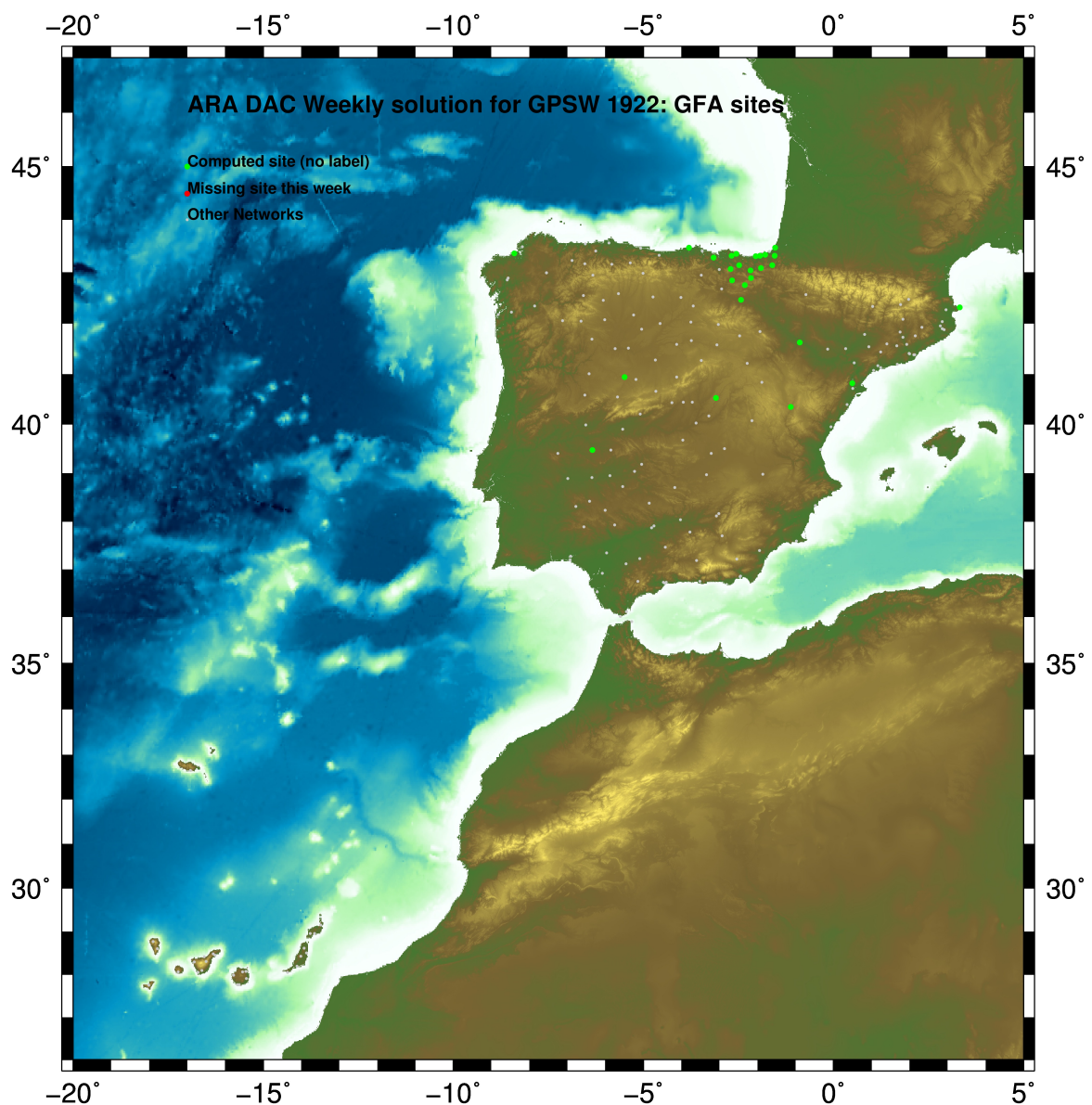
Report generated on 2016/11/20 at 22:24:22



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 Nov 20 22:24:10

Fig.1: Computed Sites for GPS Week1922 (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: 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 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 1922 WEEK COMBINATION: PRECISE ORBITS                20-NOV-16 20:09
-----
LOCAL GEODETIC DATUM: IGb08                                EPOCH: 2016-11-09 12:00:00
-----
NUM  STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
  1  ACRD 13434M001    4594489.59259  -678367.50227  4357066.26169  W
  22  ALDA 19383M001    4687280.19516  -190876.61531  4308106.92682  A
  28  ALSA 19419M001    4677250.87198  -176770.44416  4319079.85006  A
  51  BIAZ 10074M002    4634456.09764  -124345.02758  4365785.43724  A
  55  BIDA 00000M000    4644177.85953  -145778.37344  4354832.46126  A
  54  BRZR 19387M001    4662221.02237  -220769.94989  4333309.41156  A
   7  CACE 13447M001    4899866.52971  -544567.08364  4033770.17629  W
   8  CANT 13438M001    4625924.34595  -307096.28089  4365771.53079  W
  69  CHER 00000M000    4645880.36176  -125721.97877  4353624.35212  A
  11  CREU 13432M001    4715420.16268  273178.01051  4271946.81330  A
  12  EBRE 13410M001    4833520.01927  41537.34237  4147461.69017  W
  77  ELGE 19353S001    4657557.43723  -202241.52273  4338991.84499  A
  87  GERN 19389M001    4642811.34417  -217222.98008  4353278.85875  A
  101  IGEL 19352S001    4645951.46414  -165574.55139  4352550.39533  A
  105  ISPS 19484M001    4640596.51544  -206963.82498  4356391.88651  A
  109  LAZK 19354S001    4666098.37777  -178186.24244  4330463.65180  A
  112  LEIT 19428M001    4663520.97720  -155859.76548  4334519.86591  A
  141  ORDN 19427M001    4659695.82516  -130864.78550  4338948.86328  A
  146  PAS2 19351S001    4644909.09511  -156645.11712  4353623.05386  A
  147  PASA 19351S001    4644909.09393  -156645.11809  4353623.05295  A
  27  RID1 13448M002    4708446.85927  -199490.33233  4284089.71242  W
  28  SALA 13469M001    4803054.50684  -462131.11807  4158379.04688  W
  172  S0PU 19386M001    4643997.94368  -255913.95766  4350063.11792  A
  31  TERU 13487M001    4867391.34655  -95523.40324  4108341.65622  W
  204  VITO 19385M001    4679397.73476  -218436.55329  4314898.33791  A
  35  YEBE 13420M001    4848724.59413  -261631.97880  4123094.30183  W
  36  ZARA 13462M001    4773803.19584  -73506.03353  4215454.07041  W

```

5.2 ETRS89 Coordinates

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

```

ETRF2000 COORD. wk 1922                                    20-NOV-16 20:09
-----
LOCAL GEODETIC DATUM: ETRF2000                            EPOCH: 2016-11-09 12:00:00
-----
NUM  STATION NAME      X (M)      Y (M)      Z (M)      FLAG
-----
  1  ACRD 13434M001    4594489.87442  -678367.99265  4357065.87306  W
  22  ALDA 19383M001    4687280.52615  -190877.11377  4308106.53625  A
  28  ALSA 19419M001    4677251.20518  -176770.94163  4319079.46134  A
  51  BIAZ 10074M002    4634456.43942  -124345.52084  4365785.05205  A
  55  BIDA 00000M000    4644178.19832  -145778.86768  4354832.07516  A
  54  BRZR 19387M001    4662221.35176  -220770.44603  4333309.02339  A
   7  CACE 13447M001    4899866.80528  -544567.60279  4033769.76805  W
   8  CANT 13438M001    4625924.66816  -307096.77373  4365771.14417  W
  69  CHER 00000M000    4645880.70262  -125722.47313  4353623.96613  A
  11  CREU 13432M001    4715420.54099  273177.51068  4271946.42685  A
  12  EBRE 13410M001    4833520.36488  41536.83065  4147461.29303  W
  77  ELGE 19353S001    4657557.76897  -202242.01838  4338991.45735  A
  87  GERN 19389M001    4642811.67521  -217223.47435  4353278.47196  A
  101  IGEL 19352S001    4645951.80067  -165575.04585  4352550.00889  A
  105  ISPS 19484M001    4640596.84778  -206964.31902  4356391.49999  A
  109  LAZK 19354S001    4666098.71154  -178186.73885  4330463.26383  A
  112  LEIT 19428M001    4663521.31362  -155859.26159  4334519.47837  A
  141  ORDN 19427M001    4659696.16453  -130865.28119  4338948.47628  A
  146  PAS2 19351S001    4644909.43266  -156645.61145  4353622.66759  A
  147  PASA 19351S001    4644909.43148  -156645.61242  4353622.66668  A
  27  RID1 13448M002    4708447.18780  -199490.83282  4284089.32129  W
  28  SALA 13469M001    4803054.79921  -462131.62801  4158378.64628  W
  172  S0PU 19386M001    4643998.27037  -255914.45213  4350062.73062  A
  31  TERU 13487M001    4867391.67500  -95523.91853  4108341.25524  W
  204  VITO 19385M001    4679398.06323  -218437.05106  4314897.94858  A
  35  YEBE 13420M001    4848724.90574  -261632.49270  4123093.90031  W
  36  ZARA 13462M001    4773803.53348  -73506.53992  4215453.67615  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 1922 WEEK COMBINATION: PRECISE ORBITS                20-NOV-16 20:09
-----
Station      #Days  Weekday  Repeatability (mm)
              0123456      N     E     U

```


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	0.39	-0.35	-6.12
2	ALAC 13433M001	I W	-0.79	0.64	0.35
3	ALBA 13452M001	I W	-0.00	1.13	1.68
4	ALME 13437M001	I W	-1.18	-1.06	1.29
6	BRST 10004M004	I W	0.52	0.55	5.44
7	CACE 13447M001	I W	1.35	-0.95	-1.40
8	CANT 13436M001	I W	0.70	-2.56	-5.00
9	CEU1 13449M002	I W	1.64	2.11	7.01
10	COBA 13453M001	I W	0.97	-0.72	-4.83
12	EBRE 13410M001	I W	0.32	-0.93	-1.36
14	FUNC 13911S001	I W	0.22	-1.34	0.13
16	HUEL 13451M001	I W	-1.02	0.45	-0.10
17	IZAN 31309M002	I W	-3.94	-0.78	3.01
18	LLIV 13436M001	I W	2.65	-0.25	-0.93
19	LPAL 81701M001	I W	-3.51	-0.43	0.68
20	LRDC 10023M001	I W	0.70	-0.09	1.23
21	MALA 13443M001	I W	-3.87	1.24	-0.77
22	MALL 13444M001	I W	-1.06	1.44	4.47
24	MELI 13379M001	I W	-1.62	0.41	6.49
25	FDEL 31906M004	I W	-3.04	-2.27	0.29
26	RABT 35001M002	I W	0.20	0.10	-1.07
27	RID1 13448M002	I W	1.35	-0.00	-8.45
28	SALA 13469M001	I W	0.38	-0.71	2.53
29	SCDA 10088M002	I W	2.91	-0.99	-3.01
30	SDNS 13446M001	I W	1.12	-0.41	-1.72
31	TERU 13487M001	I W	2.48	1.40	0.80
32	VALE 13439M001	I W	-0.10	1.53	0.76
33	VIGO 13450M001	I W	-0.68	-0.10	-3.13
34	VILL 13406M001	I W	1.36	0.98	-2.54
35	YEBE 13420M001	I W	1.51	0.02	1.58
36	ZARA 13462M001	I W	-0.30	0.50	0.38
37	ZIMM 14001M004	I W	0.31	1.46	2.30
	RMS / COMPONENT		1.76	1.10	3.43
	MEAN		0.00	0.00	-0.00
	MIN		-3.94	-2.56	-8.45
	MAX		2.91	2.11	7.01

NUMBER OF PARAMETERS : 3
NUMBER OF COORDINATES : 96
RMS OF TRANSFORMATION : 2.31 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          7965322
NUMBER OF UNKNOWN(S)            122114
NUMBER OF DEGREES OF FREEDOM    7843208
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                  1.935149318847850

Helmert Transformation Parameters With Respect to Combined Solution:
-----
Sol  Rms (m)      Translation (m)      Rotation (")      Scale (ppm)
      X          Y          Z          X          Y          Z
-----
  1  0.00229     0.0052  0.0035  0.0001  0.0000  0.0001  0.0002  -0.00074
  2  0.00276     -0.0040 -0.0113  0.0123  0.0002 -0.0004 -0.0003  -0.00092
  3  0.00211     -0.0045 -0.0138  0.0118  0.0002 -0.0004 -0.0004  -0.00084
  4  0.00253     -0.0100 -0.0221  0.0239  0.0004 -0.0008 -0.0006  -0.00131
  5  0.00221     -0.0073 -0.0090  0.0104  0.0000 -0.0004 -0.0003  -0.00002
  6  0.00255     -0.0302 -0.0198  0.0330  0.0002 -0.0014 -0.0007  0.00035
  7  0.00188     -0.0083 -0.0175  0.0059  0.0002 -0.0003 -0.0006  0.00041
```

```
Statistics of individual solutions:
-----
File  RMS (m)      DOF  Chi**2/DOF  #Observations authentic / pseudo  #Parameters explicit / implicit / singular
-----
  1  0.00145     1057411  2.11                1073603      3      468     15727     0
  2  0.00141     1105430  1.98                1123322      3      528     17367     0
  3  0.00139     1104154  1.93                1121706      3      525     17030     0
  4  0.00149     1118869  2.22                1137895      3      528     18501     0
  5  0.00134     1138004  1.79                1156108      3      531     17576     0
  6  0.00132     1149719  1.73                1168081      3      534     17831     0
  7  0.00132     1166534  1.75                1184607      3      531     17545     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 16:311:00000 16:317:86370 LEICA GRX1200PRO -----
ALDA A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
ALSA A 1 P 16:311:00000 16:317:86370 LEICA GRX1200GGPRO -----
BIAZ A 1 P 16:311:00000 16:317:86370 LEICA GRX1200GGPRO -----
BIDA A 1 P 16:316:23940 16:317:86370 LEICA GR10 -----
BRZR A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
CACE A 1 P 16:311:00000 16:317:86370 TRIMBLE NETR9 -----
CANT A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
CHER A 1 P 16:311:00000 16:317:86370 LEICA GRX1200+GNSS -----
CREU A 1 P 16:311:00030 16:317:86370 LEICA GR50 -----
EBRE A 1 P 16:311:00000 16:317:86370 TRIMBLE NETR9 -----
ELGE A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
GERN A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
IGEL A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
ISPS A 1 P 16:311:00000 16:317:86370 TRIMBLE NETR9 -----
LAZK A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
LEIT A 1 P 16:311:00000 16:317:86370 LEICA GRX1200+GNSS -----
ORON A 1 P 16:311:00000 16:317:86370 LEICA GRX1200GGPRO -----
PAS2 A 1 P 16:311:00000 16:317:86370 TPS NET-G3A -----
PASA A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
RIO1 A 1 P 16:311:00000 16:317:86370 LEICA GR25 -----
SALA A 1 P 16:311:00000 16:317:86370 LEICA GRX1200+GNSS -----
SOPU A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
TERU A 1 P 16:311:00000 16:317:86370 LEICA GRX1200GGPRO -----
VITO A 1 P 16:311:00000 16:317:86370 LEICA GR10 -----
YEBE A 1 P 16:311:00000 16:317:86370 TRIMBLE NETR9 -----
ZARA A 1 P 16:311:00000 16:317:86370 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 16:311:00000 16:317:86370 LEIAT504 LEIS -----
ALDA A 1 P 16:311:00000 16:317:86370 LEIAS10 NONE -----
ALSA A 1 P 16:311:00000 16:317:86370 LEIAX1202GG NONE -----
BIAZ A 1 P 16:311:00000 16:317:86370 LEIAR25 LEIT -----
BIDA A 1 P 16:316:23940 16:317:86370 LEIAS10 NONE -----
BRZR A 1 P 16:311:00000 16:317:86370 LEIAS10 NONE -----
CACE A 1 P 16:311:00000 16:317:86370 TRM29659.00 NONE -----
CANT A 1 P 16:311:00000 16:317:86370 LEIAR25.R4 LEIT 25066
CHER A 1 P 16:311:00000 16:317:86370 LEIAX1203+GNSS NONE -----
```



```

CREU A 1 P 16:311:00030 16:317:86370 LEIAR25.R4 NONE 26357
EBRE A 1 P 16:311:00000 16:317:86370 TRM57971.00 NONE 25503
ELGE A 1 P 16:311:00000 16:317:86370 LEIAR25.R4 LEIT -----
GERN A 1 P 16:311:00000 16:317:86370 LEIAS10 NONE -----
IGEL A 1 P 16:311:00000 16:317:86370 LEIAR20 LEIM -----
ISPS A 1 P 16:311:00000 16:317:86370 TRM59900.00 SCIS -----
LAZK A 1 P 16:311:00000 16:317:86370 LEIAR25.R4 LEIT -----
LEIT A 1 P 16:311:00000 16:317:86370 LELAX1203+GNSS NONE -----
ORON A 1 P 16:311:00000 16:317:86370 LELAX1202GG NONE -----
PAS2 A 1 P 16:311:00000 16:317:86370 LEIAR20 LEIM 73034
PASA A 1 P 16:311:00000 16:317:86370 LEIAR20 LEIM 73034
RIO1 A 1 P 16:311:00000 16:317:86370 LEIAR25.R4 LEIT 25138
SALA A 1 P 16:311:00000 16:317:86370 LEIAR25 NONE -----
SOPU A 1 P 16:311:00000 16:317:86370 LEIAS10 NONE -----
TERU A 1 P 16:311:00000 16:317:86370 LELAT504GG LEIS -----
VITO A 1 P 16:311:00000 16:317:86370 LEIAS10 NONE -----
YEBE A 1 P 16:311:00000 16:317:86370 TRM29659.00 NONE -----
ZARA A 1 P 16:311:00000 16:317:86370 TRM29659.00 NONE -----

```

6.3 Eccentricities

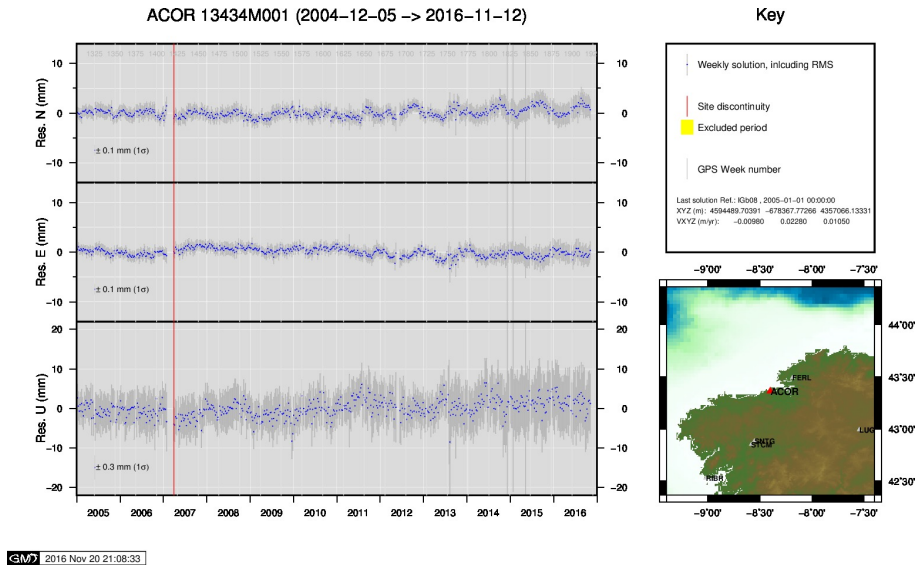
```

*
*SITE PT SOLN T DATA_START_ DATA_END_ AXE ARP->BENCHMARK(M) UP_ NORTH_ EAST_
ACOR A 1 P 16:311:00000 16:317:86370 UNE 3.0460 0.0000 0.0000
ALDA A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
ALSA A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
BIAZ A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
BIDA A 1 P 16:316:23940 16:317:86370 UNE 0.0000 0.0000 0.0000
BRZR A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
CACE A 1 P 16:311:00000 16:317:86370 UNE 0.0600 0.0000 0.0000
CANT A 1 P 16:311:00000 16:317:86370 UNE 3.0490 0.0000 0.0000
CHER A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
CREU A 1 P 16:311:00030 16:317:86370 UNE 0.0770 0.0000 0.0000
EBRE A 1 P 16:311:00000 16:317:86370 UNE 0.0770 0.0000 0.0000
ELGE A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
GERN A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
IGEL A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
ISPS A 1 P 16:311:00000 16:317:86370 UNE 0.0350 0.0000 0.0000
LAZK A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
LEIT A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
ORON A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
PAS2 A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
PASA A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
RIO1 A 1 P 16:311:00000 16:317:86370 UNE 0.0606 0.0000 0.0000
SALA A 1 P 16:311:00000 16:317:86370 UNE 0.0600 0.0000 0.0000
SOPU A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
TERU A 1 P 16:311:00000 16:317:86370 UNE 0.0600 0.0000 0.0000
VITO A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
YEBE A 1 P 16:311:00000 16:317:86370 UNE 0.0000 0.0000 0.0000
ZARA A 1 P 16:311:00000 16:317:86370 UNE 3.2590 0.0000 0.0000

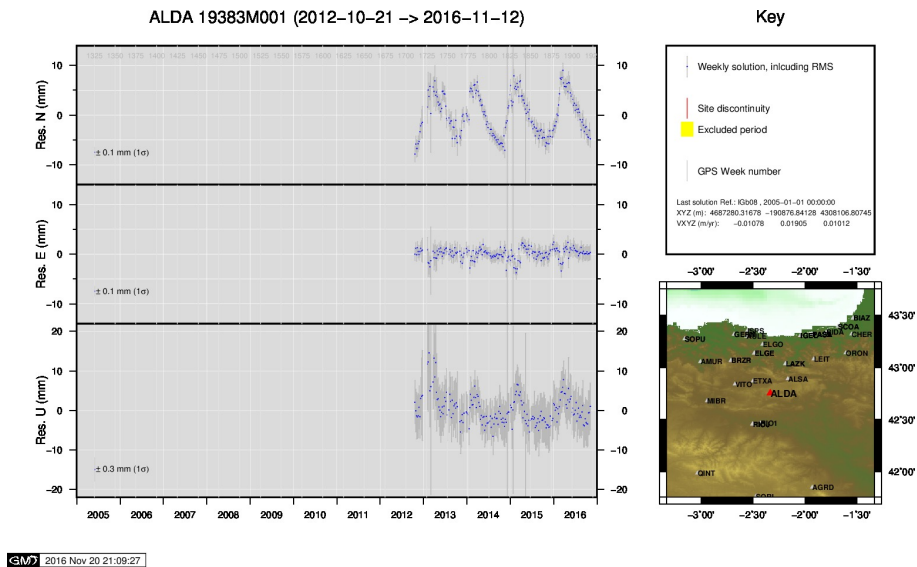
```

7 Cumulative Time Series

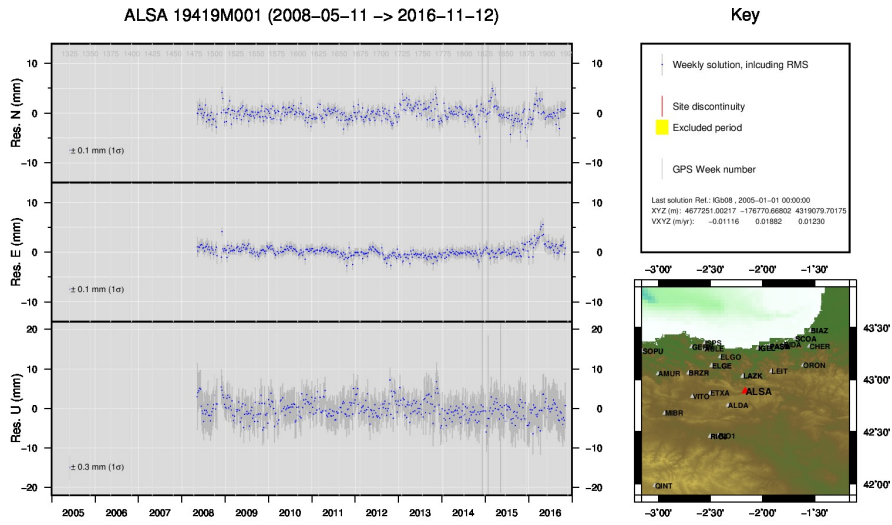
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

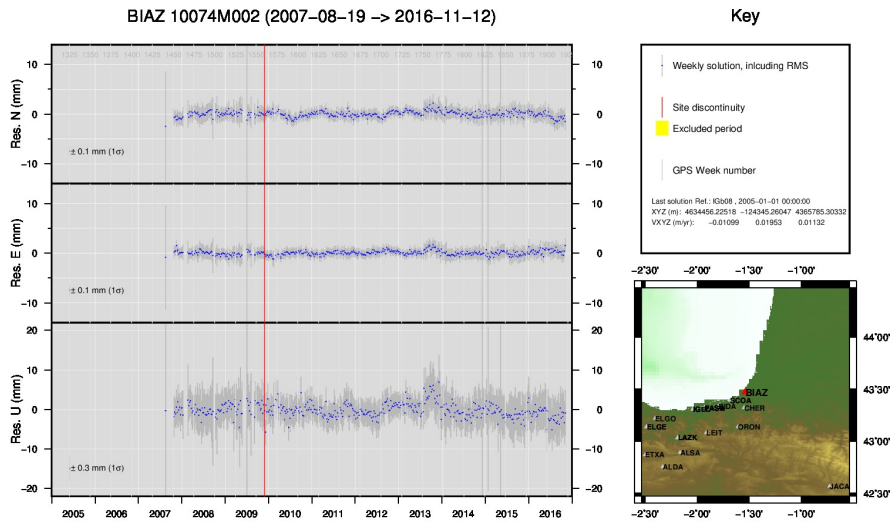


2) ALDA



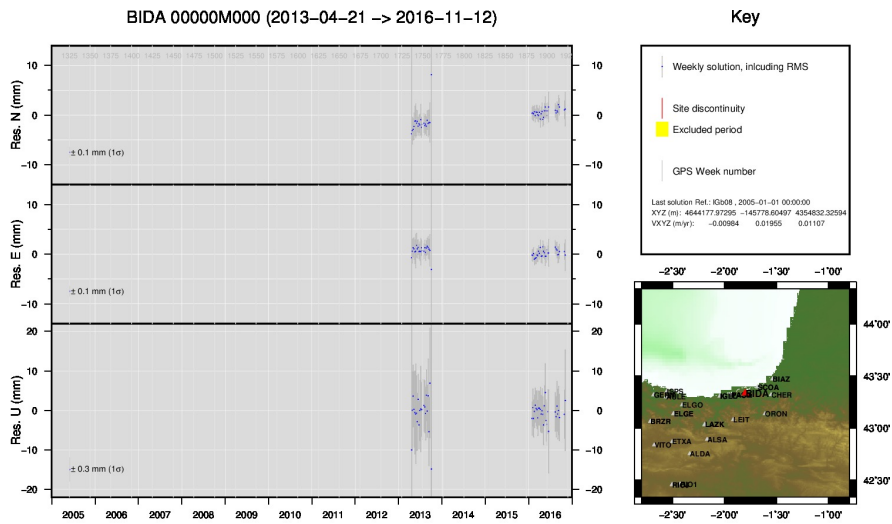
GMW 2016 Nov 20 21:10:15

3) ALSA



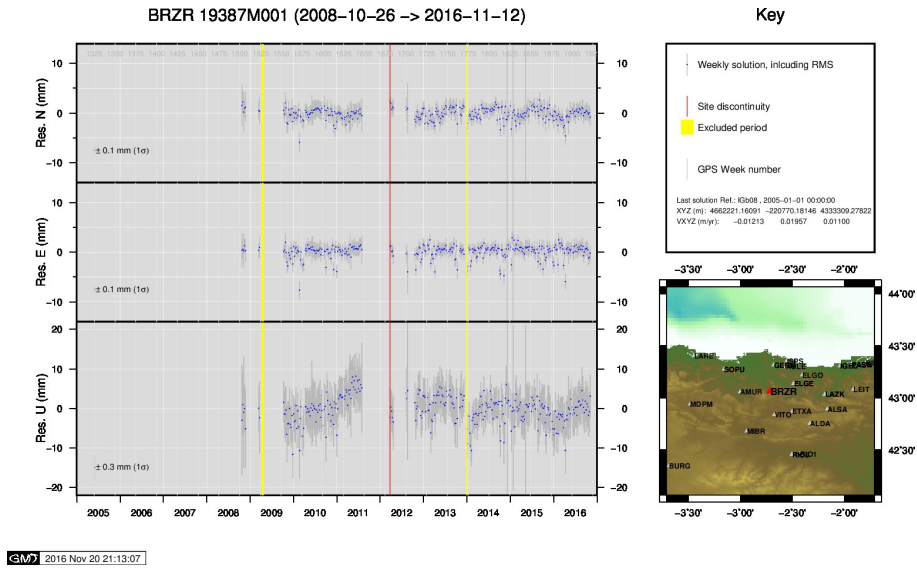
GMW 2016 Nov 20 21:12:39

4) BIAZ

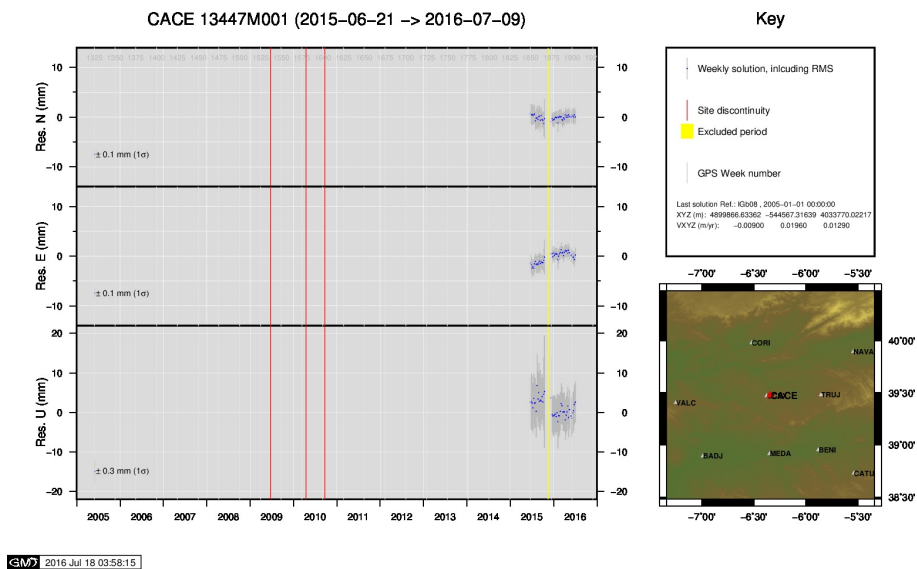


GMW 2016 Nov 20 21:12:47

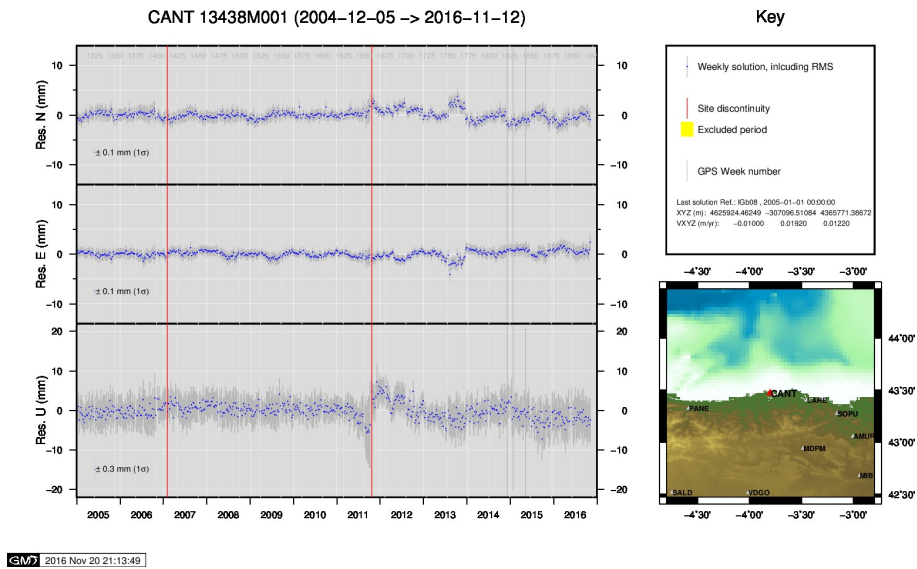
5) BIDA



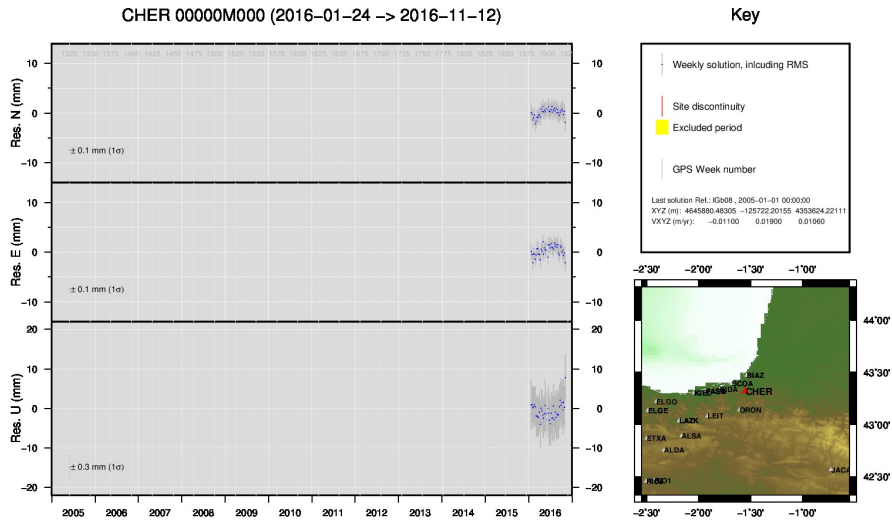
6) BRZR



7) CACE

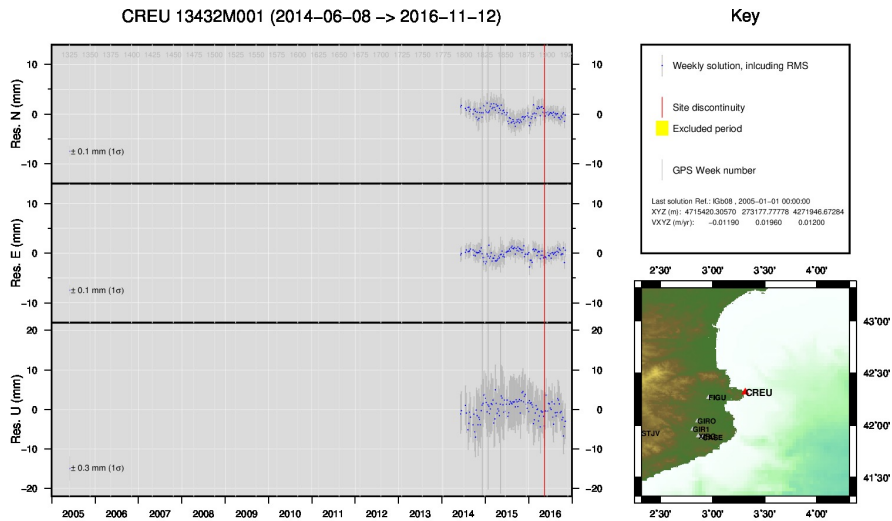


8) CANT



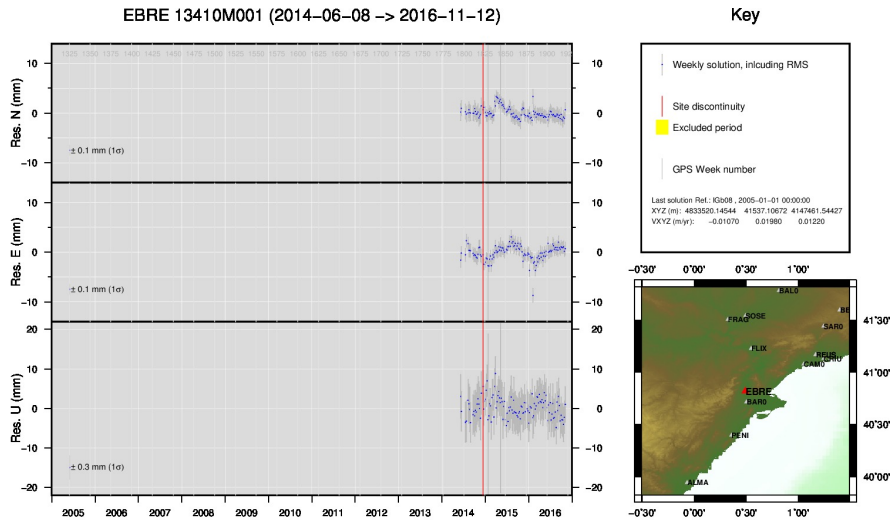
GMW 2016 Nov 20 21:14:55

9) CHER



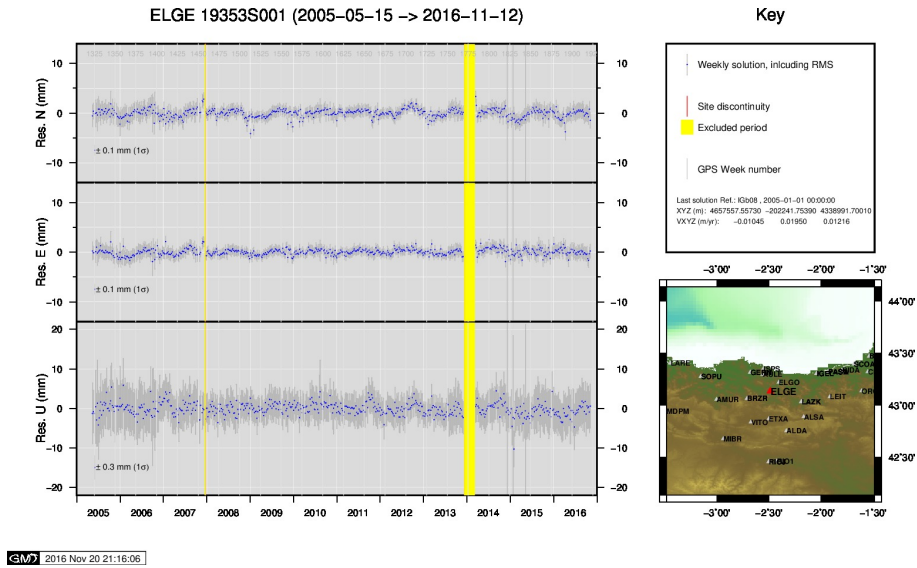
GMW 2016 Nov 20 21:15:27

10) CREU

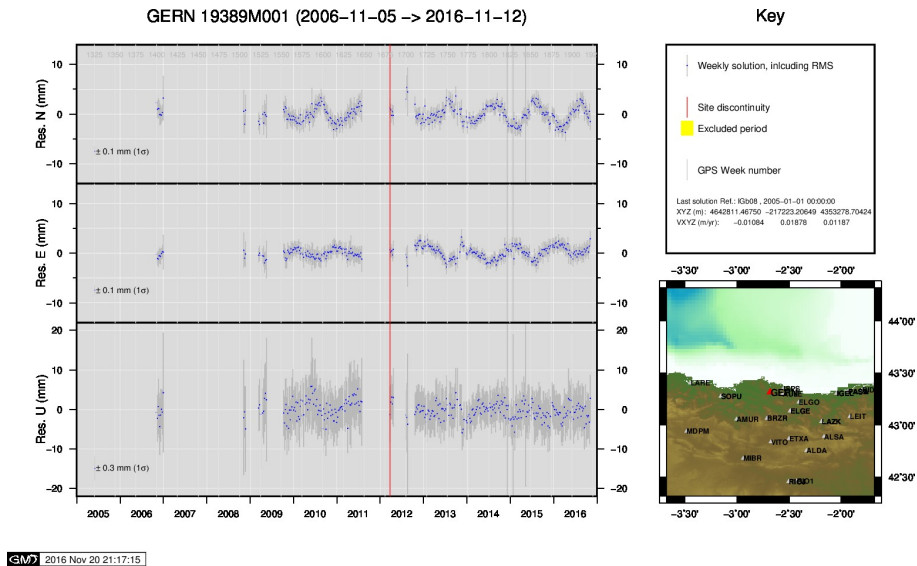


GMW 2016 Nov 20 21:15:53

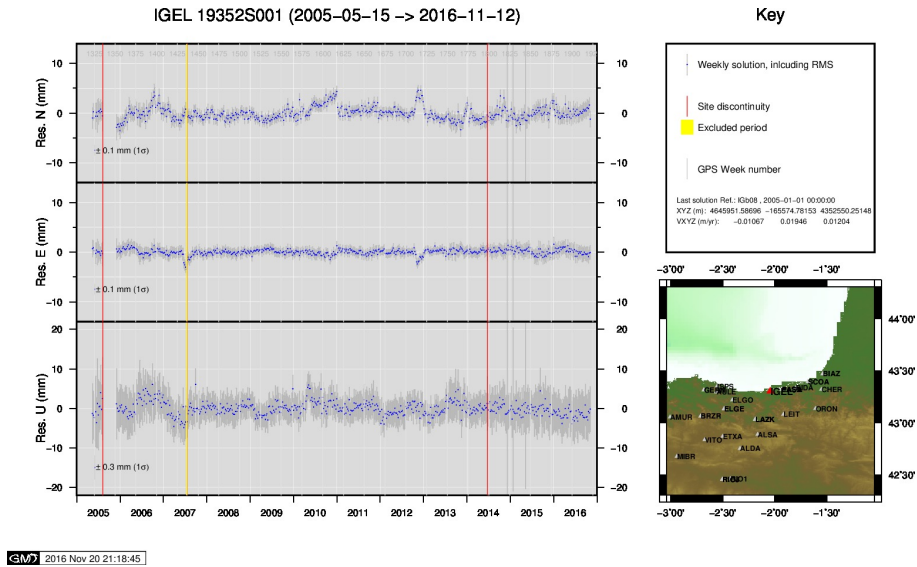
11) EBRE



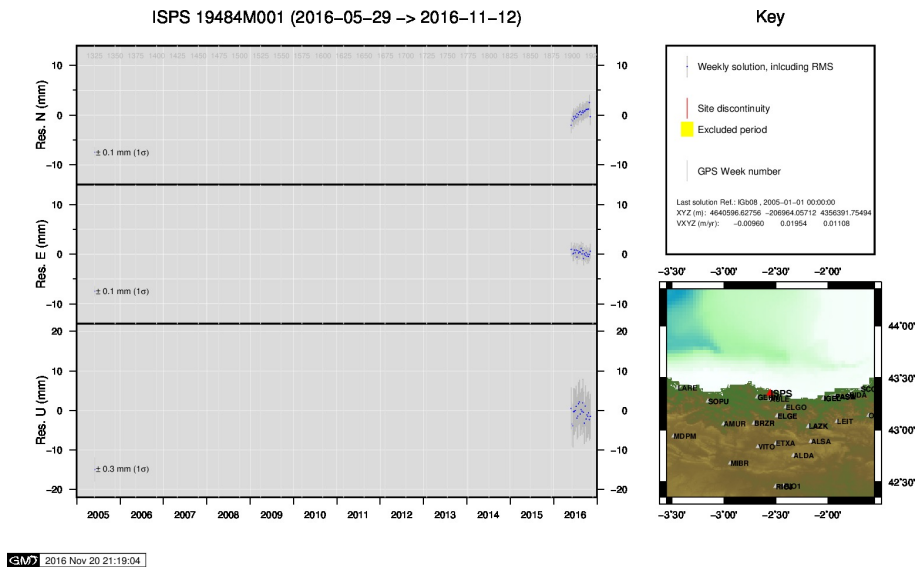
12) ELGE



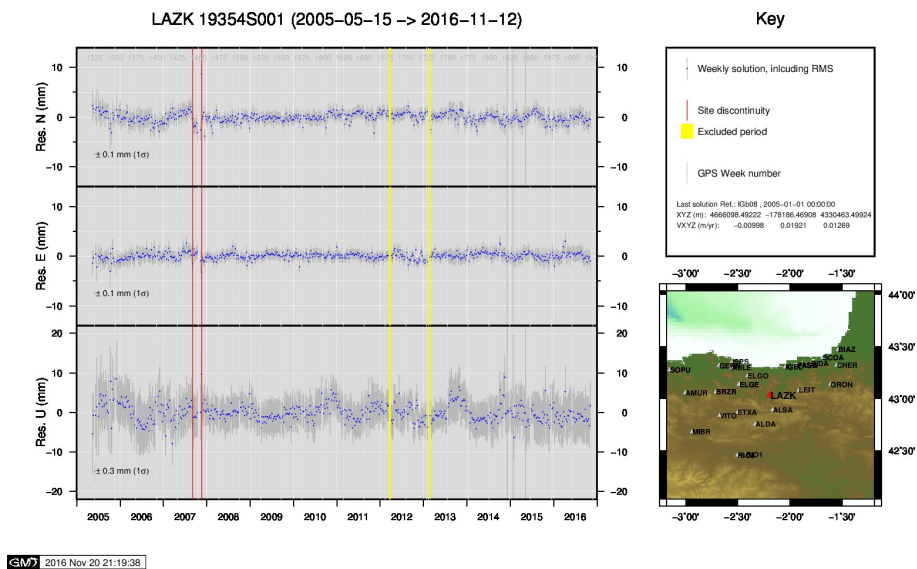
13) GERN



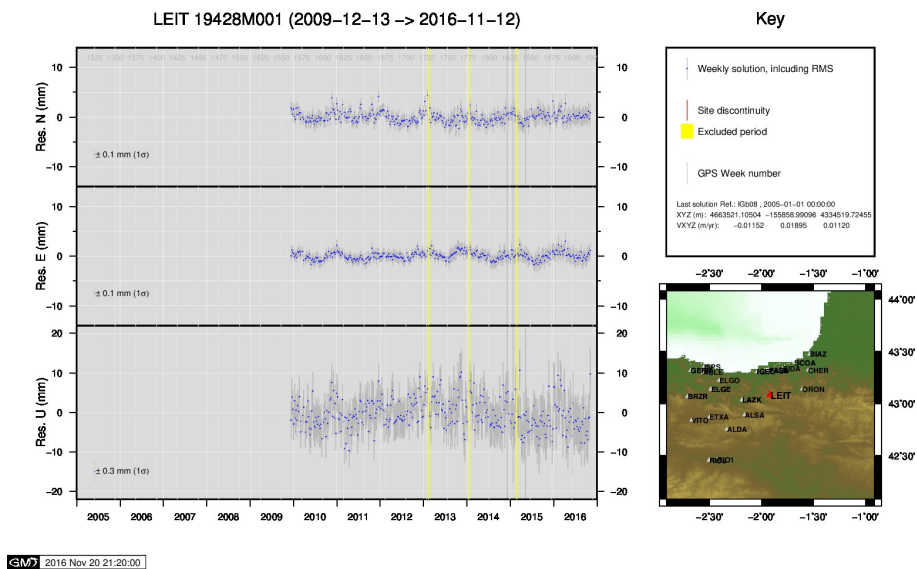
14) IGEL



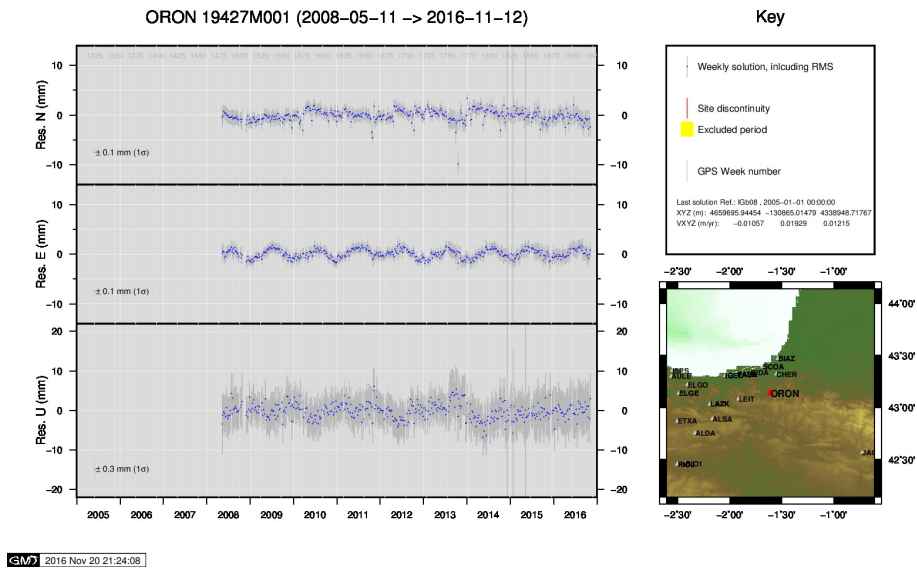
15) ISPS



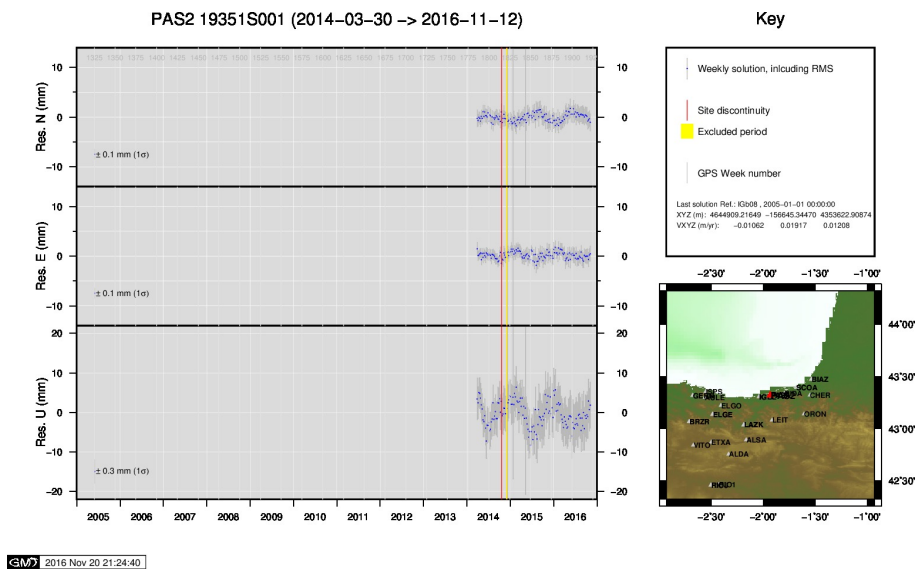
16) LAZK



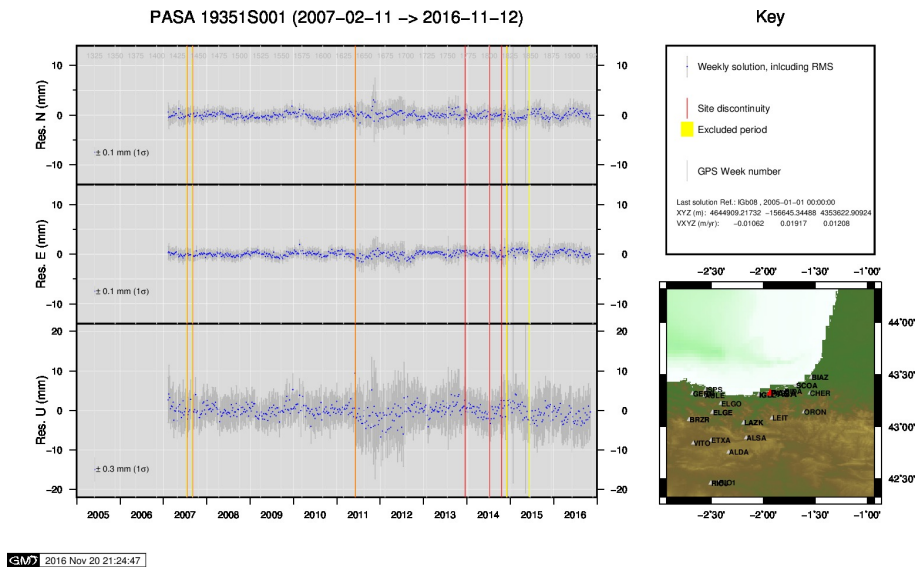
17) LEIT



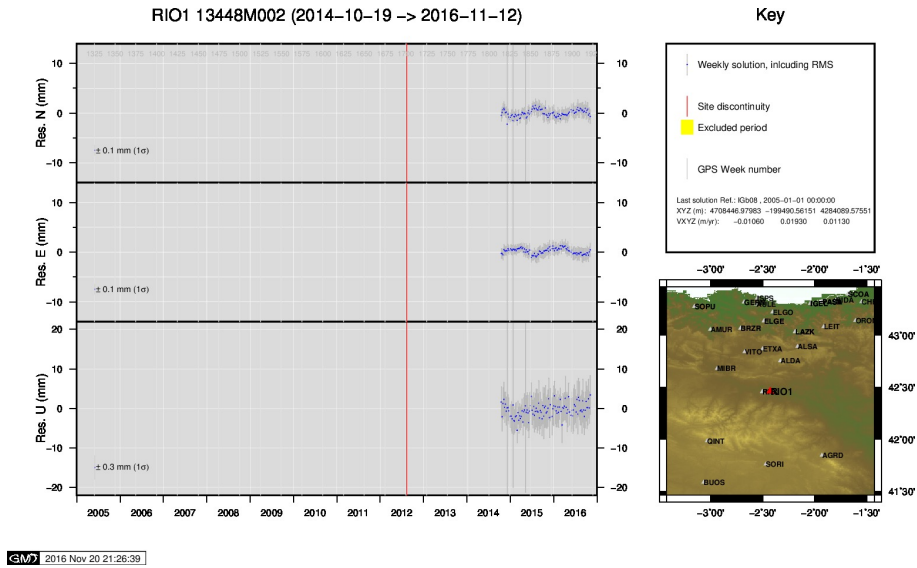
18) ORON



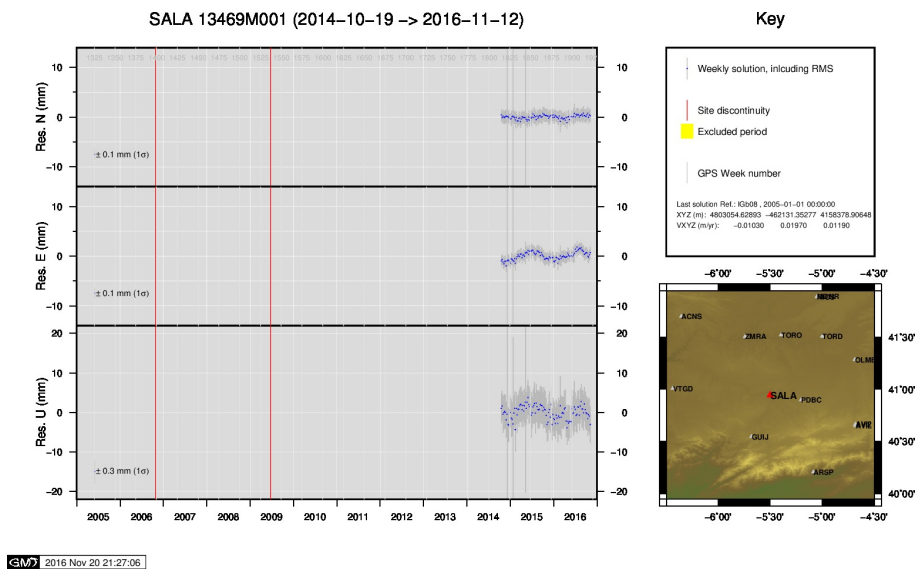
19) PAS2



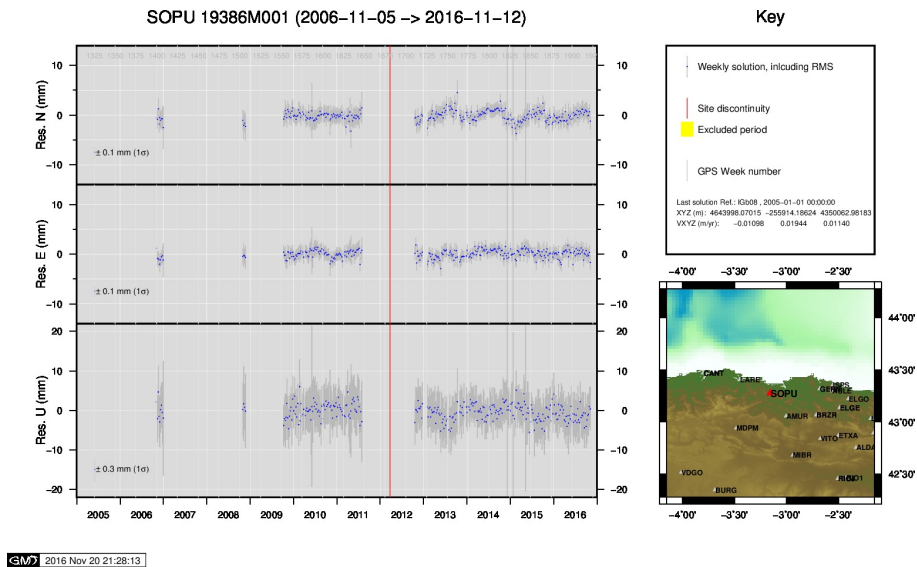
20) PASA



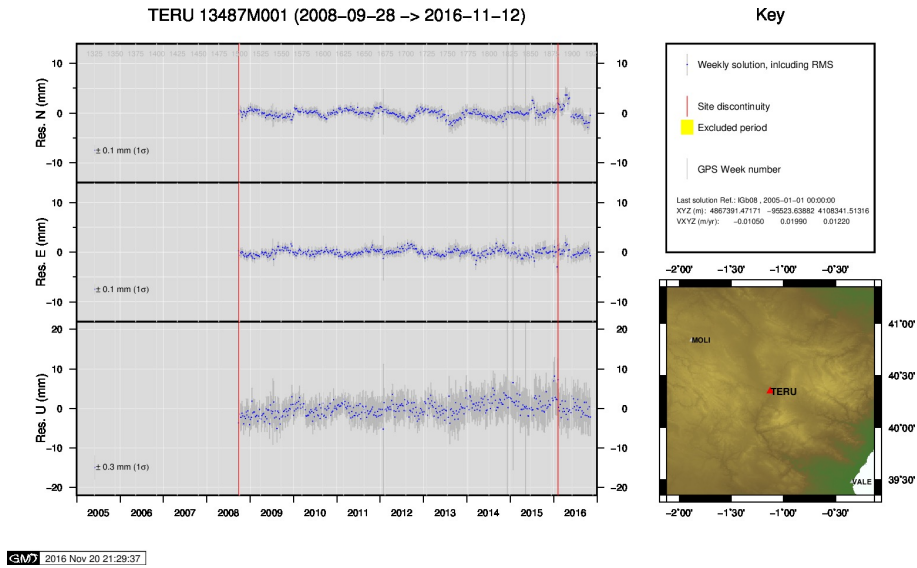
21) RIO1



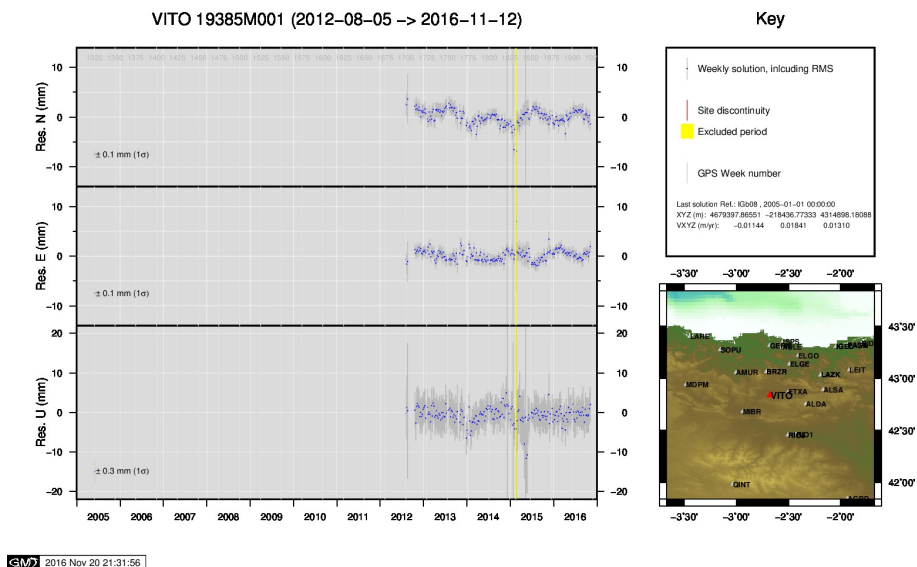
22) SALA



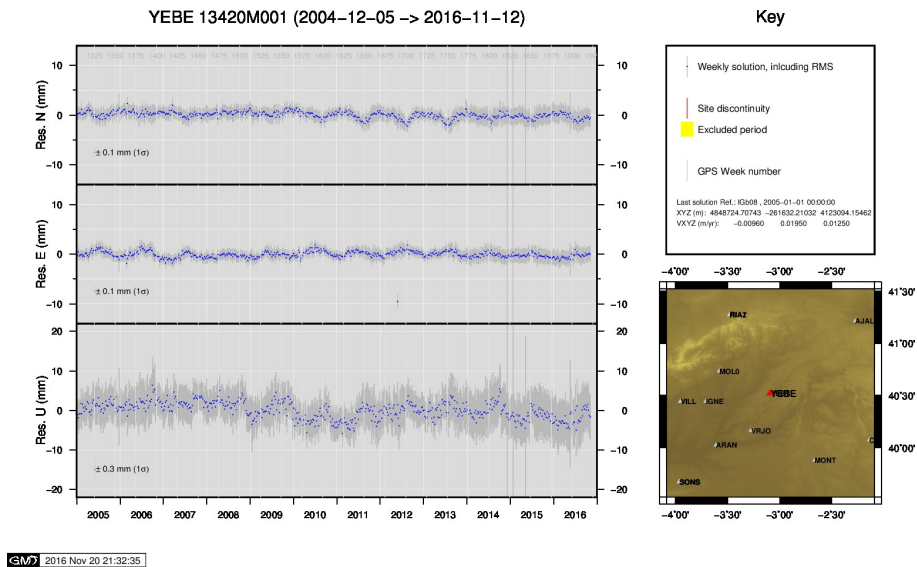
23) SOPU



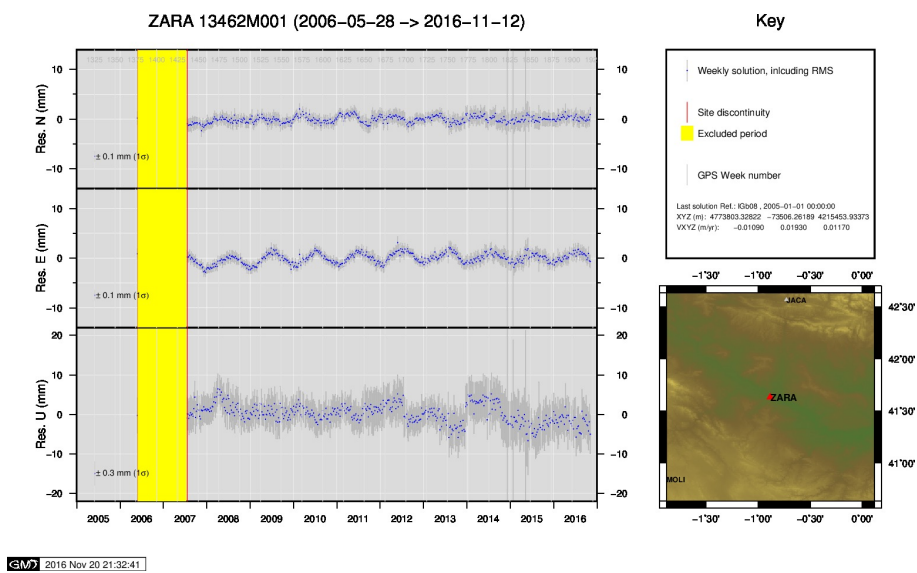
24) TERU



25) VITO



26) YEBE



27) ZARA