

ARA-DAC Weekly Analysis Result: 2404 (GFA)

Technical Report

GPS Week: 2404 (GFA)

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

ARA-DAC details:

Contact person: J. Zurutuza

Contact mail: geodesia@aranzadi.eus

Report generated on 2026/03/05 at 10:09:37



ARANZADI zientzia elkartea
sociedad de ciencias . society of sciences . société de sciences

Contents

1	Introduction	3
2	Map of Computed Sites	3
3	Main Computation Parameters	4
4	Estimated Parameters	4
5	Computed Coordinates	6
5.1	IGS20	6
5.2	ETRF2000 (ETRS89) Coordinates	6
5.3	ETRF2014 (ETRS89) Coordinates	7
5.4	ETRF2020 (ETRS89) Coordinates	7
6	Quality Control	8
6.1	Mean and Daily Repeatabilities	8
6.2	Datum verification	10
6.3	Adjustment Statistics	11
7	Equipment	11
7.1	Receiver List	11
7.2	Antennas	11
7.3	Eccentricities	12
8	Inconsistencies (logsheet-RINEX metadata)	12
9	References	14
10	Cumulative Time Series	15

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

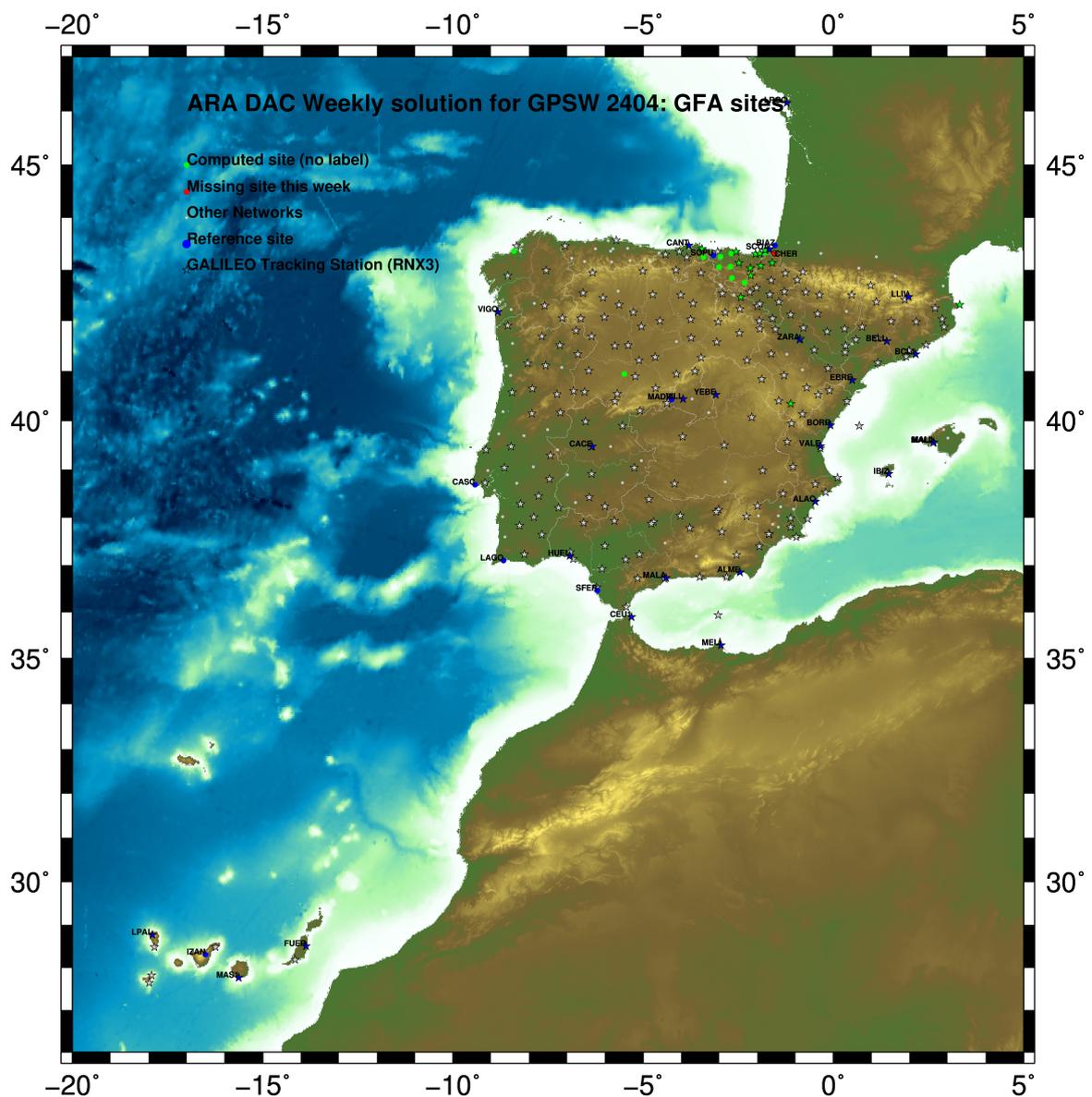


Fig.1: Computed Sites for GPS Week2404 (GFA)

3 Main Computation Parameters

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

- Preprocessing: Independent baselines are defined by the criterion of maximum common observations. Cycle slips are fixed with the MAUPRP program, analysing triple phase differences for each independent baseline. If MAUPRP does not fix all slips for one station, that station is edited out.
- Basic Observable : Carrier phase, L_1 and L_2 ; a priori sigma of single differences: 0.002 m.
 - sampling (for ambiguity resolution): 30 s
 - sampling (for final processing): 180 s
 - Systems: GPS+GLONASS observations are used (Galileo is used if available starting GPS week 1986)
- Modelled observable: Double differences of carrier phase using different combinations based on the distance.
- Ground antenna phase center calibrations: Group APCV used from the PCV_COD.I20 file and individual calibrations from EPNC_20.ATX. In case no calibration values of an antenna/radome pairs are not available for a certain GNSS system at some station, the observation of this/these GNSS/GNSSs are excluded from the analysis of that station.
- Reference sites: the latest IGS cumulative solution is used to align our solution to the latest IGS20 release, regularly updated and available at: IGS0OPSSNX_1994002_00U_00U_CRD.SNX.gz. Following the EUREF guidelines, no other individual calibrations are included in the analysis starting GPSW 2238 (IGS20); also applies to repro3 solutions, which are based on IGS20 standards.
- Troposphere:
 - minimum elevation is 3 deg.; elevation dependent weighting.
 - VMF3 mapping function. ZPD parameters are estimated using the VMF3 mapping function.
 - CHENHER gradient estimation model.
- Ionosphere: no a priori model, ionospheric effect almost removed by iono free combination.
- Ocean Loading: FES2014b (Scherneck).
- Atmospheric loading: not corrected, following the latest recommendations for IGS20 products.
- Tidal displacements:
 - Mean pole model : IERS2010_v1.2.0
 - Subdaily pole model: DESAI2016
 - Nutation model : IAU2000R06

4 Estimated Parameters

- Adjustment: Least Squares
- Rejection Criteria: $3 \times \text{rms}$ of single differences, in the weekly combination of daily normal equations (ADDNEQ)
- Station coordinates: minimum constraints (MC) to IGS 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. DE421 planetary ephemeris and JGM3 Earth geopotential model is used.
- Ambiguity: an advanced ambiguity resolution (AR) scheme is included:
 - Code-Based Widelane (WL) and Narrow Line (NR) 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 (IGS cumulative solution) are the ones used in the Minimal Constraints condition.

5.1 IGS20

The Reference Frame considered in this section is the IGS20 (IGS cumulative solution), mapped from 2015.0 to the observation epoch.

ARA FINAL WEEKLY COMBINATION: FINAL ORBITS 05-MAR-26 08:49

LOCAL GEODETIC DATUM: IGS20 EPOCH: 2026-02-04 11:59:45

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG	SYSTEM
111	ACOR 13434M001	4594489.46778	-678367.23393	4357066.33408	A	G
39	ALDA 19383M001	4687280.09348	-190876.43699	4308107.03750	A	GR
50	ALSA 19419M001	4677250.76328	-176770.26921	4319079.95647	A	GRE
53	AMUR 19388M001	4661499.38491	-244591.12943	4332269.96389	A	GR
384	BLAZ 10074M002	4634455.98034	-124344.84698	4365785.53897	W	GR
101	BIDA 00000M000	4644177.74977	-145778.19322	4354832.56063	A	GR
113	BRZR 19387M001	4662220.91948	-220769.77635	4333309.50929	A	GR
573	CACE 13447M001	4899866.44585	-544566.90658	4033770.28882	W	GRE
592	CANT 13438M001	4625924.24922	-307096.10875	4365771.64120	W	GRE
908	CREU 13432M001	4715420.05213	273178.18949	4271946.91914	A	GRE
135	EBRE 13410M001	4833519.91613	41537.52265	4147461.80171	W	GRE
180	ELGE 19353S001	4657557.32702	-202241.34136	4338991.96882	A	GRE
182	EMAZ 17001M001	4645924.14057	-276949.74236	4347759.64971	A	GR
209	GERM 19389M001	4642811.25026	-217222.79695	4353278.95302	A	GR
257	HOND 15012M002	4640529.24655	-145675.85887	4358781.83637	A	GR
235	IGEL 19352S001	4645951.35277	-165574.37595	4352550.50569	A	GRE
240	ISPS 19484M001	4640596.41045	-206963.65110	4356391.99960	A	GRE
245	KAST 19499M001	4646949.00250	-240747.13968	4348015.06589	A	GR
252	LARE 19440M001	4632831.89047	-279026.01676	4360314.51000	A	GRE
256	LAZK 19354S001	4666098.27583	-178186.06351	4330463.75473	A	GRE
261	LEIT 19428M001	4663520.86883	-155858.59071	4334519.97213	A	GRE
334	ORON 19427M001	4659695.71286	-130864.60980	4338948.96882	A	GRE
345	PAS2 19351S001	4644908.98997	-156644.94158	4353623.15791	A	GRE
493	PASA 19351S001	4644908.98999	-156644.94155	4353623.15829	A	GRE
553	R101 13448M002	4708446.76235	-199490.15448	4284089.81739	A	GRE
558	SALA 13469M001	4803054.42270	-462130.94256	4158379.15897	A	GR
526	SCDA 10088M002	4639940.43584	-136224.81699	4359552.50047	W	GRE
715	SOPU 19386M001	4643997.83764	-255913.78075	4350063.22002	W	GR
443	TERU 13487M001	4867391.25373	-95523.21436	4108341.76559	A	GR
493	VITO 19385M001	4679397.63112	-218436.37654	4314898.44472	A	GR
616	YEBE 13420M001	4848724.50188	-261631.79884	4123094.41079	W	GRE
655	ZARA 13462M001	4773803.09946	-73505.85657	4215454.17684	W	GRE

5.2 ETRF2000 (ETRS89) Coordinates

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

CONVERT TO ETRF2000 05-MAR-26 08:49

LOCAL GEODETIC DATUM: ETRF2000 EPOCH: 2026-02-04 11:59:45

NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG	SYSTEM
111	ACOR 13434M001	4594489.82598	-678367.90240	4357065.83336	A	
39	ALDA 19383M001	4687280.51713	-190877.11627	4308106.53653	A	
50	ALSA 19419M001	4677251.18987	-176770.94717	4319079.45463	A	
53	AMUR 19388M001	4661499.80294	-244591.80558	4332269.46350	A	
384	BLAZ 10074M002	4634456.41836	-124345.51934	4365785.04283	W	
101	BIDA 00000M000	4644178.18381	-145778.86688	4354832.06328	A	
113	BRZR 19387M001	4662221.34100	-220770.45253	4333309.00918	A	
573	CACE 13447M001	4899866.79568	-544567.61337	4033769.76202	W	
592	CANT 13438M001	4625924.66118	-307096.78053	4365771.14315	W	
908	CREU 13432M001	4715420.53879	273177.50834	4271946.42133	A	
135	EBRE 13410M001	4833520.35923	41536.82569	4147461.28968	W	
180	ELGE 19353S001	4657557.75167	-202242.01690	4338991.46942	A	
182	EMAZ 17001M001	4645924.55531	-276950.41663	4347759.15027	A	
209	GERM 19389M001	4642811.67398	-217223.47065	4353278.45475	A	
257	HOND 15012M002	4640529.68094	-145676.53207	4358781.33936	A	
235	IGEL 19352S001	4645951.78379	-165575.04990	4352550.00789	A	
240	ISPS 19484M001	4640596.83590	-206964.32449	4356391.50168	A	
245	KAST 19499M001	4646949.42242	-240747.81397	4348014.56689	A	
252	LARE 19440M001	4632832.30597	-279026.68935	4360314.01173	A	
256	LAZK 19354S001	4666098.70318	-178186.74005	4330463.25489	A	
261	LEIT 19428M001	4663521.29971	-155859.26687	4334519.47286	A	
334	ORON 19427M001	4659696.14768	-130865.28539	4338948.47027	A	
345	PAS2 19351S001	4644909.42236	-156645.61537	4353622.66033	A	
493	PASA 19351S001	4644909.42238	-156645.61534	4353622.66071	A	
553	R101 13448M002	4708447.18273	-199490.83645	4284089.31335	A	
558	SALA 13469M001	4803054.79492	-462131.63709	4158378.64233	A	
526	SCDA 10088M002	4639940.87164	-136225.49009	4359552.00365	W	
715	SOPU 19386M001	4643998.25557	-255914.45470	4350062.72107	W	
443	TERU 13487M001	4867391.67398	-95523.91605	4108341.24845	A	
493	VITO 19385M001	4679398.05141	-218437.05489	4314897.94307	A	
616	YEBE 13420M001	4848724.89970	-261632.49867	4123093.89292	W	
655	ZARA 13462M001	4773803.63196	-73506.54642	4215453.66864	W	

5.3 ETRF2014 (ETRS89) Coordinates

European Terrestrial Reference System, 1989 (ETRS89) is realized by ETRF2014 (Boucher and Altamimi, 2011) and (Altamimi, 2017).

```

CONVERT TO ETRF2014                                05-MAR-26 08:49
-----
LOCAL GEODETIC DATUM: ETRF2014                    EPOCH: 2026-02-04 11:59:45
-----
NUM STATION NAME      X (M)      Y (M)      Z (M)  FLAG  SYSTEM
111 ACRD 13434M001    4594489.78661  -678367.93852  4357065.88673  A
39 ALDA 19383M001    4687280.47510  -190877.15389  4308106.58876  A
50 ALSA 19419M001    4677251.14791  -176770.98489  4319079.50790  A
53 AMUR 19388M001    4661499.76141  -244591.84311  4332269.51678  A
384 BIAZ 10074M002    4634456.37671  -124345.55747  4365785.09627  W
101 BIDA 00000M000    4644178.14212  -145778.90488  4354832.11667  A
113 BRZR 19387M001    4662221.29938  -220770.49015  4333309.06247  A
573 CACE 13447M001    4899866.75220  -544567.64858  4033769.81448  W
592 CANT 13438M001    4625924.62028  -307096.81799  4365771.19652  W
908 CREU 13432M001    4715420.49455  273177.46905  4271946.47482  A
135 EBRE 13410M001    4833520.31453  41536.78786  4147461.34262  W
180 ELGE 19353S001    4657557.71003  -202242.05461  4338991.52273  A
182 EMAZ 17001M001    4645924.51408  -276950.45410  4347759.20358  A
209 GERN 19389M001    4642811.63257  -217223.50837  4353278.50810  A
257 HOND 15012M002    4640529.63929  -145676.57009  4358781.39276  A
235 IGEL 19352S001    4645951.74216  -165575.08782  4352550.06126  A
240 ISPS 19484M001    4640596.79447  -206964.36227  4356391.55505  A
245 KAST 19499M001    4646949.38104  -240747.85158  4348014.62022  A
252 LARE 19440M001    4632832.26489  -279026.72688  4360314.06509  A
256 LAZK 19354S001    4666098.66135  -178186.77782  4330463.30820  A
261 LEIT 19428M001    4663521.25783  -155859.30474  4334519.52618  A
334 ORDN 19427M001    4659696.10575  -130865.32338  4338948.52362  A
345 PAS2 19351S001    4644909.38070  -156645.65332  4353622.71372  A
493 PASA 19351S001    4644909.38072  -156645.65329  4353622.71410  A
553 RIO1 13448M002    4708447.14048  -199490.87394  4284089.36650  A
558 SALA 13469M001    4803054.75241  -462131.67309  4158378.69509  A
526 SCDA 10088M002    4639940.82996  -136225.52814  4359552.05706  W
715 SOPU 19386M001    4643998.21428  -255914.49227  4350062.77440  W
443 TERU 13487M001    4867391.62940  -95523.95319  4108341.30119  A
493 VITO 19385M001    4679398.00958  -218437.09244  4314897.99631  A
616 YEBE 13420M001    4848724.85597  -261632.53524  4123093.94563  W
655 ZARA 13462M001    4773803.48845  -73506.58409  4215453.72167  W
    
```

5.4 ETRF2020 (ETRS89) Coordinates

European Terrestrial Reference System, 1989 (ETRS89) is realized by ETRF2020 (Boucher and Altamimi, 2011) and (Altamimi, 2017).

```

CONVERT TO ETRF2020                                05-MAR-26 08:49
-----
LOCAL GEODETIC DATUM: ETRF2020                    EPOCH: 2026-02-04 11:59:45
-----
NUM STATION NAME      X (M)      Y (M)      Z (M)  FLAG  SYSTEM
111 ACRD 13434M001    4594489.78261  -678367.92354  4357065.89473  A
39 ALDA 19383M001    4687280.46976  -190877.13840  4308106.59703  A
50 ALSA 19419M001    4677251.14249  -176770.96944  4319079.51615  A
53 AMUR 19388M001    4661499.75617  -244591.82773  4332269.52500  A
384 BIAZ 10074M002    4634456.37101  -124345.54213  4365785.10446  W
101 BIDA 00000M000    4644178.13651  -145778.88952  4354832.12488  A
113 BRZR 19387M001    4662221.29406  -220770.47476  4333309.07070  A
573 CACE 13447M001    4899866.74862  -544567.63254  4033769.82304  W
592 CANT 13438M001    4625924.61514  -307096.80275  4365771.20466  W
908 CREU 13432M001    4715420.48788  273177.48482  4271946.48322  A
135 EBRE 13410M001    4833520.30889  41536.80392  4147461.35118  W
180 ELGE 19353S001    4657557.70464  -202242.03923  4338991.53095  A
182 EMAZ 17001M001    4645924.50889  -276950.43879  4347759.21177  A
209 GERN 19389M001    4642811.62718  -217223.49304  4353278.51629  A
257 HOND 15012M002    4640529.63368  -145676.55474  4358781.40096  A
235 IGEL 19352S001    4645951.73662  -165575.07245  4352550.06947  A
240 ISPS 19484M001    4640596.78905  -206964.34694  4356391.56324  A
245 KAST 19499M001    4646949.37575  -240747.83625  4348014.62841  A
252 LARE 19440M001    4632832.25968  -279026.71161  4360314.07325  A
256 LAZK 19354S001    4666098.65591  -178186.76240  4330463.31643  A
261 LEIT 19428M001    4663521.25231  -155859.28932  4334519.53442  A
334 ORDN 19427M001    4659696.10014  -130865.30796  4338948.53185  A
345 PAS2 19351S001    4644909.37513  -156645.63796  4353622.72192  A
493 PASA 19351S001    4644909.37515  -156645.63793  4353622.72230  A
553 RIO1 13448M002    4708447.13522  -199490.85839  4284089.37481  A
558 SALA 13469M001    4803054.74827  -462131.65734  4158378.70350  A
526 SCDA 10088M002    4639940.82432  -136225.51279  4359552.06526  W
715 SOPU 19386M001    4643998.20902  -255914.47695  4350062.78258  W
443 TERU 13487M001    4867391.62427  -95523.93708  4108341.30978  A
493 VITO 19385M001    4679398.00430  -218437.07699  4314898.00456  A
616 YEBE 13420M001    4848724.85130  -261632.51926  4123093.95416  W
655 ZARA 13462M001    4773803.48298  -73506.56827  4215453.73011  W
    
```

6 Quality Control

6.1 Mean and Daily Repeatabilities

In this section, the mean and daily repeatabilities of the sites are shown. Repeatabilities refer to the IGS20 solution and are given with respect to the Local frame (North-East-Up).

GFA FINAL WEEKLY COMBINATION: FINAL ORBITS 05-MAR-26 08:49

Station	#Days	Weekday 0123456	Repeatability (mm)		
			N	E	U
ACOR 13434M001	7	XXXXXX	1.20	0.89	1.90
ALDA 19383M001	7	XXXXXX	1.36	1.31	5.08
ALSA 19419M001	7	XXXXXX	0.99	2.30	3.02
AMUR 19388M001	7	XXXXXX	3.67	2.96	5.49
BLAZ 10074M002	7	XXXXXX	0.62	1.09	5.56
BIDA 00000M000	7	XXXXXX	1.24	0.71	2.71
BRZR 19387M001	7	XXXXXX	2.86	3.31	3.66
CACE 13447M001	7	XXXXXX	1.09	0.79	1.71
CANT 13438M001	7	XXXXXX	0.60	0.38	2.06
CREU 13432M001	7	XXXXXX	1.33	1.10	3.52
EBRE 13410M001	7	XXXXXX	1.48	2.53	4.32
ELGE 19353S001	7	XXXXXX	2.87	1.94	3.40
EMAZ 17001M001	7	XXXXXX	2.46	0.80	2.72
GERN 19389M001	7	XXXXXX	2.27	0.98	2.92
HOND 15012M002	7	XXXXXX	0.77	1.18	2.04
IGEL 19352S001	7	XXXXXX	1.15	0.64	3.04
ISPS 19484M001	7	XXXXXX	1.29	1.24	4.38
KAST 19499M001	7	XXXXXX	1.91	1.58	2.95
LARE 19440M001	7	XXXXXX	0.89	0.58	3.74
LAZK 19354S001	7	XXXXXX	0.80	1.06	5.11
LEIT 19428M001	7	XXXXXX	3.55	1.07	5.49
ORON 19427M001	7	XXXXXX	0.86	0.93	4.12
PAS2 19351S001	6	XX XXX	0.77	0.82	3.07
PASA 19351S001	7	XXXXXX	0.82	0.91	3.03
RI01 13448M002	7	XXXXXX	0.71	0.66	2.99
SALA 13469M001	7	XXXXXX	0.64	0.72	2.10
SCDA 10088M002	7	XXXXXX	1.03	1.50	2.75
SOPU 19386M001	7	XXXXXX	1.74	1.40	3.61
TERU 13487M001	7	XXXXXX	0.69	1.83	5.75
VITD 19385M001	7	XXXXXX	3.01	1.37	3.22
YEBE 13420M001	7	XXXXXX	0.38	0.52	2.05
ZARA 13462M001	7	XXXXXX	0.84	1.62	3.12

Comparison of individual solutions:

ACOR 13434M001	N	1.20	0.66	-1.66	-1.14	0.57	-0.60	-0.22	-1.85
ACOR 13434M001	E	0.89	0.01	0.53	-1.22	1.53	-0.27	-0.34	0.71
ACOR 13434M001	U	1.90	2.34	2.18	-1.36	-0.15	-0.60	1.90	2.39
ALDA 19383M001	N	1.36	1.65	-2.35	0.08	0.75	-0.91	0.91	0.75
ALDA 19383M001	E	1.31	-1.90	1.62	-0.30	1.80	0.84	0.11	-0.19
ALDA 19383M001	U	5.08	-7.87	0.84	-1.28	2.22	8.76	0.29	-2.95
ALSA 19419M001	N	0.99	0.04	1.76	0.93	-0.96	0.70	-0.36	0.59
ALSA 19419M001	E	2.30	3.31	2.49	0.72	-1.63	-0.28	-3.36	-0.02
ALSA 19419M001	U	3.02	1.53	-0.93	-1.04	-1.58	-3.33	5.79	-1.86
AMUR 19388M001	N	3.67	1.57	-7.39	2.19	1.46	-2.60	2.34	2.15
AMUR 19388M001	E	2.96	-0.24	-3.22	1.40	-1.19	-3.29	2.32	4.76
AMUR 19388M001	U	5.49	-5.28	-5.80	3.42	1.75	-5.12	-0.57	8.83
BLAZ 10074M002	N	0.62	-0.11	0.49	0.67	0.26	0.54	-0.08	-1.11
BLAZ 10074M002	E	1.09	0.46	-0.92	-0.65	-0.09	2.20	0.89	-0.27
BLAZ 10074M002	U	5.56	-7.96	2.69	0.57	1.07	10.20	-2.55	-1.74
BIDA 00000M000	N	1.24	1.62	1.10	0.68	-0.45	-1.12	-0.07	-1.86
BIDA 00000M000	E	0.71	-0.64	1.43	0.33	0.23	-0.05	-0.52	-0.31
BIDA 00000M000	U	2.71	-5.21	-2.51	2.09	1.10	1.92	1.00	-0.72
BRZR 19387M001	N	2.86	4.79	-1.10	-2.03	0.24	-0.97	-3.55	2.65
BRZR 19387M001	E	3.31	4.54	-1.33	-0.76	0.19	-2.08	-4.25	4.52
BRZR 19387M001	U	3.66	-0.21	-1.05	-4.08	3.90	0.74	-5.79	3.64
CACE 13447M001	N	1.09	-0.28	0.49	-1.24	-1.68	0.92	-0.73	-1.02
CACE 13447M001	E	0.79	0.19	0.78	-1.12	0.69	0.68	-0.71	0.60
CACE 13447M001	U	1.71	-1.19	-2.06	1.95	1.74	1.74	-1.15	-0.85
CANT 13438M001	N	0.60	-0.16	0.68	1.06	0.62	-0.25	-0.11	-0.32
CANT 13438M001	E	0.38	0.01	-0.31	0.28	0.75	-0.03	-0.33	-0.20
CANT 13438M001	U	2.06	-2.71	1.78	-1.14	1.73	-2.27	-2.24	0.60
CREU 13432M001	N	1.33	2.41	-0.97	-0.41	1.40	-0.02	1.21	-0.43
CREU 13432M001	E	1.10	-0.78	-1.56	-0.25	1.56	-0.79	1.03	-0.30
CREU 13432M001	U	3.52	4.15	-4.93	-2.48	4.97	-1.05	-0.08	0.83
EBRE 13410M001	N	1.48	0.91	-1.42	-0.63	2.44	0.89	1.59	-0.84
EBRE 13410M001	E	2.53	-0.92	1.71	0.45	-2.01	-4.71	1.77	2.22
EBRE 13410M001	U	4.32	-2.72	5.17	2.36	-2.84	-5.91	-0.40	5.39
ELGE 19353S001	N	2.87	1.61	-5.52	-2.07	2.72	0.66	2.05	0.45
ELGE 19353S001	E	1.94	-0.98	-2.19	-0.21	0.07	0.30	4.04	-0.49
ELGE 19353S001	U	3.40	-5.43	0.23	-0.44	5.72	-0.39	-2.48	0.69
EMAZ 17001M001	N	2.46	-0.51	4.60	-1.73	1.78	1.03	-1.34	-2.43
EMAZ 17001M001	E	0.80	0.08	-0.02	-0.85	1.05	-1.22	0.52	0.51
EMAZ 17001M001	U	2.72	-2.83	-1.07	-4.13	-3.02	-2.67	-1.33	0.39
GERN 19389M001	N	2.27	1.75	-3.95	-1.35	1.59	-0.70	2.69	-0.07
GERN 19389M001	E	0.98	1.04	-1.45	-0.59	1.45	-0.18	0.01	0.25
GERN 19389M001	U	2.92	-3.95	-1.60	-3.92	1.42	2.95	0.38	2.59
HOND 15012M002	N	0.77	1.42	-0.79	0.03	0.45	0.04	-0.65	-0.57
HOND 15012M002	E	1.18	1.89	0.59	-1.53	-0.24	-1.07	0.97	-0.09
HOND 15012M002	U	2.04	-2.65	0.85	-1.99	2.54	0.76	-2.44	0.47
IGEL 19352S001	N	1.15	-1.64	-0.14	-0.01	1.79	1.09	-0.72	-0.55
IGEL 19352S001	E	0.64	0.94	-0.08	-1.04	-0.13	0.02	0.65	0.15
IGEL 19352S001	U	3.04	-5.84	2.03	-2.93	1.92	1.64	1.44	-0.54
ISPS 19484M001	N	1.29	0.24	1.03	-0.20	1.62	0.71	-1.76	-1.62
ISPS 19484M001	E	1.24	-0.35	-0.07	-1.21	2.04	1.59	-0.67	-0.75
ISPS 19484M001	U	4.38	-7.13	5.21	0.16	1.13	3.46	0.53	-4.85
KAST 19499M001	N	1.91	3.57	-0.81	-0.85	-0.28	0.98	-2.60	-0.07
KAST 19499M001	E	1.58	1.78	0.93	-1.20	-0.27	-1.06	-1.73	2.29
KAST 19499M001	U	2.95	2.94	0.57	-5.55	-0.28	1.39	-3.04	1.01
LARE 19440M001	N	0.89	-0.00	-0.34	0.77	1.33	0.28	-1.02	-1.07
LARE 19440M001	E	0.58	0.21	0.35	-0.18	0.65	-1.08	-0.45	0.01
LARE 19440M001	U	3.74	-5.75	3.69	-2.59	-2.89	-4.15	-1.96	1.10
LAZK 19354S001	N	0.80	0.98	1.43	-0.03	0.44	0.39	-0.72	0.12
LAZK 19354S001	E	1.06	-0.18	-0.39	0.43	2.40	-0.60	0.29	-0.46

LAZK	19354S001	U	5.11	-9.77	3.11	2.69	-1.30	-1.35	6.32	-1.03
LEIT	19428M001	N	3.55	-0.75	7.70	-0.73	-1.05	0.21	-2.59	-2.74
LEIT	19428M001	E	1.07	-0.94	2.10	-1.00	0.72	0.06	-0.16	-0.26
LEIT	19428M001	U	5.49	-10.69	2.98	6.22	0.75	3.01	-2.39	-1.92
ORDN	19427M001	N	0.86	1.01	-1.34	0.69	0.29	-0.71	-0.68	0.30
ORDN	19427M001	E	0.93	0.38	-0.58	-0.38	0.66	-0.42	1.43	1.38
ORDN	19427M001	U	4.12	-7.74	3.25	1.92	-1.35	-1.86	0.53	4.69
PAS2	19351S001	N	0.77	0.69	-0.42	0.59		-0.69	0.46	-1.15
PAS2	19351S001	E	0.82	-0.88	-0.94	-0.41		0.66	1.06	0.04
PAS2	19351S001	U	3.07	-1.93	0.24	-3.56		5.02	-1.85	-1.45
PASA	19351S001	N	0.82	0.26	-0.18	1.03	0.47	-0.62	0.37	-1.47
PASA	19351S001	E	0.91	-0.61	-0.54	-0.85	1.27	-0.20	1.41	0.05
PASA	19351S001	U	3.03	-4.62	-0.83	-2.49	3.32	3.75	-1.35	0.06
RID1	13448M002	N	0.71	0.63	-0.67	0.87	0.75	0.93	0.05	-0.07
RID1	13448M002	E	0.66	-0.18	1.11	-0.75	0.28	-0.23	0.77	0.25
RID1	13448M002	U	2.99	-4.68	4.91	-2.08	0.66	1.20	0.27	-1.08
SALA	13469M001	N	0.64	0.21	-0.57	-0.05	0.88	0.00	0.23	-1.11
SALA	13469M001	E	0.72	0.81	-0.60	-0.29	0.32	-1.24	0.39	0.46
SALA	13469M001	U	2.10	-0.39	3.89	-2.83	0.14	-0.37	-1.53	0.84
SCDA	10088M002	N	1.03	1.72	0.39	-1.03	-1.35	-0.05	0.36	0.50
SCDA	10088M002	E	1.50	0.94	-1.37	-1.62	2.29	-0.29	-1.03	1.28
SCDA	10088M002	U	2.75	-5.24	0.20	-1.74	-0.31	-0.70	2.25	3.05
SOPU	19386M001	N	1.74	-0.62	3.51	0.22	-0.26	-0.08	-0.41	-2.29
SOPU	19386M001	E	1.40	1.03	1.01	-1.83	1.97	-0.44	-1.47	0.44
SOPU	19386M001	U	3.61	-5.96	0.10	1.69	0.87	4.81	-0.30	-3.95
TERU	13487M001	N	0.69	1.05	0.54	0.30	-0.15	-0.87	-0.13	-0.76
TERU	13487M001	E	1.83	0.38	0.14	-0.86	3.98	0.36	-1.78	-0.17
TERU	13487M001	U	5.75	-6.99	0.14	1.07	1.29	-10.29	-6.18	1.65
VITO	19385M001	N	3.01	4.45	-4.84	-1.31	2.35	0.96	-0.72	1.57
VITO	19385M001	E	1.37	0.10	0.11	-1.88	2.18	1.62	0.25	0.49
VITO	19385M001	U	3.22	2.72	-4.70	2.45	2.64	0.62	-1.36	-4.18
YEBE	13420M001	N	0.38	-0.07	-0.02	0.53	0.29	-0.24	0.03	-0.65
YEBE	13420M001	E	0.52	-1.02	-0.14	-0.36	0.31	0.53	-0.27	0.11
YEBE	13420M001	U	2.05	0.64	2.89	1.89	-0.69	0.09	-0.98	-3.40
ZARA	13462M001	N	0.84	0.67	-1.02	-0.01	0.61	-0.01	1.03	-1.14
ZARA	13462M001	E	1.62	0.10	0.27	-1.43	-0.05	-1.81	3.19	0.42
ZARA	13462M001	U	3.12	-3.30	3.33	1.54	3.72	3.46	-2.72	-0.90

6.2 Datum verification

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

TRANSFORMATION IN EQUATORIAL SYSTEM (X, Y, Z):
RESIDUALS IN LOCAL SYSTEM (NORTH, EAST, UP)

LIST OF REMOVED STATIONS:

OUTLIER CRITERIA: 15.00 15.00 20.00

NUM	NAME	FLG	RESIDUALS IN MILLIMETERS		
2	ALAC 13433M001	I W	2.04	-1.82	3.31
3	ALME 13437M001	I W	-0.12	0.29	6.80
4	BCL1 19482M001	I W	-0.69	-1.51	2.22
5	BELL 13431M001	I W	0.31	-1.66	0.12
6	BIAZ 10074M002	I W	1.09	0.37	-12.95
7	BORR 13480M001	I W	-6.33	-2.89	-4.71
8	BRST 10004M004	I W	-0.35	-0.71	1.53
9	CACE 13447M001	I W	1.38	0.65	1.18
10	CANT 13438M001	I W	0.06	0.71	-5.57
11	CASC 13909S001	I W	5.68	-1.05	0.23
12	CEU1 13449M002	I W	1.56	4.50	3.28
14	EBRE 13410M001	I W	-5.21	1.02	-2.21
16	FLRS 31907M001	I W	0.37	-4.80	-5.00
17	FUER 31330M001	I W	0.62	-0.06	5.30
19	HUEL 13451M001	I W	2.16	2.10	-5.89
20	IBIZ 13454S001	I W	-1.35	2.16	6.30
21	IZAN 31309M002	I W	-0.54	-1.81	-0.49
22	LAGO 13903M001	I W	1.20	-0.36	5.96
23	LLIV 13436M001	I W	-1.78	0.48	3.04
24	LPAL 81701M001	I W	1.87	1.65	-1.82
25	LROC 10023M001	I W	3.41	0.30	-3.33
26	MADR 13407S012	I W	-2.53	-0.80	-4.96
27	MAL1 13444M002	I W	2.70	1.12	-1.33
28	MALA 13443M001	I W	3.32	1.06	10.27
29	MALL 13444M001	I W	-2.40	1.56	7.04
30	MAS1 31303M002	I W	-1.23	-2.00	2.96
31	MELI 19379M001	I W	0.50	-0.62	8.93
32	PDEL 31906M004	I W	-2.21	-1.33	-4.11
33	SCOA 10088M002	I W	0.99	1.17	-14.66
34	SFER 13402M004	I W	0.41	-5.58	2.09
35	SOPU 19386M001	I W	-0.92	2.07	-1.38
36	VALE 13439M001	I W	1.37	1.32	-4.83
37	VIGO 13450M001	I W	2.26	2.78	-0.44
38	VILL 13406M001	I W	-1.94	-1.47	5.71
39	YEBE 13420M001	I W	-0.98	0.15	3.12
40	ZARA 13462M001	I W	-0.53	0.45	-5.02
41	ZIMM 14001M004	I W	-0.36	-0.92	0.87

	RMS / COMPONENT		2.29	1.97	5.50
	IQR		2.36	2.45	7.39
	MEAN		0.10	-0.09	0.04
	MEDIAN		0.31	0.29	0.23
	MIN		-6.33	-5.58	-14.66
	MAX		5.68	4.50	10.27

	OVERALL RMS/IQR/MAX(3D)		3.62	3.38	14.74
					SCOA 10088M002 #SUM

ALL	RMS / COMPONENT		2.29	1.97	5.50
ALL	IQR		2.36	2.45	7.39
ALL	MEAN		0.10	-0.09	0.04
ALL	MEDIAN		0.31	0.29	0.23
ALL	MIN		-6.33	-5.58	-14.66
ALL	MAX		5.68	4.50	10.27

ALL	OVERALL RMS/IQR/MAX(3D)		3.62	3.38	14.74
					SCOA 10088M002 #SUM_ALL

NUMBER OF PARAMETERS : 3
NUMBER OF STATIONS : 37
NUMBER OF COORDINATES : 111
RMS OF TRANSFORMATION : 3.62 MM

PARAMETERS:

TRANSLATION IN X : -0.00 +- 0.60 MM
TRANSLATION IN Y : 0.00 +- 0.60 MM
TRANSLATION IN Z : 0.00 +- 0.60 MM

NUMBER OF ITERATIONS : 1

6.3 Adjustment Statistics

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

```
* STATISTICAL PARAMETER-----VALUE(S)-----
NUMBER OF OBSERVATIONS          19449243
NUMBER OF UNKNOWN(S)            202550
NUMBER OF DEGREES OF FREEDOM    19246693
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                  2.006464746466028
```

7 Equipment

7.1 Receiver List

Serial numbers not shown.

```
*SITE PT SOLN T DATA_START_ DATA_END_ DESCRIPTION----- S/N_ FIRMWARE____
ACOR A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
ALDA A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
ALSA A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
AMUR A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
BIAZ A 1 P 26:032:00000 26:038:86370 SPECTRA SP90M -----
BIDA A 1 P 26:032:00000 26:038:86370 LEICA GR10 -----
BRZR A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
CACE A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
CANT A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
CREU A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
EBRE A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
ELGE A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
EMAZ A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
GERN A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
HOND A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
IGEL A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
ISPS A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
KAST A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
LARE A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
LAZK A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
LEIT A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
ORON A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
PAS2 A 1 P 26:032:00000 26:038:86370 STONEX SC2200 -----
PASA A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
RIO1 A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
SALA A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
SCOA A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
SOPU A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
TERU A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
VITO A 1 P 26:032:00000 26:038:86370 LEICA GR30 -----
YEBE A 1 P 26:032:00000 26:038:86370 LEICA GR50 -----
ZARA A 1 P 26:032:00000 26:038:86370 TRIMBLE NETR9 -----
```

7.2 Antennas

Serial number ONLY provided in case individual calibrations are used.

```
*SITE PT SOLN T DATA_START_ DATA_END_ DESCRIPTION----- S/N_ DAZI
ACOR A 1 P 26:032:00000 26:038:86370 LEIAT504 LEIS -----
ALDA A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
ALSA A 1 P 26:032:00000 26:038:86370 LEIAR10 NONE -----
AMUR A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
BIAZ A 1 P 26:032:00000 26:038:86370 LEIAR25 LEIT -----
BIDA A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
BRZR A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
CACE A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
CANT A 1 P 26:032:00000 26:038:86370 LEIAR25_R4 LEIT -----
CREU A 1 P 26:032:00000 26:038:86370 LEIAR25_R4 NONE -----
EBRE A 1 P 26:032:00000 26:038:86370 LEIAR25_R4 NONE -----
ELGE A 1 P 26:032:00000 26:038:86370 LEIAR25_R4 LEIT -----
EMAZ A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
GERN A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
HOND A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
IGEL A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
ISPS A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
KAST A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
LARE A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
LAZK A 1 P 26:032:00000 26:038:86370 LEIAR25_R4 LEIT -----
LEIT A 1 P 26:032:00000 26:038:86370 LEIAR10 NONE -----
ORON A 1 P 26:032:00000 26:038:86370 LEIAR10 NONE -----
PAS2 A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
PASA A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
RIO1 A 1 P 26:032:00000 26:038:86370 LEIAR25_R4 LEIT -----
SALA A 1 P 26:032:00000 26:038:86370 LEIAR25 NONE -----
SCOA A 1 P 26:032:00000 26:038:86370 TRM55971.00 NONE -----
SOPU A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
TERU A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
VITO A 1 P 26:032:00000 26:038:86370 LEIAS10 NONE -----
YEBE A 1 P 26:032:00000 26:038:86370 LEIAR20 LEIM -----
ZARA A 1 P 26:032:00000 26:038:86370 TRM29659.00 NONE -----
```

7.3 Eccentricities

*S	PT	SOLN	T	DATA_START	DATA_END	AXE	UP	NORTH	EAST
AR	P						ARP	BENCHMARK	(M)
ACDR	A	1	P	26:032:00000	26:038:86370	UNE	3.0460	0.0000	0.0000
ALDA	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
ALSA	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
AMUR	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
BLAZ	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
BIDA	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
BRZR	A	1	P	26:032:00000	26:038:86370	UNE	0.0771	0.0000	0.0000
CACE	A	1	P	26:032:00000	26:038:86370	UNE	0.0600	0.0000	0.0000
CANT	A	1	P	26:032:00000	26:038:86370	UNE	3.0490	0.0000	0.0000
CREU	A	1	P	26:032:00000	26:038:86370	UNE	0.0770	0.0000	0.0000
EBRE	A	1	P	26:032:00000	26:038:86370	UNE	0.0770	0.0000	0.0000
ELGE	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
EMAZ	A	1	P	26:032:00000	26:038:86370	UNE	0.0350	0.0000	0.0000
GERN	A	1	P	26:032:00000	26:038:86370	UNE	0.0771	0.0000	0.0000
HOND	A	1	P	26:032:00000	26:038:86370	UNE	0.0771	0.0000	0.0000
IGEL	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
ISPS	A	1	P	26:032:00000	26:038:86370	UNE	0.0350	0.0000	0.0000
KAST	A	1	P	26:032:00000	26:038:86370	UNE	0.0350	0.0000	0.0000
LARE	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
LAZK	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
LEIT	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
ORDN	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
PAS2	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
PASA	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
RID1	A	1	P	26:032:00000	26:038:86370	UNE	0.0606	0.0000	0.0000
SALA	A	1	P	26:032:00000	26:038:86370	UNE	0.0600	0.0000	0.0000
SCDA	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
SOPU	A	1	P	26:032:00000	26:038:86370	UNE	0.0771	0.0000	0.0000
TERU	A	1	P	26:032:00000	26:038:86370	UNE	0.0600	0.0000	0.0000
VITO	A	1	P	26:032:00000	26:038:86370	UNE	0.0000	0.0000	0.0000
YEBE	A	1	P	26:032:00000	26:038:86370	UNE	0.0600	0.0000	0.0000
ZARA	A	1	P	26:032:00000	26:038:86370	UNE	3.2590	0.0000	0.0000

8 Inconsistencies (logsheet-RINEX metadata)

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

2026-02-22 03:14 UTC	ALDA0320.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: alda00esp_20241008.log
2026-02-22 09:15 UTC	ALDA0330.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: alda00esp_20241008.log
2026-02-22 14:19 UTC	ALDA0340.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: alda00esp_20241008.log
2026-02-22 20:25 UTC	ALDA0350.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: alda00esp_20241008.log
2026-02-26 18:43 UTC	ALDA0360.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: alda00esp_20241008.log
2026-02-25 16:39 UTC	ALDA0370.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: alda00esp_20241008.log
2026-02-26 00:05 UTC	ALDA0380.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: alda00esp_20241008.log
2026-02-22 03:14 UTC	AMUR0320.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amur00esp_20241008.log
2026-02-22 09:15 UTC	AMUR0330.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amur00esp_20241008.log
2026-02-22 14:19 UTC	AMUR0340.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amur00esp_20241008.log
2026-02-22 20:25 UTC	AMUR0350.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amur00esp_20241008.log
2026-02-26 18:43 UTC	AMUR0360.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amur00esp_20241008.log
2026-02-25 16:39 UTC	AMUR0370.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amur00esp_20241008.log
2026-02-26 00:05 UTC	AMUR0380.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amur00esp_20241008.log
2026-02-22 03:14 UTC	BIDA0320.260	RECEIVER TYPE	LEICA GR30	->	LEICA GR10	(source: bida_20200626.log
2026-02-22 09:15 UTC	BIDA0330.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.52/6.525	(source: bida_20200626.log
2026-02-22 14:19 UTC	BIDA0340.260	RECEIVER TYPE	LEICA GR30	->	LEICA GR10	(source: bida_20200626.log
2026-02-22 20:25 UTC	BIDA0350.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.52/6.525	(source: bida_20200626.log
2026-02-22 03:14 UTC	BIDA0320.260	RECEIVER TYPE	LEICA GR30	->	LEICA GR10	(source: bida_20200626.log
2026-02-22 09:15 UTC	BIDA0330.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.52/6.525	(source: bida_20200626.log
2026-02-22 14:19 UTC	BIDA0340.260	RECEIVER TYPE	LEICA GR30	->	LEICA GR10	(source: bida_20200626.log
2026-02-22 20:25 UTC	BIDA0350.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.52/6.525	(source: bida_20200626.log
2026-02-26 18:43 UTC	BIDA0360.260	RECEIVER TYPE	LEICA GR30	->	LEICA GR10	(source: bida_20200626.log
2026-02-26 18:43 UTC	BIDA0360.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.52/6.525	(source: bida_20200626.log
2026-02-25 16:39 UTC	BIDA0370.260	RECEIVER TYPE	LEICA GR30	->	LEICA GR10	(source: bida_20200626.log
2026-02-25 16:39 UTC	BIDA0370.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.52/6.525	(source: bida_20200626.log
2026-02-26 00:05 UTC	BIDA0380.260	RECEIVER TYPE	LEICA GR30	->	LEICA GR10	(source: bida_20200626.log
2026-02-26 00:05 UTC	BIDA0380.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.52/6.525	(source: bida_20200626.log
2026-02-22 03:14 UTC	BRZR0320.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: brzr00esp_20240315.log
2026-02-22 09:15 UTC	BRZR0330.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: brzr00esp_20240315.log
2026-02-22 14:19 UTC	BRZR0340.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: brzr00esp_20240315.log
2026-02-22 20:25 UTC	BRZR0350.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: brzr00esp_20240315.log
2026-02-26 18:43 UTC	BRZR0360.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: brzr00esp_20240315.log
2026-02-25 16:39 UTC	BRZR0370.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: brzr00esp_20240315.log
2026-02-26 00:05 UTC	BRZR0380.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: brzr00esp_20240315.log
2026-02-22 03:14 UTC	CANT0320.260	RECEIVER TYPE	LEICA GR10	->	LEICA GR50	(source: cant00esp_20250624.log
2026-02-22 03:14 UTC	CANT0320.260	RECEIVER FIRM. VERS.	4.00/6.713	->	4.80/7.900	(source: cant00esp_20250624.log
2026-02-22 09:15 UTC	CANT0330.260	RECEIVER TYPE	LEICA GR10	->	LEICA GR50	(source: cant00esp_20250624.log
2026-02-22 09:15 UTC	CANT0330.260	RECEIVER FIRM. VERS.	4.00/6.713	->	4.80/7.900	(source: cant00esp_20250624.log
2026-02-22 14:19 UTC	CANT0340.260	RECEIVER TYPE	LEICA GR10	->	LEICA GR50	(source: cant00esp_20250624.log
2026-02-22 14:19 UTC	CANT0340.260	RECEIVER FIRM. VERS.	4.00/6.713	->	4.80/7.900	(source: cant00esp_20250624.log
2026-02-22 20:25 UTC	CANT0350.260	RECEIVER TYPE	LEICA GR10	->	LEICA GR50	(source: cant00esp_20250624.log
2026-02-22 20:25 UTC	CANT0350.260	RECEIVER FIRM. VERS.	4.00/6.713	->	4.80/7.900	(source: cant00esp_20250624.log
2026-02-26 18:43 UTC	CANT0360.260	RECEIVER TYPE	LEICA GR10	->	LEICA GR50	(source: cant00esp_20250624.log
2026-02-26 18:43 UTC	CANT0360.260	RECEIVER FIRM. VERS.	4.00/6.713	->	4.80/7.900	(source: cant00esp_20250624.log
2026-02-25 16:39 UTC	CANT0370.260	RECEIVER TYPE	LEICA GR10	->	LEICA GR50	(source: cant00esp_20250624.log
2026-02-25 16:39 UTC	CANT0370.260	RECEIVER FIRM. VERS.	4.00/6.713	->	4.80/7.900	(source: cant00esp_20250624.log
2026-02-26 00:05 UTC	CANT0380.260	RECEIVER TYPE	LEICA GR10	->	LEICA GR50	(source: cant00esp_20250624.log
2026-02-26 00:05 UTC	CANT0380.260	RECEIVER FIRM. VERS.	4.00/6.713	->	4.80/7.900	(source: cant00esp_20250624.log
2026-02-22 03:14 UTC	EMAZ0320.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amaz00esp_20241008.log
2026-02-22 09:15 UTC	EMAZ0330.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amaz00esp_20241008.log
2026-02-22 14:19 UTC	EMAZ0340.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amaz00esp_20241008.log
2026-02-22 20:25 UTC	EMAZ0350.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amaz00esp_20241008.log
2026-02-26 18:43 UTC	EMAZ0360.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amaz00esp_20241008.log
2026-02-25 16:39 UTC	EMAZ0370.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amaz00esp_20241008.log
2026-02-26 00:05 UTC	EMAZ0380.260	RECEIVER FIRM. VERS.	4.83/7.900	->	4.80/7.900	(source: amaz00esp_20241008.log
2026-02-22 03:14 UTC	ISPS0320.260	ANTENNA SER. NO.		->	24238009	(source: isps00esp_20250114.log
2026-02-22 09:15 UTC	ISPS0330.260	ANTENNA SER. NO.		->	24238009	(source: isps00esp_20250114.log
2026-02-22 14:19 UTC	ISPS0340.260	ANTENNA SER. NO.		->	24238009	(source: isps00esp_20250114.log
2026-02-22 20:25 UTC	ISPS0350.260	ANTENNA SER. NO.		->	24238009	(source: isps00esp_20250114.log
2026-02-26 18:43 UTC	ISPS0360.260	ANTENNA SER. NO.		->	24238009	(source: isps00esp_20250114.log

```
2026-02-25 16:39 UTC | ISPS0370.260 | ANTENNA SER. NO. | -> 24238009 (source: isps00esp_20250114.log
2026-02-26 00:05 UTC | ISPS0380.260 | ANTENNA SER. NO. | -> 24238009 (source: isps00esp_20250114.log
2026-02-22 03:14 UTC | KAST0320.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: kast00esp_20241008.log
2026-02-22 09:15 UTC | KAST0330.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: kast00esp_20241008.log
2026-02-22 14:19 UTC | KAST0340.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: kast00esp_20241008.log
2026-02-22 20:26 UTC | KAST0350.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: kast00esp_20241008.log
2026-02-26 18:43 UTC | KAST0360.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: kast00esp_20241008.log
2026-02-25 16:39 UTC | KAST0370.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: kast00esp_20241008.log
2026-02-26 00:05 UTC | KAST0380.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: kast00esp_20241008.log
2026-02-22 03:14 UTC | VITO0320.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: vito00esp_20241008.log
2026-02-22 09:15 UTC | VITO0330.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: vito00esp_20241008.log
2026-02-22 14:19 UTC | VITO0340.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: vito00esp_20241008.log
2026-02-22 20:26 UTC | VITO0350.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: vito00esp_20241008.log
2026-02-26 18:43 UTC | VITO0360.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: vito00esp_20241008.log
2026-02-25 16:39 UTC | VITO0370.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: vito00esp_20241008.log
2026-02-26 00:05 UTC | VITO0380.260 | RECEIVER FIRM. VERS. | 4.83/7.900 -> 4.80/7.900 (source: vito00esp_20241008.log
```

9 References

C. Boucher and Z. Altamimi (2011): *Specifications for reference frame fixing in the analysis of a EUREF GPS campaign*. etrs89.ensg.ign.fr/memo-V8.pdf

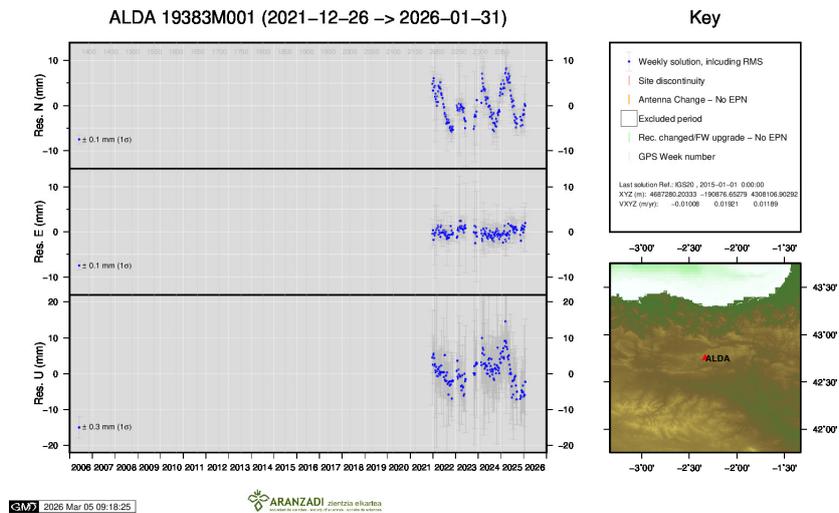
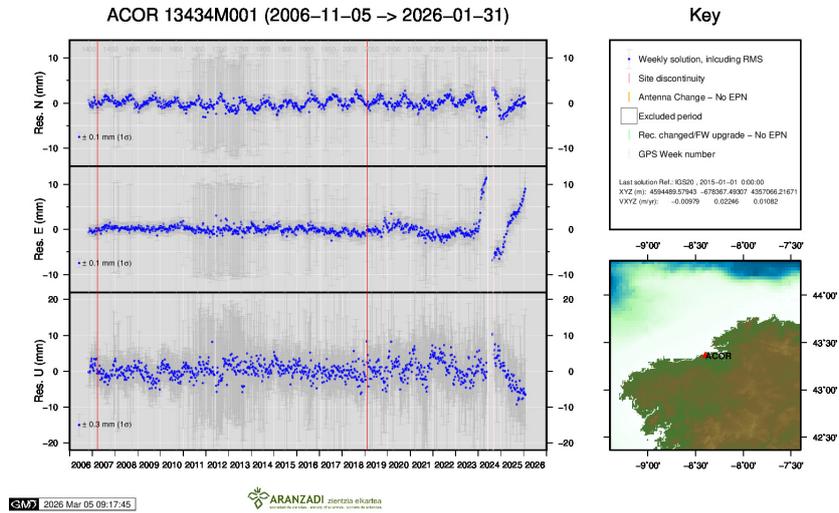
EPN Coordination Group and the EPN Central Bureau (2018): *Guidelines for the EPN Analysis Centres*. epncb.oma.be/documentation/guidelines/guidelines_analysis_centres.pdf

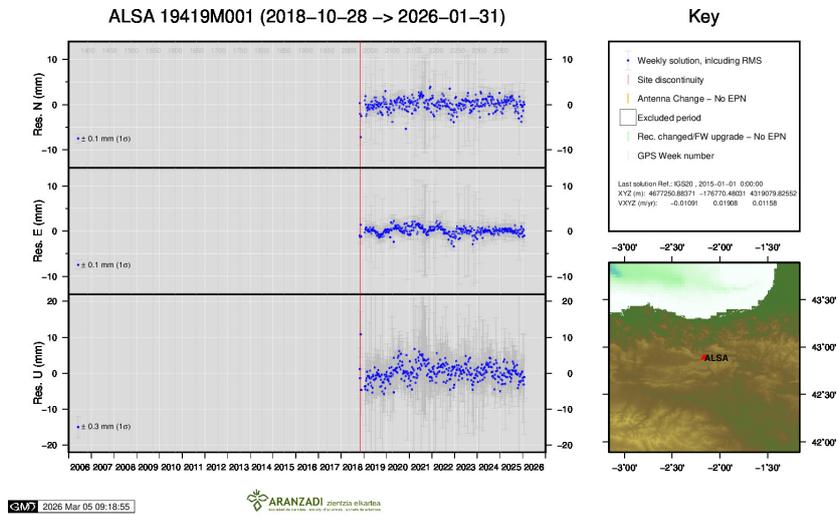
Johnston, G., Riddell, A., Hausler, G. (2017). The International GNSS Service. Teunissen, Peter J.G., Montenbruck, O. (Eds.), Springer Handbook of Global Navigation Satellite Systems (1st ed., pp. 967-982). Cham, Switzerland: Springer International Publishing. DOI: 10.1007/978-3-319-42928-1

Z. Altamimi (2018): *EUREF Technical Note 1: Relationship and Transformation between the International and the European Terrestrial Reference Systems*. etrs89.ensg.ign.fr/pub/EUREF-TN-1.pdf

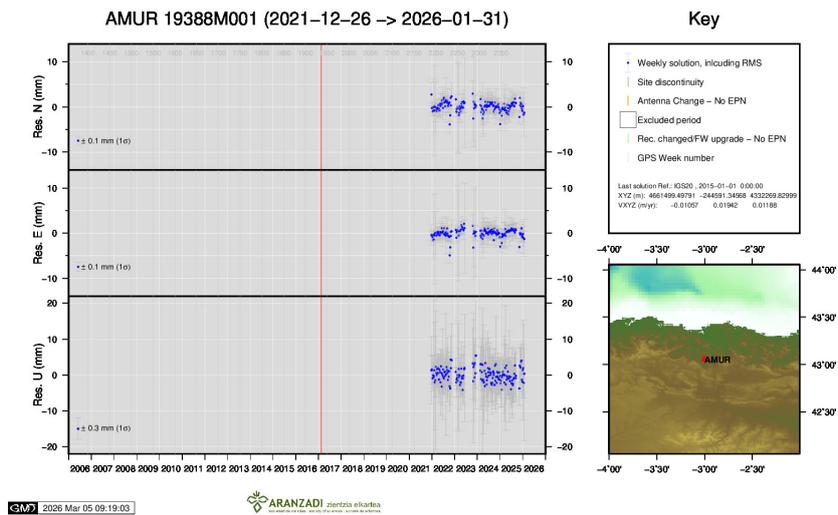
10 Cumulative Time Series

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

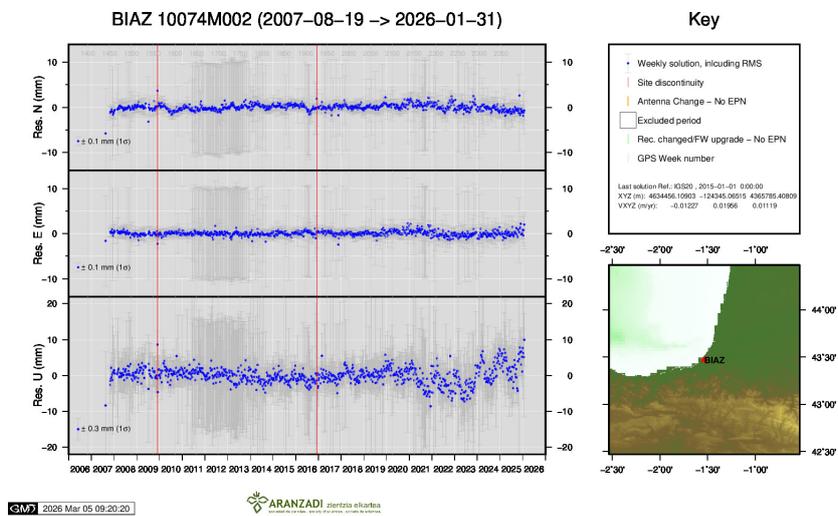




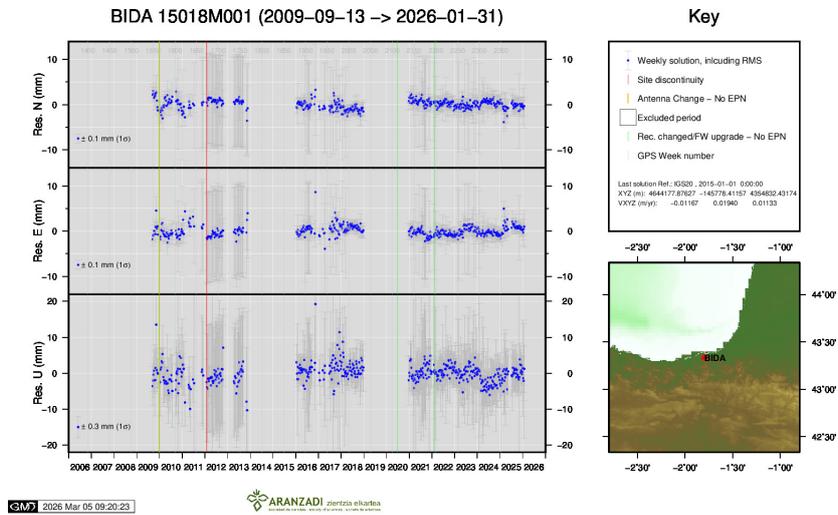
3) ALSA



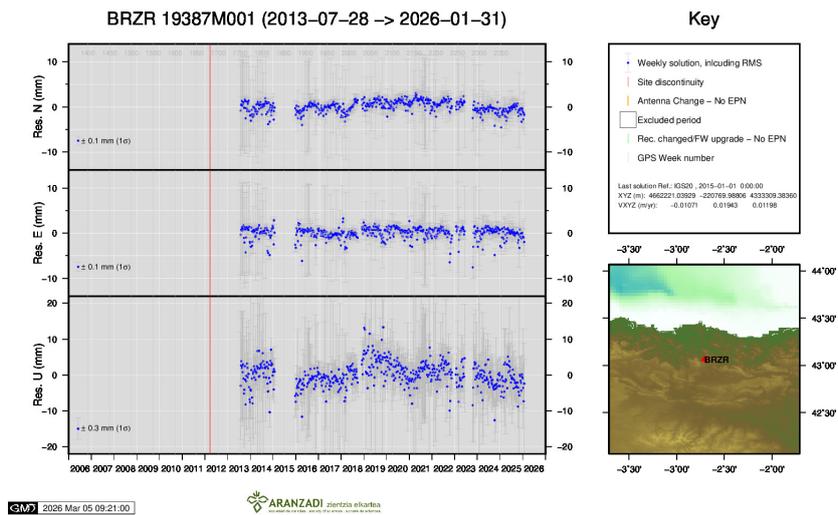
4) AMUR



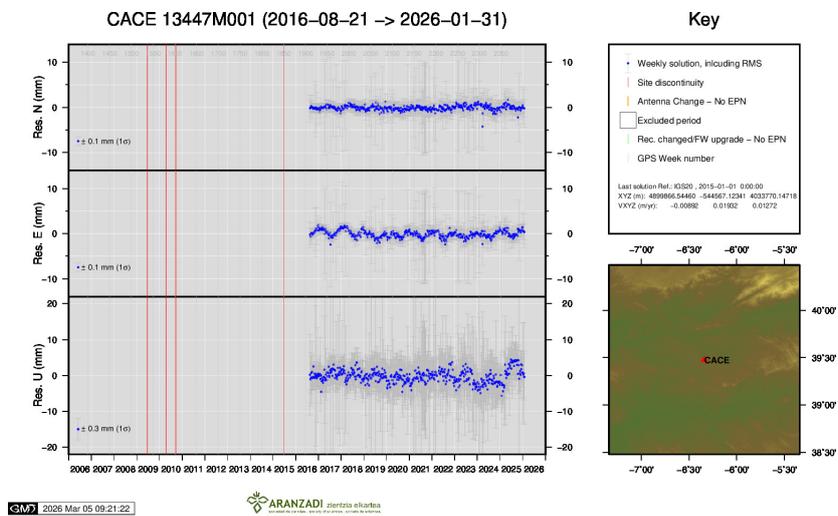
5) BIAZ



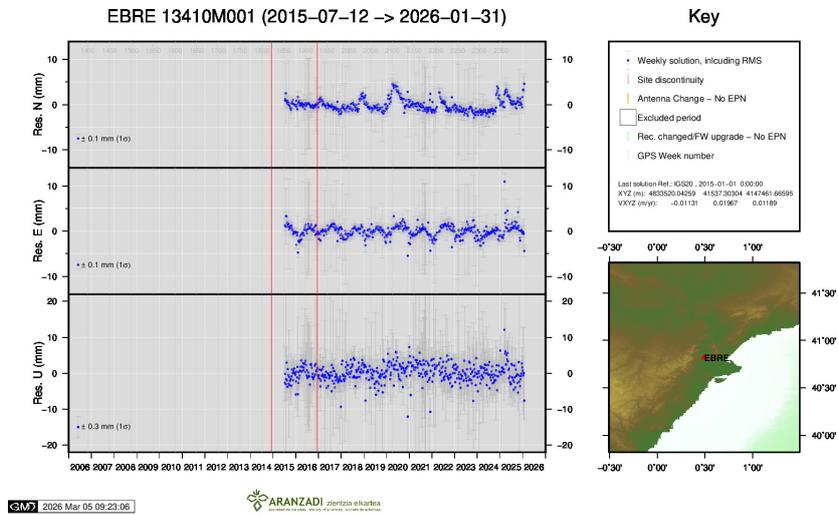
6) BIDA



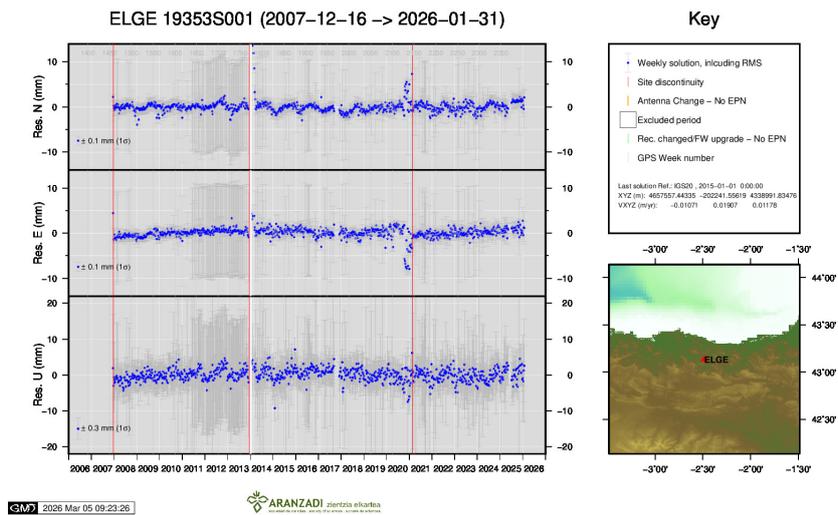
7) BRZR



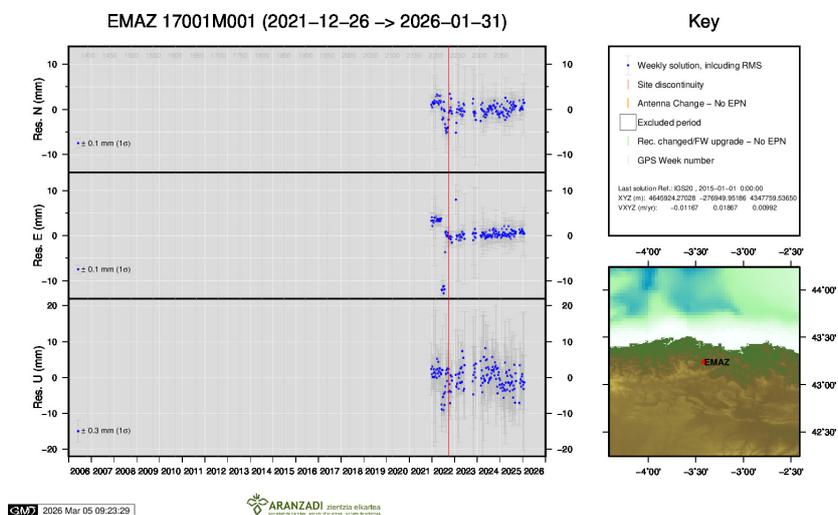
8) CACE



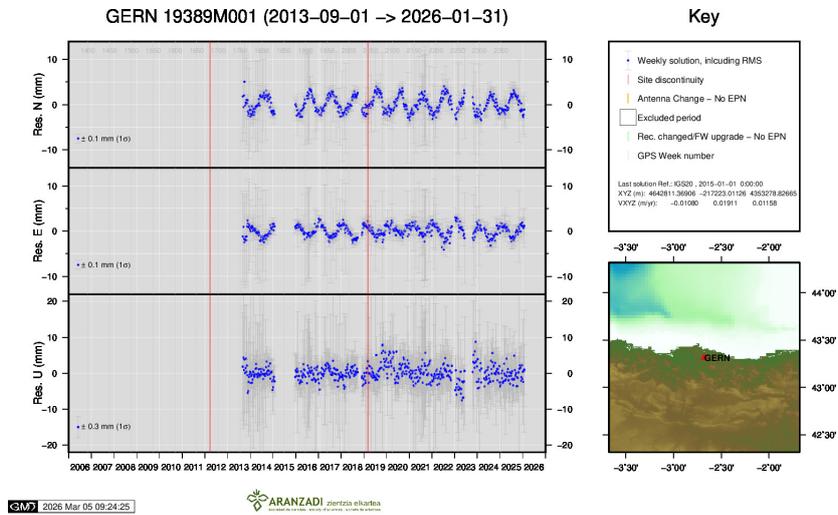
12) EBRE



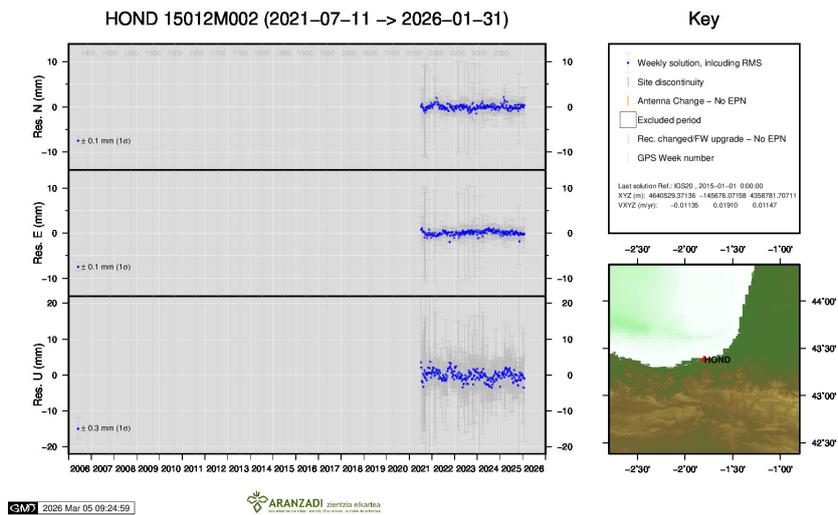
13) ELGE



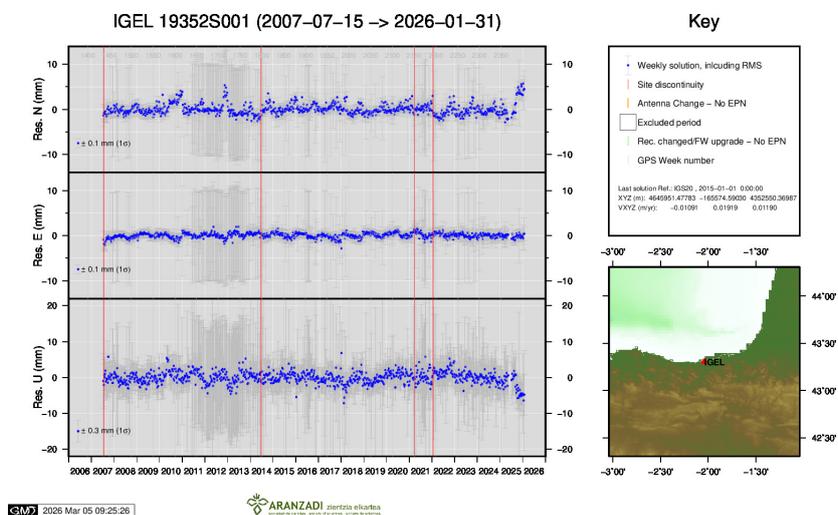
14) EMAZ



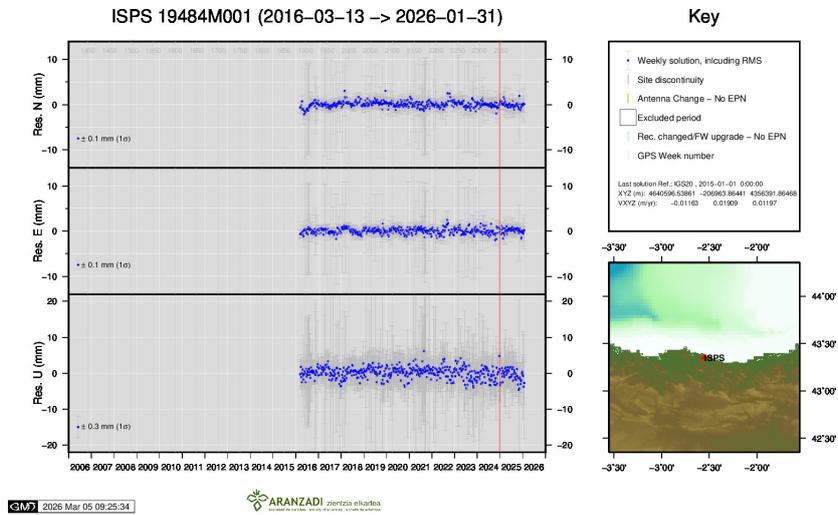
15) GERN



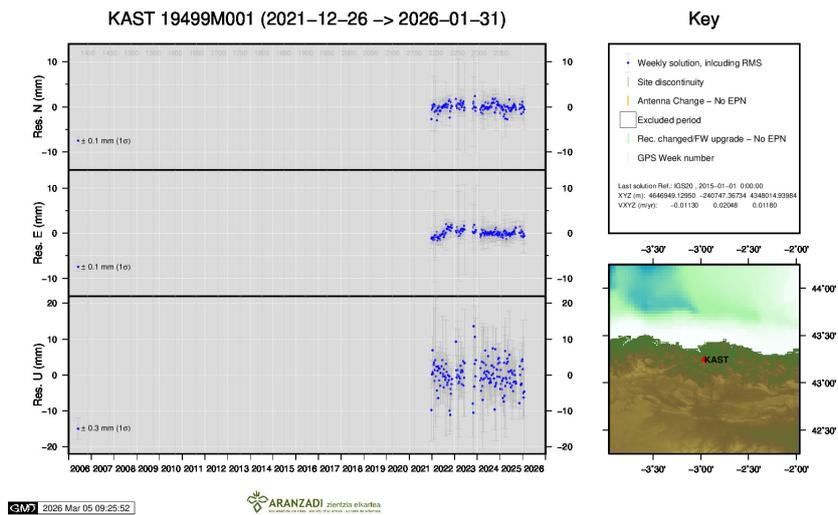
16) HOND



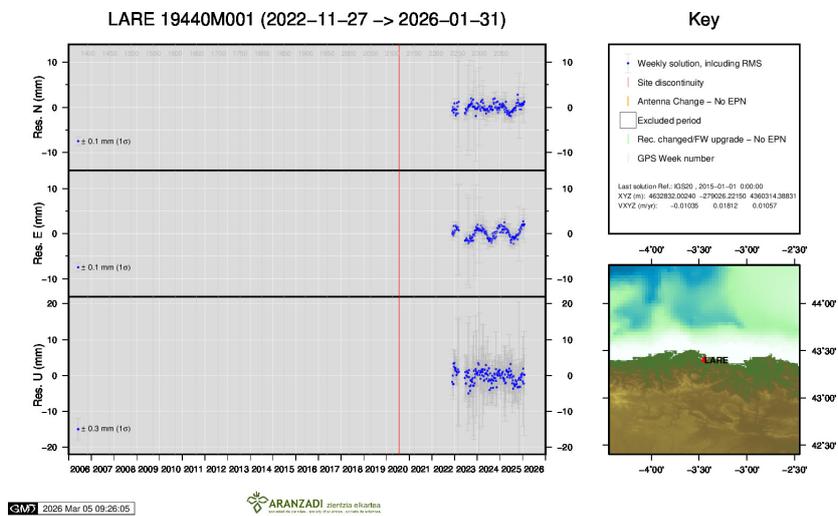
17) IGEL



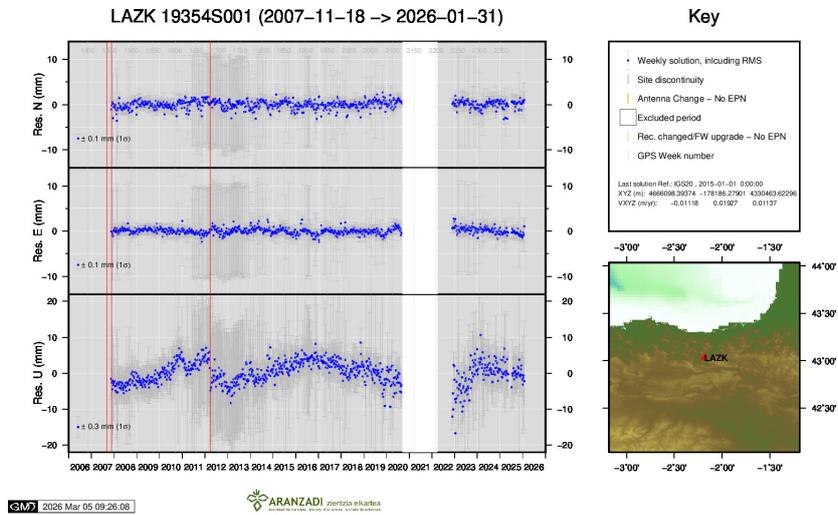
18) ISPS



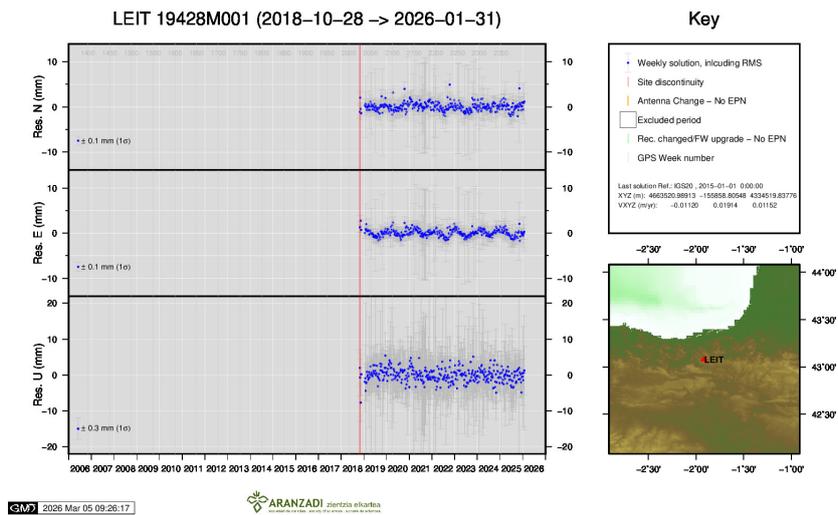
19) KAST



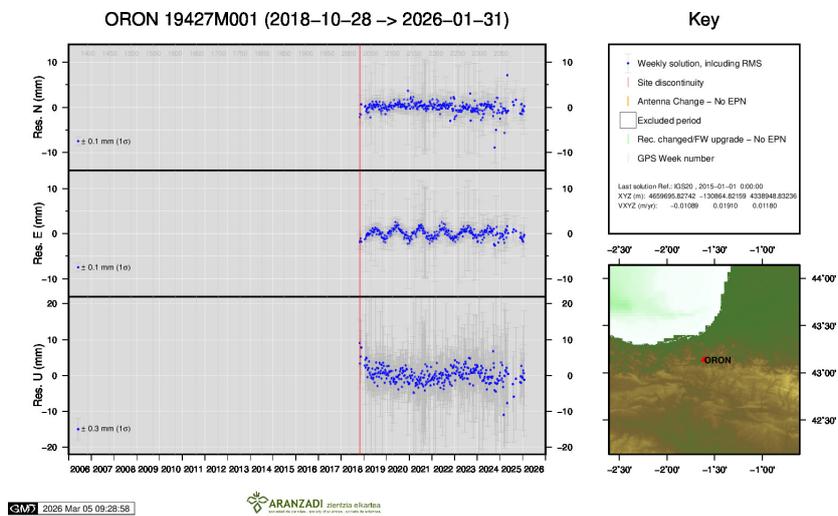
20) LARE



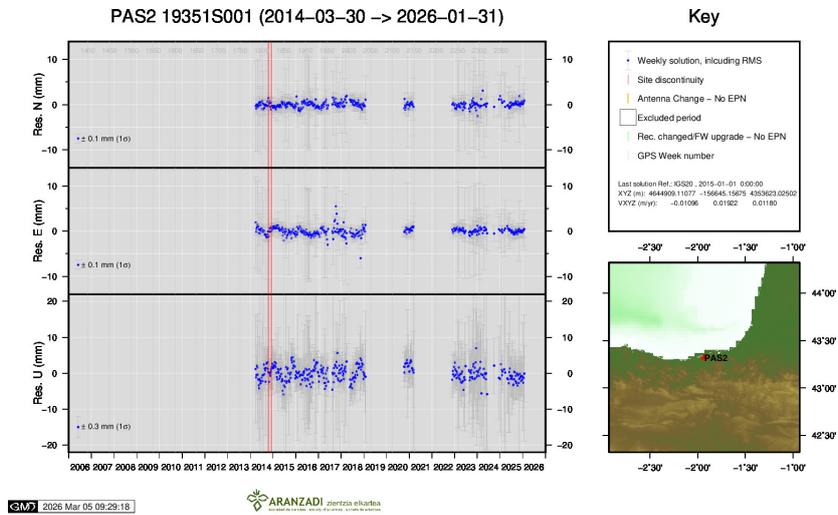
21) LAZK



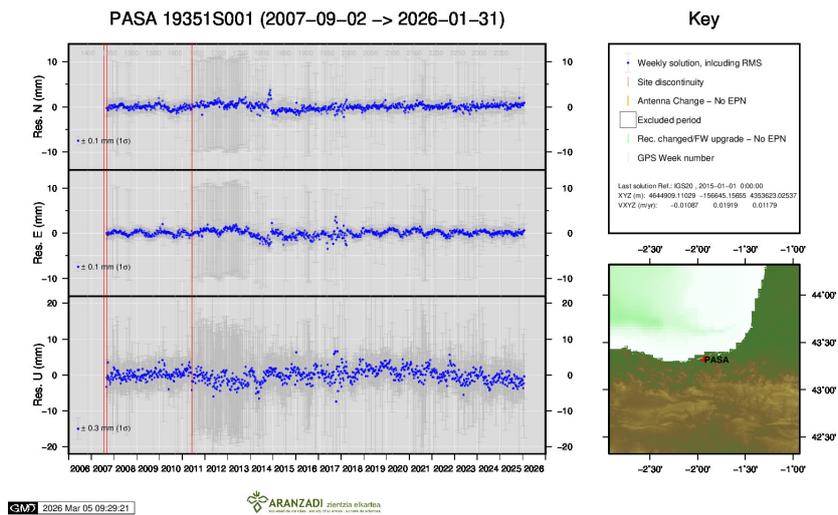
22) LEIT



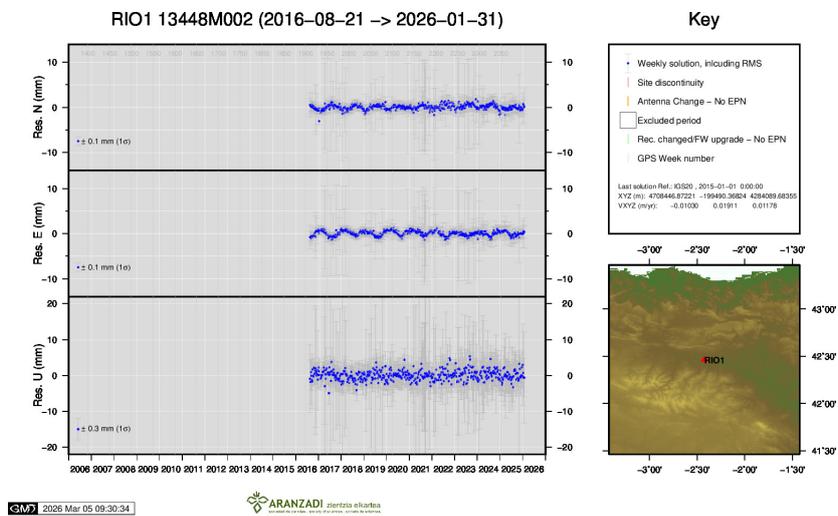
23) ORON



24) PAS2



25) PASA



26) RIO1

