

ARA-DAC Weekly Analysis Result: 2033 (GFA)

Technical Report

GPS Week: 2033 (GFA)

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

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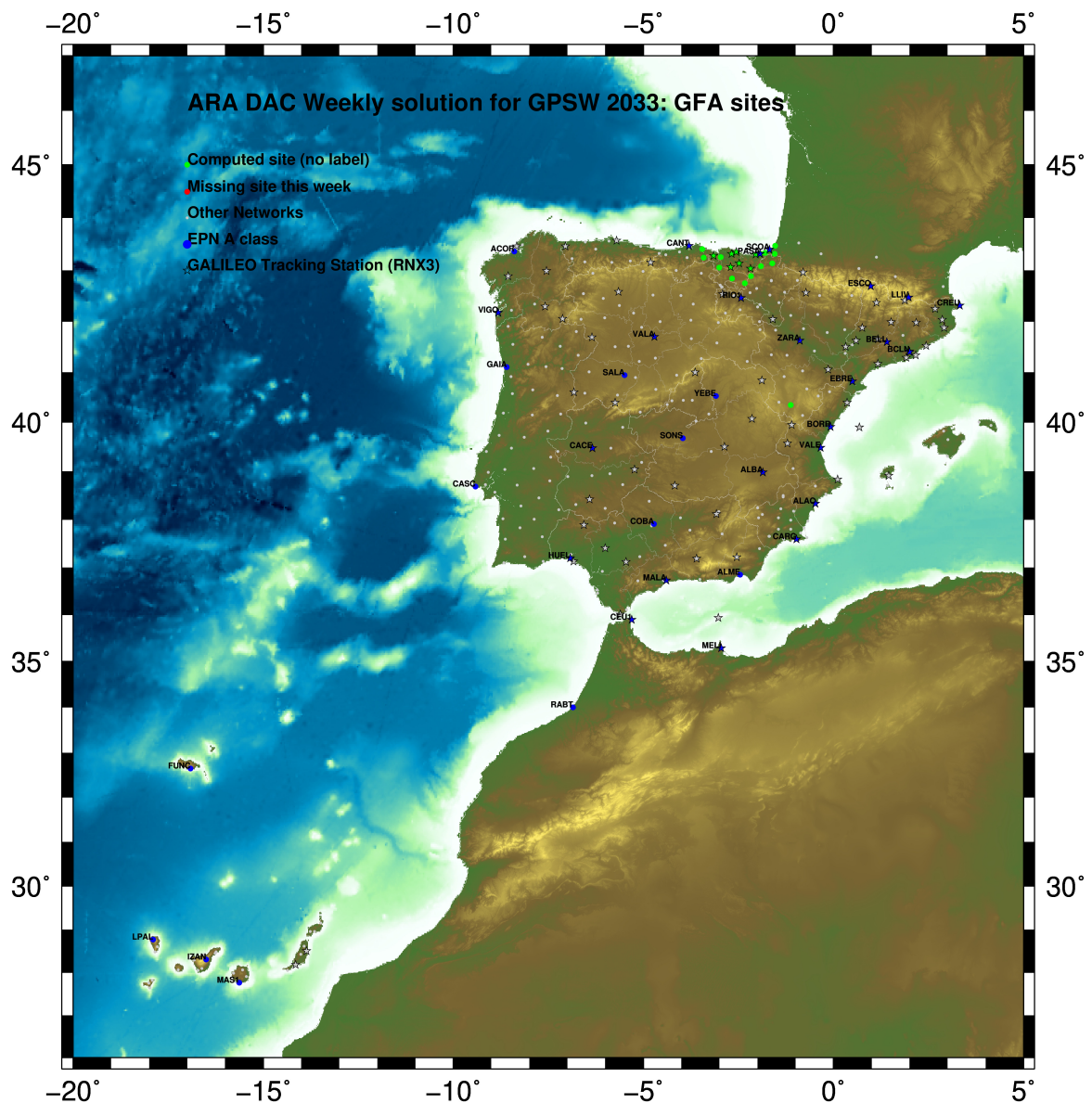
Report generated on 2019/01/13 at 03:50:16



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 2019 Jan 13 03:50:08

Fig.1: Computed Sites for GPS Week2033 (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 also used if available from GPSW 1986 on)
- 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.I14 file and individual calibrations from EPNC_14.ATX. EPN_A class sites (CRD + VEL) IGS14 used to define the reference frame (from GPSW 1934). If individual calibrations, other from these, are available, they are also included in the analysis.
- Troposphere:
 - 3 deg elev. cutoff; elevation dependent weighting
 - VMF1 mapping function. ZPD parameters are estimated using the 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 Widelane (WL) AR for baselines shorter than 6000km, a Melbourne-Wuebbena wide-lane and narrow-lane AR is computed.
 - Phase-Based Widelane (L_5) AR for baselines shorter than 200km, the code-based wide-lane AR is replaced by a phase-only wide-lane with a subsequent narrow-lane AR.
 - Quasi-Ionosphere-Free (QIF)AR for the remaining real-valued ambiguities for baselines shorter than 2000km.
 - Direct L_1/L_2 AR for baselines shorter than 20km
- AR Verification: Each baseline is processed by introducing the resolved integer ambiguities and checking the residuals. If there is any problem, the ambiguities are re-initialized.

5 Computed Coordinates

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

5.1 IGS14

The Reference Frame considered in this section is IGS14, release C2010.

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ARA LAC 2033 WEEK FINAL COMBINATION: PRECISE ORBITS          13-JAN-19 00:09
-----
LOCAL GEODETIC DATUM: IGS14          EPOCH: 2018-12-26 12:00:00
-----
NUM STATION NAME          X (M)          Y (M)          Z (M)          FLAG
-----
 1 ACRD 13434M001        4594489.56336        -678367.45664        4357066.27767        W
 33 ALDA 19383M001        4687280.16147        -190876.57560        4308106.94870        A
 42 ALSA 19419M001        4677250.83497        -176770.40275        4319079.86700        A
 44 AMUR 19388M001        4661499.44892        -244591.26905        4332269.87497        A
 78 BIAZ 10074M002        4634456.05532        -124344.98623        4365785.45310        A
 79 BIDA 00000M000        4644177.82625        -145778.33350        4354832.47659        A
 89 BRZR 19387M001        4662220.99512        -220769.90639        4333309.43836        A
 9  CACE 13447M001        4899866.50417        -544567.04346        4033770.19694        W
 10 CANT 13438M001        4625924.31549        -307096.24259        4365771.54877        W
 114 CHER 00000M000        4645880.32712        -125721.93692        4353624.36917        A
 15 CREU 13432M001        4715420.13469        273178.04861        4271946.83595        W
 16 EBRE 13410M001        4833519.99204        41537.37996        4147461.71120        W
 135 ELGE 19353S001        4657557.40653        -202241.48438        4338991.86463        A
 137 EMAZ 17001M001        4645924.21034        -276949.87510        4347759.57326        A
 157 GERN 19389M001        4642811.31243        -217222.94174        4353278.87487        A
 177 IGEL 19352S001        4645951.43177        -165574.51299        4352550.41327        A
 182 ISPS 19484M001        4640596.48498        -206963.78587        4356391.91047        A
 187 KAST 19499M001        4646949.08263        -240747.28570        4348014.98524        A
 192 LARE 19440M001        4632831.95332        -279026.14653        4360314.42154        A
 193 LAZK 19354S001        4666098.34513        -178186.20089        4330463.66842        A
 197 LEIT 19428M001        4663520.93673        -155858.72752        4334519.87785        A
 253 ORDN 19427M001        4659695.77880        -130864.74478        4338948.87540        A
 260 PAS2 19351S001        4644909.06209        -156645.07748        4353623.07322        A
 30  PASA 19351S001        4644909.06192        -156645.07777        4353623.07215        W
 33  RID1 13448M002        4708446.82811        -199490.29298        4284089.73021        W
 34  SALA 13469M001        4803054.48426        -462131.07930        4158379.07064        W
 35  SCDA 10088M002        4639940.50218        -136224.95058        4359552.40788        W
 313 SOPU 19386M001        4643997.91005        -255913.91619        4350063.13844        A
 333 TERU 13487M001        4867391.32291        -95523.36315        4108341.67650        A
 366 VITO 19385M001        4679397.70249        -218436.51498        4314898.35792        A
 43  YEBE 13420M001        4848724.56874        -261631.93934        4123094.32313        W
 44  ZARA 13462M001        4773803.16919        -73505.99490        4215454.08998        W
    
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5.2 ETRF2000 (ETRS89) Coordinates

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

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ETRF2000 FINAL COORD. wk 2033          13-JAN-19 00:09
-----
LOCAL GEODETIC DATUM: ETRF2000        EPOCH: 2018-12-26 12:00:00
-----
NUM STATION NAME          X (M)          Y (M)          Z (M)          FLAG
-----
 1 ACRD 13434M001        4594489.86640        -678367.98604        4357065.86639        W
 33 ALDA 19383M001        4687280.51747        -190877.11346        4308106.53639        A
 42 ALSA 19419M001        4677251.19334        -176770.93954        4319079.45561        A
 44 AMUR 19388M001        4661499.80137        -244591.80441        4332269.46394        A
 78 BIAZ 10074M002        4634456.42291        -124345.51847        4365785.04553        A
 79 BIDA 00000M000        4644178.19062        -145778.86680        4354832.06804        A
 89 BRZR 19387M001        4662221.34939        -220770.44377        4333309.02757        A
 9  CACE 13447M001        4899866.80062        -544567.60376        4033769.76440        W
 10 CANT 13438M001        4625924.66201        -307096.77446        4365771.13966        W
 114 CHER 00000M000        4645880.69372        -125722.47033        4353623.96073        A
 15 CREU 13432M001        4715420.54164        273177.50949        4271946.42698        W
 16 EBRE 13410M001        4833520.36385        41536.82793        4147461.29067        W
 135 ELGE 19353S001        4657557.76332        -202242.01922        4338991.45441        A
 137 EMAZ 17001M001        4645924.55911        -276950.40896        4347759.16301        A
 157 GERN 19389M001        4642811.66846        -217223.47510        4353278.46557        A
 177 IGEL 19352S001        4645951.79371        -165575.04653        4352550.00435        A
 182 ISPS 19484M001        4640596.84241        -206964.31898        4356391.50146        A
 187 KAST 19499M001        4646949.43559        -240747.81956        4348014.57535        A
 192 LARE 19440M001        4632832.30270        -279026.67904        4360314.01225        A
 193 LAZK 19354S001        4666098.70411        -178186.73654        4330463.25784        A
 197 LEIT 19428M001        4663521.29856        -155859.26284        4334519.46773        A
 253 ORDN 19427M001        4659696.14381        -130865.27963        4338948.46586        A
 260 PAS2 19351S001        4644909.42513        -156645.61089        4353622.66448        A
 30  PASA 19351S001        4644909.42496        -156645.61118        4353622.66341        W
 33  RID1 13448M002        4708447.18148        -199490.83303        4284089.31621        W
 34  SALA 13469M001        4803054.79875        -462131.62965        4158378.64638        W
 35  SCDA 10088M002        4639940.86798        -136225.48342        4359551.99976        W
 313 SOPU 19386M001        4643998.26140        -255914.44978        4350062.72859        A
 333 TERU 13487M001        4867391.67626        -95523.91908        4108341.25181        A
 366 VITO 19385M001        4679398.05577        -218437.05211        4314897.94587        A
 43  YEBE 13420M001        4848724.90396        -261632.49385        4123093.89786        W
 44  ZARA 13462M001        4773803.53239        -73506.54124        4215453.67258        W
    
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5.3 ETRF2014 (ETRS89) Coordinates

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

ETRF2014 FINAL COORD. wk 2033		13-JAN-19 00:09			
LOCAL GEODETIC DATUM: ETRF2014		EPOCH: 2018-12-26 12:00:00			
NUM	STATION NAME	X (M)	Y (M)	Z (M)	FLAG
1	ACDR 13434M001	4594489.82377	-678368.02479	4357065.91461	W
33	ALDA 19383M001	4687280.47267	-190877.15353	4308106.58450	A
42	ALSA 19419M001	4677251.14860	-176770.97970	4319079.50375	A
44	AMUR 19388M001	4661499.75697	-244591.84440	4332269.51210	A
78	BIAZ 10074M002	4634456.37842	-124345.55896	4365785.09380	A
79	BIDA 00000M000	4644178.14611	-145778.90719	4354832.11628	A
89	BRZR 19387M001	4662221.30492	-220770.48383	4333309.07573	A
9	CACE 13447M001	4899866.75460	-544567.64180	4033769.81196	W
10	CANT 13438M001	4625924.61813	-307096.81437	4365771.18787	W
114	CHER 00000M000	4645880.64913	-125722.51078	4353624.00898	A
15	CREU 13432M001	4715420.49505	273177.46797	4271946.47532	W
16	EBRE 13410M001	4833520.31686	41536.78764	4147461.33859	W
135	ELGE 19353S001	4657557.71884	-202242.05937	4338991.50259	A
137	EMAZ 17001M001	4645924.51497	-276950.44889	4347759.21119	A
157	GERN 19389M001	4642811.62417	-217223.51525	4353278.51378	A
177	IGEL 19352S001	4645951.74923	-165575.08685	4352550.05258	A
182	ISPS 19484M001	4640596.79811	-206964.35917	4356391.54968	A
187	KAST 19499M001	4646949.39133	-240747.85961	4348014.62354	A
192	LARE 19440M001	4632832.25868	-279026.71901	4360314.06046	A
193	LAZK 19354S001	4666098.65948	-178186.77673	4330463.30602	A
197	LEIT 19428M001	4663521.25389	-155859.30312	4334519.51592	A
253	ORON 19427M001	4659696.09910	-130865.32001	4338948.51407	A
260	PAS2 19351S001	4644909.38064	-156645.65123	4353622.71272	A
30	PASA 19351S001	4644909.38047	-156645.65152	4353622.71165	W
33	RI01 13448M002	4708447.13649	-199490.87299	4284089.36427	W
34	SALA 13469M001	4803054.73534	-462131.66834	4158378.69415	W
35	SOA 10088M002	4639940.82347	-136225.52385	4359552.04801	W
313	SOPU 19386M001	4643998.21721	-255914.48980	4350062.77678	A
333	TERU 13487M001	4867391.62936	-95523.95878	4108341.29958	A
366	VITO 19385M001	4679398.01113	-218437.09212	4314897.99399	A
43	YEBE 13420M001	4848724.85774	-261632.53306	4123093.94560	W
44	ZARA 13462M001	4773803.48638	-73506.58137	4215453.72056	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 IGS14 solution and are given with respect the Local frame (North-East-Up).

ARA LAC 2033 WEEK FINAL COMBINATION: PRECISE ORBITS 13-JAN-19 00:09

Station	#Days	Weekday 0123456	Repeatability (mm)		
			N	E	U
ACOR 13434M001	7	XXXXXX	1.25	0.60	1.92
ALDA 19383M001	7	XXXXXX	1.86	0.98	2.32
ALSA 19419M001	7	XXXXXX	0.50	0.80	2.47
AMUR 19388M001	7	XXXXXX	0.56	0.53	3.54
BIAZ 10074M002	7	XXXXXX	0.92	0.64	2.77
BIDA 00000M000	5	XX X X	0.85	0.57	1.55
BRZR 19387M001	7	XXXXXX	1.65	0.62	6.29
CACE 13447M001	7	XXXXXX	0.48	0.42	2.14
CANT 13438M001	7	XXXXXX	0.54	0.32	3.38
CHER 00000M000	4	XX X	1.27	0.54	2.77
CREU 13432M001	7	XXXXXX	0.42	0.34	1.01
EBRE 13410M001	7	XXXXXX	0.38	0.65	1.64
ELGE 19353S001	7	XXXXXX	0.78	0.62	3.13
EMAZ 17001M001	7	XXXXXX	0.50	0.38	3.12
GERN 19389M001	7	XXXXXX	0.70	0.71	2.07
IGEL 19352S001	7	XXXXXX	1.02	0.45	1.83
ISPS 19484M001	7	XXXXXX	0.80	0.63	1.81
KAST 19499M001	7	XXXXXX	0.46	0.45	1.71
LARE 19440M001	7	XXXXXX	1.39	0.57	4.46
LAZK 19354S001	7	XXXXXX	0.82	0.65	3.63
LEIT 19428M001	7	XXXXXX	1.66	0.62	2.60
ORON 19427M001	7	XXXXXX	1.08	0.39	4.09
PAS2 19351S001	7	XXXXXX	0.84	0.47	3.82
PASA 19351S001	7	XXXXXX	0.67	0.42	1.31
RI01 13448M002	7	XXXXXX	0.56	0.42	2.87
SALA 13469M001	3	XXX	0.45	0.59	1.84
SC0A 10088M002	7	XXXXXX	1.58	0.42	2.75
SOPU 19386M001	7	XXXXXX	0.91	0.61	2.79
TERU 13487M001	7	XXXXXX	0.53	0.35	2.30
VITD 19385M001	7	XXXXXX	0.60	0.60	2.56
YEBE 13420M001	7	XXXXXX	0.48	0.43	2.78
ZARA 13462M001	7	XXXXXX	0.44	0.30	2.01

Comparison of individual solutions:

ACOR 13434M001	N	1.25	-1.70	-0.61	-1.56	0.97	1.09	1.20	0.38
ACOR 13434M001	E	0.60	-0.81	0.89	0.24	-0.41	-0.05	0.67	0.14
ACOR 13434M001	U	1.92	1.34	1.29	0.67	2.87	2.71	-1.49	0.52
ALDA 19383M001	N	1.86	-1.92	-0.19	-0.19	-1.36	-0.79	3.81	0.09
ALDA 19383M001	E	0.98	-0.01	0.92	0.79	-0.85	-0.36	-1.84	0.35
ALDA 19383M001	U	2.32	-0.39	-1.93	3.00	0.64	1.16	-2.56	-3.32
ALSA 19419M001	N	0.50	-0.63	0.24	0.82	-0.45	-0.06	-0.40	-0.14
ALSA 19419M001	E	0.80	-0.04	-0.63	1.01	-0.33	-1.03	0.14	1.10
ALSA 19419M001	U	2.47	-2.02	-0.14	-0.42	-1.43	-3.02	4.49	0.96
AMUR 19388M001	N	0.56	-0.13	0.43	0.28	1.07	0.43	-0.48	0.19
AMUR 19388M001	E	0.53	0.47	-0.03	0.36	-1.09	-0.15	0.31	-0.18
AMUR 19388M001	U	3.54	-1.02	-1.43	1.53	2.87	1.29	-0.27	-7.73
BIAZ 10074M002	N	0.92	0.33	0.24	1.02	1.52	0.40	-1.11	0.43
BIAZ 10074M002	E	0.64	-0.45	0.28	0.25	-1.13	-0.06	0.80	0.43
BIAZ 10074M002	U	2.77	-0.35	4.89	3.95	0.34	-1.87	1.45	0.78
BIDA 00000M000	N	0.85	0.62	0.35	0.78		-0.01		1.32
BIDA 00000M000	E	0.57	-0.14	-0.20	-0.82		0.18		0.74
BIDA 00000M000	U	1.55	1.49	0.17	2.12		1.64		-0.44
BRZR 19387M001	N	1.65	-0.26	-0.07	-0.18	-0.83	-0.51	2.19	-3.24
BRZR 19387M001	E	0.62	0.70	0.53	0.27	-0.40	-0.02	-0.66	0.93
BRZR 19387M001	U	6.29	-5.63	-4.88	-4.32	-0.66	-1.10	10.96	6.45
CACE 13447M001	N	0.48	0.33	0.51	-0.61	-0.50	-0.24	0.47	0.35
CACE 13447M001	E	0.42	0.33	0.32	-0.36	-0.36	0.55	-0.20	0.47
CACE 13447M001	U	2.14	-0.10	2.01	-0.93	-0.24	3.78	-2.78	-0.79
CANT 13438M001	N	0.54	0.11	-0.63	-0.34	-0.52	0.21	-0.77	-0.55
CANT 13438M001	E	0.32	0.03	0.23	-0.30	-0.29	-0.20	0.55	-0.19
CANT 13438M001	U	3.38	0.83	-3.04	2.90	1.83	-4.47	5.14	0.76
CHER 00000M000	N	1.27	0.62	0.45	2.00				0.50
CHER 00000M000	E	0.54	0.52	0.03	-0.77				-0.13
CHER 00000M000	U	2.77	-0.70	3.57	2.88				-1.22
CREU 13432M001	N	0.42	0.46	-0.73	0.33	-0.19	-0.09	0.34	0.21
CREU 13432M001	E	0.34	0.35	-0.70	0.13	-0.05	-0.21	-0.10	0.10
CREU 13432M001	U	1.01	0.34	1.68	-1.39	-1.09	0.11	0.02	0.23
EBRE 13410M001	N	0.38	-0.01	0.59	0.10	-0.10	-0.64	0.29	-0.01
EBRE 13410M001	E	0.65	-0.03	-1.30	0.24	0.56	0.56	0.20	-0.34
EBRE 13410M001	U	1.64	-0.61	-1.25	0.11	3.64	-0.09	-0.01	-0.97
ELGE 19353S001	N	0.78	-0.52	0.19	0.06	0.09	-0.33	-0.73	-1.63
ELGE 19353S001	E	0.62	0.21	0.18	1.14	-0.47	-0.38	0.76	-0.03
ELGE 19353S001	U	3.13	-1.83	-4.09	2.61	0.39	0.40	5.40	-1.52
EMAZ 17001M001	N	0.50	-0.27	0.23	-0.72	0.26	-0.54	-0.65	-0.23
EMAZ 17001M001	E	0.38	0.26	-0.45	-0.51	0.48	-0.02	0.25	0.15
EMAZ 17001M001	U	3.12	-3.53	1.60	1.63	-0.96	-1.83	1.28	-5.90
GERN 19389M001	N	0.70	-0.23	-0.46	0.31	-0.06	-0.43	-0.82	-1.30
GERN 19389M001	E	0.71	0.15	-0.15	0.44	-0.35	-0.66	1.35	0.62
GERN 19389M001	U	2.07	-1.02	-0.31	0.49	0.92	2.77	2.29	-3.23
IGEL 19352S001	N	1.02	-0.60	0.46	0.75	0.19	-0.72	-1.56	-1.43
IGEL 19352S001	E	0.45	-0.10	0.18	0.45	-0.26	-0.01	0.70	0.65
IGEL 19352S001	U	1.83	-1.41	-0.09	3.25	-0.37	0.76	0.87	-2.48
ISPS 19484M001	N	0.80	-0.70	0.41	0.32	-0.71	-0.11	-1.10	-1.16
ISPS 19484M001	E	0.63	0.39	0.85	0.81	-0.13	-0.79	0.41	-0.15
ISPS 19484M001	U	1.81	-0.02	2.42	-1.02	-2.28	2.40	1.13	-0.69
KAST 19499M001	N	0.46	0.28	0.80	-0.12	0.28	0.66	0.03	-0.08
KAST 19499M001	E	0.45	0.15	0.10	0.72	-0.66	-0.48	-0.15	0.01
KAST 19499M001	U	1.71	-1.17	-1.79	0.18	1.26	0.33	-0.19	-3.35
LARE 19440M001	N	1.39	-1.26	1.02	-0.67	0.96	1.54	-1.76	-1.47
LARE 19440M001	E	0.57	-0.47	-0.14	-0.78	0.33	0.64	0.70	0.32
LARE 19440M001	U	4.46	2.44	1.74	1.50	-2.14	-6.90	-1.81	-7.24
LAZK 19354S001	N	0.82	0.07	0.14	0.26	-0.19	-0.74	-0.73	-1.69
LAZK 19354S001	E	0.65	-0.25	0.07	0.65	-0.40	-0.25	0.25	1.34

LAZK	19354S001	U	3.63	-0.67	-2.61	-0.29	-4.29	0.12	7.02	2.03
LEIT	19428M001	N	1.66	-1.37	0.37	-1.26	-3.18	0.25	1.50	0.66
LEIT	19428M001	E	0.62	0.52	0.14	0.46	-0.19	-0.50	1.23	0.00
LEIT	19428M001	U	2.60	-3.60	-1.89	-1.24	0.18	0.27	3.18	3.52
ORDN	19427M001	N	1.08	2.19	0.40	0.06	0.94	-0.50	-0.91	-0.16
ORDN	19427M001	E	0.39	0.52	-0.40	-0.32	-0.16	0.21	0.47	-0.31
ORDN	19427M001	U	4.09	-1.51	-0.37	6.11	2.11	-1.41	7.22	-1.41
PAS2	19351S001	N	0.84	-0.69	0.21	0.09	-0.60	0.48	-1.62	-0.67
PAS2	19351S001	E	0.47	0.30	0.18	0.64	0.15	-0.58	0.42	0.49
PAS2	19351S001	U	3.82	0.01	0.16	0.41	-1.14	-2.81	7.74	-4.29
PASA	19351S001	N	0.67	-0.57	0.12	0.09	-0.70	0.02	-0.96	-0.97
PASA	19351S001	E	0.42	0.53	0.31	0.57	-0.18	-0.30	0.31	0.39
PASA	19351S001	U	1.31	-0.71	0.67	1.04	0.88	-0.26	1.24	-2.43
RID1	13448M002	N	0.56	-0.36	-0.29	-0.03	-0.86	-0.15	-0.82	0.47
RID1	13448M002	E	0.42	-0.09	-0.03	0.23	-0.40	-0.29	0.86	0.16
RID1	13448M002	U	2.87	-3.60	-2.34	2.16	1.03	0.94	4.61	-1.74
SALA	13469M001	N	0.45					0.33	0.38	-0.40
SALA	13469M001	E	0.59					-0.61	0.22	-0.51
SALA	13469M001	U	1.84					2.27	-0.90	-0.90
SCDA	10088M002	N	1.58	1.98	2.01	1.68	-0.68	-0.74	-1.79	-0.19
SCDA	10088M002	E	0.42	0.15	-0.02	-0.46	-0.30	0.11	0.81	0.26
SCDA	10088M002	U	2.75	-1.52	0.04	3.63	-0.89	1.51	4.67	2.27
SOPU	19386M001	N	0.91	-0.65	0.87	-0.27	-1.04	0.35	-1.31	-0.90
SOPU	19386M001	E	0.61	0.09	0.19	0.94	-0.50	-0.08	1.02	-0.05
SOPU	19386M001	U	2.79	-0.17	0.46	2.96	2.94	2.06	1.47	-4.75
TERU	13487M001	N	0.53	0.89	0.77	0.19	0.33	0.01	-0.39	-0.02
TERU	13487M001	E	0.35	0.02	0.04	-0.24	0.32	-0.16	-0.53	0.52
TERU	13487M001	U	2.30	0.16	0.55	-4.62	1.02	-0.50	-2.89	-0.71
VITO	19385M001	N	0.60	0.33	0.42	-0.12	0.41	0.95	-0.31	-0.84
VITO	19385M001	E	0.60	0.06	0.08	0.69	0.80	-0.48	-0.30	-0.85
VITO	19385M001	U	2.56	0.35	-0.75	0.24	-1.37	-1.07	3.21	-5.03
YEBE	13420M001	N	0.48	0.45	0.33	0.91	-0.15	-0.37	0.17	-0.26
YEBE	13420M001	E	0.43	-0.14	0.78	-0.35	0.32	0.46	-0.15	0.21
YEBE	13420M001	U	2.78	-1.94	-0.90	-0.07	2.49	3.43	1.63	-4.61
ZARA	13462M001	N	0.44	-0.55	0.16	-0.45	-0.60	0.44	0.29	-0.01
ZARA	13462M001	E	0.30	-0.26	0.00	0.62	-0.26	-0.02	0.14	-0.03
ZARA	13462M001	U	2.01	-0.04	-4.34	2.15	-0.08	-0.31	0.82	-0.15

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.

LOCAL GEODETIC DATUM: IGS14
RESIDUALS IN LOCAL SYSTEM (NORTH, EAST, UP)

NUM	NAME	FLG	RESIDUALS IN MILLIMETERS		
1	ACOR 13434M001	I W	0.24	-0.19	0.60
2	ALAC 13433M001	I W	-0.17	-0.20	-1.66
3	ALBA 13452M001	I W	-0.41	-0.66	1.80
4	ALME 13437M001	I W	-1.57	-1.23	0.97
5	BCLN 13412M001	I W	0.85	1.12	-2.28
6	BELL 13431M001	I W	2.66	1.87	-1.77
7	BORR 13480M001	I W	-0.38	-1.38	-0.31
8	BRST 10004M004	I W	1.17	-0.70	-1.56
9	CACE 13447M001	I W	0.82	-1.35	3.65
10	CANT 13438M001	I W	1.04	-0.50	2.57
11	CARG 19412M001	I W	0.17	-1.20	-1.43
12	CASC 13909S001	I W	1.29	-1.84	0.15
13	CEU1 13449M002	I W	-0.13	-0.87	-2.02
14	COBA 13453M001	I W	0.38	0.19	-2.13
15	CREU 13432M001	I W	0.24	2.07	-0.04
16	EBRE 13410M001	I W	-1.26	1.56	-0.66
17	ESCO 13435M001	I W	1.94	0.94	-1.09
18	FUNC 13911S001	I W	0.34	-1.70	-4.55
19	GAIA 13902M001	I W	0.90	-1.44	3.81
21	HUEL 13451M001	I W	-2.51	3.21	2.95
22	IZAN 13109M002	I W	-2.55	-1.33	-2.15
23	LLIV 13436M001	I W	0.71	-0.27	2.15
24	LPAL 81701M001	I W	-5.12	-0.87	-3.56
26	MALA 13443M001	I W	-1.00	-0.68	0.14
27	MAS1 13103M002	I W	-1.31	-0.03	-0.77
29	MELI 19379M001	I W	-0.59	-0.12	-1.23
30	PASA 19351S001	I W	0.13	0.43	1.05
31	PDEL 13106M004	I W	-0.30	-0.29	-9.33
32	RABT 35001M002	I W	-0.40	-0.40	-1.30
33	RIO1 13448M002	I W	0.22	-0.01	0.37
34	SALA 13469M001	I W	1.05	0.51	1.19
35	SCOA 10088M002	I W	-0.48	-0.00	-0.13
38	SONS 13446M001	I W	1.18	1.16	-0.42
40	VALA 13463M002	I W	-2.37	0.80	4.78
41	VALE 13439M001	I W	-0.14	1.40	1.66
42	VIGO 13450M001	I W	1.39	-0.83	2.03
43	YEBE 13420M001	I W	1.12	-0.50	4.89
44	ZARA 13462M001	I W	0.52	2.22	2.10
45	ZIMM 14001M004	I W	2.34	1.10	1.52
RMS / COMPONENT			1.47	1.20	2.67
MEAN			0.00	-0.00	-0.00
MIN			-5.12	-1.84	-9.33
MAX			2.66	3.21	4.89

NUMBER OF PARAMETERS : 3
NUMBER OF COORDINATES : 117
RMS OF TRANSFORMATION : 1.89 MM

BARYCENTER COORDINATES:

LATITUDE : 39 28 14.92
LONGITUDE : - 5 0 24.38
HEIGHT : -43.728 KM

PARAMETERS:

TRANSLATION IN N : -0.00 +- 0.30 MM
TRANSLATION IN E : -0.00 +- 0.30 MM
TRANSLATION IN U : 0.00 +- 0.30 MM

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 the daily solutions are shown.

```
* STATISTICAL PARAMETER----- VALUE(S)-----
NUMBER OF OBSERVATIONS          18038723
NUMBER OF UNKNOWN               209243
NUMBER OF DEGREES OF FREEDOM    17829480
PHASE MEASUREMENTS SIGMA        0.00100
SAMPLING INTERVAL (SECONDS)     180
VARIANCE FACTOR                  1.610228850974458
```

Helmert Transformation Parameters With Respect to Combined Solution:

Sol	Rms (m)	Translation (m)			Rotation (")			Scale (ppm)
		X	Y	Z	X	Y	Z	
1	0.00161	0.0092	0.0044	-0.0137	-0.0000	0.0005	0.0002	0.00024
2	0.00149	0.0029	-0.0064	-0.0040	0.0002	0.0002	-0.0001	-0.00016
3	0.00142	0.0038	-0.0060	-0.0026	0.0002	0.0001	-0.0001	-0.00019
4	0.00148	-0.0055	-0.0006	0.0068	0.0000	-0.0003	-0.0000	0.00009
5	0.00157	-0.0187	-0.0152	0.0201	0.0003	-0.0009	-0.0004	0.00017
6	0.00158	-0.0060	-0.0064	0.0068	0.0001	-0.0003	-0.0002	0.00009
7	0.00173	0.0093	0.0152	-0.0103	-0.0004	0.0005	0.0003	-0.00002

Statistics of individual solutions:

File	RMS (m)	DOF	Chi**2/DOF	#Observations authentic / pseudo	#Parameters explicit / implicit / singular
1	0.00125	2544539	1.55	2575197	3 1008 29653 0
2	0.00128	2554568	1.64	2585457	3 1011 29881 0
3	0.00127	2470415	1.62	2499789	3 990 28387 0
4	0.00127	2513992	1.60	2544391	3 1008 29394 0
5	0.00127	2568945	1.60	2600137	3 1023 30172 0
6	0.00126	2593572	1.60	2624992	3 1020 30403 0
7	0.00127	2577416	1.62	2608760	3 1020 30327 0

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 18:357:00000 18:363:86370 LEICA GRX1200PRO -----
ALDA A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
ALSA A 1 P 18:357:00000 18:363:86370 LEICA GR50 -----
AMUR A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
BIAZ A 1 P 18:357:00000 18:363:86370 TRI SP90M -----
BIDA A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
BRZR A 1 P 18:357:00000 18:363:86370 LEICA GR30 -----
CACE A 1 P 18:357:00000 18:363:86370 TRIMBLE NETR9 -----
CANT A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
CHER A 1 P 18:357:00000 18:363:86370 LEICA GRX1200+GNSS -----
CREU A 1 P 18:357:00000 18:363:86370 LEICA GR50 -----
EBRE A 1 P 18:357:00000 18:363:86370 LEICA GR50 -----
ELGE A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
EMAZ A 1 P 18:357:00000 18:363:86370 LEICA GR30 -----
GERN A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
IGEL A 1 P 18:357:00000 18:363:86370 LEICA GR30 -----
ISPS A 1 P 18:357:00000 18:363:86370 TRIMBLE NETR9 -----
KAST A 1 P 18:357:00000 18:363:86370 LEICA GR30 -----
LARE A 1 P 18:357:00000 18:363:86370 LEICA GRX1200GGPRO -----
LAZK A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
LEIT A 1 P 18:357:00000 18:363:86370 LEICA GR50 -----
ORON A 1 P 18:357:00000 18:363:86370 LEICA GR50 -----
PAS2 A 1 P 18:357:00000 18:363:86370 TPS NET-G3A -----
PASA A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
RIO1 A 1 P 18:357:00000 18:363:86370 LEICA GR25 -----
SALA A 1 P 18:361:00000 18:363:86370 LEICA GRX1200+GNSS -----
SCOA A 1 P 18:357:00000 18:363:86370 LEICA GR25 -----
SOPU A 1 P 18:357:00000 18:363:86370 LEICA GR30 -----
TERU A 1 P 18:357:00000 18:363:86370 LEICA GRX1200GGPRO -----
VITO A 1 P 18:357:00000 18:363:86370 LEICA GR10 -----
YEBA A 1 P 18:357:00000 18:363:86370 TRIMBLE NETR9 -----
ZARA A 1 P 18:357:00000 18:363:86370 TRIMBLE NETR9 -----
```

7.2 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 18:357:00000 18:363:86370 LEIAT504 LEIS -----
ALDA A 1 P 18:357:00000 18:363:86370 LEIAS10 NONE -----
ALSA A 1 P 18:357:00000 18:363:86370 LEIAR10 NONE -----
AMUR A 1 P 18:357:00000 18:363:86370 LEIAS10 NONE -----
```

BLAZ	A	1	P	18:357:00000	18:363:86370	LEIAR25	LEIT	----
BIDA	A	1	P	18:357:00000	18:363:86370	LEIAS10	NONE	----
BRZR	A	1	P	18:357:00000	18:363:86370	LEIAS10	NONE	----
CACE	A	1	P	18:357:00000	18:363:86370	TRM29659.00	NONE	----
CANT	A	1	P	18:357:00000	18:363:86370	LEIAR25.R4	LEIT	25066
CHER	A	1	P	18:357:00000	18:363:86370	LEIAX1203+GNSS	NONE	----
CREU	A	1	P	18:357:00000	18:363:86370	LEIAR25.R4	NONE	26357
EBRE	A	1	P	18:357:00000	18:363:86370	LEIAR25.R4	NONE	26359
ELGE	A	1	P	18:357:00000	18:363:86370	LEIAR25.R4	LEIT	----
EMAZ	A	1	P	18:357:00000	18:363:86370	LEIAS10	NONE	----
GERN	A	1	P	18:357:00000	18:363:86370	LEIAS10	NONE	----
IGEL	A	1	P	18:357:00000	18:363:86370	LEIAR20	LEIM	----
ISPS	A	1	P	18:357:00000	18:363:86370	TRM59900.00	SCIS	----
KAST	A	1	P	18:357:00000	18:363:86370	LEIAS10	NONE	----
LARE	A	1	P	18:357:00000	18:363:86370	LEIAT504	NONE	----
LAZK	A	1	P	18:357:00000	18:363:86370	LEIAR25.R4	LEIT	----
LEIT	A	1	P	18:357:00000	18:363:86370	LEIAR10	NONE	----
ORDN	A	1	P	18:357:00000	18:363:86370	LEIAR10	NONE	----
PAS2	A	1	P	18:357:00000	18:363:86370	LEIAR20	LEIM	73034
PASA	A	1	P	18:357:00000	18:363:86370	LEIAR20	LEIM	73034
RID1	A	1	P	18:357:00000	18:363:86370	LEIAR25.R4	LEIT	25138
SALA	A	1	P	18:361:00000	18:363:86370	LEIAR25	NONE	----
SCDA	A	1	P	18:357:00000	18:363:86370	TRM55971.00	NONE	----
SOPU	A	1	P	18:357:00000	18:363:86370	LEIAS10	NONE	----
TERU	A	1	P	18:357:00000	18:363:86370	LEIAT504GG	LEIS	----
VITO	A	1	P	18:357:00000	18:363:86370	LEIAS10	NONE	----
YEBE	A	1	P	18:357:00000	18:363:86370	TRM29659.00	NONE	----
ZARA	A	1	P	18:357:00000	18:363:86370	TRM29659.00	NONE	----

7.3 Eccentricities

*S	PT	SOLN	T	DATA_START_	DATA_END_	AXE	ARP->BENCHMARK(M)	UP	NORTH	EAST
ACOR	A	1	P	18:357:00000	18:363:86370	UNE	3.0460	0.0000	0.0000	0.0000
ALDA	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
ALSA	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
AMUR	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
BLAZ	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
BIDA	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
BRZR	A	1	P	18:357:00000	18:363:86370	UNE	0.0771	0.0000	0.0000	0.0000
CACE	A	1	P	18:357:00000	18:363:86370	UNE	0.0600	0.0000	0.0000	0.0000
CANT	A	1	P	18:357:00000	18:363:86370	UNE	3.0490	0.0000	0.0000	0.0000
CHER	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
CREU	A	1	P	18:357:00000	18:363:86370	UNE	0.0770	0.0000	0.0000	0.0000
EBRE	A	1	P	18:357:00000	18:363:86370	UNE	0.0770	0.0000	0.0000	0.0000
ELGE	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
EMAZ	A	1	P	18:357:00000	18:363:86370	UNE	0.0350	0.0000	0.0000	0.0000
GERN	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
IGEL	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
ISPS	A	1	P	18:357:00000	18:363:86370	UNE	0.0350	0.0000	0.0000	0.0000
KAST	A	1	P	18:357:00000	18:363:86370	UNE	0.0350	0.0000	0.0000	0.0000
LARE	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
LAZK	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
LEIT	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
ORDN	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
PAS2	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
PASA	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
RID1	A	1	P	18:357:00000	18:363:86370	UNE	0.0606	0.0000	0.0000	0.0000
SALA	A	1	P	18:361:00000	18:363:86370	UNE	0.0600	0.0000	0.0000	0.0000
SCDA	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
SOPU	A	1	P	18:357:00000	18:363:86370	UNE	0.0771	0.0000	0.0000	0.0000
TERU	A	1	P	18:357:00000	18:363:86370	UNE	0.0600	0.0000	0.0000	0.0000
VITO	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
YEBE	A	1	P	18:357:00000	18:363:86370	UNE	0.0000	0.0000	0.0000	0.0000
ZARA	A	1	P	18:357:00000	18:363:86370	UNE	3.2590	0.0000	0.0000	0.0000

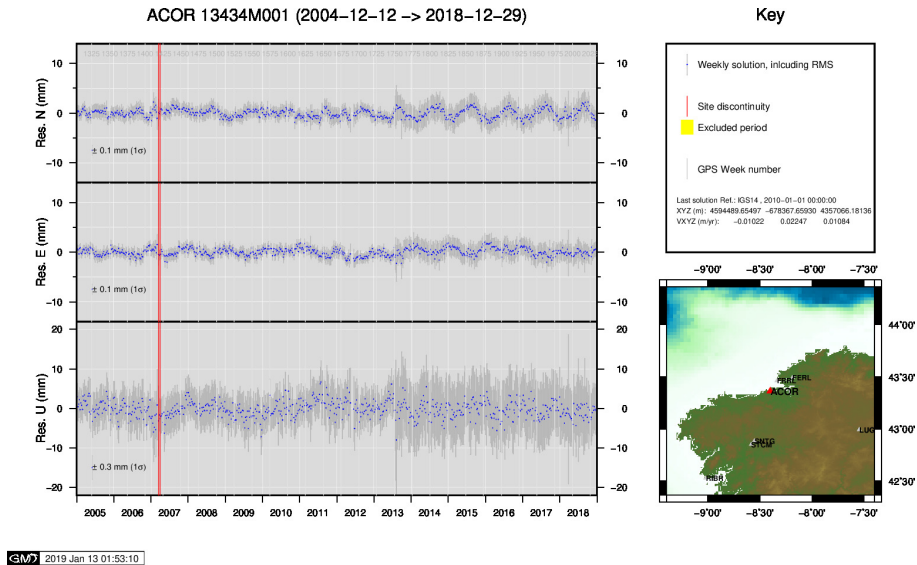
8 Inconsistencies (logsheet-RINEX metadata)

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

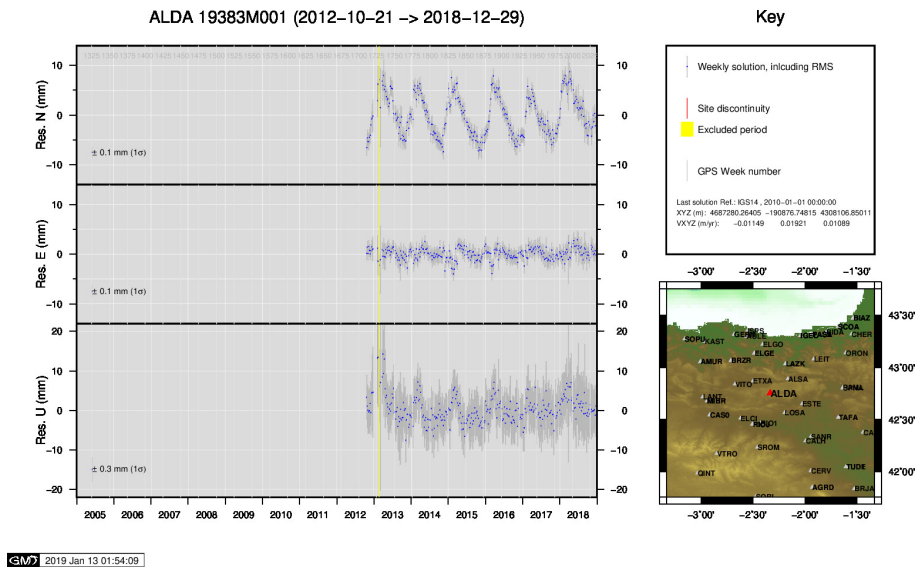
2019-01-06	23:36	UTC		GERN3570.180		RECEIVER FIRM. VERS.		4.10	->	4.10/6.523
2019-01-07	23:28	UTC		GERN3580.180		RECEIVER FIRM. VERS.		4.10	->	4.10/6.523
2019-01-08	23:18	UTC		GERN3590.180		RECEIVER FIRM. VERS.		4.10	->	4.10/6.523
2019-01-09	23:18	UTC		GERN3600.180		RECEIVER FIRM. VERS.		4.10	->	4.10/6.523
2019-01-10	23:19	UTC		GERN3610.180		RECEIVER FIRM. VERS.		4.10	->	4.10/6.523
2019-01-11	23:20	UTC		GERN3620.180		RECEIVER FIRM. VERS.		4.10	->	4.10/6.523
2019-01-12	23:28	UTC		GERN3630.180		RECEIVER FIRM. VERS.		4.10	->	4.10/6.523

9 Cumulative Time Series

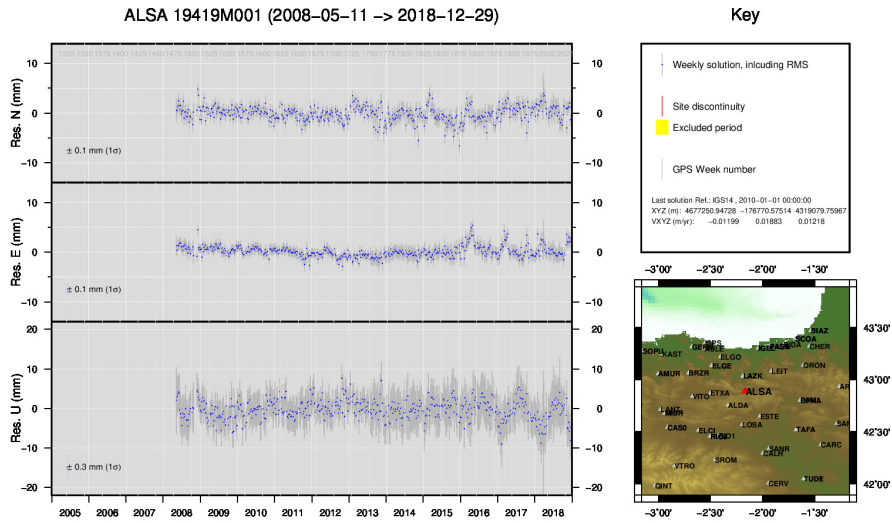
Time series of stations. Latest plots at: <http://geolabpasaia.org/gnss/ARA-net/TSeries/>, or click on the caption of each image.



1) ACOR

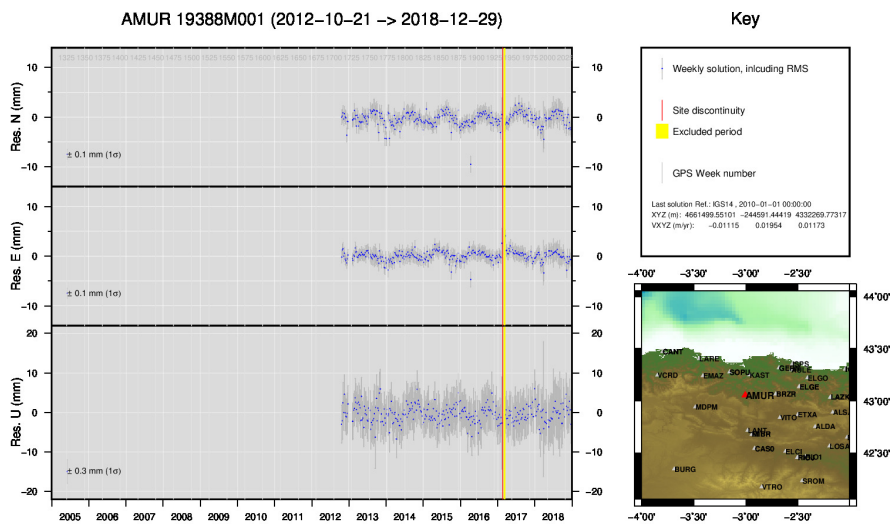


2) ALDA



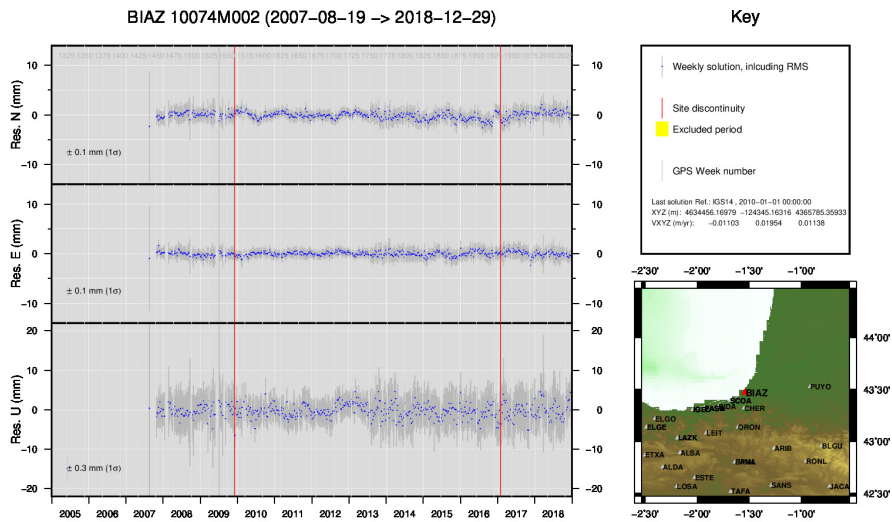
GMW 2019 Jan 13 01:54:51

3) ALSA



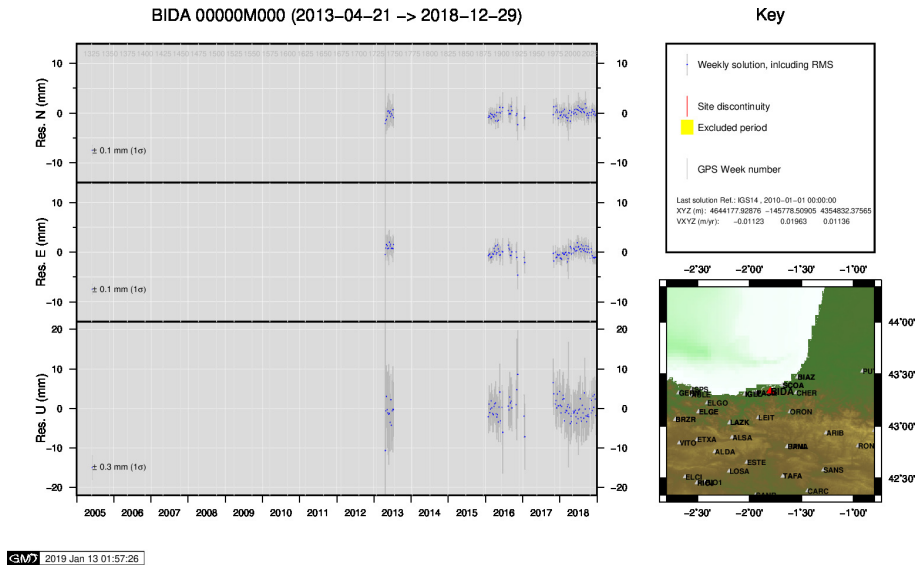
GMW 2019 Jan 13 01:55:00

4) AMUR

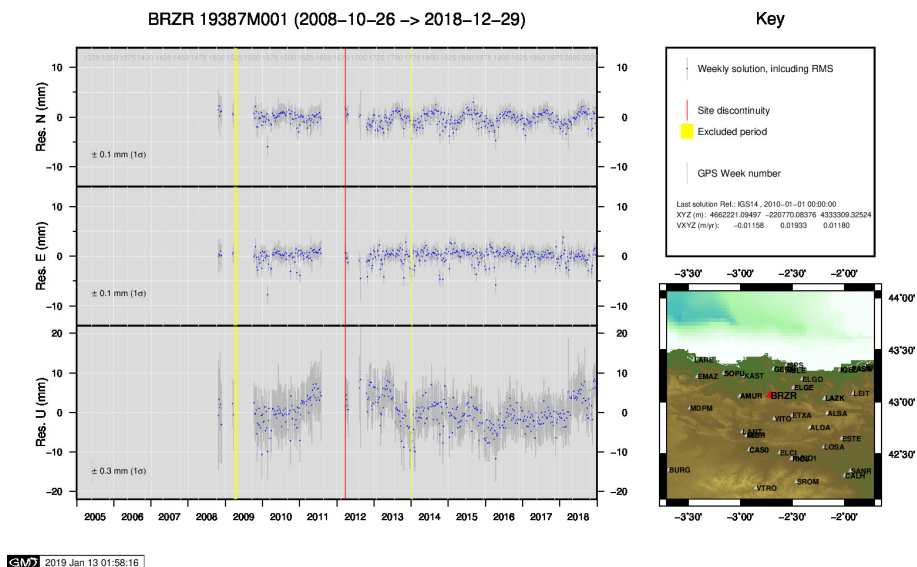


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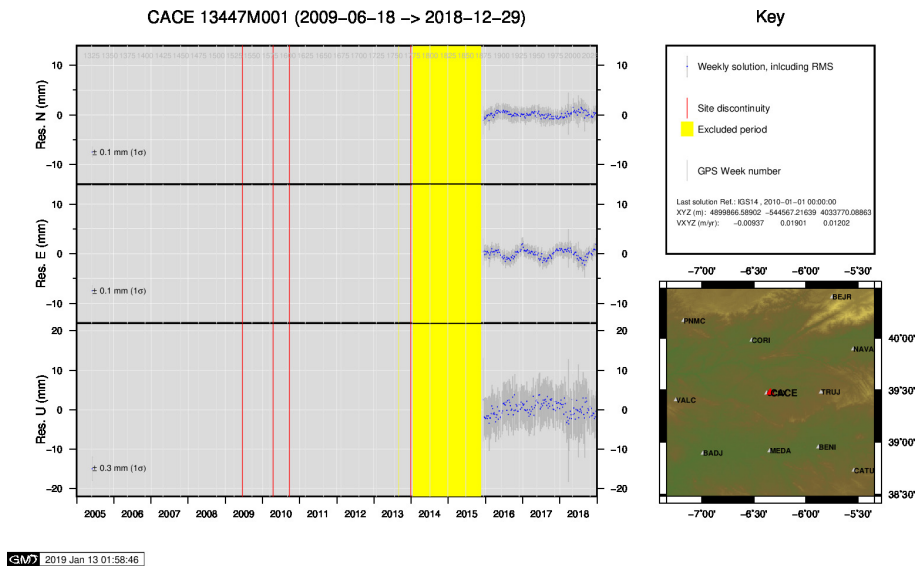
5) BIAZ



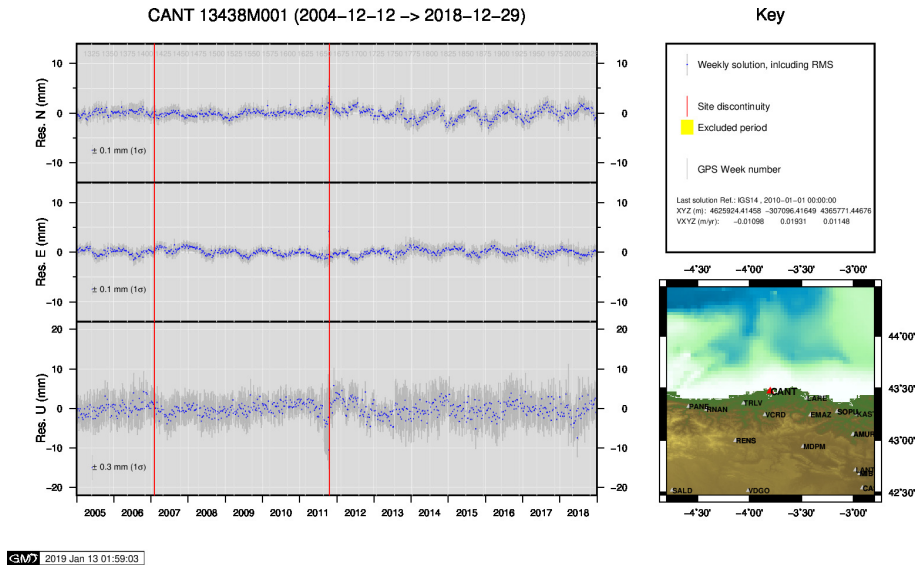
6) BIDA



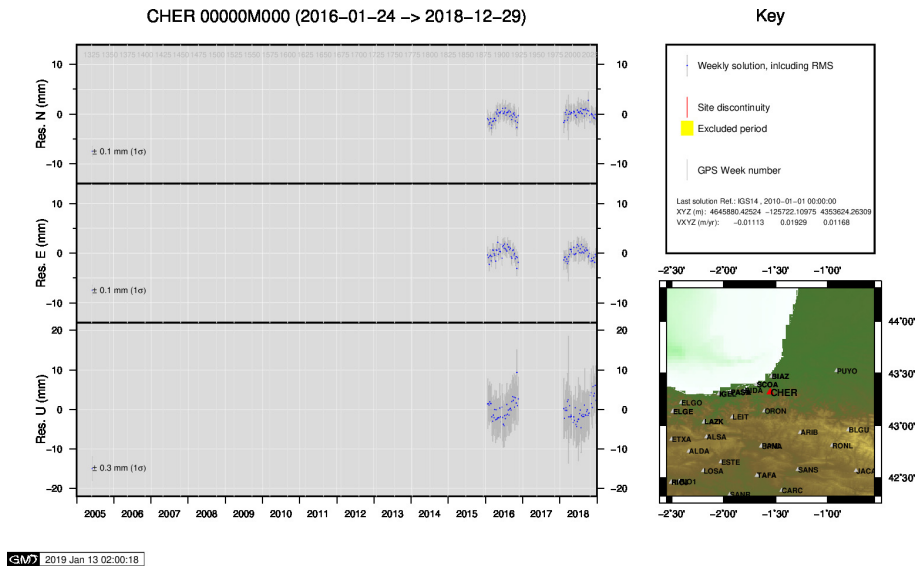
7) BRZR



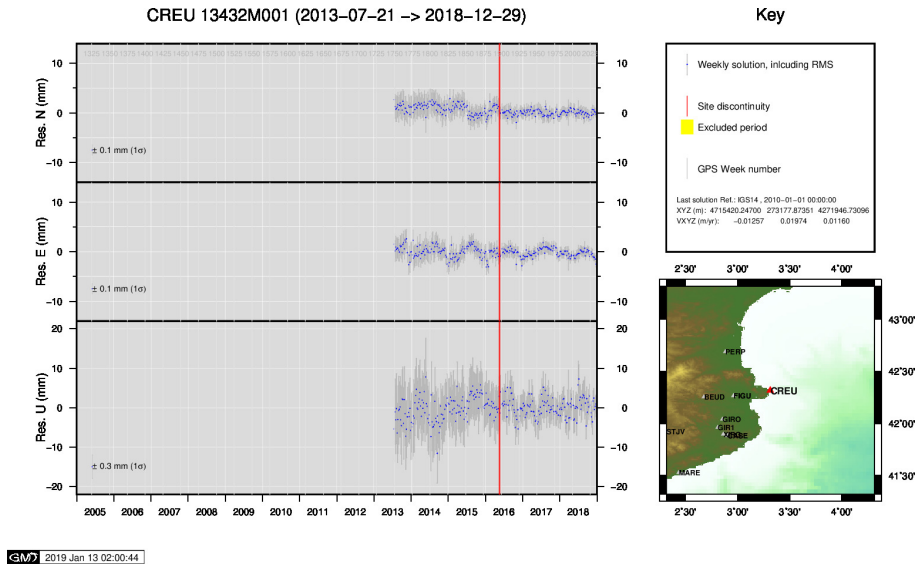
8) CACE



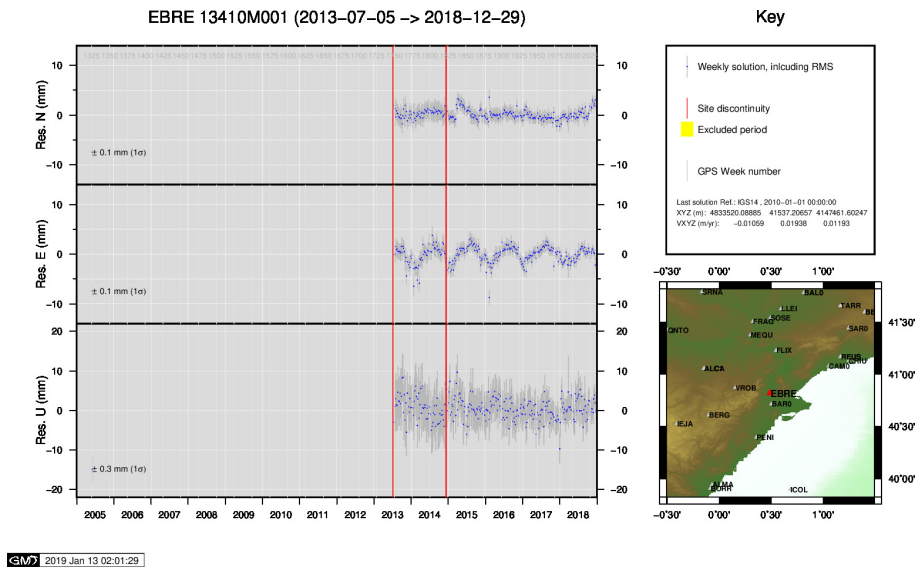
9) CANT



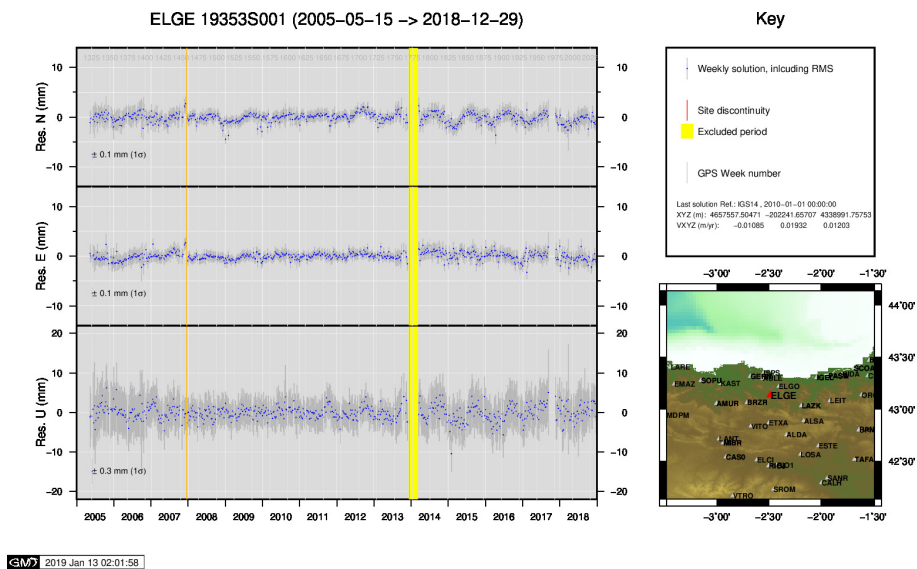
10) CHER



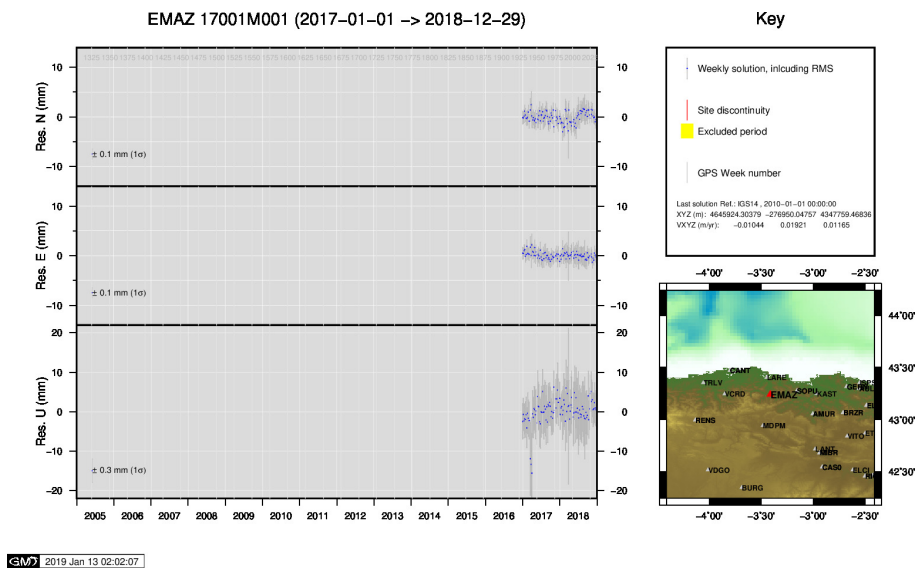
11) CREU



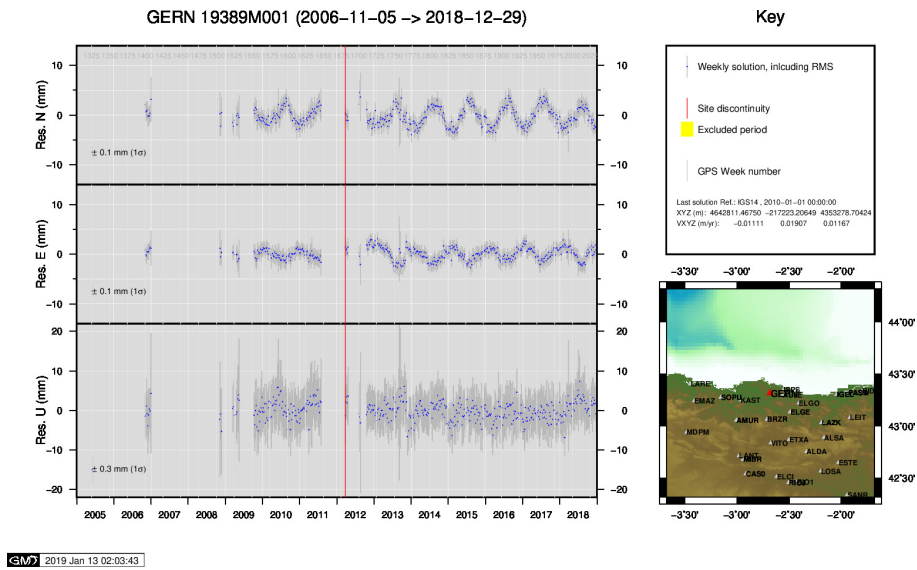
12) EBRE



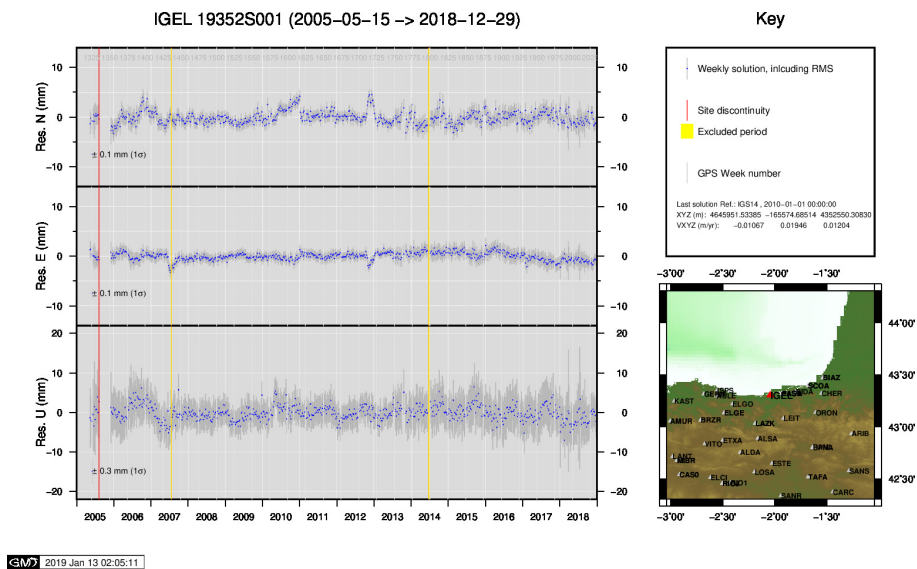
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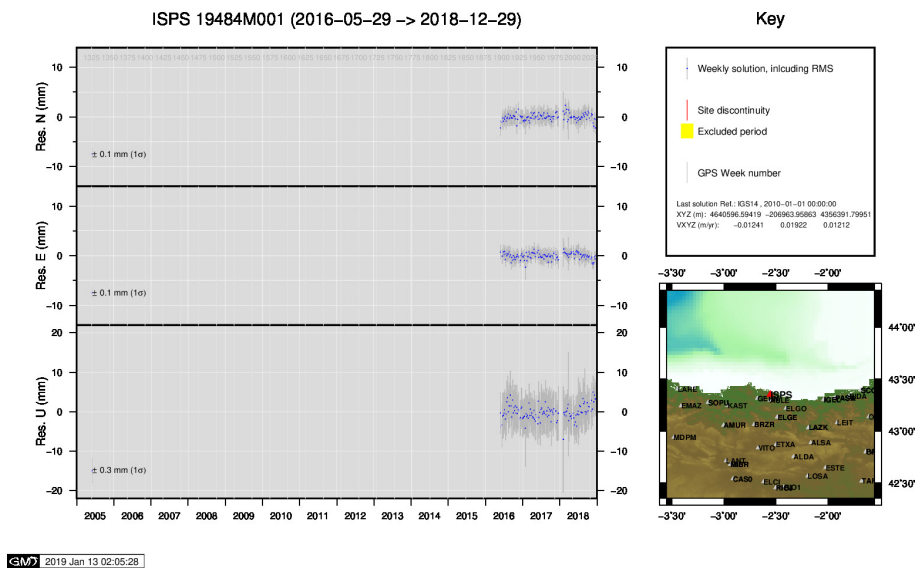
14) EMAZ



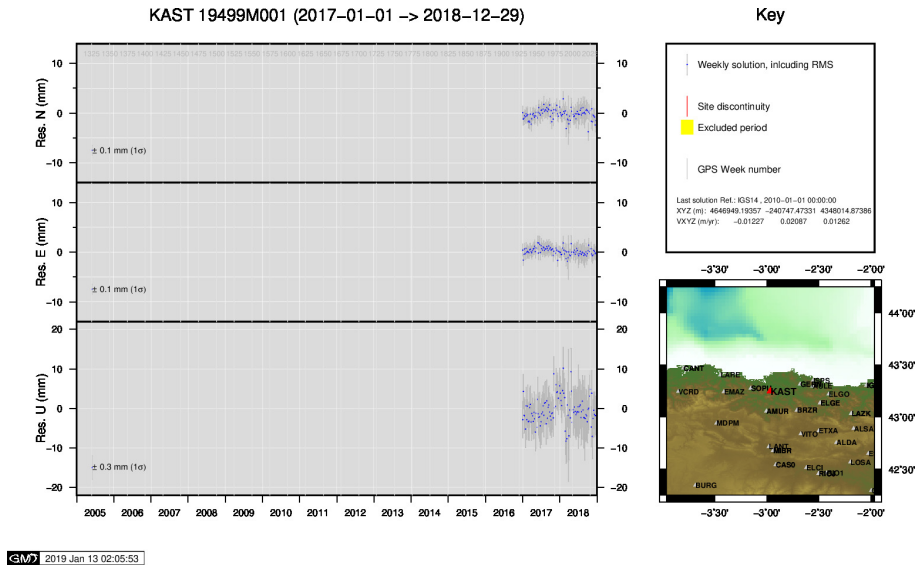
15) GERN



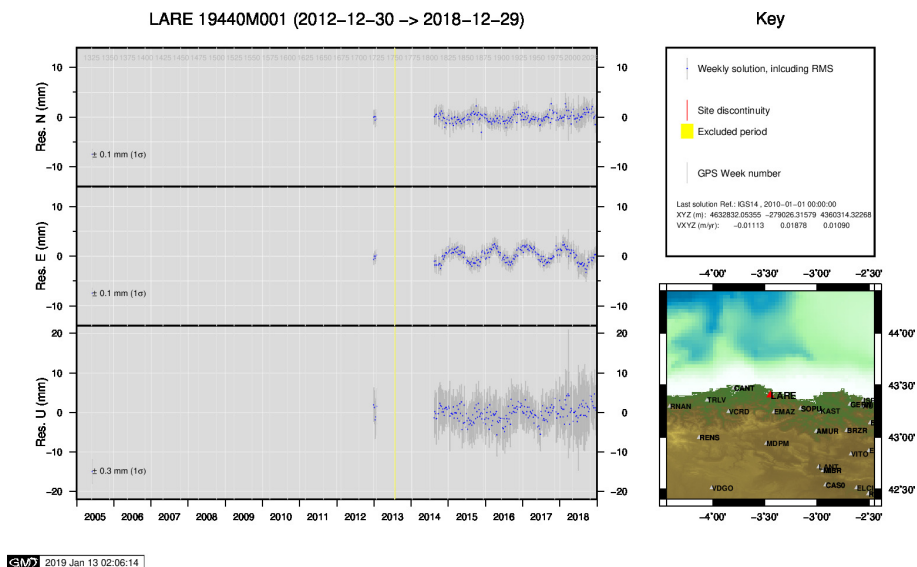
16) IGEL



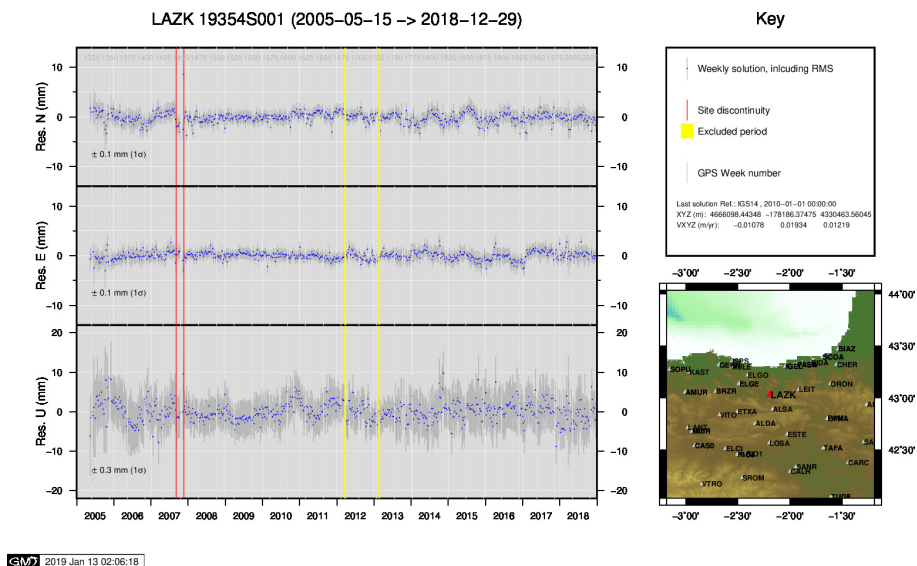
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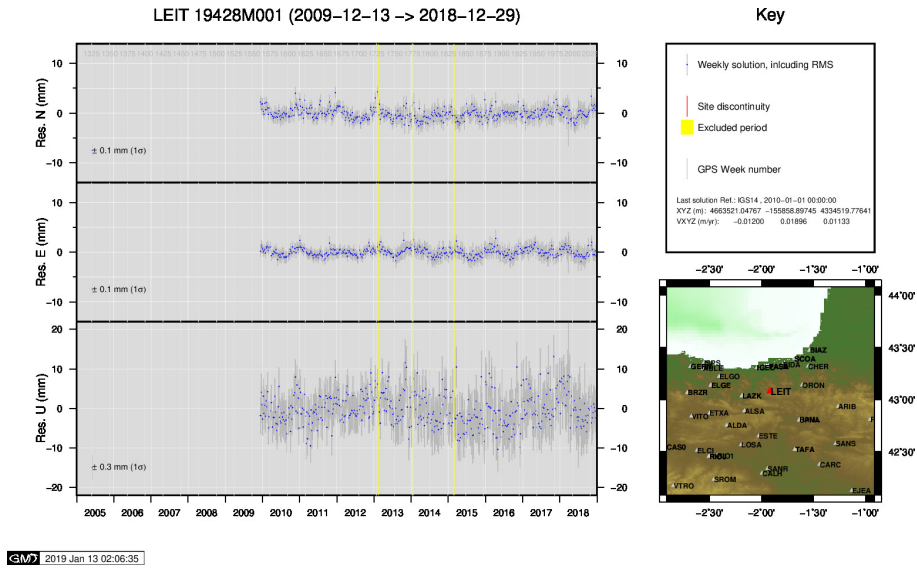
18) KAST



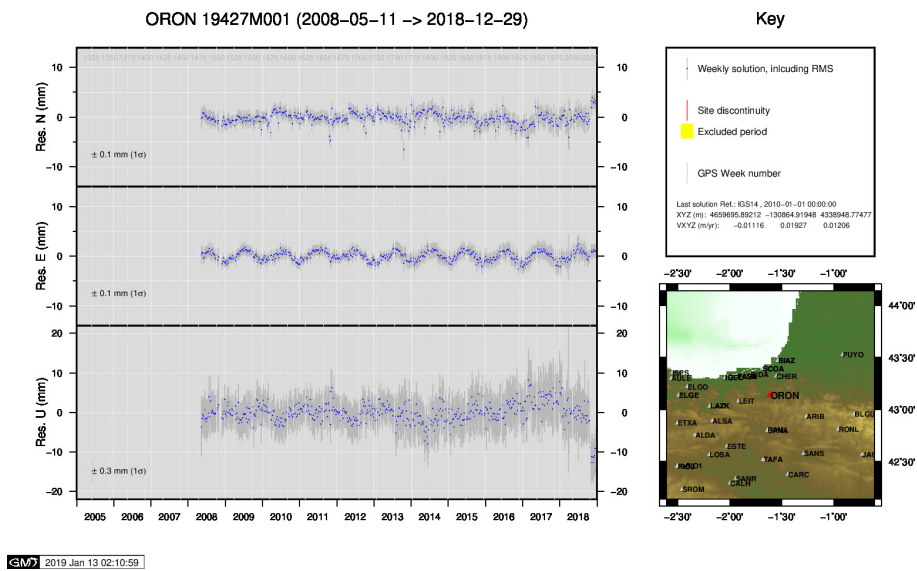
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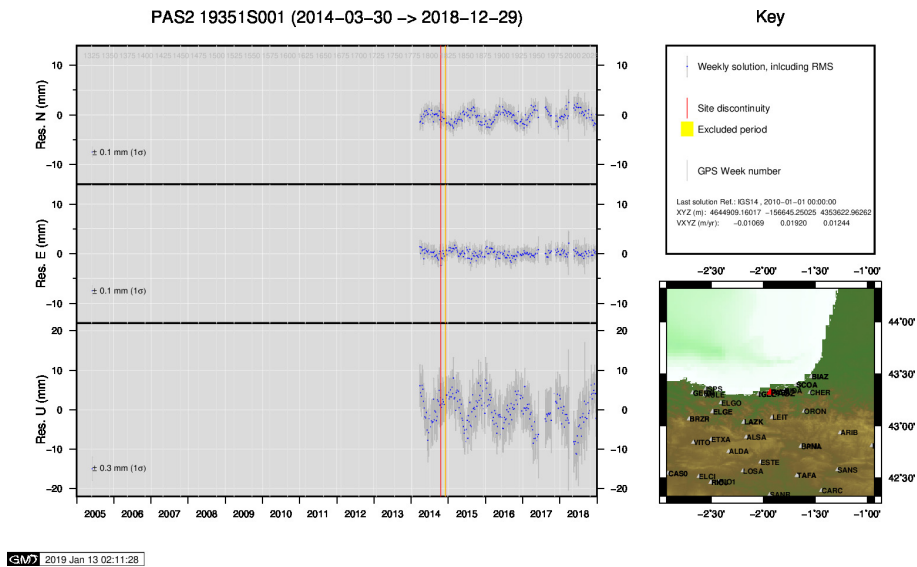
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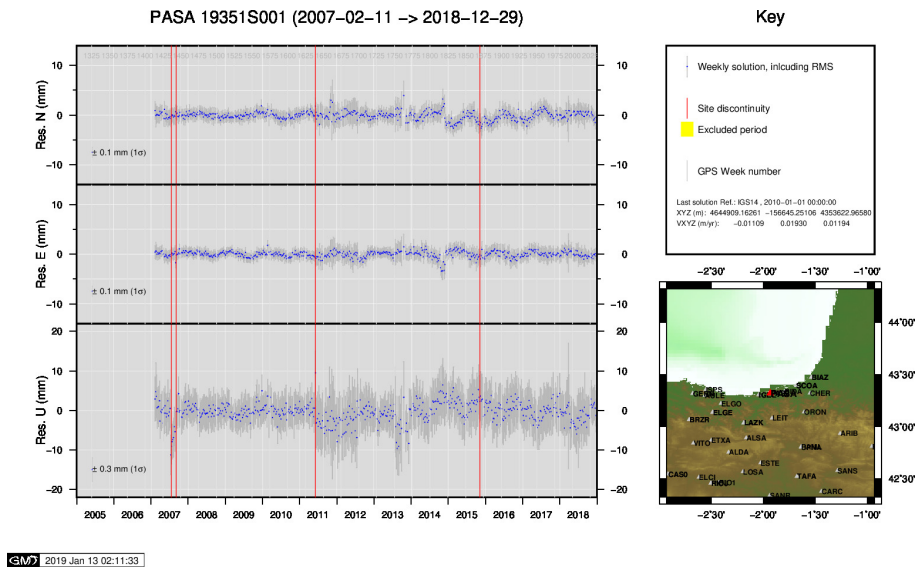
21) LEIT



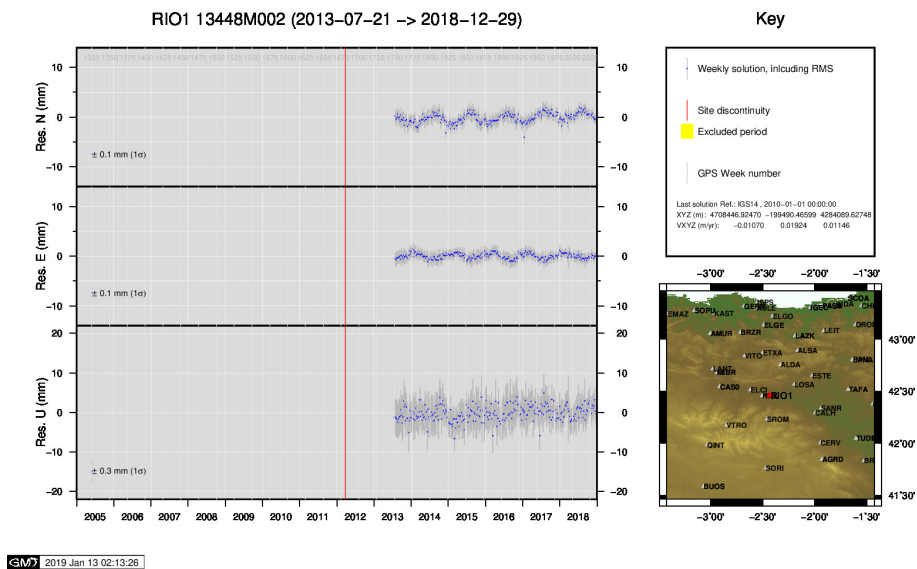
22) ORON



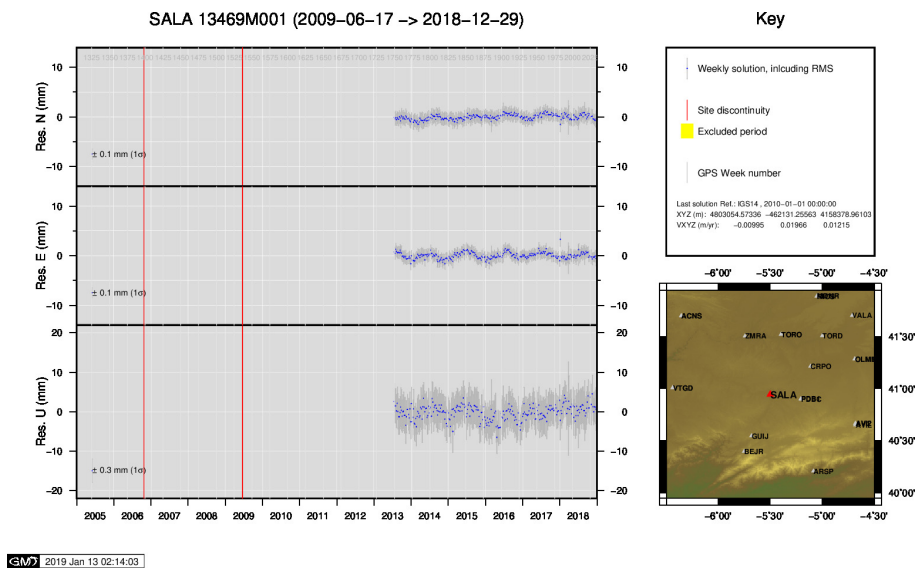
23) PAS2



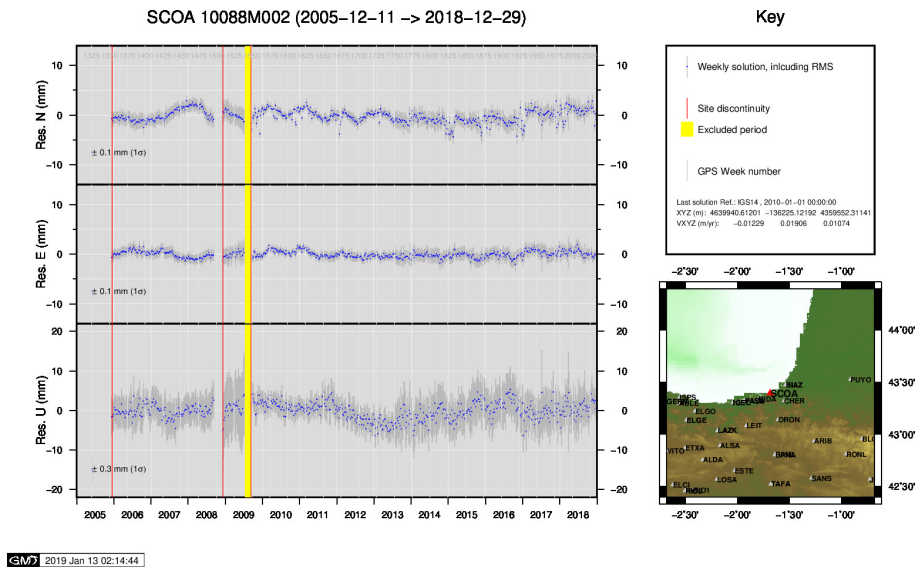
24) PASA



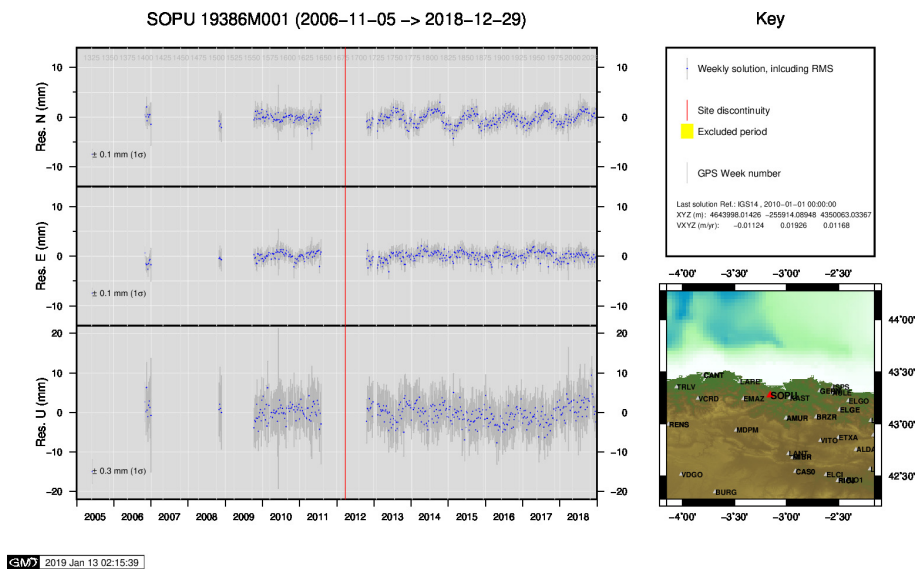
25) RIO1



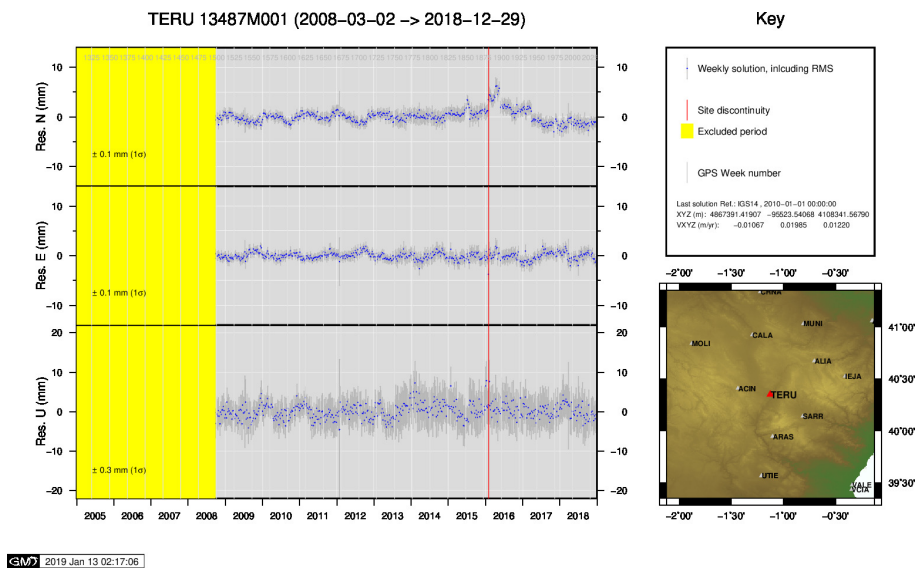
26) SALA



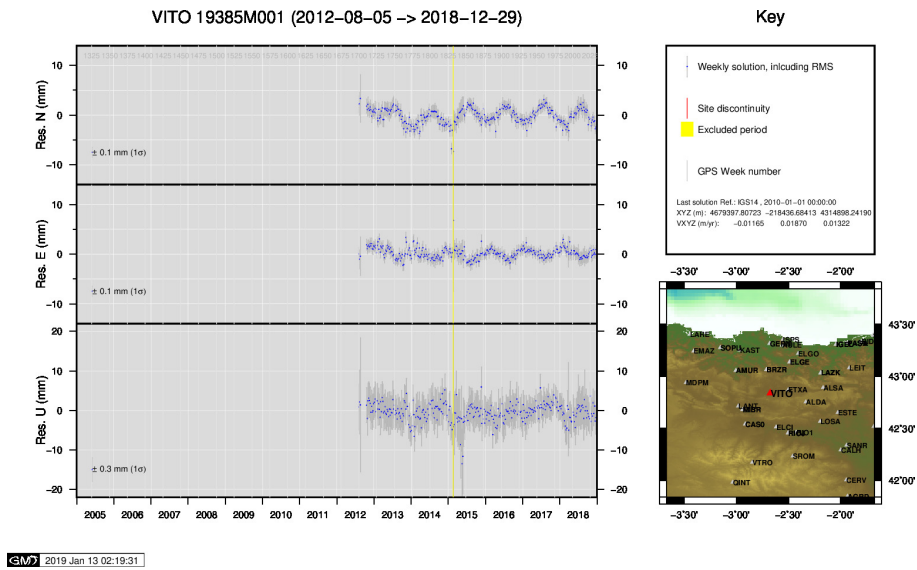
27) SCOA



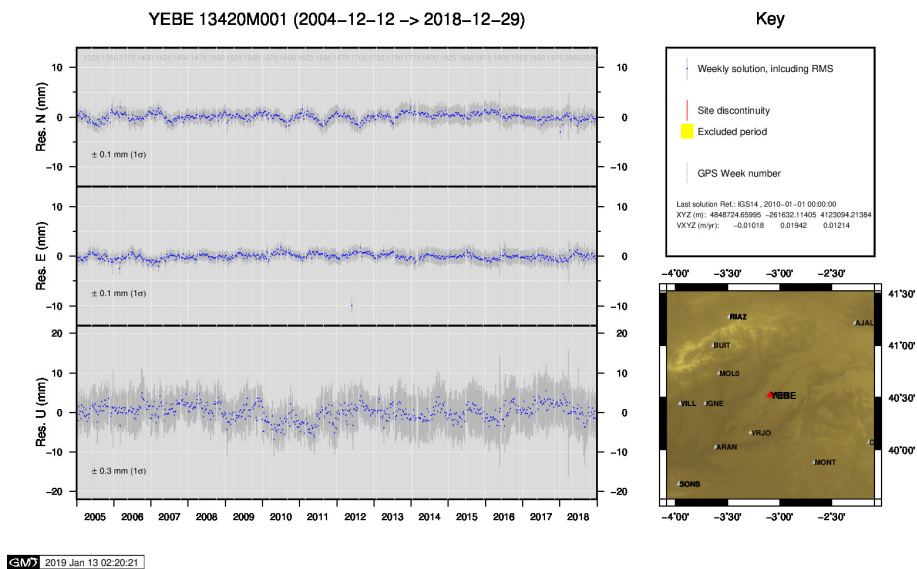
28) SOPU



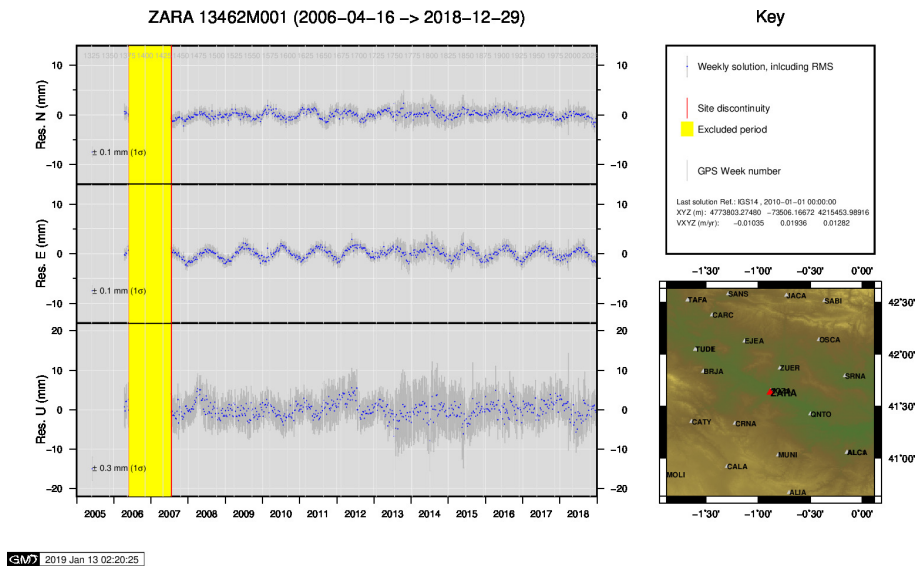
29) TERU



30) VITO



31) YEBE



32) ZARA

