

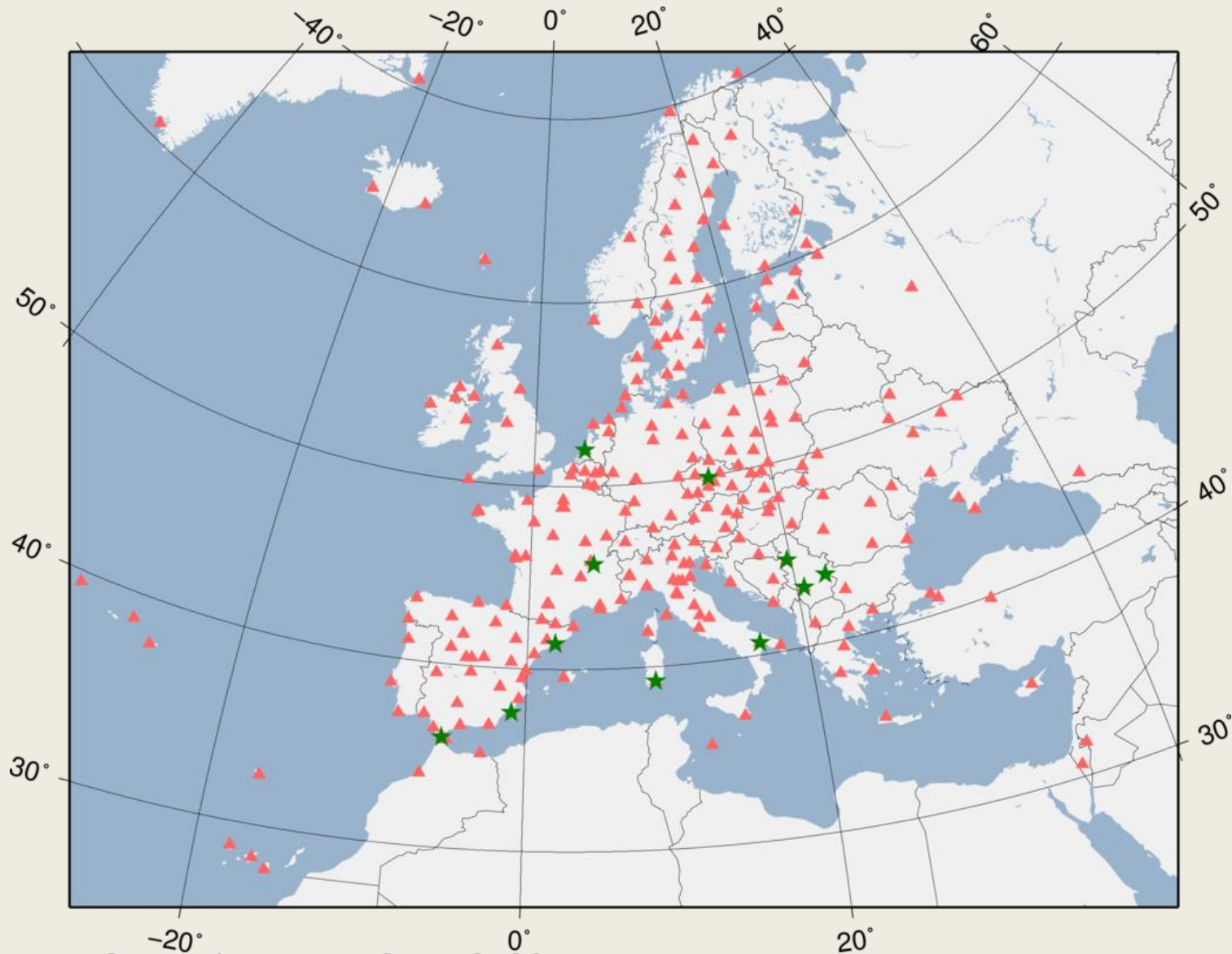
New EPN Stations

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EPN Central Bureau

New EPN Stations



New EPN Stations

4-ch ID	Location	MGEX ITRF	Capabilities	Calib	Inclusion	Hist. DC
BCLN	Barcelona, ESP		RT GLO+GAL	Indiv.	02/08/2015	07/02/2012
CARG	Cartagena, ESP		RT GLO+GAL	Indiv.	27/09/2015	23/05/2014
TARI	Tarifa, ESP	ITRF	RT GLO+GAL	Indiv.	02/08/2015	15/05/2010
BRMF	Bron, FRA		RT GLO+GAL	Type	26/07/2015	25/02/2014
GOP6	Ondrejov, CZE	MGEX	GLO+GAL	Indiv.	05/07/2015	28/02/2012
MATG	Matera, ITA	MGEX	RT GLO+GAL	Type	09/08/2015	01/02/2012
UCAG	Cagliari, ITA		RT GLO+GAL	Type	09/09/2015	16/04/2014
KNJA	Knjazevac, SRB		-	Type	27/09/2015	12/05/2012
NPAZ	Novi Pazar, SRB		GLO	Type	21/06/2015	17/12/2014
SABA	Sabac, SRB		GLO	Type	21/06/2015	17/12/2014
DLF1	Delft, NLD	MGEX	GLO+GAL	Indiv.	27/09/2015	16/04/2011

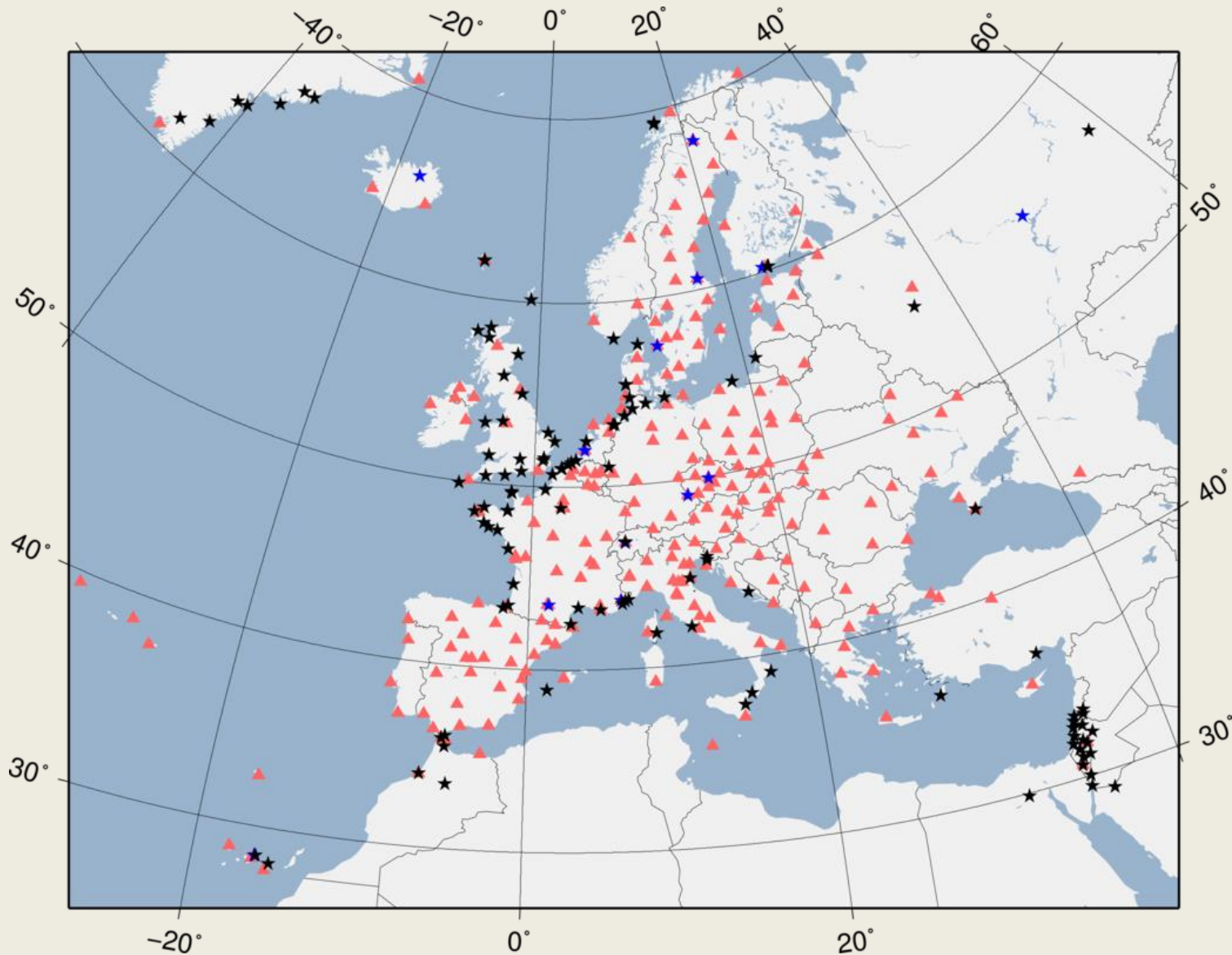
Why add a station to the EPN?

- Provide an added-value to the EPN, according to the objectives of EUREF
 - *ITRF, MGEX, geographical area, co-located instruments,*
- Equipment capable of
 - Tracking GPS, GLONASS and Galileo (or easily upgradeable)
 - Providing third frequency measurements in the RINEX data files
 - Providing real-time data

EPN – ITRF2014 - MGEX



ROYAL
OBSERVATORY
OF BELGIUM



Contacts with station

managers - MGEX/IGS (EPN)

- ✓ DLF1 (DELF)
- ✓ GRAC (GRAS)
- ✓ KIR8 (KIRO/KIRU)
- ✓ ONS1 (ONSA)
- ✓ MAR7 (MAR6)
- ✓ NYA2 (NYA1)
- ✗ GOP7 (GOPE/GOP6)
- MYVA (Völksen)
- LLAG (DLR)
- TLSG (TLSE, CNES - Regina)
- METG (METS, CNES - Regina)
- WTZ2/WTZ3/WTZZ (WTZR)
- ZIM3/ZIMJ (ZIMM/ZIM2)

IGS stations
EPN stations

Contacts with station managers - ITRF2014

- Not all stations are suitable :
 - ✓ decommissioned, long-term commitment problematic,
 - ✓ data flow irregular and slow,
 - ✓ 'low quality' (L2, visibility,...)
- Station selection negotiated with concerned agencies
 - ✓ Netherlands (VLIS, IJMU, KOS1),
 - ✓ UK (ADAR, ARIS, CHIO, EDIN, LERI, PMTH, SCIL, SHOE, SNEO, SWAS)
 - ✓ Spain (BCLN, IBIZ, CARG, TARI)
 - ✓ Ongoing for Denmark, Italy, Iceland
 - ✓ +

Proposed EPN Stations

4-ch ID	Location	MGEX ITRF	Capabilities	Calib	Hist. DC	Twin
GRAC	Grasse, FRA	MGEX	RT GLO+GAL	Type	07/02/2012	GRAS
CAG1	Cagliary, ITA	(CAGL)	RT GLO+GAL	Type	23/05/2014	
VLIS	Vlissingen, NLD	ITRF	RT GLO+GAL	Indiv.	15/05/2010	
KOS1	Kootwijk, NLD	(KOSG)	RT GLO+GAL	Indiv.	25/02/2014	
IJMU	Ijmuiden, NLD	ITRF	RT GLO+GAL	Indiv.	28/02/2012	
NYA2	Ny Alesund, NOR	MGEX	RT GLO+GAL	Indiv.		NYA1
PASA	Pasaia, ESP	ITRF	RT GLO+GAL	Indiv.	01/02/2012	
IBIZ	Ibiza, ESP	ITRF	RT	Type	16/04/2014	
PLAN	Palleja, ESP		RT GLO+GAL	Type	12/05/2012	
ONS1	Onsala, SWE	MGEX	RT GLO+GAL	Indiv.	17/12/2014	ONSA
MAR7	Gävle, SWE	MGEX	RT GLO+GAL	Indiv.	17/12/2014	MAR6
KIR8	Kiruna, SWE	MGEX	RT GLO+GAL	Indiv.	16/04/2011	KIR0

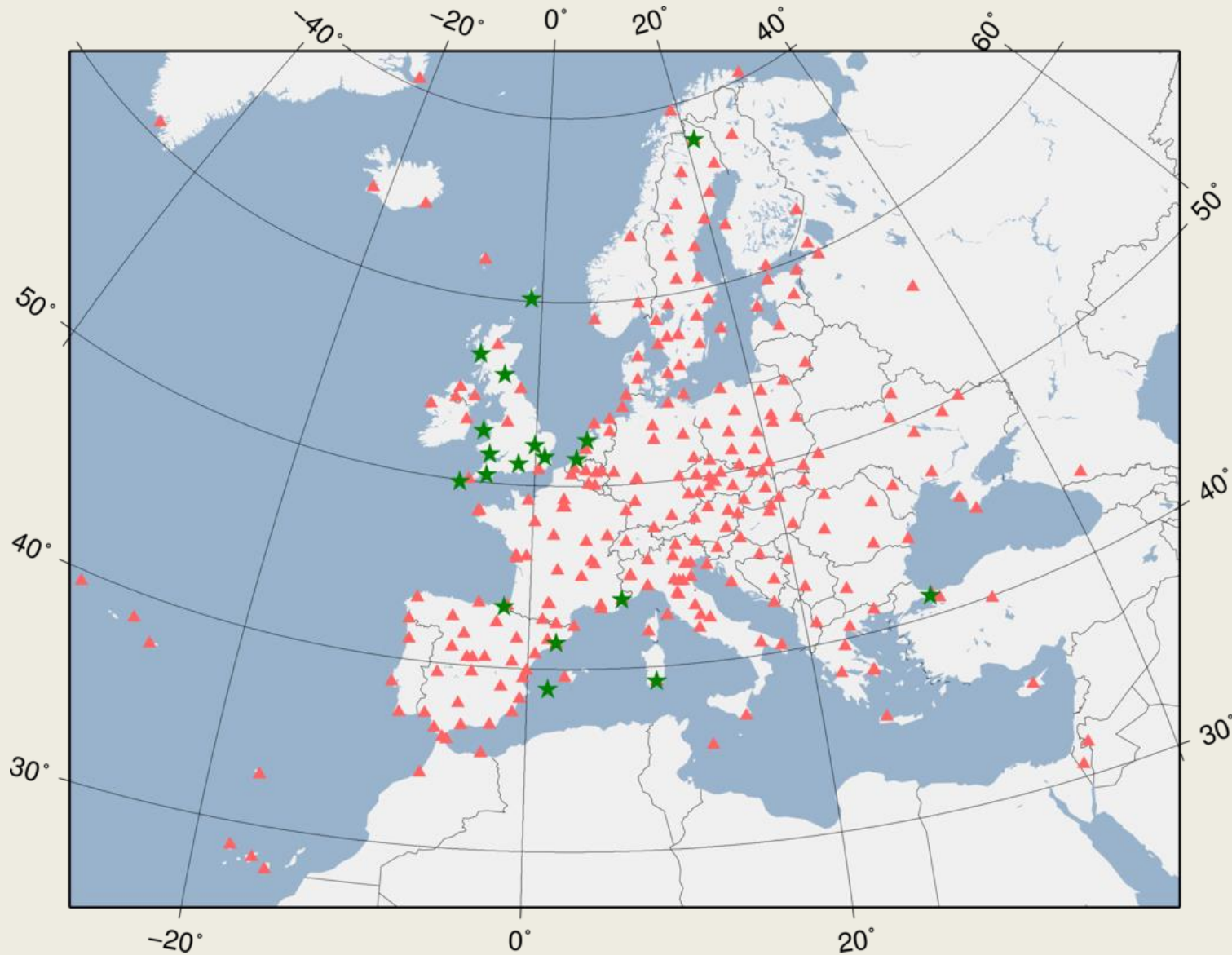
Proposed EPN Stations

4-ch ID	Location	MGEX ITRF	Capabilities	Calib	Hist. DC
YLDZ	Istanbul, TUR		GLO+GAL	Type	07/02/2012
ADAR	Aberdaron, GBR		GLO+GAL	Indiv.	04/03/2009
ARIS	Arisaig, GBR		GLO+GAL	Indiv.	02/06/2009
CHIO	Chilbolton, GBR		GLO+GAL	Indiv.	30/06/2009
EDIN	Edinburgh, GBR	ITRF	GLO+GAL	Type	16/03/2000
LERI	Lerwick, GBR		GLO+GAL	Indiv.	16/06/2009
PMTH	Plymouth, GBR	ITRF	GLO+GAL	Type	13/02/2004
SHOE	Shoeburyness, GBR	ITRF	GLO+GAL	Type	29/07/2005
SCIL	Scilly Isles, GBR	ITRF	GLO+GAL	Type	18/08/2010
SNEO	St. Neots, GBR		GLO+GAL	Indiv.	17/03/2009
SWAS	Swansea, GBR	ITRF	GLO+GAL	Indiv.	14/08/2014

Proposed EPN Stations



ROYAL
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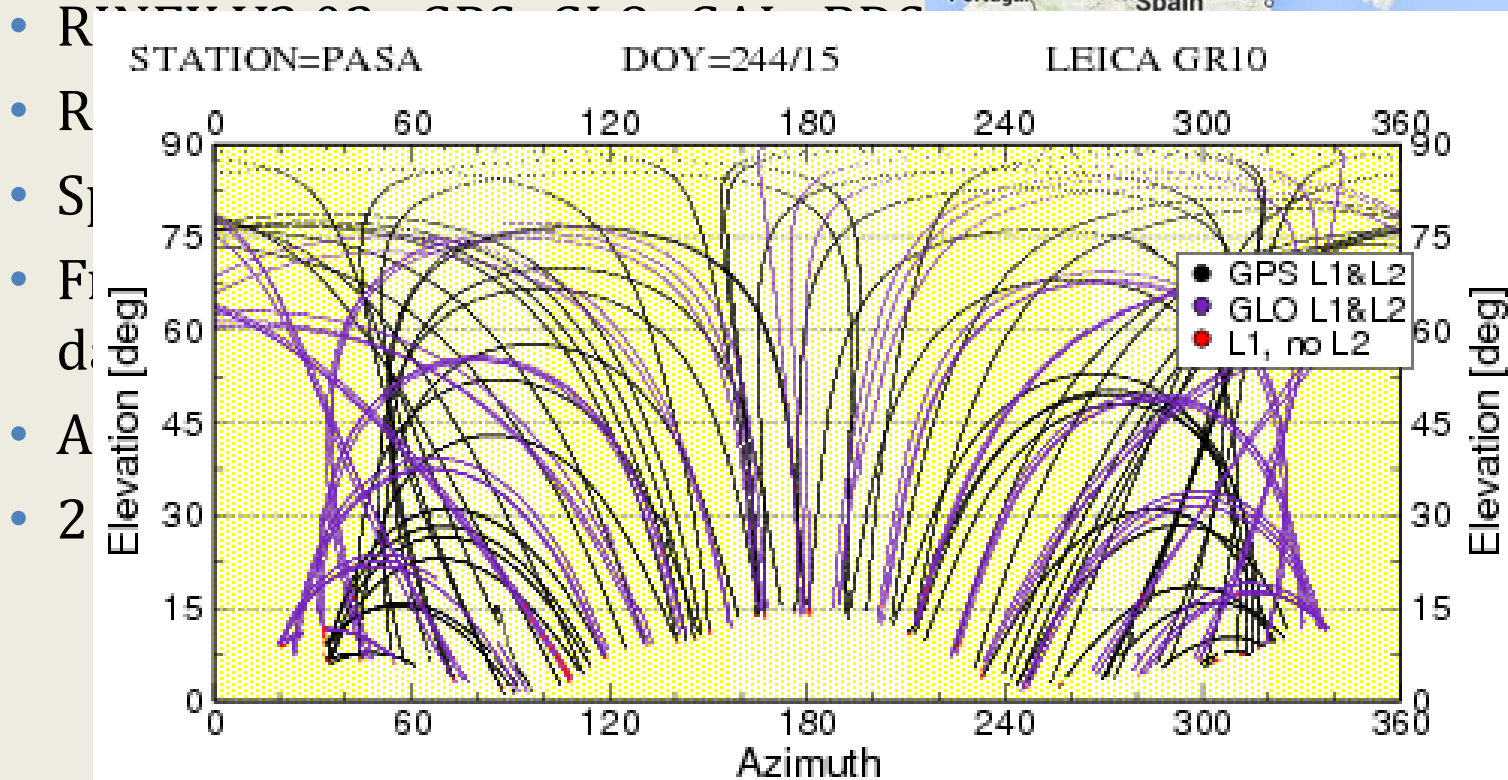
To be discussed

4-ch ID	Location	MGEX ITRF	Capabilities		Calib	Hist. DC
PASA	Pasaia, ESP	ITRF	RT	GLO+GAL	Indiv.	01/02/2012
PLAN	Palleja, ESP		RT	GLO+GAL	Type	12/05/2012



- Included in ITRF2014
- A tide gauge is 15 m away
- RINEX V3.02 : GPS+GLO+GAL+BDS+SBAS
- Real-time data
- Spanish Leveling Network is some 300 m away
- France is only 20 km away (important to link both vertical datums: Spanish and French).
- 2 receivers to avoid data loss

PASA



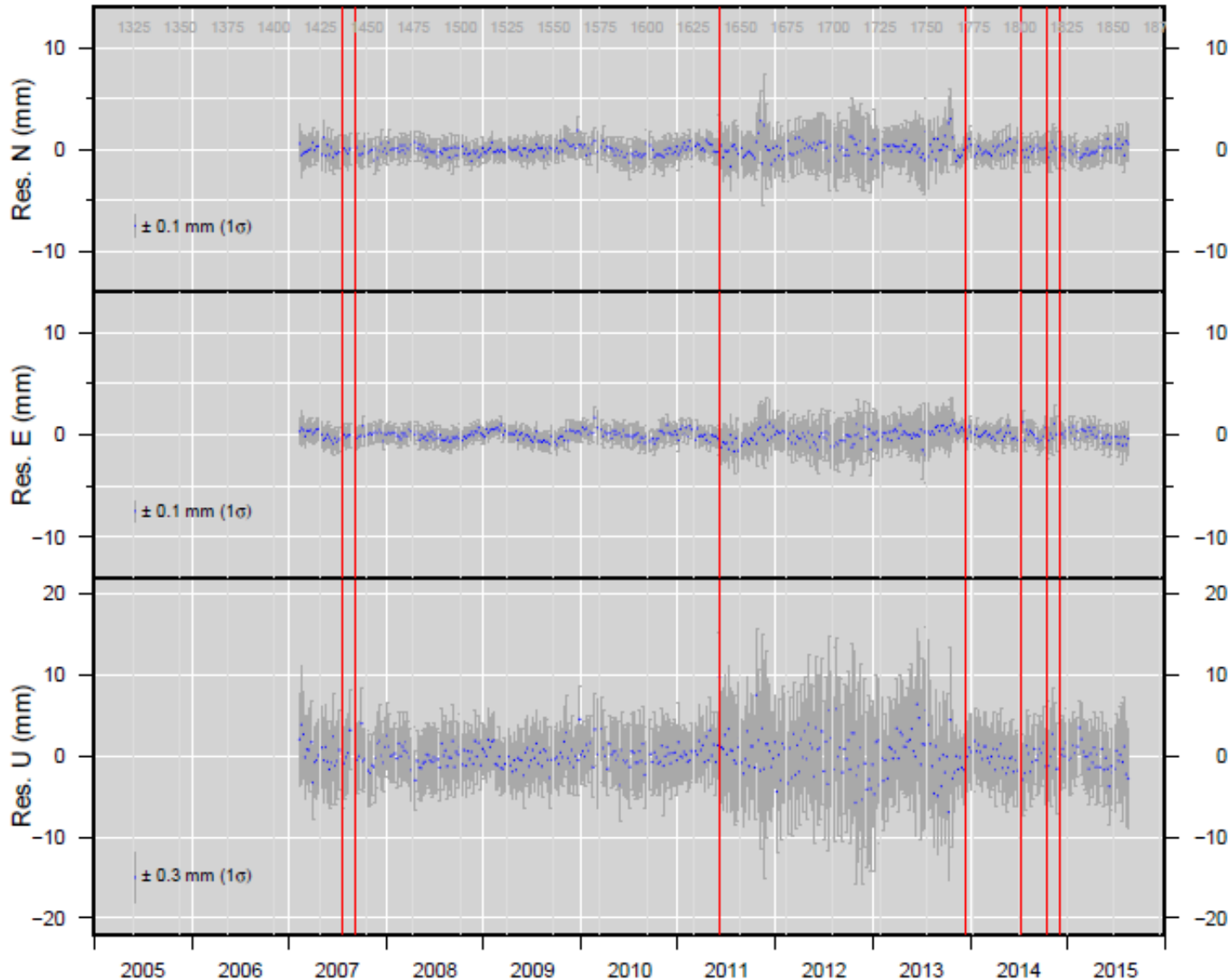
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EPN Guidelines: “*Obstruction should be minimal above 5 degrees elevation, but satellite visibility at lower elevations is encouraged whenever possible*”



PASA 19351S001 (2007-02-11 -> 2015-08-16)

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PLAN CASE AVAL



The Cartographic and Geological Institute of Catalunya (ICGC) proposes three new EPN stations (CATNET):

PLAN (1999): GPS+GLO+GAL → added to “proposed list”

CASE (2005) , **AVAL** (1999): GPS+GLO → put on hold until Galileo data available (expected end 2015)

- ✓ All included in EPN densification project
- ✓ Concrete Pillar (geodynamics stations)
- ✓ Co-located with seismic station
- ✓ Real-time

Very good stations! But in area where already a lot of stations...

PLAN



Station manager

“We have realized that the rinex v3 file with PLAN observations has L2W and L2X observations, the first with a smaller SNR than the second one.

Until now, when we recovered data from the receiver to generate the rinex v2 file, the L2 observations were taken from L2W (which have bad SNR values at low elevations).

But, taking L2X data, the quality of L2 is improved. “