



MINISTERIO
DE FOMENTO

DIRECCIÓN GENERAL
DEL INSTITUTO
GEOGRÁFICO NACIONAL

Instituto Geográfico Nacional (Spain)

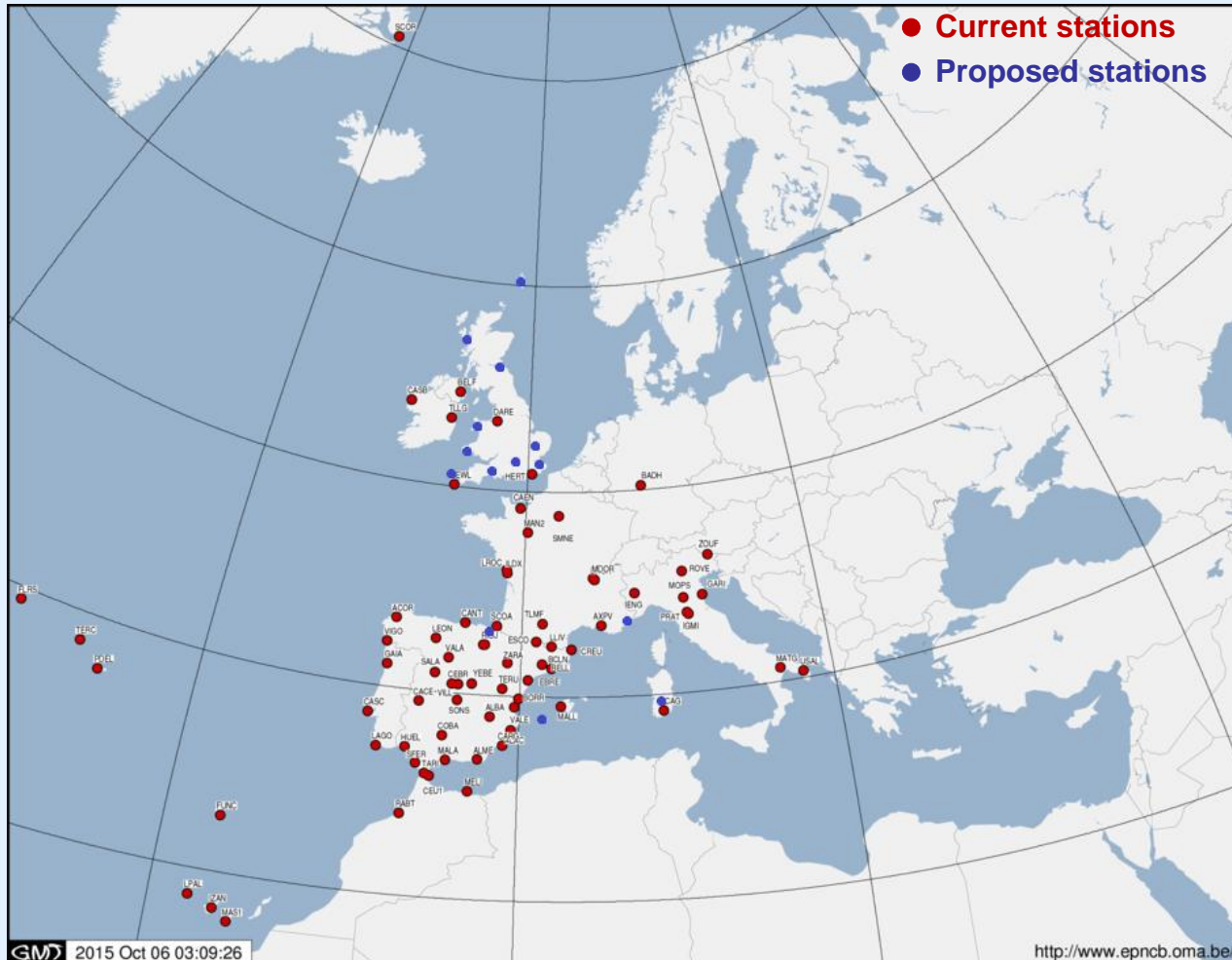
IGE EUREF LAC Report 2015

Instituto Geográfico Nacional

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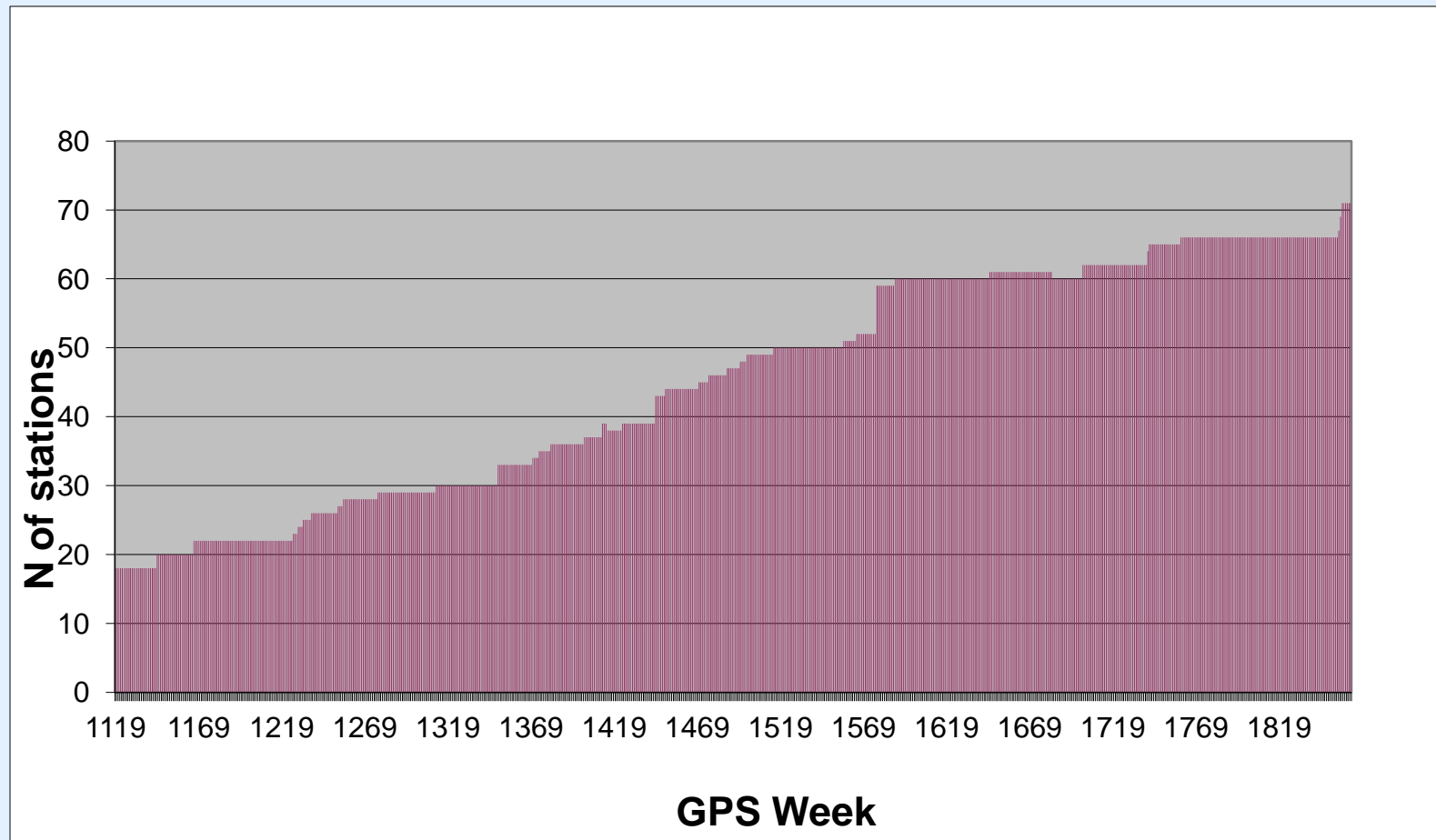
Current sub-network processed



- BSW 5.2.
- 71 GNSS stations + 14 proposed.
- 26 IGN stations.
- 53 GPS + GLONASS.
- 12 individual calibration.



Number of processed stations per GPS week

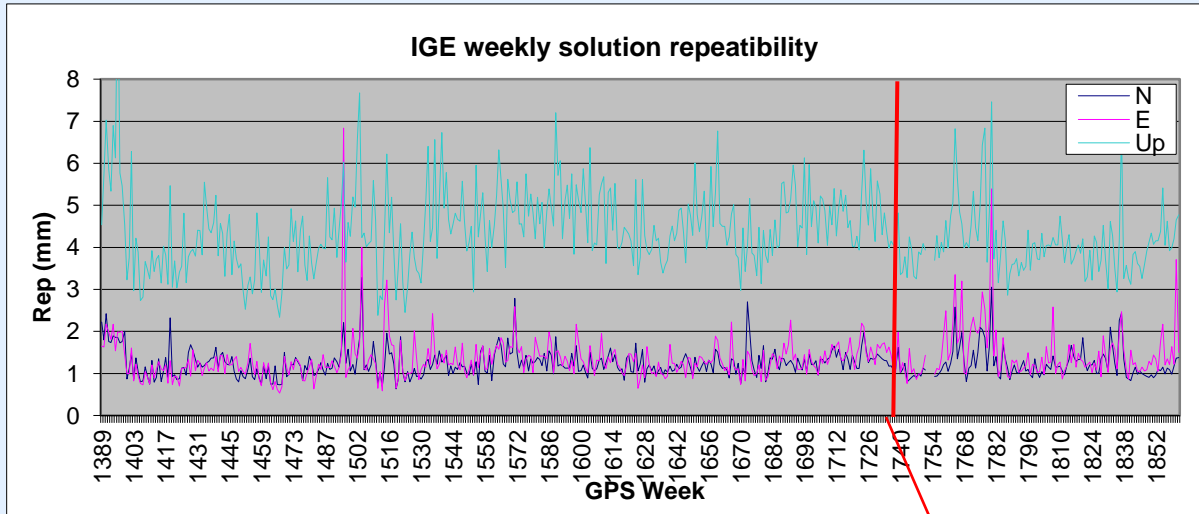


Processing options:

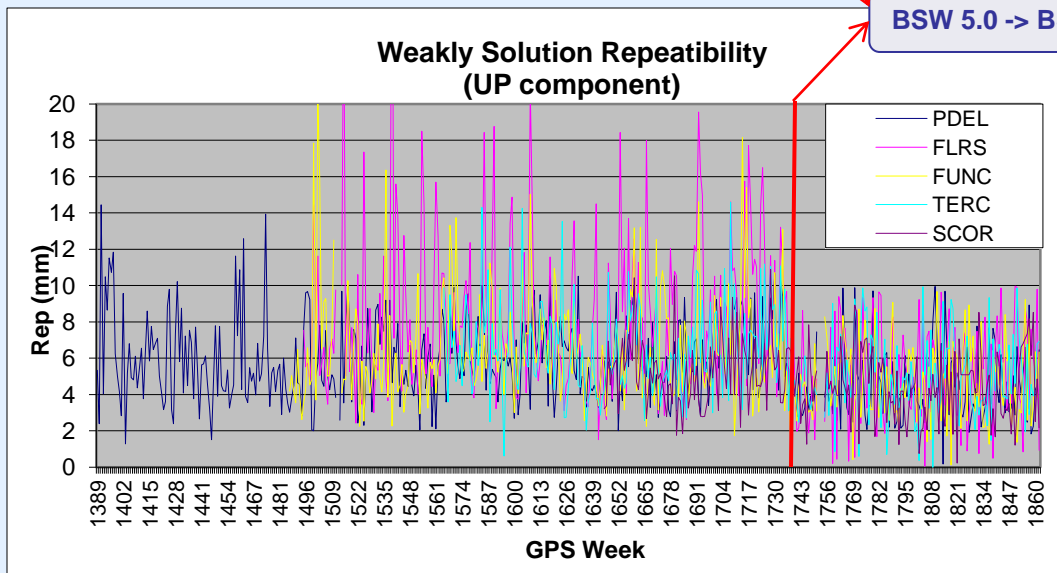
- Bernese 5.2 (GPS+GLONASS) since Sept. 2013.
- Submitting daily and weekly solutions.
- Orbits: IGS final orbits + ERP.
- Abs. PCV + individual calibrations.
- Troposphere: GMF 1h (priori) + horizontal gradient parameters.
- Ionosphere: regional model for QIF AR / not modelled in final solution.
- Amb. fixing: Advanced ambiguity resolution (AR) scheme.
- Elevation cutoff: $3^\circ + \cos z$ weighting.
- Ref. frame fixing: IGB08, minimal constraint 22 core stations used for the EUREF final solution (3-translation Helmert).
- FES2004 ocean loading model + ATL.



Final solution



BSW 5.0 → BSW 5.2



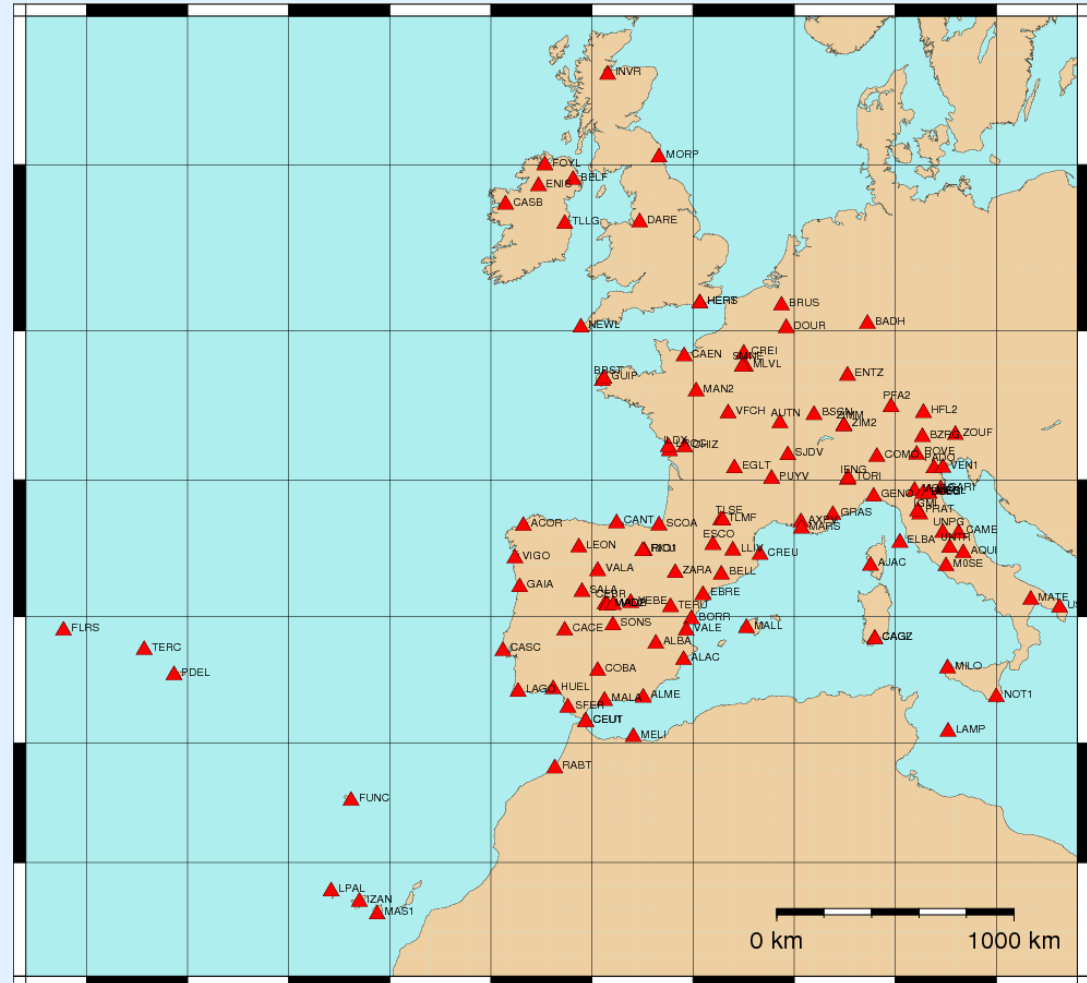
- Mean repeatability:
 - 1.2 – 1.4 mm (N – E)
 - 4.3 mm (Up)
- Mean BL length: 364 km.

- Mean rep. PDEL, FLRS, FUNC, TERC, SCOR:
 - 1.5 – 4 mm (N – E)
 - 4.7 – 7.3 mm (Up)
- Usual BL lengths example:
 - LPAL-PDEL: 1228 km.
 - IZAN-MALA: 1466 km.
 - BELF-SCOR: 1933 km

Contribution to Repro-2

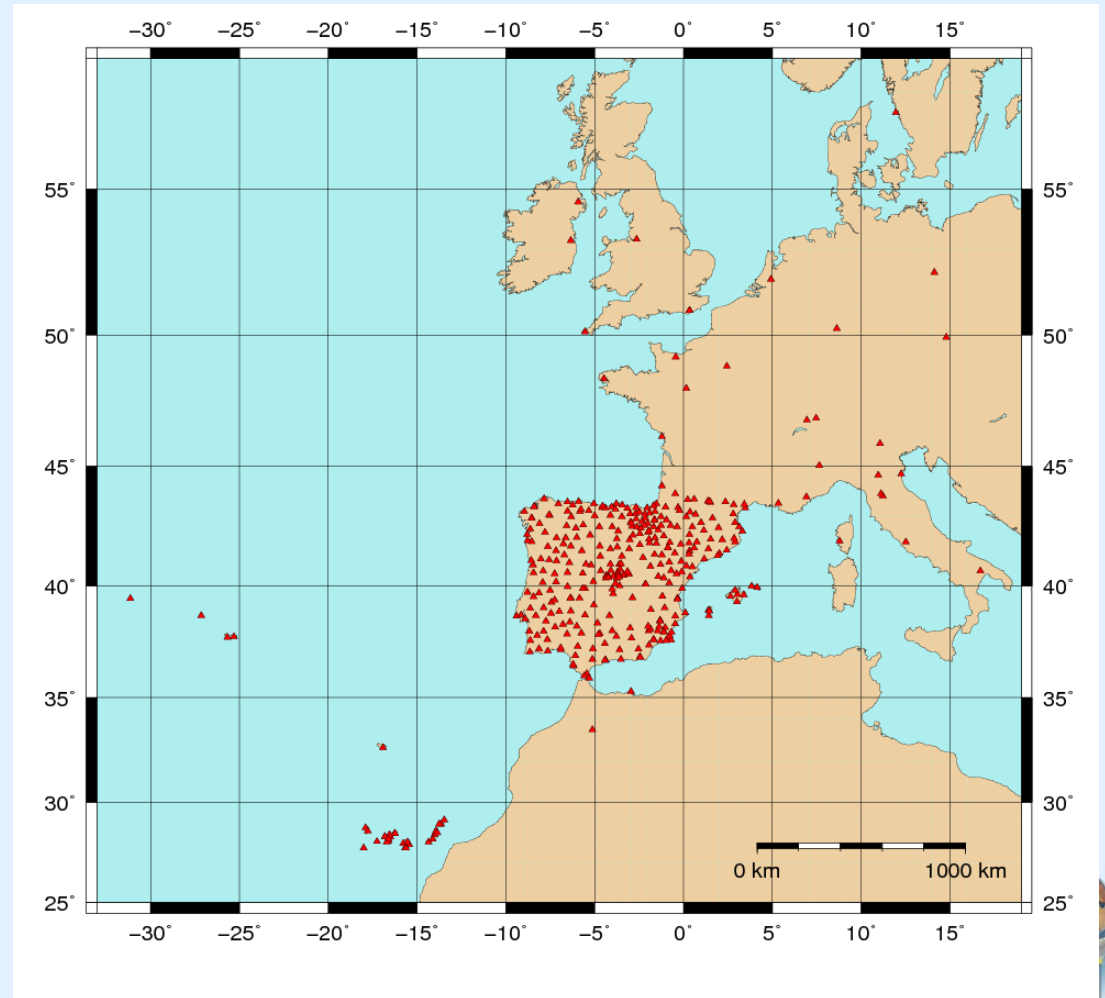
Main characteristics:

- BSW5.2.
- GPS + GLONASS.
- GMF 1 h + gradients 6h.
- Ionosphere: CODE HOI.
- Antennas: absolute + individual calibration.
- CODE R2 orbits.
- All EPN stations (125) in PT, SP, GB, IR, IT, FR.
- Period: 1996 – 2014.
- Products: Daily SNX, TRO, CRD.



Other IGE Analysis Centre projects (I): IBERRRED

- ~ 350 stations.
 - Coordinates.
 - Time series.
- Weekly processing.
- Almost the same strategy as EPN LAC.
 - Clustering.
 - Double differences.
 - Final IGS products.
- Solutions sent to the EUREF Densification project until WK 1840.

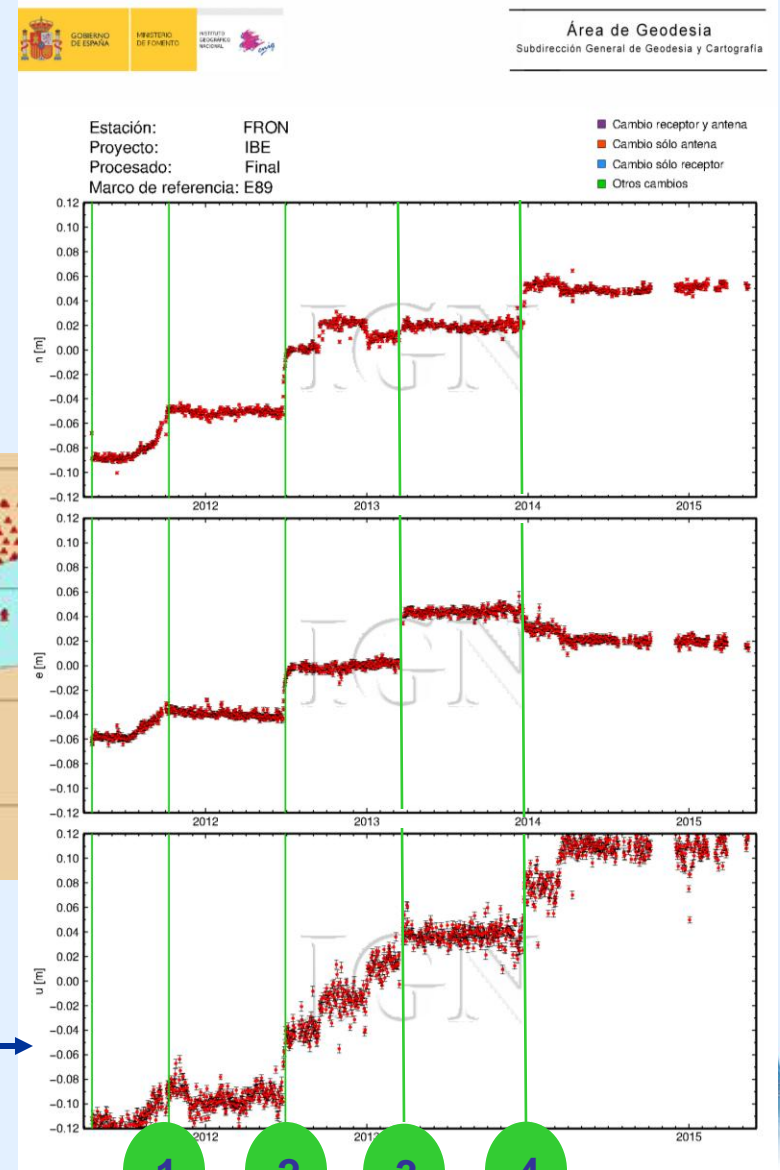


IBERRED Time series

- Time serie detects the geodynamical activity in Hierro Island.
- 1 -> volcanic event on October 2011.
- 2 -> underwater eruption on May 2012.
- 3 y 4 -> Several seismic events close to FRON.



Frontera,
Canary Islands

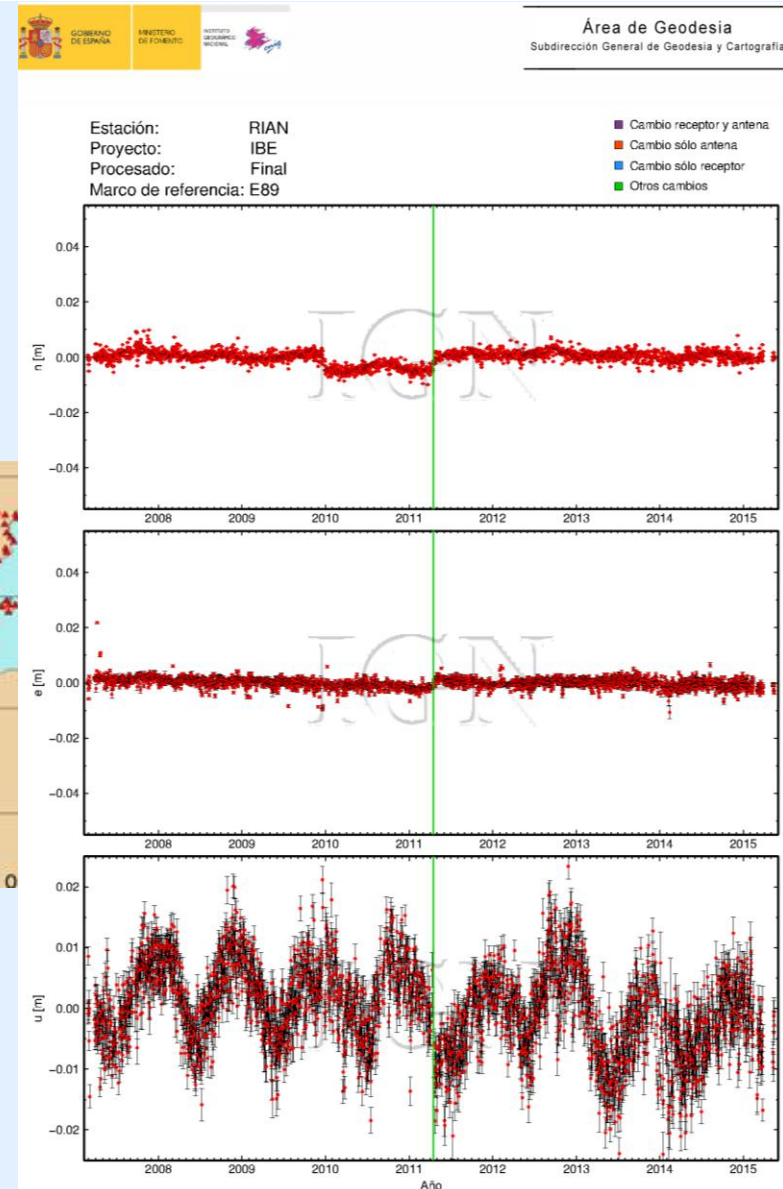


IBERRED Time series

- Time serie shows the periodical height oscillation in RIAN due to the water cycle in a near dam.
- Highest values -> minimum water level (less pressure on the surface).
- Minimum values -> maximum water level (highest pressure sinks closest areas).

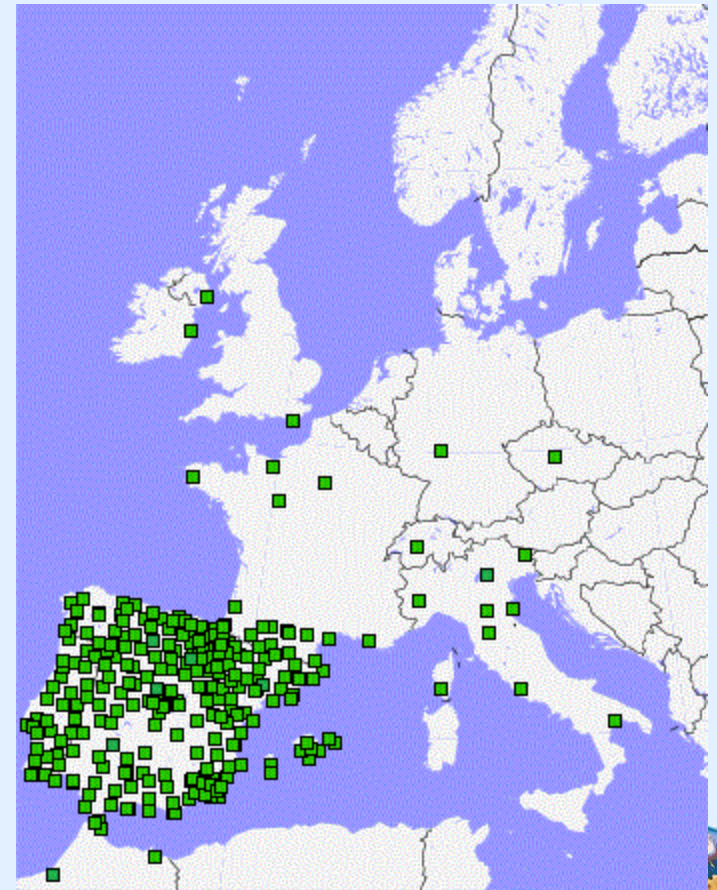


Riaño,
León.



Other IGE Analysis Centre projects (II): E-GVAP

- ZTDs from 350 stations.
- Hourly NRT process (using coordinates from the IBERRED processing).
 - Objective → ZTD
 - Double differences.
 - Ultra rapid CODE orbits.
 - Finally → last 6 hours combined.





.Many thanks !

**Instituto Geográfico Nacional
Spain**