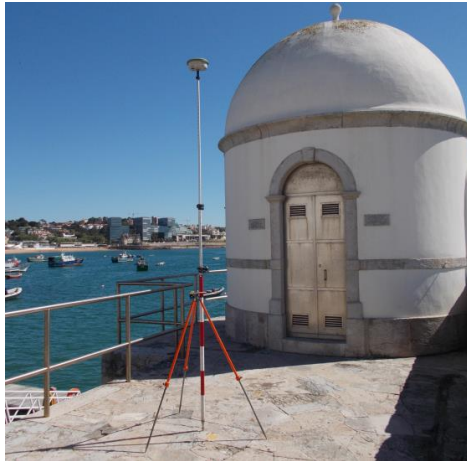


National Report of PORTUGAL



Department of Geodesy

[Helena Ribeiro](#)

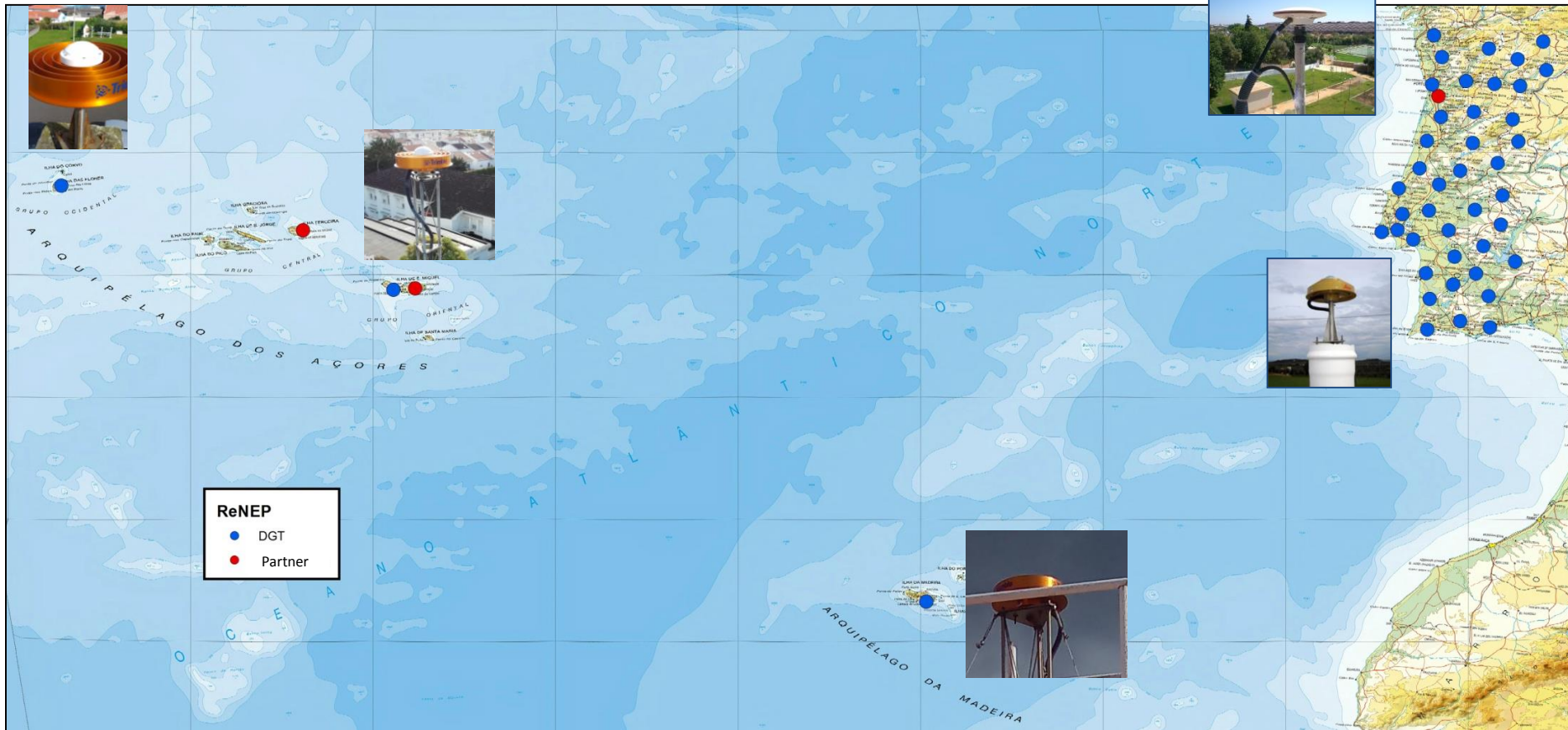
[\(hribeiro@dgterritorio.pt\)](mailto:hribeiro@dgterritorio.pt)

A. Bernardes

A. Medeiro



ReNEP – Portuguese CORS Network



ReNEP – Portuguese CORS Network



47 Stations:

- 42 mainland
- 4 in Azores
- 1 in Madeira

➤ GPS & GLONASS

➤ 16 Galileo

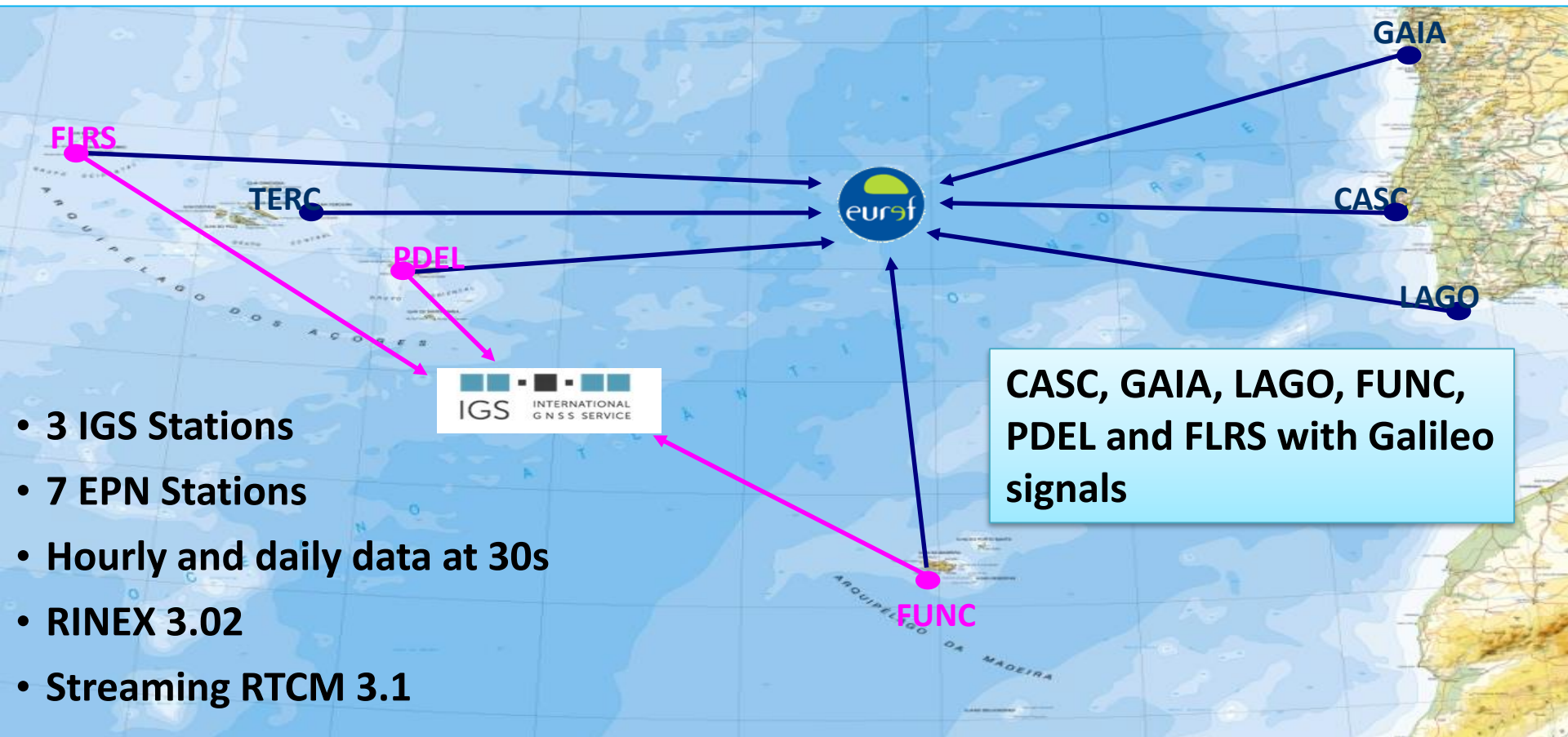


- RTK Network Coverage
- Continuous Streaming
- RTCM (Radio Technical Commission for Maritime Services) over NTRIP
- Hourly RINEX files at 5 seconds rate

• Coordinate Systems:

- Mainland: ETRF97 at epoch 1995.4
- Islands: ITRF93 at epoch 1994.0

ReNEP and Internacional Networks



FLRS

TERC

PDEL



GAIA

CASC

LAGO

FUNC

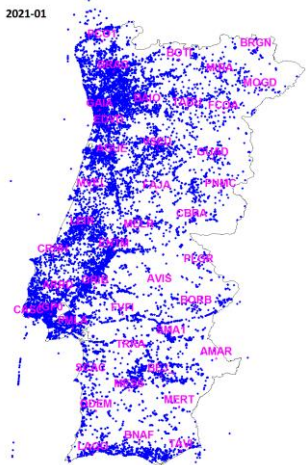


CASC, GAIA, LAGO, FUNC, PDEL and FLRS with Galileo signals

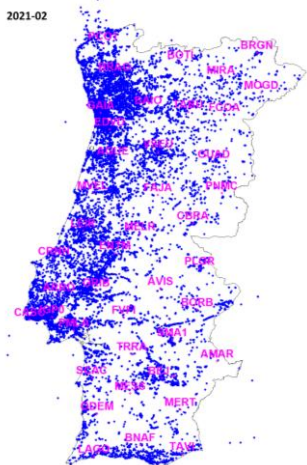
- 3 IGS Stations
- 7 EPN Stations
- Hourly and daily data at 30s
- RINEX 3.02
- Streaming RTCM 3.1

RTK Users - 2021

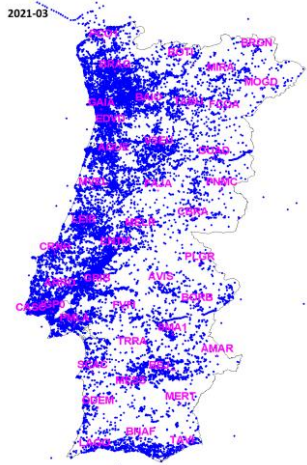
2021-01



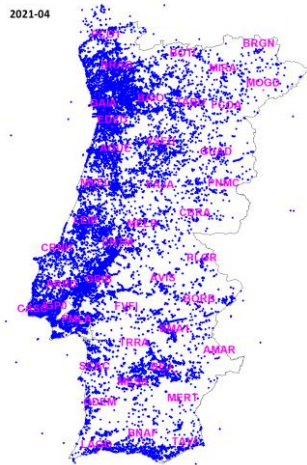
2021-02



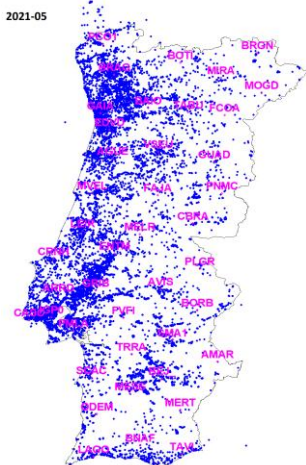
2021-03



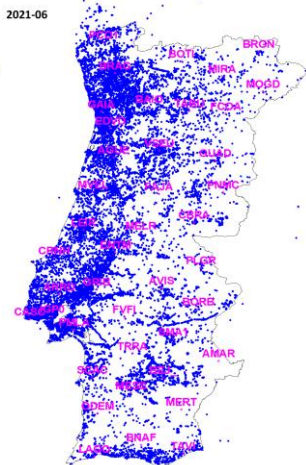
2021-04



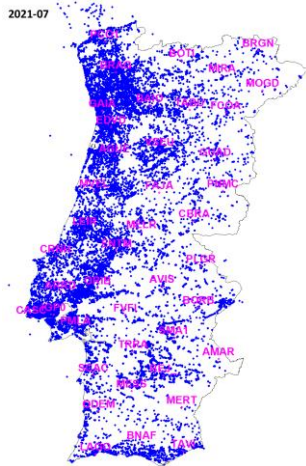
2021-05



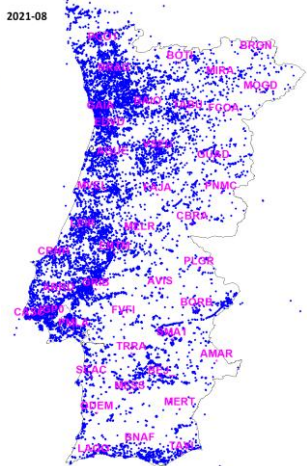
2021-06



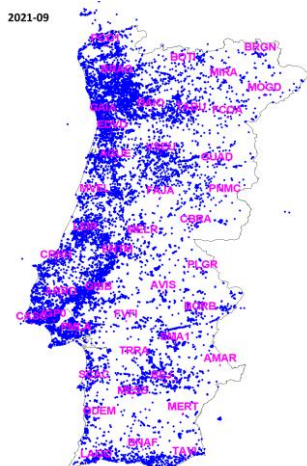
2021-07



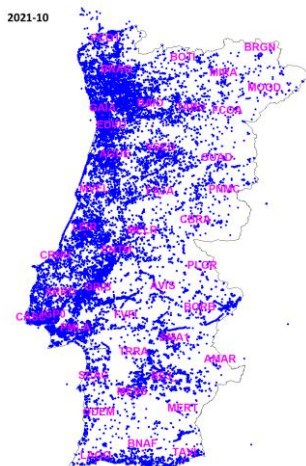
2021-08



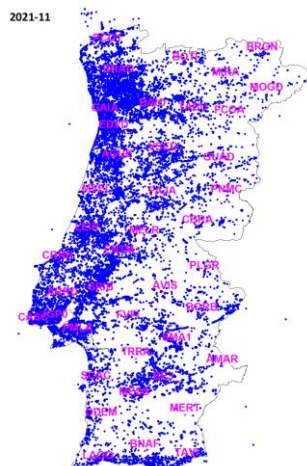
2021-09



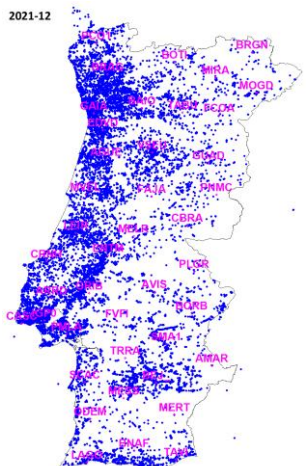
2021-10



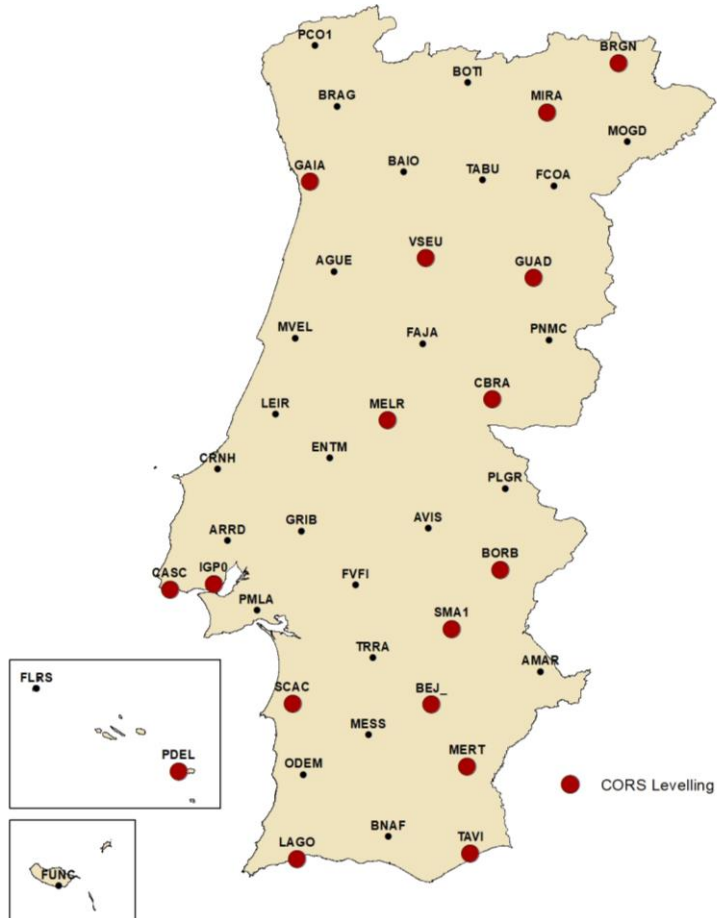
2021-11



2021-12

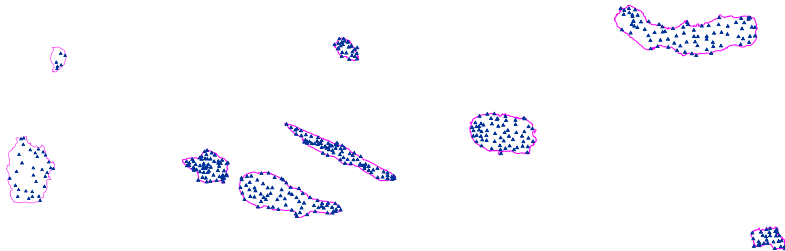


ReNEP Levelling

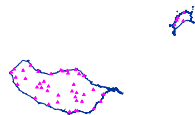


- EP levelling 2021: VSEU, SMA1, GUAD

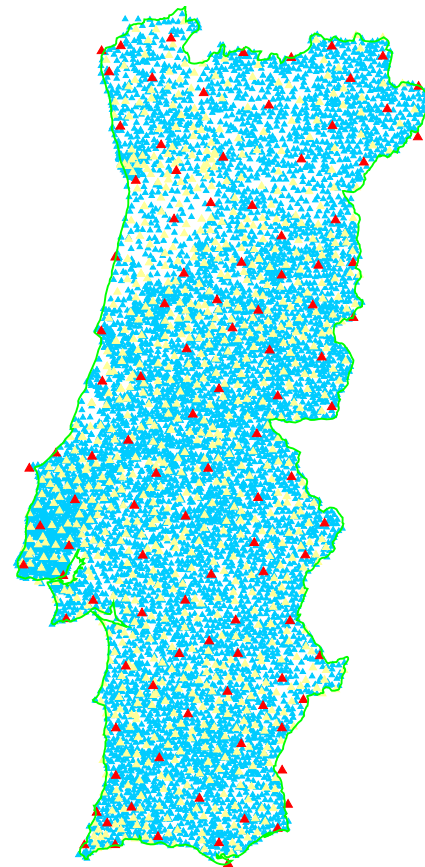
Geodetic Network



R. A. Açores: 523 VG



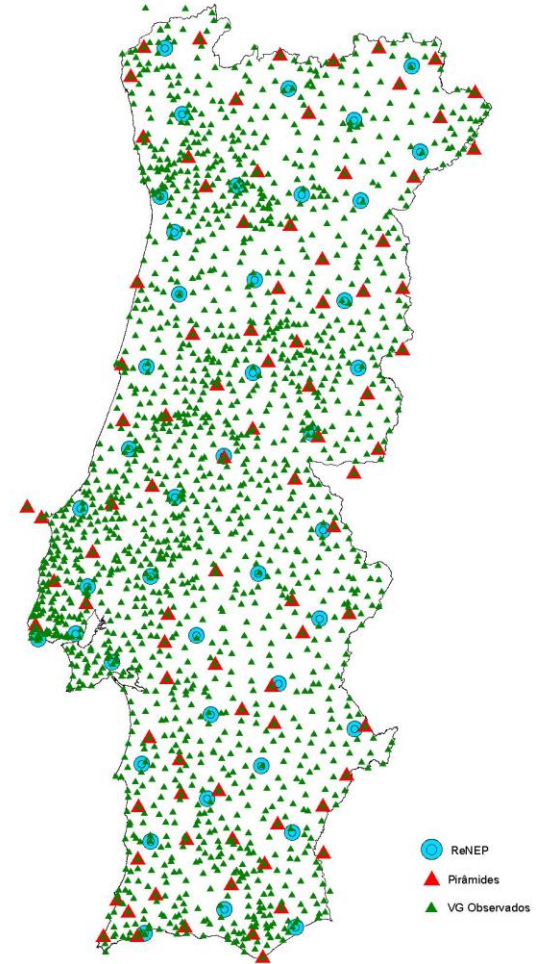
R. A. Madeira: 118 VG



Mainland: 7963 VG

Redefinition of the Geodetic Network for Mainland: RGN2021

- CORS Network- ReNEP: **42** Points
- Geodetic Network in the Mainland: **1522** trig points
(19% of the geodetic marks)



Total: 42 EP + 1522 VG

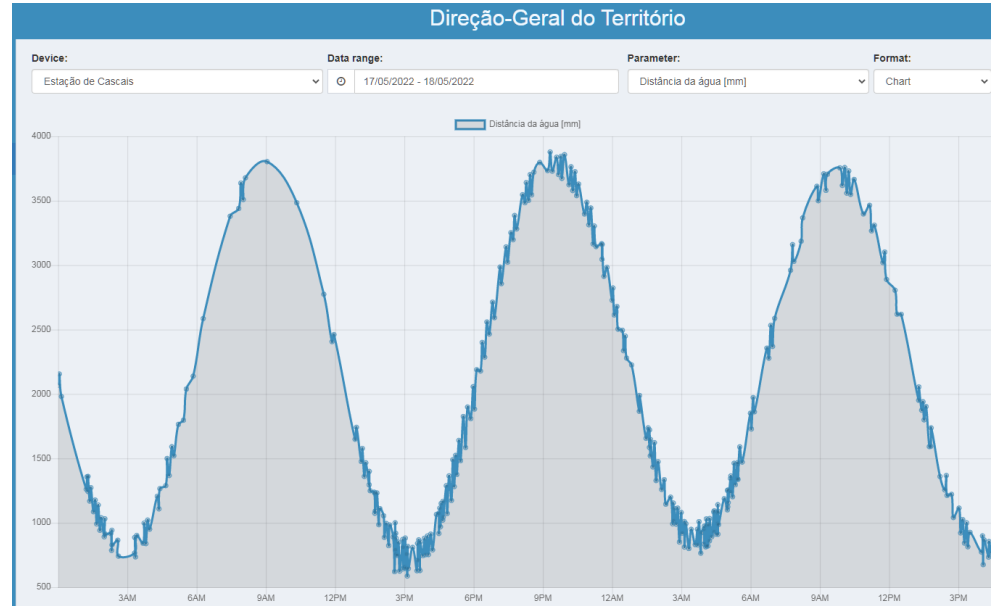
Maintenance of the Tide Gauges: Cascais e Lagos

- RADAR technology for water leveling sensors
- Real-time data logging and uploading data to DGT servers and other users
- Sensors for measuring water temperature, air temperature and pressure

Radar sensor



Datalogger

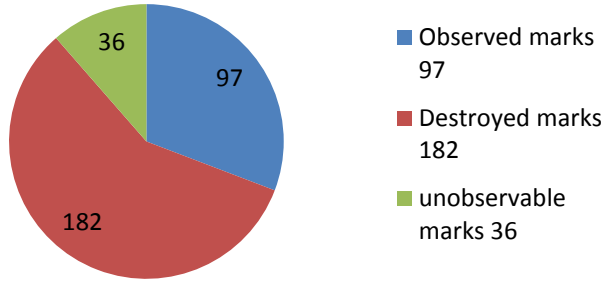


Levelling Network

Recognition and coordination of levelling marks



Levelling marks: line 0300



From Cascais Tide Gauge to Albergaria-a-Velha: 03-00 line (315 marks)

Azores Islands: Regional Directorate for Territory Planning and Water Resources

Division of Geodesy, Cartography and Cadaster

- REPRAA: Azores CORS
 - PDEL e FLRS (DGT – EPN and IGS)
 - FRNS and VFDC (S. Miguel)
 - RAEG (EPN) and AZSM (St. Maria)
 - TERC (Terceira - EPN)
 - AZGR (Graciosa)
 - HORT (Faial)
 - AZTP and PIED (Pico)
 - QEMD and TOPO (S. Jorge Island – New station)
- Recognition and status of the geodetic network of Azores Island.
- Recognition and status of the levelling benchmarks in S. Miguel. Beginning of leveling field work to conclude a close leveling line in S. Miguel



TOPO – S. Jorge

Madeira Island: Regional Directorate for Territory Planning

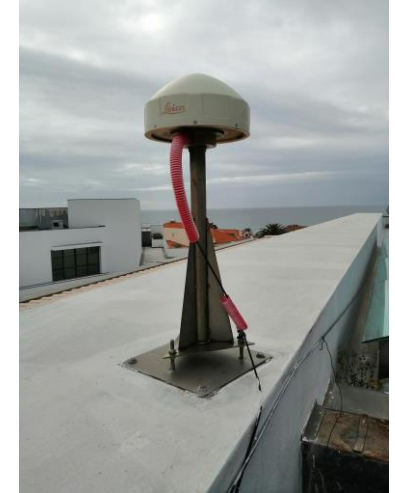
- REPGRAM: Madeira CORS
 - FUNCHAL (DGT – EPN)
 - SANTANA (EPN proposed)
 - PORTO SANTO (EPN proposed)
 - PAÚL da SERRA
- Recognition and status of the geodetic network of Porto Santo Island.



**Porto Santo
Geodetic Pillar**



SANTANA



Porto Santo

EUREF Web Page

<http://www.euref.eu>



The screenshot shows the EUREF website interface. At the top, there is a green header with the EUREF logo on the left and logos for IUGG and IAG-AIG on the right. Below the header is a navigation bar with links for Home, Site Map, Data Protection, Legal & Privacy, and Contacts. The main content area is divided into a left sidebar with a menu and a main content area. The menu items are: About EUREF, Governing Board (formerly TWG), European Geodetic Reference Systems, EUREF Permanent Network, Products & Services, Symposia, Documentation & Guidelines, Links, and News. The main content area features a map of Europe in the background and a section titled "IAG Statement on Ukraine". The statement text reads: "EUREF's parent organization IAG has published a statement on Ukraine, see below, (Also on the IAG web page: <https://www.iag-aig.org/topic/324>) IAG Executive Committee, 2022-03-03, 'The International Association of Geodesy and its services strongly condemn the unprovoked and premeditated Russian invasion of Ukraine. We are deeply troubled by the loss of life and hundreds of thousands of civilians becoming refugees, and are very concerned about the safety and well-being of our scientific colleagues in Ukraine. We strongly request that the responsible people stop the military actions immediately. For the past 150 years, the International Association of Geodesy has been an enduring and politically neutral forum for dialogue and collaboration for geodetic scientists and engineers around the world, through its various research bodies and technical services. IAG aligns with the recent statement of the International Science Council, which 'warns against the severe outcomes that conflict will have on the research and academic community. Our capacity to work collaboratively on global challenges, and on cutting edge research such as Arctic and space research' is only equal to our capacity to maintain strong collaboration amidst". Below the statement, it says "Updated 2022.03.04". At the bottom of the page, there is a Google search bar, a footer with the text "This page is hosted by Direção-Geral do Território", and an email address "EurefMaster@dgterritorio.pt".

About EUREF

Governing Board (formerly TWG)

European Geodetic Reference Systems

EUREF Permanent Network

Products & Services

Symposia

Documentation & Guidelines

Links

News

IAG Statement on Ukraine

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"The International Association of Geodesy and its services strongly condemn the unprovoked and premeditated Russian invasion of Ukraine. We are deeply troubled by the loss of life and hundreds of thousands of civilians becoming refugees, and are very concerned about the safety and well-being of our scientific colleagues in Ukraine. We strongly request that the responsible people stop the military actions immediately. For the past 150 years, the International Association of Geodesy has been an enduring and politically neutral forum for dialogue and collaboration for geodetic scientists and engineers around the world, through its various research bodies and technical services. IAG aligns with the recent statement of the International Science Council, which "warns against the severe outcomes that conflict will have on the research and academic community. Our capacity to work collaboratively on global challenges, and on cutting edge research such as Arctic and space research" is only equal to our capacity to maintain strong collaboration amidst

Updated 2022.03.04

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