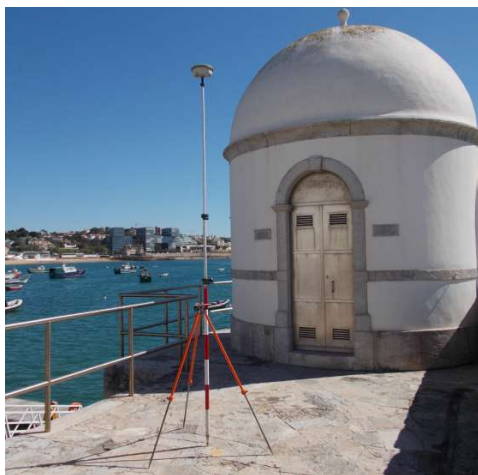


National Report of PORTUGAL



Department of Geodesy

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

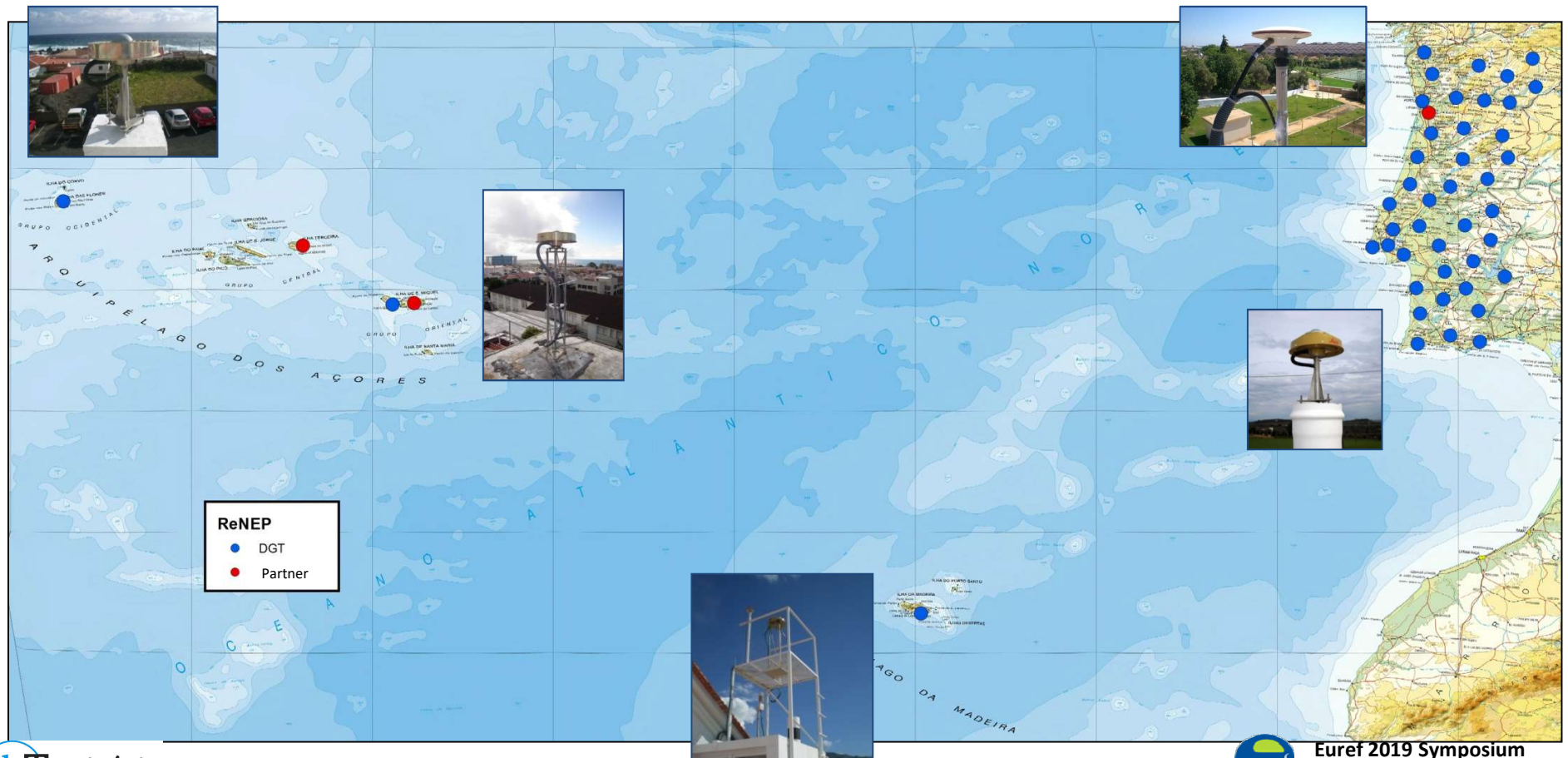
A. Bernardes

A. Medeiro

M. Vasconcelos



ReNEP – Portuguese CORS Network



ReNEP – Portuguese CORS Network



47 Stations :

- 42 mainland
- 4 in Azores
- 1 in Madeira

➤ GPS & GLONASS

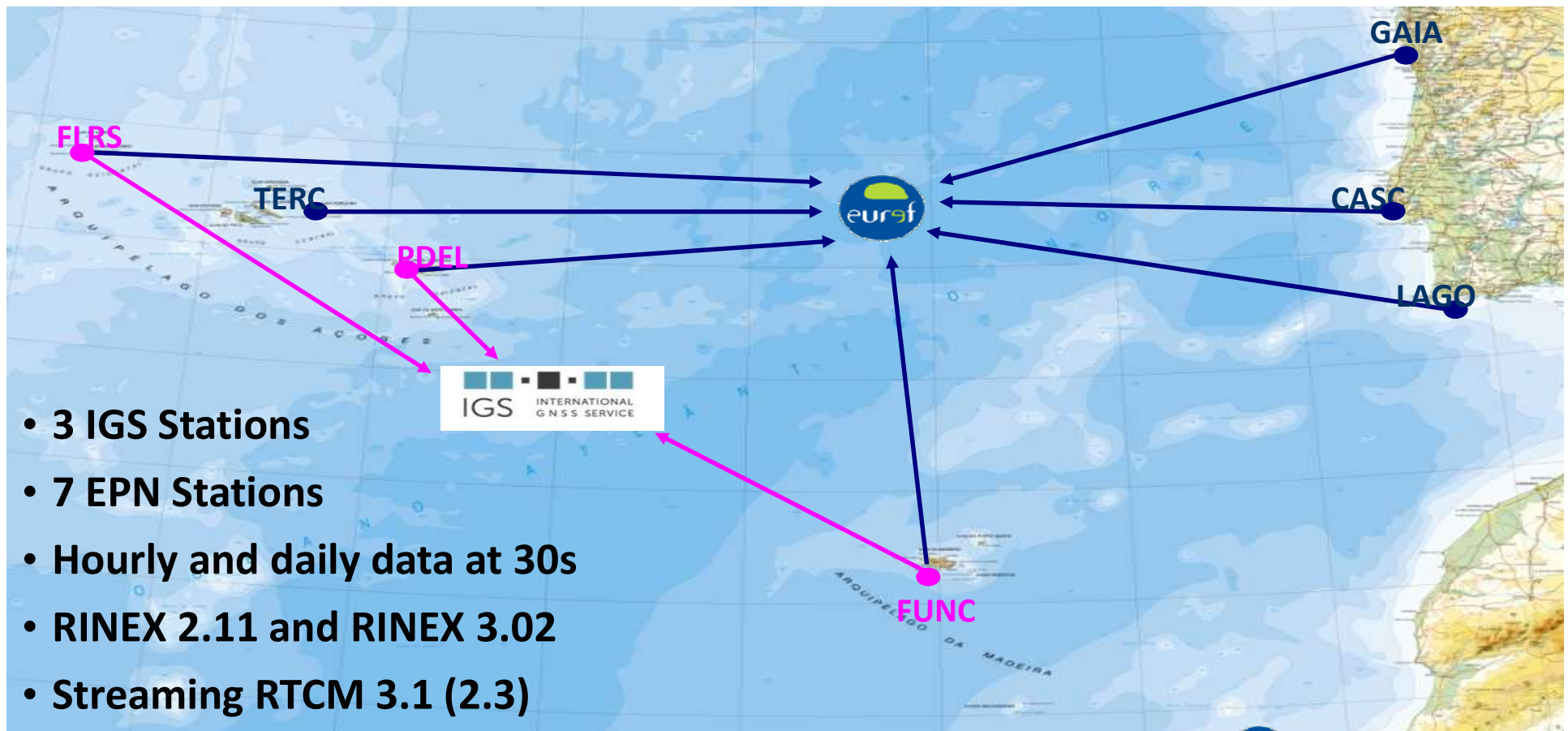


- RTK Network Coverage
- Continuous Streaming
- RTCM (Radio Technical Commission for Maritime Services) over NTRIP (Networked Transport of RTCM via Internet Protocol)
- Hourly RINEX files at 5 seconds rate

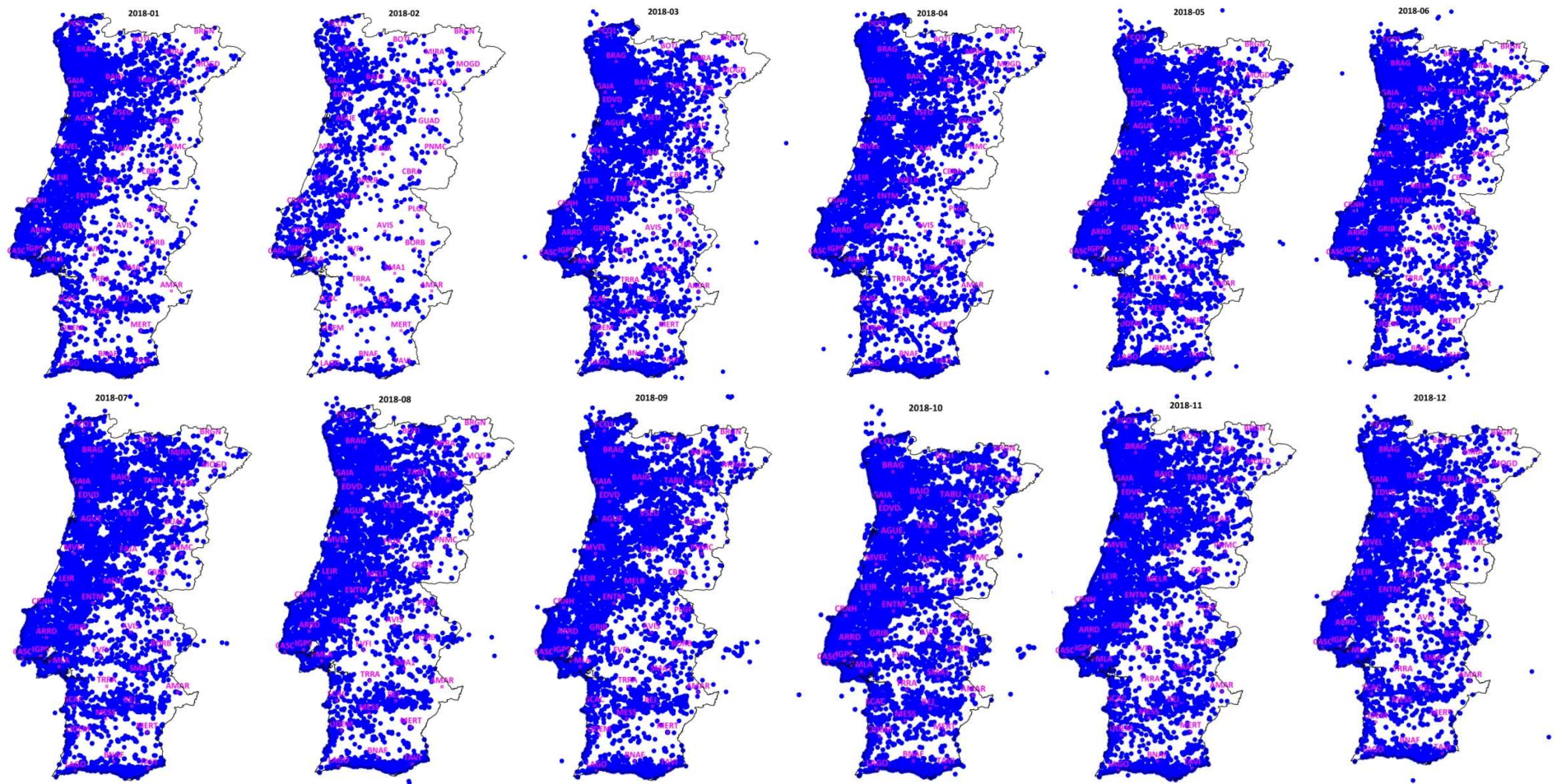
- **Coordinate Systems:**

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

ReNEP and Internacional Networks



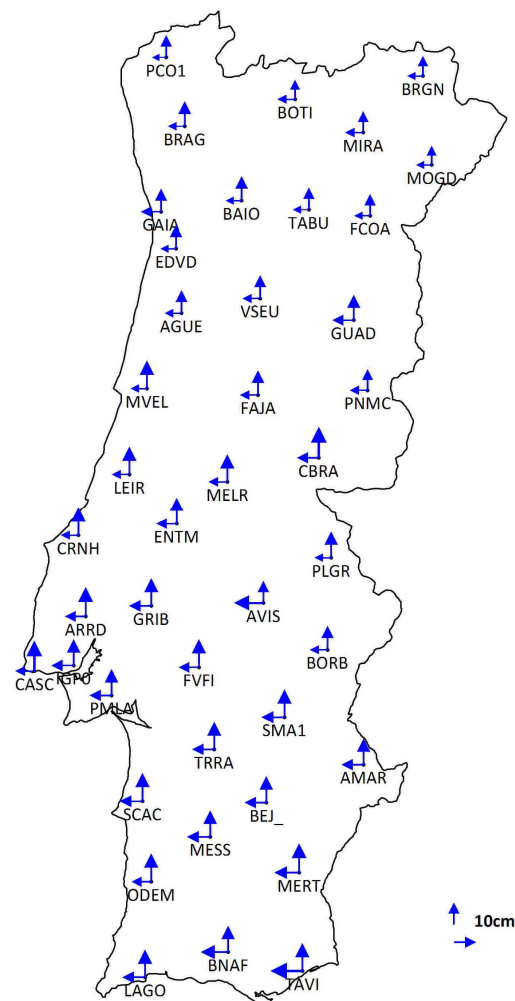
Users - 2018



ReNEP Coordinates

Differences between ETRF2014 (epoch 2010.0)
and PT-TM06/ETRS89

	Differences ETRF2014(2010.0) - PT-TM06/ETRS89 oficial (m)			
	M	P	vector MP	h
Maximum	-0,042	0,095	0,129	0,141
Average	-0,061	0,078	0,099	-0,009
Minimum	-0,097	0,058	0,075	-0,092
Std Deviation	0,0117	0,0093	0,0125	0,0405

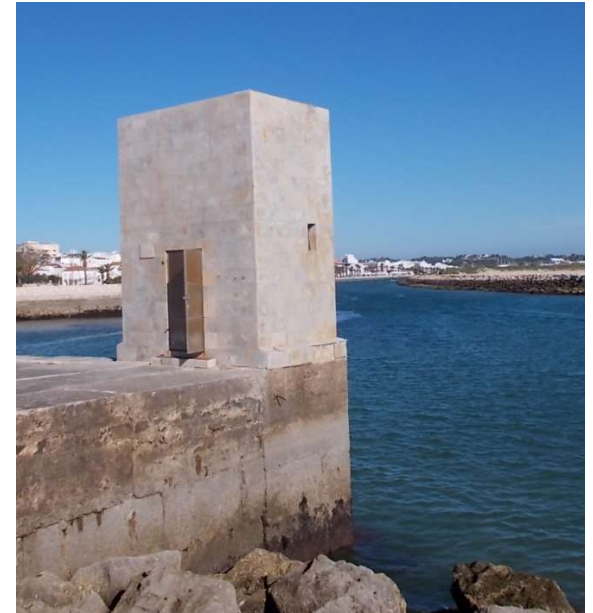


New Tide Gauges: Cascais e Lagos

- RADAR technology for water levelling sensors
- Real-time data logging and uploading data to DGT servers and other users
- New sensors for measuring water temperature, air temperature and pressure
- Power supply: solar panel



Cascais



Lagos



Installation of the New Equipment

Cascais – 24 October 2018

Radar Sensor



Datalogger



Atmospheric pressure sensor

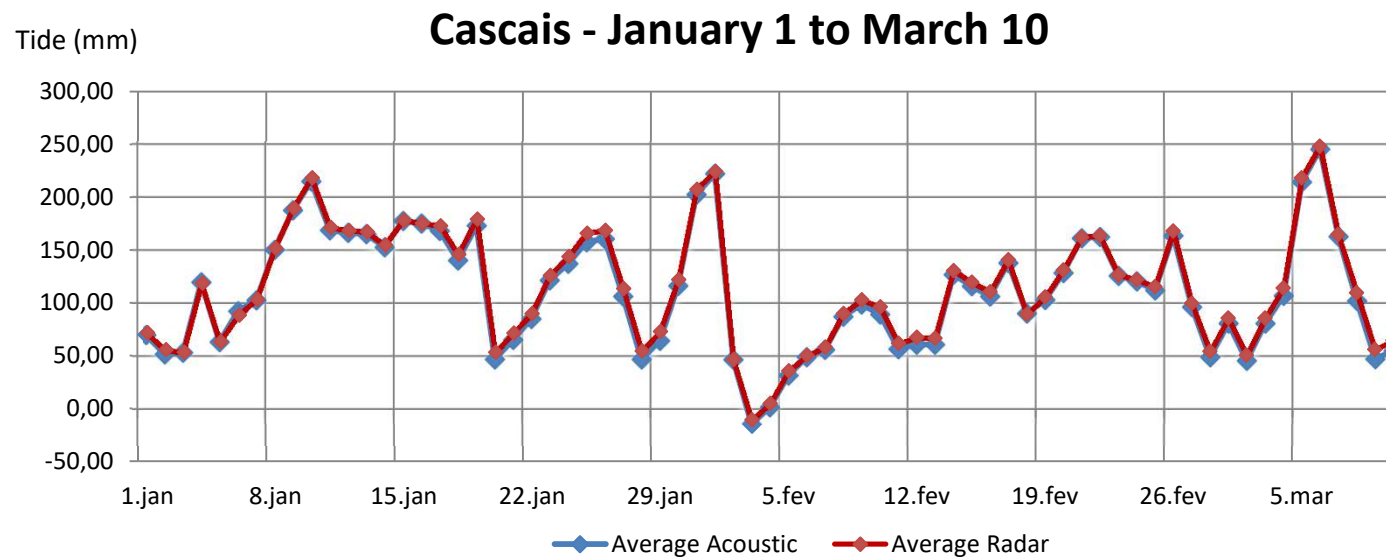
Solar Panel



Air temperature sensor



Records comparison between the Acoustic and Radar Tide Gauges



Maximum = 9.81 mm
Average = 3.78 mm
Minimum = -3.94 mm
Std Deviation = 2.69 mm



SEA LEVEL STATION MONITORING FACILITY

Intro Map Station lists **Station details** Services & FAQ GLOSS Catalog

[\[previous station\]](#)
Station at GMT [\[next station\]](#)

[\[more details\]](#)
[\[show data\]](#)
[\[show on map\]](#)
[\[monitor\]](#)

Station metadata	
Code	casc
Country	Portugal
Location	Cascais
Status	Operational
Local Contact	Direção-Geral do Território (Portugal)
GLOSS ID	246 [goto handbook]
QC data	UHSLC 209 (1959-2005) PSMSL 2201 (1959-2005) PSMSL 52 (1882-1993)
Latitude	38.693158
Longitude	-9.415384
Connection	SOCKET
Sensor 1	
Type of sensor	rad (radar)
Sampling rate (min)	0.0833

Sealevel at Cascais station (offset: 0.2522 m)

• rad (radar)

From 2019-05-07 15:34+00:00 to 2019-05-14 15:34+00:00 ©IOC-VLIZ

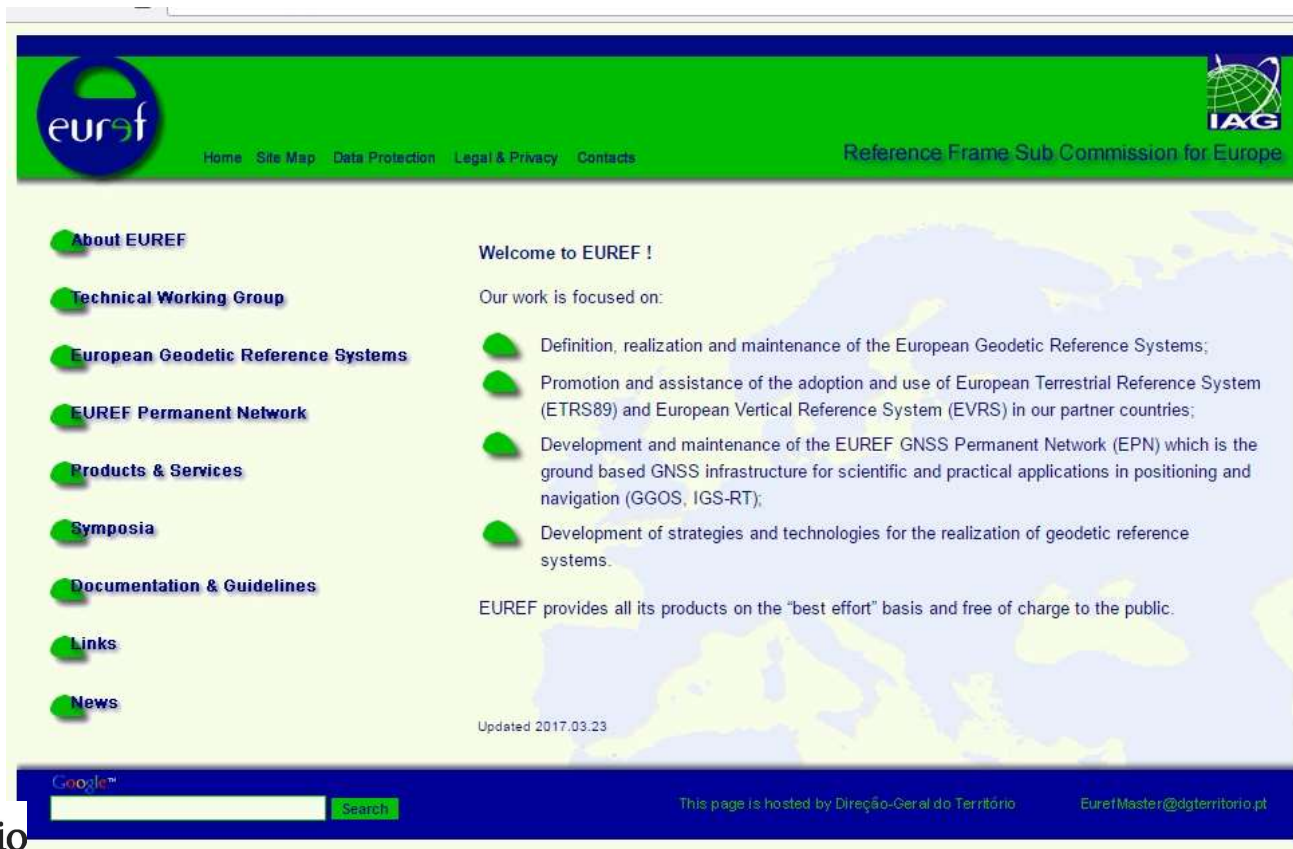
Period	Signals	Data
☐ 12h ☐ day ☒ 7 days ☐ 30 days	☐ Remove outliers ☐ Remove spikes	☒ Relative levels= signal - average over selected period ☐ Absolute levels= as received ☐ Offset signals= relative signals + offset

Tip: use left icons to zoom & scroll

Site developed and maintained by VLIZ for UNESCO/IOC

EUREF Web Page

<http://www.euref.eu>



The screenshot shows the EUREF website homepage. The header features the EUREF logo on the left and the IAG logo on the right, with the text "Reference Frame Sub Commission for Europe" below it. A navigation bar includes links for Home, Site Map, Data Protection, Legal & Privacy, and Contacts. The main content area is divided into two columns. The left column contains a vertical menu with links: About EUREF, Technical Working Group, European Geodetic Reference Systems, EUREF Permanent Network, Products & Services, Symposia, Documentation & Guidelines, Links, and News. The right column contains a welcome message, a list of four bullet points describing EUREF's work, and a statement about providing products on a "best effort" basis. A background map of Europe is visible. The footer includes a Google search bar, the text "This page is hosted by Direção-Geral do Território", and the email "EurefMaster@dgterritorio.pt".

euref Home Site Map Data Protection Legal & Privacy Contacts Reference Frame Sub Commission for Europe

About EUREF

Technical Working Group

European Geodetic Reference Systems

EUREF Permanent Network

Products & Services

Symposia

Documentation & Guidelines

Links

News

Welcome to EUREF !

Our work is focused on:

- Definition, realization and maintenance of the European Geodetic Reference Systems;
- Promotion and assistance of the adoption and use of European Terrestrial Reference System (ETRS89) and European Vertical Reference System (EVRS) in our partner countries;
- Development and maintenance of the EUREF GNSS Permanent Network (EPN) which is the ground based GNSS infrastructure for scientific and practical applications in positioning and navigation (GGOS, IGS-RT);
- Development of strategies and technologies for the realization of geodetic reference systems.

EUREF provides all its products on the "best effort" basis and free of charge to the public.

Updated 2017.03.23

Google™ Search

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Future projects:

- **New coordinates for the GNSS CORS based on the ITRF2014**
- **New GNSS equipment with Galileo tracking capabilities**