EVREST Project Report:

Tide observation campaign along the Algarve coast: Lagos, Albufeira and Barreta Island

Project Funding: Fundação para a Ciência e a Tecnologia (FCT)

Scientific Domain: Marine Sciences and Earth Sciences - Estuarine Coastal and Littoral Systems

Project reference: PTDC/MAREST/1031/2014

Report Title	Tide observation campaign along the Algarve coast.
Reporting Period	28-03-2017 to 01-05-2017
Delivery Date	18-05-2017
Related Task	Task 2.2. Analysis of relative sea-level variations
Objective	Validate the difference of mean sea level for: Lagos, Albufeira and Barreta Island.
Participants	Carlos Antunes & Fábio Madeira
Other Information	Location: Cais da Solaria (Lagos), Porto de Abrigo (Albufeira) and Barreta Island.

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GENERAL INFORMATION

Administrative Tasks

In the recent campaign, some authorizations were requested for the placement of 2 transducers. So, two requests were made to the South Delegation of DOCAPESCA (under the care of Eng. Helena Cardoso and Eng. Bruno Guerreiro) for temporary installation at Cais da Solaria (Lagos) and Porto de Abrigo (Albufeira).

The main purpose of this campaign was to validate the MSL (Mean Sea Level) difference between these three locations. Thus, through the comparative analysis with the tide models and their respective mean levels, it is expected to understand the variation of the MSL in Algarve.

Deployment of pressure transducers

Lagos (Cais da Solaria)

Cais da Solaria is located next to Av. das Descobertas, at the exit to Sagres, and at the mouth of Bensafrim stream (**Figure 1**). The transducer was placed precisely next to the Lagos Tide Gauge at the end of Cais da Solaria, where the Bensafrim stream enters the sea (**Figure 2**).

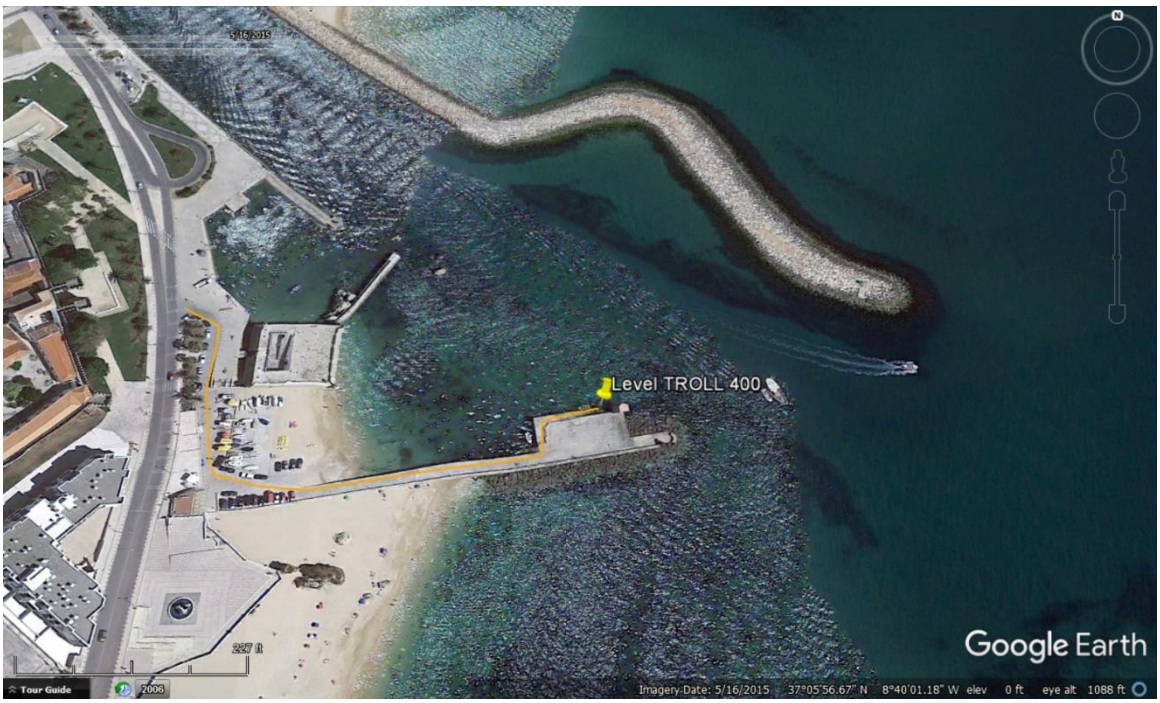

Figure 1: Cais da Solaria (Lagos), with path followed to deploy the transducer (Level TROLL 400).

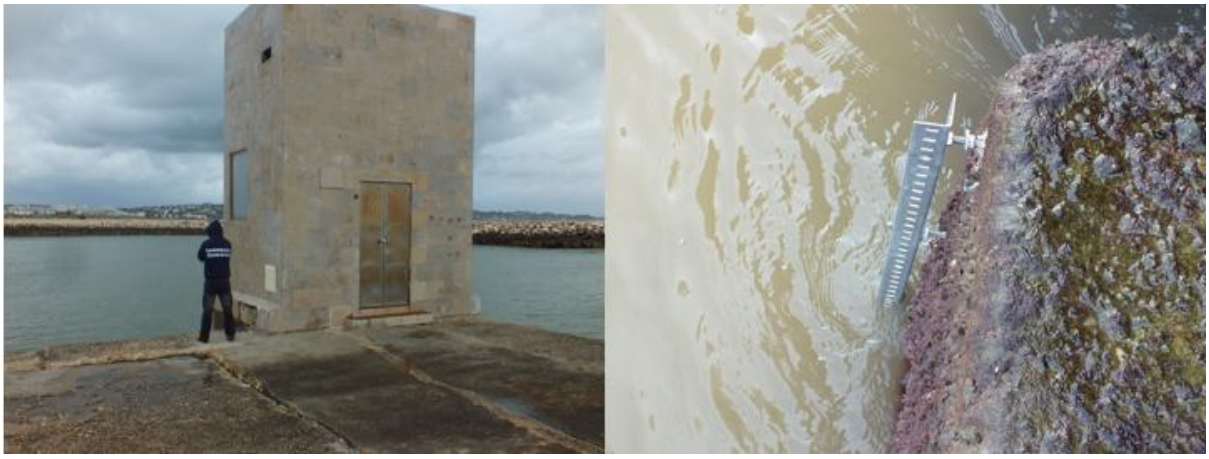

Figure 2: Cais da Solaria (Lagos). Left: Lagos national tide gauge. Right: Submerged transducer (Level TROLL 400) placed near to the tide gauge.

Albufeira (Porto de Abrigo)

Porto de Abrigo is located next to Marina de Albufeira and is sheltered by two breakwaters (**Figure 3**). The transducer was placed inside this area, more precisely on the North seawall (**Figure 4**).

Figure 3: Porto de Abrigo (Albufeira), with path followed to deploy the transducer (INFINITY).

Figure 4: Porto de Abrigo (Albufeira). Left: Preparations for INFINITY'S placement. Right: INFINITY'S placement.

Barreta Island

Barreta Island belongs to the Ria Formosa barrier-island system (**Figure 5**), Algarve, South Portugal. The transducer is in the eastern part of Barreta Island, more precisely, at the landing dock of the commercial ferry boat (**Figure 6**).

Figure 5: Barreta Island, with path followed to deploy the transducer (Level TROLL 400).

Figure 6: Barreta Island. Left: Eastern view of Barreta Island. Right: Place where the transducer (Level TROLL 400) was placed.

Sensor's Data Information

Table 1: File's information about the devices configuration.

	Lagos	Albufeira	Barreta Island
Device	Level TROLL 400	INFINITY	Level TROLL 400
Original Filename	Lagos-Mar2017_2017-05-02_13-54-03-618	20170328_0800_AWH-USB_0012_174702	Faro-Mar2017_2017-05-02_13-57-23-199
Datetime (placing)	27/03/2017 08:40:00*[1]	28/03/2017 09:00:00*[1]	26/03/2017 09:00:00
Datetime (withdraw) (GMT Summer time)	28/04/2017 08:50:00	28/04/2017 10:30:00	28/04/2017 09:00:00
Schedule Start Time (GMT Summer time)	27/03/2017 06:00:00	28/03/2017 08:00:00	26/03/2017 06:00:00
Schedule Stop Time (GMT Summer time)	01/05/2017 23:00:00	02/05/2017 23:00:00	30/04/2017 23:00:00
Data Acquisition Rate	10 minutes	5 minutes	10 minutes

*[1]These datetimes belongs to GMT summer time, due to the time change on the 26-Mar at night.

The files obtained from the sensors are in a folder called "Campanha-Mar2017". The files regarding Lagos and Barreta Island have a size of 890 KB. As for Albufeira, due to problems with the batteries, it was only possible to register 3 days of data, so the file only contains 41 KB. The original extensions of Lagos and Barreta Island files were *.wsl and for Albufeira*.raw.

Table 2: GPS coordinates of transducers locations.

	Latitude	Longitude	Altitude
Lagos	N 37° 5' 55.6641"	W 8° 40' 0.7915"	0.268 m
Albufeira	N 37° 4' 56.6904"	W 8° 15' 37.2774"	0.512 m
Barreta Island	N 36° 57' 57.4479"	W 7° 52' 15.4311"	0.378 m