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IGN-E TIDE GAUGES NETWORK

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Originally, the purpose of measuring the sea level was to obtain a mean sea level reference for setting up the origin of altitudes in the National Topographic Map. The methodology followed was readings on a tide staff located on the dock of Alicante between 1870 and 1874.

On March 1st 1874, the first tidal station with continuous paper recordings was installed at Alicante.

Since then, IGN has installed continuous recording stations in different locations of the Spanish geography. Currently, the Tide Gauges Network consists of nine stations.

The installations are composed of two sensors, one angular encoder that records data every ten minutes and another radar sensor which records every minute. TN012 and TN031 stations only have a radar sensor. The sensors duplicity allows the displacement control of the measurements origin.

ACOR1, ALAC2, MURC2, TN013 and ALME2 stations transmit the data in real time via Ethernet. In the rest of stations, a daily download is performed.

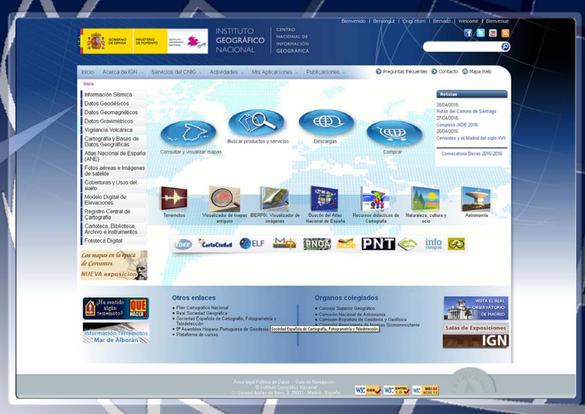
All stations have installed a permanent GNSS antenna for altimetry control, which is part of the ERGNSS network. Thus, together with the high precision levelling, absolute gravity observations and link to the geodetic network, it is possible the differential movement control between the mean sea level and the ground at the tide gauge site.

In 2008, the TN021 and TN031 stations were installed in Tenerife Island. These stations together with the already historic TN013 station are part of the Volcanic Monitoring Network of the Canary Islands (SVV).

Data query and acquisition

Temporal series in digital format are published on the IGN website (www.ign.es) and ftp server (ftp://ftp.geodesia.ign.es).

Observed data of each station are available to users in near real time.



Original observation series from each sensor can be consulted and downloaded in daily files.
Additionally, time series graphics from each sensor are shown with the possibility to navigate within the graphics for getting more details.
Graphics and hourly data download is allowed in the time period desired.

Possible spatial and temporal offsets from the reference have been corrected. All the data is referred to the Bench Mark (BM) of each station. Unfiltered hourly data are extracted from the complete series (data with the observation interval) and are used to calculate daily, monthly and annual averages following the PSMSL (Permanent Service of Mean Sea Level) recommendations.

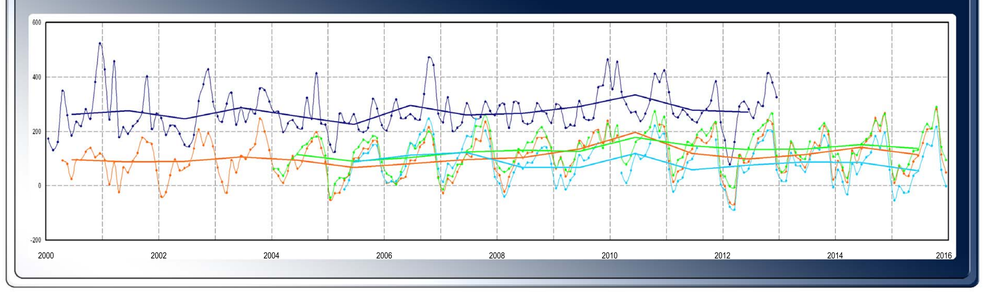
The data sheet shows information about the name, code , location and coordinates of the station, and photos, reference benchmarks graphics and picture of the observed series for the different sensors.

Monthly and annual averages

Averages monthly and annual sea level in milimeters with respect to National Levelling Network (REDNAP)

Monthly averages — ACOR1 — ALAC2 — ALME2 — MURC2

Annual averages — ACOR1 — ALAC2 — ALME2 — MURC2



Historical series recovery

"Sea Level changes at Tenerife Island (NE Tropical Atlantic) since 1927"

JOURNAL OF GEOPHYSICAL RESEARCH: OCEANS, VOL. 118, 1–12, doi:10.1002/jgrc.20377, 2013

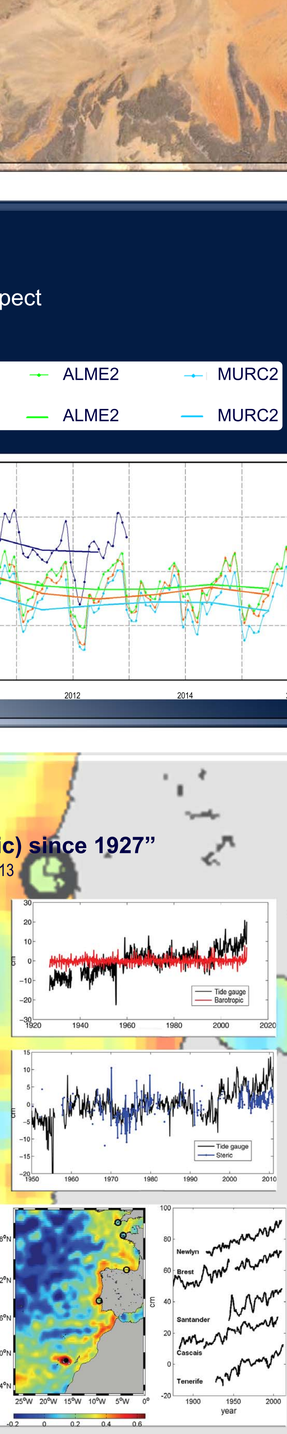
Marta Marcos[1], Bernat Puyol[2], Francisco M. Calafat[3-4] y Guy Woppelmann[5]

The historical series recovery of tide gauge records is relevant for studies of the sea level and climate change. In the paper "Sea Level Changes at Tenerife Island (NE Tropical Atlantic) since 1927", the results of hourly data analysis of five series of tides at three different locations within the Port of 'Santa Cruz de Tenerife' are published and linked to complete a continuous series of sea level since 1927. In the process, the results of successive high precision levelling were used to refer all series to a common origin materialized in reference NGR333, integrated in the National High Precision Levelling Network.

The corrections listed below were performed in the quality control stage:

- time drift correction by harmonic analysis
- influence of local winds and atmospheric pressure.
- changes in sea level due to salinity and ocean temperature.
- altimetry anomalies checking correlating them with other series.
- influence of steric sea level variations.
- contribution of longshore winds.

The result was a continuous record of sea level that helped to describe the variability of the low frecuency sea level in Tenerife.



Correlaciones entre distintas series mareograficas

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