In this work the contribution of the tide gauges to the experiences on space altimeter calibration are summarized. In the Spanish Mediterranean several calibration campaigns of the TOPEX-side B and Jason-1 altimeters have been conducted in the areas of Begur Cape and Ibiza island. The three Begur Cape experiences on radar altimeter calibration and marine geoid mapping were made on 1999, 2000 and 2002 with support of I Estartit and Llobrera tide gauges. One campaign has also been made in June 2003 at the Ibiza island area. In this case the marine geoid has been used to relate the coastal tide gauge data from Ibiza and San Antonio harbours to offshore altimetric data. All these campaigns have been supported by the Spanish Ministry of Science and Technology under projects of the National Space Plan ESP97-1816-C04-03 and ESP2001-4534-PE.

1. Cape of Begur calibration site

**TIDE GAUGE AT L’ESTARTIT**

The advantage of using the Estartit record is the continuity of its time series (the record valid for all the three campaigns). The Estartit tide gauge is a classical floating tide gauge sent up in the Estartit harbour. Data are taken in graphics registers, from which select to achieve harmonic analysis and mean sea levels. Other data is recorded in electronic configuration. Two hours are interpretable to one hour data to do a good harmonic analysis of the astronomic tide. Tide gauge is controlled each week to check the accuracy and delay of the tide gauge maintenance has the same periodicity. A quality control to ensure the self-consistency of the records has been made. The tide gauge heights are referred to a benchmark at the Cartographic Institute of Catalonia (ICC). The coordinates of this geodetic mark have been calculated in 1999 by a precise leveling network, composed at this moment by several permanent IGS-ITRF stations of the ICC in Catalonia (separates in Fig. 1). Apart of the tide gauge at Estartit, two ancillary sensors were temporarily installed at Llobrera harbour in 1999 in order to study the spatial and temporal variability of the tides in that area from the simultaneous measurements.

In 1999 and 2000 campaigns the direct estimation of the altimeter bias was realized during the overflight of the TOPEX/POSEIDON onto a point marked as TOP-08 and in the 2002 campaign the overflight occurred in 1999 and 2000. In the first two campaigns the altimeter bias was determined in real time, according to the user requirements.