



## **Comparisons of Sea Level Signals and Climatic Indices.**

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Along the European coasts, tide gauges have been used to monitor sea level for decades. Since 1992 sea level have also been measured by the T/P satellite altimeter at high spatial low temporal coverage. A comparative analysis of sea level data from tide gauges and the Topex/Poseidon (T/P) altimeter is an integral part of the European Sea Level Service - Research Infrastructure (ESEAS-RI) project.

A dataset, which has been prepared through the efforts of the ESEAS-RI partners, is used for comparing tide gauge records with data from the T/P altimeter, and selected climatic indices (i.e. the North Atlantic Oscillation, the Southern Oscillation etc.). This dataset consists of records from more than 500 tide gauges, all of which have been quality controlled, detrended and deseasonalized in order to have a homogenous dataset well suited for studies of inter-annual variability, here we have however limited ourselves to a smaller number of stations, to provide an overview of some characteristics.

Our comparative analysis includes temporal and spatial correlations, focusing on differences in for example periodicity and coherence between tide gauges and altimetry both locally and on regional scales, but also on the impact of climatic variability on sea level, as seen by comparing climatic indices based on pressure differences and temperature with sea level obtained by altimetry. Studying the power spectra from different stations and their changes with time, it is clear that the dominant frequencies of the Sea Surface Height varies considerably over the past 100 years, and from basin to basin.