OceanObs'09
**Community White Paper Proposal**
**Session 4B: Frontiers in Satellite observing technology**

Title
# The Role of Altimetry in Coastal Observing Systems

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Description
Many groups around the world are contributing significant research into extending the capabilities of current and future altimeters to the coastal zone, with the aim to integrate the altimeter-derived measurements of sea level, wind speed and significant wave height into coastal ocean observing systems. The last couple of years have seen the coalescence and initial coordination of this new "coastal altimetry" community, inherently interdisciplinary, with two well-attended international workshops (see http://www.coastalt.eu/pisaworkshop08/). At the same time the major Space Agencies have recognized the importance of the topic and are sustaining coastal altimetry research through projects such as COASTALT (ESA), PISTACH (CNES) and some OSTST (NASA/CNES) initiatives. A number of crucial improvements to the processing of the altimetric waveforms in the coastal zone and to the correction of the measurements for path delay and geophysical effects (tides and atmospheric) are being implemented and tested. The first custom-processed coastal altimetry data are now available, and many more data from Jason-1, Jason-2 and Envisat will become available during 2009; more than 15 years of coastal zone data from various past and present altimetric mission are waiting to be reprocessed.

This community white paper will focus on the applications of coastal altimetry data and on the advantages that they bring to observing and forecasting systems in the coastal zone. Information about this region is essential for applications such as monitoring wind surges and coastal setup, measuring long term coastal sea level variation, and providing current and wave observations for erosion and sediment transport studies, ship routing and coastal defence design and operation. Other applications include fisheries, search and rescue, and the movement of hazardous spills, pollution and harmful algal blooms. In all of these cases, the availability of reprocessed altimeter data and their assimilation into models alongside sea surface temperature and data from moorings, wave buoys, tide gauges, gliders and HF radars has the potential to increase the realism and accuracy of the predictions. Note that along some stretches of the world's coast, altimetry is the only available measurement.

We will also show how altimetry contributes to coastal wave climatologies and can be used for validation of coastal wave models and to connect them to the open ocean

models. At the time of the OceanObs09 meeting the community will have just held its 3rd meeting, the COASTALT and PISTACH projects will have concluded and a book on Coastal Altimetry will have been published; therefore we will have a huge amount of material to contribute to a full review of the state of the art in this new topic.