

A summary of the COASTALT project **COASTALT** and its contribution to the monitoring of coastal sea level

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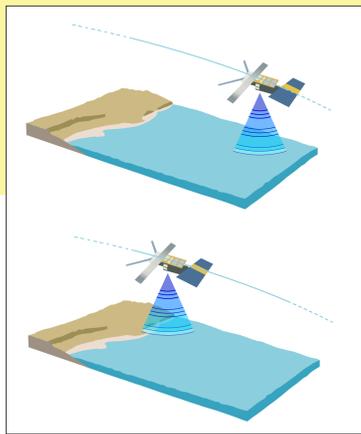
COASTAL ALTIMETRY - motivations

Satellite altimetry was designed for open ocean BUT the coastal region has enormous socio-economic-strategic importance and **17 years of data over the coastal ocean are still unexploited** - normally flagged as 'bad' in the official products

These data can - and should - be recovered!

There are many possible uses, including:

- Sea level, currents, wave - not only long term studies & climatologies, but also specific events
- Assimilation into coastal models
- Modelling/prediction of extreme events/surges



COASTALT Phase 1 (08/09) MAIN OUTCOMES

- surveyed the user base and identified product requirements
- reviewed the **corrections**, highlighted challenges and problems, made recommendations
- designed and fully implemented a **prototype software processor** for Envisat RA-2 in the Coastal zone
- made a full **product definition** for the Level 2 output coastal products (CGDRs) format and contents
- investigated use of CGDRs in training and **outreach** via the BRAT tool-box, and issued guidelines

COASTALT - framework & aims

Since 2008 the European Space Agency (ESA) has been funding a research and development study, **COASTALT**, led by NOC; this started in co-ordination with CNES which has funded a parallel study in France, named **PISTACH** and led by CLS

COASTALT aims to lead to the definition, specification and prototyping of a new pulse-limited radar altimetry coastal zone product for Envisat

This is done over a number of study regions:

- NW Mediterranean (including the Corsica Channel)
- West Britain
- Portugal Coast

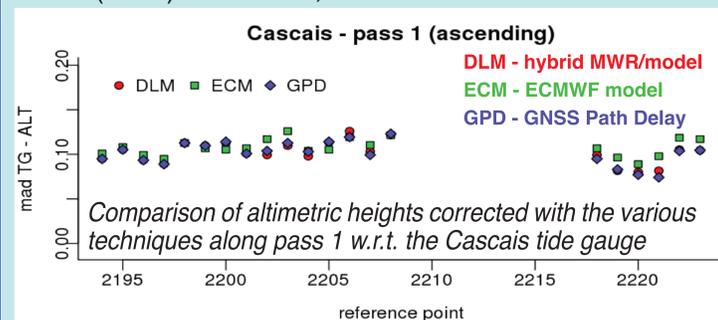
This poster summarized the results for **Phase 1** of the COASTALT project (2008/2009). ESA has now granted funding for a **Phase 2** in 2010/2011.

CORRECTIONS - TWO EXAMPLES

COASTALT is investigating the various instrumental and geophysical corrections

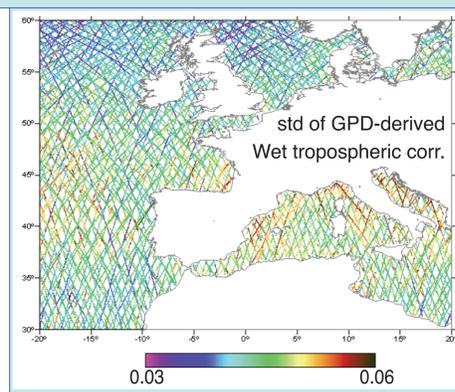
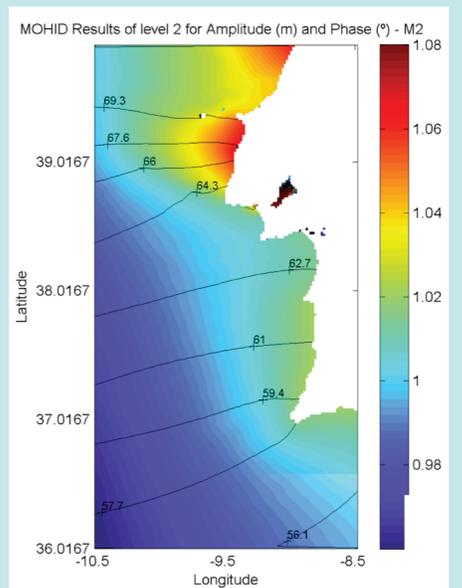
GPD (GNSS Path Delay) Tropospheric Correction

Original contribution to COASTALT by Univ. of Porto. Uses data from GPS stations to provide an estimate of the path delay due to gases ('dry tropo') and water vapour ('wet tropo'). Potentially more accurate than ECMWF model correction and hybrid model/radiometer (DLM) correction, as first results confirm:



Coastal tidal models

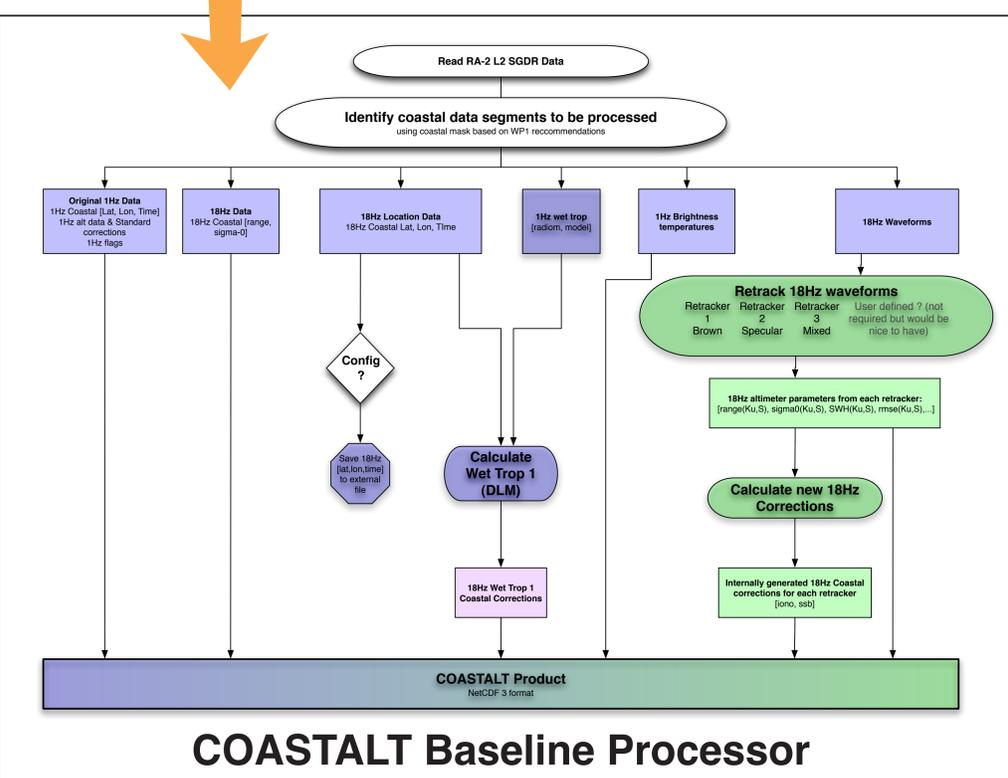
Tides are also a challenge for coastal altimetry, in all those application where they need to be removed. The figure below shows the M2 component in the MOHID model



ONGOING RESEARCH (COASTALT Phase 2)

In Phase 2 of the project we are continuing to **improve the processor and the products** (CGDRs - Coastal Geophysical Data Records), by adding **innovative coastal retracers** and developing the **corrections** further, in particular the **GPD** which will be integrated in the CGDRs. A new **regional tidal model** will also be fully tested and integrated along the western Iberian coast. All the products will then be validated by the COASTALT partners against *in situ* data over the pilot sites. The plan is to illustrate the new products at the **4th Coastal Altimetry Workshop in Porto, 14-15 October 2010**. The ensuing validation will allow the start of the scientific exploitation of the CGDRs. There are several questions that we hope to answer with coastal altimetry and this new dataset, but one is particularly intriguing:

Is sea level rising faster in the coastal zone?



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www.coastalt.eu
www.coastalaltimetry.org

