

The PISTACH products

Since November 2008, CLS has been producing the Level 2 PISTACH products, a new altimeter dataset developed to improve coastal ocean and continental waters monitoring.

The PISTACH project is supported by CNES in the framework of the Jason 2 altimeter satellite mission launched in June 2008.

The PISTACH products deal with **along-track experimental products** dedicated to altimetry-expert users. They are enriched **I-GDR (level 2) dataset** in NetCDF produced in **Near Real Time**.

Delivered **freely** through the **AVISO website** <http://aviso.oceanobs.com>, they provide :

- New estimations of the satellite-sea distance (retracking)
- Atmospheric corrections improved near the coasts (wet troposphere)
- Up-To-Date global tidal corrections
- Several Mean Sea Surface fields

with a 300m along-track sampling (20hz) instead of 6 km (classical 1Hz altimeter data).

Additionally, CNES supported in 2011-12 the development of PISTACH Sea Level Anomalies a **(level 3)** in order to **ease the use** of PISTACH products in coastal ocean and thus lead more users to coastal altimetry. It was also an **opportunity for gathering feedback** and developing **collaborations with coastal teams** for assessment. This study enabled a **step forward higher resolution** as it improved the understanding of altimetry small-scales contents.

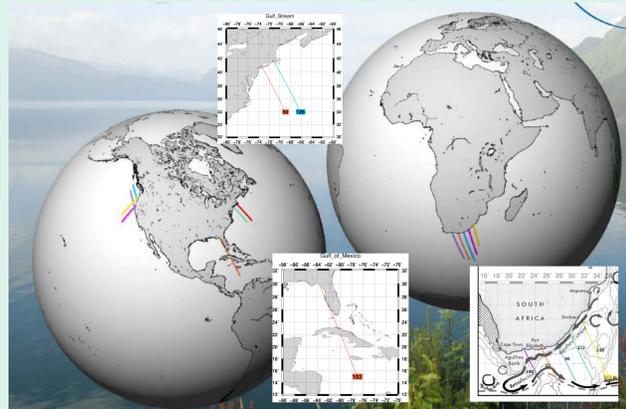
The PISTACH Sea Level Anomalies (SLA)

A **Level3 PISTACH processing chain** was developed in 2011-12. It includes:

- Improvement of some corrections
- Homogenization of the data (SSB correction adapted to RED3 retracking)
- 20 Hz editing tuned for detection of small portions of outliers to take benefit of all the measurements
- 7km and 14km Filtering and 5hz sub-sampling
- Computation of the across-track geostrophic current after SLA filtering at 50km

It provided along-track 5hz Sea Level Anomalies for **4 regions** over July 2008- July 2011 on the **AVISO website** → Products → sea-surface-height-products → Regional → coastaldt-sla-products

Florida Strait	Agulhas Current	US East Coast	US West Coast
Track 102	Tracks 20,198,96,172,248	Tracks 50,126	Tracks 206, 69, 28, 247

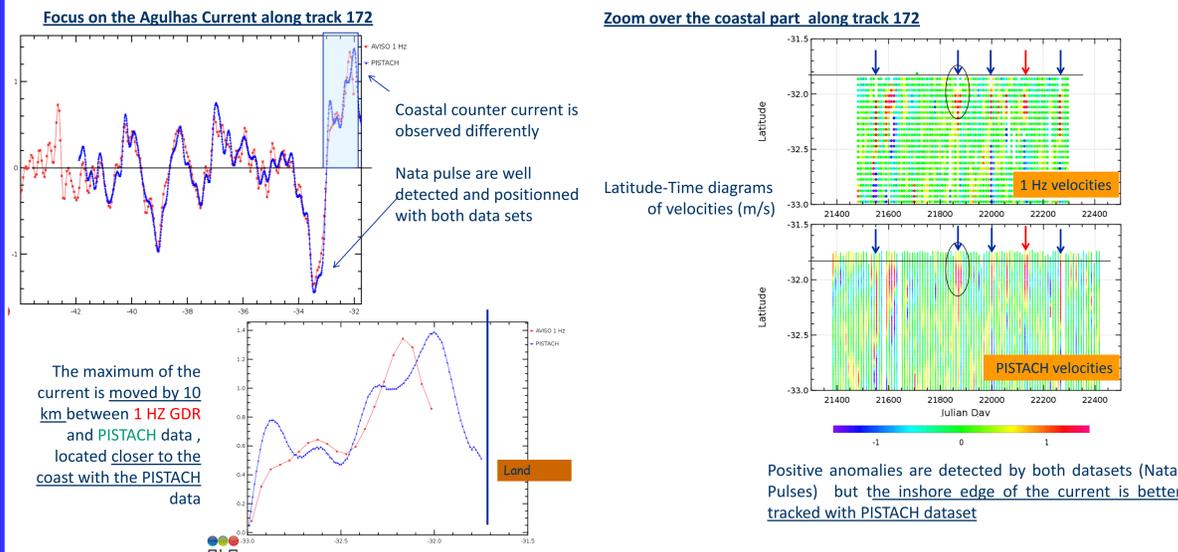


Data Use Cases www.altimetry.info

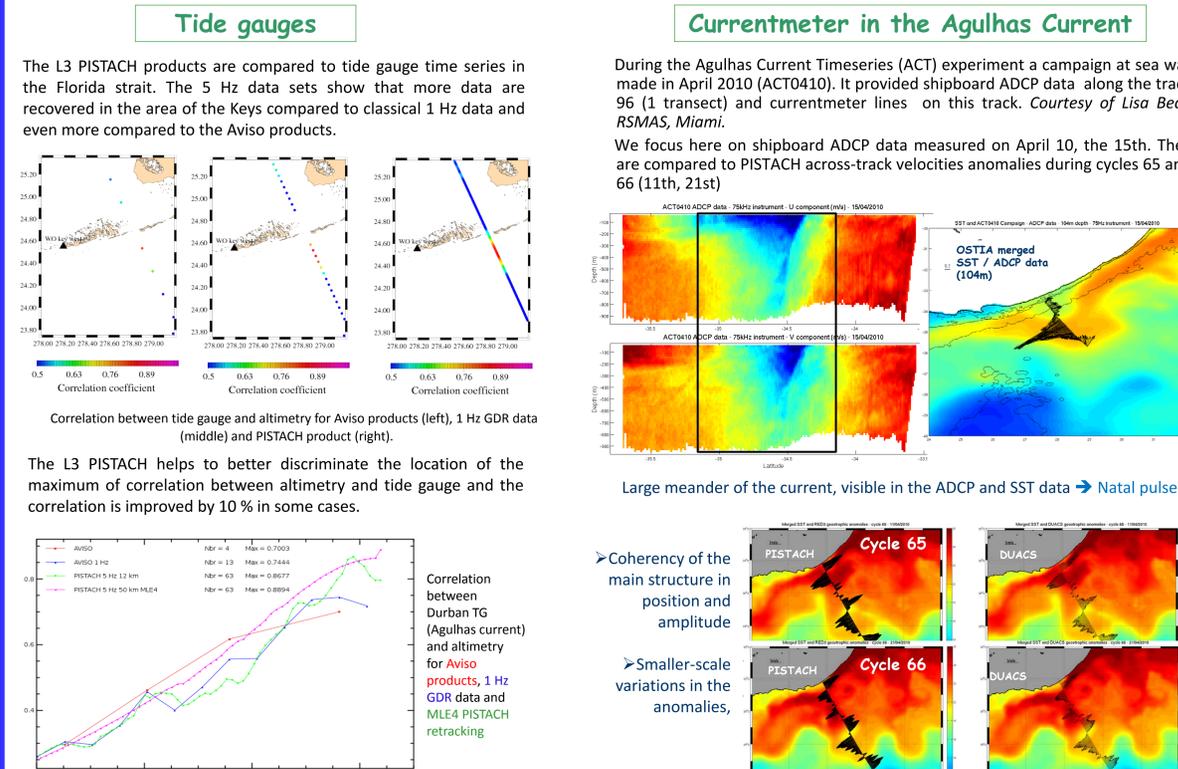
Two Data Use Cases was made to exhibit the results over the Florida strait and Agulhas Current

Added Value of PISTACH SLA ... for observing the coastal ocean

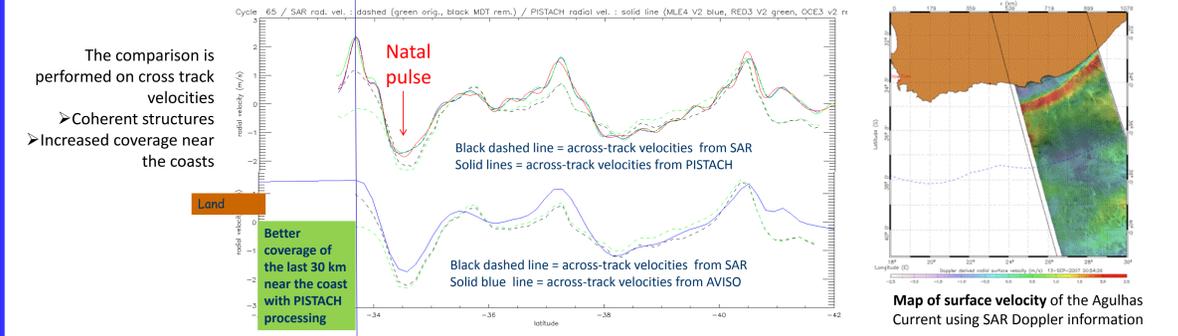
Comparison of L3 PISTACH products with 1hz L3 SLA from AVISO through cross-track velocities anomalies



Comparison of L3 PISTACH products with external datasets

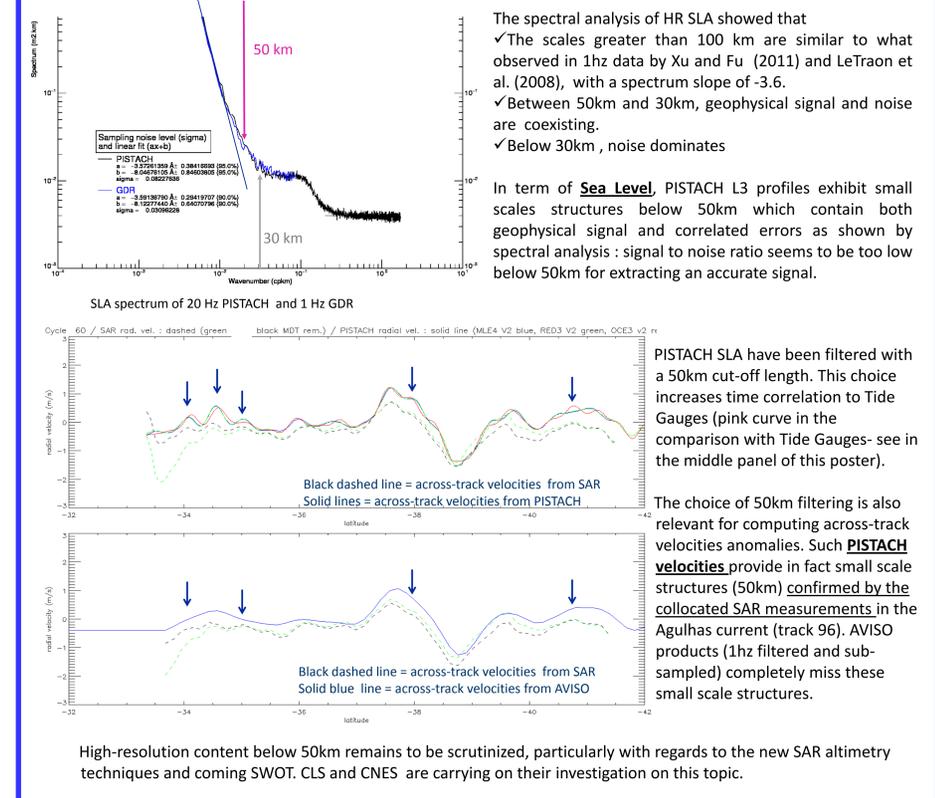


SAR Doppler velocities over the Agulhas current



... for observing HR process

Which spatial scales are contained in PISTACH products?



The 2013-2014 PISTACH perspectives

After a 4 years exploitation with the prototype PISTACH, CNES plans now to produce in quasi-operational data for coastal ocean and hydrological waters. The prototype PISTACH data will be upgraded in a PISTACH V2 multi-mission processing chain. The new PISTACH products should cover the recent years (since 2011) and PISTACH SLA should also be computed over some coastal areas.

Coastal Altimetry & Coastal models

In the framework of the European MyOcean project, CLS launched in 2010 the TAPAS initiative to **define and set up a new generation of products for assimilation and validation within models**. A first TAPAS workshop led to the **definition of a common dataset** based on Delayed-Time products, **to be tested by the different modeling centers (MFCs)**.

A first set of **assimilation tests** was done. It showed that assimilating systems are able to assimilate non/less-filtered dataset but with no very sensitive improvements. From these tests, it appeared also that models forced by atmospheric pressure benefit from assimilating SLA not-corrected from the Dynamical Atmospheric Correction.

Assimilation method should also be **modified** when changing SLA by not-filtered or less-filtered SLA (at least the associated errors) and **additional diagnostics** are clearly still needed to better quantify the impact. Nevertheless, the Mediterranean MFC asked officially to have a **NRT production of TAPAS data**. This requirement should be fulfilled during spring 2013.

Assimilation tests are **still on-going** in regional MERCATOR model and by UK Met Office. MFCs are considering changing altimetry errors and SLA model background to improve their DA scores.

Considering this initiative, **similar questioning** should also be addressed by **coastal modelers** before/when using coastal altimetry data:

- Which **physical content** in SLA (tides removal, atmospheric pressure forcing removal (HF and LF)) ? How to compute the **SLA model background** ?
- What is the **spatial resolution** of coastal models ? Compare spectral analyses of altimetry and model...
- Are **Near Real Time** or **Delayed Time** required ?
- Which **error budget** prescribe in coastal DA ?