COASTAL ALTIMETRY AT THE CENTRE OF TOPOGRAPHIC STUDIES OF THE OCEANS AND HYDROSPHERE (CTOH)
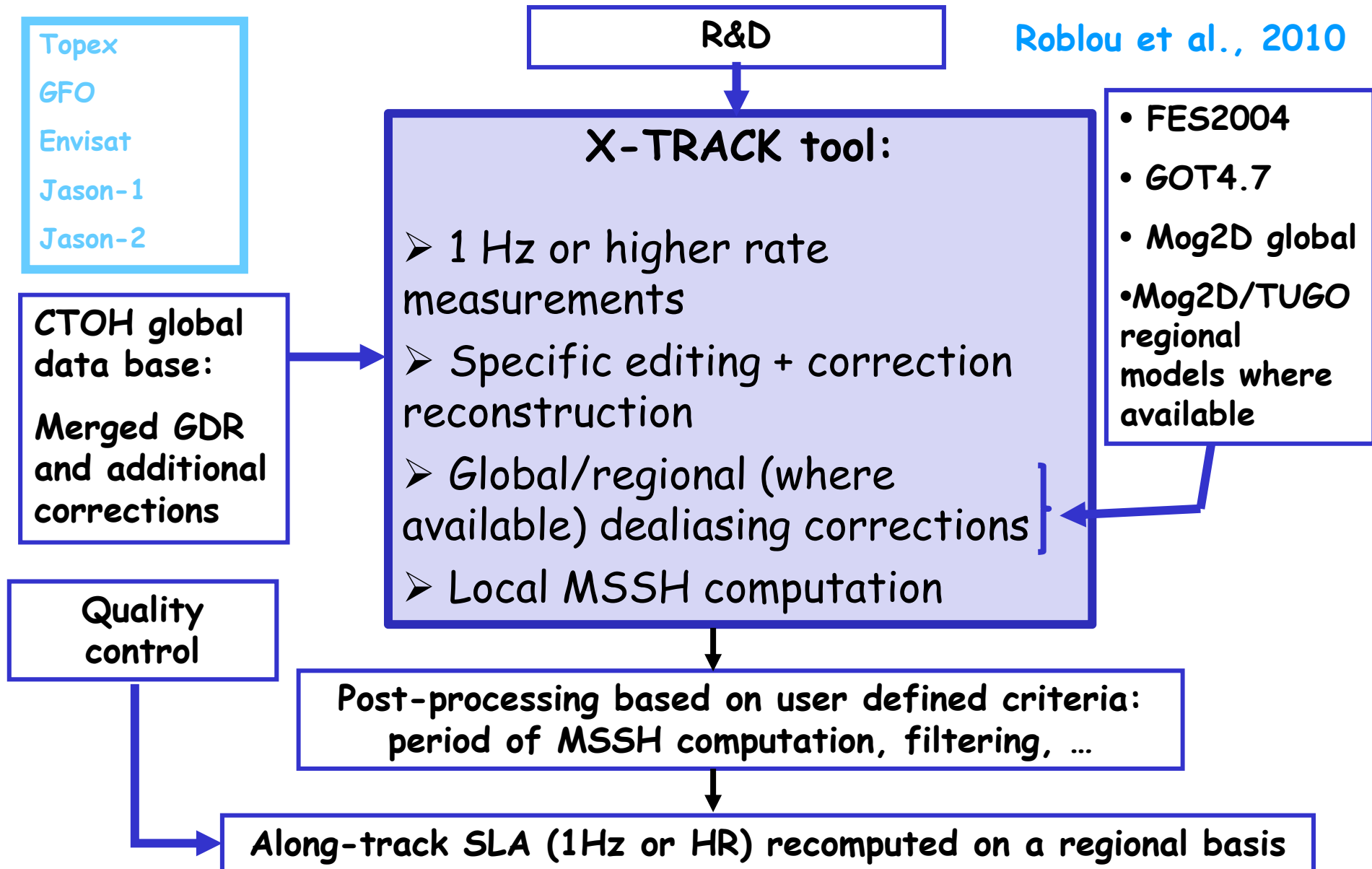
Florence Birol, Caroline Delebecque, Laurent Roblou, Sara Fleury, Rosemary Morrow, Fernando Niño and Guillaume Pernot

http://ctoh.legos.obs-mip.fr/

CTOH: French altimetric data service

1) maintain and distribute homogeneous altimetric data bases over all surfaces

2) help scientific users to develop new altimetry applications,

3) contributes to the processing and management of altimetric data for "emerging" research domains,

4) DEVELOP AND DISTRIBUTE REGIONAL ALTIMETRY PRODUCTS FOR COASTAL APPLICATIONS

CTOH coastal tools

Topex
GFO
Envisat
Jason-1
Jason-2

R&D

Roblou et al., 2010

X-TRACK tool:

➢ 1 Hz or higher rate measurements

➢ Specific editing + correction reconstruction

➢ Global/regional (where available) dealiasing corrections

➢ Local MSSH computation

CTOH global data base:

Merged GDR and additional corrections

• FES2004
• GOT4.7
• Mog2D global
• Mog2D/TUGO regional models where available

Quality control

Post-processing based on user defined criteria: period of MSSH computation, filtering, …

Along-track SLA (1Hz or HR) recomputed on a regional basis

CTOH regional products

Already distributed:

➤ **1 Hz alongtrack products, Netcdf format:**
   - SLA along a nominal ground-track,
   - MSSH consistent with SLA
   - geophysical (tidal and DAC separetely) corrections included

➤ **12 different regions available**

➤ **Satellite missions (homogeneous processing):**
   - T/P, Jason-1, T/P & Jason-1 combined,
   - Envisat and GFO (Western Tropical Pacific, the North Indian Ocean and the North East Atlantic for the moment)
   - Jason-2 available soon (work on the editing underway)

➤ **For each region and each mission (4 data sets):**
   - corrected with FES2004 or GOT4.7 (if no regional tidal model available)
   - alongtrack filtered and non-filtered SLA

CTOH regional products

http://ctoh.legos.obs-mip.fr/products/coastal-products/
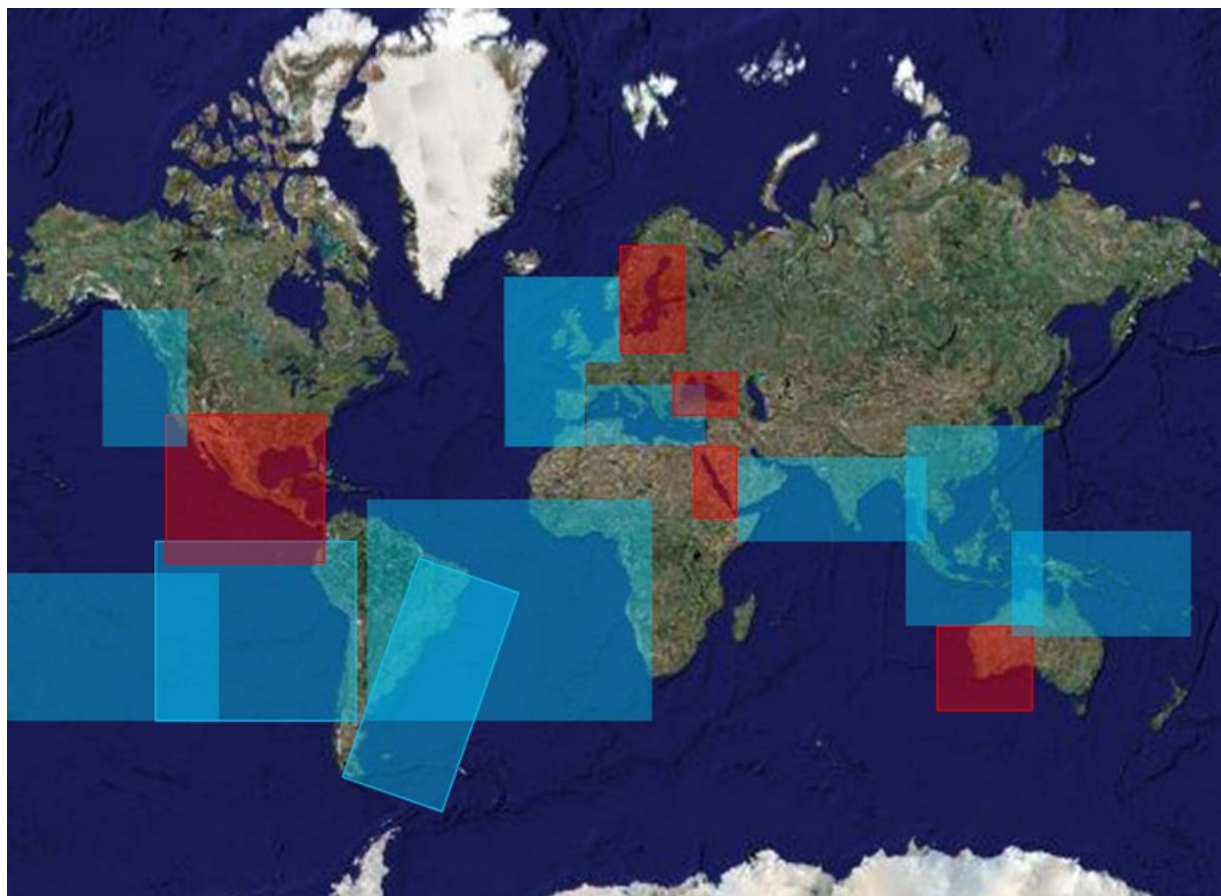
Available via ftp

Ongoing Processing

~ 50 scientific users (half from Europe, half from Asia and America)
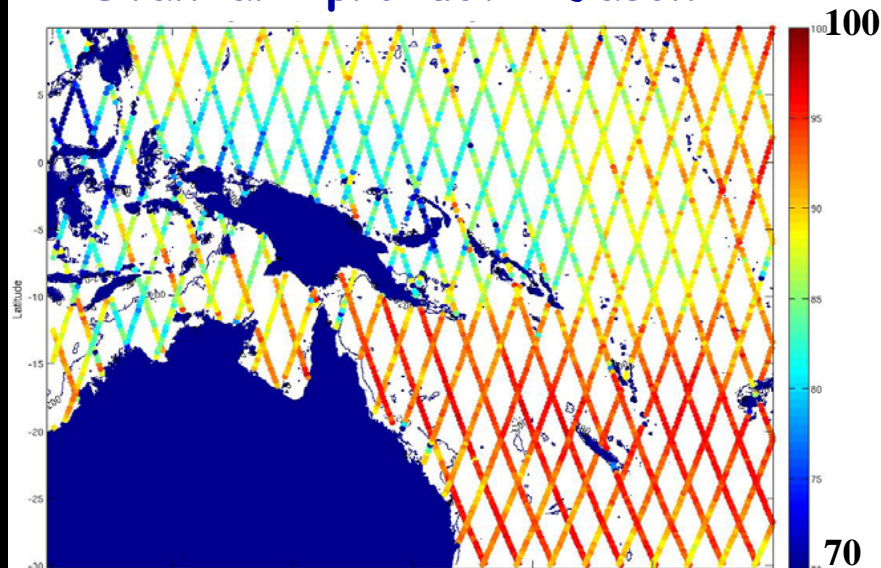→ Feedback on the product quality

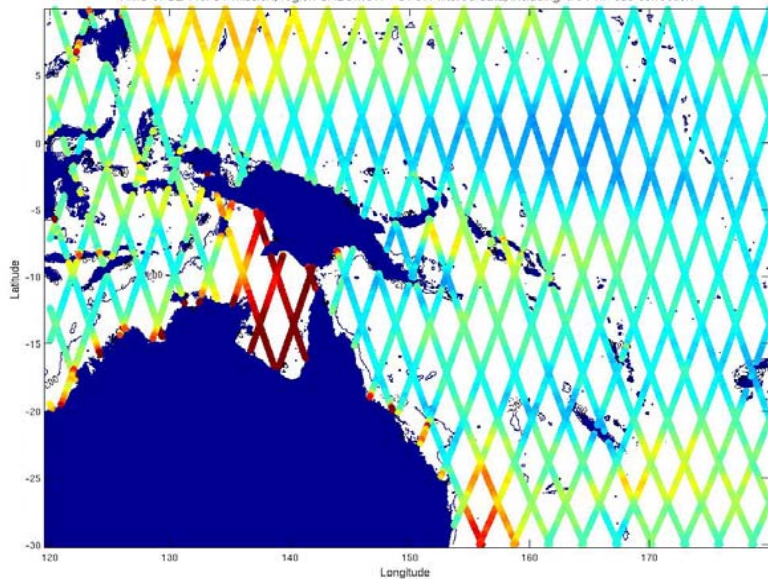# CTOH regional products: Example of the Equatorial Western Pacific Ocean
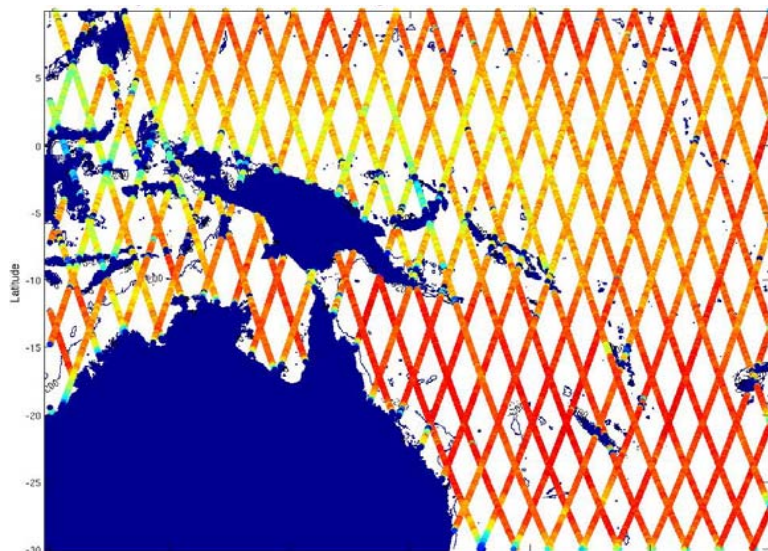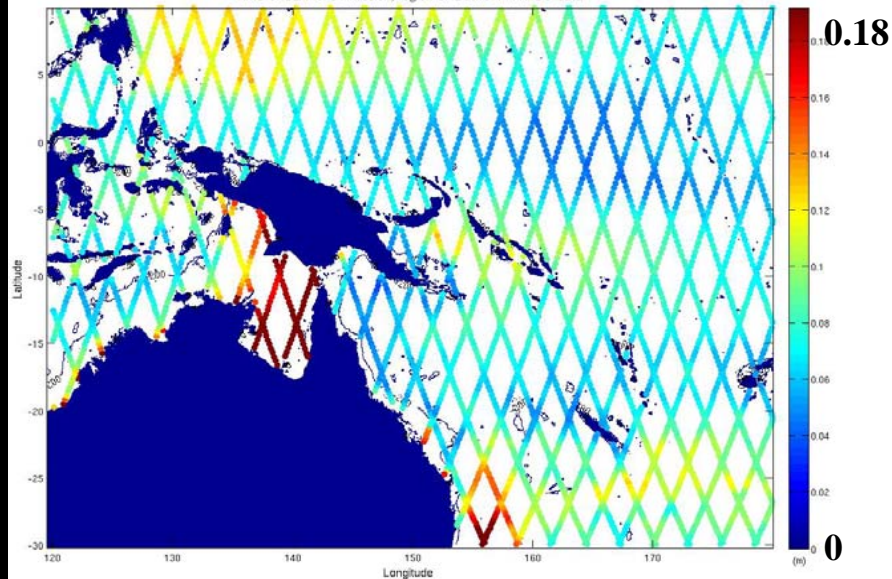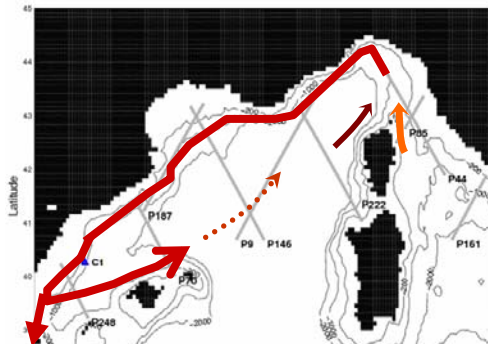
Spatio-temporal structure of the LPC Current (NW Mediterranean Sea)

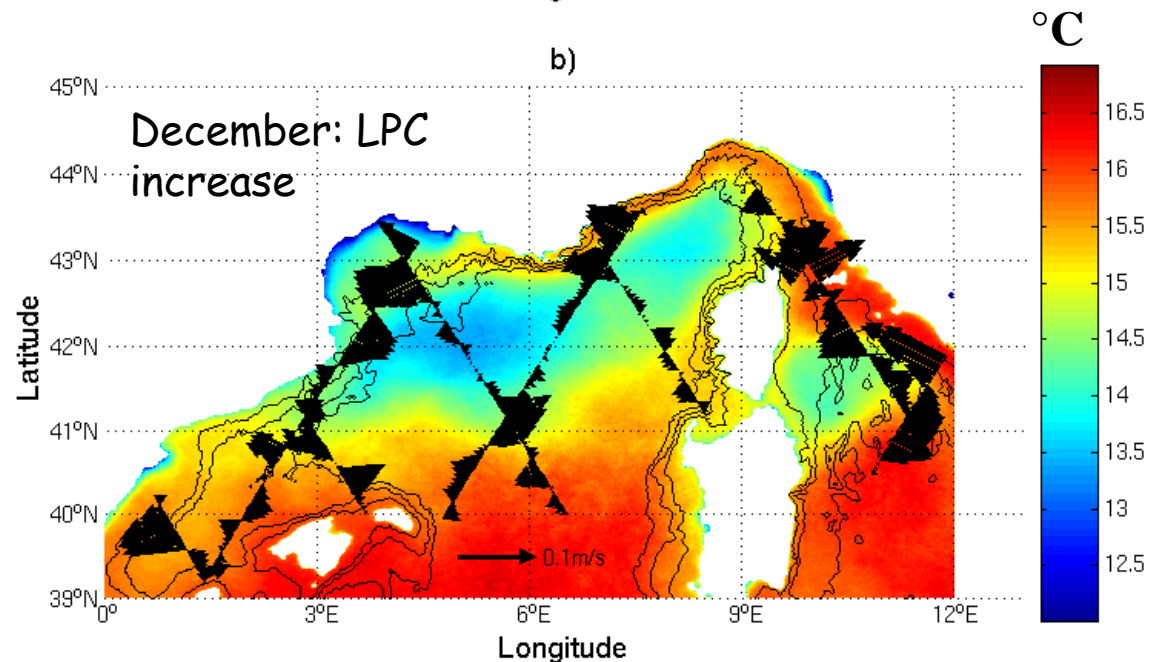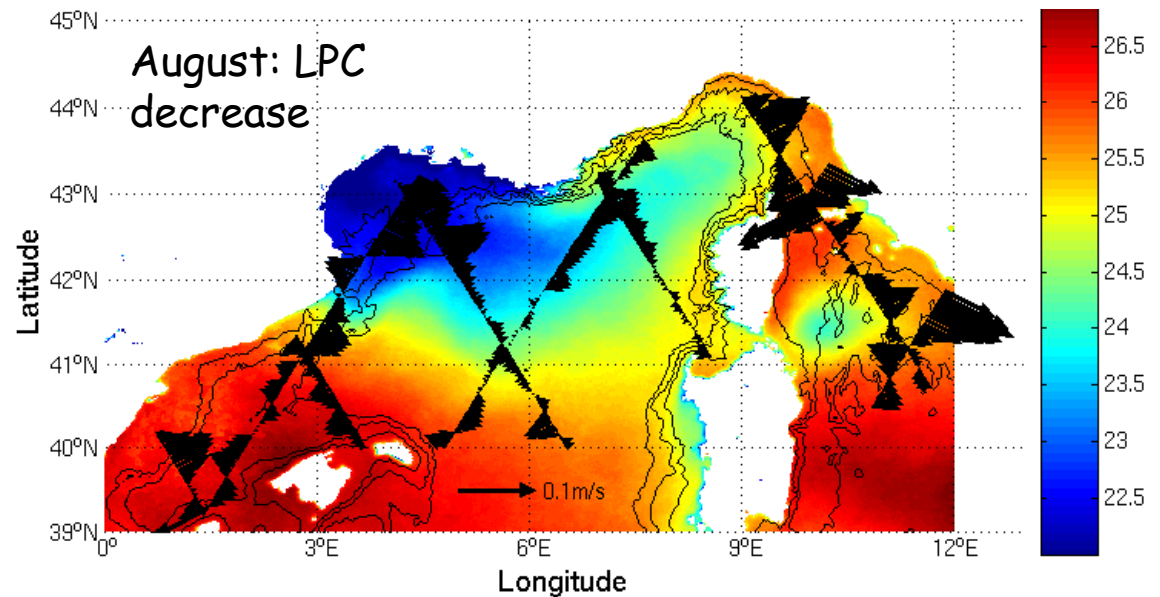Geostrophic velocity anomalies from 15 years of T/P and Jason-1 1 Hz data
→ **Monthly climatology of:**
- **Sea Surface Temperature**
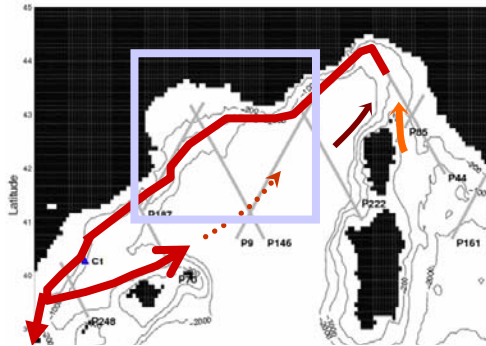- **Current anomalies (altimetry)**

LPC Current circulation

From Birol et al., 2010

Also posters by Leger et al.and Ayoub et al.

August: LPC decrease

°C

b)

December: LPC increase

LPC Current circulation

Winter – XTRACK 1Hz

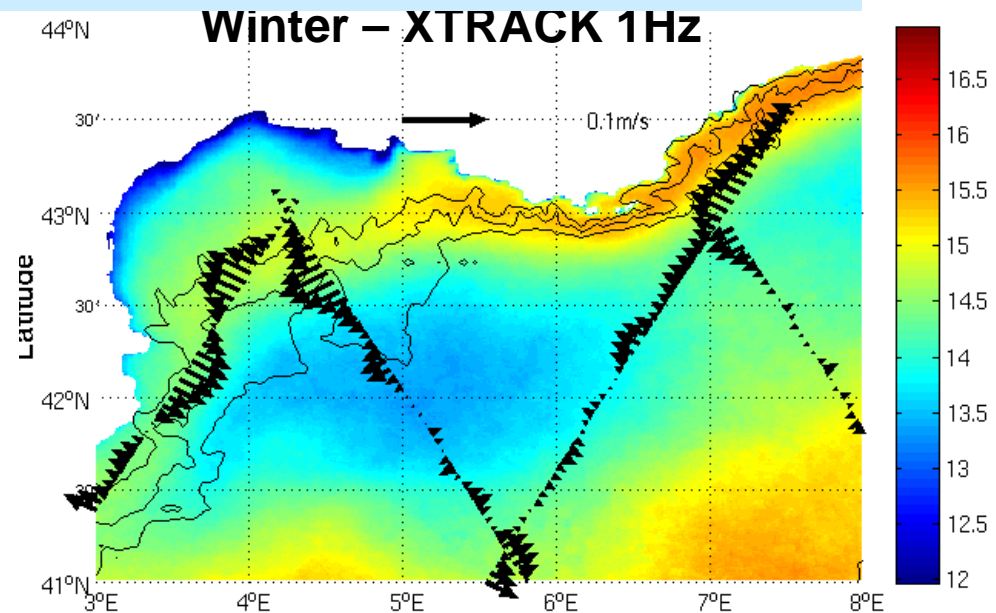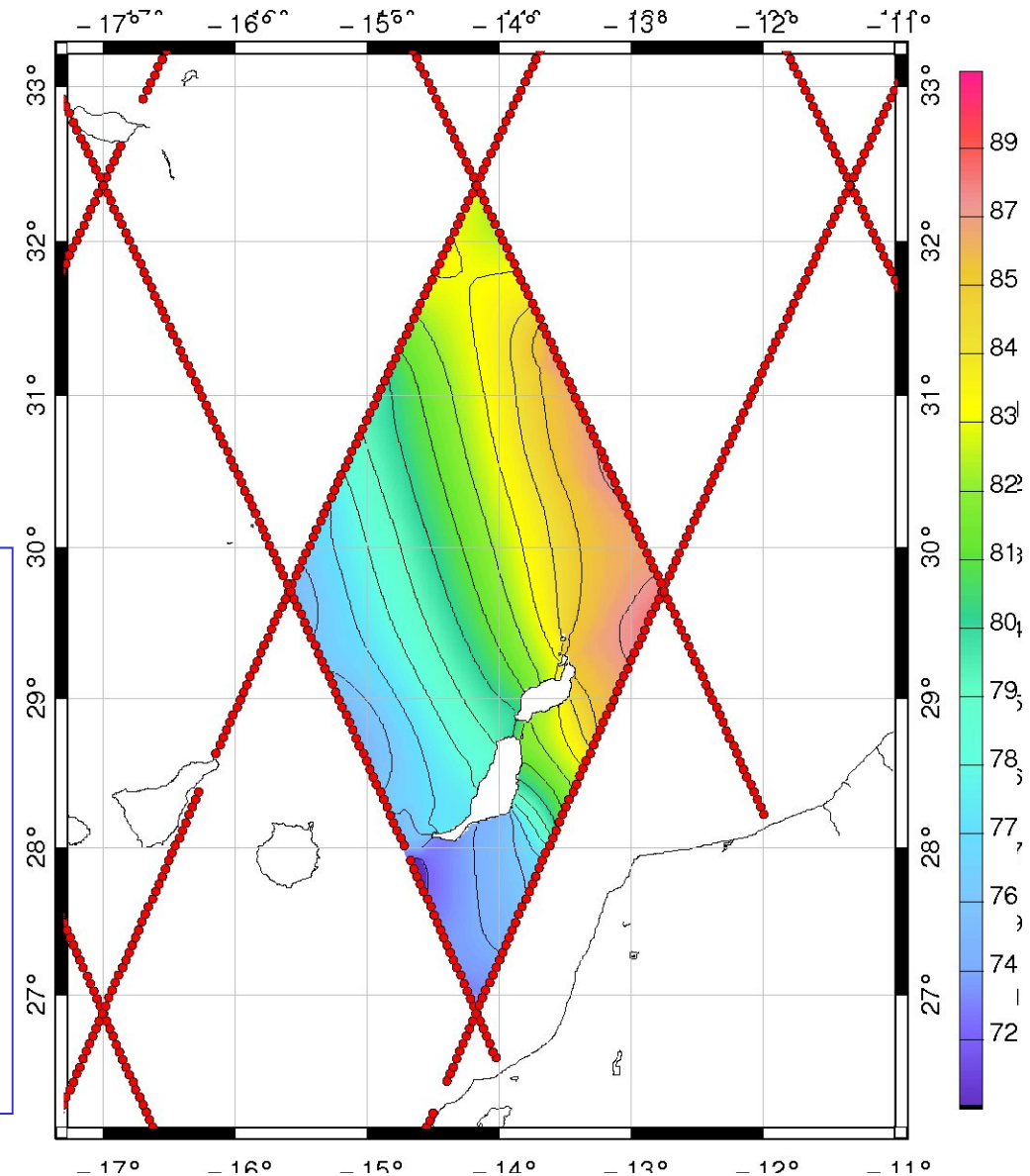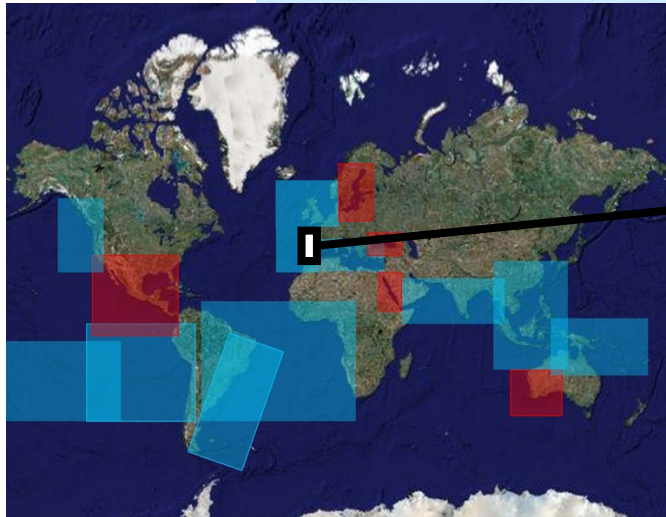**Monthly climatology of:**
- SST (1998-2007)
- Cross-track geostrophic current anomalies (T/P & Jason-1 over the period 1993-2007)

Winter – 10 Hz filtered

- Amplitude of the seasonal variations increased
- More information close to the coast
- Smaller scale structures
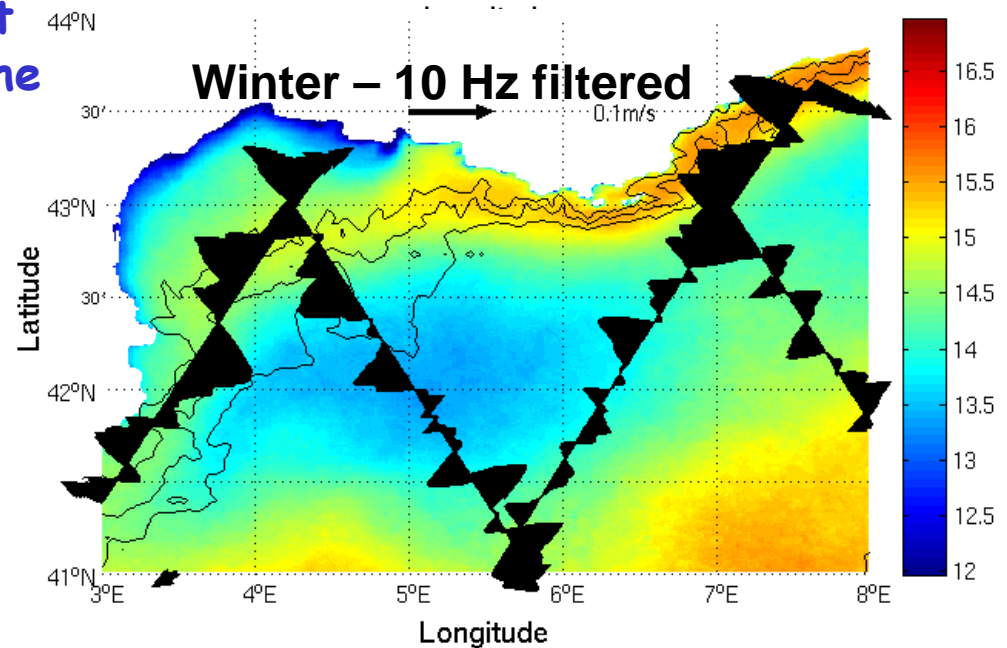
Perspective: Regional product of tidal harmonic constituents derived from XTRACK alongtrack SLA
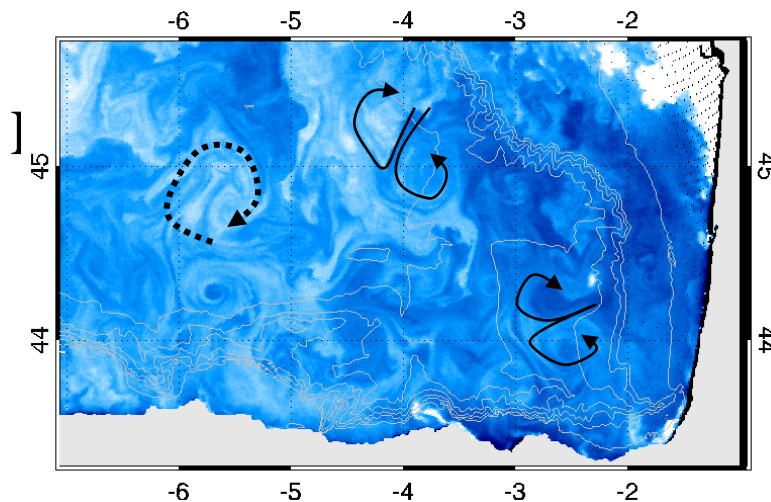

Along-track harmonic analysis computed from Topex-Poseidon/Jason series
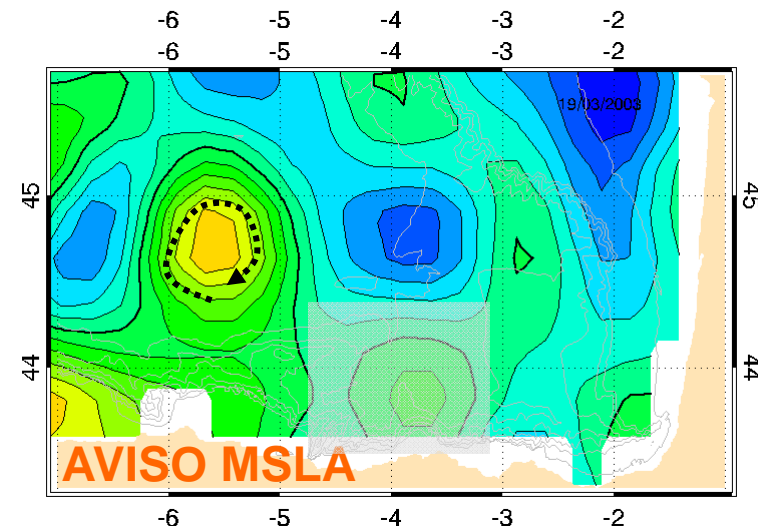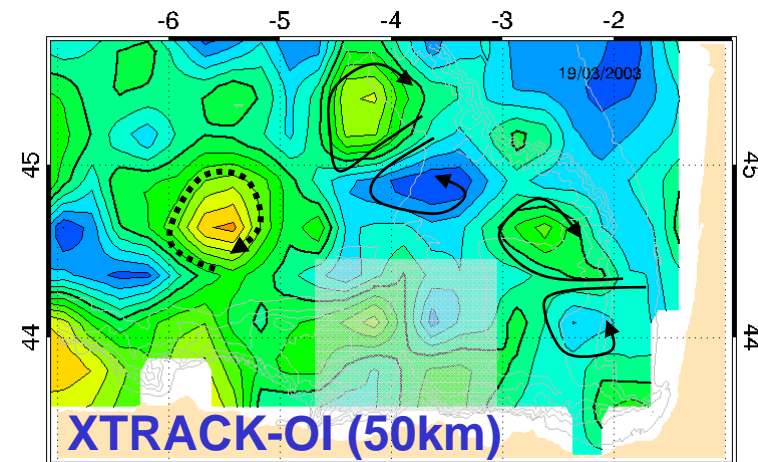
⇨ Along-track amplitude, phase and error for different tidal constituents

⇨ Local tidal modeling/assimilation in coastal and shelf seas

An example of multi-sensor comparison

- Satellite imagery may provide punctual information on fine scale dynamics

- Finer-scale structures in regional maps
  - Steeper SLA gradients
  - Dipoles visible near the slope

XTRACK-OI (50km)

AVISO MSLA

Poster by Dussurget et al.

ACCESS TO CTOH's DATA BASE

http://ctoh.legos.obs-mip.fr/

DATA CATALOGUE:

- Along-track data

- Coastal products

- Access to Hydroweb data base

- Global surface current data product

- Submesoscale filaments (FSLE or Finite Size Lyapunov Exponent)

Any request? ⇒ *ctoh_products@legos.obs-mip.fr*