Swot Coastal Ocean and Estuarine Products Usability Study (SCOEPUS)

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(1) evaluate SWOT products (data, corrections, flags) on the shelf and in estuaries and coastal lagoons,

(2) Use LR/HR products to study
- water level variability and circulation in estuaries and coastal lagoons
- coastal circulation and river plumes,
- internal tides.

(3) test the consistency between SWOT observations and our numerical simulations using an ensemble-based approach
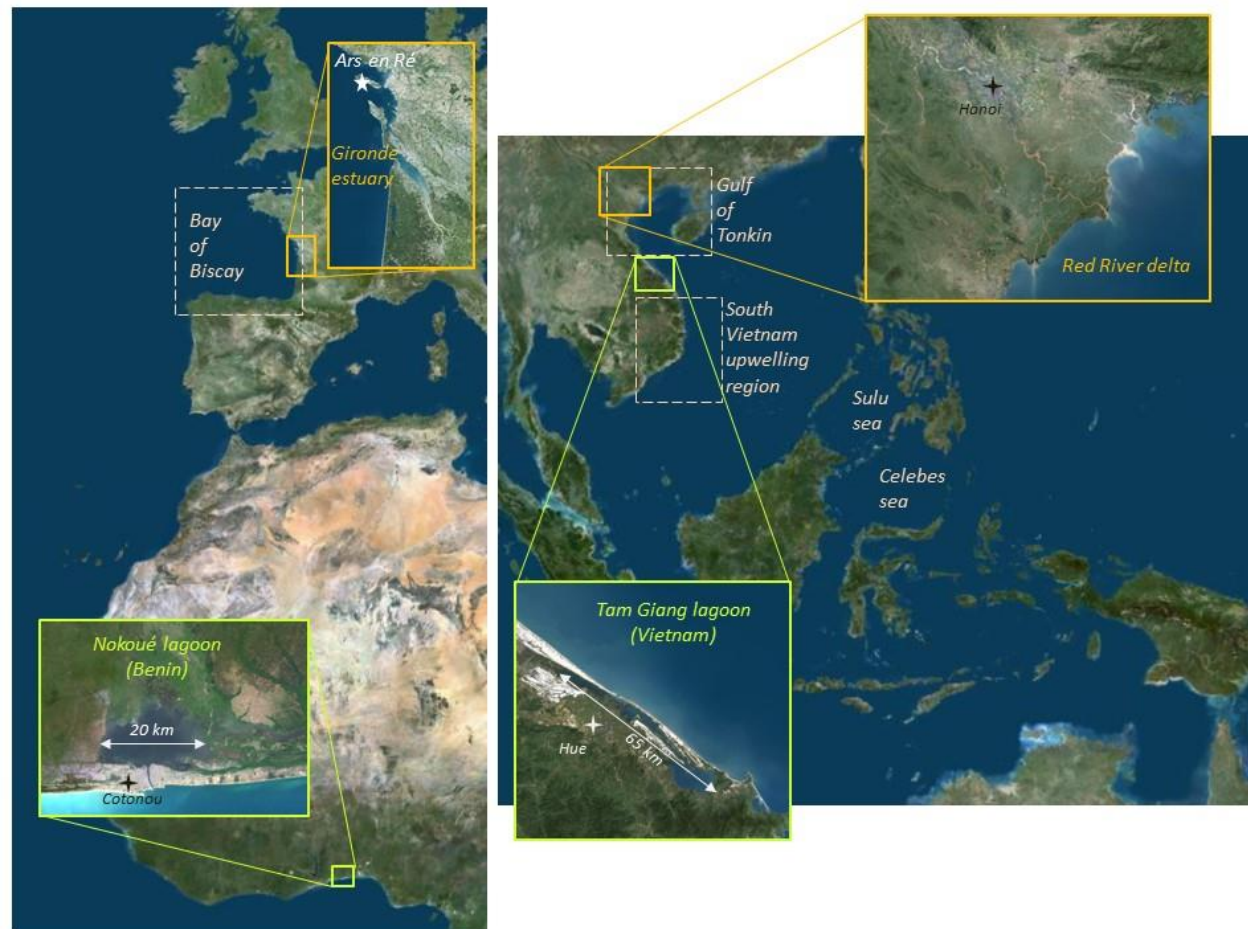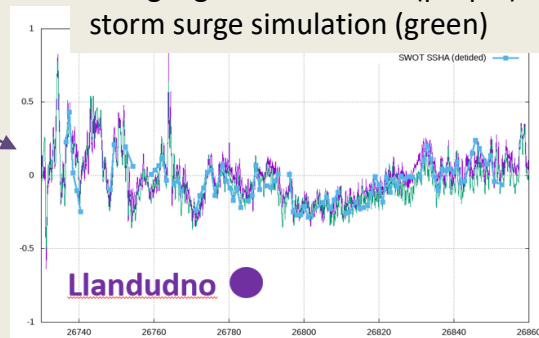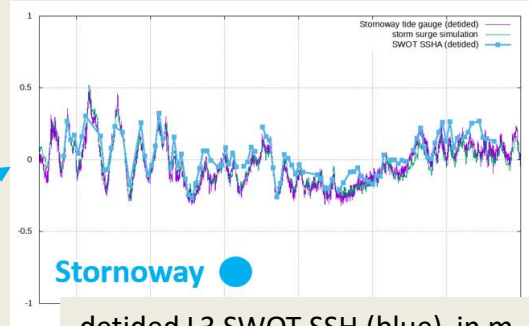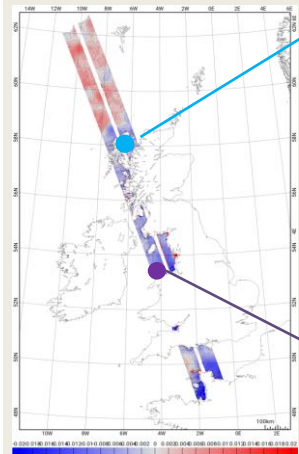
First evaluation of SWOT LR products in coastal areas of the North-East Atlantic and in the Gironde estuary

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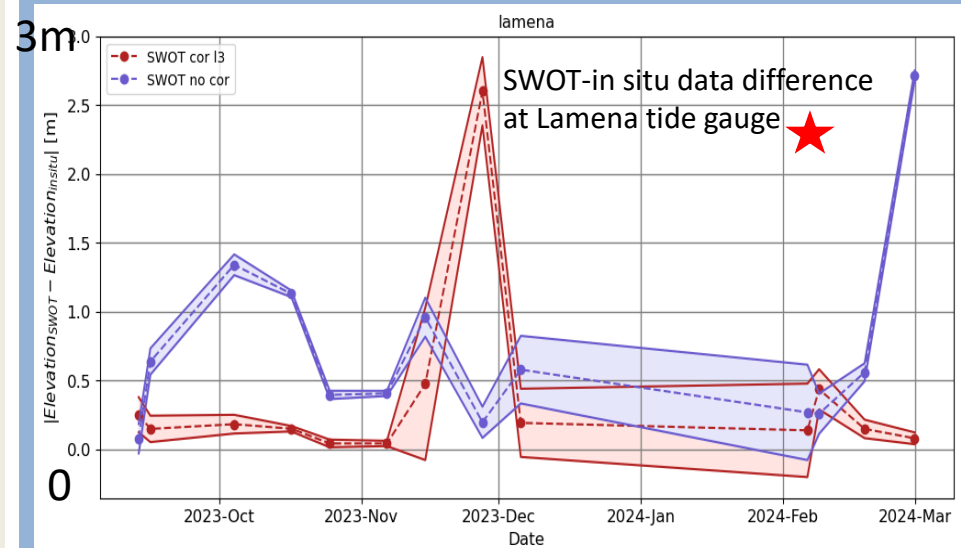
CAL/Val orbit - North Sea and Irish Sea

- good agreement between SWOT and the tide gauges measurements especially at the beginning of the period
- differences < ~20 cm
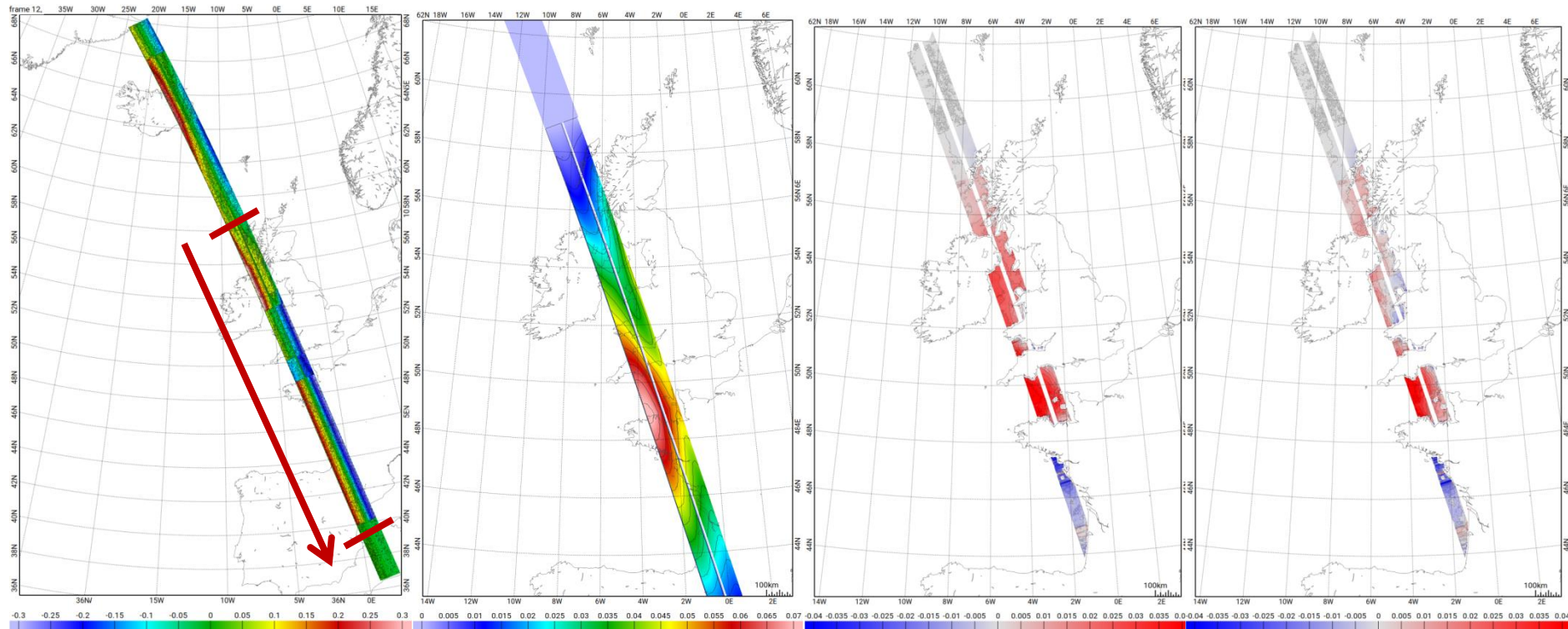- predominance of storm surge signal in detided sea level

Science orbit – Gironde estuary

SSH (unsmoothed) with (red) and without (blue) the L3 correction for roll/phase errors

- crossover calibration necessary to avoid deviation from in-situ measurement > 1 m
- Lamena station: mean deviation from in-situ data ~20 cm + large variability
- Pauillac and Royan station: mean deviation around 50/60 cm

Gironde estuary

LEGEND
Limit of tide influence

CONTINENTAL SHELF

GIRONDE

DORDOGNE

GARONNE

20 km

Stornoway

detided L3 SWOT SSH (blue) in m
tide gauge detided SSHA (purple)
storm surge simulation (green)

Llandudno

3m

0

lamena

- SWOT cor l3
- SWOT no cor

SWOT-in situ data difference at Lamena tide gauge ⭐

$|Elevation_{SWOT} - Elevation_{insitu}|$ [m]

2023-Oct 2023-Nov 2023-Dec 2024-Jan 2024-Feb 2024-Mar

Date

Science L3 Smoothed, pass #348 : investigating calibration correction

L3 calibration
along-track slope
O(25cm)/km

Native L3
calibration versus
linearized,
deviation

SSHA standard deviation difference,
linear versus native calibration
Using GDR DAC (left) and more precise
regional DAC (right)

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