

❑ **Objectives:** Establish the link between Altimetry experts and applications (MSL, mesoscale, etc)

- New insights about errors in the altimeter system

⇒ From experts to applications

- User needs and requirements in terms of errors, including formalism of errors

⇒ From applications to experts

❑ Splinter divided into 2 parts :

- 1) Mean Sea Level errors: 3 talks / 2 posters
- 2) Short wavelength errors : 2 talks / 2 posters
- 3) Instrumental errors : 1 talk

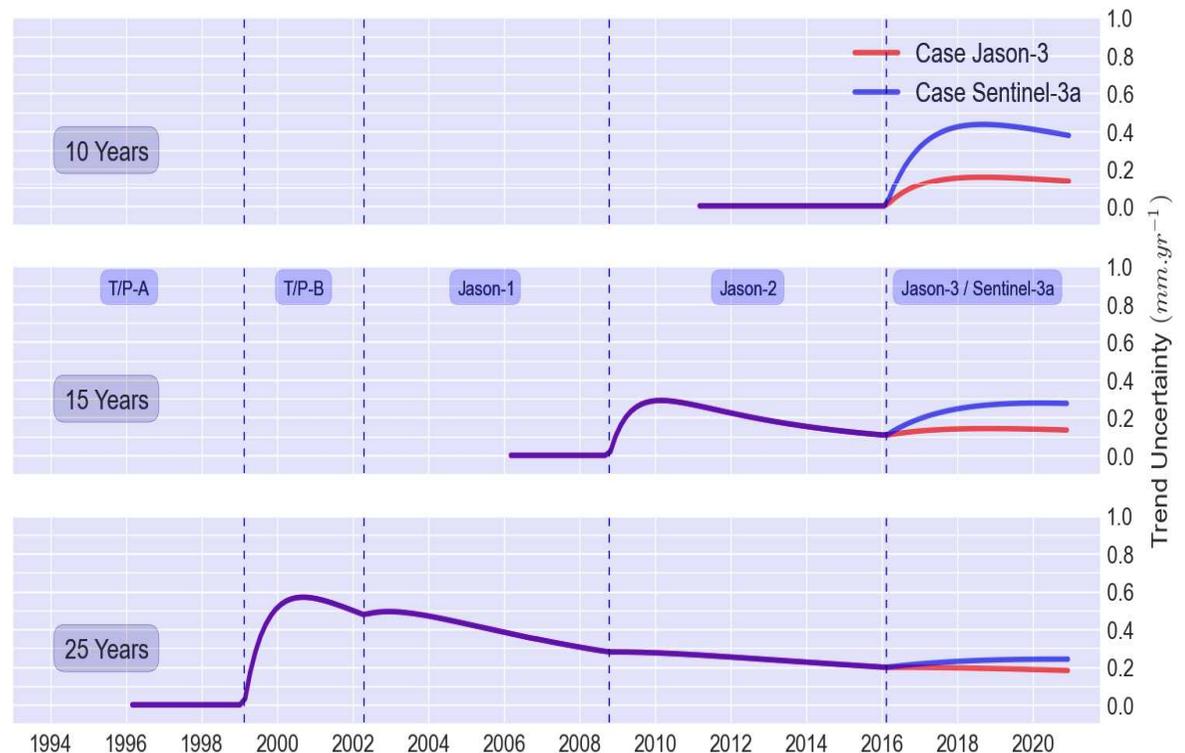
Mean Sea Level errors

□ **L. Zawadzki et al.** : Accuracy of the mean sea level continuous record with future altimetric missions: Jason-3 versus Sentinel-3a

⇒ What would be the impact on the GMSL of using S3-A instead of Jason-3 as reference mission ?

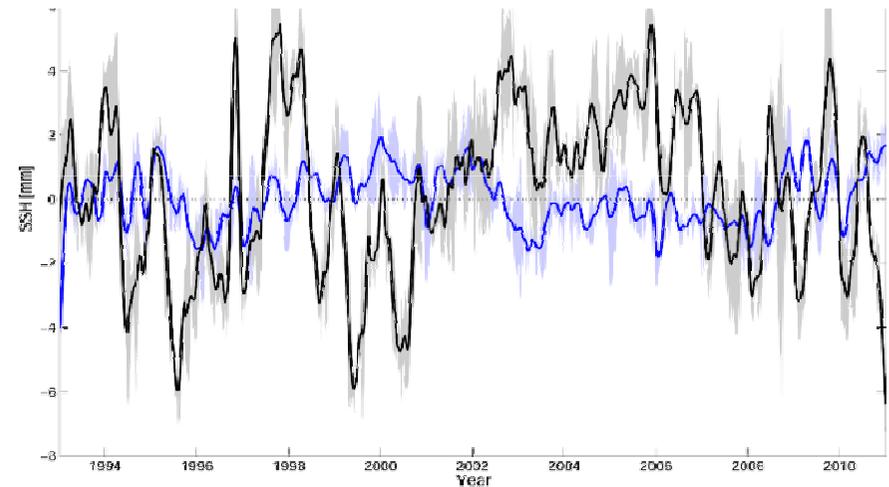
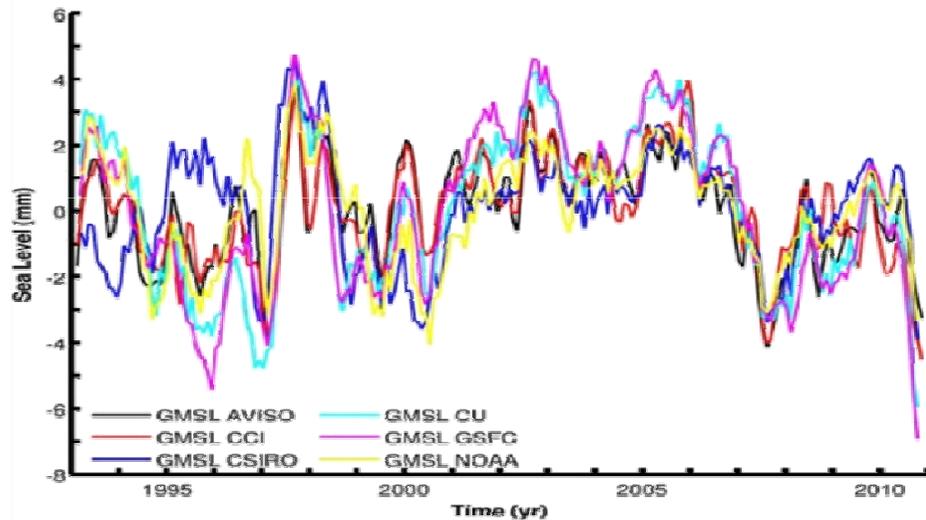
- Linking Sentinel-3 MSL time series to Jason-2 has a strong impact on the global (and regional) MSL uncertainty, mainly due to the absence of a calibration phase.

- Changing the historical TOPEX/Jason orbit for Sentinel-3a orbit would therefore exceed user requirements over 10 years even though it is only one component of MSL error budget (Ablain et al. 2015).



Mean Sea Level errors

- **M. Scharffenberg et al.** : Uncertainty estimates of altimetric Global Mean Sea Level timeseries
⇒ Impact of the STORM/NCEP model [von Storch et al. 2012] as synthetic truth to test the effects of applying different averaging methods.



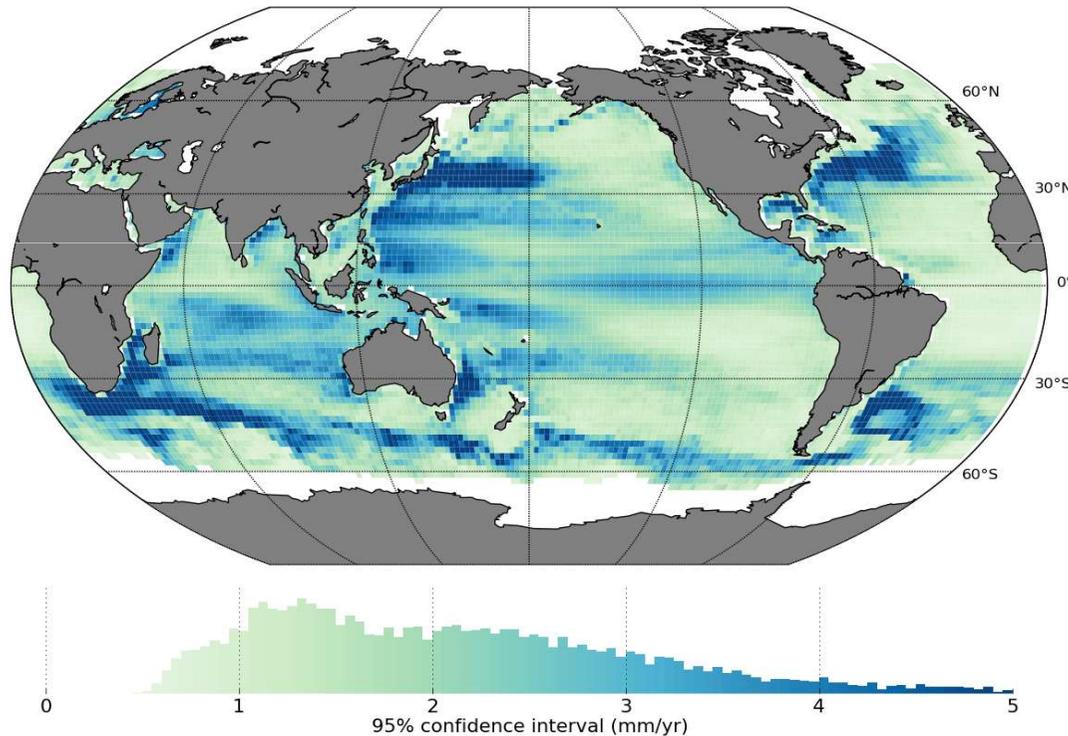
⇒ This work is an update of O. Henry et al., 2013

⇒ depending on the method used, the uncertainties of the GMSL estimates needs to be considered larger by up to +6 mm

Mean Sea Level errors

□ P. Prandi et al. : How reliable are regional sea level trends ?

⇒ Objective: provide a map of uncertainties of regional MSL trends trends



- Systematic uncertainties range between **1 to 3 mm/yr**

- Results depend on the *a priori* description of errors : if the error model is wrong, the results are ⇒ Accurate error covariance description is crucial

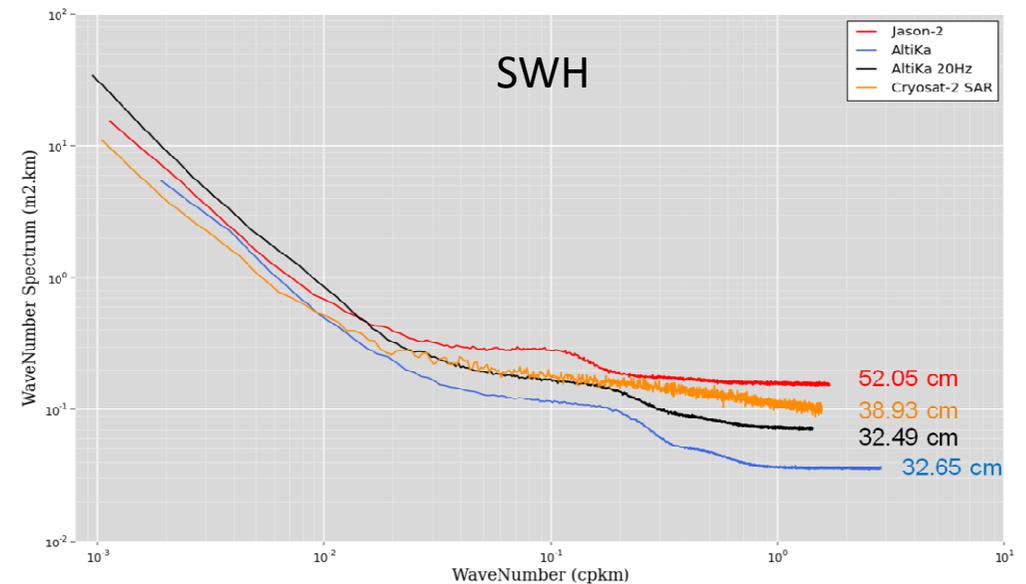
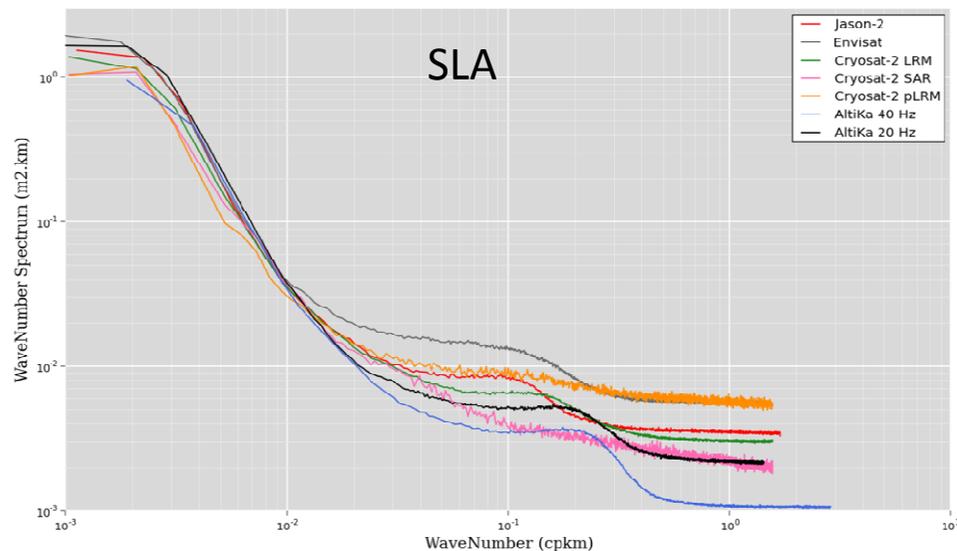
- With time, the CI will reduce

Providing this map was a recommendation of last OSTST

Short wavelength errors

□ P. Thibaut et al. : Characterization of the Altimeter Mission Performances over Ocean: Comparison and Interpretation

- ⇒ Most of past/present altimeter missions have been looked at and compared with the same processing applied: Performances have been derived using different metrics
- ⇒ 20Hz std and PSD noise level are strictly equivalent at low SWH and coherent with simulations
- ⇒ PSD noise level for high SWH doesn't represent the instrumental noise. Does SWH/Swell introduce correlated errors in the estimates ?
- ⇒ Very good SLA performances of CS-2 SAR but also of SARAL (Ka band / 40 Hz), even better SWH performances with Saral

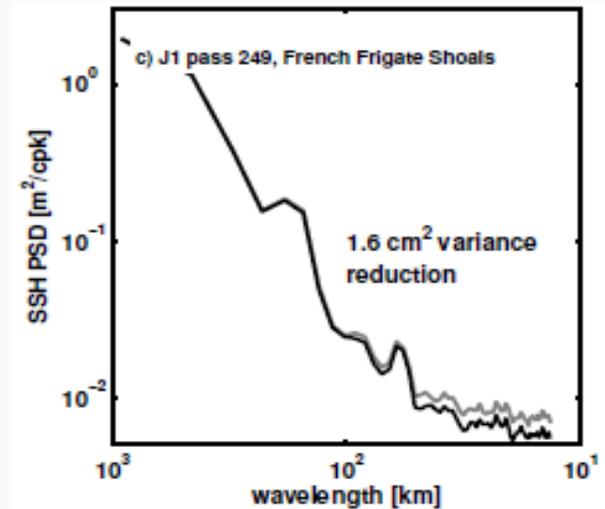
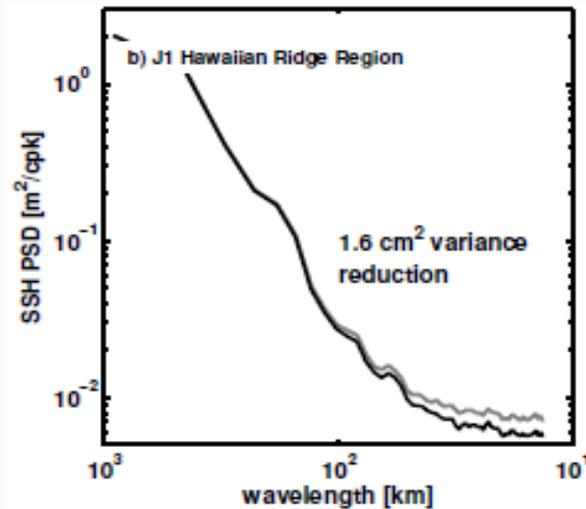
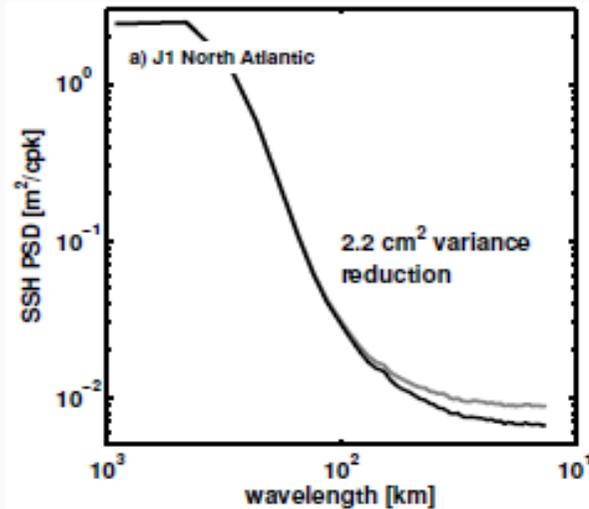


Short wavelength errors

E.D. Zaron et al. : identification and reduction of retracker-related noise in altimeter-derived sea-surface height measurements

⇒ An empirical approach to reducing the retracker-related SSH error was implemented, based on analysis of J1-J2 during the J2 cal/val orbit phase.

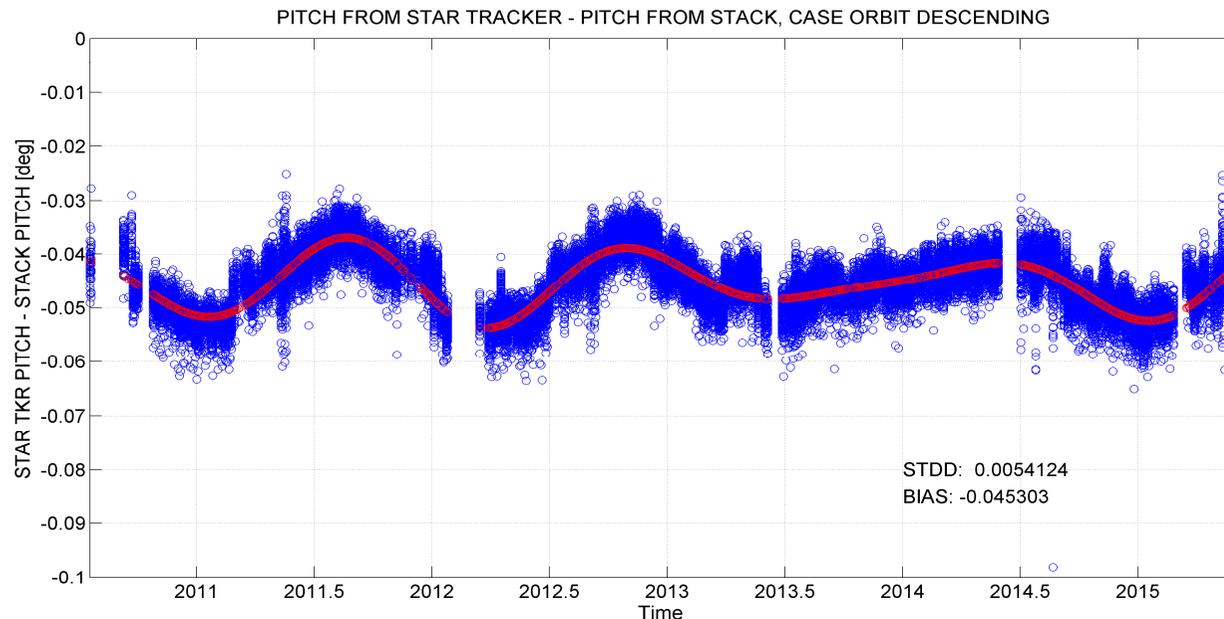
⇒ The high-wavenumber SSH noise floor is reduced by about 2cm^2 , depending on SWH.



Instrumental errors

□ D. Salvatore et al. : Seasonal Effects on the Pitch Measurements for Cryosat-2

- ⇒ Thanks to pitch mispointing computed from Stack, a sinusoidal pattern in the Star Tracker estimation of the pitch mispointing has been detected (potentially correlated to sun illumination conditions).
- ⇒ After removal of the sinusoidal pattern, the estimation of the pitch from Star Tracker and Stack are pretty consistent (around 3 millideg)
- ⇒ It is essential to calibrate also the roll mispointing (that can be affected in the same way by solar illumination).
- ⇒ We recommend to perform the same exercise routinely for Sentinel-3, as long as for the roll.



Posters

- Labroue et al. Sentinel-3 Delay Doppler Altimeter: a New Insight on High Resolution Ocean Dynamics
- M. Scharffenberg: Sea level ECV quality assessment via global ocean model assimilation
- H. Dieng et al. : Sea level budget over 2005-2013: Missing contributions and data errors
- Laura A. R. Etcheverry et al.: Satellite altimetry data validation in San Matias Gulf, Argentina

Conclusions

❑ from last OSTST :

- new insights allowing a better description of the altimeter errors
- 2 recommendations of last OSTST have been answered:

⇒ errors are provided as function of wavelength

⇒ the errors on regional sea level trends have been characterized and a map has been provided

❑ Recommendation for the next OSTST:

- feedbacks from end-users to better characterize the error for their studies are very encouraged !
- the total propagation of measurements errors into final products should be further studied.