

SARAL/AltiKa data quality assessment over ocean

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SARAL/AltiKa workshop

October 27, 2014
Conzanz, Germany

Cal/Val activities

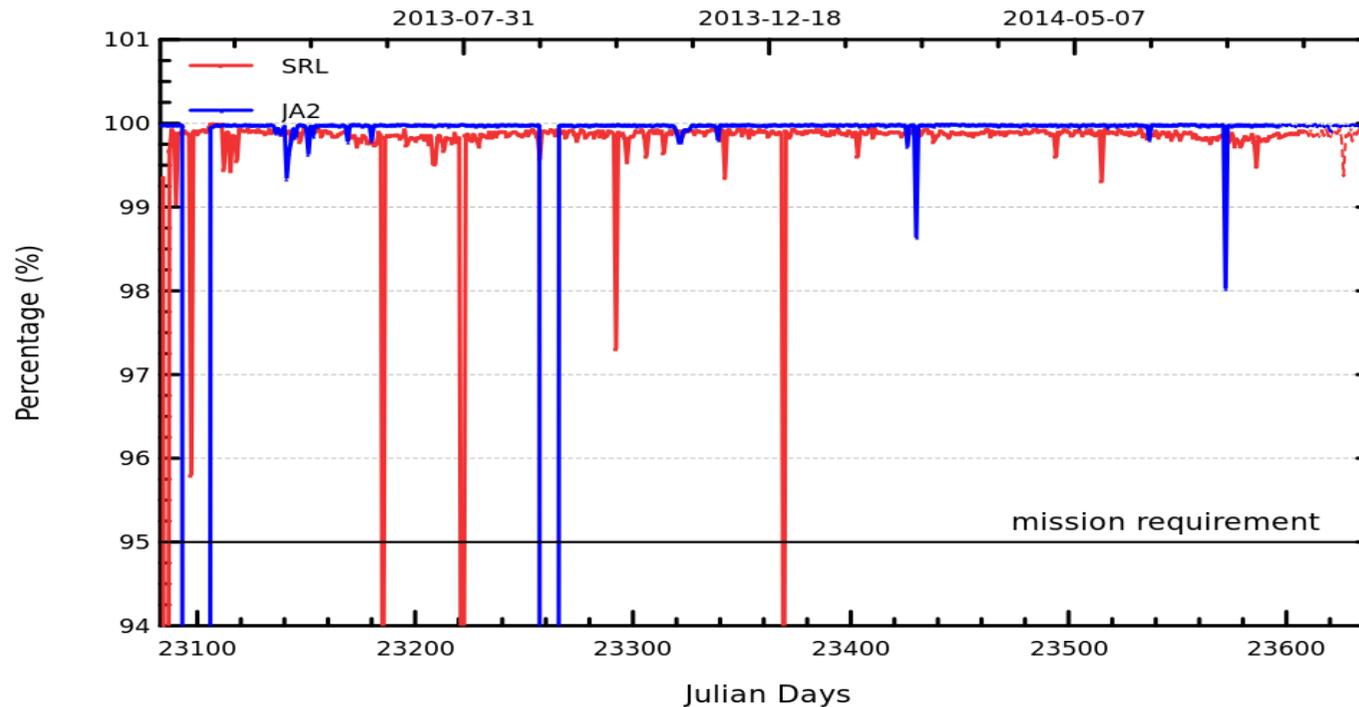
- Objectives of altimetry validation activities over ocean
 - check the data availability and validity
 - analyze the physical content of product parameters
 - estimate the system performance
 - contribute to a better knowledge of the sea-level physical content
 - check improvement by new standards
 - provide information to users and production centres

Outline

- Data availability & editing performance,
 - Altimeter and radiometer parameters,
 - Crossovers & Sea level anomaly performance
-
- Based on SARAL/AltiKa GDR & IGDR data using Patch 2
 - Covers about 1.5 year
 - GDR cycles 1 to 15 (March 14th 2013 to Aug 21st 2014)
 - IGDR for cycles 16 & 17

Data coverage **AltiKa** v **Jason-2**

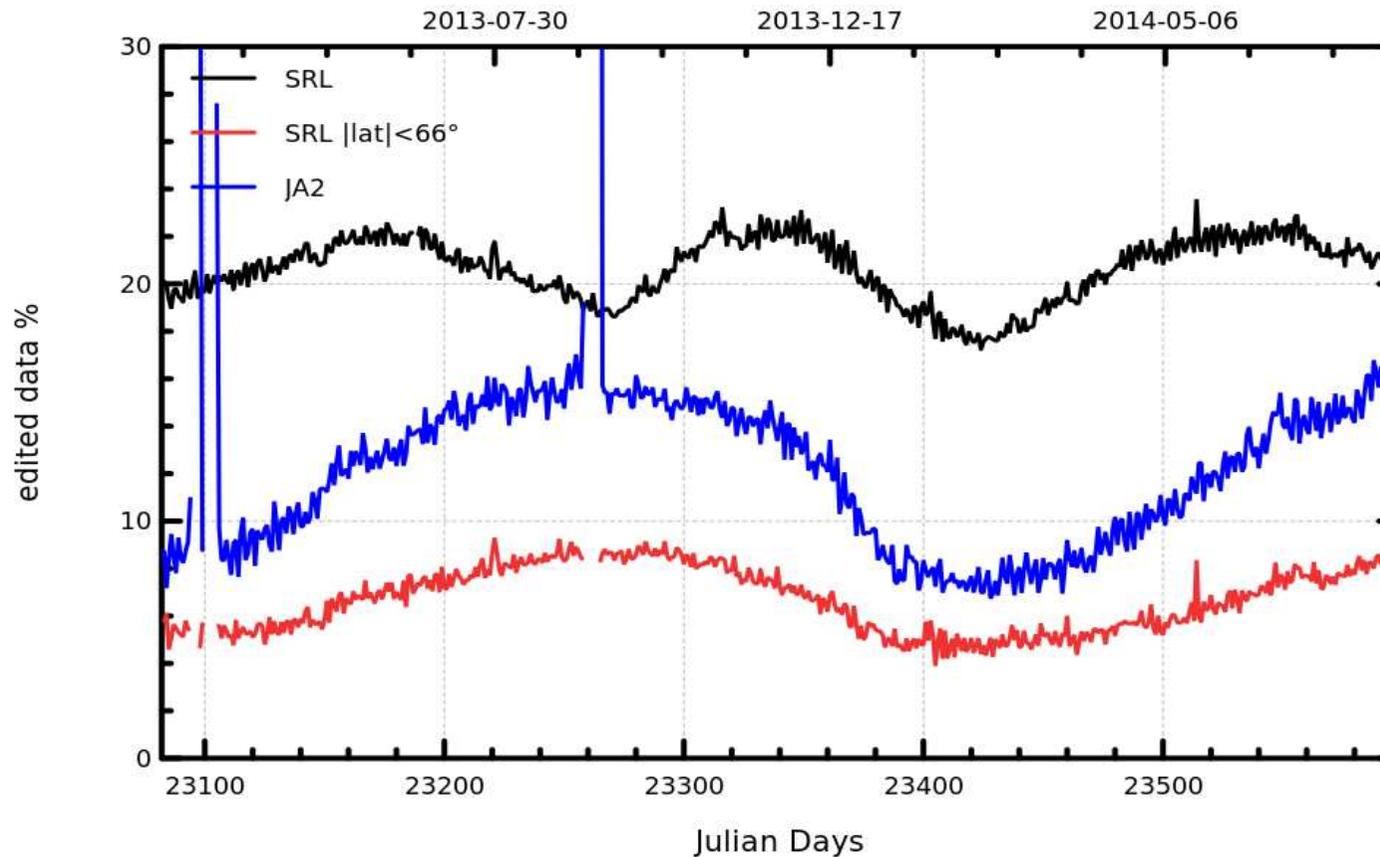
- Ocean only,



- Ocean availability : **99.6 %**
- Exceeds mission requirements

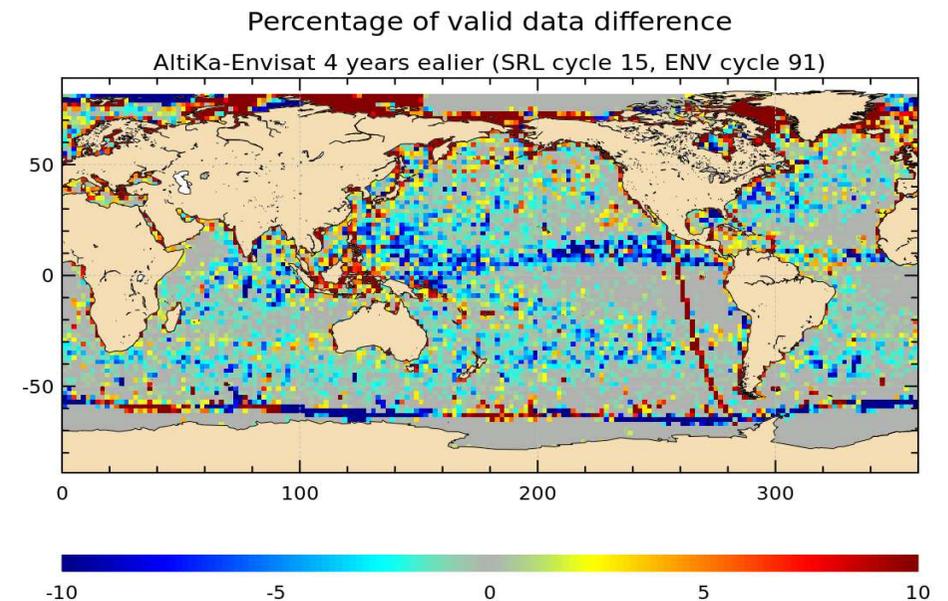
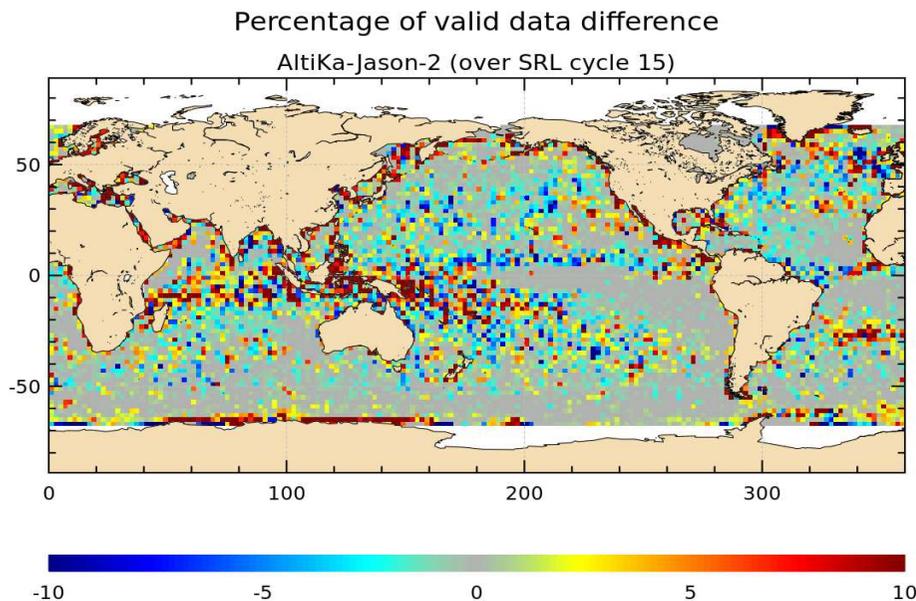
Data editing

- Sea-ice & thresholds combined



Data editing

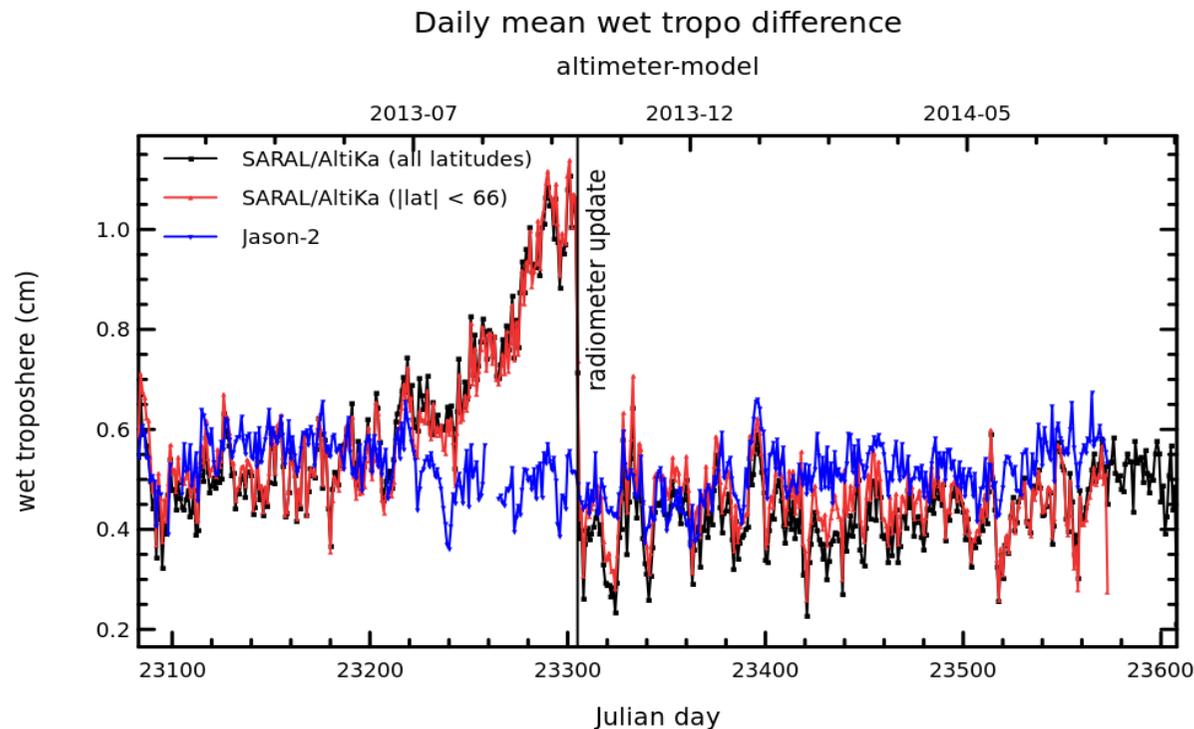
- Mapping the % of valid data differences:
 - More valid data than Jason-2 in the western Pacific
 - Less valid data than Envisat (impact of Ka band)



ALTIMETER & RADIOMETER PARAMETERS

Wet troposphere

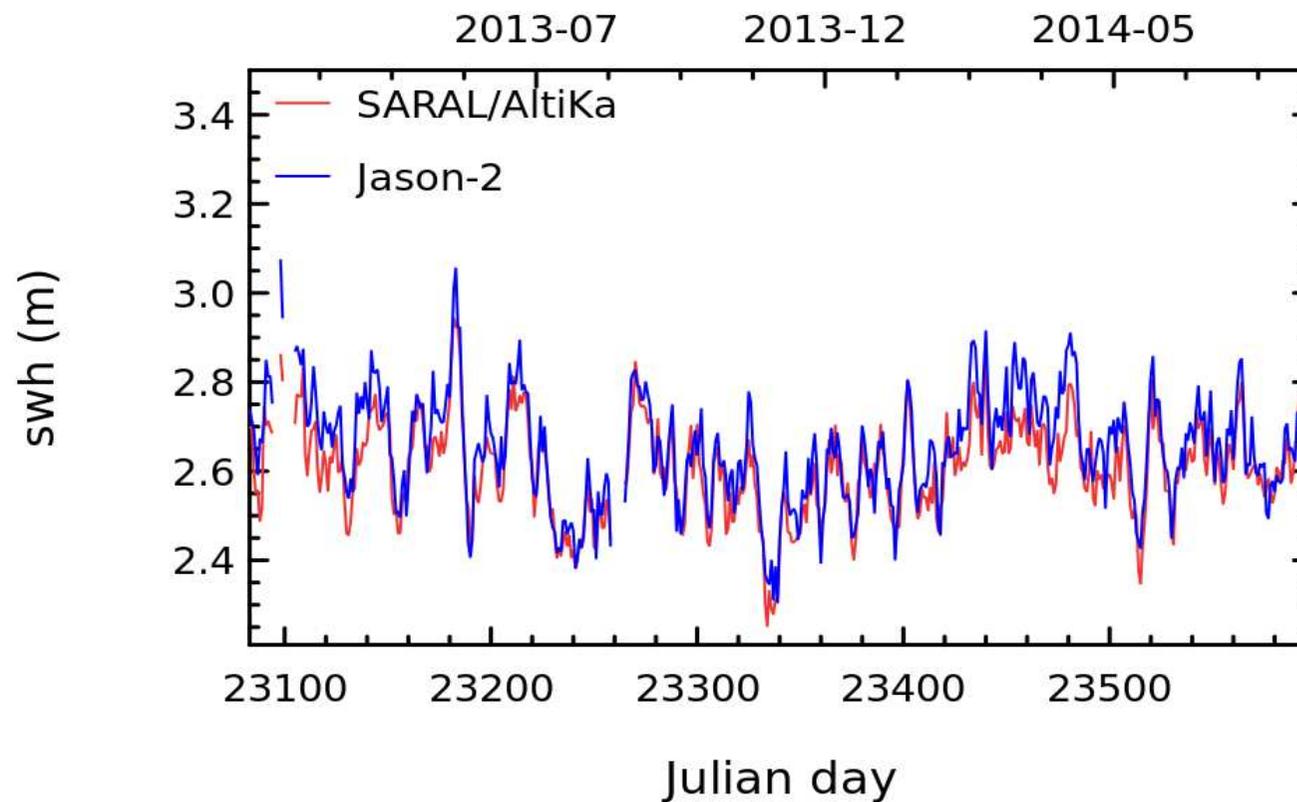
- saturation of radiometer hot calibration counts from July to October 2013



- Correction calculated, will be in the P3 products
(see poster 103 by Frery et al.)

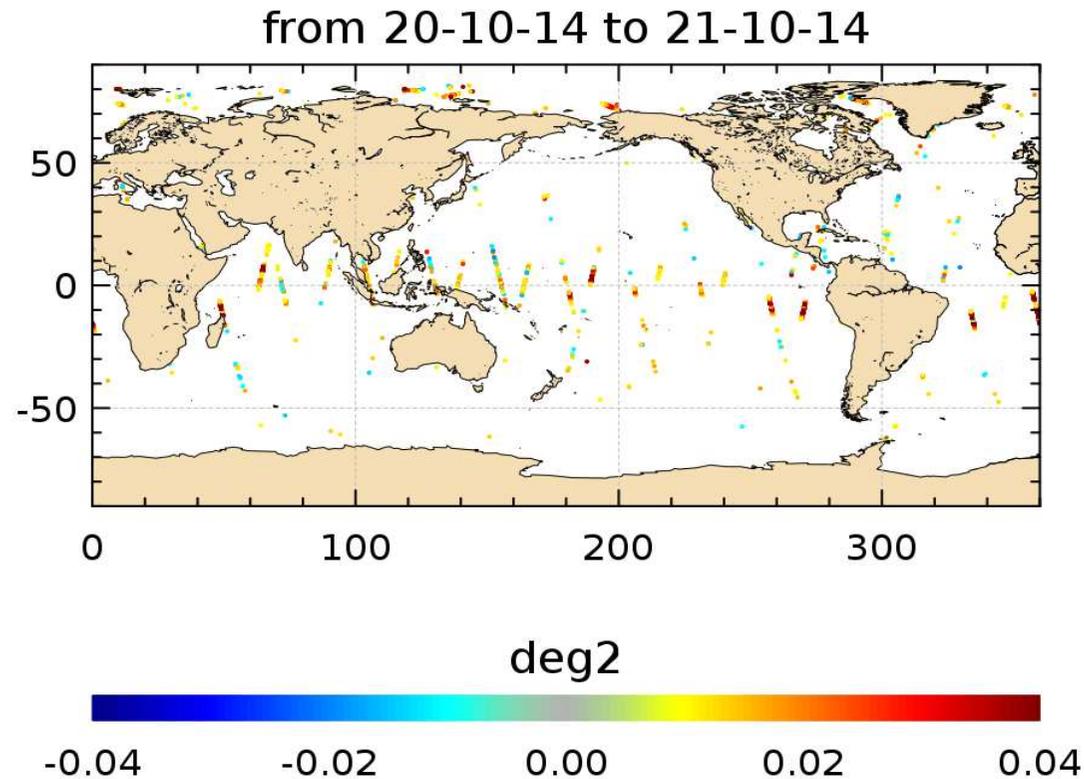
Altimeter parameters

- Excellent consistency between Jason-2 and SARAL for wind speed and SWH



Mispointing

- Since cycle 15, increase in mispointing events due to RW friction,
- Wheel eventually stopped -> SHM on Oct 6th (c17/p324) for 3 days

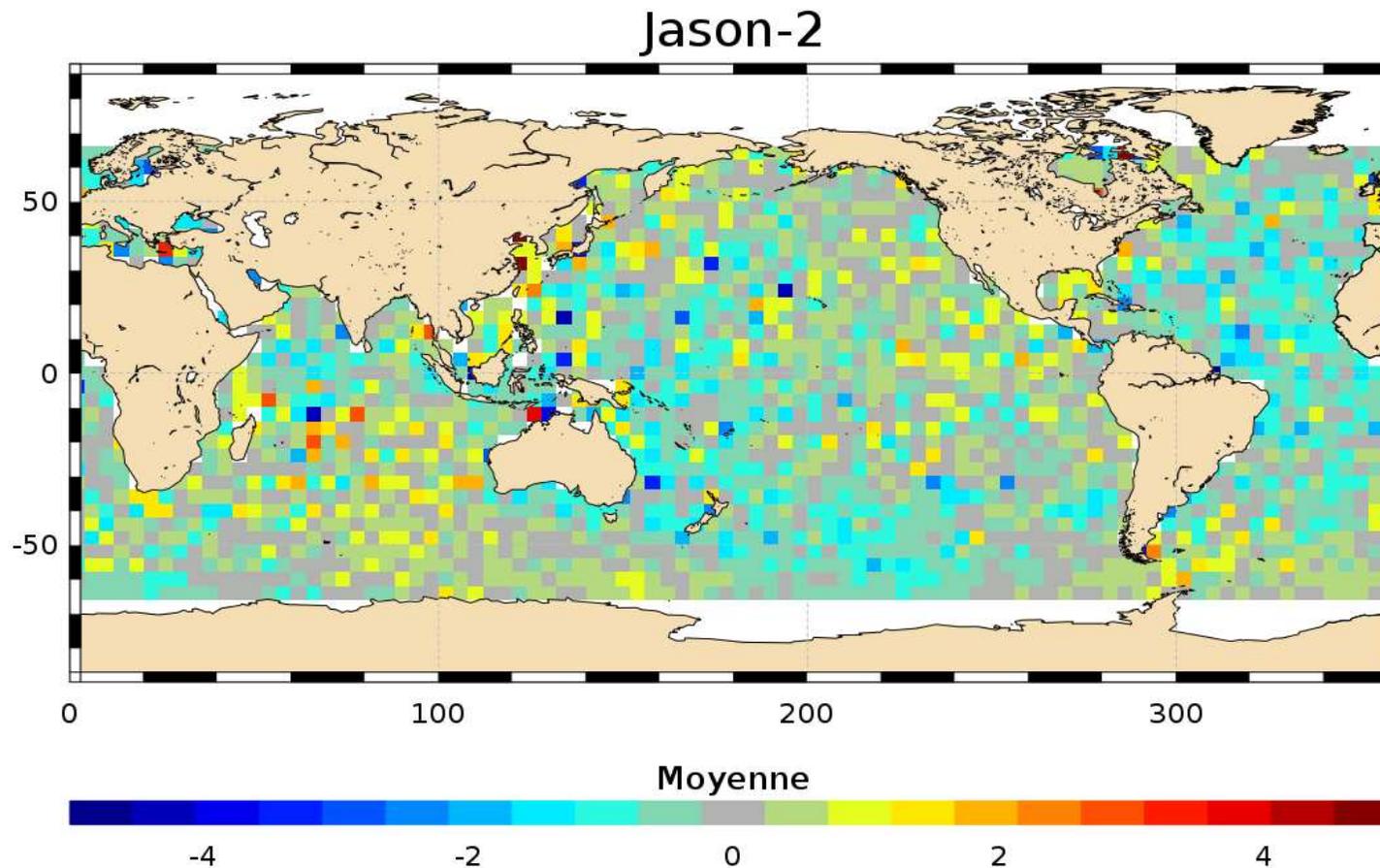


- After SHM, no impact on sea level performances

SSH PERFORMANCE ASSESSMENT

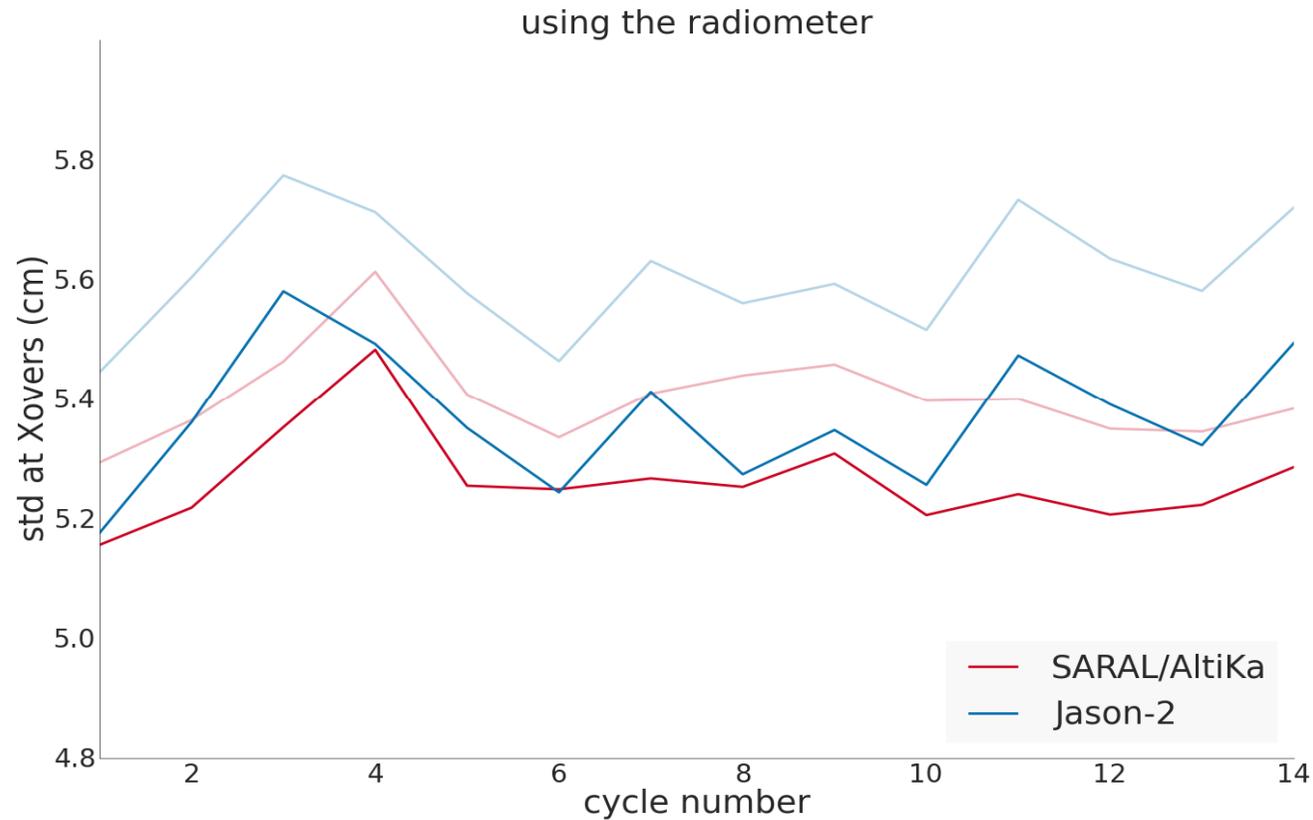
Mean differences at X-overs

- Mono-mission mean differences



- Slightly larger geographical patches on SARAL/AltiKa

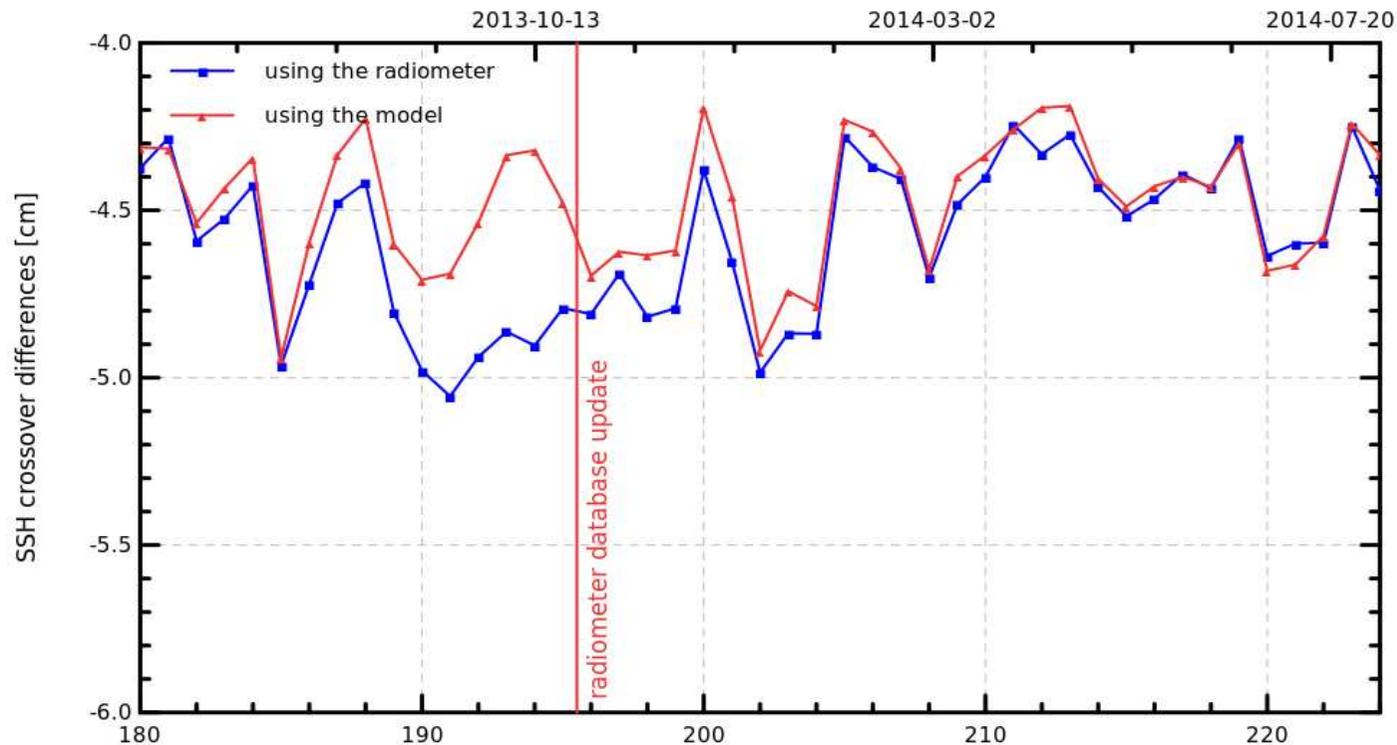
Std at mono mission X-overs



- SARAL/AltiKa is slightly better than Jason-2

Evolution of Sea level anomaly

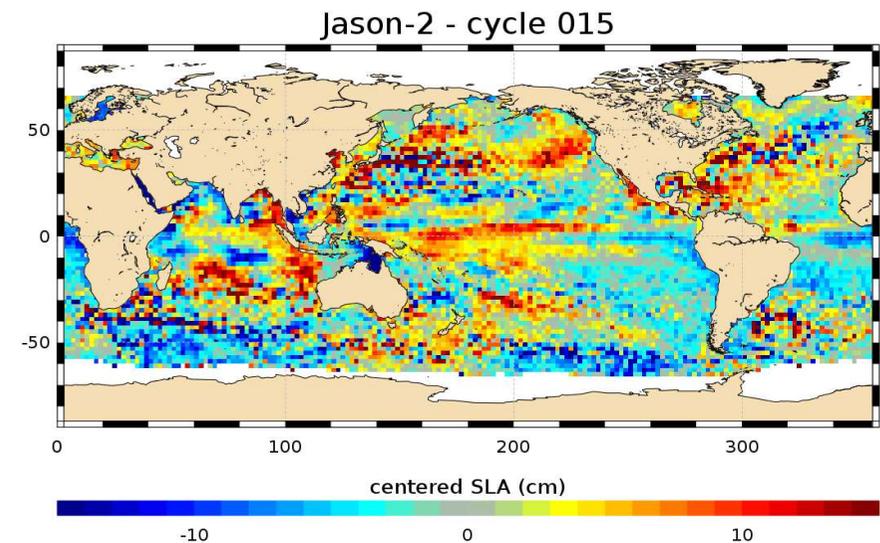
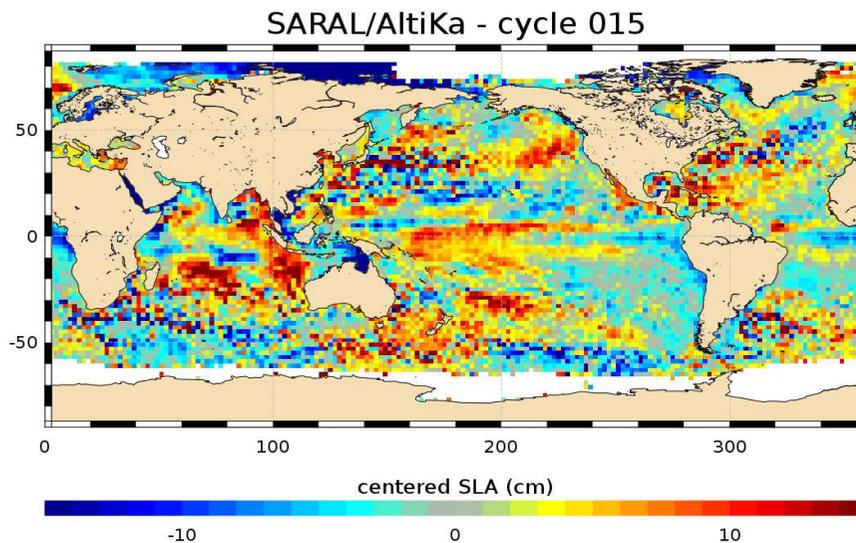
- SARAL/AltiKa SSH bias \approx **-48 mm** relative to Jason-2
- No statistically significant drift



- Excellent mission stability confirmed at AL/J2 crossovers

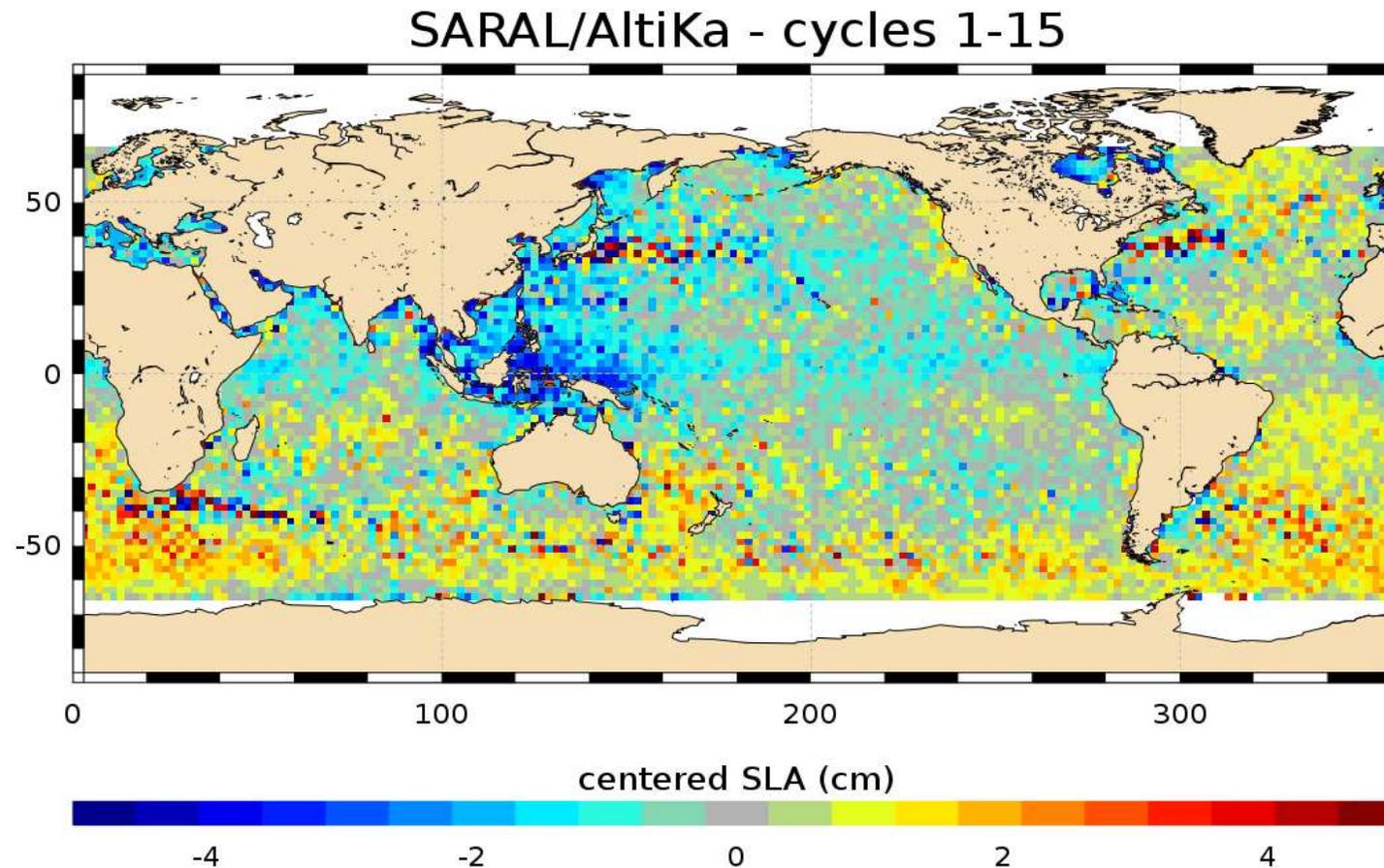
Map of Sea Level Anomaly

- SARAL/AltiKa and Jason-2 see similar geographical patterns



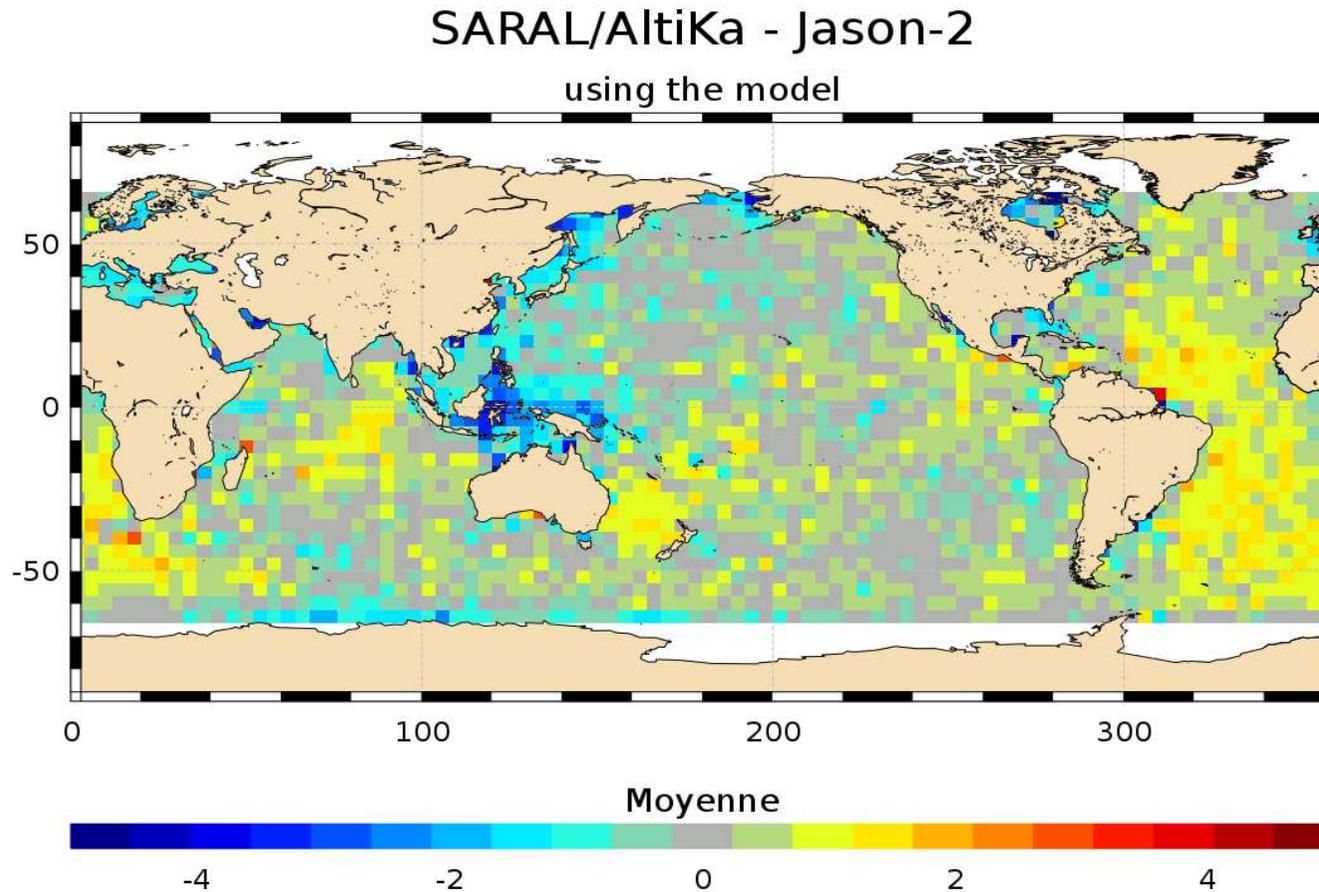
Map of Sea Level Anomaly

- Good spatial consistency between AltiKa and Jason-2



Mean differences at X-overs

- Multi-mission (AL-J2) mean differences



- Remaining East/West pattern

Conclusions

- Data coverage is greater than **99%** over ocean
- Data quality is excellent (less than 10% of ocean data are edited),
- Crossovers show a slightly better performance than Jason-2:
5.2 v 5.4 cm for std of SSH differences
typical Envisat value: 5.6 cm
- No significant global SSH drift is detected wrt Jason-2
- SSH bias wrt Jason-2 is about **-4.8 cm**
- Results in Prandi et al., submitted to Marine Geodesy
- Outputs of routine Cal/Val available on AVISO website

Questions ?

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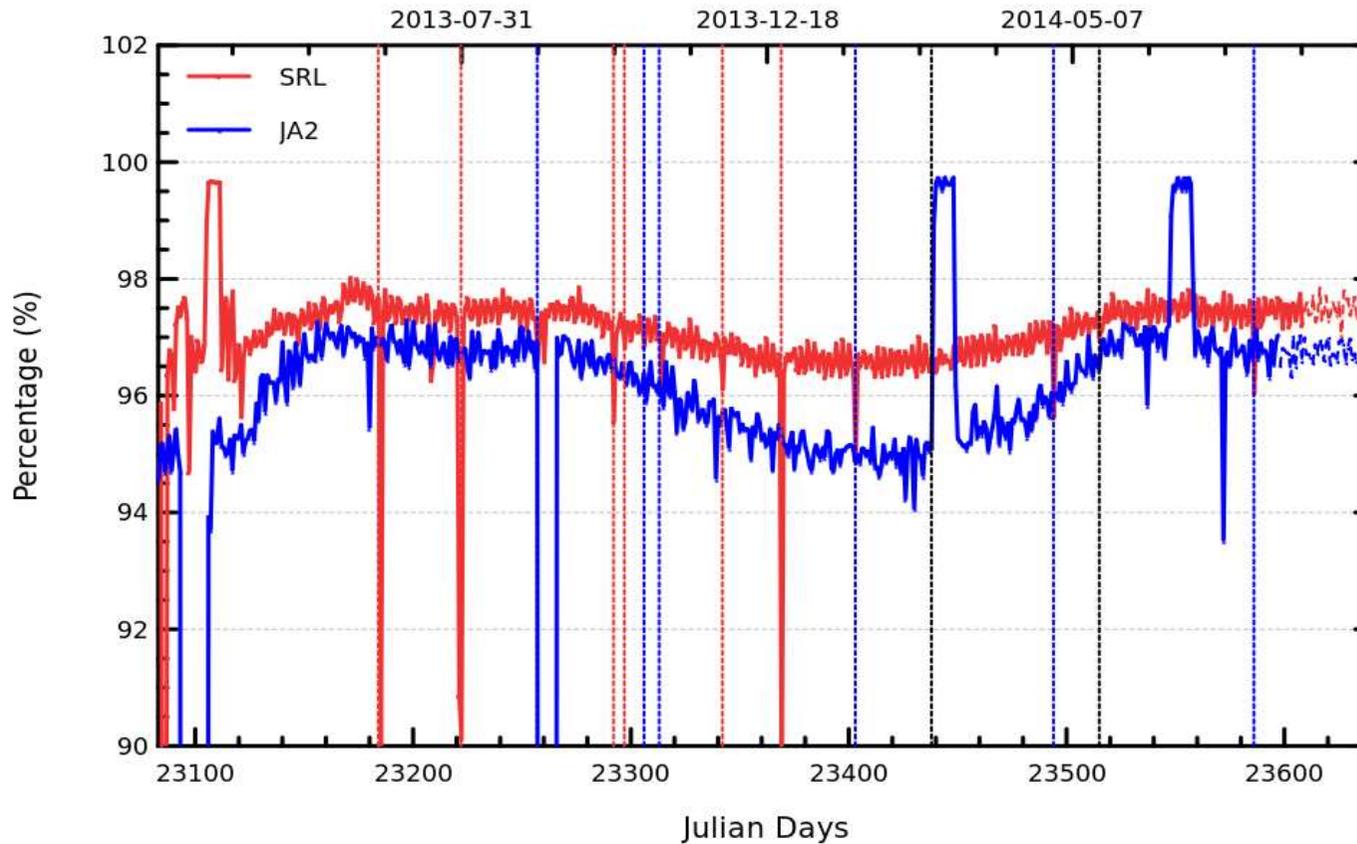


SARAL/Altika workshop

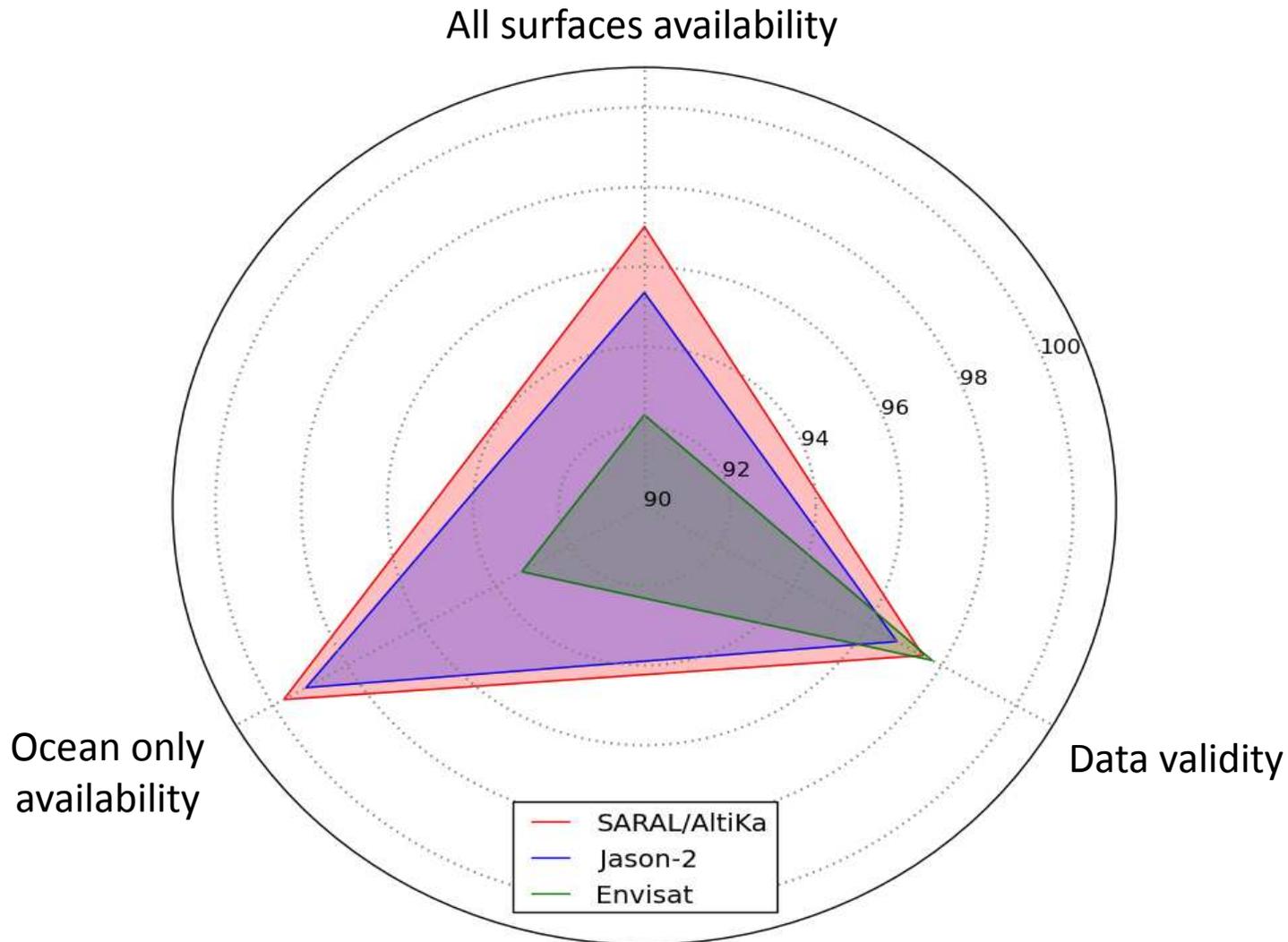
October 27, 2014
Constance, Germany

Data coverage Altika v Jason-2

- All surfaces: land, ocean, ice

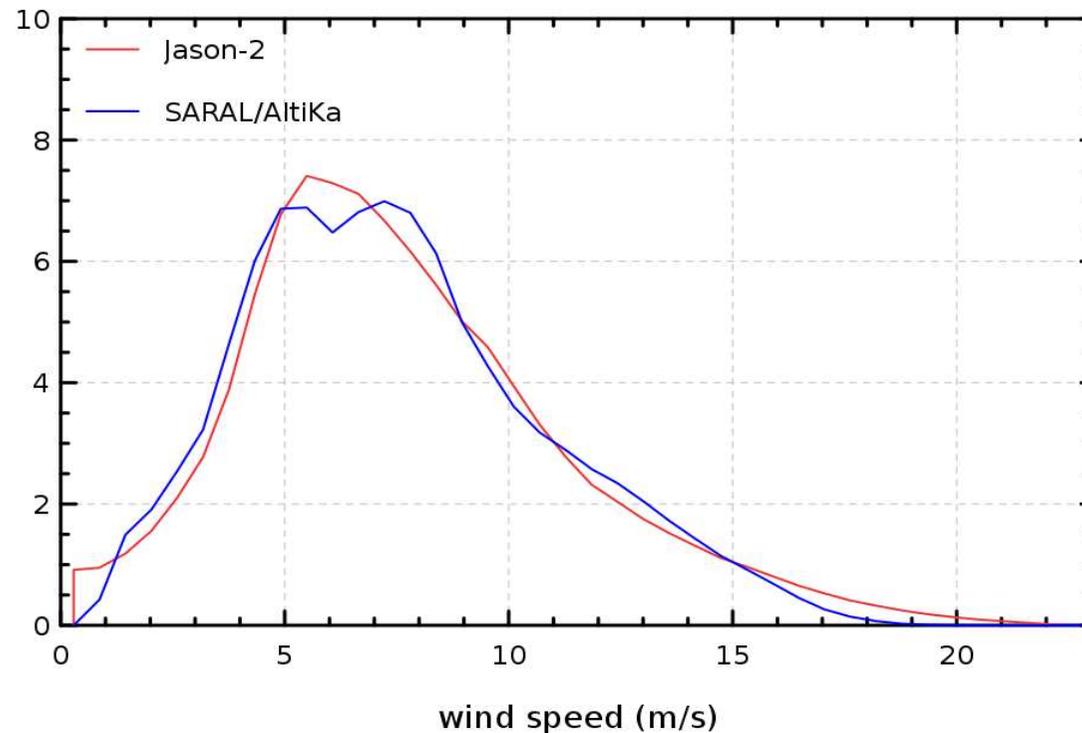


Data coverage summarized



Altimeter wind speed

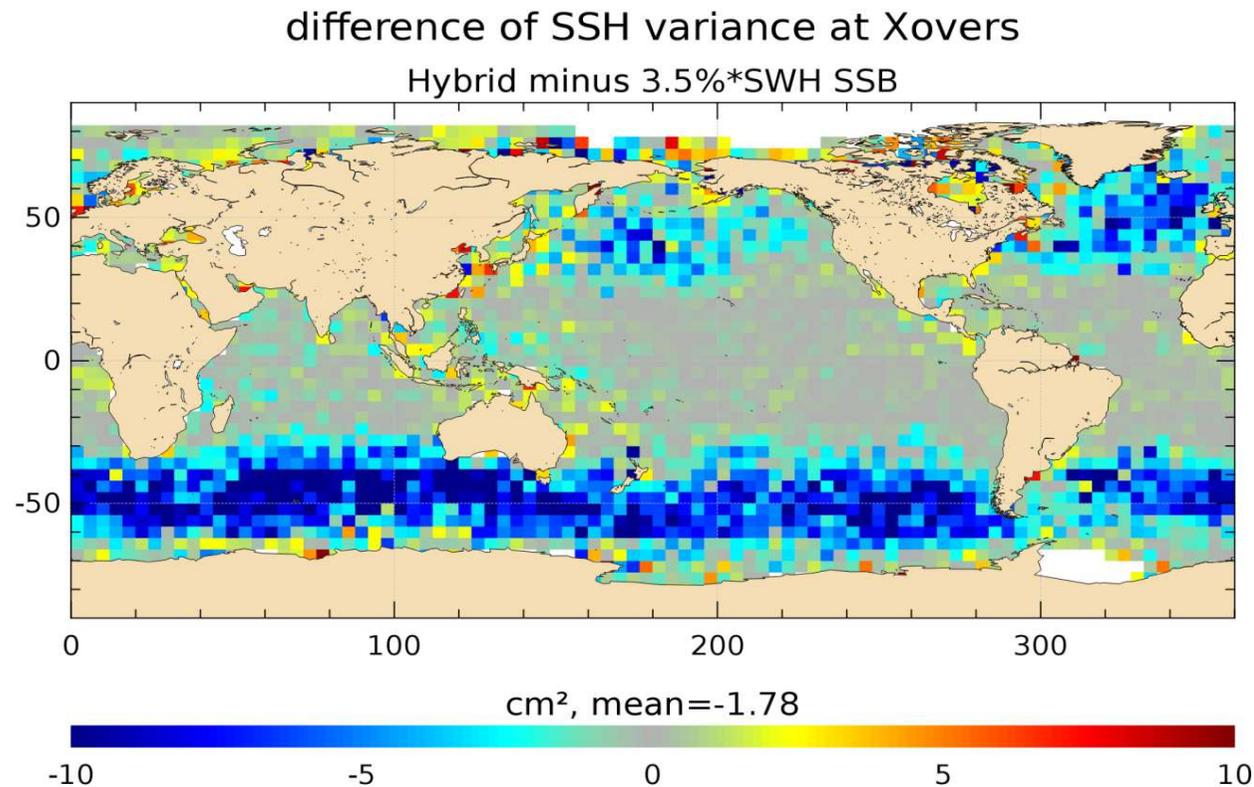
- Patch 2: wind speed according to Lillibridge et al., 2013,
- Wind speed is now close to Jason-2 wind



- Two populations corresponding to two domains of the model

Sea State Bias

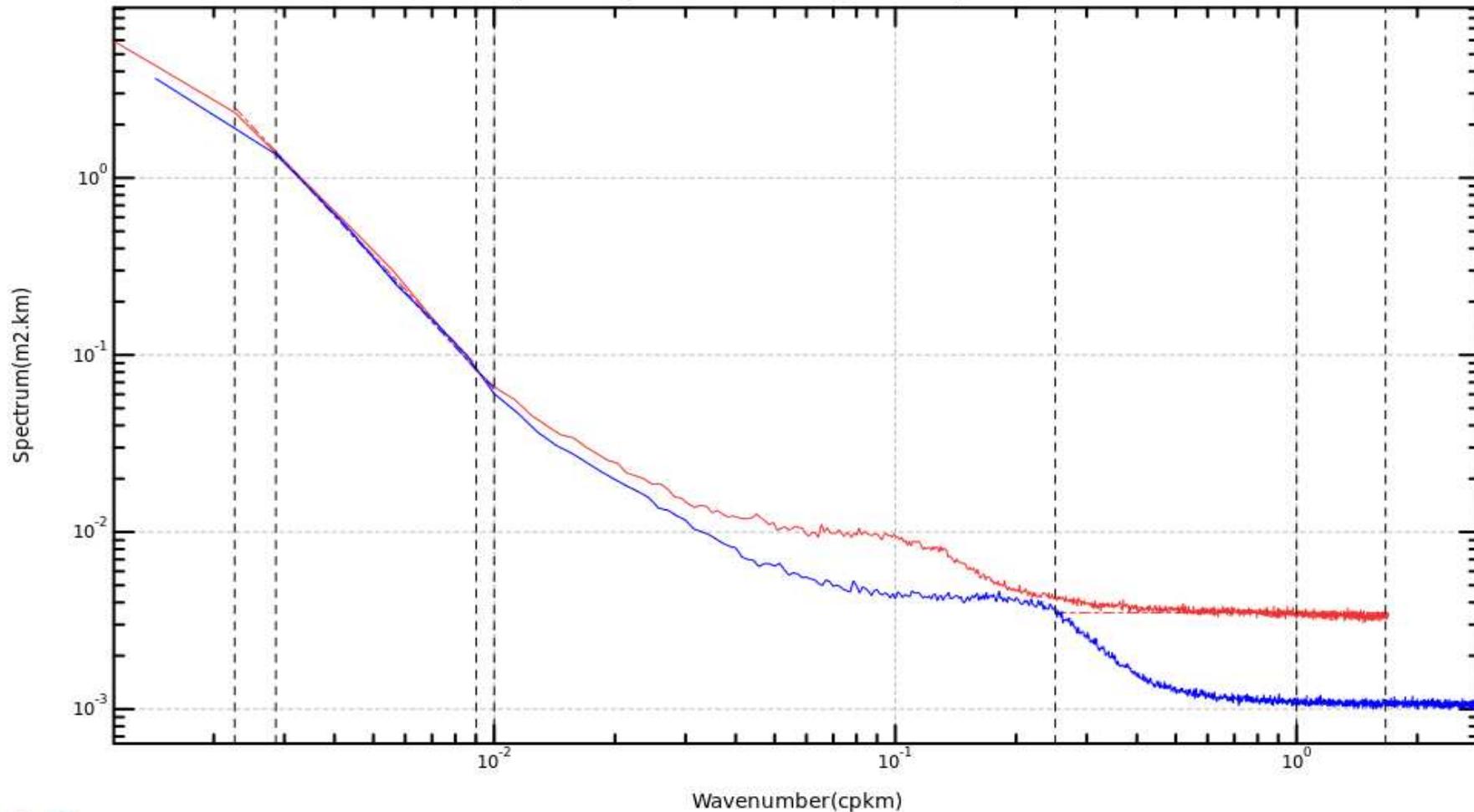
- P2: hybrid SSB from Scharroo,
- Small population of positive SSB, valid from CalVal point of view



- Large improvement in high SWH regions over Patch1

SLA spectrum

SLA Spectrum Jason-2/AltiKa - Cycle 998 pass 175 to 289



— Jason-2 Edit $a=-2.41681077813$ $b=-5.99983925407$ $\sigma=0.076962938649$
— AltiKa Edit $a=-2.45716226043$ $b=-6.10631082494$ $\sigma=0.055389755955$

Global Mean Sea Level

