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## Calibration and validation of HY-2 altimeter wave height

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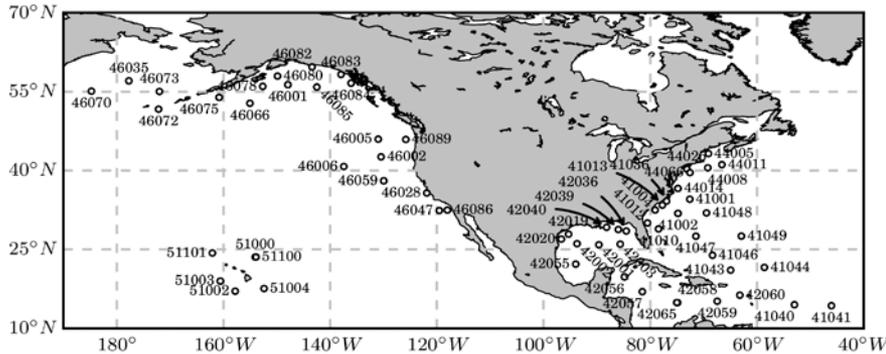
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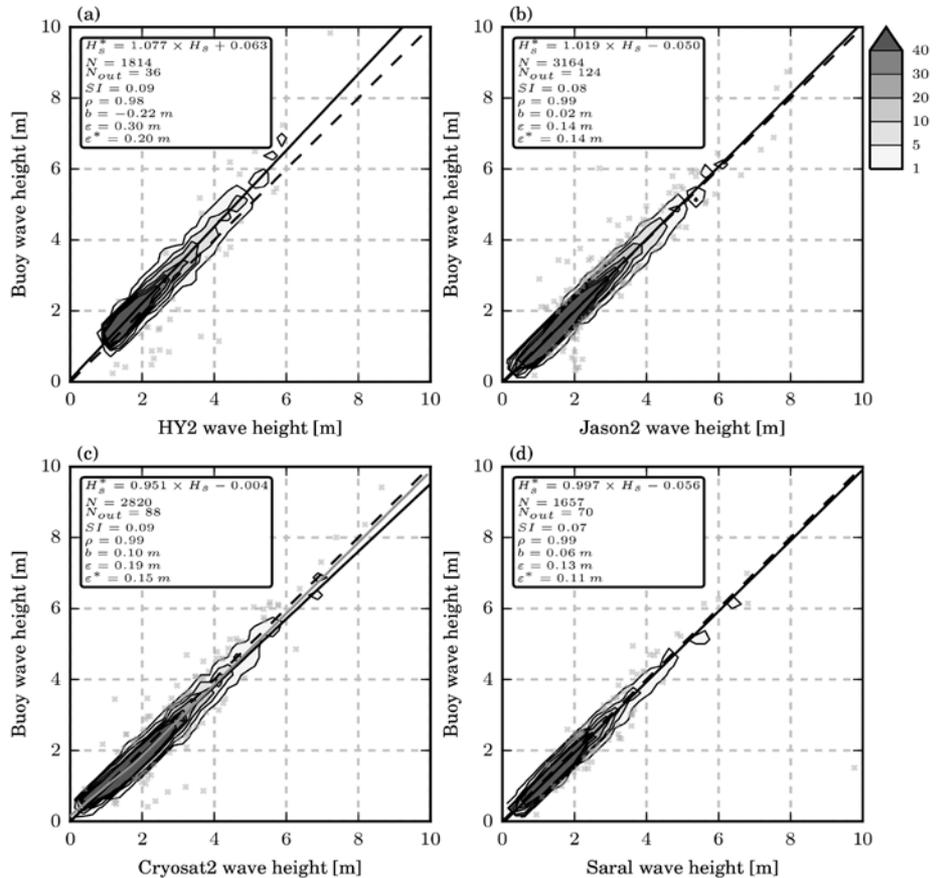
<sup>3</sup> National Satellite Ocean Application Service, Beijing, China

Satellite Oceanography Users Workshop, Melbourne 9-11 Nov 2015

Calibration against in situ measurements

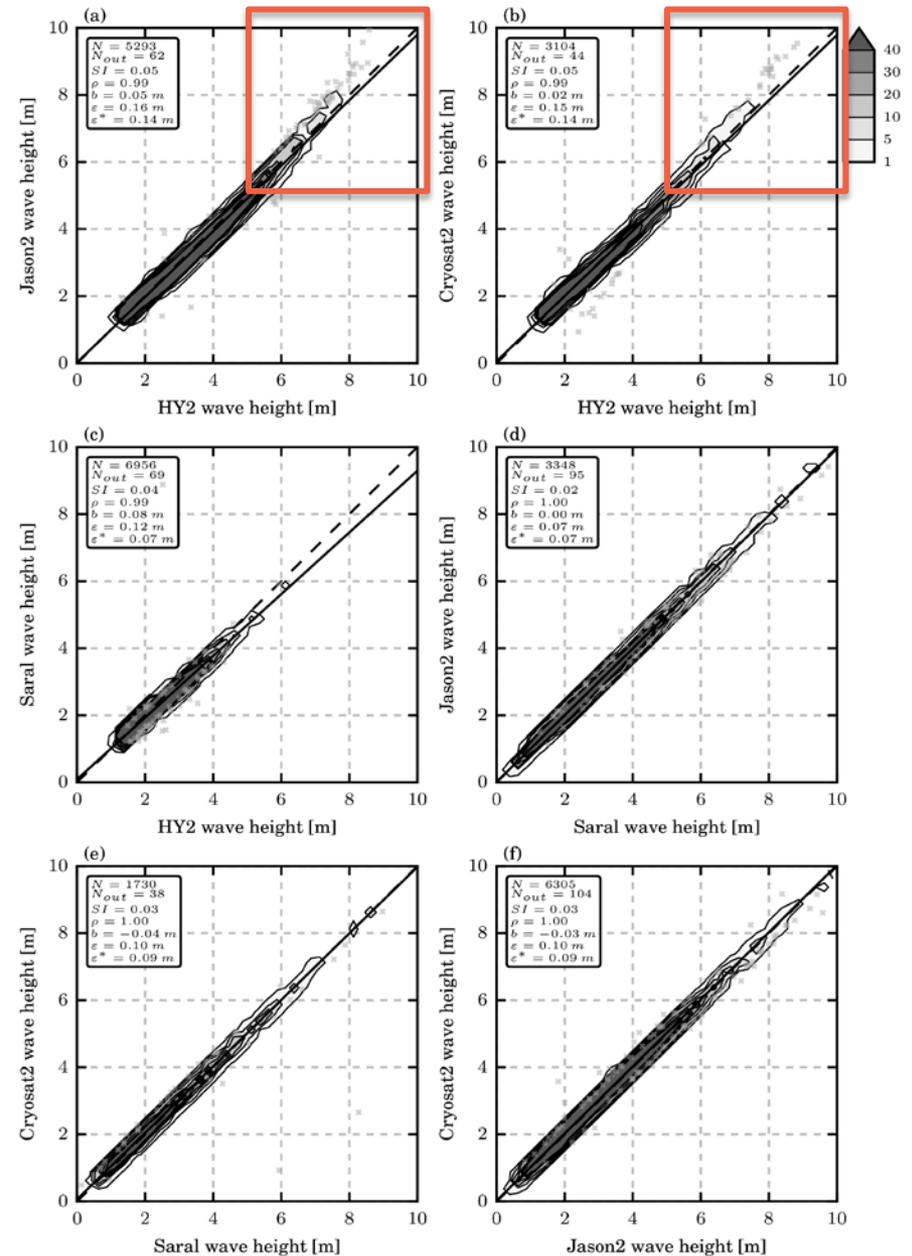
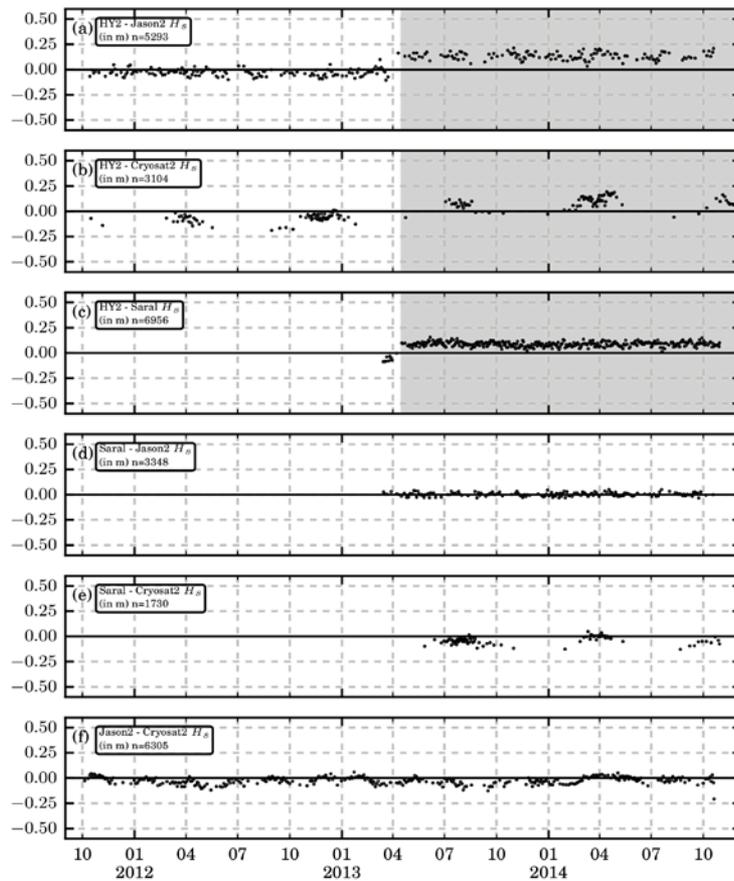


Satellite	Inclination (°)	Repeat Period	Band	Data Type	Duration	Source	"flagged" records (%)
Jason-2	66.0	9.9 days	Ku	GDR-D	25 Sep 2011 – 19 Oct 2014	AVISO	19.9
Cryosat2	92.0	369 days	Ku	IGDR	29 Sep 2011 – 4 Dec 2014	NOAA/NESDIS	14.6
HY-2	99.3	14 days	Ku	IGDR	1 Oct 2011 – 6 Dec 2014	NSOAS	21.6
Saral	98.6	35 days	Ka	GDR-T	14 Mar 2013 – 30 Oct 2014	AVISO	13.9



- HY-2  $H_s$  is well within the stated accuracy (rmse < 0.5 m)
  - -0.22 m bias and 0.3 m rmse
- Saral  $H_s$  has the best performance, followed by Jason-2, Cryosat2, HY-2
- See also, e.g., Zhang et al. (2015), Ye et al. (2015), among others.

## Cross-validation against other altimeters



### Issues:

- 1) A mismatch between HY-2 and other missions is present in high seas ( $H_s > 6m$ )
- 2) A jump of HY-2  $H_s$  performance occurred in April 2013
  - related to the switch of HY-2 to backup status and the update of data processing software

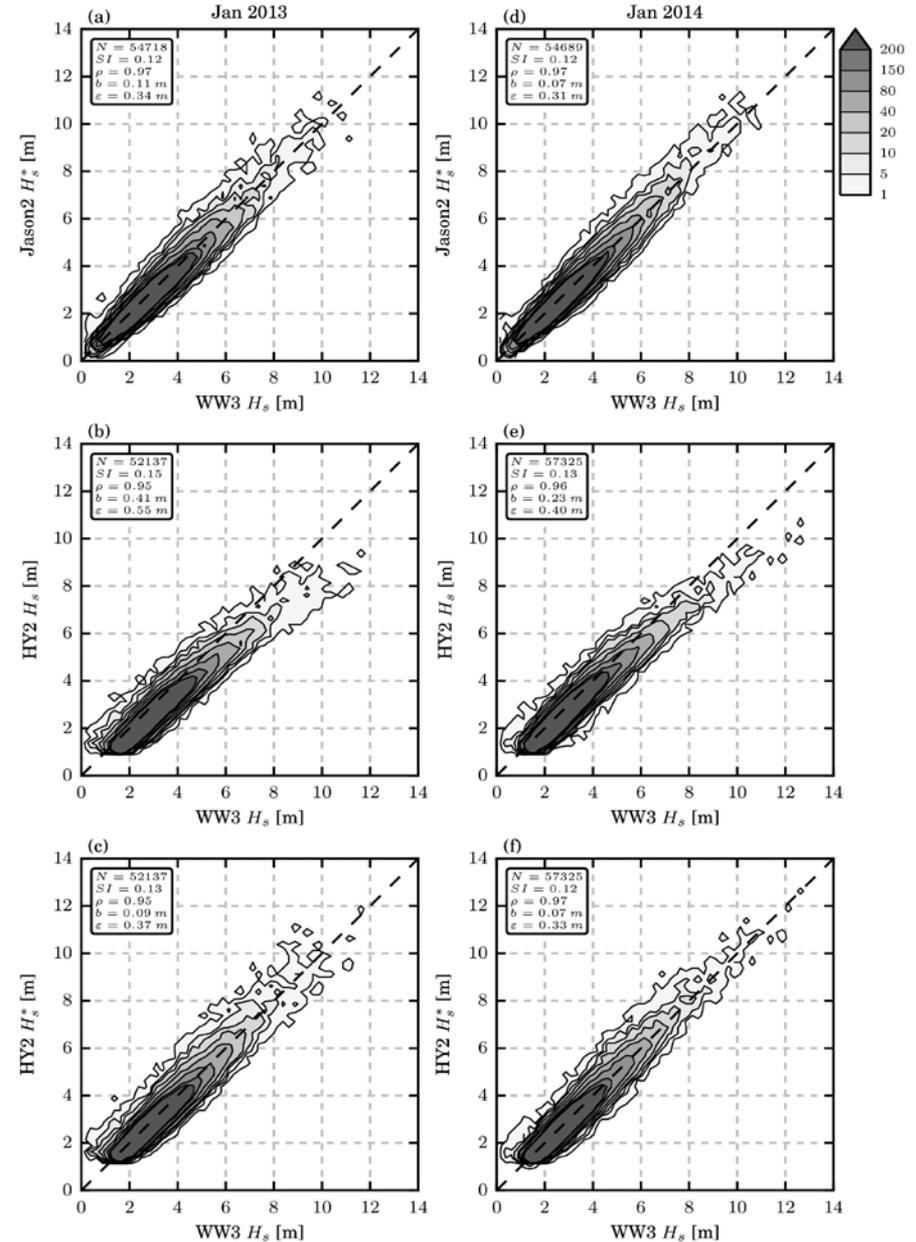
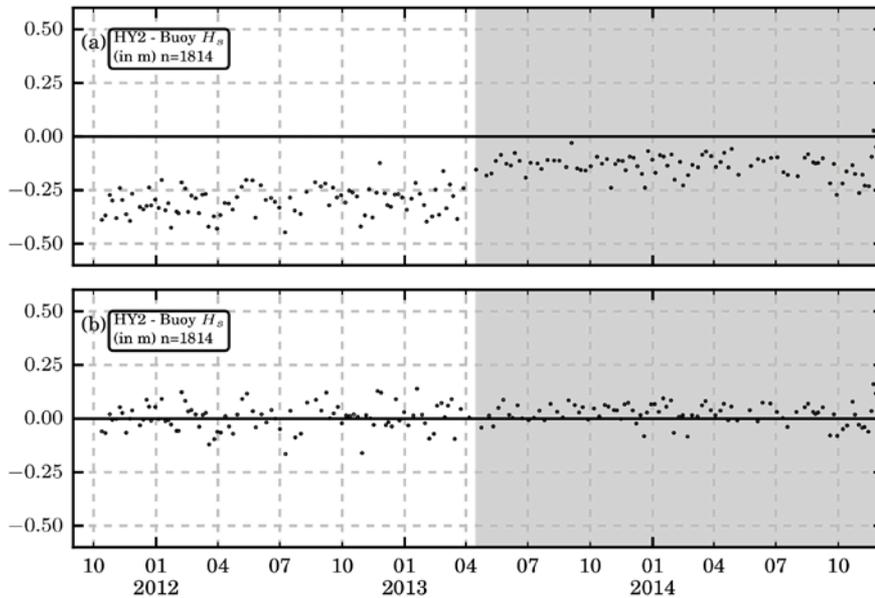
## Revised calibration of HY-2 $H_s$

Phase 1 (Cycle < 41):

$$H_s^* = \begin{cases} 1.003 \cdot H_s + 0.287 & H_s \leq 3.504 \text{ m} \\ 0.040 \cdot H_s^2 + 0.838 \cdot H_s + 0.376 & H_s > 3.504 \text{ m} \end{cases}$$

Phase 2 (Cycle  $\geq$  41):

$$H_s^* = \begin{cases} 0.977 \cdot H_s + 0.187 & H_s \leq 3.568 \text{ m} \\ 0.013 \cdot H_s^2 + 1.083 \cdot H_s - 0.359 & H_s > 3.568 \text{ m} \end{cases}$$



Thank you !