

VALIDATION OF OCEAN SURFACE FEATURES FROM SARAL/ALTIKA

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Activity Partners

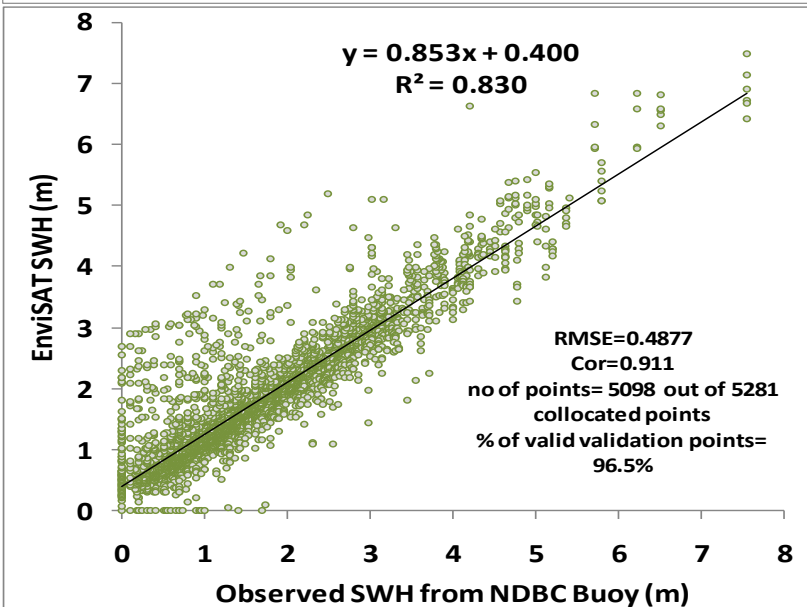
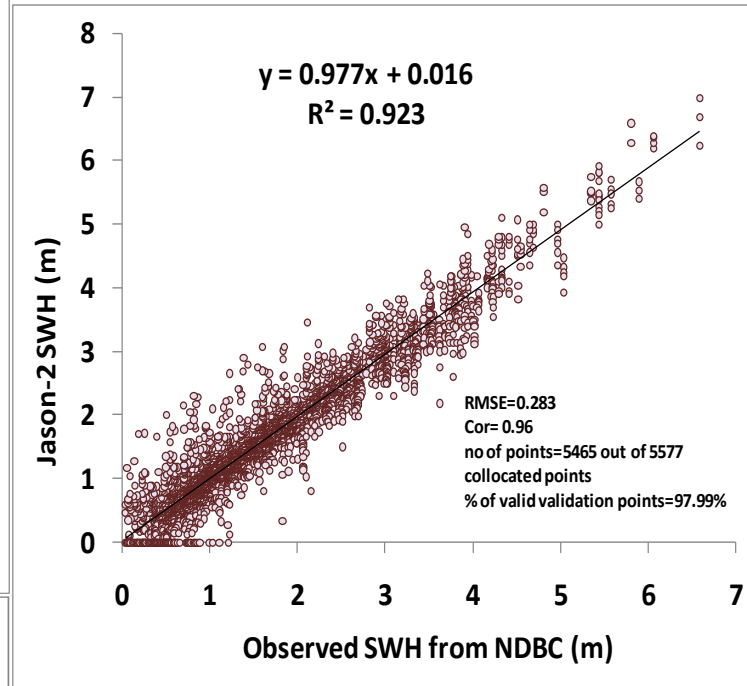
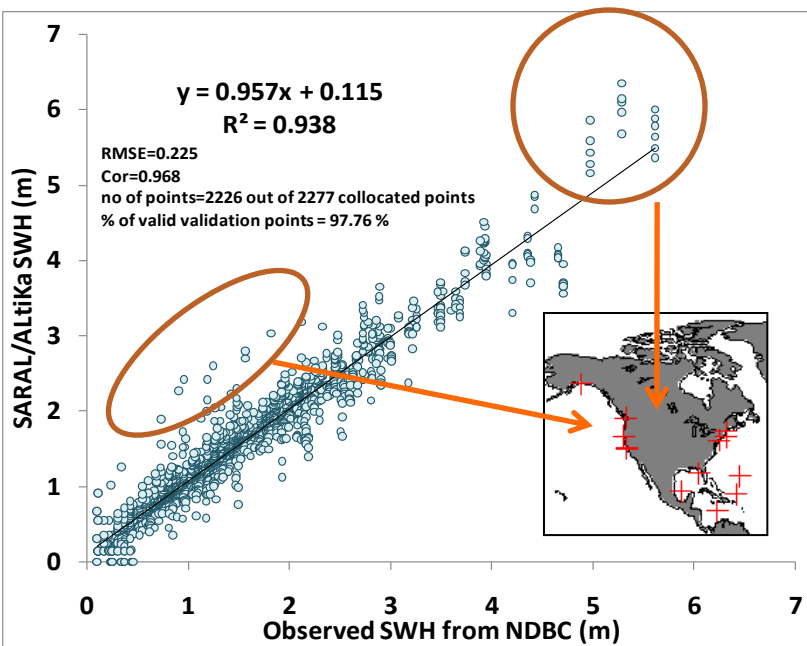
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Venkateshan (NIOT)*

*SARAL International Science and Applications
Meeting*

22-24 April, 2014, SAC Ahmedabad



SIGNIFICANT WAVE HEIGHT



RMSE(m) of SWH in different altimeters at different states of ocean

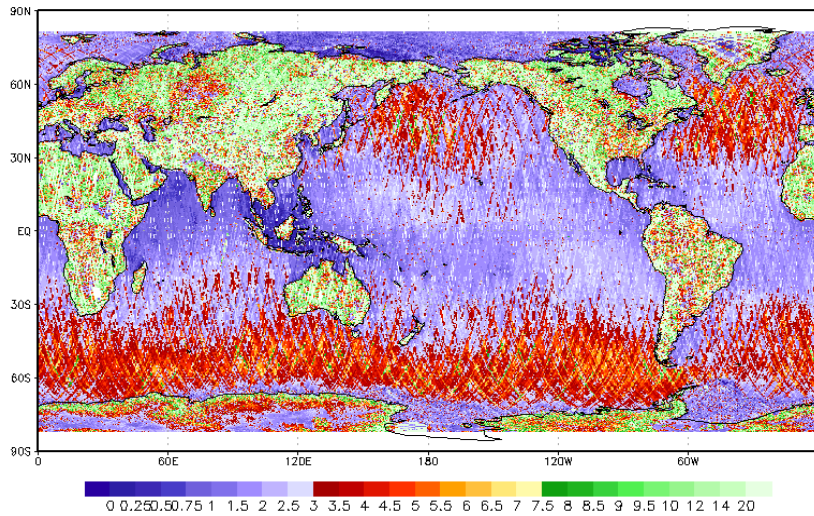
Ocean State	EnviSAT (2005)	Jason-2 (2009)	SARAL/AltiKa (2013)
Slight (0-1.25)	1.39	0.70	0.52
Moderate (1.26-2.50m)	0.63	0.44	0.45
Rough (>2.5m)	0.50	0.41	0.56

SARAL a better candidate in calm sea state = good signal to noise ratio ?

4/22/2014

Validation of the SWH data from a) EnviSAT (2005), b) Jason-2 (2009) and c) SARAL/AltiKa (2013) using the NDBC buoy observations. d) The location of the buoys where the outliers are obtained in SARAL/AltiKa data

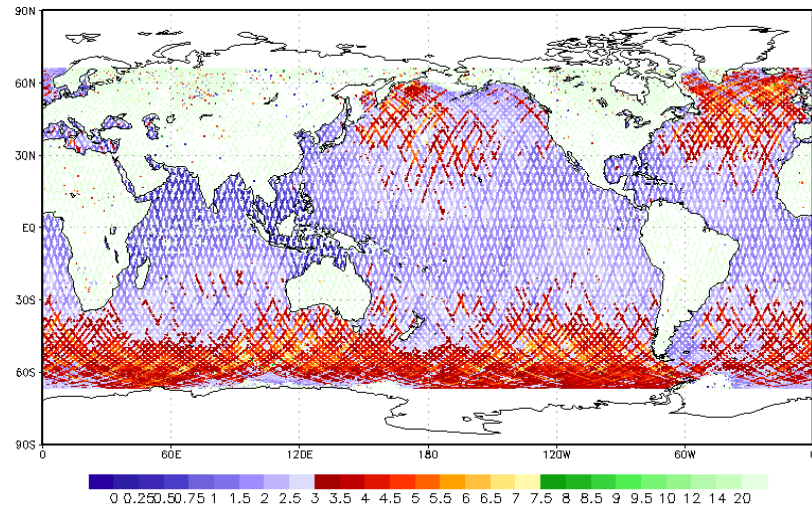
AltiKa SWH



GrADS: COLA/IGES

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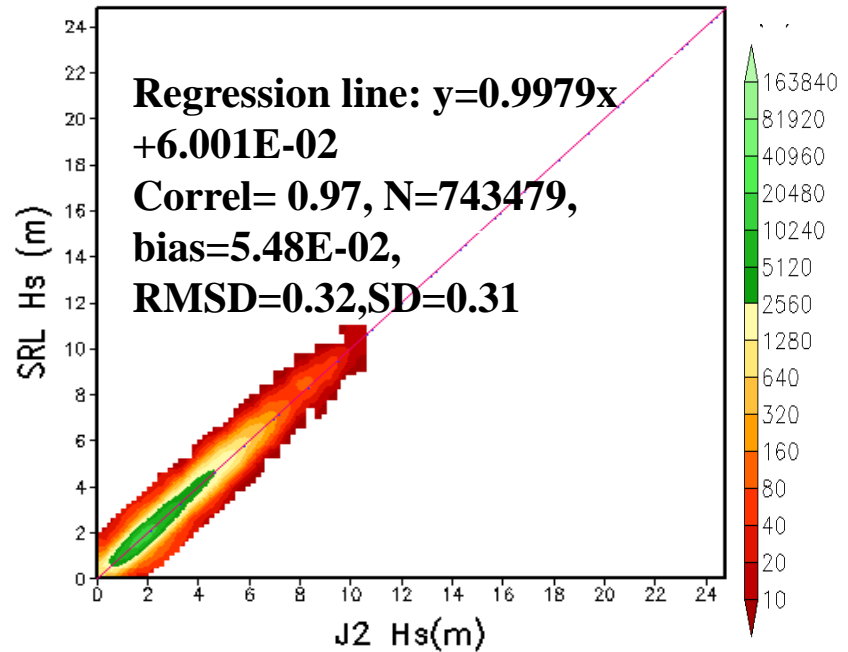
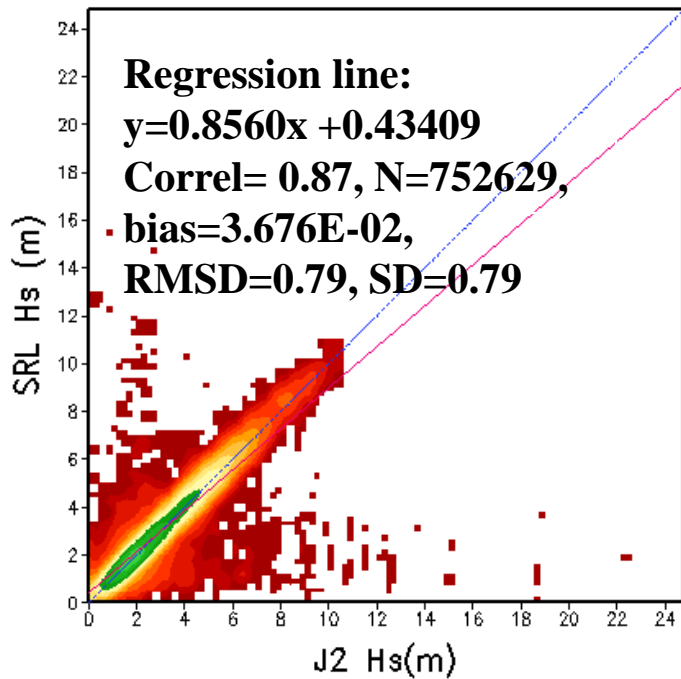
Jason-2 SWH

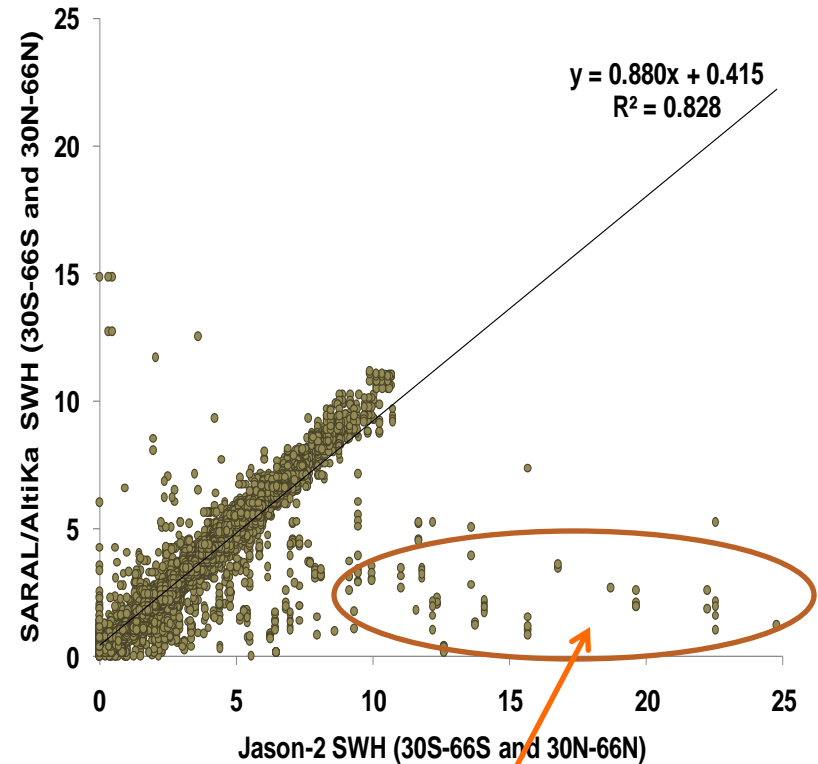
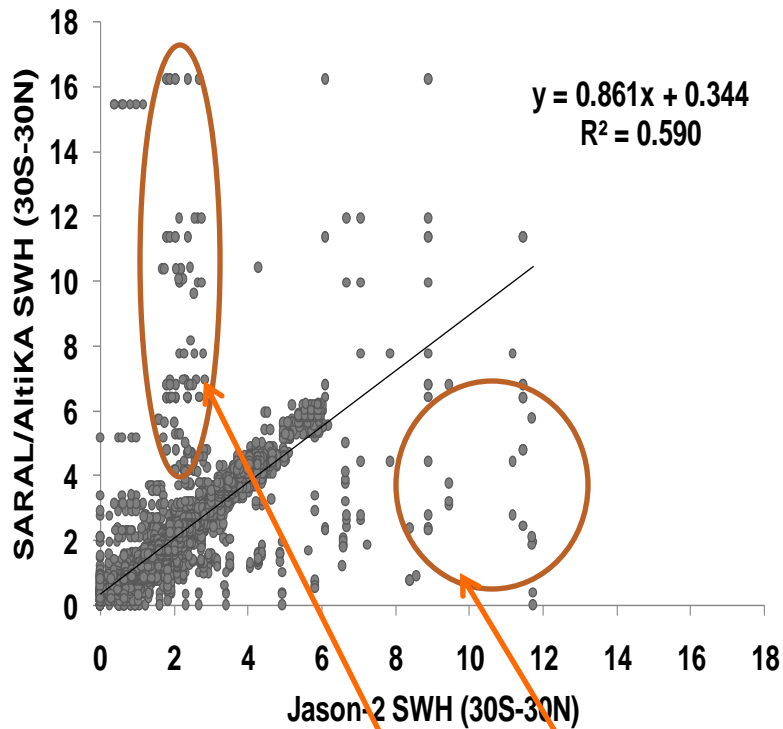


GrADS: COLA/IGES

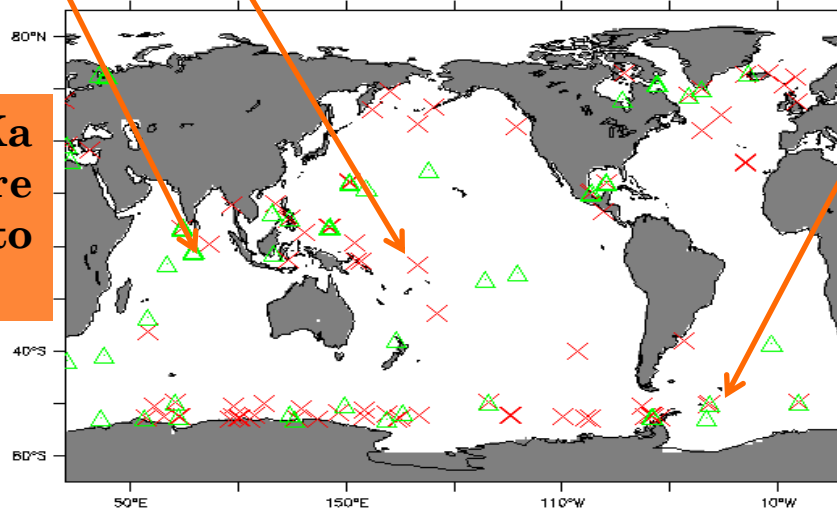
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At lower latitudes Ka band performances are effected mildly due to heavy rain at ITCZ

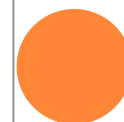
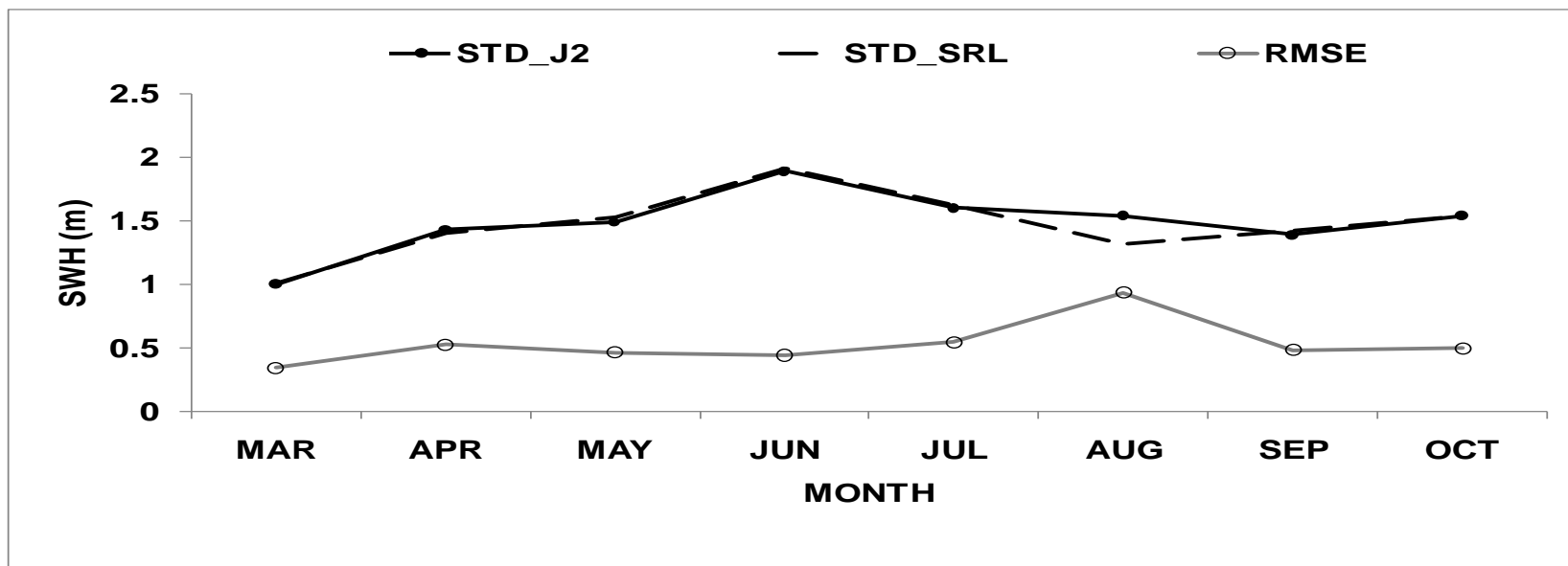
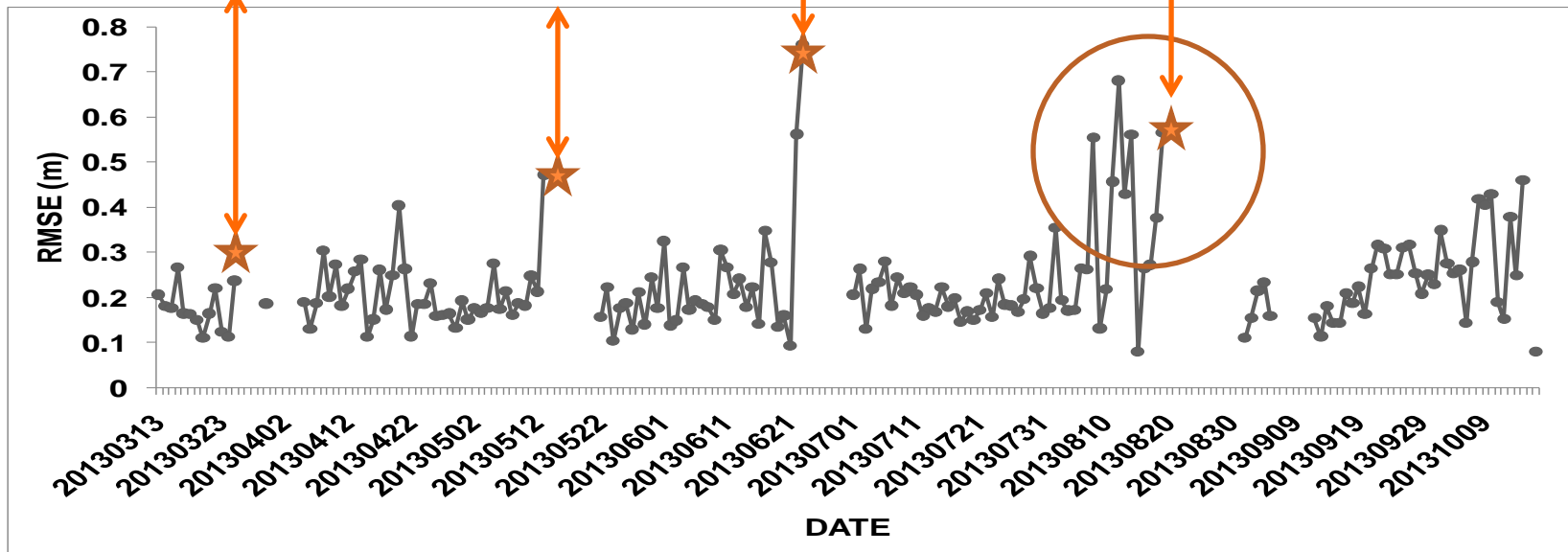
At higher latitudes Ka band performs better particularly over the sea ice area beyond 60

23rd March
2013
Station
keeping
Maneuver

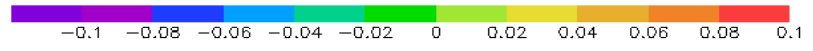
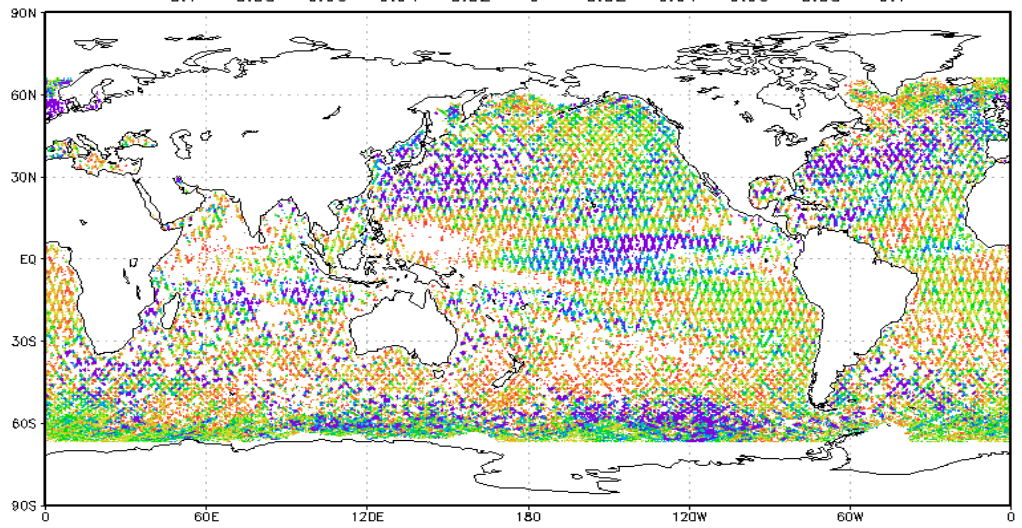
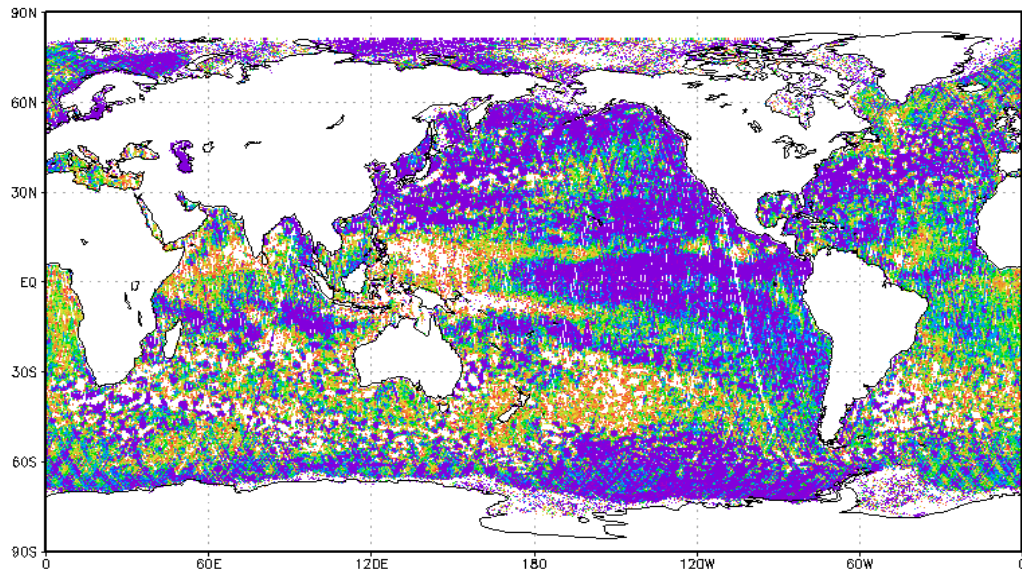
15th May
2013
Station
keeping
Maneuver

24th June
2013
Station
keeping
Maneuver

29th July 2013 Major inclination maneuver
31st July 2013 Semi-major axis maneuver
07th Aug 2013 Semi-major axis maneuver
26th Aug 2013 Semi-major axis maneuver



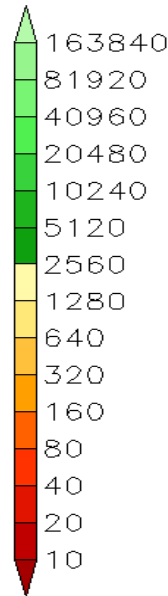
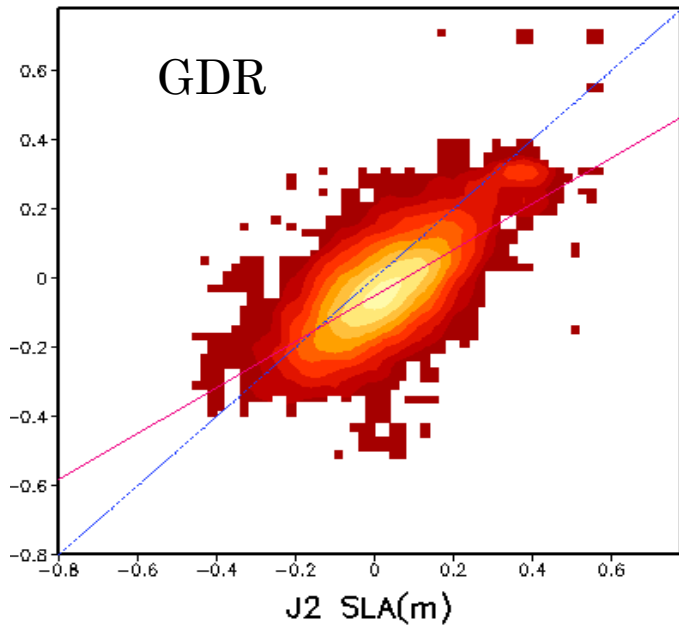
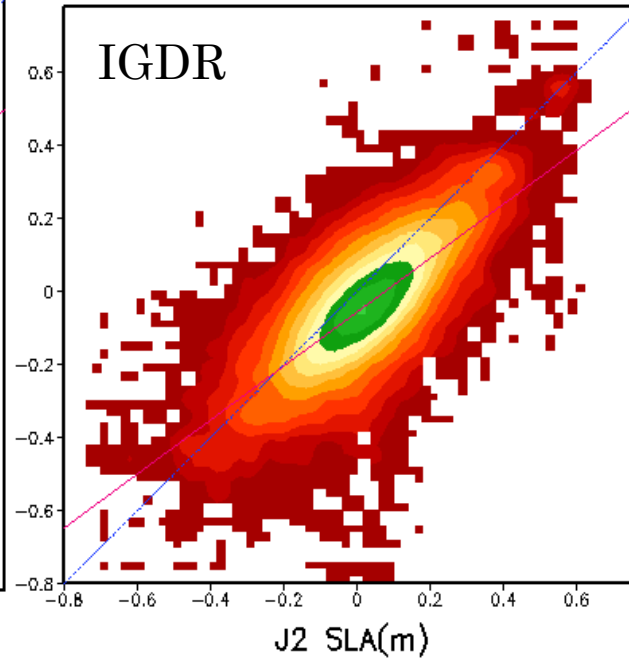
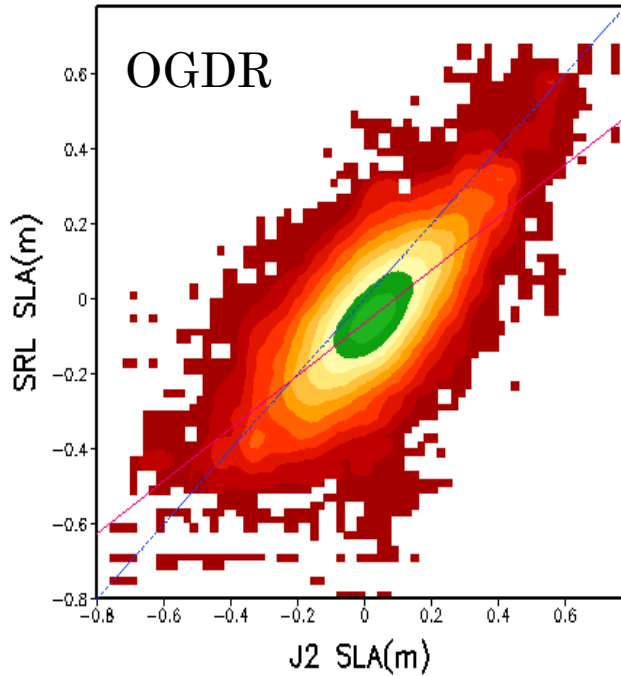
SEA SURFACE HEIGHT ANOMALY



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SEA SURFACE HEIGHT ANOMALY

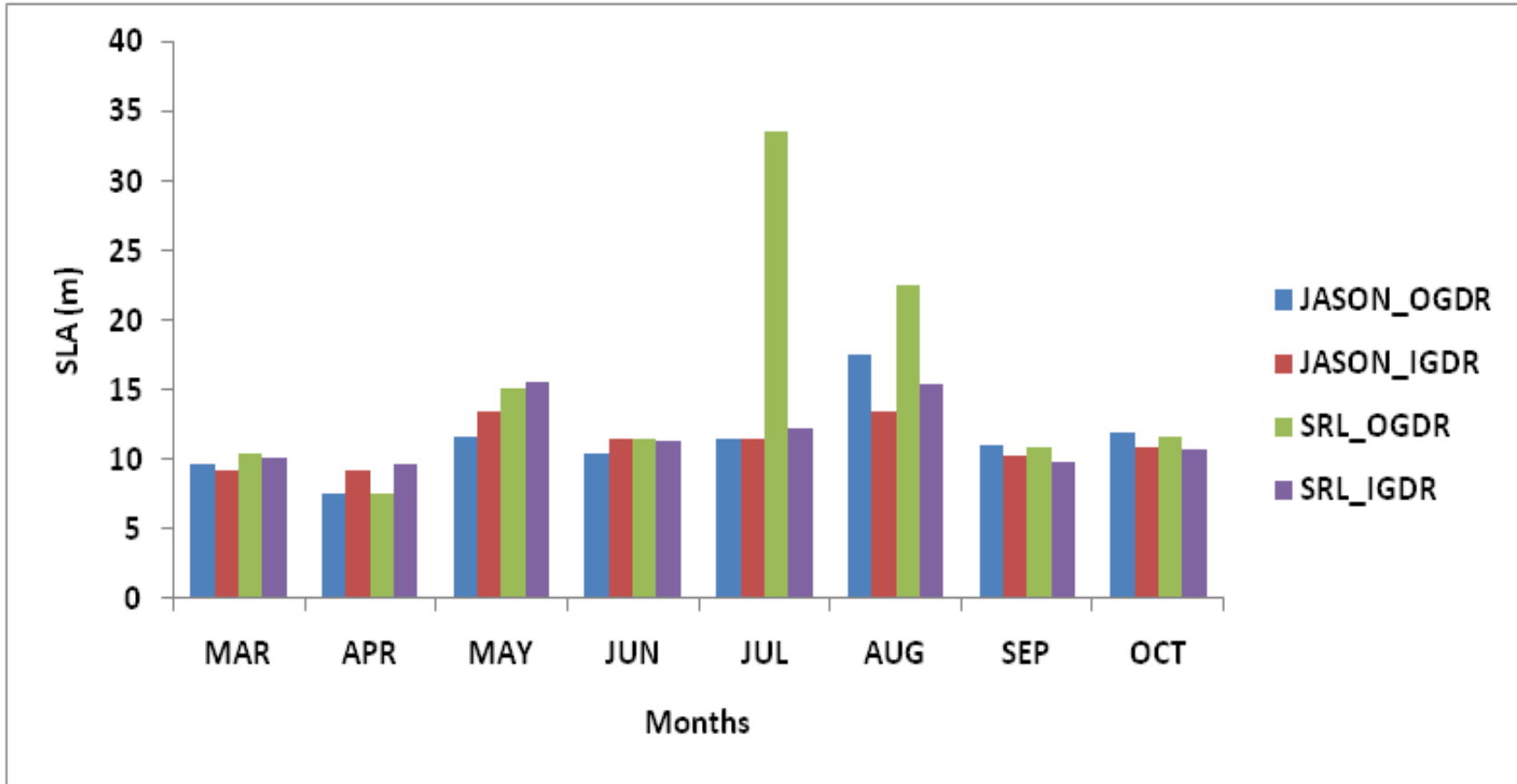


Inter-comparison
with Jason-2
SSHA

	OGDR	IGDR	GDR
Bias (cm)	-6.98	-6.10	-5.81
Cor	0.70	0.73	0.66

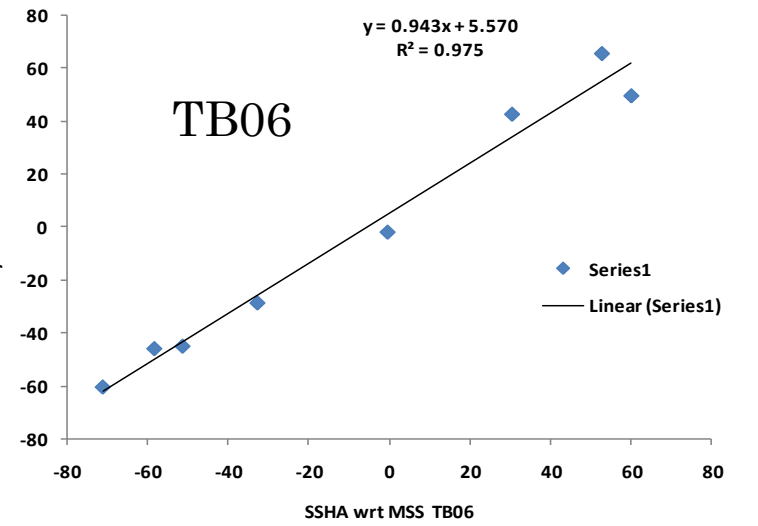
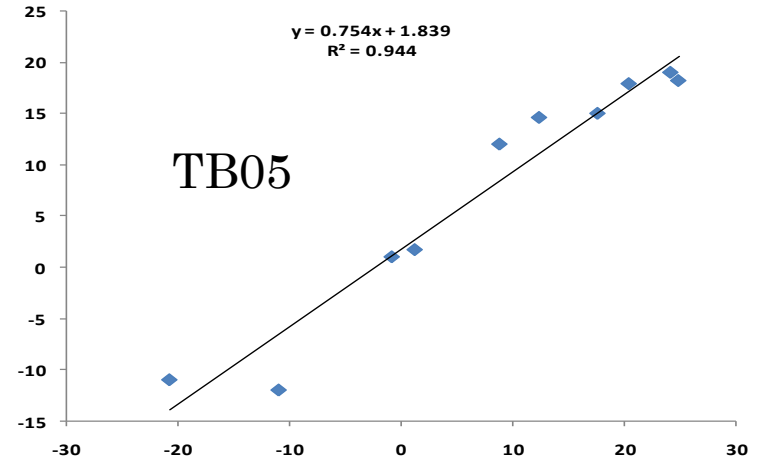
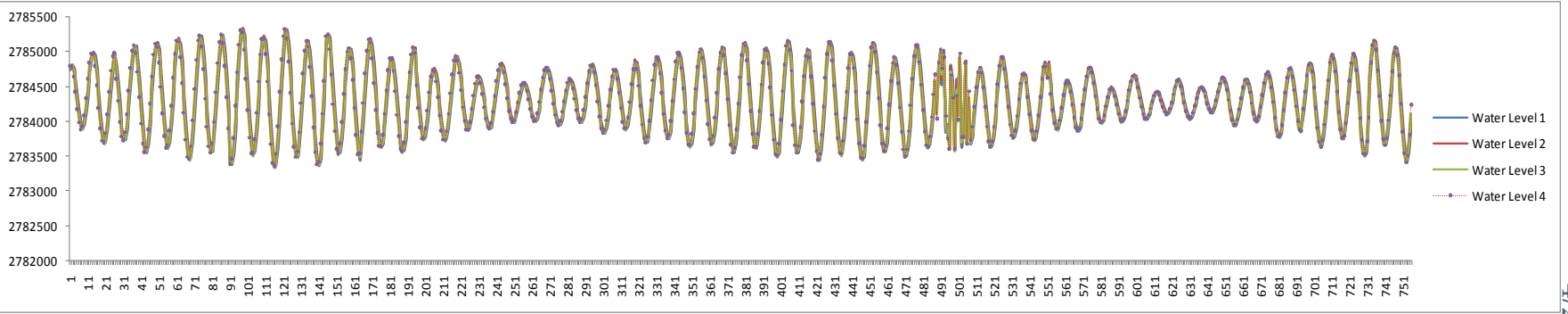
We need more studies
regarding the correction
terms



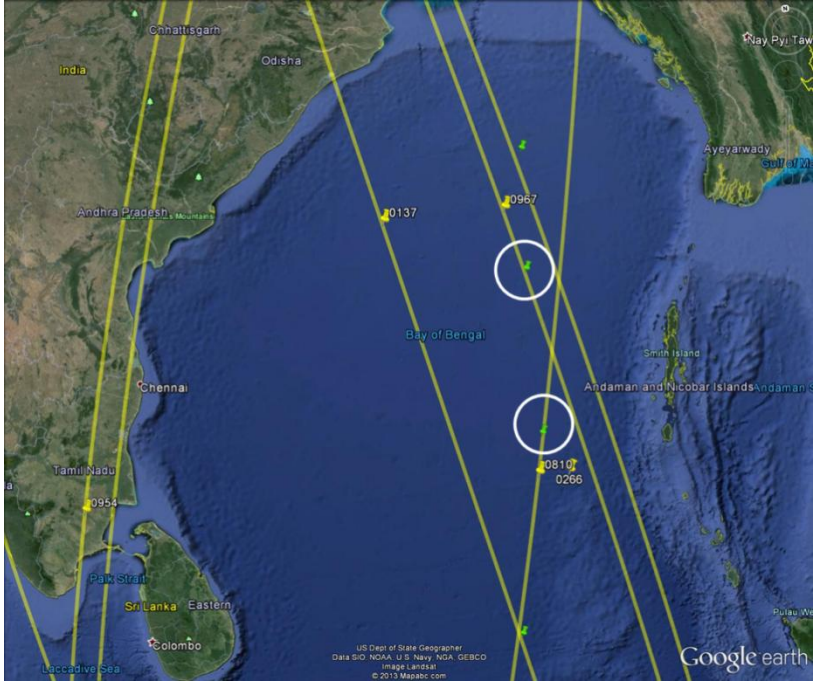


The standard deviation of the SLA at OGDR and IGDR level from AltiKa and Jason-2.



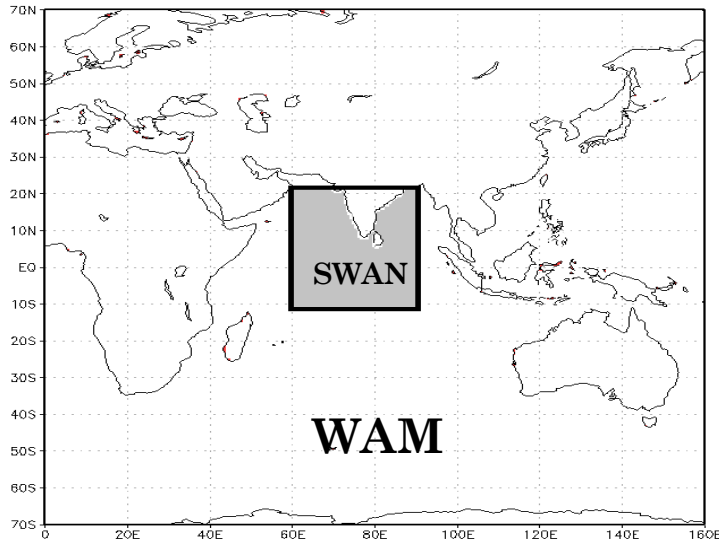


**Validation with
Bottom Pressure
Recorder data**



OPERATIONAL USE OF SARAL/ALTIKA: AN EXAMPLE

Assimilation of SWH in coastal ocean wave model operational at ISRO during Cyclone PHAILIN



MODEL OPERATIONAL AT SAC/ISRO

WAM: Wave Model

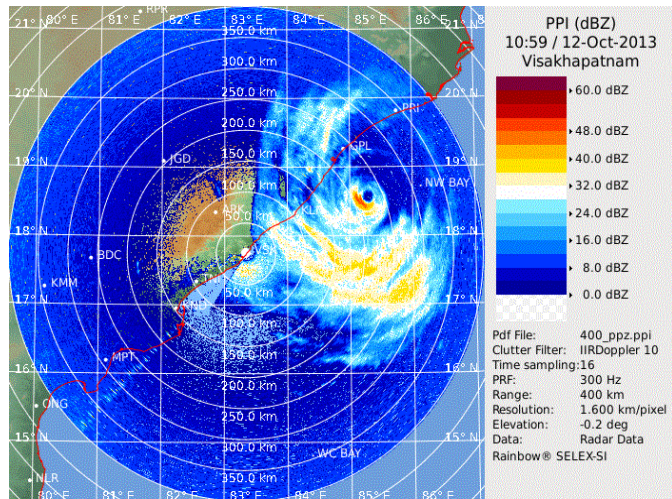
SWAN: Simulating Wave Near-shore

ASSIMILATION DATA SETS SARAL/ALTIKA OGDR
SWH

ASSIMILATION TECHNIQUE OPTIMUM
INTERPOLATION

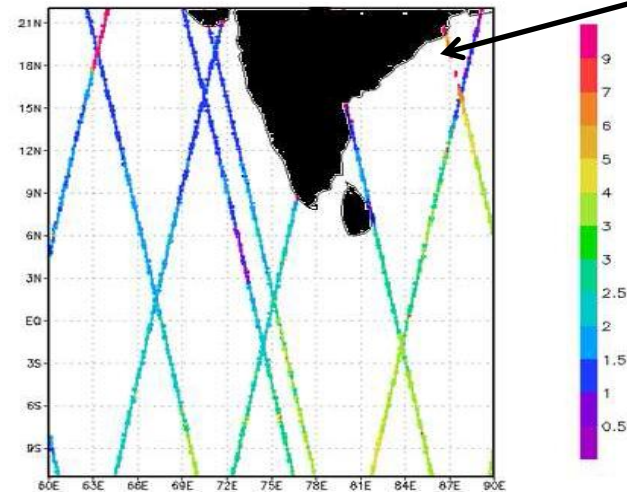
Forecasts available through www.mosdac.isro.gov.in

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Cyclone: Phailin (8-14th OCT 2013)

SARAL
TRACK 8-
12th OCT
2013



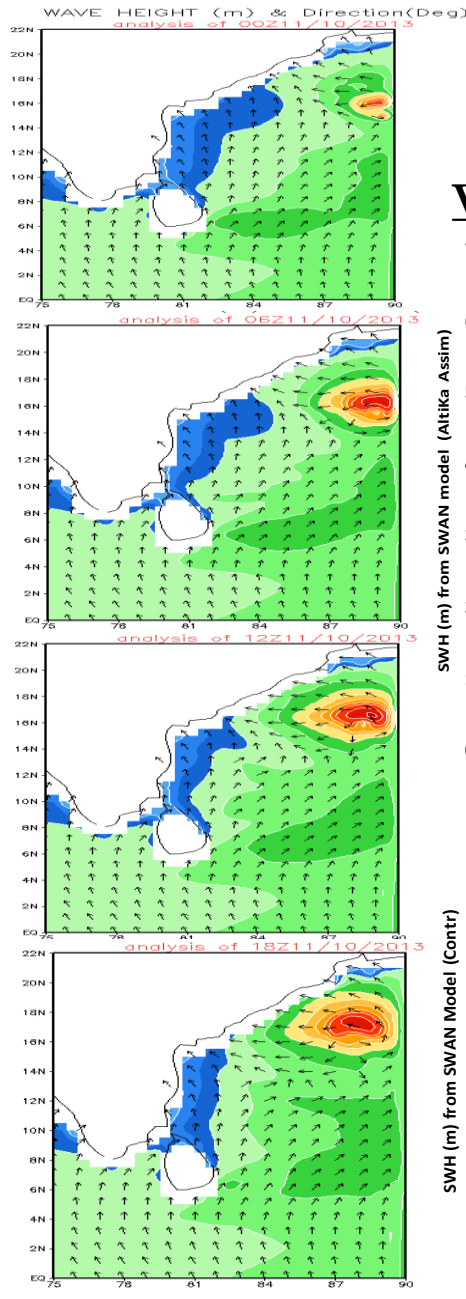
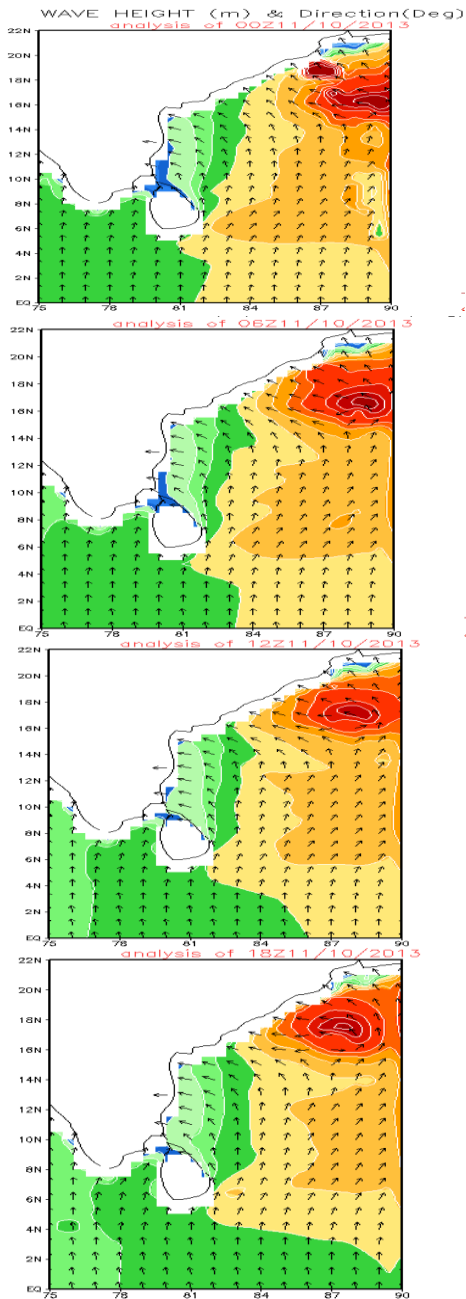
Track on
00 UTC of
12th OCT,
2013



The Improvement achieved with assimilating SARAL/ALTIKA SWH alone!

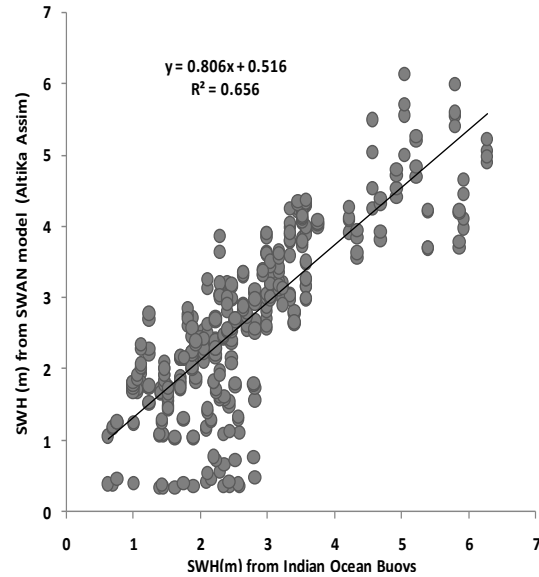
Validation using Indian Ocean Buoys

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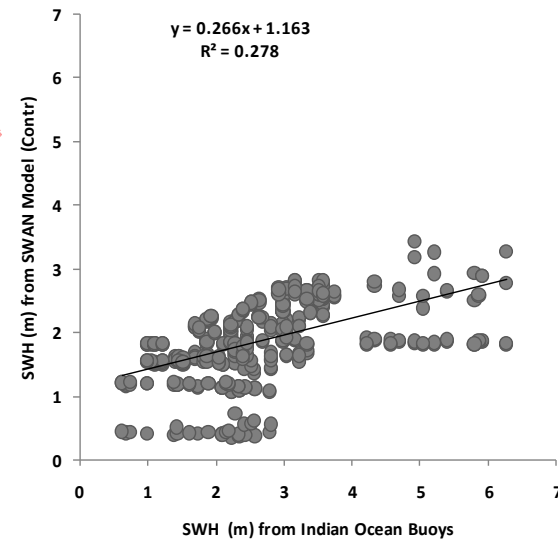


With Assim

Without Assim



With Assim



Without Assim



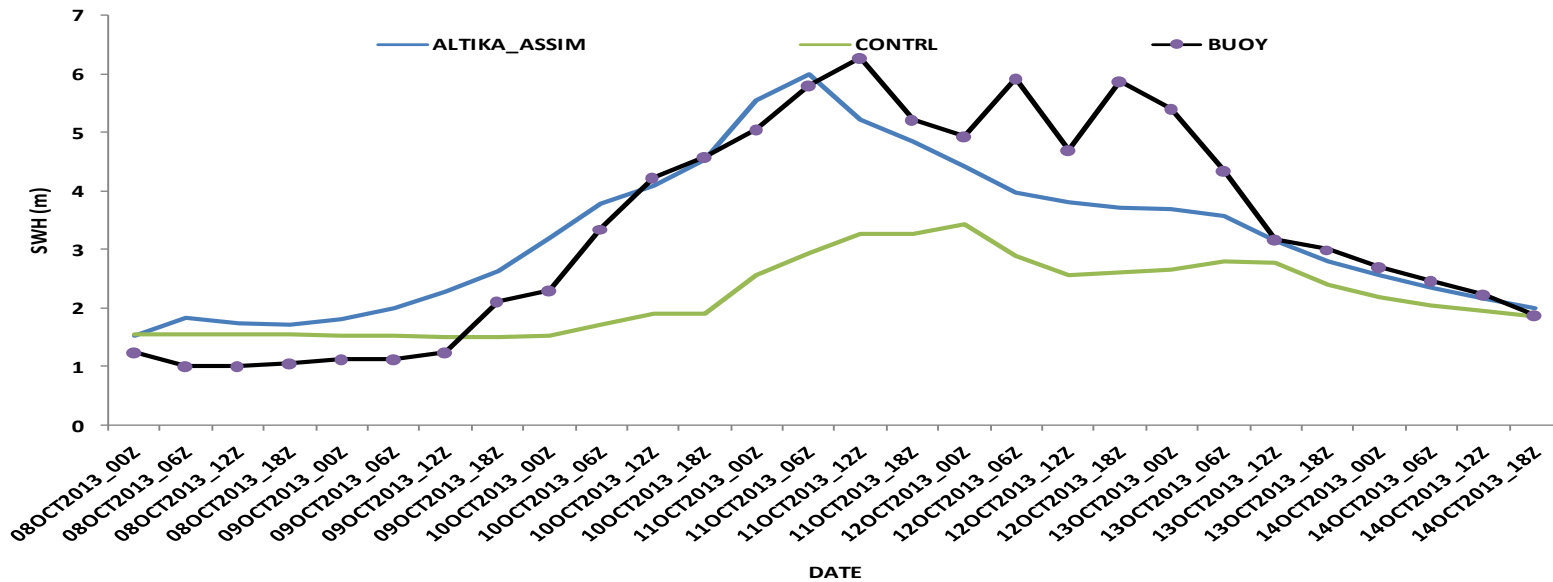
Validation with Indian Ocean Buoys

	CONTRL	Assim
RMSE	1.298	0.734
CORREL	0.527	0.809

Validation with Jason-2 SWH

	CONTRL	Assim
RMSE	0.82	0.54
CORREL	0.65	0.89

4/22/2014



Time series showing the SWH at BD08 buoy location near Gopalpur (place of landfall)



THANKS

