Evaluating the impact of ocean gravity wave variability on Aquarius satellite measurements

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* aquarius_L2_wwav files are assembled daily at UNH for the Aq. cal/val team
Aquarius Level 2 wave model collocation products: Processing status (March 2012)

Near Real Time processing
( Latency: 1 day after Aq-L2 V1.1 data become available at GSFC)

Aq-L2 V1.1 SCIdata (daily wget)

Ifremer/Previmer WW3 model product
( Partial dataset: 5 NRT variables, limited QC)

L2V1.1_wwav*

* ftp access via PODAAC for Aq. Cal/Val team members

Science level processing
( Latency: 50-60 days after Aq-L2 data become available)

Aq-L2 V1.2 EVSCI data (2011)
Aq-L2 V1.2.3 EVSCI data (2011, 2012)

Ifremer/Previmer WW3 model product
(Full wave model dataset: 14 variables with QC)

L2V1.2_wwav (2011)*
L2V1.2.3_wwav (2012)*
Wind products and spatial differences
Day 240-270 (cycles 1-5)

Aq Cal/Val, March 2012
Aquarius Radiometer Salinity error vs. SWH (17 weeks; Day 240-362); X-axis=NCEP wind

Residual Salinity taken with respect to HYCOM model SSS

Long-waves lead to salinity anomaly – low for low seas, high for high seas

Aq Cal/Val, March 2012
Aquarius Radiometer Salinity error vs. SWH
(17 weeks; Day 240-362); X-axis=NCEP wind; V1.2; DESC

Residual Salinity with respect to HYCOM Long-waves lead to salinity anomaly – low for low seas, high for high seas

Aq Cal/Val, March 2012
Aquarius Radiometer Salinity error vs. SWH
(17 weeks; Day 240-362); X-axis=NCEP wind; Ver 1.2.3; ASC; OUTER BEAM

Residual Salinity taken with respect to HYCOM model SSS

Long-waves lead to salinity anomaly – low for low seas, high for high seas

Aq Cal/Val, March 2012
Aquarius Radiometer Salinity error vs. SWH
(17 weeks; Day 240-362); X-axis=NCEP wind; Ver 1.2.3; DESC; OUTER BEAM

Residual Salinity taken with respect to HYCOM model SSS

Long-waves lead to salinity anomaly – low for low seas, high for high seas
Aquarius Scatterometer Wind vs. significant wave height (17 weeks; Day 240-362); X-axis=NCEP wind; V1.2

Wind Speed Bin = 4 m/s (+- 0.5)

0.35 psu/1m sea state change

OUTER BEAM θ = 46 deg.

Wind Speed Bin = 7 m/s (+- 0.5)

0.21 psu/1m sea state change

OUTER BEAM θ = 46 deg.

Desc Pass data, Galactic refl < 1 K

Aq Cal/Val, March 2012
Aquarius Scatterometer Wind vs. significant wave height (17 weeks; Jan-Feb 2012); X-axis = NCEP wind; Ver. 1.2.3

Wind Speed Bin = 4 m/s (+ - 0.5)

0.1 psu/1m sea state change

OUTER BEAM
θ = 46 deg.

<0.1 psu/1m sea state change

Long-waves lead to wind speed error of order when seas are exceedingly high

OUTER BEAM
θ = 46 deg.

Desc Pass data, Galactic refl < 1 K

Aq Cal/Val, March 2012
Aquarius Scatterometer Wind vs. significant wave height (17 weeks; Jan-Feb 2012); X-axis = NCEP wind; Ver. 1.2.3

Wind Speed Bin = 4 m/s (+- 0.5)

>0.1 psu/1m sea state change

OUTER BEAM
θ = 46 deg.

OUTER BEAM
θ = 46 deg.

ASC ONLY

ASC Pass data, Galactic refl < 1 K

Aq Cal/Val, March 2012
Aquarius Scatterometer Wind vs. significant wave height (17 weeks; Jan-Feb 2012); X-axis=NCEP wind; Ver. 1.2.3

Desc Pass data, Galactic refl < 1 K

Aq Cal/Val, March 2012