Global WW3 hindcast vs. altimeters and buoys
September-December 2010

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Model Wind U10 vs. Altimeters

Wind Speed (CFSR and Altimeter)

Wind Speed (NOGAPS and Altimeter)
SWH (m)
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
SWH (m)
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
Mean SWH (m)
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel

Mean Wave Height (ICE-WW3)
SWH bias (m)
WW3 w/CFSR ice ; source term package and wind forcing as indicated in each panel

Mean Bias (ICE-WW3 vs. Altimeter)
SWH RMSE (m)
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
SWH Scatter Index
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
• Normalized RMS error as defined by Ardhuin et al. (2010) (note that it is almost the same definition as Scatter Index)
• Compare with Ardhuin et al. (2010) Figure 11.
SWH (m) near buoy 46006: model vs. altimeter
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
SWH (m) at buoy 46006: model vs. buoy
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel

CFSR ST2

\[ n = 2458 \]
\[ r = 0.94 \]
\[ SI = 0.18 \]
\[ rmse = 0.58 \text{ m} \]
\[ bias = 0.34 \text{ m} \]

CFSR ST4

\[ n = 2458 \]
\[ r = 0.94 \]
\[ SI = 0.18 \]
\[ rmse = 0.57 \text{ m} \]
\[ bias = 0.34 \text{ m} \]

NOGAPS ST2

\[ n = 2458 \]
\[ r = 0.93 \]
\[ SI = 0.15 \]
\[ rmse = 0.50 \text{ m} \]
\[ bias = -0.13 \text{ m} \]

NOGAPS ST4

\[ n = 2458 \]
\[ r = 0.95 \]
\[ SI = 0.13 \]
\[ rmse = 0.44 \text{ m} \]
\[ bias = -0.14 \text{ m} \]
SWH (m) at buoy 41001: model vs. buoy
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
SWH (m) at buoy 41010: model vs. buoy
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
SWH (m) at buoy 41048: model vs. buoy
WW3 w/CFSR ice; source term package and wind forcing as indicated in each panel
WSPD (m/s) at buoy 46006: model vs. buoy
WW3 w/CFSR ice ; wind forcing as indicated in each panel
WSPD (m/s) at buoy 41001: model vs. buoy
WW3 w/CFSR ice; wind forcing as indicated in each panel

shel CFSR ST2

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U_{10} (m/s) : model
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shel NOGAPS ST2

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U_{10} (m/s) : model
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- **n = 2758**
- **r = 0.94**
- **SI = 0.16**
- **rmse = 1.47 m**
- **bias = -0.17 m**

- **n = 2758**
- **r = 0.93**
- **SI = 0.17**
- **rmse = 1.56 m**
- **bias = -0.43 m**
WSPD (m/s) at buoy 41010: model vs. buoy
WW3 w/CFSR ice; wind forcing as indicated in each panel
WSPD (m/s) at buoy 41048: model vs. buoy
WW3 w/CFSR ice; wind forcing as indicated in each panel

![Graph: WSPD vs Observed for CFSR and NOGAPS](image)

- **CFSR ST2**
  - n = 2759
  - r = 0.94
  - SL = 0.17
  - rmse = 1.44 m
  - bias = -0.23 m

- **NOGAPS ST2**
  - n = 2759
  - r = 0.94
  - SL = 0.18
  - rmse = 1.53 m
  - bias = -0.51 m