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Technical Note

WAVEWATCH III[®] Hindcasts with Re-analysis winds[†]. Initial
report on model setup

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This report contains the setup that we have developed to undertake a wave hindcast study using the WAVEWATCH III[®] model. This model will be run with the new NCEP Climate Forecast System Reanalysis Reforecast (CFSRR) 30-year homogeneous data set of hourly 1/2° spatial resolution winds, to generate a wave climatology. This report contains detailed information on the grids that have been developed, the products that are going to be generated and some initial validation results.

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This report is available as a pdf file from:

<http://polar.ncep.noaa.gov/waves>

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1 Introduction

A long-term global wave database is very useful to build wave climatologies, do scenario studies as well as undertake model validation analysis across multiple time scales. The wave modeling group at the National Center for Environmental Prediction (NCEP) maintains a wave hindcast database that extends from 1999 to the present. This database uses the archived analysis winds from the GFS atmospheric model to drive the waves. However, this database is inconsistent in the sense that all the numerical and physical upgrades to the models (both wave and atmosphere) are tied in with the variability in the underlying physics. This can be countered by doing a reanalysis so that the same model can be used to build a consistent multi-decadal database.

There is not enough available data to develop a traditional re-analysis of the wave environment. Furthermore, wave dynamics are different from atmospheric dynamics in the sense that they are more of a boundary value problem than an initial value problem, with the wind forcing being the most dominant process driving wave dynamics. It is more useful to do a hindcast re-run using a reanalysis wind field. However, till now the reanalysis winds developed at NCEP were on too coarse a grid to allow for the development of a meaningful wave hindcast database.

A new NCEP Climate Forecast System Reanalysis Reforecast (CFSRR) system has been recently developed and entails a coupled reanalysis of the atmospheric, oceanic, sea-ice and land data from late 1979 through 2010, and a reforecast run with this reanalysis (Saha et al., 2010). This reanalysis has much higher horizontal and vertical resolution of the atmosphere than the Global and the North American Reanalysis, and can thus be used to develop a long-term hindcast wave database.

The wave model used at NCEP is a third generation wind wave model WAVEWATCH III[®] (Tolman, 2009). In 2007, the model was expanded to run as a mosaic of two-way nested grids (Tolman, 2008). The nested grid driver is described in Tolman (2007a,b), and the grid generation tools used to develop these grids are described in Chawla and Tolman (2007, 2008). To drive the waves the wave model requires two input fields: ice and winds (including the air-sea temperature difference). The high resolution winds used here are 10m above sea level on an hourly temporal and $1/2^\circ$ spatial resolution which cover the globe from 90°S – 90°N . The reanalysis daily ice concentration fields are $1/2^\circ$ spatial resolution, and are derived from passive microwave from the SMMR and SSMI using the NASA Team algorithm. A companion report (Spindler et al., 2011) takes a closer look at the CFSRR winds that are used in the development of this wave database.

This hindcast database is foreseen to be developed in three stages. In the first stage, the wave model shall be run (for the 30 year hindcast period from

1979 to 2009) using the same physics packages that are currently used in NCEP operations (with minor exceptions these are also the default settings described in Tolman (2009)). This will set the baseline for the wave model. The database will be regenerated in stage 2 and 3 with newer physics packages as they become available, courtesy of a concurrent NOPP initiative to improve physics in operational wind wave models. However, the model setup and products will remain unchanged at the different stages¹. The mosaic approach to wave modeling in WAVEWATCH III allows us to develop a detailed modeling system with high resolution grids in areas of interest.

The purpose of this report is to outline the model setup and different products that are going to be generated as part of this database and some initial results. In section 2 we outline the grids that have been developed for this database (with further details in appendix B), the physics packages used at this stage are outlined in section 3, the types of output products are listed in section 4, and some initial validation results are shown in section 5.

¹This may change depending on developments in model capability and/or database generation

2 Grids

The WAVEWATCH III model can be run as a mosaic of grids with two-way interaction between the higher and lower resolution grids. This facilitates increased computational efficiencies by restricting the higher resolution grids only in the necessary areas.

Keeping in mind the requirements of our collaborative partners, a set of nested grids was produced for the Global Ocean. In all the grids, the full resolution ETOPO1 bathymetry was used as the reference grid. Three files were created for each grid: a bathymetry, a mask, and an obstruction grid which accounts for wave attenuation by unresolved islands. See Chawla and Tolman (2007, 2008) for details on the software used for developing these grids.

Grids of three different resolutions were generated: low resolution ($1/2^\circ$ or 30 arc-minutes), mid resolution ($1/6^\circ$ or 10 arc-minutes), and high resolution ($1/15^\circ$ or 4 arc-minutes). The grid generation software that has been used to develop these grids provides the flexibility of closing some coastal features that can only be resolved in high resolution grids (e.g. bays, harbors, estuaries etc.). Appendix A provides a list of the water bodies that can be closed. With the exception of the Bay of Fundy and Cook Inlet, only in the high resolution grids were these coastal features kept open. Figures 2.1– 2.3 show the outlines of the intermediate and high resolution grids, along with the masked areas.

The lowest resolution grids are the 30 arc-minute grids and cover the entire globe (in longitude). In this current implementation, we are using regular spherical grids² and as a result, model time steps are limited by the CFL limit near the poles. For increased efficiency, the global domain was divided into three “bands” (see Table 2.1). These three grids are primarily used for computation purposes, and the output from these grids is stored in a single global grid (referred to as **glo_30m**).

Table 2.1: 30 arc-minute grids: range and resolution. All output data associated with a particular grid are identified by their grid labels.

Name	Grid label	Latitude	Longitude	Resolution (lat x lon)
Global	glo_30m	$90^\circ S : 90^\circ N$	$180^\circ E : 180^\circ W$	$1/2^\circ \times 1/2^\circ$
Arctic	ao_30m	$55^\circ N : 90^\circ N$	$180^\circ E : 180^\circ W$	$1/2^\circ \times 1/2^\circ$
Mid-Globe	mid_30m	$65^\circ S : 65^\circ N$	$180^\circ E : 180^\circ W$	$1/2^\circ \times 1/2^\circ$
Antarctic	ac_30m	$90^\circ S : 55^\circ S$	$180^\circ E : 180^\circ W$	$1/2^\circ \times 1/2^\circ$

²both an unstructured and a curvilinear grid version of the model is currently under development and depending upon progress may be involved in the later stages of the database development

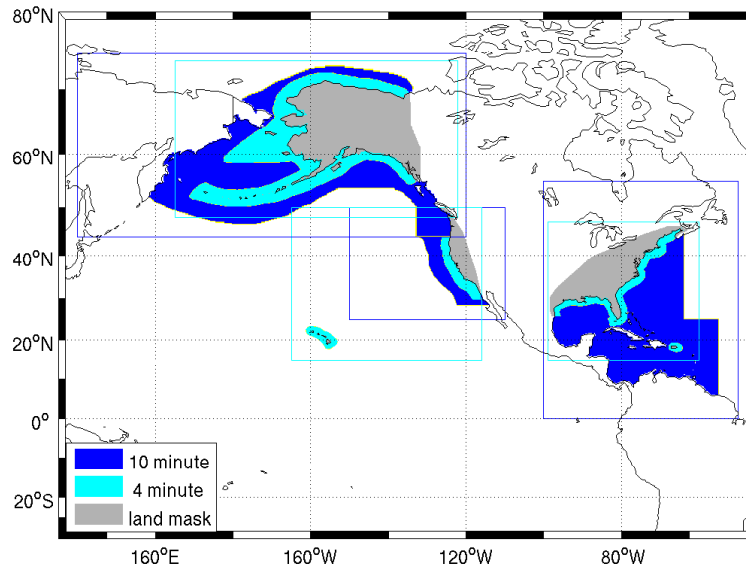


Fig. 2.1 : East and West Coasts of USA, Alaska, and Hawaii Grids

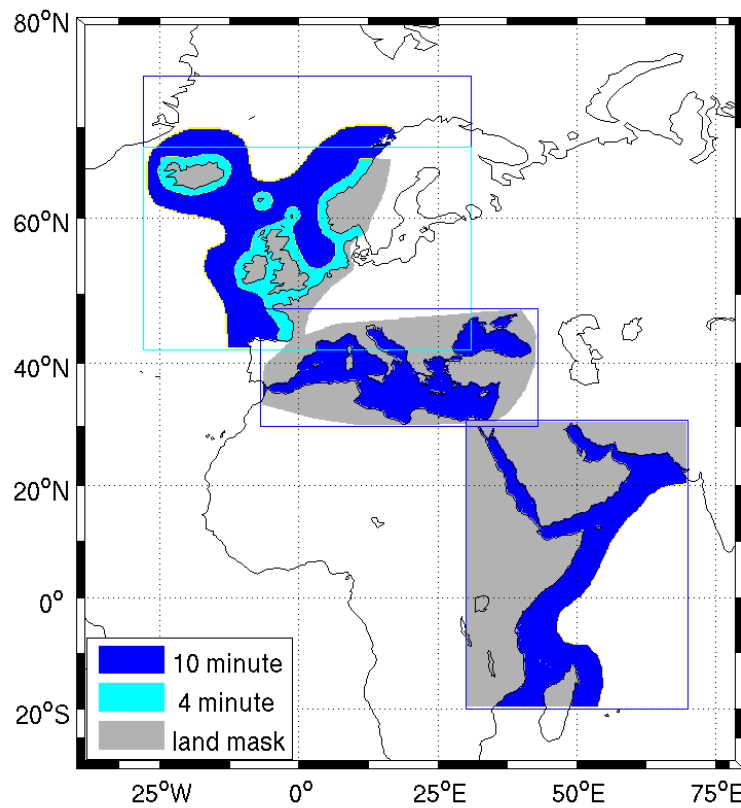


Fig. 2.2 : North Sea / Baltic, Mediterranean, and NW Indian Ocean Grids

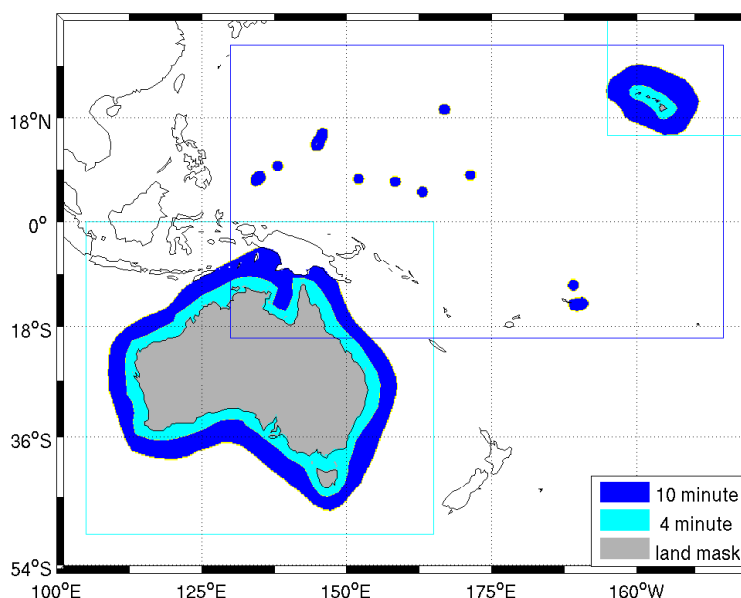


Fig. 2.3 : Australia, Pacific Islands, and West Coast US (Hawaii 4 min) Grids

To avoid the singularity at the poles, all grid points beyond $82^\circ N$ in the Arctic grid are marked as inactive. This is not an issue in the Antarctic grid because of land.

Nested inside the low resolution grids are the intermediate grids, which have been masked so that the only active points are those within approximately 250 nautical miles from shore. See Table 2.2 for details on the individual grids. Note that in the Alaska 10 arc-minute grid, Cook Inlet is open (see Figure B.3 in Appendix B). In this resolution, Hawaii is part of the Pacific Islands grids.

The highest resolution grids are the 4 arc-minute coastal grids, masked so that the only active points are those within approximately 100 km of shore. In this resolution, Hawaii is part of the West Coast US grid. Since these grids can be computationally very expensive, they have been limited to regions of highest priority. See Table 2.3 for the details on the individual grids.

Overall, we have separated the global domain into sixteen computational grids (Fig. 2.4) with the time step particulars given in Table 2.4. Detailed maps of these grids can be seen in appendix B. The wave model uses four different time steps internally for each grid, all of which are pre-defined in the grid setup and have been outlined. Keep in mind that the wave model uses a dynamic time step for source term integration and the time step in Table 2.4 is the minimum time step allowed in the model. A discussion on the meaning of the different time steps is beyond the scope of this report and the readers are referred to the manual (Tolman, 2009) for more details. All the raw output from the wave model is generated at these sixteen different grids. For practical reasons, the gridded

Table 2.2: 10-minute grids: range and resolution. Note that in the higher latitude grids of Alaska and the North Sea, the longitude resolution has been increased to maintain the same resolution in rectilinear coordinates.

Name	Grid label	Latitude	Longitude	Resolution (lat x lon)
East Coast US	ecg_10m	0°N : 55°N	100°W : 50°W	1/6° x 1/6°
West Coast US	wc_10m	25°N : 50°N	150°W : 110°W	1/6° x 1/6°
Alaska	ak_10m	44°N : 75°N	140°E : 120°W	1/6° x 1/4°
Pacific Isl.	pi_10m	20°S : 30°N	130°E : 145°W	1/6° x 1/6°
Australia	oz_10m	50°S : 0°N	105°E : 165°E	1/6° x 1/6°
North Sea	nsb_10m	42°N : 75°N	28°W : 31°E	1/6° x 1/4°
Mediterranean	med_10m	30°S : 48°N	7°W : 43°E	1/6° x 1/6°
NW Indian O.	nwio_10m	20°S : 31°N	30°E : 70°E	1/6° x 1/6°

Table 2.3: 4 arc-minute grids: range and resolution.

Name	Grid label	Latitude	Longitude	Resolution (lat x lon)
East Coast US	ecg_4m	15°N : 47°N	101°W : 60°W	1/15° x 1/15°
West Coast US	wc_4m	15°N : 50°N	165°W : 116°W	1/15° x 1/15°
Alaska	ak_4m	48°N : 74°N	165°E : 122°W	1/15° x 2/15°
Australia	oz_4m	50°S : 0°N	105°E : 165°E	1/15° x 1/15°
North Sea	nsb_4m	42°N : 68°N	28°W : 31°E	1/15° x 2/15°

output from the three 30 arc-minute computational grids are combined into a single global grid identified in Table 2.1, yielding fourteen output grids.

Table 2.4: Grid Time steps. All the times are in seconds.

Grid label	Global	Spatial	Intra-spectral	Source term
ao_30m	900	300	450	30
mid_30m	1800	900	900	30
ac_30m	900	300	450	30
ak_10m	900	375	450	30
wc_10m	900	450	450	30
pi_10m	900	625	450	30
ecg_10m	900	414	450	30
med_10m	900	485	450	30
nsb_10m	900	400	450	30
nwio_10m	900	615	450	30
oz_10m	900	450	450	30
ecg_4m	450	195	225	15
wc_4m	450	185	225	15
ak_4m	450	160	225	15
oz_4m	450	185	225	15
nsb_4m	450	215	225	15

The spectral domain has been divided into 50 frequency and 36 directional bins (directional resolution of 10°). The minimum frequency has been set at 0.035 Hz and the frequency increment factor has been set at 1.07, providing a frequency range of 0.035–0.963. A parametric tail is fitted beyond the highest computed frequency.

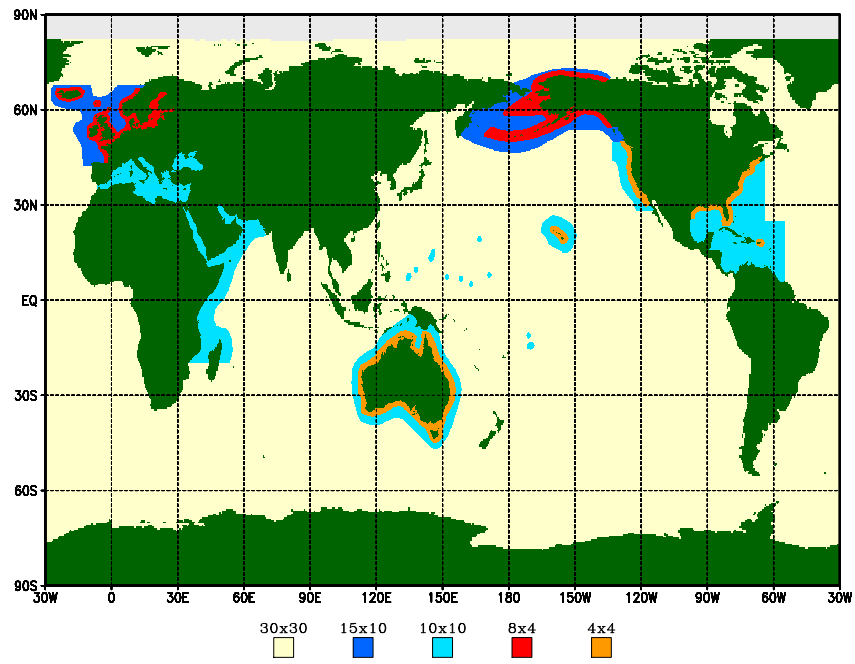


Fig. 2.4 : Global domain. Grid resolution given in arc-minutes.

3 Physics packages

In WAVEWATCH III the packages used are defined by switches during the compile stage of the wave model (Tolman, 2009). The switches that are being used at this stage of the database development are as follows:

- **NCEP2:** NCEP GRIB2 package for IBM (being used in generating GRIB2 output)
- **LRB4:** 4 Byte words (this is the record length in direct access files)
- **LLG:** Spherical grid
- **PR3:** ULTIMATE QUICKEST propagation scheme with averaging technique for Garden Sprinkler alleviation
- **FLX3:** Friction velocity from Tolman and Chalikov input with a cap (see manual for details)
- **LN1:** Cavaleri and Malanotte-Rizoli linear growth term with a filter
- **ST2:** Tolman and Chalikov source term package (Tolman and Chalikov, 1996)
- **STAB2:** Stability correction for Tolman and Chalikov package (see manual)
- **NL1:** DIA approximation for non-linear interactions
- **BT1:** JONSWAP bottom friction formulation
- **DB1:** Battjes-Janssen shallow water depth breaking
- **MLIM:** Miche-style shallow water limiter for maximum energy (see manual for details)
- **TR0:** No Triad interactions
- **BS0:** No bottom scattering
- **WNT1:** Linear interpolation of wind in time
- **WNX1:** Linear interpolation of wind speed in space

The key points are, that at this first stage of the database, DIA formulation is used to account for non-linear interactions, shallow water wave breaking is simulated using the Battjes-Janssen formulation and the Tolman-Chalikov source term packages are used for wave generation and dissipation. In later stages of the database development one or more of these packages will be changed.

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4 Products

Two types of output products are generated by the wave model—field output that is produced on the model grid layout and point output that is produced at select locations. For the database runs point output locations have been selected that correspond to known buoy locations as well as additional locations that were specifically requested by our collaborators. In all over two thousand output points have been selected (see appendix C for the full list). The output products generated on the grids are:

- Wind speed and direction as well as bulk spectral parameters—Significant wave height (Hs), Peak period (Tp) and Mean Direction at the peak period (Dp). These are stored in GRIB2 format with separate files for each parameter. Temporal resolution for the GRIB2 data is every 3 hours.
- Spectral partition data at all the grid output points. (Exception being the 30 arc-minute global grids where the output is stored at every other point). Temporal resolution for the partition data is every hour.

The temporal resolution of all products generated at the output points is hourly and the list of products are:

- The complete 2D spectra at each output point.
- Bulk spectral parameters using the WMO format at each output point. This includes the wind speed and direction, significant wave height and peak period.
- Partitioned wave data at the output points.

In the event that the output point is located in more than one grid, the energy spectrum is extracted from the finest grid that the point resides in. Linear interpolation is used to generate the spectrum at the output point from the neighboring grid points in the case that the output location does not correspond to a computational point.

Apart from these two types of products wave output is also generated along the altimeter tracks for later validation. This is done by interpolating in time and space wave parameters (significant wave height and wind speed) from the hourly field output files on to the altimeter tracks. The altimeter tracks are obtained from the quality controlled global altimeter data set that is maintained at the French Research Institute for the Exploration of the Sea (IFREMER).

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5 Initial validation

As an initial validation, the model was run from June 2005 through December 2005. The model was started from rest condition in June, and run in month long segments with restart files generated at the end of each run used to start the next month's runs. This is the format that shall be used also for the actual runs.

Some initial validation of the model runs has been done with the NDBC buoy data as well as with IFREMER's altimeter database. In this section results from November 2005 (arbitrarily chosen) have been shown. Results from other months show similar trends.

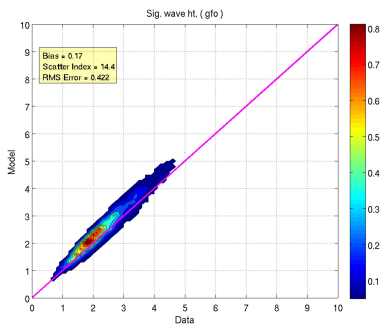
Figure 5.1 shows scatter plots from all the altimeters. Since just a plain scatter plot does not provide enough information on the number of points, a probability density function (PDF) was created by binning model and altimeter data into bins and plotting that distribution (Tolman et al., 2006). The PDF is defined as

$$PDF = \frac{n_{\text{bin}}}{n_{\text{T}} \Delta x \Delta y}$$

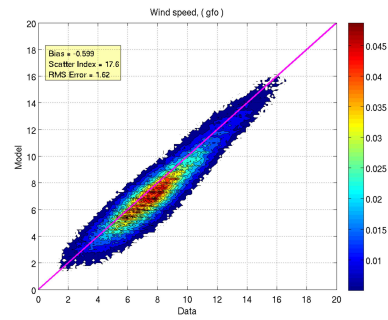
where, n_{bin} are the number of points in the bin, n_{T} are the total number of points, and $\Delta x, \Delta y$ are the bin resolutions for model and altimeter data respectively.

Figure 5.1 shows that in all the altimeters the wave height has a positive bias that increases for higher wave heights and a slightly negative bias for wind speeds. Error maps corresponding to these four different altimeters are shown in Figs. 5.2 to 5.5. Also a map of combined altimeter data was made (Fig 5.6). The maps show that significant part of the biases are along the eastern edges of the ocean basins, corresponding to insufficient dissipation in swell fields in the model. This and the larger biases in the Southern Ocean shall be addressed in the second stage of the wave database.

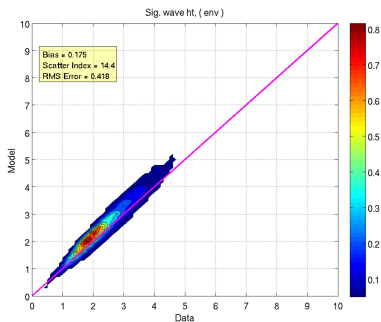
Time series comparisons at some select buoys are also shown in Figs. 5.7–5.13. The presented locations were chosen arbitrarily to correspond to points in the Atlantic Ocean, Pacific Ocean and in the Southern Hemisphere. The biases in the time series reflect what was observed in the error maps in the altimeters.



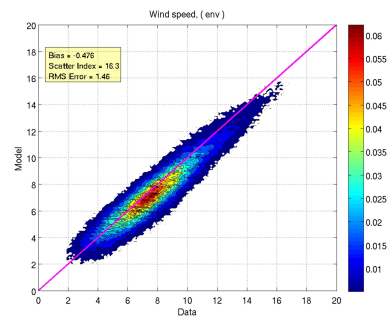
(a) GFO Hs Scatter plot



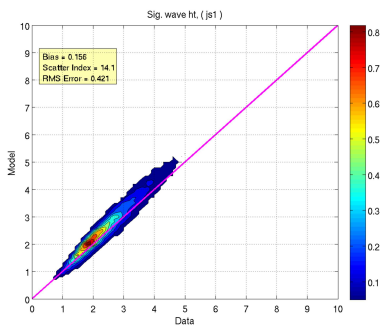
(b) GFO U10 Scatter plot



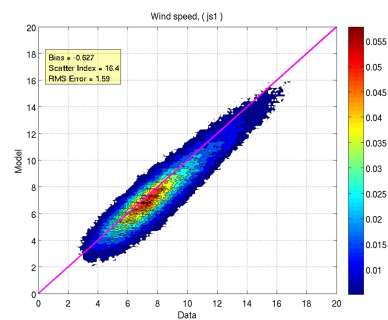
(c) ENVISAT Hs Scatter plot



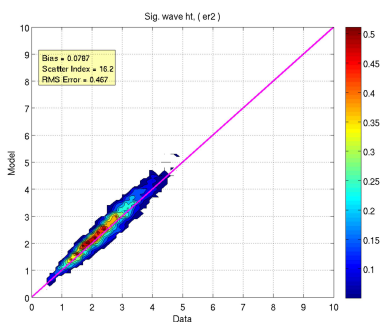
(d) ENVISAT U10 Scatter plot



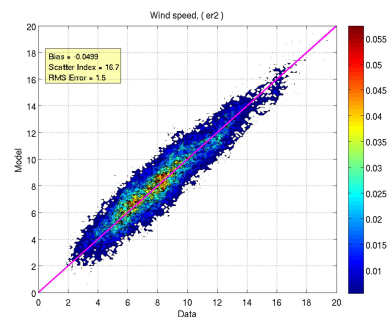
(e) JASON-1 Hs Scatter plot



(f) JASON-1 U10 Scatter plot



(g) ERS2 Hs Scatter plot



(h) ERS2 U10 Scatter plot

Fig. 5.1 : Scatter plot for Significant Wave height and Wind Speed from the several different altimeters for November 2005. Scatter plot was created using PDFs generated by binning the data into 0.1m bins. PDFs less than a cut-off value (0.05 for wave height and 0.005 for wind speed) have not been plotted. Magenta line indicates one to one correspondence between model and data. All values (including the statistics in the yellow boxes) are in m for the wave heights and m/s for wind speeds.

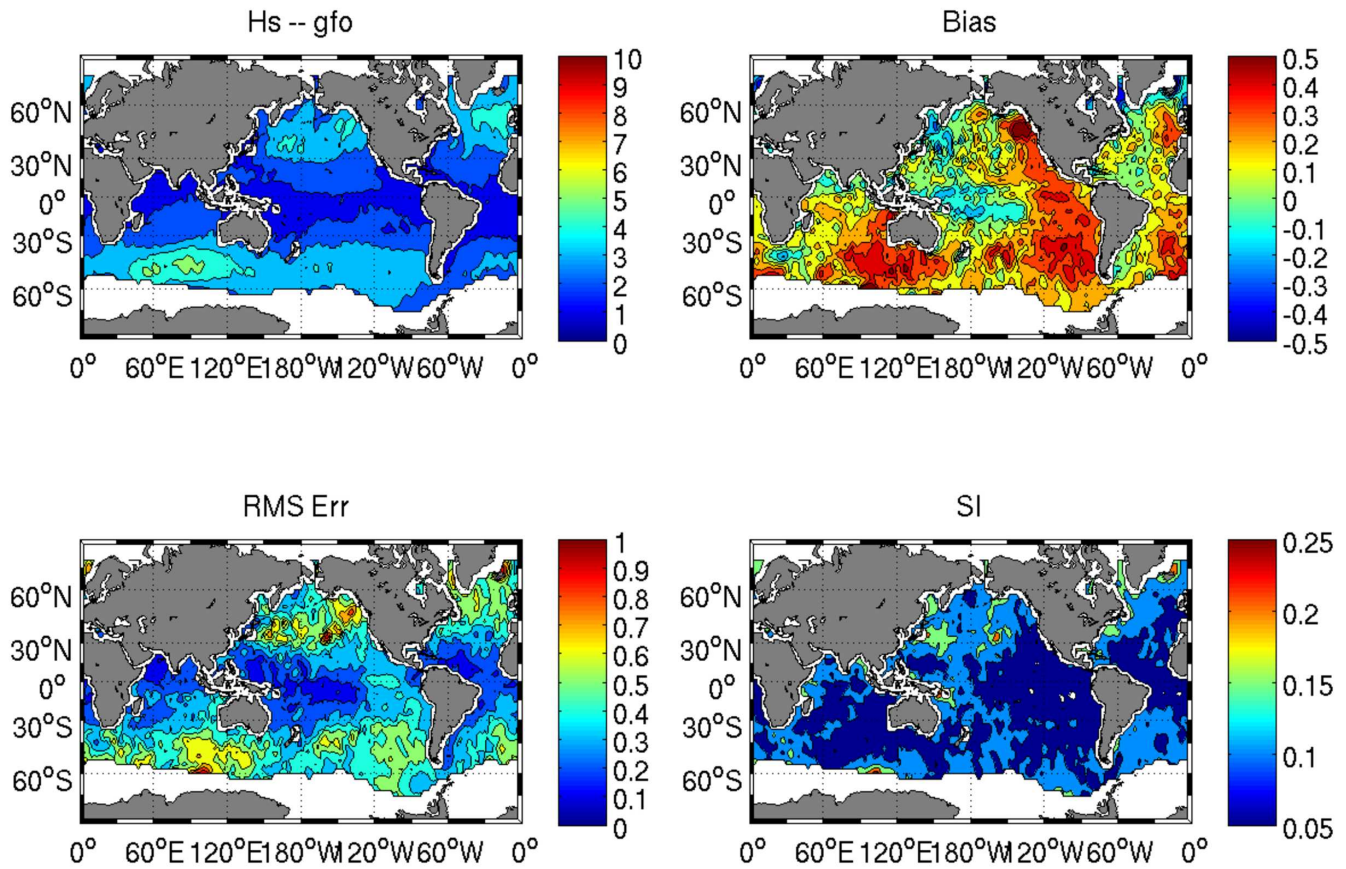


Fig. 5.2 : Error map of Significant wave height from the GFO satellite. To build these maps, model and data wave heights along altimeter tracks are binned into 2° bins. Error statistics have been computed inside each bin and a 3 point running average is done across the longitudes and latitudes to remove track signature. All values are in m (except for SI which is non-dimensional). The H_s map on the top left panel is made with altimeter data.

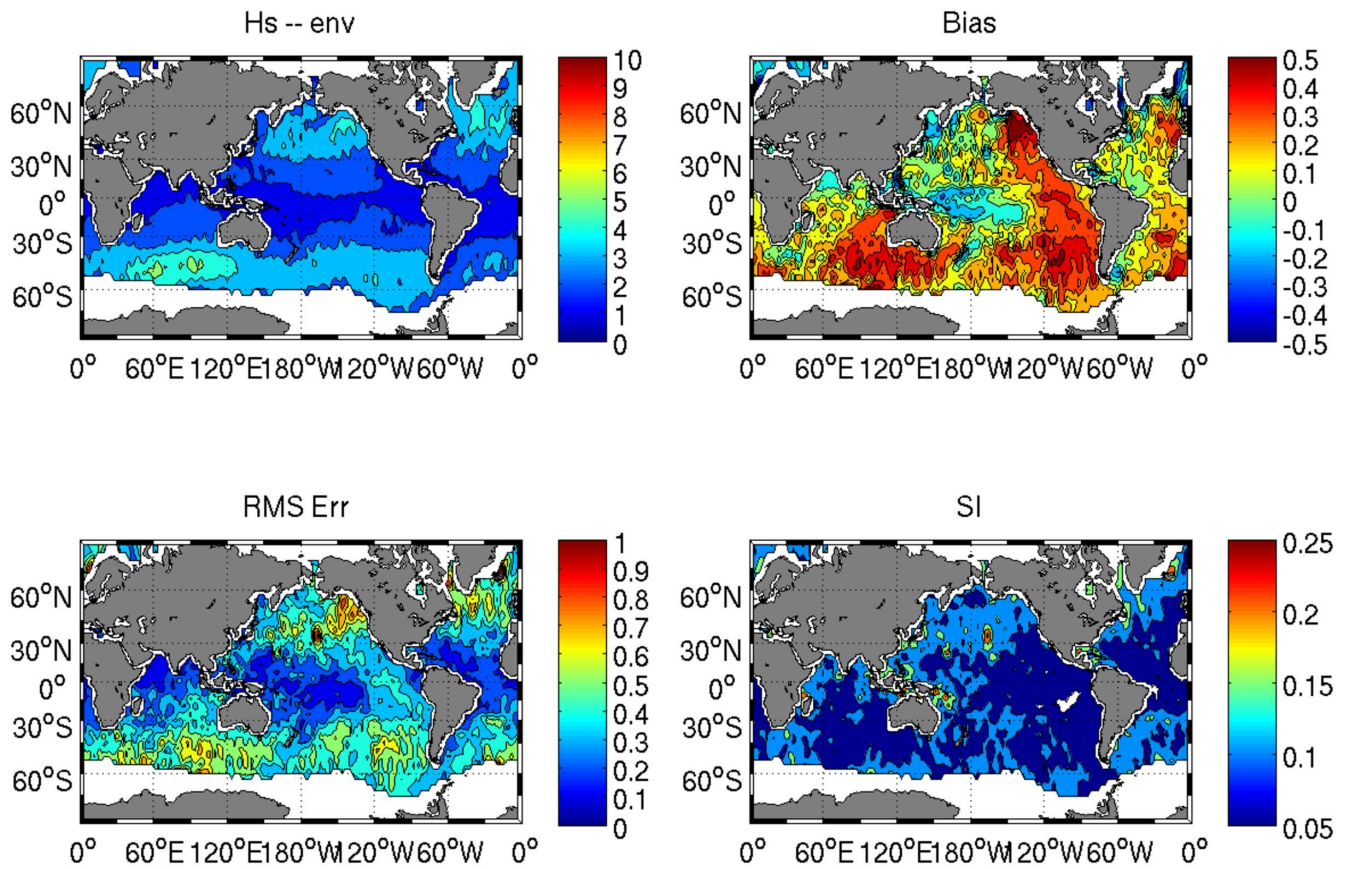


Fig. 5.3 : Idem. Fig 5.2 but from the ENVISAT satellite.

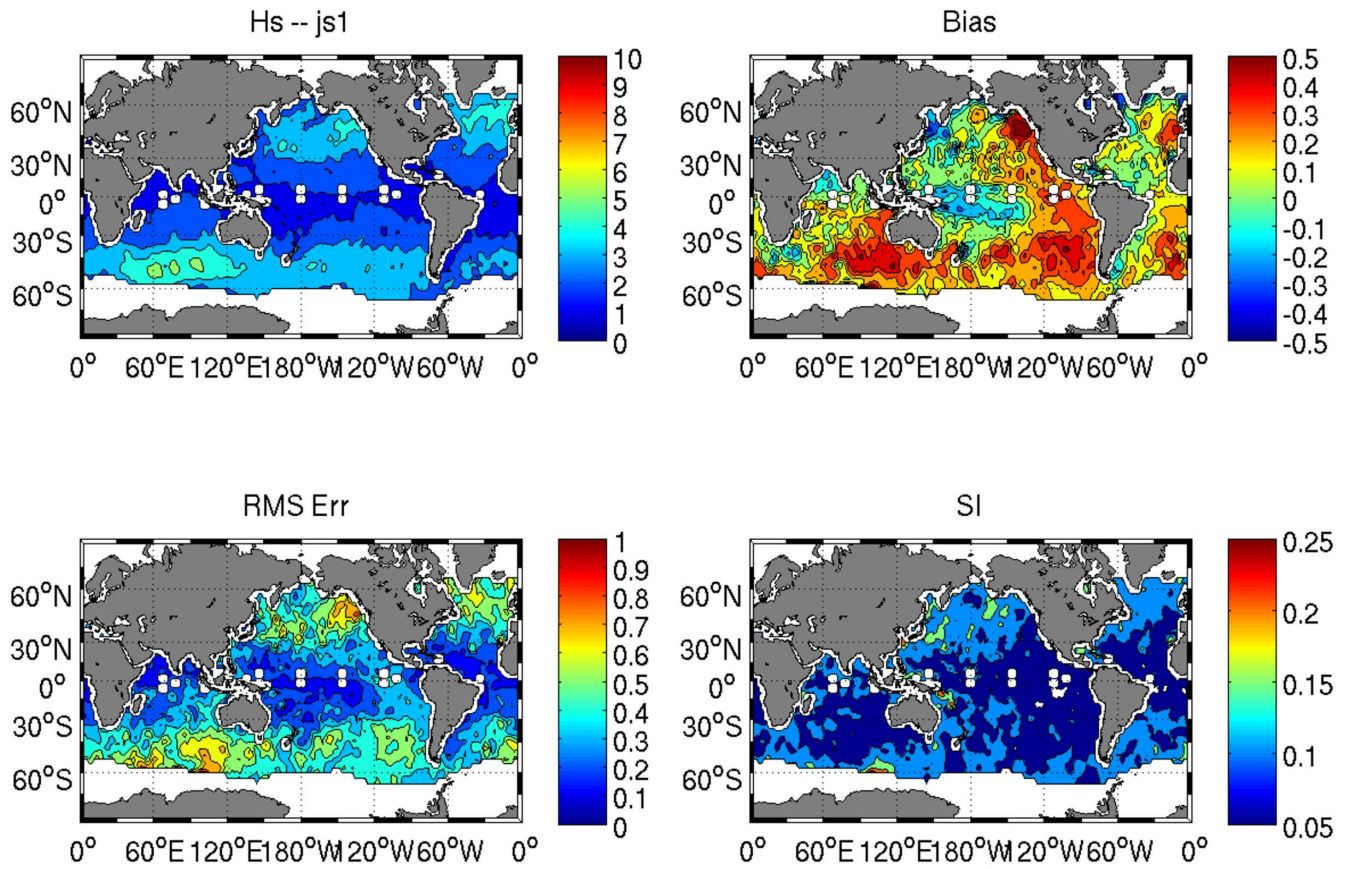


Fig. 5.4 : Idem. Fig 5.2 but from the JASON-1 satellite (white boxes indicate not enough data).

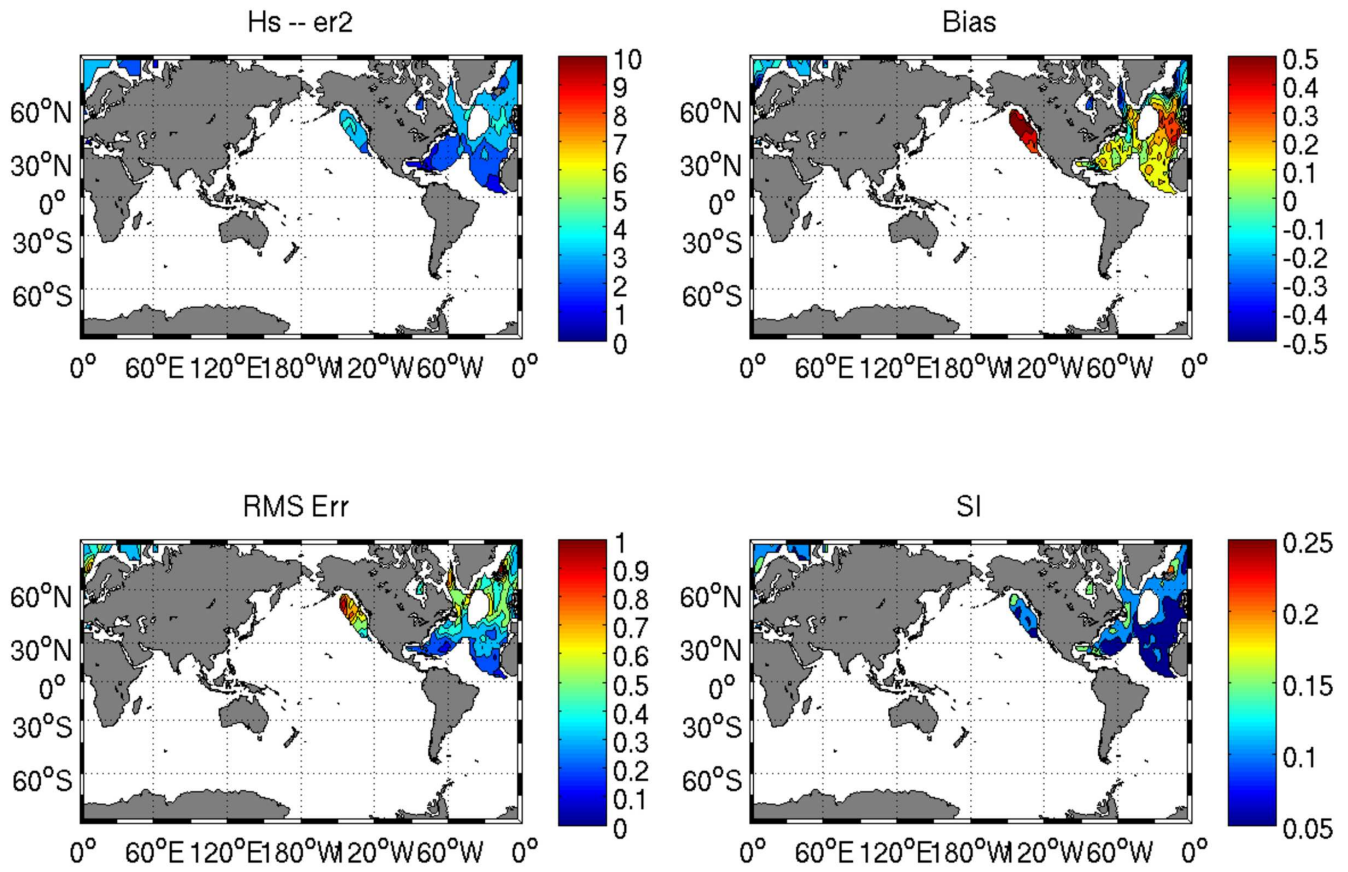


Fig. 5.5 : Idem. Fig 5.2 but from the ERS2 satellite. Note the limited data availability.

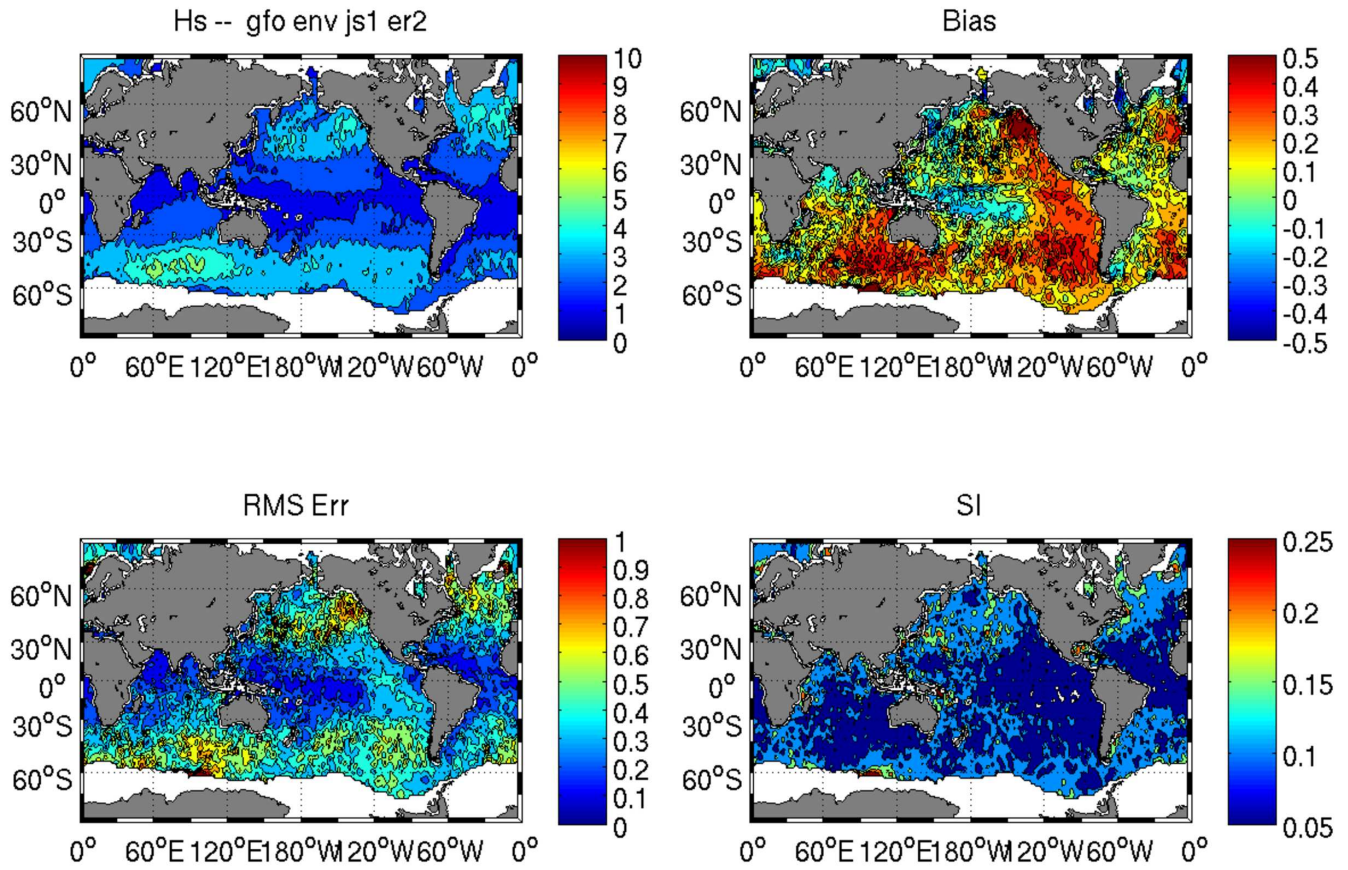
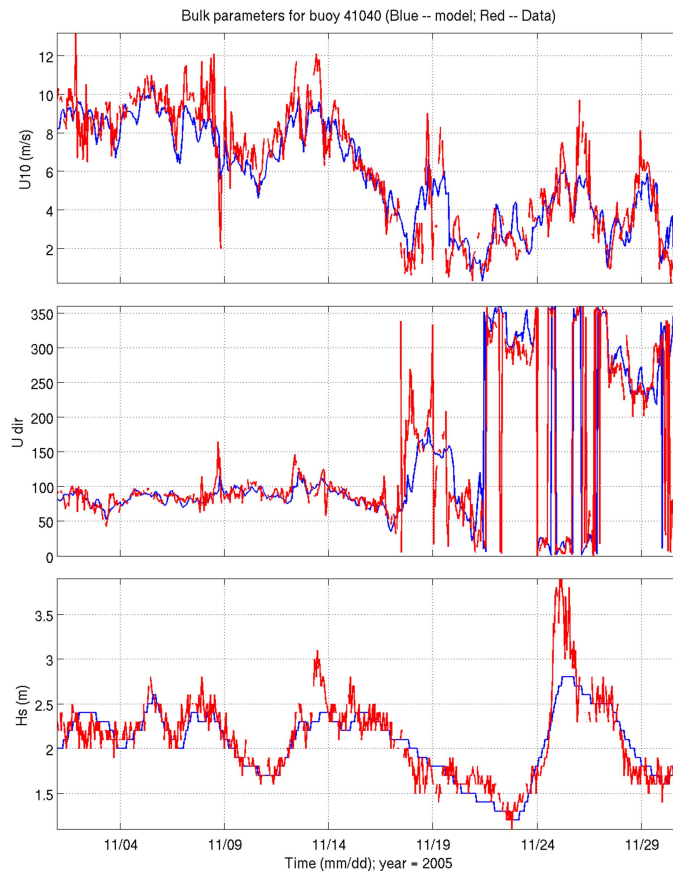
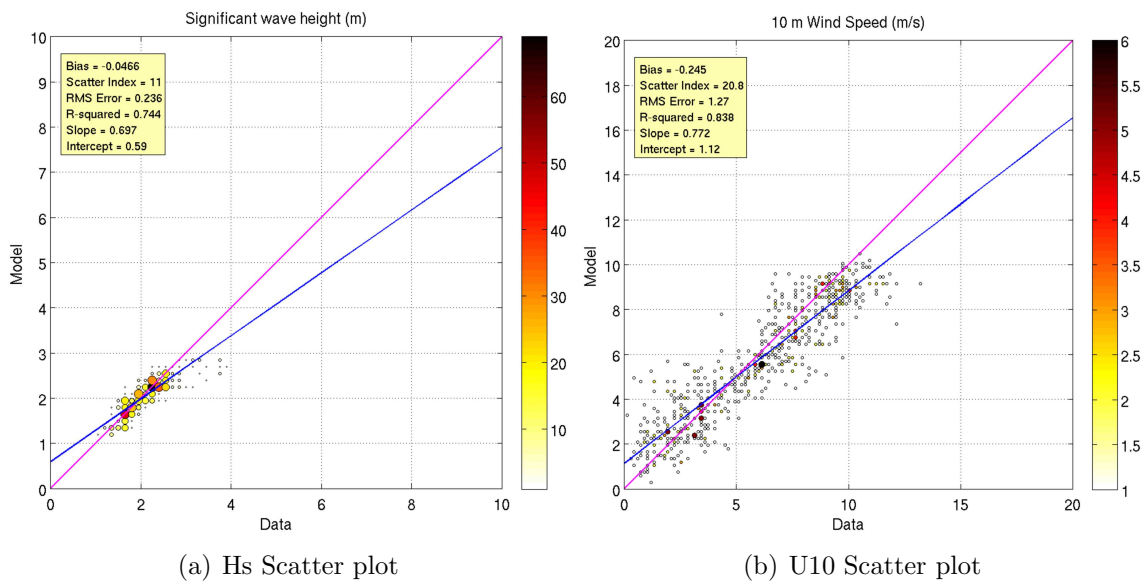
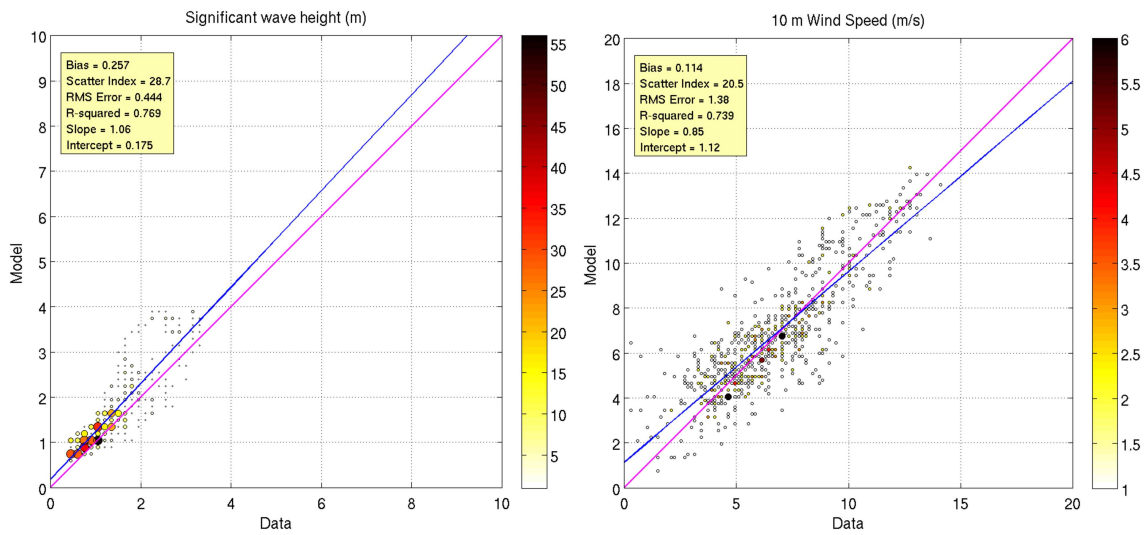


Fig. 5.6 : Idem. Fig 5.2 but for combined altimeter data from all the satellites. Maps for the combined data was made by binning the data in 1° bins (as opposed to 2° bins in the other figures).



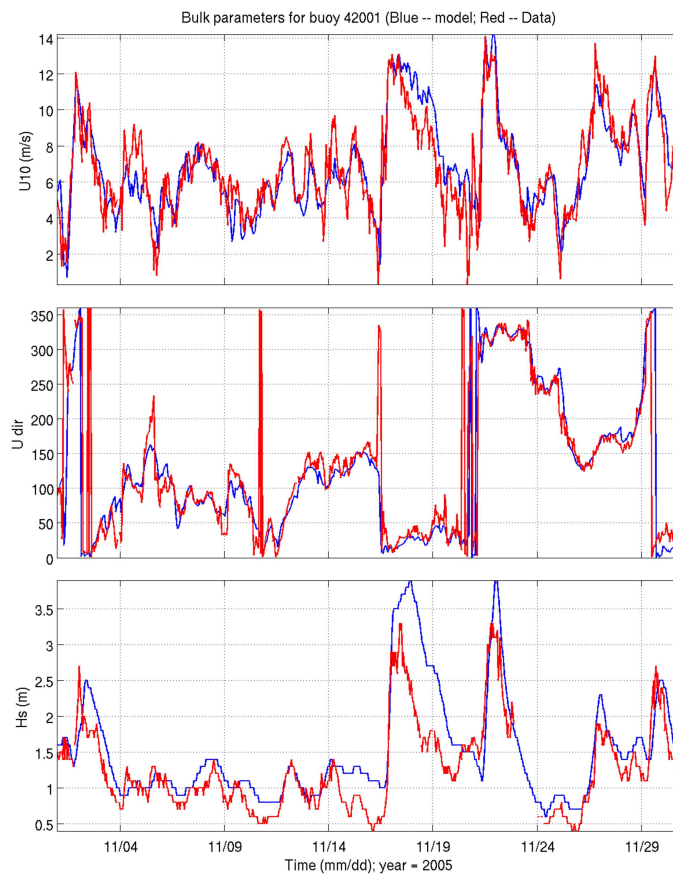
(c) Time Series

Fig. 5.7 : Model–Data comparison for November 2005 at buoy 41040 located in Western Atlantic Ocean (14.48° N 53° W). In panels (a) and (b) the scatter plots were generated by binning the data in 0.1 m bins. The color bars indicate the number of points that were found in the bins, with the marker size being increased in proportion to the number of points. The magenta line indicates the slope that would be if the model and data were in one to one correspondence and the blue line indicates the actual slope between model and data.



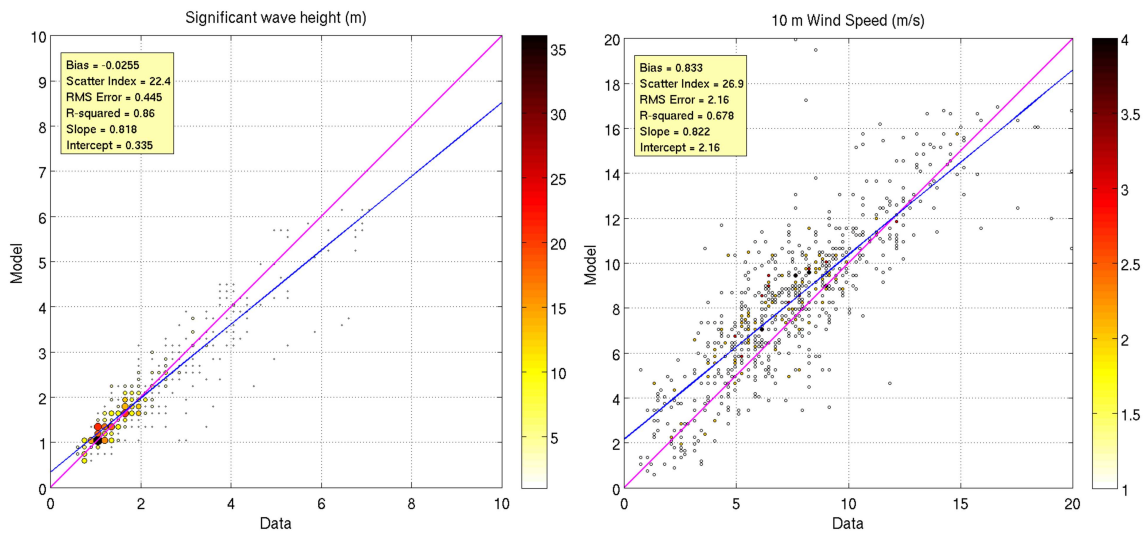
(a) Hs Scatter plot

(b) U10 Scatter plot



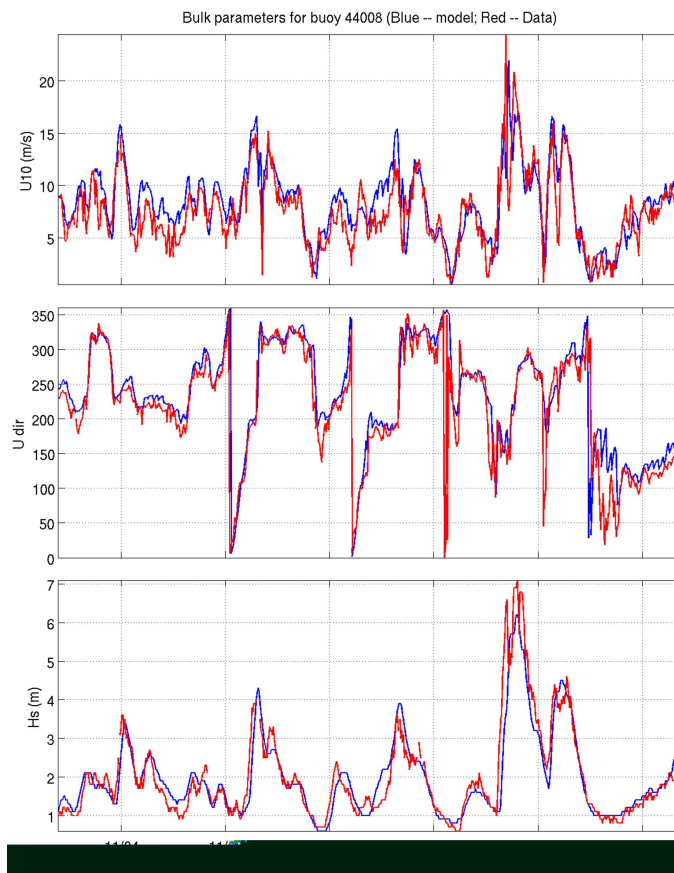
(c) Time Series

Fig. 5.8 : Idem. Fig 5.7 but at buoy 42001 located in the Gulf of Mexico (25.89° N 89.66° W).



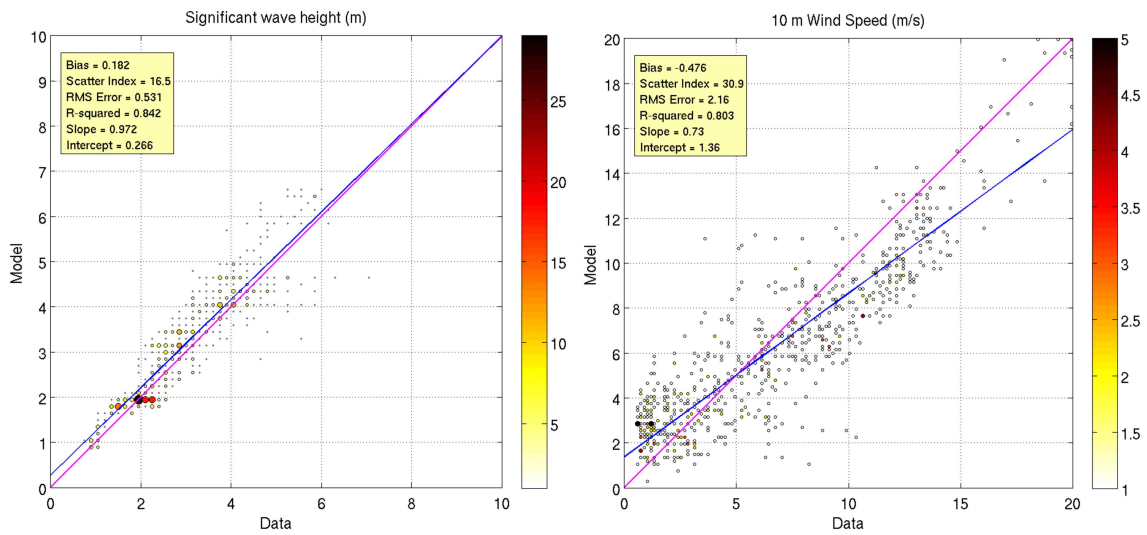
(a) Hs Scatter plot

(b) U10 Scatter plot



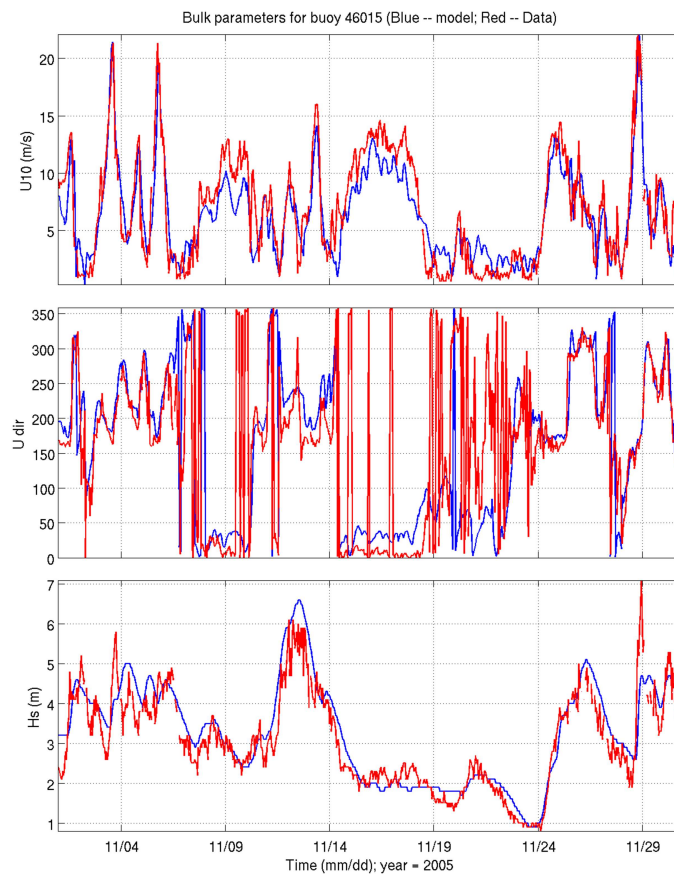
(c) Time Series

Fig. 5.9 : Idem. Fig 5.7 but at buoy 44008 located South East of Nantucket (40.5° N 69.25° W).



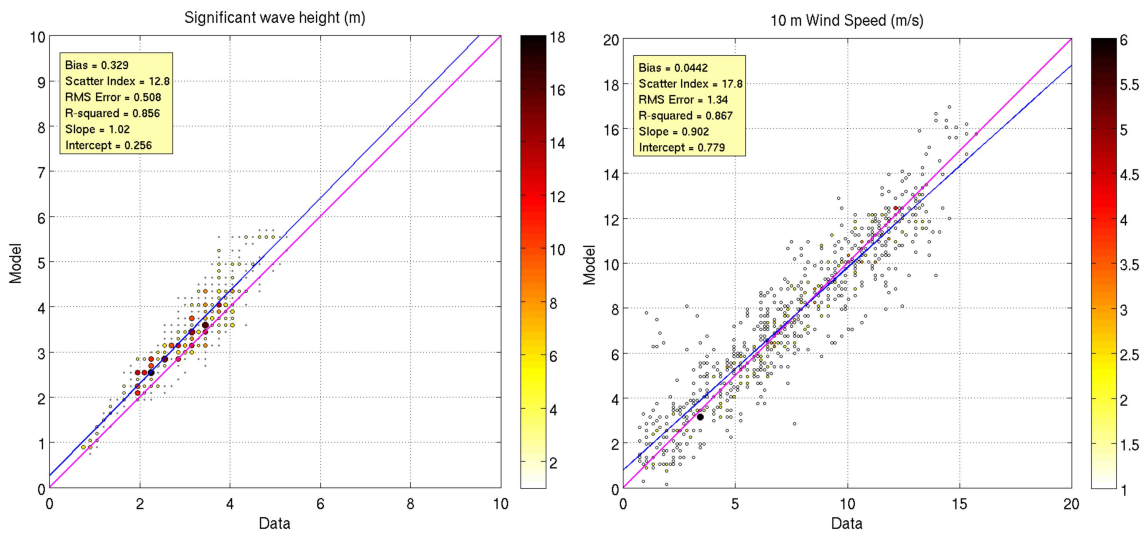
(a) Hs Scatter plot

(b) U10 Scatter plot



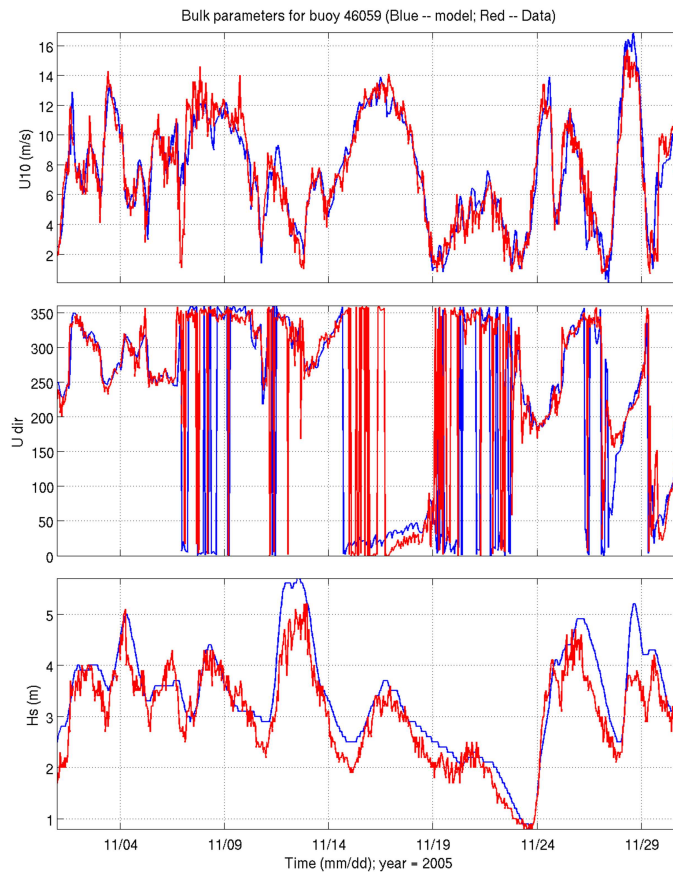
(c) Time Series

Fig. 5.10 : Idem. Fig 5.7 but at buoy 46015 located West of Port Orford in Oregon in the Pacific Ocean (42.75° N 124.82° W).



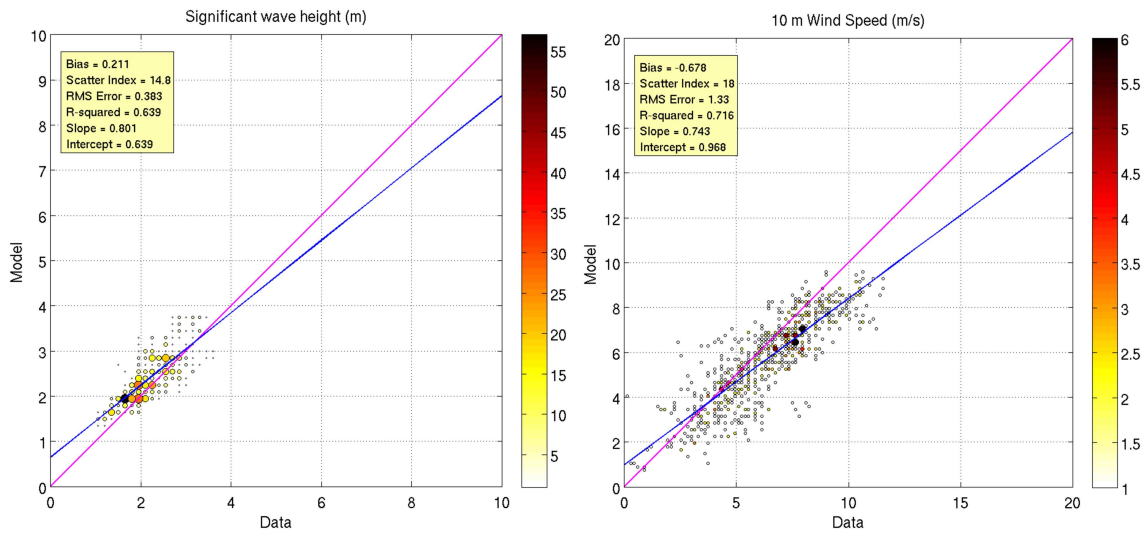
(a) Hs Scatter plot

(b) U10 Scatter plot



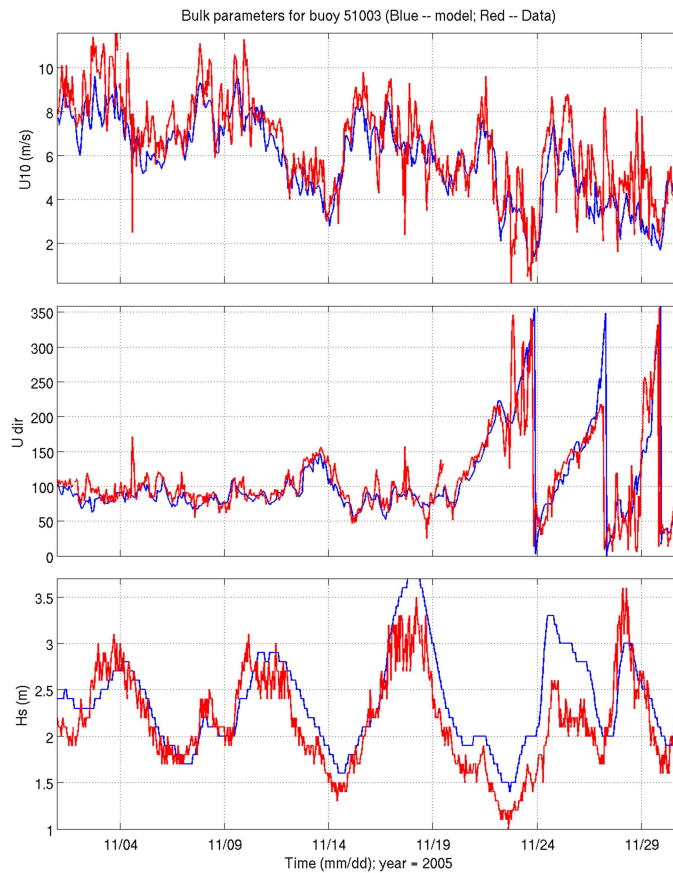
(c) Time Series

Fig. 5.11 : Idem. Fig 5.7 but at buoy 46059 located West of San Francisco, CA in the Pacific Ocean (38° N 129.97° W).



(a) Hs Scatter plot

(b) U10 Scatter plot



(c) Time Series

Fig. 5.12 : Idem. Fig 5.7 but at buoy 51003 located South West of Honolulu, HI in the Pacific Ocean (19.35° N 160.62° W).

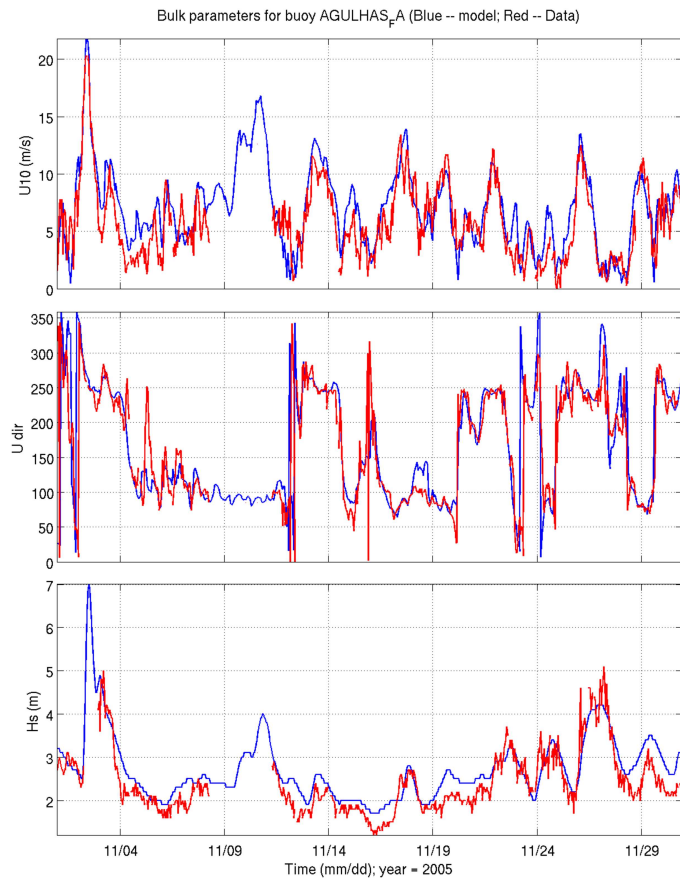
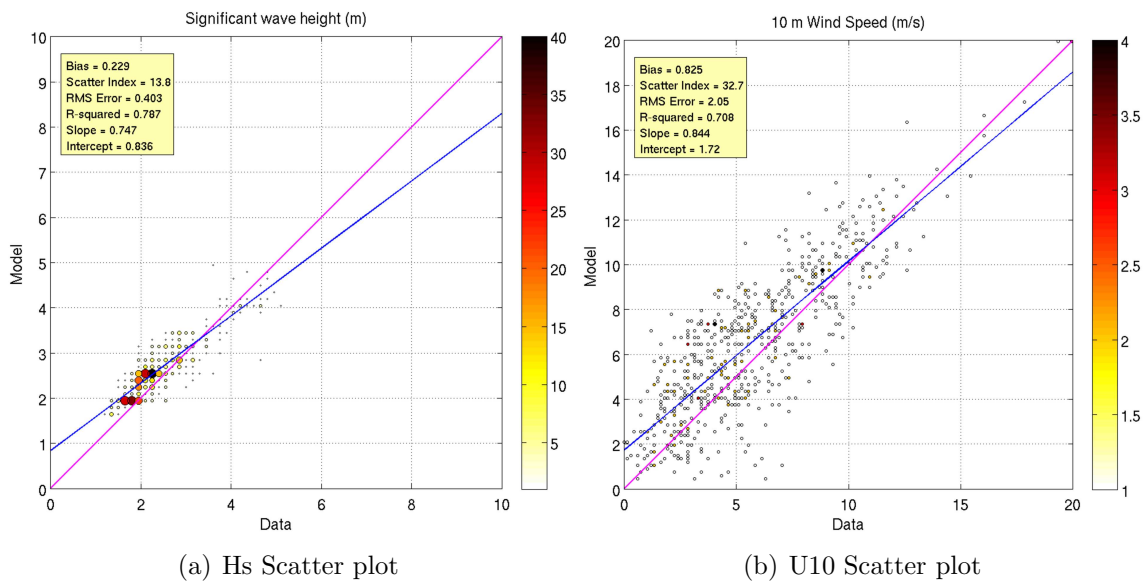


Fig. 5.13 : Idem. Fig 5.7 but at station AGULHAS_{FA}. This station is not a buoy but a downward looking laser sitting on a platform. It is located off of Cape Agulhas in South Africa (34.9° S 22.1° E).

6 Conclusions

This report highlights the setup of the wave model to develop the 30-year hindcast based on the CFSRR reanalysis winds. Grids were designed such that the major water bodies are all well resolved. Higher resolution grids were developed in areas that are of interest to our collaborative partners as well as places where buoy data are available for validation studies. At this stage of the study, we are still limited to using regular spherical grids. This may change for the later stages depending on the progress made in developing alternative numerical algorithms. To make sure that reasonable output is being generated a validation exercise was carried out with output from a short test run. The errors were found to be on the same order as our hindcast validation study based on analysis winds from the GFS model(Chawla et al., 2009). A detailed analysis of the output will be done once the first stage of the database is complete.

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References

- Chawla, A. and H. L. Tolman, 2007: Automated grid generation for WAVEWATCH III. Tech. Note 254, NOAA/NWS/NCEP/MMAB, 71 pp.
- Chawla, A. and H. L. Tolman, 2008: Obstruction grids for spectral wave models. *Ocean Mod.*, **22**, 12–25.
- Chawla, A., H. L. Tolman, J. L. Hanson, E.-M. Devaliere and V. M. Gerald, 2009: Validation of a multi-grid WAVEWATCH III modelling system. in *11th international workshop on wave hindcasting and forecasting & coastal hazards symposium*.
- Saha, S., S. Moorthi, H. Pan, X. Wu, J. Wang, S. Nadiga, P. Tripp, R. Kistler, J. Wollen, D. Behringer, H. Liu, D. Stokes, R. Grumbine, G. Gayno, J. Wang, Y. Hou, H. Chuang, H. Juang, J. Sela, M. Iredell, R. Treadon, D. Kleist, P. V. Delst, D. Keyser, J. Derber, M. Ek, J. Meng, H. Wei, R. Yang, S. Lord, H. van den Dool, A. Kumar, W. Wang, C. Long, M. Chelliah, Y. Xue, B. Huang, J. Schemm, W. Ebisuzaki, R. Lin, P. Xie, M. Chen, S. Zhou, W. Higgins, C. Zou, Q. Liu, Y. Chen, Y. Han, L. Cucurull, R. Reynolds, G. Rutledge and M. Goldberg, 2010: The NCEP climate forecast system reanalysis. *Bull. Am. Meteor. Soc.*, pp. 1015–1057.
- Spindler, D. M., A. Chawla and H. L. Tolman, 2011: An initial look at the CFSR Reanalysis winds for wave modeling. Tech. Note nnn, NOAA/NWS/NCEP/MMAB, nn pp.
- Tolman, H. L., 2007a: The 2007 release of WAVEWATCH III. in *10th international workshop on wave hindcasting and forecasting & coastal hazards symposium*. Paper Q4.
- Tolman, H. L., 2007b: Development of a multi-grid version of WAVEWATCH III. Tech. Note 256, NOAA/NWS/NCEP/MMAB, 88 pp. + Appendices.
- Tolman, H. L., 2008: A mosaic approach to wind wave modeling. *Ocean Modelling*, **25**, 35–47.
- Tolman, H. L., 2009: User manual and system documentation of WAVEWATCH III version 3.14. Tech. Note 276, NOAA/NWS/NCEP/MMAB, 220 pp.
- Tolman, H. L., D. Cao and V. . M. Gerald, 2006: Altimeter data for use in wave models at ncep. Tech Note 252, NOAA/NWS/NCEP/MMAB.
- Tolman, H. L. and D. Chalikov, 1996: Source terms in a thrid generation wind wave model. *Journal of Physical Oceanography*, **26**, 2497–2518.

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APPENDICES

A Appendix A: Example of user polygons file

Hudson Bay
Gulf of St. Lawrence
Mediterranean Sea
Black Sea
Baltic Sea
White Sea
Red Sea
Persian Gulf
Gulf of Aden
Gulf of Oman
Sea of Okhotsk
Sea of Japan
USA East Coast - Long Island Sound
USA East Coast - Delaware Bay
USA East Coast - Atlantic City
USA East Coast - Chesapeake Bay + Ocean City
USA East Coast - Pamlico Sound (Cape Hatteras)
USA East Coast - Cape Canaveral (Florida)
USA Gulf Coast - Charlotte Harbour (Florida)
USA Gulf Coast - Tampa Bay (Florida)
USA Gulf Coast - Panama City (Florida)
USA Gulf Coast - Mobile Bay (Alabama)
USA Gulf Coast - Lake Pontchartrain (New Orleans)
USA Gulf Coast - Grand Isle (New Orleans)
USA Gulf Coast - Sabine Lake (Louisiana)
USA Gulf Coast - Galveston Bay (Texas)
USA Gulf Coast - Padre Island (Texas)
Mexico Gulf Coast - Laguna Madre
Mexico Gulf Coast - Tamiahua
Mexico Gulf Coast - Paso Real (Yukatan)
Mexico Gulf Coast - Belize (Yukatan)
Honduras Gulf Coast - Laguna Caratasca
Nicaragua Gulf Coast
Panama Gulf Coast
Columbia Gulf Coast
Venezuela Gulf Coast - Lago de Maracaibo
Venezuela Gulf Coast - Gulf of Paria
Brazil East Coast - Amazon Delta
Alaska - Cook Inlet
Alaska - Prince William Sound

Alaska - Yakutat Bay
Alaska - Alexander Archipelago (Chatham Strait, Sitka)
Canada West Coast
US/Canada West Coast - Strait of Juan de Fuca + Puget Sound
US West Coast - Columbia River Estuary
US West Coast - San Francisco Harbor
West Coast - Lake Ojo de Liebre (Baja California)
West Coast - Laguna S. Ignacio (Baja California)
West Coast - Bay of Magdalena (Baja California)
West Coast - Gulf of California (Baja California)

B Appendix B: Grids

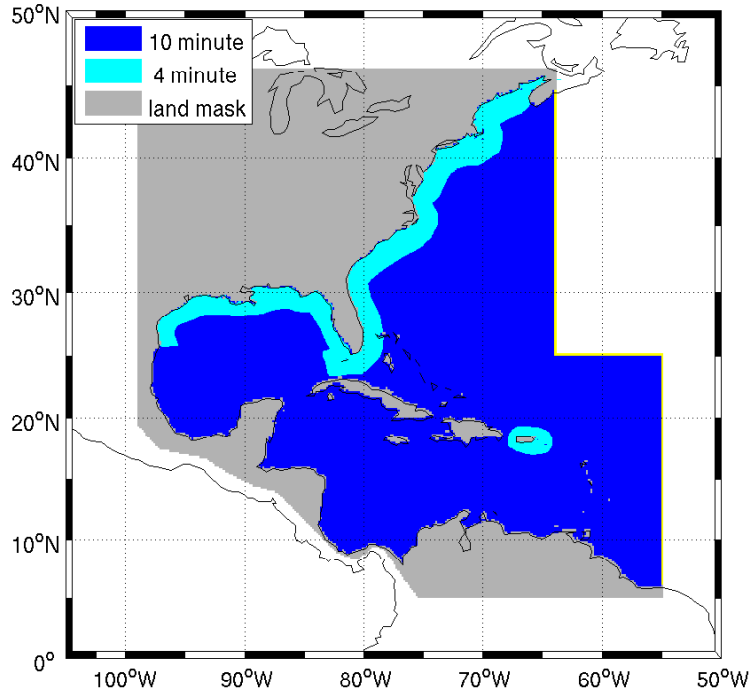


Fig. B.1 : East Coast of USA

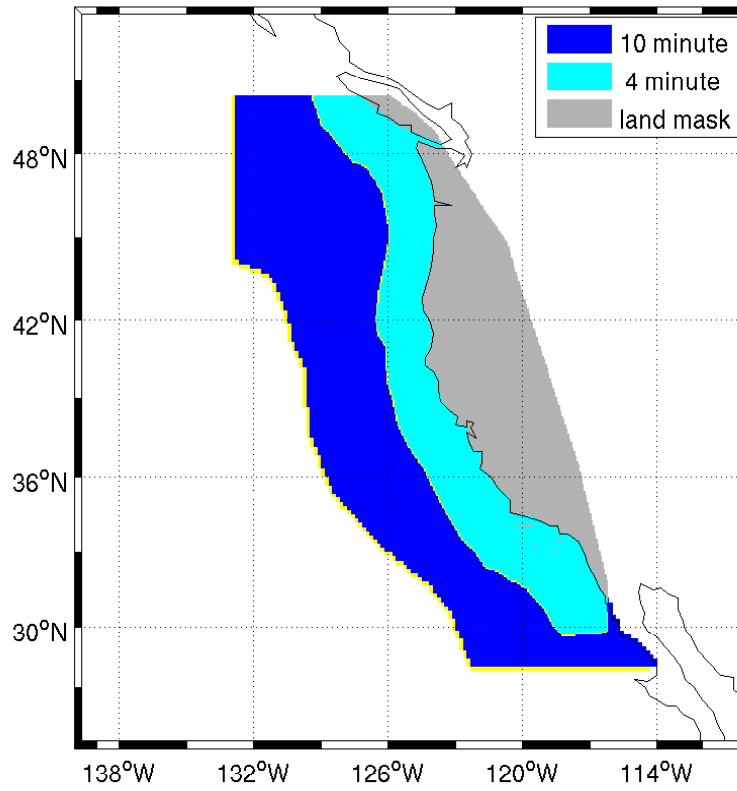


Fig. B.2 : West Coast of USA

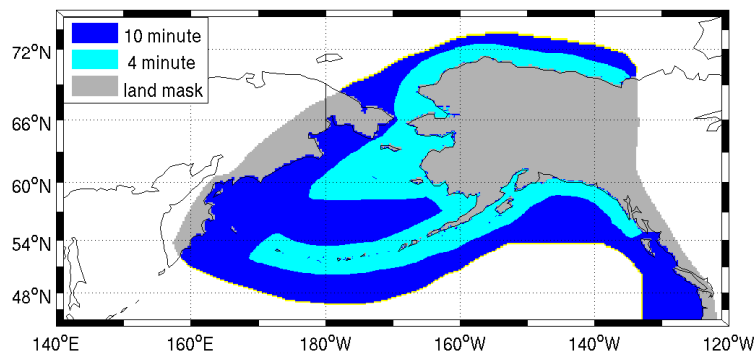


Fig. B.3 : Alaska

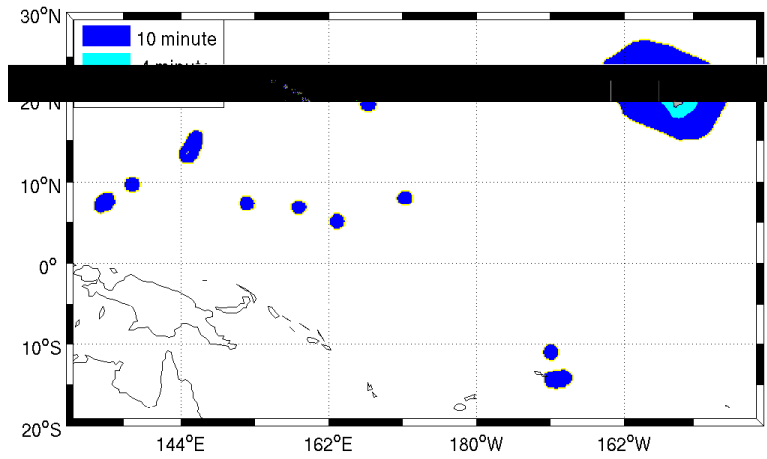


Fig. B.4 : Pacific Islands and Hawaii

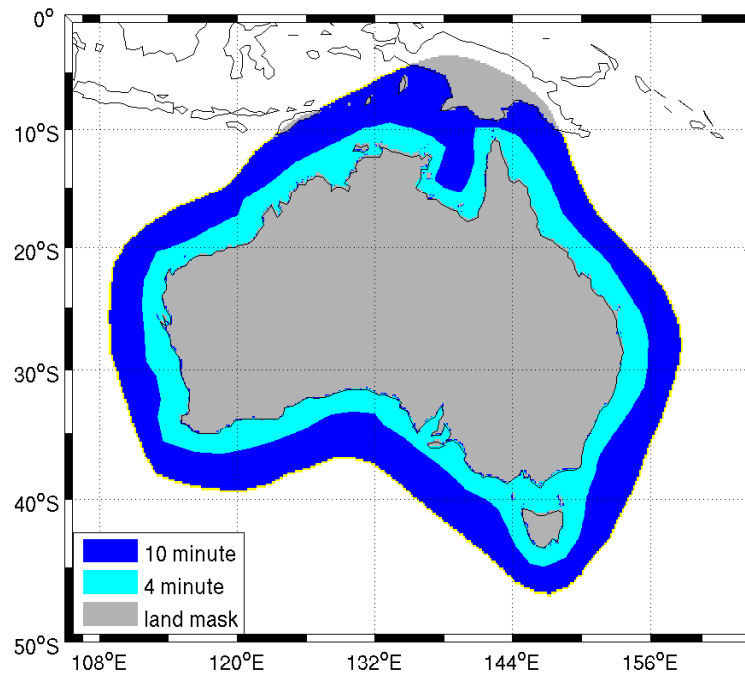


Fig. B.5 : Australia

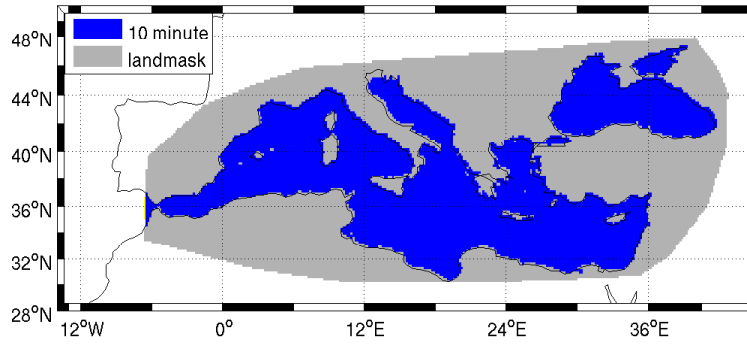


Fig. B.6 : Mediterranean

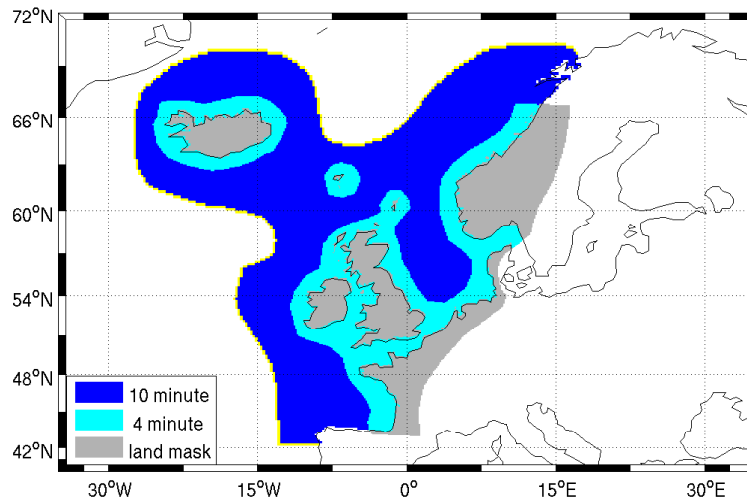


Fig. B.7 : North Sea and Baltic

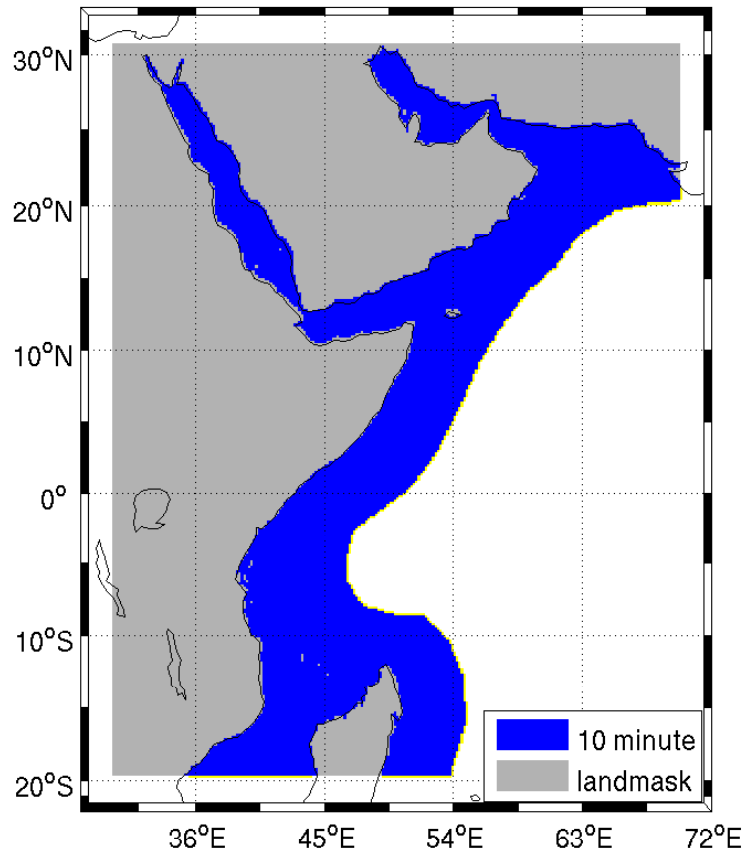


Fig. B.8 : North West Indian Ocean

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C Appendix C: Output Points

```

$
$ Global output point data file for multi-grid wave model
$
$ Key to data in file:
$
$   LON      Longitude, east positive
$   LAT      Latitude
$   NAME     Output point name C*10, no blanks in name allowed
$   AH      Anemometer height, dummy value for none-data points
$   TYPE     Buoy type indicator, used for plotting and postprocessing
$           DAT      Data point
$           XDT      Former data point
$           BPT      Boundary data for external models.
$           VBY      'Virtual buoy'
$   SOURCE   Source of data point
$           ENCAN   Environment Canada
$           GOMOOS  Gulf of Maine OOS
$           IDT     Irish Department of Transportation
$           METFR   Meteo France
$           NCEP    Boundary and other data points
$           NDBC    National Data Buoy Center
$           PRIV    Private and incidental data sources
$           SCRIPPS Scripps
$           UKMO    UK Met Office
$           PDES    Puertos del Estados
$           SHOM    Service Hydrographique et Oceanographique de la Marine
$           OCNOR   Fugro Oceanor
$           WHOI    Woods Hole Oceanographic Institute
$           SKOREA  South Korea
$           MVEW    Ministerie van Verkeer en Waterstaat
$           CORMP   Coastal Ocean Research and Monitoring Program
$           DIMAR   Direccion General Maritima (Columbia)
$           BP      British Petroleum
$   SCALE    Scale indicator for plotting of locations on map
$           Point will only be plotted if SCALE =< DX in our
$           GrADS scripts, DX is width of plot in logitude
$
$ Notes:
$
$ - The '$' at the first position identifies comments for WAVEWATCH III

```

\$ input.
 \$ - The first three data columns are used by the forecats code, the other
 \$ are used by postprocessing scripts.

\$

\$ NE Pacific deep ocean

\$

LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
-----	-----	------	----	------	--------	-------

\$

-148.02	56.31	'46001	'	5.0	DAT	NDBC	360
-130.27	42.60	'46002	'	5.0	DAT	NDBC	360
-136.10	50.93	'46004	'	5.0	DAT	ENCAN	360
-131.02	46.05	'46005	'	5.0	DAT	NDBC	360
-137.48	40.80	'46006	'	5.0	DAT	NDBC	360
-177.58	57.05	'46035	'	10.0	DAT	NDBC	360
-133.94	48.35	'46036	'	5.0	DAT	ENCAN	360
-130.00	37.98	'46059	'	5.0	DAT	NDBC	360
-154.98	52.70	'46066	'	5.0	DAT	NDBC	360
175.28	55.00	'46070	'	5.0	DAT	NDBC	360
-172.03	54.94	'46073	'	10.0	DAT	NDBC	360
-138.85	53.91	'46184	'	5.0	DAT	ENCAN	360

\$

\$ NE Pacific coastal

\$

LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
-----	-----	------	----	------	--------	-------

\$

\$ Alaska

\$

-146.83	60.22	'46061	'	5.0	DAT	NDBC	90
179.05	51.16	'46071	'	5.0	DAT	NDBC	360
-171.73	52.25	'46072	'	5.0	DAT	NDBC	360
-160.81	53.93	'46075	'	5.0	DAT	NDBC	360
-148.00	59.50	'46076	'	5.0	DAT	NDBC	360
-152.45	56.05	'46078	'	5.0	DAT	NDBC	360
-152.09	59.76	'46106	'	999	DAT	NDBC	75
-150.00	58.00	'46080	'	5.0	DAT	NDBC	360
-143.42	59.69	'46082	'	5.0	DAT	NDBC	360
-138.00	58.25	'46083	'	5.0	DAT	NDBC	360
-136.16	56.59	'46084	'	5.0	DAT	NDBC	360
-142.56	56.85	'46085	'	5.0	DAT	NDBC	360

\$

\$ Canada

\$

-127.93	49.74	'46132	'	5.0	DAT	ENCAN	90
-132.45	54.38	'46145	'	5.0	DAT	ENCAN	45
-131.22	51.83	'46147	'	5.0	DAT	ENCAN	90
-131.10	53.62	'46183	'	5.0	DAT	ENCAN	45
-129.81	52.42	'46185	'	5.0	DAT	ENCAN	45
-128.75	51.37	'46204	'	5.0	DAT	ENCAN	45
-134.28	54.16	'46205	'	5.0	DAT	ENCAN	45
-126.00	48.84	'46206	'	5.0	DAT	ENCAN	45
-129.92	50.87	'46207	'	5.0	DAT	ENCAN	45
-132.68	52.52	'46208	'	5.0	DAT	ENCAN	45
\$							
\$ USA							
\$							
-120.87	34.88	'46011	'	5.0	DAT	NDBC	15
-122.88	37.36	'46012	'	5.0	DAT	NDBC	45
-123.32	38.23	'46013	'	5.0	DAT	NDBC	25
-123.97	39.22	'46014	'	5.0	DAT	NDBC	45
-124.85	42.75	'46015	'	5.0	DAT	NDBC	45
-124.54	40.78	'46022	'	5.0	DAT	NDBC	25
-120.97	34.71	'46023	'	10.0	DAT	NDBC	45
-119.08	33.75	'46025	'	5.0	DAT	NDBC	45
-122.82	37.75	'46026	'	5.0	DAT	NDBC	25
-124.38	41.85	'46027	'	5.0	DAT	NDBC	45
-121.89	35.74	'46028	'	5.0	DAT	NDBC	45
-124.51	46.12	'46029	'	5.0	DAT	NDBC	45
-124.53	40.42	'46030	'	5.0	DAT	NDBC	15
-124.75	47.34	'46041	'	5.0	DAT	NDBC	45
-122.42	36.75	'46042	'	5.0	DAT	NDBC	45
-119.53	32.43	'46047	'	5.0	DAT	NDBC	45
-124.53	44.62	'46050	'	5.0	DAT	NDBC	45
-119.85	34.24	'46053	'	5.0	DAT	NDBC	45
-120.45	34.27	'46054	'	10.0	DAT	NDBC	25
-121.01	35.10	'46062	'	5.0	DAT	NDBC	45
-120.70	34.27	'46063	'	5.0	DAT	NDBC	45
-120.20	33.65	'46069	'	5.0	DAT	NDBC	45
-118.00	32.50	'46086	'	5.0	DAT	NDBC	45
-124.73	48.49	'46087	'	5.0	DAT	NDBC	45
-125.77	45.88	'46089	'	5.0	DAT	NDBC	45
-124.24	46.86	'46211	'	999.	DAT	SCRIPPS	25
\$ -124.31	40.75	'46212	'	999.	DAT	SCRIPPS	25
-124.74	40.29	'46213	'	999.	DAT	SCRIPPS	25
-123.47	37.95	'46214	'	999.	DAT	SCRIPPS	45

-119.80	34.33	'46216	'	999.	DAT	SCRIPPS	15	
-119.43	34.17	'46217	'	999.	DAT	SCRIPPS	15	
-120.78	34.45	'46218	'	999.	DAT	SCRIPPS	25	
-119.88	33.22	'46219	'	999.	DAT	SCRIPPS	45	
-118.63	33.85	'46221	'	999.	DAT	SCRIPPS	15	
-118.32	33.62	'46222	'	999.	DAT	SCRIPPS	15	
-117.77	33.46	'46223	'	999.	DAT	SCRIPPS	15	
-117.47	33.18	'46224	'	999.	DAT	SCRIPPS	15	
-117.39	32.93	'46225	'	999.	DAT	SCRIPPS	15	
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-124.55	43.77	'46229	'	999.	DAT	SCRIPPS	25	
-117.37	32.75	'46231	'	999.	DAT	SCRIPPS	15	
-117.33	32.43	'46232	'	999.	DAT	SCRIPPS	15	
-119.47	33.40	'46238	'	999.	DAT	SCRIPPS	15	
\$								
-117.75	32.64	'SGX01	'	999.	VBY	NCEP	25	
\$								
\$	South America							
\$								
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE	
\$	-----							
	-77.50	6.26	'32488	'	999.	DAT	DIMAR	45
	-77.74	3.52	'32487	'	999.	DAT	DIMAR	45
	-72.22	12.35	'41193	'	999.	DAT	DIMAR	120
\$								
\$	Japanese buoys							
\$								
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE	
\$	-----							
	134.90	28.90	'21004	'	999.	XDT	JAPAN	360
	126.30	28.10	'22001	'	999.	XDT	JAPAN	360
\$								
\$	South Korean buoys							
\$								
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE	
\$	-----							
	126.02	37.23	'22101	'	999.	DAT	SKOREA	100
	125.77	34.80	'22102	'	999.	DAT	SKOREA	100
	127.50	34.00	'22103	'	999.	DAT	SKOREA	100
	128.90	34.77	'22104	'	999.	DAT	SKOREA	100
	130.00	37.53	'22105	'	999.	DAT	SKOREA	100
	129.78	36.35	'22106	'	999.	DAT	SKOREA	100

126.33	33.00	'22107	'	999.	DAT	SKOREA	100
\$							
\$ Hawaii							
\$							
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE

\$	-162.21	23.43	'51001	'	5.0	DAT	NDBC 360
	-157.78	17.19	'51002	'	5.0	DAT	NDBC 360
	-160.82	19.22	'51003	'	5.0	DAT	NDBC 360
	-152.48	17.52	'51004	'	5.0	DAT	NDBC 360
	-154.06	23.55	'51000	'	5.0	DAT	NDBC 11
	-153.90	23.56	'51100	'	5.0	DAT	NDBC 11
	-162.06	24.32	'51101	'	5.0	DAT	NDBC 11
	-158.12	21.67	'51201	'	999.	DAT	SCRIPPS 11
	-157.68	21.42	'51202	'	999.	DAT	SCRIPPS 11
\$							
	-158.00	24.00	'HNL01	'	999.	VBY	NCEP 360
	-153.00	22.50	'HNL02	'	999.	VBY	NCEP 360
	-157.75	22.00	'HNL10	'	999.	VBY	NCEP 45
	-158.25	21.00	'HNL11	'	999.	VBY	NCEP 45
	-156.50	19.75	'HNL12	'	999.	VBY	NCEP 45
\$							
\$ Other deep Pacific							
\$							
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE

\$	-153.87	0.02	'51028	'	5.0	DAT	NDBC 360
	144.79	13.54	'52200	'	999.	DAT	SCRIPPS 360
\$							
\$ NWS forecast points							
\$							
	143.75	12.00	'GUAM	'	999.	VBY	NCEP 360
	147.50	16.00	'SAIPAN	'	999.	VBY	NCEP 360
	166.50	19.50	'WAKE	'	999.	VBY	NCEP 360
	136.25	9.00	'PALAU	'	999.	VBY	NCEP 360
	138.00	9.60	'YAP	'	999.	VBY	NCEP 360
	152.50	8.00	'CHUUK	'	999.	VBY	NCEP 360
	157.50	7.00	'POHNPEI	'	999.	VBY	NCEP 360
	163.00	5.10	'KOSRAE	'	999.	VBY	NCEP 360
	167.80	9.50	'KWAJALEIN	'	999.	VBY	NCEP 360
	167.50	8.67	'KWAJ_W1	'	999.	VBY	NCEP 360
	167.00	8.67	'KWAJ_W2	'	999.	VBY	NCEP 360

168.17	8.67	'KWAJ_E	'	999.	VBY	NCEP	360
166.33	9.17	'WOTHO	'	999.	VBY	NCEP	360
168.00	9.17	'ROI_NAMUR	'	999.	VBY	NCEP	360
171.50	9.17	'WOTJE_E	'	999.	VBY	NCEP	360
146.25	-12.00	'NEWGUINE_S'		999.	VBY	NCEP	360
171.25	8.00	'MAJURO	'	999.	VBY	NCEP	360
163.75	13.00	'ENEWETAK	'	999.	VBY	NCEP	360
-168.75	-15.00	'PAGO_PAGO	'	999.	VBY	NCEP	360
\$							
\$ Pacific training points							
\$							
-177.40	28.20	'MIDWAY	'	999.	VBY	NCEP	360
-169.50	16.70	'JOHNSTON	'	999.	VBY	NCEP	360
176.25	-18.00	'NADI	'	999.	VBY	NCEP	360
179.20	-8.50	'FUNAFUTI	'	999.	VBY	NCEP	360
-175.00	-22.00	'TONGATAPU	'	999.	VBY	NCEP	360
-159.80	-21.20	'RAROTONGA	'	999.	VBY	NCEP	360
167.50	-24.00	'NOUMEA	'	999.	VBY	NCEP	360
167.50	-18.00	'PORT_VILA	'	999.	VBY	NCEP	360
-149.60	-19.00	'PAPEETE	'	999.	VBY	NCEP	360
174.00	1.00	'TARAWA	'	999.	VBY	NCEP	360
-169.90	-19.10	'NIUE	'	999.	VBY	NCEP	360
-166.30	23.90	'FF_SHOALS	'	999.	VBY	NCEP	360
167.00	-0.50	'NAURU	'	999.	VBY	NCEP	360
-171.90	-9.20	'NUKUNONO	'	999.	VBY	NCEP	360
160.00	-12.00	'SOLOMON_SW'		999.	VBY	NCEP	360
165.00	-12.00	'SOLOMON_SE'		999.	VBY	NCEP	360
160.00	-5.00	'SOLOMON_N	'	999.	VBY	NCEP	360
\$							
\$ Virtual points for Indonesia							
\$							
102.00	-5.00	'P_ENGGANO	'	999.	VBY	NCEP	360
107.00	0.00	'P_PENJAN	'	999.	VBY	NCEP	360
110.00	-5.00	'SEMARANG	'	999.	VBY	NCEP	360
122.00	-11.00	'P_SAWA	'	999.	VBY	NCEP	360
132.00	1.00	'P_IGI	'	999.	VBY	NCEP	360
133.00	-8.00	'P_JAMDENA	'	999.	VBY	NCEP	360
93.00	6.00	'G_NICOBAR	'	999.	VBY	NCEP	360
100.00	4.00	'P_PANGKOR	'	999.	VBY	NCEP	100
118.00	-1.00	'SULAWESI	'	999.	VBY	NCEP	360
120.00	-7.50	'P_BONARAT	'	999.	VBY	NCEP	100
125.00	-5.00	'P_RUNDUMA	'	999.	VBY	NCEP	100

123.00	3.00	'BORNEO	'	999.	VB	NCEP	360
126.00	1.00	'P_GUREDA	'	999.	VB	NCEP	100
\$							
\$ Virtual points for Malaysia							
\$							
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE

\$							
	104.00	6.00	'MALAY01	'	999.	VB	NCEP 100
	105.00	3.00	'MALAY02	'	999.	VB	NCEP 100
	110.00	3.00	'MALAY03	'	999.	VB	NCEP 100
	113.00	5.00	'MALAY04	'	999.	VB	NCEP 100
	116.00	7.50	'MALAY05	'	999.	VB	NCEP 100
	117.00	7.50	'MALAY06	'	999.	VB	NCEP 100
\$							
\$ Gulf of Mexico and Carabean							
\$							
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE

\$							
	-89.67	25.90	'42001	'	10.0	DAT	NDBC 360
	-94.42	25.17	'42002	'	10.0	DAT	NDBC 360
	-85.94	26.07	'42003	'	10.0	DAT	NDBC 360
	-88.77	30.09	'42007	'	5.0	DAT	NDBC 90
	-95.36	27.91	'42019	'	5.0	DAT	NDBC 90
	-96.70	26.94	'42020	'	5.0	DAT	NDBC 90
	-94.40	29.22	'42035	'	5.0	DAT	NDBC 90
	-84.52	28.50	'42036	'	5.0	DAT	NDBC 90
	-92.55	27.42	'42038	'	5.0	DAT	NDBC 90
	-86.02	28.79	'42039	'	5.0	DAT	NDBC 90
	-87.55	30.06	'42012	'	5.0	DAT	NDBC 90
	-88.21	29.18	'42040	'	5.0	DAT	NDBC 90
	-90.46	27.50	'42041	'	5.0	DAT	NDBC 90
	-88.49	28.19	'42887	'	48.2	DAT	BP 90
\$							
	-87.73	26.00	'42054	'	10.0	XDT	NDBC 360
	-94.05	22.01	'42055	'	10.0	DAT	NDBC 360
	-85.06	19.87	'42056	'	10.0	DAT	NDBC 360
	-81.50	16.83	'42057	'	10.0	DAT	NDBC 360
	-75.06	15.09	'42058	'	10.0	DAT	NDBC 360
	-81.95	24.39	'42080	'	999.	DAT	NDBC 45
	-84.24	27.34	'42099	'	999.	DAT	SCRIPPS 100
\$							

	-67.50	15.01	'42059	'	5.0	DAT	NDBC	360
	-63.50	16.50	'42060	'	5.0	DAT	NDBC	360
\$								
	-53.08	14.55	'41040	'	5.0	DAT	NDBC	360
	-46.00	14.53	'41041	'	5.0	DAT	NDBC	360
	-57.90	15.90	'41100	'	5.0	DAT	METFR	360
	-56.20	14.60	'41101	'	5.0	DAT	METFR	360
\$								
	-81.75	24.00	'EYW01	'	999.	VBY	NCEP	90
	-82.25	25.00	'EYW02	'	999.	VBY	NCEP	90
\$								
	-66.50	19.00	'PUERTO_R_N'		999.	VBY	NCEP	90
	-66.50	17.50	'PUERTO_R_S'		999.	VBY	NCEP	90
	-67.50	19.00	'CARCOOS01	'	999.	VBY	NCEP	90
	-65.50	19.00	'CARCOOS02	'	999.	VBY	NCEP	90
	-64.00	19.00	'CARCOOS03	'	999.	VBY	NCEP	90
	-64.40	17.30	'CARCOOS04	'	999.	VBY	NCEP	90
	-67.50	17.50	'CARCOOS05	'	999.	VBY	NCEP	90
\$								
\$	NW Atlantic deep ocean							
\$								
\$	LON	LAT	NAME		AH	TYPE	SOURCE	SCALE
\$	-----							
	-72.66	34.68	'41001	'	5.0	DAT	NDBC	360
	-75.36	32.32	'41002	'	5.0	DAT	NDBC	360
	-79.09	32.50	'41004	'	5.0	DAT	NDBC	360
	-80.87	31.40	'41008	'	5.0	DAT	NDBC	360
	-66.58	41.11	'44011	'	5.0	DAT	NDBC	360
	-62.00	42.26	'44137	'	5.0	DAT	ENCAN	360
	-53.62	44.26	'44138	'	5.0	DAT	ENCAN	360
	-57.08	44.26	'44139	'	5.0	DAT	ENCAN	360
	-51.74	43.75	'44140	'	5.0	DAT	ENCAN	360
	-58.00	43.00	'44141	'	5.0	DAT	ENCAN	360
	-64.02	42.50	'44142	'	5.0	DAT	ENCAN	360
	-64.01	42.50	'44150	'	5.0	DAT	ENCAN	360
	-48.01	46.77	'WRB07	'	10.0	DAT	PRIV	360
\$								
\$	NW Atlantic coastal							
\$								
\$	LON	LAT	NAME		AH	TYPE	SOURCE	SCALE
\$	-----							
	-80.17	28.50	'41009	'	5.0	DAT	NDBC	80

-78.47	28.95	'41010	'	5.0	DAT	NDBC	80	
-80.60	30.00	'41012	'	5.0	DAT	NDBC	80	
-77.74	33.44	'41013	'	5.0	DAT	NDBC	80	
-75.40	35.01	'41025	'	5.0	DAT	NDBC	80	
-77.28	34.48	'41035	'	5.0	DAT	NDBC	80	
-76.95	34.21	'41036	'	5.0	DAT	NDBC	80	
-77.36	33.99	'41037	'	3.0	DAT	CORMP	80	
-77.72	34.14	'41038	'	3.0	DAT	CORMP	80	
-65.01	20.99	'41043	'	5.0	DAT	NDBC	90	
-70.99	24.00	'41046	'	5.0	DAT	NDBC	90	
-71.49	27.47	'41047	'	10.0	DAT	NDBC	90	
-69.65	31.98	'41048	'	10.0	DAT	NDBC	90	
-63.00	27.50	'41049	'	5.0	DAT	NDBC	90	
-58.69	21.65	'41044	'	5.0	DAT	NDBC	90	
-77.71	34.14	'41110	'	3.0	DAT	CORMP	80	
-81.29	30.72	'41112	'	999.	DAT	SCRIPPS	30	
-80.53	28.40	'41113	'	999.	DAT	SCRIPPS	30	
-80.22	27.55	'41114	'	999.	DAT	SCRIPPS	30	
\$								
\$	-75.72	36.20	'44056	'	999.	DAT	USACE	90
	-75.78	36.91	'44099	'	999.	DAT	SCRIPPS	90
	-75.59	36.26	'44100	'	999.	DAT	SCRIPPS	90
	-70.43	38.48	'44004	'	5.0	DAT	NDBC	90
	-69.16	43.19	'44005	'	5.0	DAT	NDBC	90
	-69.43	40.50	'44008	'	5.0	DAT	NDBC	90
	-74.70	38.46	'44009	'	5.0	DAT	NDBC	90
	-74.84	36.61	'44014	'	5.0	DAT	NDBC	90
	-72.10	40.70	'44017	'	5.0	DAT	NDBC	80
	-71.01	41.38	'44070	'	999.	DAT	NDBC	60
	-69.29	41.26	'44018	'	5.0	DAT	NDBC	80
	-72.60	39.58	'44066	'	5.0	DAT	NDBC	80
	-65.93	42.31	'44024	'	4.0	DAT	GOMOOS	80
	-73.17	40.25	'44025	'	5.0	DAT	NDBC	80
	-70.17	42.80	'44098	'	999.	DAT	SCRIPPS	80
	-67.31	44.27	'44027	'	5.0	DAT	NDBC	80
	-67.88	43.49	'44037	'	4.0	DAT	GOMOOS	80
	-66.55	43.62	'44038	'	4.0	DAT	GOMOOS	80
\$								
	-53.39	46.44	'44251	'	5.0	DAT	ENCAN	80
	-57.35	47.28	'44255	'	5.0	DAT	ENCAN	80
\$								
	-70.25	42.50	'BOX01	'	999.	VBY	NCEP	45

-67.50	44.00	'CAR01	'	999.	VBY	NCEP	45
-77.00	30.75	'CHS01	'	999.	VBY	NCEP	80
-69.75	43.25	'GYX01	'	999.	VBY	NCEP	45
-77.00	34.00	'ILM01	'	999.	VBY	NCEP	45
-78.50	33.25	'ILM02	'	999.	VBY	NCEP	45
-80.25	29.50	'JAX02	'	999.	VBY	NCEP	90
-79.50	27.25	'MLB01	'	999.	VBY	NCEP	90
-79.50	26.25	'MIA01	'	999.	VBY	NCEP	80
-79.75	25.00	'MIA02	'	999.	VBY	NCEP	90

\$

\$ NE Atlantic

\$

\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
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\$

\$

-5.00	45.20	'62001	'	3.0	DAT	UKMO	360
-20.00	41.60	'62002	'	999.	DAT	UNKNOWN	360
-12.40	48.70	'62029	'	3.0	DAT	UKMO	360
-7.90	51.40	'62023	'	999.	DAT	UNKNOWN	360
-5.60	48.50	'62052	'	999.	DAT	METFR	100
\$ -1.45	44.65	'62064	'	999.	DAT	SHOM	100
-13.30	51.00	'62081	'	3.0	DAT	UKMO	360
-11.20	53.13	'62090	'	4.5	DAT	IDT	100
-5.42	53.47	'62091	'	4.5	DAT	IDT	60
-10.55	51.22	'62092	'	4.5	DAT	IDT	100
-9.07	54.67	'62093	'	4.5	DAT	IDT	60
-6.70	51.69	'62094	'	4.5	DAT	IDT	60
-15.92	53.06	'62095	'	4.5	DAT	IDT	100
-2.90	49.90	'62103	'	14.0	DAT	UKMO	360
-12.36	54.54	'62105	'	3.0	DAT	UKMO	360
-9.90	57.00	'62106	'	4.5	DAT	UKMO	360
-6.10	50.10	'62107	'	14.0	DAT	UKMO	360
-19.50	53.50	'62108	'	3.0	DAT	UKMO	360
-8.50	47.50	'62163	'	3.0	DAT	UKMO	360
-4.70	52.30	'62301	'	3.0	DAT	UKMO	25
-5.10	51.60	'62303	'	3.0	DAT	UKMO	25
0.00	50.40	'62305	'	14.0	DAT	UKMO	25
2.00	51.40	'62170	'	999.0	DAT	UKMO	25
-11.40	59.10	'64045	'	3.0	DAT	UKMO	360
-4.50	60.70	'64046	'	3.0	DAT	UKMO	360

\$

\$ Iceland

\$							
	-9.26	68.48	'64071	'	999.	DAT	UNKNOWN 60
	-23.10	64.05	'TFGSK	'	999.	DAT	UNKNOWN 60
	-25.00	65.69	'TFBLK	'	999.	DAT	UNKNOWN 60
\$	-23.36	66.44	'TFSTD	'	999.	DAT	UNKNOWN 60
\$	-21.12	65.76	'TFDRN	'	999.	DAT	UNKNOWN 60
	-18.20	66.50	'TFGRS	'	999.	DAT	UNKNOWN 60
	-13.50	65.65	'TFKGR	'	999.	DAT	UNKNOWN 60
	-15.20	64.00	'TFHFN	'	999.	DAT	UNKNOWN 60
	-20.35	63.00	'TFSRT	'	999.	DAT	UNKNOWN 60
\$	-22.46	63.82	'TFGRV	'	999.	DAT	UNKNOWN 60
\$							
\$	Norwegian Sea						
\$							
	7.80	64.30	'LF3F	'	999.	DAT	UNKNOWN 360
	7.30	65.30	'LF3N	'	999.	DAT	UNKNOWN 60
	8.10	66.00	'LF5T	'	999.	DAT	UNKNOWN 360
	2.00	66.00	'LDWR	'	999.	DAT	UNKNOWN 360
\$							
\$	North Sea						
\$							
	1.10	55.30	'62026	'	999.	DAT	UNKNOWN 360
	0.00	57.00	'62109	'	999.	DAT	UNKNOWN 25
	0.40	58.10	'62111	'	999.	DAT	UNKNOWN 25
	1.30	58.70	'62112	'	999.	DAT	UNKNOWN 25
	1.40	57.70	'62116	'	999.	DAT	UNKNOWN 360
	0.00	57.90	'62117	'	999.	DAT	UNKNOWN 15
	0.90	57.70	'62118	'	999.	DAT	UNKNOWN 15
	2.00	57.00	'62119	'	999.	DAT	UNKNOWN 25
\$	-3.50	53.80	'62125	'	999.	DAT	PRIV 25
\$	-3.60	53.90	'62126	'	999.	DAT	UNKNOWN 25
\$	-3.80	54.00	'62135	'	999.	DAT	UNKNOWN 25
	1.40	58.70	'62128	'	999.	DAT	UNKNOWN 25
	2.00	56.40	'62132	'	999.	DAT	UNKNOWN 25
	1.00	57.10	'62133	'	999.	DAT	UNKNOWN 15
	2.10	53.00	'62142	'	999.	DAT	PRIV 30
	1.80	57.70	'62143	'	999.	DAT	UNKNOWN 25
	1.70	53.40	'62144	'	999.	DAT	PRIV 45
	2.80	53.10	'62145	'	999.	DAT	PRIV 360
	2.10	57.10	'62146	'	999.	DAT	UNKNOWN 25
	1.80	57.00	'62152	'	999.	DAT	UNKNOWN 25
	0.50	57.40	'62162	'	999.	DAT	UNKNOWN 25

0.50	57.20	'62164	'	999.	DAT	PRIV	15	
1.90	51.10	'62304	'	14.0	DAT	UKMO	25	
1.70	60.60	'63055	'	999.	DAT	UNKNOWN	25	
1.60	59.50	'63056	'	999.	DAT	UNKNOWN	25	
1.50	59.20	'63057	'	999.	DAT	UNKNOWN	360	
1.10	61.20	'63103	'	999.	DAT	UNKNOWN	15	
1.70	60.80	'63108	'	999.	DAT	UNKNOWN	15	
1.50	59.50	'63110	'	999.	DAT	PRIV	15	
1.50	59.50	'63111	'	10.0	XDT	PRIV	0	
1.00	61.10	'63112	'	999.	DAT	PRIV	360	
1.70	61.00	'63113	'	999.	DAT	PRIV	100	
1.30	61.60	'63115	'	999.	DAT	PRIV	25	
\$								
2.30	61.20	'LF3J	'	999.	DAT	UNKNOWN	25	
3.70	60.60	'LF4B	'	999.	DAT	UNKNOWN	360	
2.20	59.60	'LF4H	'	999.	DAT	UNKNOWN	25	
1.90	58.40	'LF4C	'	999.	DAT	UNKNOWN	25	
3.20	56.50	'LF5U	'	999.	DAT	UNKNOWN	60	
\$								
6.33	55.00	'BSH01	'	999.	DAT	UNKNOWN	60	
7.89	54.16	'BSH02	'	999.	DAT	UNKNOWN	60	
8.12	54.00	'BSH03	'	999.	DAT	UNKNOWN	60	
6.58	54.00	'BSH04	'	999.	DAT	UNKNOWN	60	
8.22	54.92	'BSH05	'	999.	DAT	UNKNOWN	60	
\$	13.87	54.88	'BSH54	'	999.	DAT	UNKNOWN	60
\$	12.70	54.70	'BSH71	'	999.	DAT	UNKNOWN	60
\$								
\$ Dutch Stations								
\$								
\$								
\$								
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE	

\$	3.28	51.99	'EURO	'	999.	DAT	MVEW	60
\$	3.22	53.22	'K13	'	999.	DAT	MVEW	25
\$								
\$ Barents Sea								
\$								
	21.10	71.60	'3FYT	'	999.	DAT	UNKNOWN	360
	15.50	73.50	'LFB1	'	999.	DAT	OCNOR	360
	30.00	74.00	'LFB2	'	999.	DAT	OCNOR	360
\$								
\$ Brazil								

\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
\$	-48.13	-27.70	'31201	999.	DAT	SCRIPPS	180
	-48.75	-32.00	'RIO_GRANDE'	999.	VBY	NCEP	360
	-46.25	-28.00	'FLORIPA	999.	VBY	NCEP	360
	-43.75	-25.00	'SANTOS	999.	VBY	NCEP	360
	-38.75	-21.00	'CAMPOS	999.	VBY	NCEP	360
	-36.25	-13.00	'SALVADOR	999.	VBY	NCEP	360
	-32.50	-8.00	'RECIFE	999.	VBY	NCEP	360
	-36.25	-3.00	'FORTALEZA	999.	VBY	NCEP	360
	-47.50	3.00	'AMAZON	999.	VBY	NCEP	360
	-30.00	1.00	'PETER_PAUL'	999.	VBY	NCEP	360
\$	\$ Peru/Chile Basin						
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
\$	-85.38	-19.62	'32012'	999.	DAT	WHOI	360
\$	\$ South Africa						
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
\$	22.17	-34.97	'AGULHAS_FA'	10.0	DAT	PRIV	360
\$	\$ Australia						
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
\$	141.75	-12.68	'52121	999.	DAT	UNKNOWN	50
	150.34	-35.71	'55014	999.	DAT	UNKNOWN	50
	153.73	-28.69	'55017	999.	DAT	UNKNOWN	10
	153.27	-30.35	'55018	999.	DAT	UNKNOWN	10
	152.86	-31.83	'55019	999.	DAT	UNKNOWN	50
	150.18	-37.29	'55020	999.	DAT	UNKNOWN	50
	151.03	-34.48	'55022	999.	DAT	UNKNOWN	50
	151.42	-33.77	'55024	999.	DAT	UNKNOWN	50
	151.32	-33.90	'55025	999.	DAT	UNKNOWN	10
	145.01	-42.08	'55026	999.	DAT	UNKNOWN	50
	145.71	-16.73	'55028	999.	DAT	UNKNOWN	50
	147.06	-19.16	'55029	999.	DAT	UNKNOWN	50

149.55	-21.04	'55031	'	999.	DAT	UNKNOWN	50	
149.31	-21.27	'55032	'	999.	DAT	UNKNOWN	15	
151.07	-23.31	'55033	'	999.	DAT	UNKNOWN	50	
153.20	-27.25	'55034	'	999.	DAT	UNKNOWN	10	
153.63	-27.49	'55035	'	999.	DAT	UNKNOWN	50	
153.44	-27.96	'55036	'	999.	DAT	UNKNOWN	10	
153.58	-28.18	'55037	'	999.	DAT	UNKNOWN	10	
148.19	-38.60	'55039	'	999.	DAT	UNKNOWN	50	
136.62	-36.07	'55040	'	999.	DAT	UNKNOWN	50	
116.14	-19.59	'56002	'	999.	DAT	UNKNOWN	120	
114.91	-30.29	'56004	'	999.	DAT	UNKNOWN	50	
115.40	-32.11	'56005	'	999.	DAT	UNKNOWN	50	
114.78	-33.36	'56006	'	999.	DAT	UNKNOWN	120	
114.94	-21.41	'56007	'	999.	DAT	UNKNOWN	50	
121.90	-34.00	'56010	'	999.	DAT	UNKNOWN	50	
117.72	-35.20	'56011	'	999.	DAT	UNKNOWN	50	
114.10	-21.70	'56012	'	999.	DAT	UNKNOWN	50	
115.69	-31.98	'56008	'	999.	DAT	UNKNOWN	25	
136.20	-36.10	'CADUCOU	'	999.	VBY	UNKNOWN	120	
139.00	-38.00	'SWROBE	'	999.	VBY	UNKNOWN	120	
142.45	-39.20	'WBAST1	'	999.	VBY	UNKNOWN	120	
141.50	-40.00	'WBAST2	'	999.	VBY	UNKNOWN	120	
151.00	-40.00	'EBAST	'	999.	VBY	UNKNOWN	120	
146.50	-40.50	'CBAST	'	999.	VBY	UNKNOWN	120	
144.60	-42.30	'CSORRELL	'	999.	VBY	UNKNOWN	120	
144.50	-40.10	'SEKING	'	999.	VBY	UNKNOWN	120	
143.80	-39.20	'N KING	'	999.	VBY	UNKNOWN	120	
144.85	-38.60	'PNEPEAN	'	999.	VBY	UNKNOWN	120	
147.40	-39.20	'EHOGAN	'	999.	VBY	UNKNOWN	120	
147.00	-44.00	'STHSEC	'	999.	VBY	UNKNOWN	120	
149.50	-41.50	'EBICHENO	'	999.	VBY	UNKNOWN	120	
133.50	-33.50	'WCAPYORK	'	999.	VBY	UNKNOWN	120	
\$								
\$	India							
\$								
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE	
\$	-----							
	72.49	17.02	'23092	'	999.	DAT	UNKNOWN	20
	73.75	15.40	'23093	'	999.	DAT	UNKNOWN	120
	74.50	12.94	'23094	'	999.	DAT	UNKNOWN	120
	80.39	13.19	'23096	'	999.	DAT	UNKNOWN	120
	69.24	15.47	'23097	'	999.	DAT	UNKNOWN	360

72.51	10.65	'23098	'	999.	DAT	UNKNOWN	360
90.74	12.14	'23099	'	999.	DAT	UNKNOWN	360
87.56	18.35	'23100	'	999.	DAT	UNKNOWN	120
83.27	13.97	'23101	'	999.	DAT	UNKNOWN	360
85.00	12.60	'23167	'	999.	DAT	UNKNOWN	360
87.50	15.00	'23168	'	999.	DAT	UNKNOWN	360
90.14	18.13	'23169	'	999.	DAT	UNKNOWN	360
72.66	8.33	'23170	'	999.	DAT	UNKNOWN	360
70.00	11.02	'23171	'	999.	DAT	UNKNOWN	360
72.00	12.50	'23172	'	999.	DAT	UNKNOWN	360
78.57	8.21	'23173	'	999.	DAT	UNKNOWN	120
81.53	11.57	'23174	'	999.	DAT	UNKNOWN	360
91.66	10.52	'23451	'	999.	DAT	UNKNOWN	120
89.04	10.97	'23455	'	999.	DAT	UNKNOWN	120
86.98	9.99	'23456	'	999.	DAT	UNKNOWN	120
70.10	5.16	'23491	'	999.	DAT	UNKNOWN	120
68.08	13.89	'23492	'	999.	DAT	UNKNOWN	120
66.98	11.12	'23493	'	999.	DAT	UNKNOWN	120
75.00	6.46	'23494	'	999.	DAT	UNKNOWN	120
68.97	7.13	'23495	'	999.	DAT	UNKNOWN	120

\$

\$ Red Sea

\$

\$	LON	LAT	NAME		AH	TYPE	SOURCE	SCALE
\$	38.50	23.16	'23020	'	999.	DAT	UNKNOWN	120

\$

\$ Spain

\$

\$	LON	LAT	NAME		AH	TYPE	SOURCE	SCALE
\$	-3.03	43.63	'62024	'	999.	DAT	PDES	25
	-6.17	43.73	'62025	'	999.	DAT	PDES	25
	-7.62	44.07	'62082	'	999.	DAT	PDES	25
	-9.22	43.48	'62083	'	999.	DAT	PDES	25
	-9.40	42.12	'62084	'	999.	DAT	PDES	25
	-6.97	36.48	'62085	'	999.	DAT	PDES	25

\$

\$ Mediteranean Sea

\$

	3.65	41.92	'61196	'	999.	DAT	PDES	25
	4.42	39.72	'61197	'	999.	DAT	PDES	25

-2.33	36.57	'61198	'	999.	DAT	PDES	25
-5.03	36.23	'61199	'	999.	DAT	PDES	25
1.47	40.77	'61280	'	999.	DAT	PDES	25
0.21	39.52	'61281	'	999.	DAT	PDES	25
-0.32	37.65	'61417	'	999.	DAT	PDES	25
2.10	39.55	'61430	'	999.	DAT	PDES	25
7.80	43.40	'61001	'	999.	DAT	METFR	25
4.70	42.10	'61002	'	999.	DAT	METFR	25
\$							
\$ Canary Islands							
\$							
-15.82	28.18	'13130	'	999.	DAT	PDES	25
-16.58	28.00	'13131	'	999.	DAT	PDES	25
\$							
\$ TPC and OPC							
\$							
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE

\$	-85.00	-15.00	'TPC01	'	999.	VBY NCEP	360
	-110.00	-15.00	'TPC02	'	999.	VBY NCEP	360
	-135.00	-15.00	'TPC03	'	999.	VBY NCEP	360
	-93.75	0.00	'TPC04	'	999.	VBY NCEP	360
\$							
	-55.00	15.00	'TPC20	'	999.	VBY NCEP	360
	-63.00	15.00	'TPC21	'	999.	VBY NCEP	360
	-77.00	12.00	'TPC22	'	999.	VBY NCEP	360
	-80.00	15.00	'TPC23	'	999.	VBY NCEP	360
	-76.00	22.00	'TPC24	'	999.	VBY NCEP	360
	-80.00	24.00	'TPC25	'	999.	VBY NCEP	360
	-86.00	23.00	'TPC26	'	999.	VBY NCEP	360
\$							
	-118.00	30.00	'TPC50	'	999.	VBY NCEP	360
	-135.00	20.00	'TPC51	'	999.	VBY NCEP	360
	-117.00	20.00	'TPC52	'	999.	VBY NCEP	360
	-120.00	6.00	'TPC53	'	999.	VBY NCEP	360
	-95.00	15.00	'TPC54	'	999.	VBY NCEP	360
	-88.00	9.00	'TPC55	'	999.	VBY NCEP	360
	-80.00	6.00	'TPC56	'	999.	VBY NCEP	360
\$							
	-130.50	48.10	'OPCP01	'	999.	VBY NCEP	45
	-126.60	48.10	'OPCP02	'	999.	VBY NCEP	45
	-129.70	45.30	'OPCP03	'	999.	VBY NCEP	45

-125.60	45.30	'OPCP04	'	999.	VBY	NCEP	45
-129.90	41.75	'OPCP05	'	999.	VBY	NCEP	45
-125.80	41.90	'OPCP06	'	999.	VBY	NCEP	45
-129.00	38.50	'OPCP07	'	999.	VBY	NCEP	45
-125.50	39.20	'OPCP08	'	999.	VBY	NCEP	45
-125.40	36.40	'OPCP09	'	999.	VBY	NCEP	45
-125.00	33.30	'OPCP10	'	999.	VBY	NCEP	45
-122.30	34.60	'OPCP11	'	999.	VBY	NCEP	45
-121.50	30.90	'OPCP12	'	999.	VBY	NCEP	45
-117.00	29.60	'OPCP13	'	999.	VBY	NCEP	45
\$							
-67.70	42.35	'OPCA01	'	999.	VBY	NCEP	45
-72.00	39.30	'OPCA02	'	999.	VBY	NCEP	45
-65.70	39.30	'OPCA03	'	999.	VBY	NCEP	45
-70.10	37.30	'OPCA04	'	999.	VBY	NCEP	45
-74.60	36.30	'OPCA05	'	999.	VBY	NCEP	45
-73.80	35.60	'OPCA06	'	999.	VBY	NCEP	45
-70.80	34.90	'OPCA07	'	999.	VBY	NCEP	45
-76.00	33.80	'OPCA08	'	999.	VBY	NCEP	45
-72.30	32.80	'OPCA09	'	999.	VBY	NCEP	45
\$							
\$ WIS OUTPUT POINTS							
\$							
\$ Alaska WIS points							
\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE

-156.75	71.75	'WIS_82001	'	999.	VBY	USACE	45
-156.50	71.75	'WIS_82002	'	999.	VBY	USACE	45
-156.25	71.75	'WIS_82003	'	999.	VBY	USACE	45
-157.00	71.50	'WIS_82004	'	999.	VBY	USACE	45
-156.00	71.50	'WIS_82005	'	999.	VBY	USACE	45
-155.75	71.50	'WIS_82006	'	999.	VBY	USACE	45
-155.50	71.50	'WIS_82007	'	999.	VBY	USACE	45
-155.25	71.50	'WIS_82008	'	999.	VBY	USACE	45
-155.00	71.50	'WIS_82009	'	999.	VBY	USACE	45
-159.75	71.25	'WIS_82010	'	999.	VBY	USACE	45
-159.50	71.25	'WIS_82011	'	999.	VBY	USACE	45
-159.25	71.25	'WIS_82012	'	999.	VBY	USACE	45
-159.00	71.25	'WIS_82013	'	999.	VBY	USACE	45
-158.75	71.25	'WIS_82014	'	999.	VBY	USACE	45
-158.50	71.25	'WIS_82015	'	999.	VBY	USACE	45
-158.25	71.25	'WIS_82016	'	999.	VBY	USACE	45

-158.00	71.25	'WIS_82017 '	999.	VBY	USACE	45
-157.75	71.25	'WIS_82018 '	999.	VBY	USACE	45
-157.50	71.25	'WIS_82019 '	999.	VBY	USACE	45
-157.25	71.25	'WIS_82020 '	999.	VBY	USACE	45
-160.75	71.00	'WIS_82021 '	999.	VBY	USACE	45
-160.50	71.00	'WIS_82022 '	999.	VBY	USACE	45
-160.25	71.00	'WIS_82023 '	999.	VBY	USACE	45
-160.00	71.00	'WIS_82024 '	999.	VBY	USACE	45
-162.00	70.75	'WIS_82025 '	999.	VBY	USACE	45
-161.75	70.75	'WIS_82026 '	999.	VBY	USACE	45
-161.50	70.75	'WIS_82027 '	999.	VBY	USACE	45
-161.25	70.75	'WIS_82028 '	999.	VBY	USACE	45
-161.00	70.75	'WIS_82029 '	999.	VBY	USACE	45
-162.75	70.50	'WIS_82030 '	999.	VBY	USACE	45
-162.50	70.50	'WIS_82031 '	999.	VBY	USACE	45
-162.25	70.50	'WIS_82032 '	999.	VBY	USACE	45
-163.00	70.25	'WIS_82033 '	999.	VBY	USACE	45
-163.50	70.00	'WIS_82034 '	999.	VBY	USACE	45
-163.25	70.00	'WIS_82035 '	999.	VBY	USACE	45
-163.50	69.75	'WIS_82036 '	999.	VBY	USACE	45
-164.25	69.50	'WIS_82037 '	999.	VBY	USACE	45
-164.00	69.50	'WIS_82038 '	999.	VBY	USACE	45
-163.75	69.50	'WIS_82039 '	999.	VBY	USACE	45
-166.00	69.25	'WIS_82040 '	999.	VBY	USACE	45
-165.75	69.25	'WIS_82041 '	999.	VBY	USACE	45
-165.50	69.25	'WIS_82042 '	999.	VBY	USACE	45
-165.25	69.25	'WIS_82043 '	999.	VBY	USACE	45
-165.00	69.25	'WIS_82044 '	999.	VBY	USACE	45
-164.75	69.25	'WIS_82045 '	999.	VBY	USACE	45
-164.50	69.25	'WIS_82046 '	999.	VBY	USACE	45
-166.50	69.00	'WIS_82047 '	999.	VBY	USACE	45
-166.25	69.00	'WIS_82048 '	999.	VBY	USACE	45
-166.75	68.75	'WIS_82049 '	999.	VBY	USACE	45
-166.75	68.50	'WIS_82050 '	999.	VBY	USACE	45
-166.75	68.25	'WIS_82051 '	999.	VBY	USACE	45
-166.50	68.00	'WIS_82052 '	999.	VBY	USACE	45
-166.25	67.75	'WIS_82053 '	999.	VBY	USACE	45
-166.00	67.75	'WIS_82054 '	999.	VBY	USACE	45
-165.75	67.75	'WIS_82055 '	999.	VBY	USACE	45
-165.50	67.75	'WIS_82056 '	999.	VBY	USACE	45
-165.25	67.50	'WIS_82057 '	999.	VBY	USACE	45
-165.00	67.50	'WIS_82058 '	999.	VBY	USACE	45

-164.75	67.50	'WIS_82059 '	999.	VBY	USACE	45
-164.50	67.25	'WIS_82060 '	999.	VBY	USACE	45
-164.75	67.00	'WIS_82061 '	999.	VBY	USACE	45
-164.50	67.00	'WIS_82062 '	999.	VBY	USACE	45
-164.25	67.00	'WIS_82063 '	999.	VBY	USACE	45
-164.00	67.00	'WIS_82064 '	999.	VBY	USACE	45
-166.00	66.75	'WIS_82065 '	999.	VBY	USACE	45
-165.75	66.75	'WIS_82066 '	999.	VBY	USACE	45
-165.50	66.75	'WIS_82067 '	999.	VBY	USACE	45
-165.25	66.75	'WIS_82068 '	999.	VBY	USACE	45
-165.00	66.75	'WIS_82069 '	999.	VBY	USACE	45
-163.50	66.75	'WIS_82070 '	999.	VBY	USACE	45
-163.25	66.75	'WIS_82071 '	999.	VBY	USACE	45
-163.00	66.75	'WIS_82072 '	999.	VBY	USACE	45
-167.00	66.50	'WIS_82073 '	999.	VBY	USACE	45
-166.75	66.50	'WIS_82074 '	999.	VBY	USACE	45
-166.50	66.50	'WIS_82075 '	999.	VBY	USACE	45
-166.25	66.50	'WIS_82076 '	999.	VBY	USACE	45
-167.75	66.25	'WIS_82077 '	999.	VBY	USACE	45
-167.50	66.25	'WIS_82078 '	999.	VBY	USACE	45
-169.00	66.00	'WIS_82079 '	999.	VBY	USACE	45
-168.75	66.00	'WIS_82080 '	999.	VBY	USACE	45
-168.25	66.00	'WIS_82081 '	999.	VBY	USACE	45
-169.25	65.75	'WIS_82082 '	999.	VBY	USACE	45
-168.75	65.75	'WIS_82083 '	999.	VBY	USACE	45
-168.25	65.75	'WIS_82084 '	999.	VBY	USACE	45
-169.25	65.50	'WIS_82085 '	999.	VBY	USACE	45
-169.00	65.50	'WIS_82086 '	999.	VBY	USACE	45
-168.75	65.50	'WIS_82087 '	999.	VBY	USACE	45
-168.25	65.50	'WIS_82088 '	999.	VBY	USACE	45
-168.25	65.25	'WIS_82089 '	999.	VBY	USACE	45
-168.00	65.00	'WIS_82090 '	999.	VBY	USACE	45
-167.75	65.00	'WIS_82091 '	999.	VBY	USACE	45
-167.50	65.00	'WIS_82092 '	999.	VBY	USACE	45
-167.25	65.00	'WIS_82093 '	999.	VBY	USACE	45
-167.25	64.75	'WIS_82094 '	999.	VBY	USACE	45
-167.00	64.75	'WIS_82095 '	999.	VBY	USACE	45
-166.75	64.50	'WIS_82096 '	999.	VBY	USACE	45
-166.50	64.50	'WIS_82097 '	999.	VBY	USACE	45
-166.25	64.25	'WIS_82098 '	999.	VBY	USACE	45
-166.00	64.25	'WIS_82099 '	999.	VBY	USACE	45
-165.75	64.25	'WIS_82100 '	999.	VBY	USACE	45

-165.50	64.25	'WIS_82101 '	999.	VBY	USACE	45
-164.25	64.25	'WIS_82102 '	999.	VBY	USACE	45
-164.00	64.25	'WIS_82103 '	999.	VBY	USACE	45
-163.75	64.25	'WIS_82104 '	999.	VBY	USACE	45
-163.50	64.25	'WIS_82105 '	999.	VBY	USACE	45
-162.50	64.25	'WIS_82106 '	999.	VBY	USACE	45
-162.25	64.25	'WIS_82107 '	999.	VBY	USACE	45
-162.00	64.25	'WIS_82108 '	999.	VBY	USACE	45
-161.75	64.25	'WIS_82109 '	999.	VBY	USACE	45
-172.25	64.00	'WIS_82110 '	999.	VBY	USACE	45
-172.00	64.00	'WIS_82111 '	999.	VBY	USACE	45
-171.75	64.00	'WIS_82112 '	999.	VBY	USACE	45
-171.50	64.00	'WIS_82113 '	999.	VBY	USACE	45
-171.25	64.00	'WIS_82114 '	999.	VBY	USACE	45
-171.00	64.00	'WIS_82115 '	999.	VBY	USACE	45
-170.75	64.00	'WIS_82116 '	999.	VBY	USACE	45
-170.50	64.00	'WIS_82117 '	999.	VBY	USACE	45
-170.25	64.00	'WIS_82118 '	999.	VBY	USACE	45
-165.25	64.00	'WIS_82119 '	999.	VBY	USACE	45
-165.00	64.00	'WIS_82120 '	999.	VBY	USACE	45
-164.75	64.00	'WIS_82121 '	999.	VBY	USACE	45
-164.50	64.00	'WIS_82122 '	999.	VBY	USACE	45
-163.25	64.00	'WIS_82123 '	999.	VBY	USACE	45
-163.00	64.00	'WIS_82124 '	999.	VBY	USACE	45
-162.75	64.00	'WIS_82125 '	999.	VBY	USACE	45
-161.75	64.00	'WIS_82126 '	999.	VBY	USACE	45
-172.25	63.75	'WIS_82127 '	999.	VBY	USACE	45
-170.00	63.75	'WIS_82128 '	999.	VBY	USACE	45
-169.75	63.75	'WIS_82129 '	999.	VBY	USACE	45
-169.50	63.75	'WIS_82130 '	999.	VBY	USACE	45
-169.25	63.75	'WIS_82131 '	999.	VBY	USACE	45
-169.00	63.75	'WIS_82132 '	999.	VBY	USACE	45
-168.75	63.75	'WIS_82133 '	999.	VBY	USACE	45
-168.50	63.75	'WIS_82134 '	999.	VBY	USACE	45
-168.25	63.75	'WIS_82135 '	999.	VBY	USACE	45
-164.25	63.75	'WIS_82136 '	999.	VBY	USACE	45
-164.00	63.75	'WIS_82137 '	999.	VBY	USACE	45
-163.75	63.75	'WIS_82138 '	999.	VBY	USACE	45
-163.50	63.75	'WIS_82139 '	999.	VBY	USACE	45
-163.25	63.75	'WIS_82140 '	999.	VBY	USACE	45
-163.00	63.75	'WIS_82141 '	999.	VBY	USACE	45
-162.75	63.75	'WIS_82142 '	999.	VBY	USACE	45

-162.50	63.75	'WIS_82143 '	999.	VBY	USACE	45
-162.25	63.75	'WIS_82144 '	999.	VBY	USACE	45
-162.00	63.75	'WIS_82145 '	999.	VBY	USACE	45
-161.75	63.75	'WIS_82146 '	999.	VBY	USACE	45
-172.25	63.50	'WIS_82147 '	999.	VBY	USACE	45
-168.25	63.50	'WIS_82148 '	999.	VBY	USACE	45
-165.00	63.50	'WIS_82149 '	999.	VBY	USACE	45
-164.75	63.50	'WIS_82150 '	999.	VBY	USACE	45
-164.50	63.50	'WIS_82151 '	999.	VBY	USACE	45
-172.25	63.25	'WIS_82152 '	999.	VBY	USACE	45
-168.25	63.25	'WIS_82153 '	999.	VBY	USACE	45
-165.50	63.25	'WIS_82154 '	999.	VBY	USACE	45
-165.25	63.25	'WIS_82155 '	999.	VBY	USACE	45
-172.25	63.00	'WIS_82156 '	999.	VBY	USACE	45
-172.00	63.00	'WIS_82157 '	999.	VBY	USACE	45
-171.75	63.00	'WIS_82158 '	999.	VBY	USACE	45
-171.50	63.00	'WIS_82159 '	999.	VBY	USACE	45
-171.25	63.00	'WIS_82160 '	999.	VBY	USACE	45
-171.00	63.00	'WIS_82161 '	999.	VBY	USACE	45
-170.75	63.00	'WIS_82162 '	999.	VBY	USACE	45
-168.25	63.00	'WIS_82163 '	999.	VBY	USACE	45
-165.50	63.00	'WIS_82164 '	999.	VBY	USACE	45
-170.50	62.75	'WIS_82165 '	999.	VBY	USACE	45
-170.25	62.75	'WIS_82166 '	999.	VBY	USACE	45
-170.00	62.75	'WIS_82167 '	999.	VBY	USACE	45
-169.50	62.75	'WIS_82168 '	999.	VBY	USACE	45
-169.25	62.75	'WIS_82169 '	999.	VBY	USACE	45
-169.00	62.75	'WIS_82170 '	999.	VBY	USACE	45
-168.75	62.75	'WIS_82171 '	999.	VBY	USACE	45
-165.75	62.75	'WIS_82172 '	999.	VBY	USACE	45
-169.75	62.50	'WIS_82173 '	999.	VBY	USACE	45
-166.00	62.50	'WIS_82174 '	999.	VBY	USACE	45
-166.00	62.25	'WIS_82175 '	999.	VBY	USACE	45
-166.25	62.00	'WIS_82176 '	999.	VBY	USACE	45
-166.50	61.75	'WIS_82177 '	999.	VBY	USACE	45
-166.50	61.50	'WIS_82178 '	999.	VBY	USACE	45
-166.50	61.25	'WIS_82179 '	999.	VBY	USACE	45
-166.25	61.00	'WIS_82180 '	999.	VBY	USACE	45
-173.25	60.75	'WIS_82181 '	999.	VBY	USACE	45
-173.00	60.75	'WIS_82182 '	999.	VBY	USACE	45
-172.75	60.75	'WIS_82183 '	999.	VBY	USACE	45
-172.50	60.75	'WIS_82184 '	999.	VBY	USACE	45

-172.25	60.75	'WIS_82185 '	999.	VBY	USACE	45
-172.00	60.75	'WIS_82186 '	999.	VBY	USACE	45
-166.00	60.75	'WIS_82187 '	999.	VBY	USACE	45
-165.75	60.75	'WIS_82188 '	999.	VBY	USACE	45
-173.25	60.50	'WIS_82189 '	999.	VBY	USACE	45
-172.00	60.50	'WIS_82190 '	999.	VBY	USACE	45
-167.25	60.50	'WIS_82191 '	999.	VBY	USACE	45
-167.00	60.50	'WIS_82192 '	999.	VBY	USACE	45
-166.75	60.50	'WIS_82193 '	999.	VBY	USACE	45
-166.50	60.50	'WIS_82194 '	999.	VBY	USACE	45
-166.25	60.50	'WIS_82195 '	999.	VBY	USACE	45
-166.00	60.50	'WIS_82196 '	999.	VBY	USACE	45
-165.75	60.50	'WIS_82197 '	999.	VBY	USACE	45
-165.50	60.50	'WIS_82198 '	999.	VBY	USACE	45
-173.25	60.25	'WIS_82199 '	999.	VBY	USACE	45
-173.00	60.25	'WIS_82200 '	999.	VBY	USACE	45
-172.75	60.00	'WIS_82201 '	999.	VBY	USACE	45
-172.50	60.00	'WIS_82202 '	999.	VBY	USACE	45
-172.25	60.00	'WIS_82203 '	999.	VBY	USACE	45
-172.00	60.25	'WIS_82204 '	999.	VBY	USACE	45
-167.50	60.50	'WIS_82205 '	999.	VBY	USACE	45
-165.25	60.25	'WIS_82206 '	999.	VBY	USACE	45
-167.50	60.00	'WIS_82207 '	999.	VBY	USACE	45
-165.25	60.00	'WIS_82208 '	999.	VBY	USACE	45
-167.50	59.75	'WIS_82209 '	999.	VBY	USACE	45
-165.00	59.75	'WIS_82210 '	999.	VBY	USACE	45
-164.75	59.75	'WIS_82211 '	999.	VBY	USACE	45
-167.25	59.50	'WIS_82212 '	999.	VBY	USACE	45
-167.00	59.50	'WIS_82213 '	999.	VBY	USACE	45
-166.75	59.50	'WIS_82214 '	999.	VBY	USACE	45
-166.50	59.50	'WIS_82215 '	999.	VBY	USACE	45
-166.25	59.50	'WIS_82216 '	999.	VBY	USACE	45
-166.00	59.50	'WIS_82217 '	999.	VBY	USACE	45
-165.75	59.50	'WIS_82218 '	999.	VBY	USACE	45
-165.50	59.50	'WIS_82219 '	999.	VBY	USACE	45
-165.25	59.50	'WIS_82220 '	999.	VBY	USACE	45
-165.00	59.50	'WIS_82221 '	999.	VBY	USACE	45
-164.75	59.50	'WIS_82222 '	999.	VBY	USACE	45
-164.50	59.50	'WIS_82223 '	999.	VBY	USACE	45
-164.25	59.50	'WIS_82224 '	999.	VBY	USACE	45
-163.75	59.50	'WIS_82225 '	999.	VBY	USACE	45
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\$

\$ Atlantic WIS points

\$	LON	LAT	NAME	AH	TYPE	SOURCE	SCALE
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\$ End of list

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