



# Newsletter

[www.globwave.info](http://www.globwave.info)

2013

## February

### GlobWave Sustainability

We are delighted to announce that the GlobWave data products and portal will continue to be maintained by Ifremer for the foreseeable future. It is great news that the GlobWave service will continue, which will give further users re-assurance to invest effort in using the products.

This will be the final GlobWave Newsletter that Logica will issue. We have very much enjoyed being an instrumental part in stimulating the uptake and use of satellite wave data and we wish you all every success with your wave endeavours going forward. Please do liaise with Ifremer (via [fpaf@ifremer.fr](mailto:fpaf@ifremer.fr)) if you have any questions about the GlobWave data going forward.

### 3<sup>rd</sup> GlobWave User Meeting

An enjoyable and dynamic User Meeting was held on 7<sup>th</sup> and 8<sup>th</sup> November 2012 at the European Marine Safety Agency (EMSA) facility in Lisbon, Portugal. During the meeting both the GlobWave team and users presented interesting talks on a wide range of applications.



Presentation sessions topics included calibration and validation, applications of GlobWave data, wave data inter-comparisons and the wider wave and ocean community. The meeting contained a lively panel discussion, which allowed GlobWave users to provide much valued feedback to the panel of key GlobWave team members. It also included a PS-WFVS workshop, which allowed key PS-WFVS users to discuss in depth the system with the GlobWave team.

In addition, there was an opportunity to tour the EMSA facilities (including the Maritime Support Service Centres) and a free evening networking event with dinner and drinks. A report on the User Meeting and all Phase 3 activities is available in the [3<sup>rd</sup> Annual User Assessment](#).

### New GlobWave data streams

We are pleased to announce that CryoSAT altimeter data is now available as a [GlobWave data stream](#). Although its main objective is to measure sea ice and ice sheets, CryoSAT's innovative radar altimeter can also measure wave height, making it a valuable new resource for oceanography. Data is derived from NOAA's Interim Geophysical Data Records (IGDR) L2 data with the Near Real-Time (NRT) data being available approximately 2 days after acquisition. CryoSAT GDR data is available from May 2012 and NRT data available from November 2012.



Additionally, from May 2012 onwards Jason-1 altimeter data is from the Geodetic mission. This mission was the result in a change in orbit due to concerns about the mission's future after two earlier equipment failures. Although the quality of Significant Wave Height (SWH) measurements should be consistent, it is recommended to use caution when using the new geodetic data.

### Pilot Extension to the JCOMM Wave Forecast Verification Scheme (PS-WFVS)

Development of the PS-WFVS has progressed very well in recent months. Reports are now automatically generated daily and monthly for 7 clients; the UKMO, PREVIMER, NOAA-NCEP, BOM, Puertos del Estado, FNMOC and ECMWF. We are also working hard to fully automate production of reports using Météo-France data over the next few months.

We are pleased to announce that the PS-WFVS scheme will be extended until December 2013 to allow users to fully evaluate the usefulness of the reports.

### Projects using GlobWave data

#### I. Validating of global WaveWatch III (WW3) hindcasts using merged altimeter data

The US Navy recently undertook a [study](#) using merged altimeter data to evaluate the

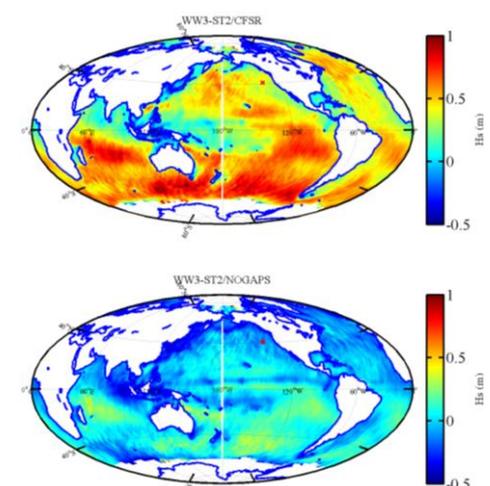
global hindcasting of the WW3 model. The focus of this study was to examine 4 different hindcast models, each of which used a different combination of parameterisations of physical processes packages and wind forcing fields (either the Navy Operational Global Atmospheric Predictions System [NOGAPS] or the NCEP Climate Forecast System Reanalysis [CFRS]).

The outputs from each hindcast models were the compared to spatially and temporally matched SWH and wind speed measurements from the Ifremer Merged Altimeter Database. Where possible, comparisons were also made with any suitable *in situ* buoy measurements.

For wind speeds it was found that CFRS winds are more consistent with altimeter measurements than NOGAPS winds. This was expected, since NOGAPS is an operational product whereas CFRS is a reanalysis.

In contrast, when using the less accurate NOGAPS winds the WW3 model gives SWH values that are more consistent with altimeter values than CFRS. It is believed this is due to WW3 being calibrated for operational runs using winds that may be similar to NOGAPS in terms of bias.

In addition the actual SWH values, a range of selected statistical variables, such as mean bias, RMSE and scatter index, also confirmed closer correlation between SWH and model results using NOGAPS. The two figures below show the mean bias between the altimeter and model SWH. The top figure, which used CFRS winds, shows larger areas with quite high bias, in contrast to the bottom figure, produced with NOGAPS winds, which has consistency low bias values.

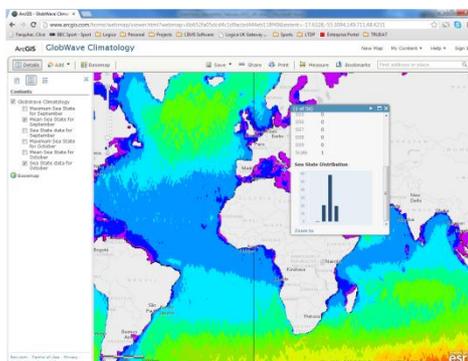


This study shows the importance of altimeter data in validating WW3 hindcast models and also the potential differences in model outputs when using either reanalysis or operational products.

## II. Using GlobWave data to assist in Ship Route Planning

In 2012 the Royal Australian Navy took delivery of the hull of a new ship, which was transported on a heavy lift carrier from northern Spain. Due to the size and importance of the cargo and the season it was being transported the route from Europe to Australia needed exact planning, particularly to avoid both areas of high wave heights and also regions prone to cross-seas.

To help planners determine the optimum route, GlobWave data was made available through an ArcGIS online database. This interactive tool allowed planners to click on the screen to examine various sea state statistics. The figure below shows monthly mean SWH, whereas the smaller window displays the distribution of SWH observed within one degree of the quarter degree lat-long box containing the selected point across all GlobWave altimeters for that month.



Using this tool the route planners were able to determine the expected wave conditions during the passage, timed to occur before the early autumn storms, through the Atlantic and across the southern Indian Ocean after winter storms and before the cyclone season.

The Royal Australian Navy has stated 'We have derived significant benefit from GlobWave across a range of activities from planning and supporting operations and verifying wave models to understand the maritime environment and its impacts. GlobWave data is easy to access and use and relatively error free.'

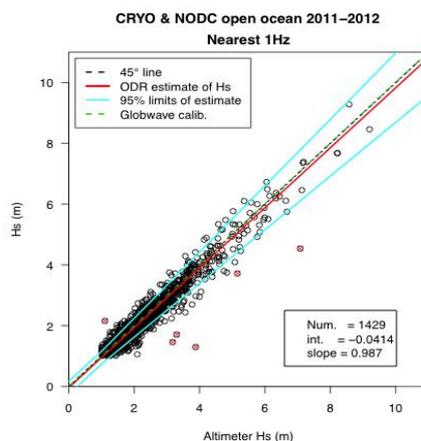
The online database is available to explore and can be accessed [here](http://www.globwave.info).

## GlobWave Quality Control Reports

We are pleased to announce the release of the latest in a series of [Annual Quality Control Reports](#), which describe the results of an in-depth comparison between satellite and *in situ* buoy measurements. The latest report, which covers 2011, contains: (i) an analysis of the quality levels of the delayed mode L2P data set, (ii) an analysis of L2P error characterisation through collocation measurements with *in situ* buoys, offering an estimate of significant wave height standard error, and (iii) analysis of L2P inter-comparison via satellite crossover measurements.

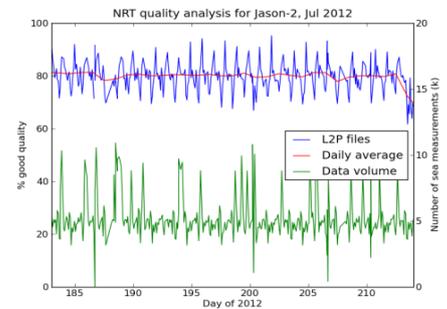
Results from this report are consistent with previous reports, with the quality of data produced from different instruments generally improved in the more modern instruments.

For the error characterisation analysis, the assessment for altimetry illustrates that wave height errors for values greater than 1m follow a linear function that varies with sensor, whereas for wave heights less than 1m the errors are less certain and considered to be constant at 1m level. This was consistent in all datasets including recently added CryoSAT data. The figure below shows the collocations measurements between CryoSAT and *in situ* buoy data. Envisat altimeter errors have been noticeably decreased at higher wave values by improvements in the processing by ESA.



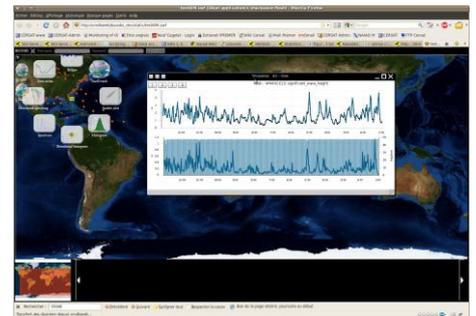
Aside from these [Annual Quality Control Reports](#), the GlobWave team has also produced 8 [Quarterly Quality Control Reports](#) covering all of 2011 and 2012. Each report summarises the quality levels of the NRT L2P datasets, covering Envisat SAR, Envisat altimeter, Jason-1 and Jason-2. The plot below shows the quality levels of Jason-2 Altimeter data during July 2012, with the red

line indicating the mean percentage of good quality data.



## New Calypso online tool coming soon!

Look out for an announcement in the coming weeks, as a revised version of the Calypso online query tool is released. This will allow powerful search and visualisation of overlapping satellite and buoy observations spanning a wealth of wave parameters.



## GlobWave – An ESA Initiative

 GlobWave is funded by ESA and CNES and is improving the uptake of satellite-derived wind-wave and swell data by the scientific, operational and commercial user communities. The project, which began in January 2009, covers the development of an integrated set of information services based on satellite wave data, and the operation and maintenance of these services for a demonstration period.

GlobWave is led by Logica, with key expertise provided from SatOC, CLS, Ifremer and NOC.

