



Newsletter

2010

July

GlobWave – An ESA Initiative

 **GlobWave** is an ESA initiative to improve the uptake of satellite-derived wind-wave and swell data by the scientific, operational and commercial user community. The project 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.

The project, funded by ESA and CNES kicked off in January 2009, and will run for three years.



Satellite Data Products

GlobWave allows easy access to a harmonised set of Altimeter and SAR wave products with a uniform error characterisation.

Altimeter Level-2-Preprocessed wave products from [ERS-1](#), [ERS-2](#), [Envisat](#), [Topex/POSEIDON](#), [Jason-1](#), [Jason-2](#), [US Navy GEOSAT](#) and [US Navy/NOAA GEOSAT](#) [Follow On](#).

SAR Level-2-Preprocessed wave products from [ERS-1](#), [ERS-2](#) and [Envisat](#).



ESA's Envisat Satellite

The full delayed mode archive from each satellite is now available. Near real-time data will be provided within 1 hour of us receiving the data from the relevant agency.

Delayed Mode Products

On 23rd April, 2010 we released the delayed mode GlobWave products. We thank PO.DAAC, NOAA and ESA for use of their Level 2 data products as input. Please visit the web portal for [access details](#).

Product Content

The [Product User Guide](#) should be consulted for a detailed listing of the product content. The format is NetCDF-3 using CF-1.4 metadata conventions.

Some of the variables of particular interest in the data are as follows:

Common to SAR & Altimetry:

- Backscatter Coefficient (Sigma0)
- Altimeter/SAR Wind Speed
- Quality Flags
- Rejection Flags

SAR Specific

- Swell Significant Wave Height
- Dominant wavelength (per spectral partition)
- Mean direction (per spectral partition)
- Standard Errors for the above

Altimeter Specific

- Significant Wave Height (SWH)
- SWH Standard Error

In addition the following ancillary data has been inserted into the delayed mode data:

- Model Wind Speeds
- Bathymetry
- Distance to Coast
- Sea Surface Temperature
- Surface Air Temperature
- Surface Air Pressure

We thank ECMWF, GEBCO and GSHHS for use of this ancillary data.

Near Real Time Data

During the summer we will make available the following NRT data streams within one hour of receipt from the relevant Space Agency:

- Jason-1 Altimeter
- Jason-2 Altimeter
- Envisat SAR
- Envisat Altimeter

User Consultation Meeting

A very successful User Consultation Meeting was held on 29th and 30th April at Ifremer's premises in Brest, France.

The aim of this meeting was to review the GlobWave data/services and ensure that the future plans align with the needs of Users.



Attendees at the first GlobWave UCM

A series of [presentations](#) were made by the Project Team and User Group which outlined the achievements so far, what we plan to do in the future and the challenges faced by organisations in terms of wave data.

Some very positive feedback about the project was received from the users such as:

- "I found the GlobWave very interesting and useful. I really hope this will lead to our use of the GlobWave data" – Nigel Tozar, HR Wallingford
- "So far I've not been using satellite data. It will help me to verify my numerical models" – Jesus Portillo, SEAMOCs

A full report of the UCM conclusions will be made available on the portal shortly.

Demonstration Products

The GlobWave portal will provide a facility to archive and distribute demonstration wave products which are derived at least partly from satellite data. The initial set of [demonstration products](#) are:

- **Soprano** – construction of reliable wave products near coastal zones.
- **Hs:Tz Scatterplots** – estimation of wave fatigue and power, which are widely used in offshore engineering applications.
- **Fireworks** – constructs swell tracking animations using SAR snapshot observations and propagation algorithms.

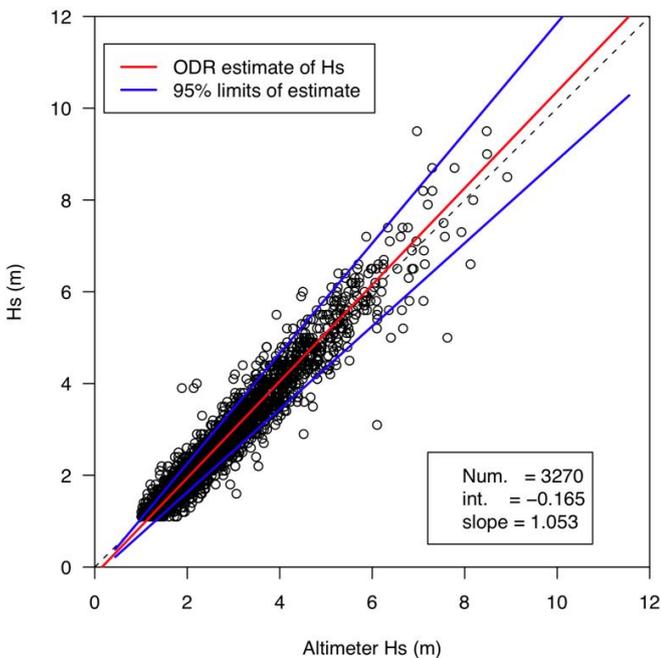
GlobWave offers great publicity and outreach for your innovative products so please contact us with your offerings.

Error Characterisation

Satellite vs. In Situ: During July 2010 the Consortium will make a first release of the error statistics in the satellite products based on comparisons with *in situ* data.

For SAR this involves the error of the significant swell height as well as the dominant wavelength and direction for each spectral partition. For the Altimeter the standard error for SWH will be calculated. Further details of these calculation steps are outlined in Annex C of the [Product User Guide](#). We thank NODC, HCMR, UKMO, CDIP and OPPE for use of their buoy data in the satellite vs. *in situ* error analysis.

The Figure below shows preliminary results for NODC *in situ* buoys vs GlobWave Envisat Altimeter data:



NODC vs. Envisat SWH Inter-comparisons

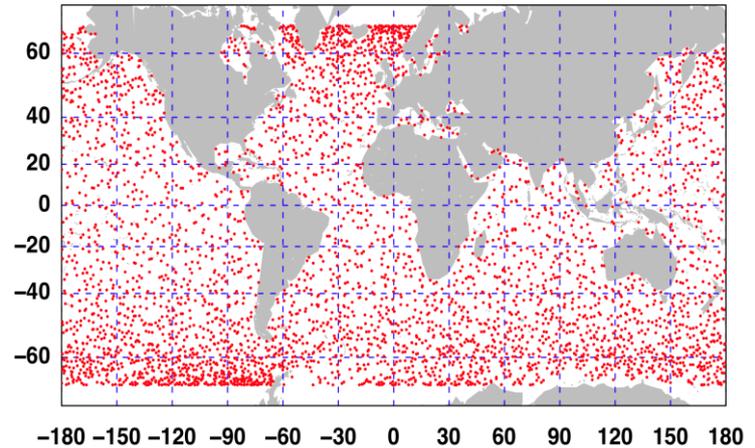
Satellite vs. Satellite: Inter-comparisons between the different satellite-based sensors using delayed mode data will also be made available in the Wave Data Quality Report. The cross overs are computed on the following satellite combinations:

	GFO	ERS-1	ERS-2	TOPEX / Poseidon	Jason-1	Jason-2	Envisat
GFO							
ERS-1							
ERS-2							
TOPEX / Poseidon							
Jason-1							
Jason-2							
Envisat							

Altimeter Satellite Crossover Combinations (Green – matchups are produced, Yellow – No matchups because common orbit track, Orange – no matchups because time frames are different)

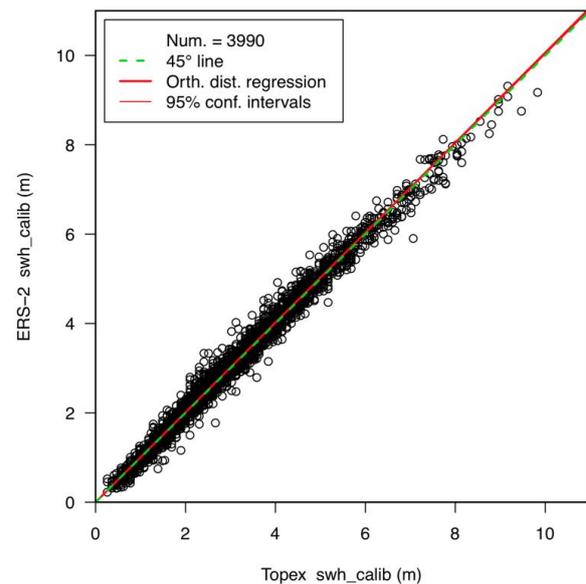
We note that only Altimeter cross overs can be analysed since the ERS-2 and ENVISAT SAR instruments share a common orbit track.

The figure below shows the cross over locations for Topex and ERS-2 during 2001. The locations are based on a matchup criteria of 1 hour and 60 km.



Locations of Topex/ERS-2 cross over locations during 2001.

Some preliminary results of the analysis of ERS-2 and Topex crossovers from 2001 are shown below. They show excellent agreement between the calibrated Hs values, which suggests that no further cross-calibration is necessary



ERS-2 vs. Topex inter-comparison of SWH

We emphasise that the results presented here are preliminary. The full error characterisation analysis of the GlobWave delayed mode data will be available in the Wave Data Quality Report, to be released in July.