



Project GlobWave

OceanSAR 2009, Herrsching, Germany

8th September, 2009

Agenda



Partners

Objective

Strategy

Portal

Satellite Products

Satellite vs *In Situ* Matchup Database

Satellite vs Satellite Matchup Database

Global Wave Statistics

GlobWave DDS

Pilot Spatial Wave Forecast Verification Scheme

Online Tools

L2P Quality Control Reports

GlobWave Portal

Partners



- ESA: Funding the project through its Data User Element Programme



- CNES: Providing subsidisation and advice during the project



- Logica: Prime Contractor – responsible for all development, delivery and public outreach of GlobWave for ESA.



- Ifremer: Responsible for development of the portal, *in situ* database and hosting of the operational system, including the archived satellite products



- SatOC: Responsible for the Altimeter processing, error characterisation methodologies and documentation



- CLS: Responsible for the SAR processing and error characterisation



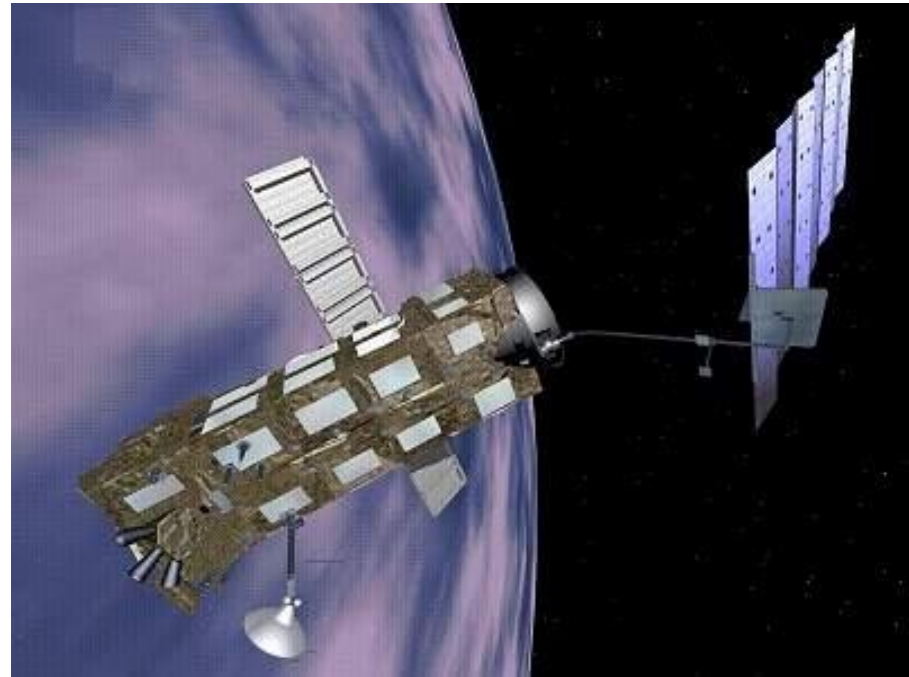
- NOCS: Responsible for the Pilot Spatial WFVS and HR-DDS

Objective



Improve the uptake of satellite-derived wind-wave and swell data in the

- Scientific,
 - Operational,
 - Commercial
- User Communities





- Develop a GlobWave web portal
 - A single point of reference for satellite wave data
 - Clear documentation about satellite data acquisition techniques
 - Allow access to on-line tools, reports, cal/val info, etc.
- Inter-comparison of different wave data sources
 - SAR and altimeter wave data with collocated in-situ measurements
 - Cross characterisation between different satellite data streams
- Provision via the GlobWave web portal of:
 - A multi-sensor set of satellite wave data in a common format and meta-data standard.
 - A set of demonstration data products

Satellite Products



- All satellite products available in a “common” L2P format
 - NetCDF-3
 - Meta-data standard will be CF-1.4 compliant

Altimeter

- ERS-1, ERS-2, ENVISAT, TOPEX/POSEIDON, Jason-1, Jason-2, GEOSAT, GFO

SAR

- ERS-1, ERS-2, ENVISAT

- Data will be available for the full archive of each satellite
- NRT data will be available within 1 hour of receipt

Future Satellites

- Cryosat-2 – due for launch on 16th November, 2009
- Altika – due for launch at the end of 2010

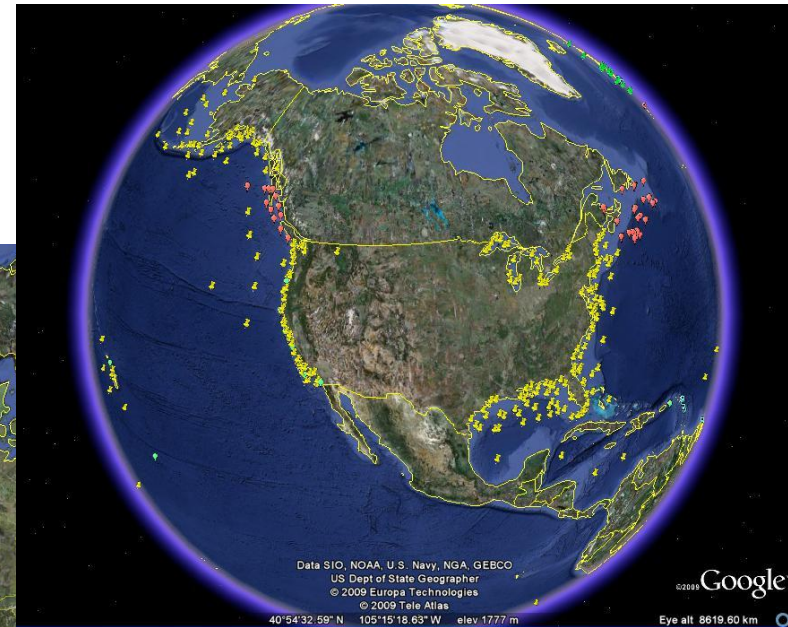
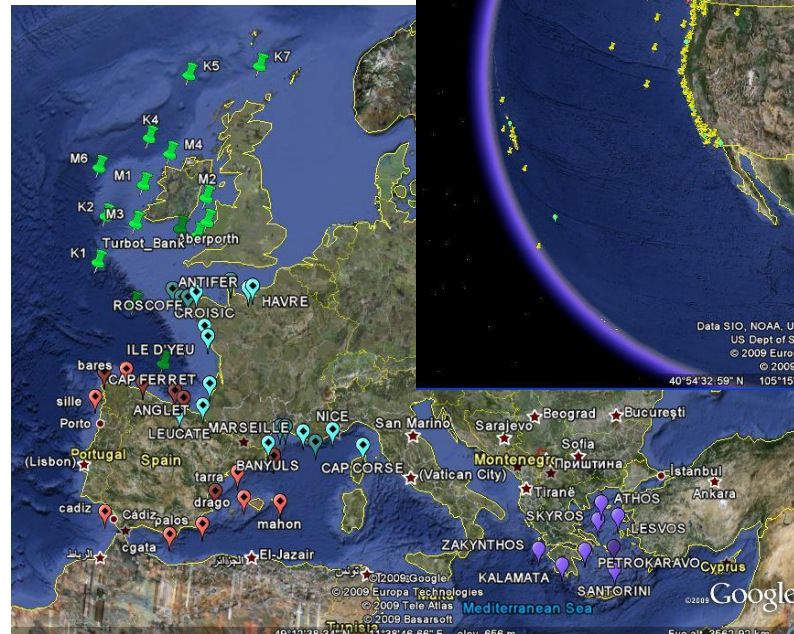
Satellite vs In Situ Matchup Database



A satellite vs. *in situ* matchup database will be constructed using:

- The full archive of L2P satellite data
- An initial set of *in situ* data sources from:

- POSEIDON
- Puertos del Estado
- NODC
- UKMO
- Meteo-France
- CDIP
- MEDS



Satellite vs Satellite Matchup Database



- Database of satellite crossovers will be produced
- Collocation criteria will be used of:

- 60 km
- 1hour

- ✘ Different time frames
- ✘ Same orbit track
- ✓ Matchups possible

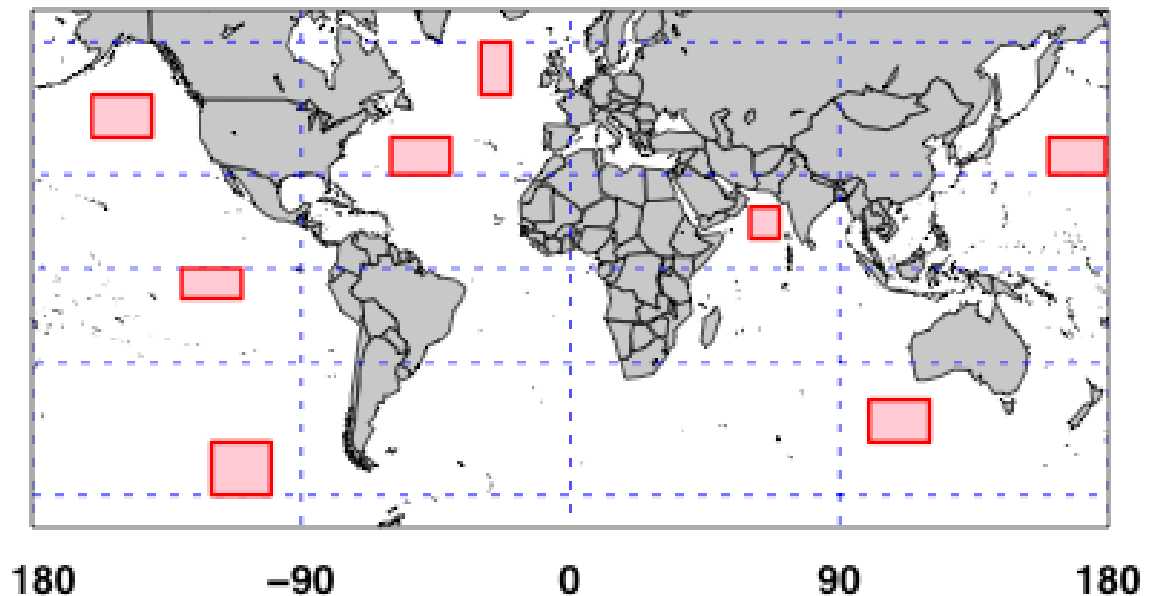
	GFO SAT	ERS-1	ERS-2	TOPEX / Poseidon	Jason-1	Jason-2	Envisat
GFO SAT		Matchups possible	Matchups possible	Matchups possible	Matchups possible	Same orbit track	Matchups possible
ERS-1			Different time frames	Matchups possible	Same orbit track	Same orbit track	Same orbit track
ERS-2				Matchups possible	Matchups possible	Matchups possible	Matchups possible
TOPEX / Poseidon					Different time frames	Same orbit track	Matchups possible
Jason-1						Different time frames	Matchups possible
Jason-2							Matchups possible
Envisat							

- Scatterplots will be produced for calibrated and uncalibrated data
 - Will enable checks of the calibrations
- Differences analysed wrt wind speed and Hs
- Comparisons will also take account of latitude
- Results will be published in the Annual Quality Control Reports

Goal is to compare measured quantities from different satellites over different regions

The following physical quantities will be compared:

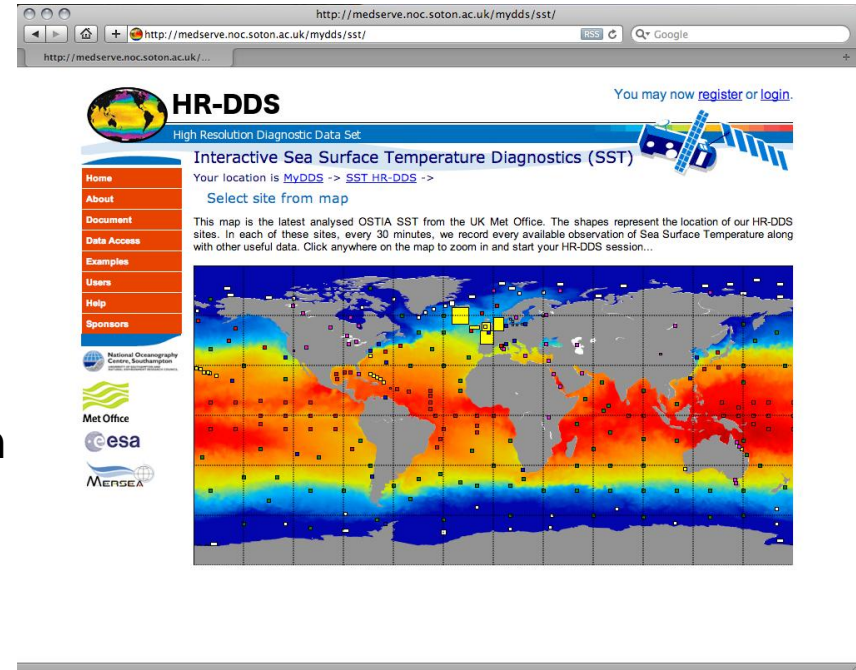
- **Altimeter**
 - Significant wave height
- **SAR**
 - Swell wave height
 - Dominant swell direction
 - Dominant swell wavelength



GlobWave Diagnostic Data Set (DDS)



- Allows the following interactive inter-comparisons over fixed sites of interest:
 - Satellite vs. satellite
 - Satellite vs. model
 - Model vs. model
- Calculations are of a diagnostic nature (i.e. not based on a matchup database)
- For each parameter, various statistics can be generated (mean, min, max, standard deviation, skew, kurtois, median)
- Interactive plot generation, 2-D and 1-D plots
- Allows the request of periodic (offline) and interactive reports

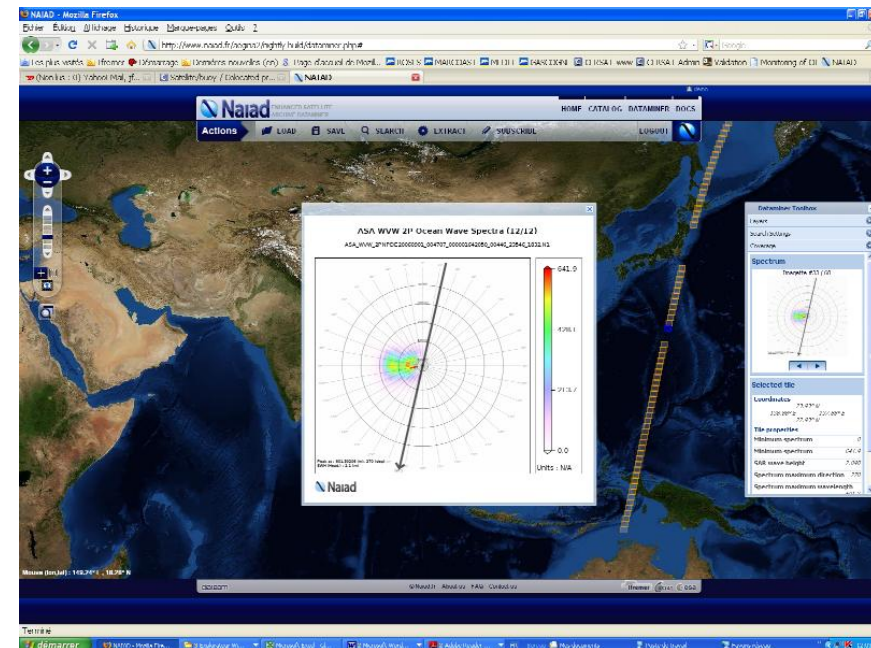


Pilot Spatial Wave Forecast Verification Scheme



- Existing WFVS scheme:
 - Initiated by ECMWF and operated since 1995
 - Monthly inter-comparison of *in situ* and model data
 - 12 participating Meteorological organisations
- GlobWave Pilot Spatial WFVS will:
 - Operate for a demonstration period of 2 years
 - Allow inter-comparison of satellite and model data
 - Ingest model data on a monthly basis from participating organisations
 - Provide offline reports on a monthly basis illustrating the previous months inter-comparisons
 - Allow interactive inter-comparisons using the GlobWave DDS

- Data Dissemination
 - FTP (browsable directories by year/day, etc.)
 - THREDDS/OpenDAP
- Satellite data query interface (NAIAD)
 - Data search
 - Data sub-setting
 - Visualisation
- Satellite vs. *in situ* query interface
 - Query criterion (Space/time window, etc)
 - Extraction in NetCDF format
 - Statistical and graphical displays
- HR-DDS services
 - Satellite and model diagnostic inter-comparisons
 - Statistics and visualisation



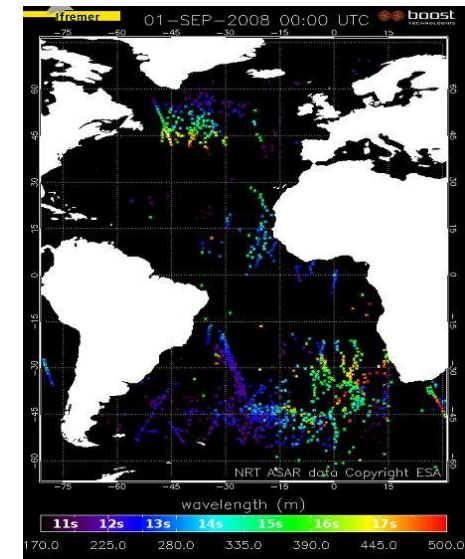
Published on the Portal – there are two types:

- Monthly Reports will contain:
 - Statistical analysis of the satellite vs *in situ* inter-comparisons (scatter plots, biases, scatter indexes, mean square slope)
 - Results shall be shown as overall values as well as split spatially and temporally
 - Any anomalies found in the error characterisation process
- Annual Reports will contain:
 - Summary of all monthly reports for the preceding year
 - Satellite vs. satellite inter-comparison results from previous year
 - Comparison of the differences between the NRT and consolidated L2P data sets

Demonstration Products



- GlobWave will host “demo products” which could be:
 - New types of info derived from SAR/Altimetry
 - Merged SAR/Altimeter products
 - Satellite wave retrievals augmented with model data
 - Analysis from assimilations of satellite wave data into wave models
- An initial set of demonstration products will be:
 - Altimeter wave period product (SatOC)
 - Hs-Tz scatterplots (SatOC)
 - Fireworks (CLS)
 - Soprano (CLS)
- Shortly inviting proposals for demo products
- All members of the wave community invited to apply
- Budget available to host and support demo products



- Products area
 - Catalogue with a description of each of the products
 - Wave data handbook
 - L2P Product User Guide
 - Data access page
- Validation area
 - L2P Quality Control Reports
 - Global Wave Statistics info



- Tools area – provides links to the online interactive services
- Demonstration area – provides access to the demo products
- News area – gives announcements about wave related events/announcements
- User Community area – allows users to exchange info and engage in discussions



- User Group of 35 people/organisations
 - Spans scientific, operational and commercial user communities
 - We consulted closely with participants to define user requirements
- Bi-annual Newsletter
 - First issue distributed in late August
- Conference posters/presentations
 - WISE 2009, OceanSAR 2009, OceanObs, SeaSAR 2010
- Hosting of demo products – will help encourage users to interact with GlobWave
- User Consultation Meetings
 - 3 planned (at KO+12, 24, 36)
 - UCM-1 to be held in late April at Ifremer in conjunction with WISE

Timetable



- KO – January 16th, 2009
- KO+1 – Initial Version of Portal
- KO+3 – Delivery of Requirements Baseline
- KO+5 – Delivery of Technical Specification
- KO+12 – Delivery of:
 - GlobWave Web Portal
 - L2P satellite wave data (archived products)
 - Satellite vs *in situ* database
 - Initial set of demo products
- KO+13 – NRT satellite wave data
- KO+18 – Delivery of Global Wave Statistics
- KO+12,24,36 – User Consultation Meetings
- KO+36 – Completion of project

Any questions...?