Проект ESA GlobWave

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GlobWave Workshop

12-14 September

ESA and Data Exploitation Projects

Olivier Arino and Simon Pinnock

GLOBWAVE

Earth Explorer missions

GOCE

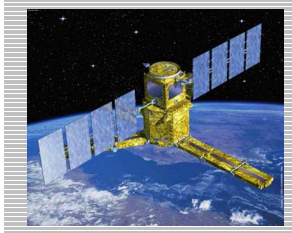
Earth gravity field and Geoid measurements

Launch: 2008

SMOS

Soil moisture and ocean salinity measurements

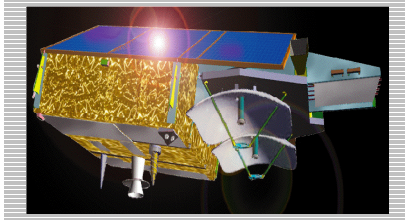
Launch: 2008



Cryosat-2

Ice elevation and ice thickness measurements

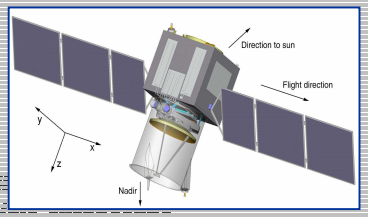
Launch: 2009



ADM-Aeolus

Windspeed vectors measurements

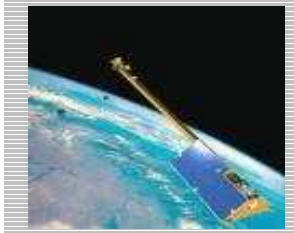
Launch: 2009



SWARM

Earth magnetic field & Earth core dynamics meas.

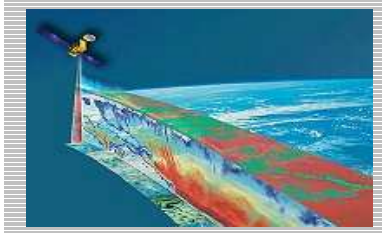
Launch: 2010



EarthCARE

Clouds, Aerosols & radiation measurements

Launch: 2012+



Europe
Agence spatiale européenne

the Living Planet

GMES (Global Monitoring of Environmental Systems) and the development of operational oceanography in Europe

- **Before GMES (<2002)**
  - Conducting research, developing network and capacities
- **GMES initial period (2002-2003)**
  - **Demonstrate** the "European **maturity**" of oceanography:
    - **MERSEA Strand 1**
    - A system based on existing skills/capacities / European contribution to GODAE
- **GMES Implementation period (2004-2008)**
  - **Building** the main components of the GMES **system**
    - **MERSEA IP (BOSS4GMES)** for the marine component
      - Based on the integration of the European core of the existing systems and their networks – links with **EUROGOOS**.
    - **ESA DUE** (Medspiration, Globcolour) for R/S data and products, **ESA GSE** (Marcoast, Polarview) for downstream services
- **GMES Operational period (2008-xxx)**
  - **Run** the GMES European **Service**
    - **MCS** for the marine component
  - Ensure the **link with the existing network** of research players (innovation) and users (European, national and others) : e.g. the IBI-ROOS network

Earth Watch missions

Meteosat

Since ’78, 9 ESA developed Meteosat satellites have been launched

MSG-1

29.8.2002

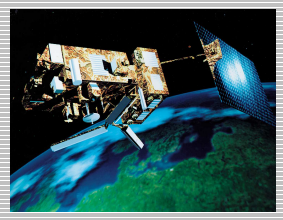
MSG-2

21.12.2005

MetOp

Europe’s first polar orbiting satellite for op. meteorology

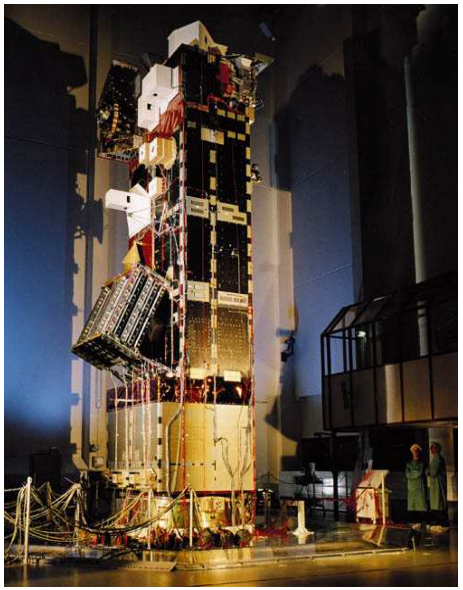
Launch: 19.10.2006



ERS-1 1991

ERS-2 1995

ENVISAT 2002



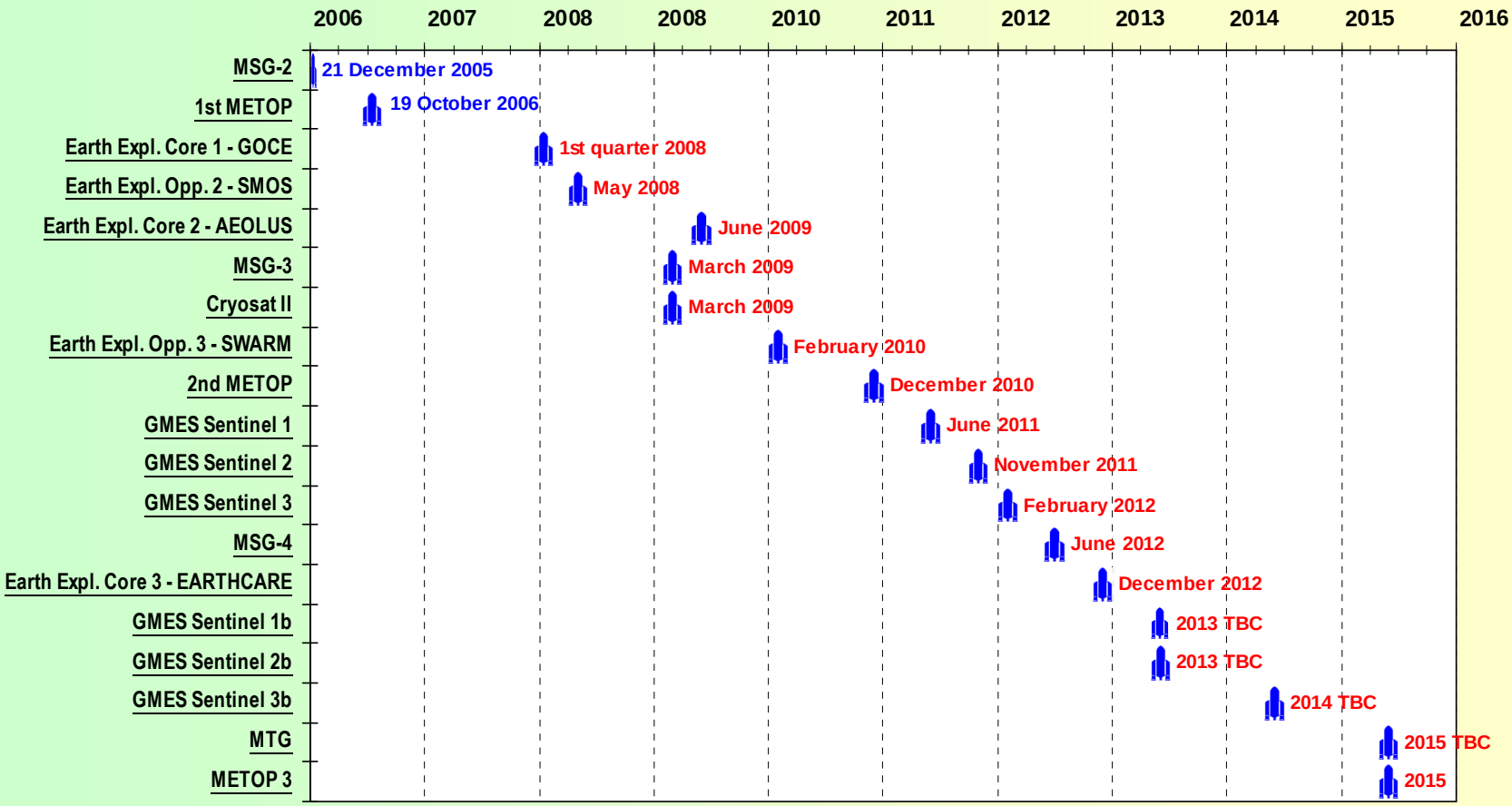
and now

GMES
Sentinel-1
Sentinel-2
Sentinel-3

European Space Agency
Agence spatiale européenne

EOP Overall Launch Schedule

e D / EO P Overall Launch Schedule



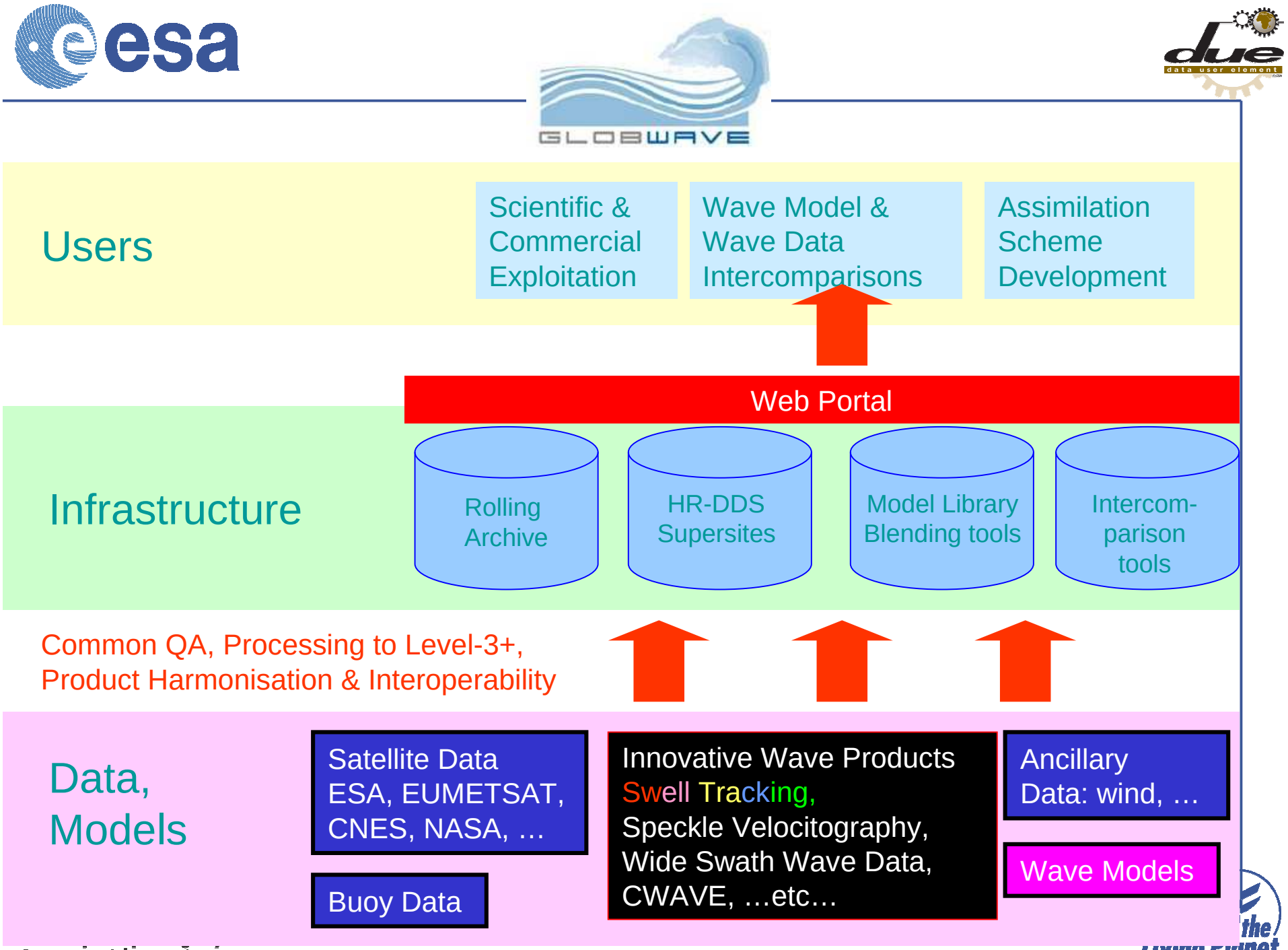
Earth Explorer Nr. 7, Sentinel-4 and -5: launch dates tbd

Potential New Projects in 2008

- Urban Heat Island – effect of local heat wave in cities (User Consulation, June 2007)
- GlobWave – wave height mapping and forecast

(http://cersat.ifremer.fr/information/projects/globwave)

- Permafrost – permafrost monitoring (User Consultation, December 2007)
- GlobSnow – snow fractional cover (User Consultation, February 2008)
- GlobAlbedo – albedo (User Consultation, 2008)


GLOBWAVE
Users
Scientific & Commercial Exploitation
Wave Model & Wave Data Intercomparisons
Assimilation Scheme Development
Web Portal
Infrastructure
Rolling Archive
HR-DDS Supersites
Model Library Blending tools
Intercom-parison tools
Common QA, Processing to Level-3+,
Product Harmonisation & Interoperability
Data, Models
Satellite Data ESA, EUMETSAT, CNES, NASA, …
Buoy Data
Innovative Wave Products
Swell Tracking,
Speckle Velocitography,
Wide Swath Wave Data,
CWAVE, …etc…
Ancillary Data: wind, …
Wave Models

Schedule

User Group formation	(21 Sep 2007)
URD	(30 Nov 2007)
DPM	(30 Dec 2007)
ITT	(1 March 2008)
KO	(1 Jun 2008)

24 month project

- **1stUser Consultation Meeting (29-30 April 2010)**
- Project GlobWave
- •Objectives:
- –Present the project
- –Obtain feedback from attendees to ensure we are aligned with (potential) user needs
- •Thursday 29thApril
- –Consortium give presentations about all aspects of the project
- –Small display in poster area, GlobWave Agenda's available, Notepaper to jot down feedback
- –Evening event: please liaise with the Project Team to give feedback
- •Friday 30thApril
- –Potential users (from commercial/R&D/operational backgrounds) present:
- ◦Explain what their organisation does with wave data/models, what the problems are, etc.
- ◦Outline what is good/bad about what Globwave will offer

- **ESA**: Funding the project through its Data User Element Programme
- **CNES**: Providing co-funding 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 data and operational system
- **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

Strategy

- 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.
- Provision of:
  - A multi-sensor set of satellite wave data in a common format and meta-data standard.
  - A set of demonstration data products
- Inter-comparison of different wave data sources
  - SAR and altimeter wave data with collocated *in situ* measurements
  - Cross characterisation between different satellite data streams

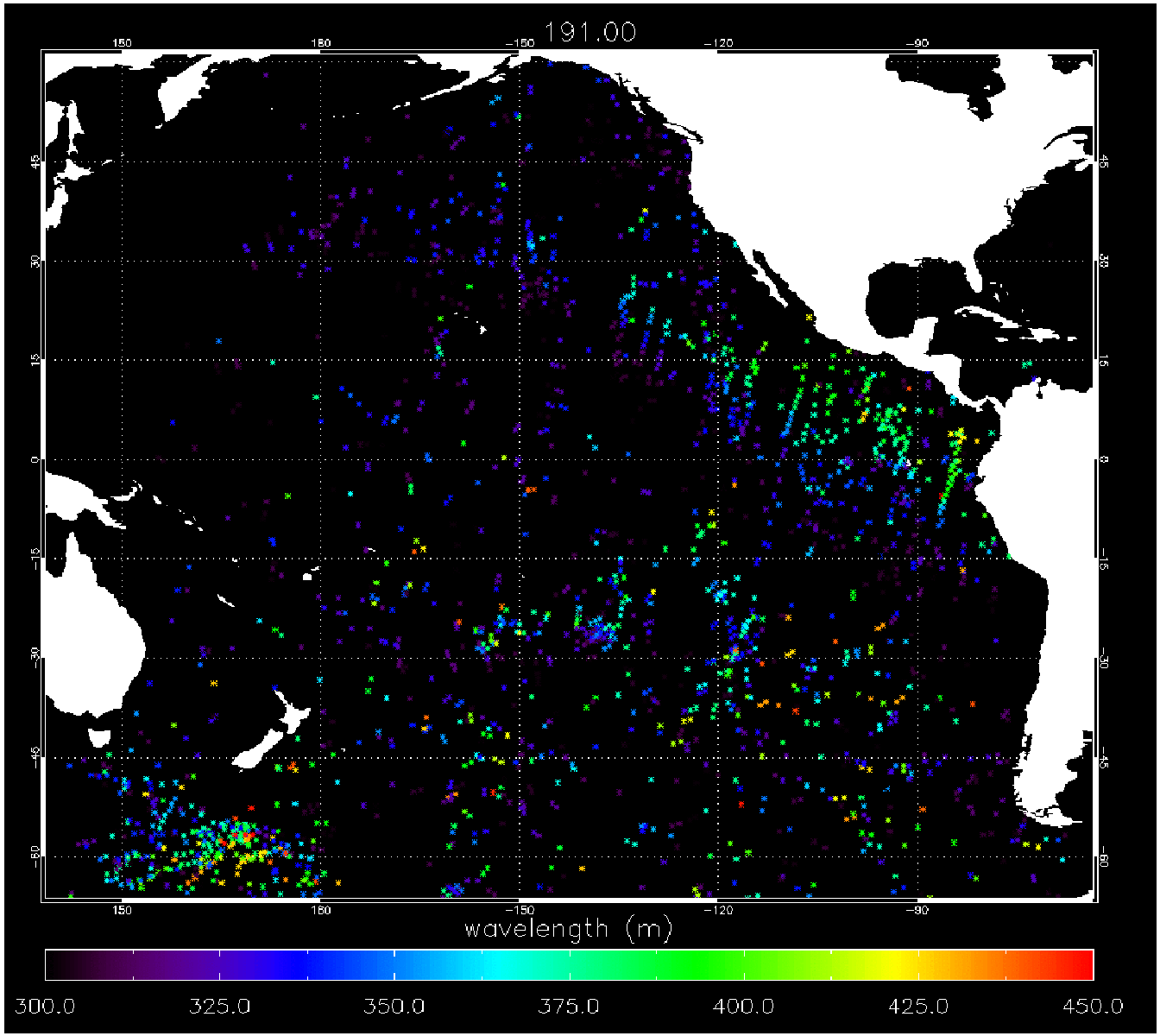
Outreach

- User Group of 43 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 early Q4, 2009.
- Conference posters/presentations
  - WISE 2009, OceanSAR 2009, OceanObs, SeaSAR 2010,
  - To come: IGARSS 2010, ESA Living Planet 2010, ...
- Hosting of demo products –will help stimulate wave community
- User Consultation Meetings
  - 3 planned (at end of each phase), allows us to gather feedback

Demo products (IFREMER, F. Collard, B. Chapron)

- SOPRANO : Demonstration of coastal SAR Image mode L2 wave spectra and global L3 wave products.
- Naiad : an online browser of satellite archive. Demonstration on Globwave data search.
- Firework animations : propagating SAR wave mode observations.

Observed propagation of 13s to 17s swell from July 8 to July 20, 2004

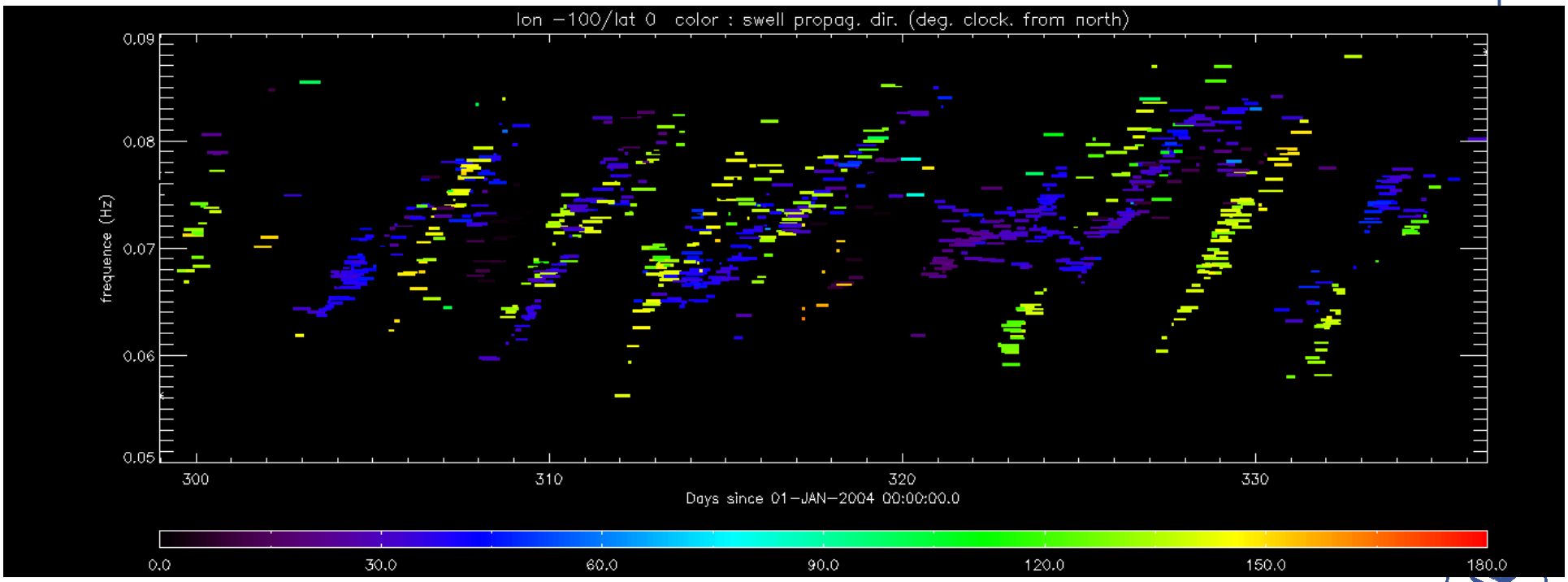


- 6 hour time step
- Wavelength from 300 to 450m
- Wave period from 13 to 17 seconds

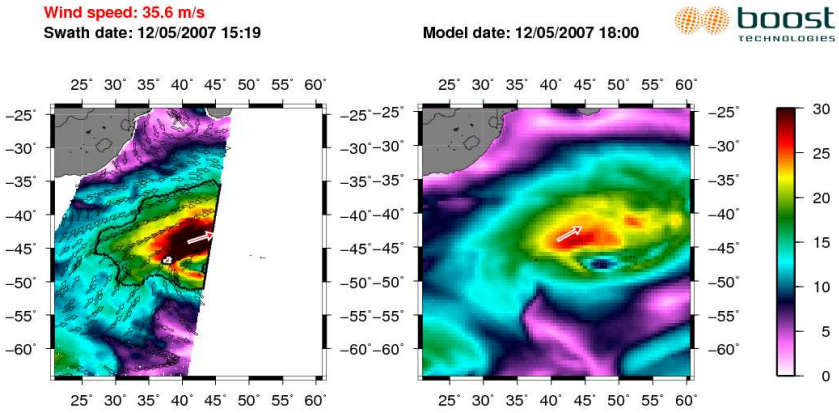
Observed swell at a given location versus time (virtual buoy)

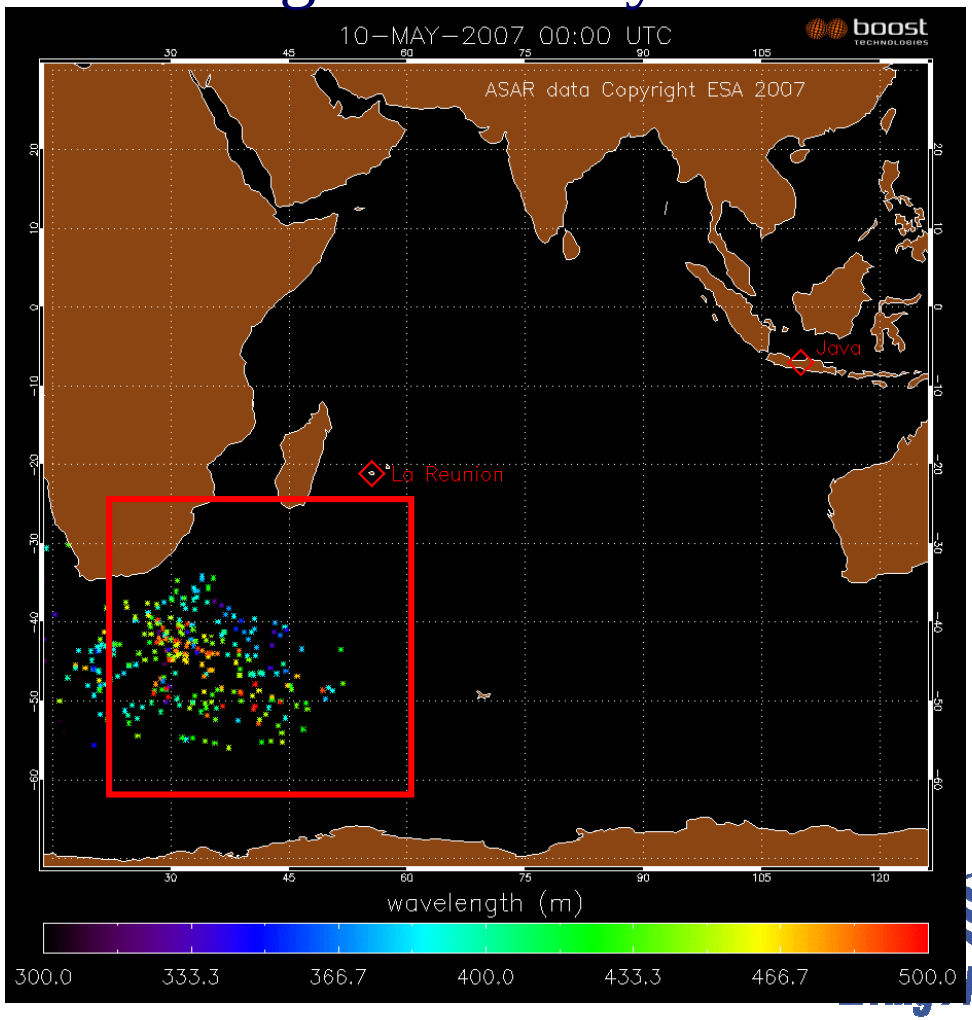
- Time-frequency diagram for one month at position longitude 100 °W and 0°N

color indicates propagation direction.



- Another possible application : SAR based automatic tracking/warning system for swell generated by extreme events





European Space Agency
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Резюме

- GlobWave – возможность участвовать в европейских проектах
- Участие предполагает достаточно высокий организационный уровень
- Каждый из участников самодостаточен