E-SURFMAR Report

18th-22nd May 2009, Geneva

Pierre Blouch

Programme Manager

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Content

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- **VOS Ships**
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Background

- E-SURFMAR = Surface Marine Observations Programme of EUMETNET
- Part of EUCOS (EUMETNET Composite Observing System)
- Main EUCOS objective: to improve Numerical Weather Predictions over Europe
  but E-SURFMAR also contributes to other application areas than NPW and is concerned by other regions than North Atlantic (contribution to the WWW)
- Optional: 17 participants out of the 24 EUMETNET members
- Components: conventional VOS, ship borne AWS, drifting and moored buoys
- Two Technical Advisory Groups (TAG): VOS ships and Data Buoys
- First period: 2003-2006 - Second period: 2007-2011
- Budget: 822 k€ per year
- Responsible member: Meteo-France

Drifting Buoys

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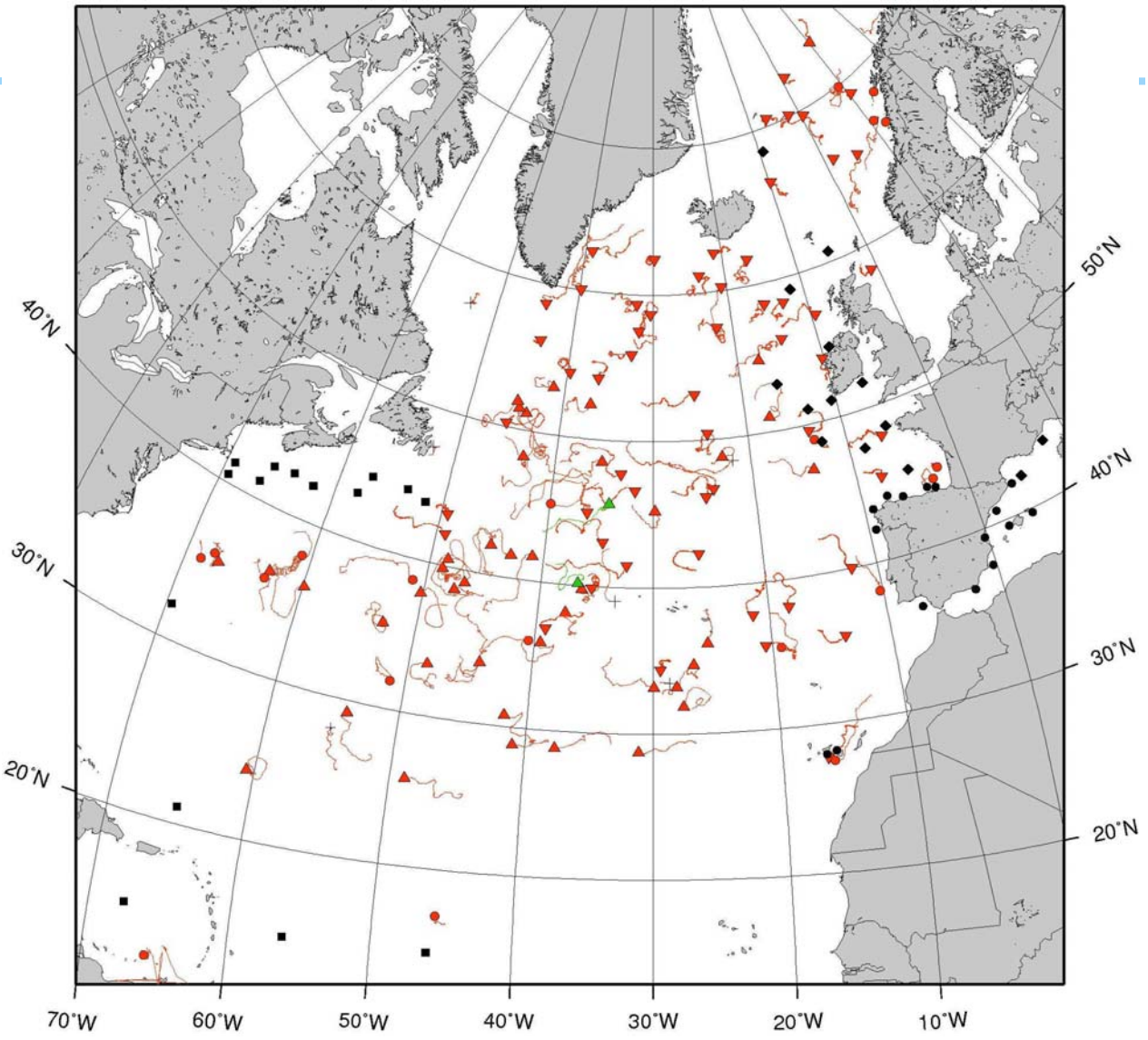
Drifting Buoys

Tracks

- Iridium SVP-B
- Argos SVP-B
- SVP-BW

- *(moored buoys)*



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Meteo-France

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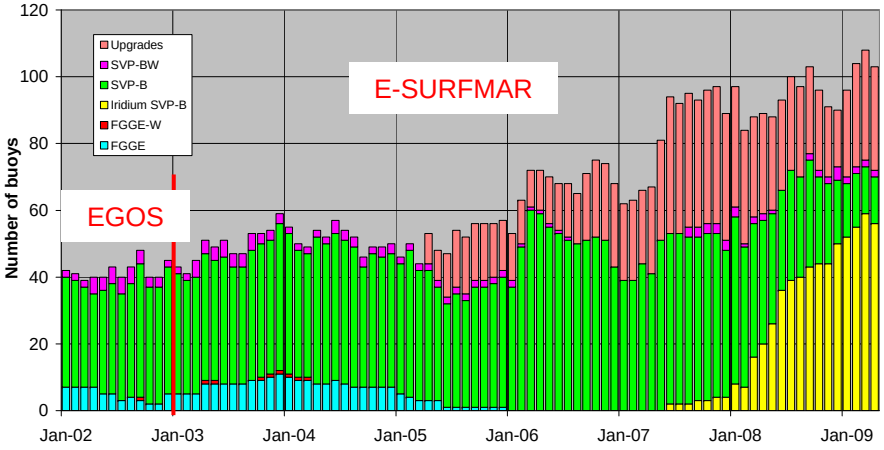
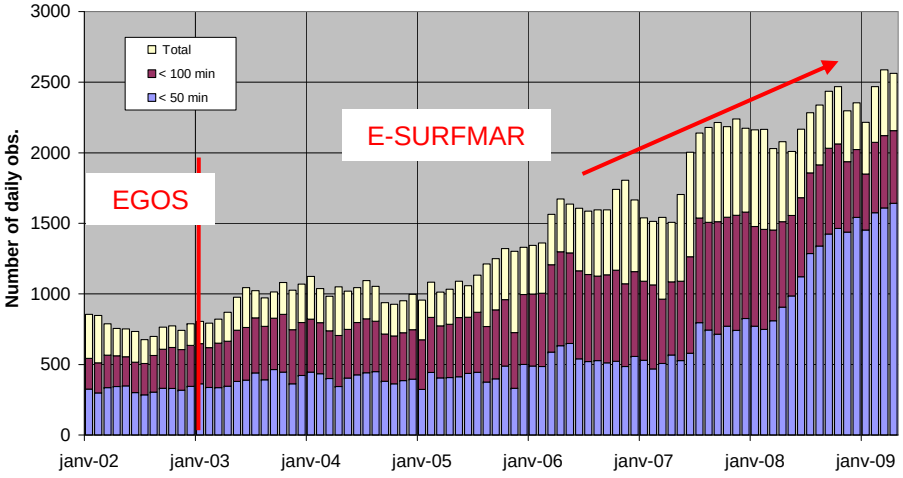
Drifting Buoys

Data Availability





Number of operating buoys :
250% increase over 6 years

Volume of data :
330% increase over 6 years

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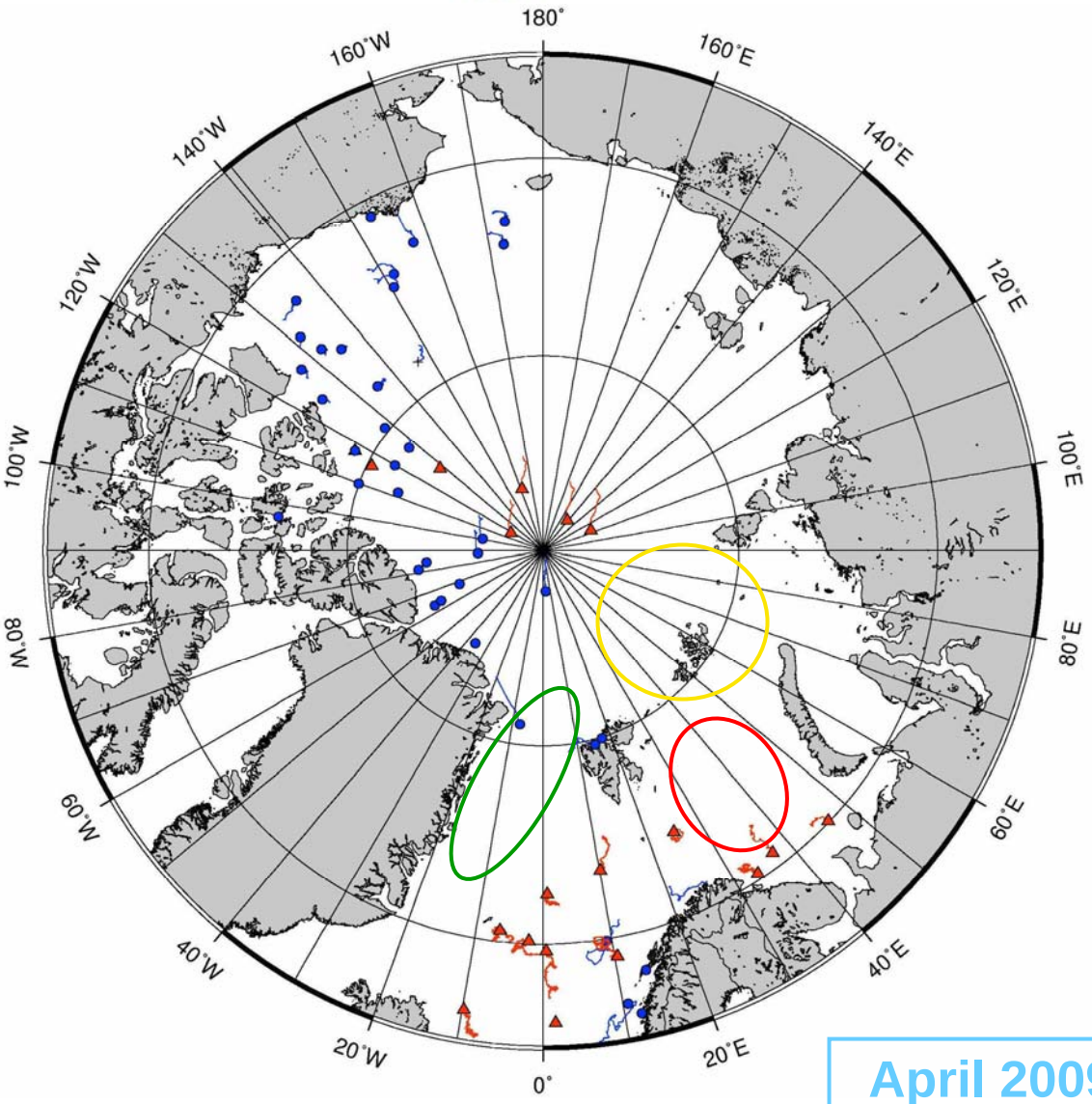
North of EUCOS area and Arctic

All buoys are measuring air pressure

Non-Eumetnet drifting buoys in blue

Eumetnet drifting buoys in red



Opportunities of deployments and/or authorizations are presently sought into circles for next summer

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Moored Buoys

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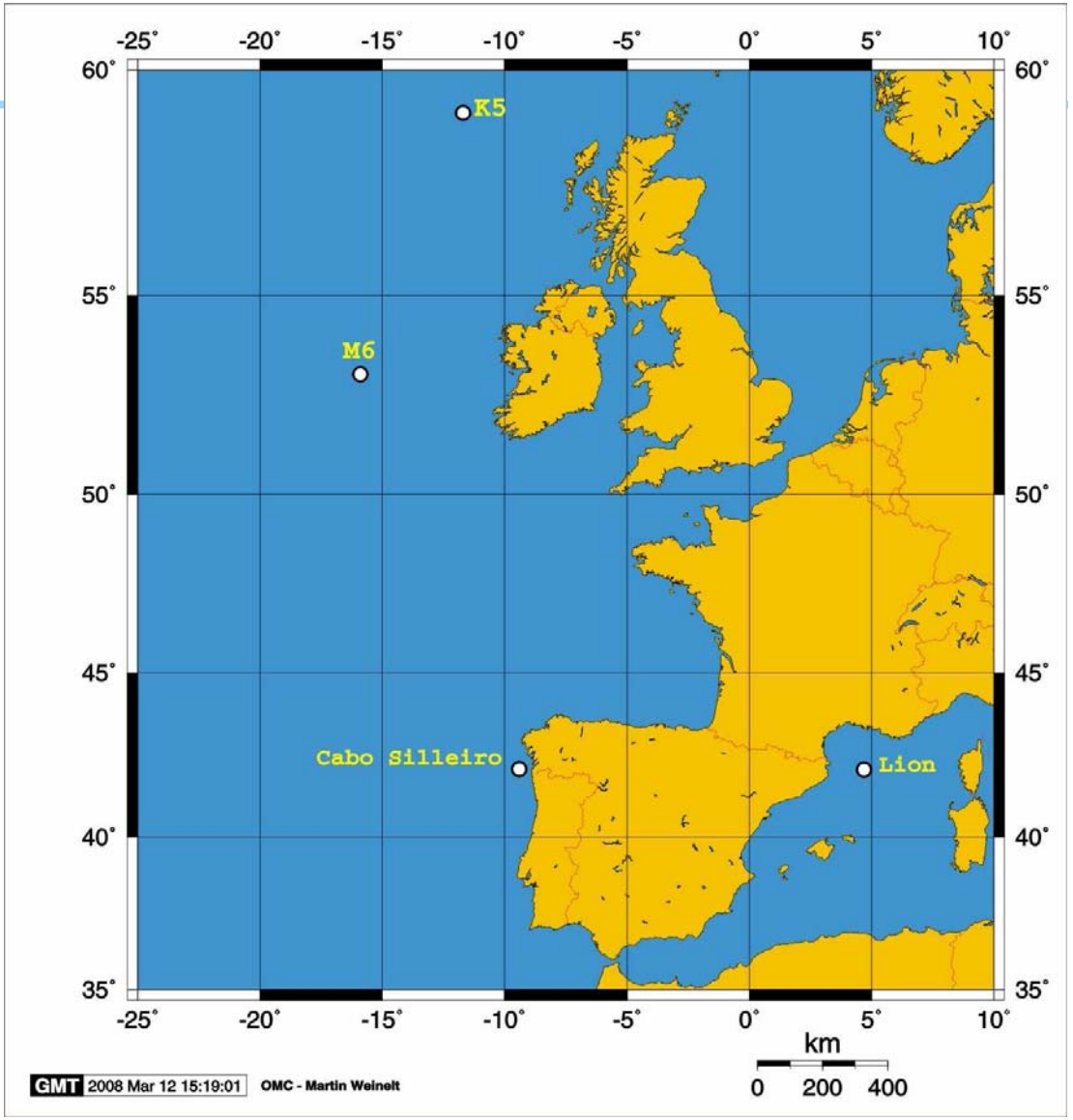
Moored Buoys

Amortizing and operations of **four moored buoys** …

…financially supported (30%) by the programme…

… for their ability to provide **reliable wave measurements** for the calibration and the validation of model and satellite data



VOS Ships

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VOS-TAG goals

- To develop common strategies to optimise and harmonise European VOS activities
- To enhance the availability, the timeliness and the quality of the observations
- To share information about VOS national networks and activities
- To report on new technical developments that could benefit the programme
- To provide guidance to the Programme Manager on how the TAG think the programme should develop
- To develop a more efficient European VOS Network that meets EUCOS requirements
- To consider how best to enhance the level of automation on VOS…

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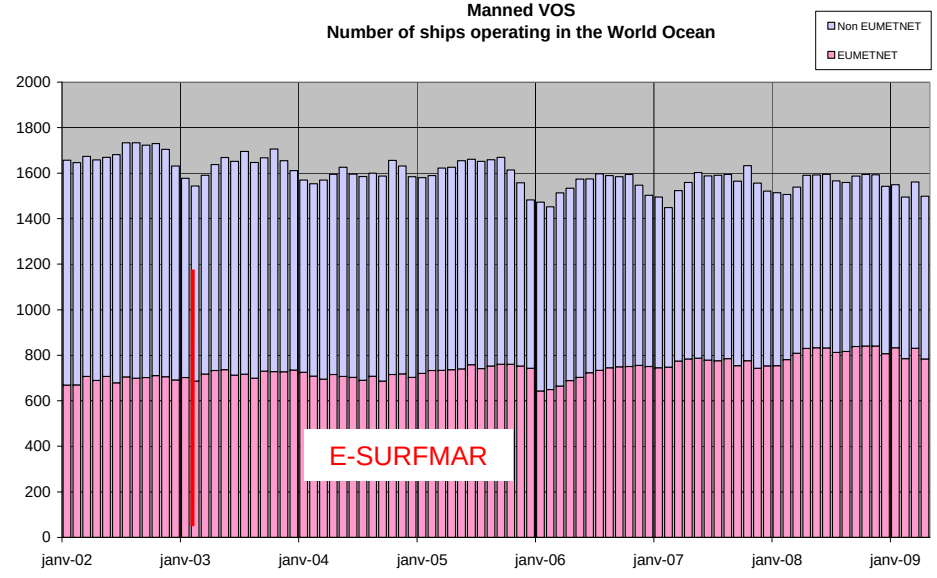
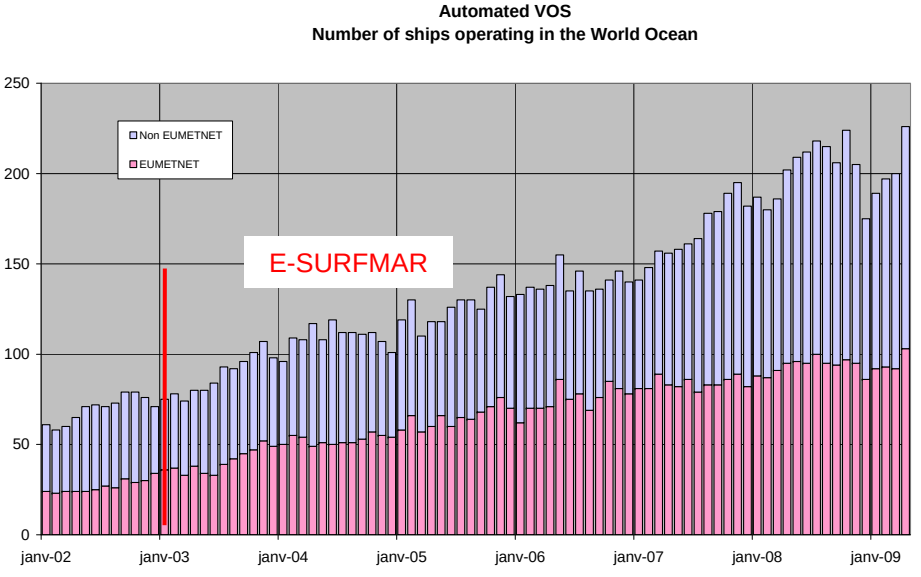
VOS Ships in the world

Data Availability
Number of active ships* in the world

** i.e having reported at least 2 obs during the month.*
VOS reporting through SHIP callsign counted for 1.



Conventional VOS



Automated VOS (AWS)

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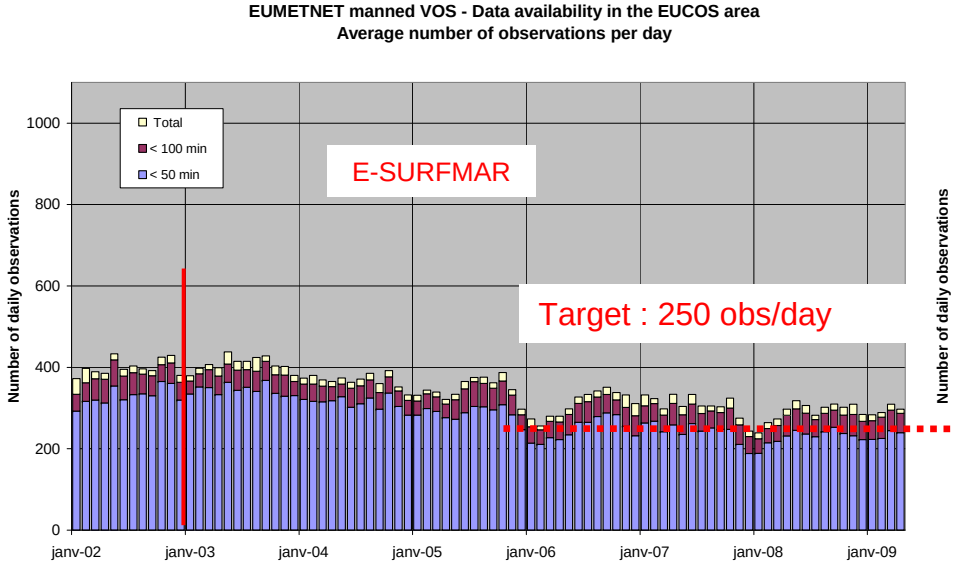
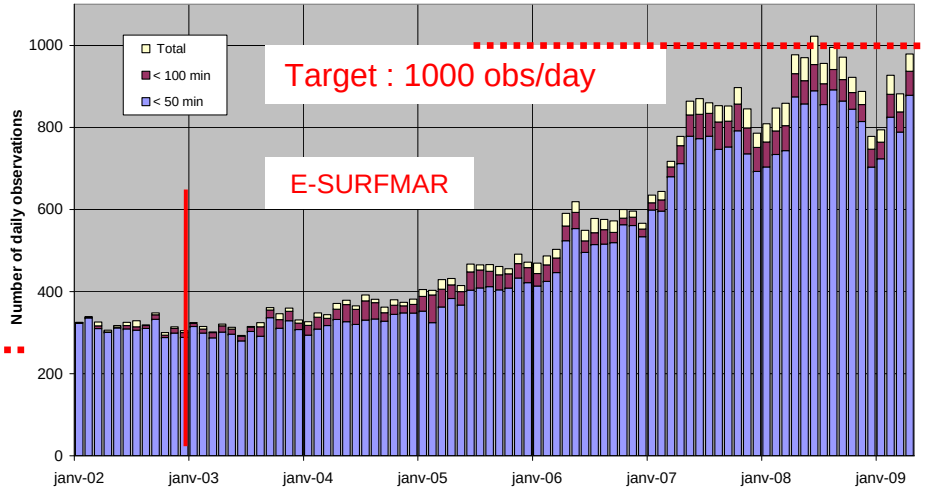
VOS Observations in the EUCOS area

Data Availability
Average number of daily reports from the EUCOS area



Conventional VOS



Automated VOS (AWS)

Pierre Blouch, E-SURFMAR Programme Manager
Meteo-France

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VOS Performances in 2008

Country	Active VOS	Total number of observations over World Ocean	Average umber per active VOS	Percentage of manned observations
Denmark				
France	70	202 095	2 887	6%
Germany	718	277 143	386	55%
Greece	7	745	106	100%
Iceland	6	2 831	472	100%
Ireland	2	27	14	100%
Netherlands	209	63 674	305	100%
Norway	6	28 863	4 811	4%
Spain	1	191	191	0%
Surfmar	9	27 410	3 046	0%
Sweden	33	11 447	347	100%
United Kingdom	287	129 227	450	60%
Total	1348	743 653	552	43%

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2007-2008 Evolution

Country	Number of active VOS		Total number of observations over the World Ocean			Number of observations over the Eucos area		
	2007	2008	2007	2008	evolution	2007	2008	evolution
Denmark	27		14 337			13 068		
France	70	70	164 890	202 095	+ 22,6%	123 823	144 908	+ 17,0%
Germany	669	718	245 573	277 143	+ 12,9%	147 991	165 287	+ 11,7%
Greece	4	7	519	745	+ 43,5%	519	745	+ 43,5%
Iceland	6	6	3 340	2 831	- 15,2%	3 339	2 828	- 15,3%
Ireland	3	2	154	27	- 82,5%	154	27	- 82,5%
Netherlands	182	209	42 190	63 674	+ 50,9%	23 311	32 922	+ 41,2%
Norway	10	6	22 132	28 863	+ 30,4%	21 517	19 348	- 10,1%
Spain	1	1	269	191	- 29,0%	269	184	- 31,6%
Surfmar	6	9	16 789	27 410	+ 63,3%	16 360	24 049	+ 47,0%
Sweden	32	33	9 291	11 447	+ 23,2%	6 215	7 165	+ 15,3%
United Kingdom	280	287	113 318	129 227	+ 14,0%	69 539	74 472	+ 7,1%
Total	**1 290**	**1 348**	**632 802**	**743 653**	**+ 17,5%**	**426 105**	**471 935**	**+ 10,8%**

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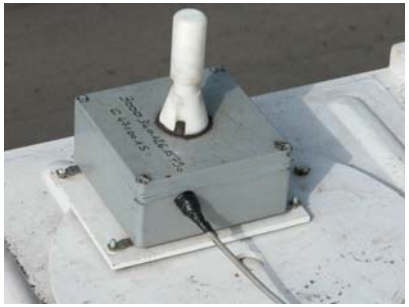
E-SURFMAR funded AWS



System	Batos	Baros
AWS Type	« complex »	« basic »
Parameters	SLP, Ta, U, dd, ff and SST	SLP only
Visual obs.	Yes	No
Transmission	Inmarsat-C DR	Iridium SBD
Data type	Binary	Binary
Mess. length	32 bytes	15 bytes
In operation	5	8
Planned	7	15
Obs. period	Hourly	Hourly

Progress in implementation

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E-SURFMAR Achievements

- E-SURFMAR **VOS Metadata Database** (Pub 47) developed and operational
- **Data QC tools** improved: more parameters compared, mode models used…
- Test of **different communication systems** including Inmarsat, Iridium, Argos, and Meteosat + development of **compression techniques**
- **Iridium** used instead of Argos **for the drifting buoys** => better timeliness and lower cost (significant decrease of the cost per observation)
- **MASK scheme** implemented and operational meanwhile encryption under BUFR: BATEU06, MILDE01, IDDUK02, TBWFR04…
- Significant **increase of the number of observations** into the EUCOS area thanks to drifting buoys and ship borne AWS
- **Excellent co-operation** between European NMSs (share of experiences, advices, sought for common practices) => better efficiency for everybody

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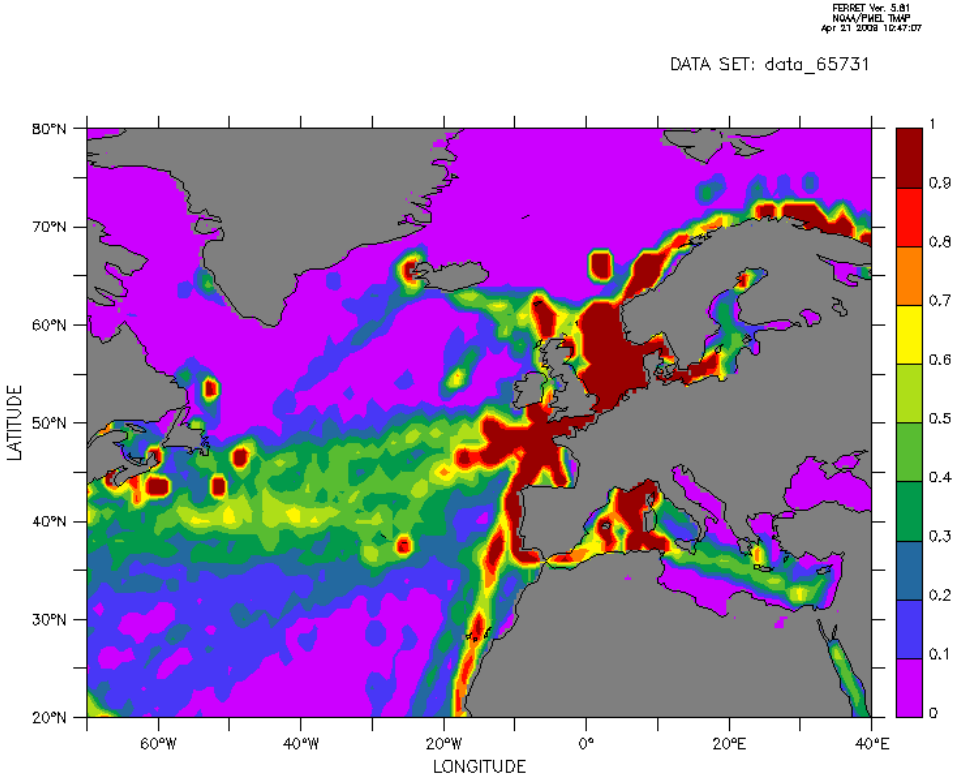
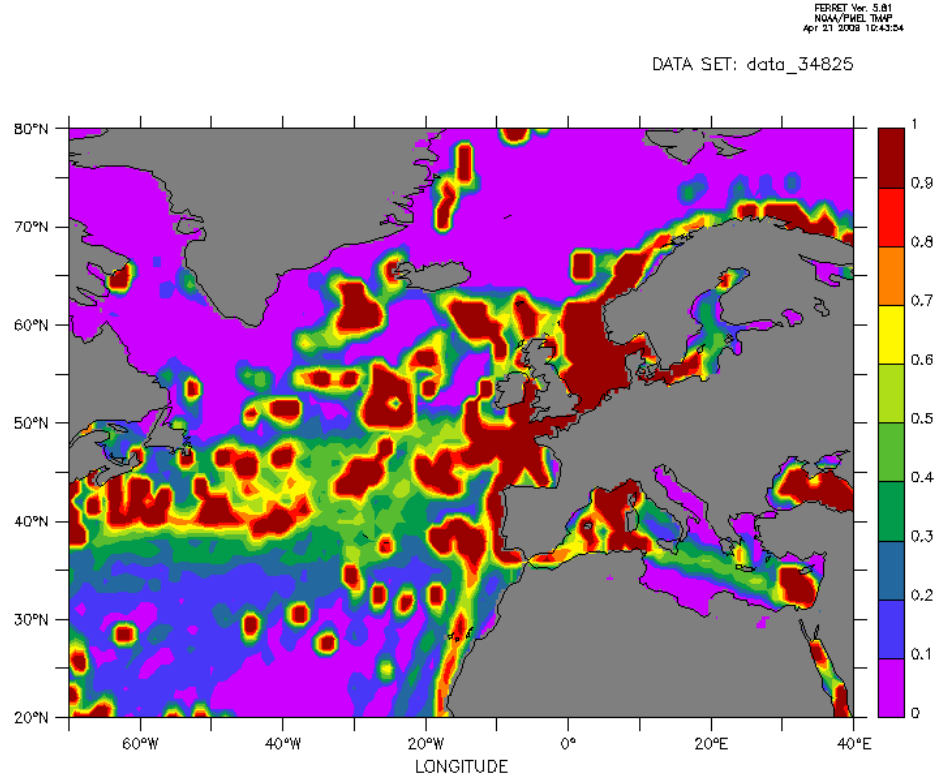
Air pressure density (March 2002)



Nb. of AP observations, per 6 hours, per 250x250 km

VOS Only



Nb. of AP observations, per 6 hours, per 250x250 km

All surface marine platforms

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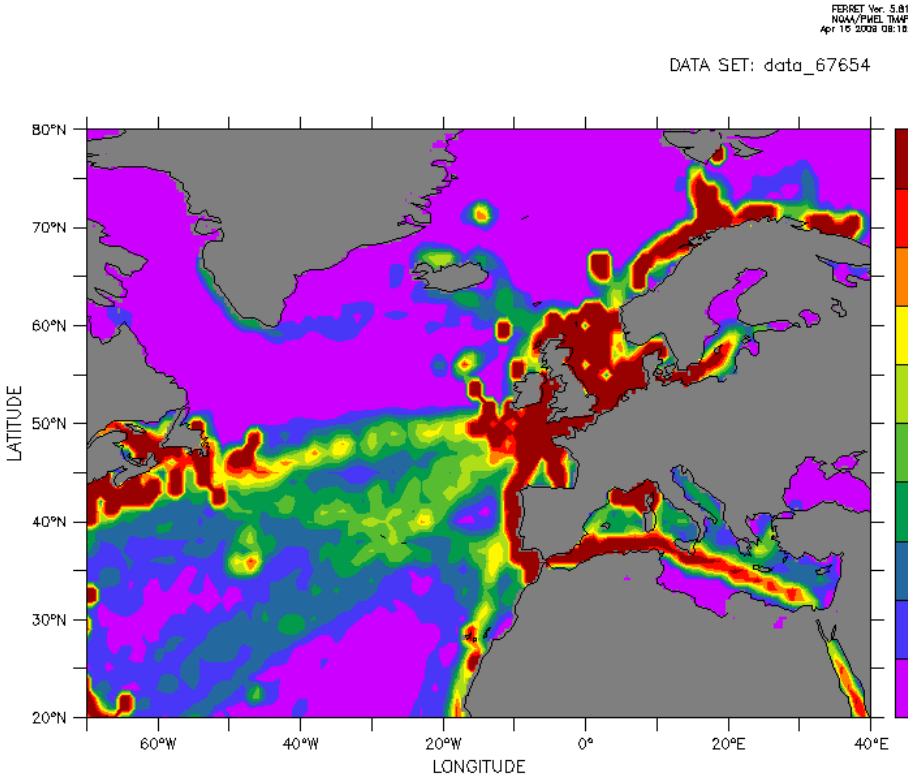
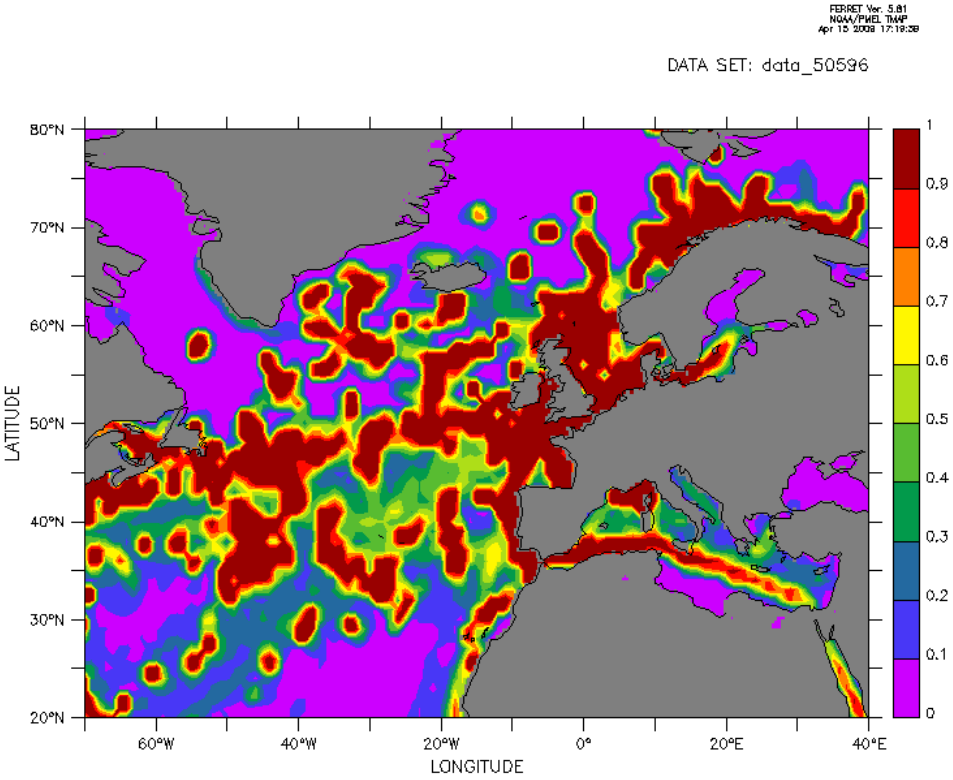
Air pressure density (March 2009)



VOS Only



All surface marine platforms

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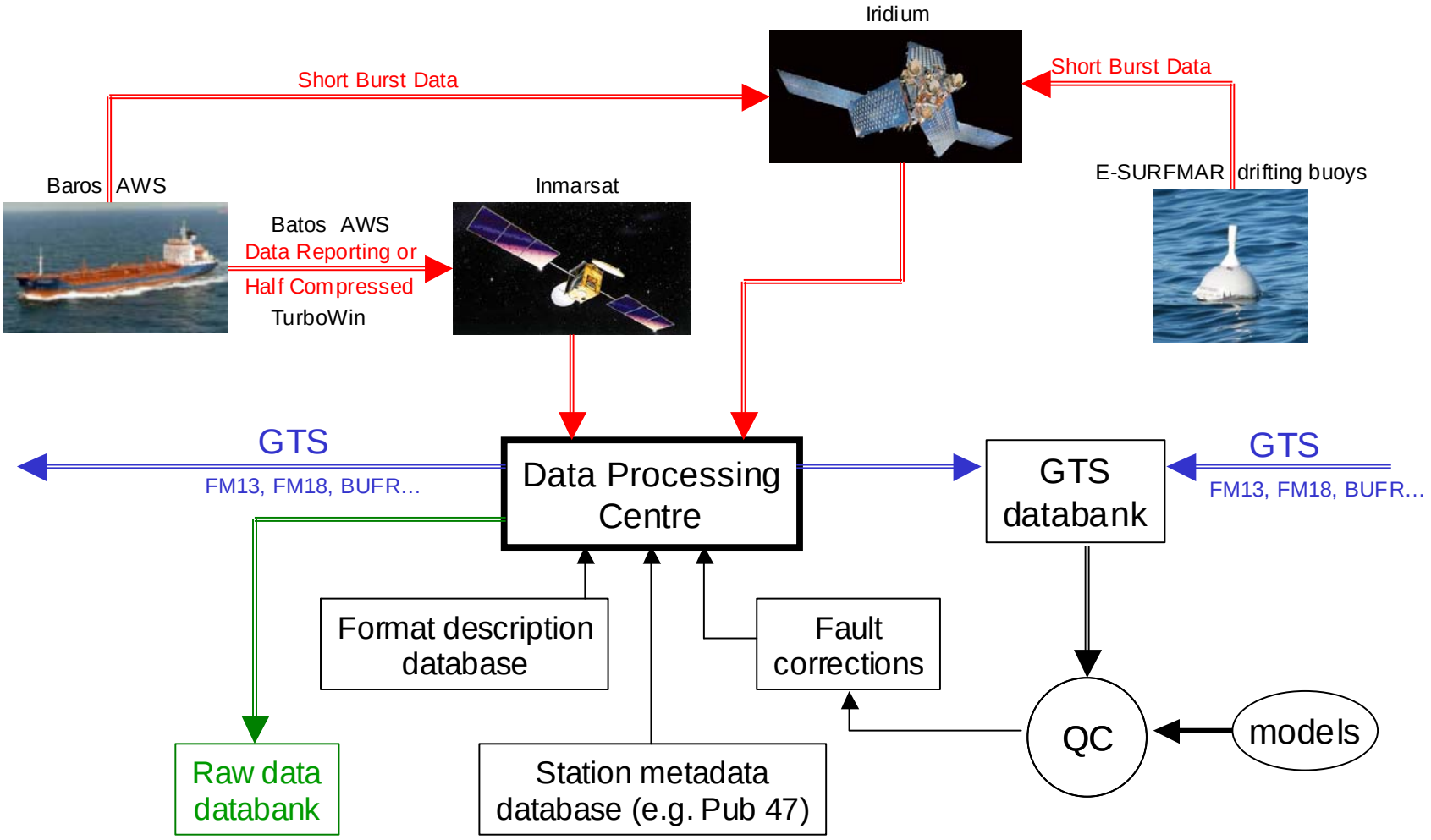
Data Transmission



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Ongoing activities

- **Task team on shipborne AWS** stations: try to define and agree specifications which can be used in calls for tender for the procurement of AWS for use on observing ships recruited by E-SURFMAR participants

- Funding and installation of **45 AWS stations**
  (5 Batos and 8 Baros in operation by mid-May 2009)

- **Observation System Experiment** (OSE)
  - Performed by ECMWF (verification on 4-day forecasts)
  - 7 weeks running on Dec 2008/Jan 2009
  - Coupled with an OSE on scatterometer wind data
  - 3 scenarios:
    - all drifting buoys and all non-synoptic ships data removed
    - ~ half of the drifting buoys and all non-synoptic ships data removed
      (in oder to retrieve a situation similar to this of 2002/2003)
    - all data assimilated


Questions ?