

**DRAGON in support of harmonizing European and Chinese
marine monitoring for Environment and Security System**

DRAGONESS



BILATERAL EU-P.R. OF CHINA PROJECT 2007-2010

KICK-OFF MEETING

**Shen Zhou International Hotel
BEIJING, P.R. of CHINA 11-12 OCTOBER 2007**

DRAFT AGENDA

DAY 1 - THURSDAY 11 OCTOBER

- **Welcome (1400-1545)**

- Prof. He and Prof. Guan
- Dragoness Coordinator Prof. Johannessen
- Dragoness Partner presentations

Coffee Break (1545-1615)

- **Project overall goal and DoW review (1615-1800)**

- Description of Work (J.A. Johannessen)
- Issues for clarifications (all partners)

Adjourn (1800)

- **Welcome Party QiLuJingDian Restaurant 1830**

DRAFT AGENDA

DAY 2 - FRIDAY 12 OCTOBER

- **Management and Financial Status (0900-1045)**
 - Project Management, Overall budget (J.A. Johannessen)
 - Requirements, responsibilities, consortium agreement (J.A. Johannessen)

Coffee Break (1045-1115)

- **Description of Workpackages (1115-1730)**

- Key objectives
- Main working tasks
- Deliverables
- Milestones



WP leaders + WP partners

Coffee Break (1500-1530)

DRAFT AGENDA

DAY 2 - FRIDAY 12 OCTOBER (cont.)

- **Review of Action Items (1730-1800)**
- **Any Other Business (1800-1830)**
- **Agree Date and Place of 1st Progress Meeting (1830-1900)**
- **Adjourn (1900)**
- **Dinner at QiLuJingDian Restaurant (1930)**

Project overall goal and DoW review

1. PROJECT SUMMARY

2. OBJECTIVES AND STATE OF THE ART

4. RELEVANCE TO THE OBJECTIVES OF THE SPECIFIC PROGRAMME

5. POTENTIAL IMPACT

- **5.1 Contribution to standards**
- **5.2 Contribution to policy developments**
- **5.3 Risk assessments and related communication strategies**

7. WORKPLAN

- **7.1 Introduction-general description and milestones**
- **7.2 Planning and timetable**
- **7.3 Graphical presentation of work packages**
- **7.4 Work package list**
- **7.5 Deliverables list**
- **7.6 Work package descriptions**

To be substantiated in P.4

9. OTHER ISSUES/ Clarifications

Project Summary

The DRAGONESS SSA project shall assess and harmonize European and Chinese capacities in marine monitoring for environment and security.

It capitalizes on achievement from completed and ongoing projects in Europe and in Peoples Republic of China, and in which members of this SSA proposal were and are participating, including:

- the joint European Space Agency (ESA) and the Ministry of Science and Technology (MOST)/National Remote Sensing Center of China (NRSCC) DRAGON project,
- the outcome of the European Union (EU) Framework Program (FP5) Marine Environment and Security for the European Area (MERSEA) Strand-1 project,
- the ongoing EU FP6 MERSEA IP, BOSS4GMES and ECOOP projects
- the ESA projects MarCoast and PolarView

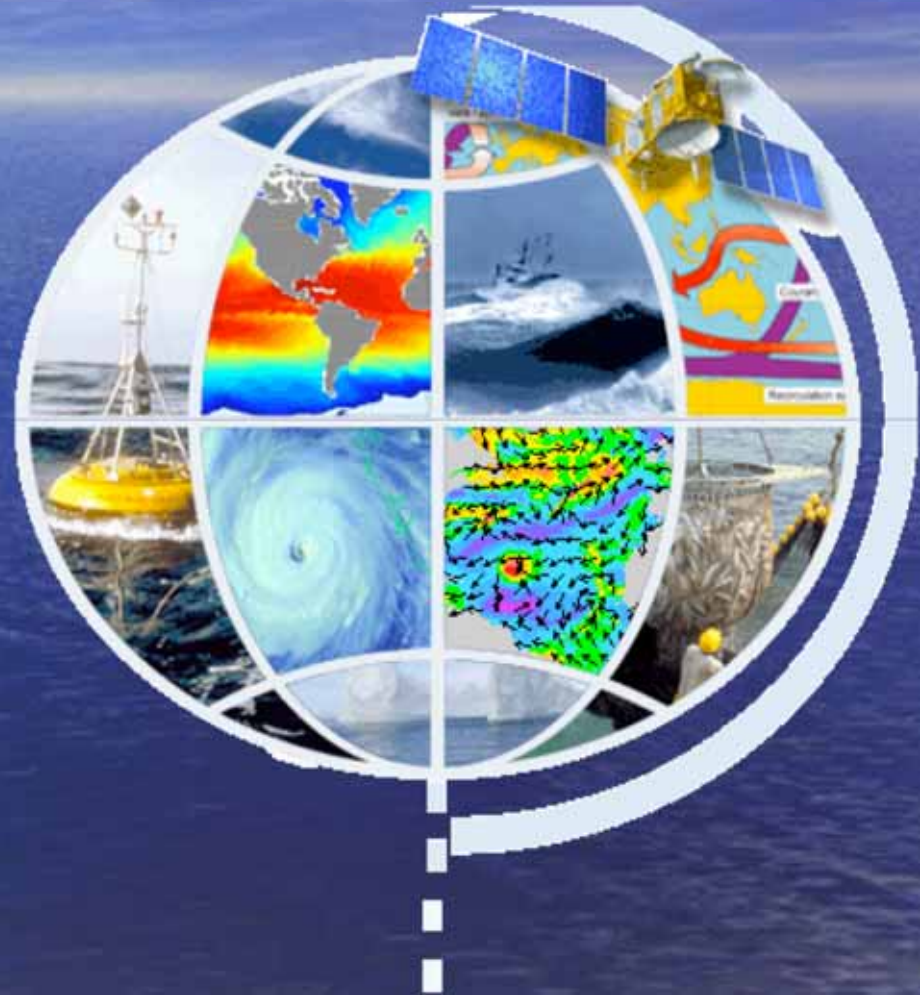
DRAGONESS shall also take stock of:

- definitions and achievements of the Global Monitoring for Environment and Security (GMES) Marine Core Services and Downstream Services (ie. MyOcean)
- the inter-connection between GMES and the 2007-2009 work plan provided by the Group on Earth Observations (GEO).

DRAGONESS shall therefore establish a strategic mechanism for interchange of GMES and GEOSS knowledge and expertise between Europe and P.R. of China. This shall be disseminated by way of a central web site, conferences and a summer school.

DRAGONESS 2007-2010

DRAGONESS will stimulate further exchange and initiation of new partnership in Earth Observation science and technology in support to *Global Environmental Monitoring and Operational Oceanography* by bringing together scientists from Europe and China.



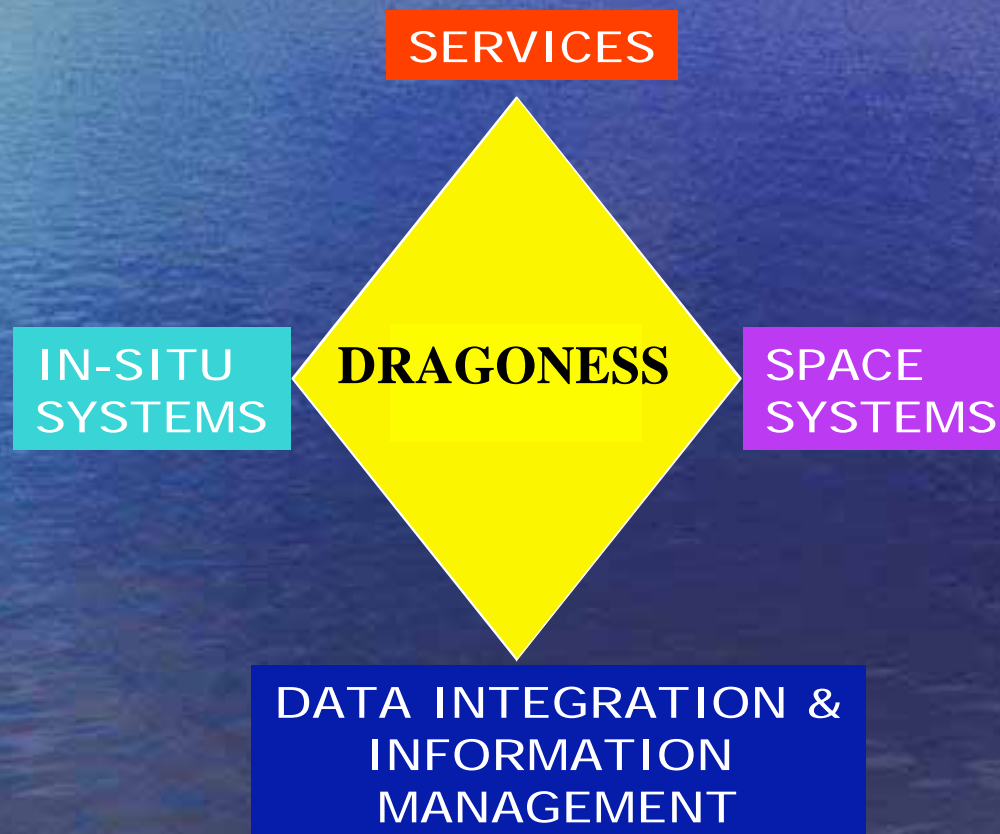
Project Objectives and State-of-Art

The primary objective of the DRAGONESS SSA proposal is to make an inventory of Chinese and European capacities of marine monitoring for environment and security including Earth observation data. In so doing harmonization of methods and approaches in the frame of international programs such as GOOS and GMES will be considered in the context of establishing and harmonizing operational services contribution to GEOSS.

The main result of the DRAGONESS project will be an inventory and assessment of existing marine and coastal observing systems in both Europe and China. This shall highlight strengths and weaknesses, identify gaps and inconsistencies, and provide recommendations for a strategy to develop harmonized monitoring elements which meet the requirements of international standards and monitoring programs (i.e. GEOSS).

APPROACH

The inventory of Chinese and European capacities of marine monitoring for environment and security will be established and harmonized in the frame of the Global Earth Observation System of Systems (GEOSS) and the Global Monitoring for Environment and Security (GMES) diamond.



Specific Objectives are:

- to assess current Chinese and European services and information products arising from integrated use of networks of remote-sensing, in-situ observations, models and data assimilation methods against the GEOSS requirements;
- to identify service/data gaps and barriers, such as for instance restrictive data dissemination and availability and re-use policies;
- to recommend activities to disseminate and implement products and services derived or customized from existing development and operational activities, for marine and atmospheric environmental monitoring and security, including early warning systems linked to natural disasters;
- to study and identify the potential for existing and foreseen European GMES services (both funded through EU FP6 and ESA) to be transferred to P.R. of China and provide the building blocks for the EU contribution to the Chinese marine monitoring for environment and security, and hence to GEOSS;
- to stimulate exchange and initiation of new partnership in Earth Observation science and technology in support to global environmental monitoring by bringing together scientists from Europe and China.

PARTNERS

Partner role	Partner No.	Participant organisation name	Partner short name	Country	Date enter project	Date Exit project
CO	1	Nansen Environmental and Remote Sensing Center	NERSC	Norway	1	36
CR	2	GKSS Furchungszentrum	GKSS	Germany	1	36
CR	3	Ocean Remote Sensing Consulting	ORS	Germany	1	36
CR	4	Institut Francais De Recherche Pour L'exploitation De La Mer	Ifremer	France	1	36
CR	5	Collecte Localisation Satellites	CLS	France	1	36
CR	6	The Nansen-Zhu International Research Center	NZC	P.R.China	1	36
CR	7	Ocean Remote Sensing Institute, Ocean University of China	ORSI-OUC	P.R.China	1	36
CR	8	Institute of Atmospheric Physics, Chinese Academy of Sciences	IAP	P.R.China	1	36
CR	9	National Satellite Ocean Application Service	NSOAS	P.R.China	1	36
CR	10	Beijing Normal University	BNU	P.R.China	1	36
CR	11	Ministry of Science and Technology	MOST	P.R.China	1	36
CR	12	National Marine Environmental Forecasting Center	NMEFC	P.R.China	1	36
CR	13	Second Institute of Oceanography, State Oceanic Administration	SIO-SOA	P.R.China	1	36

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

State-of-the-Art:

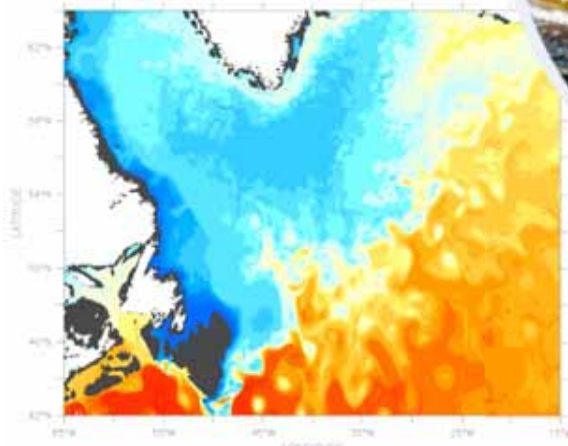
Infrastructure Required for Operational Oceanography



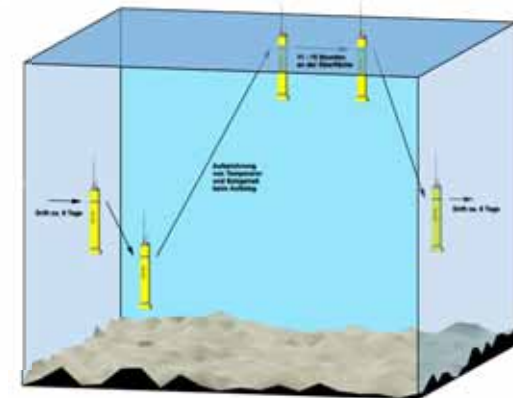
Research Platforms



Earth observing satellites



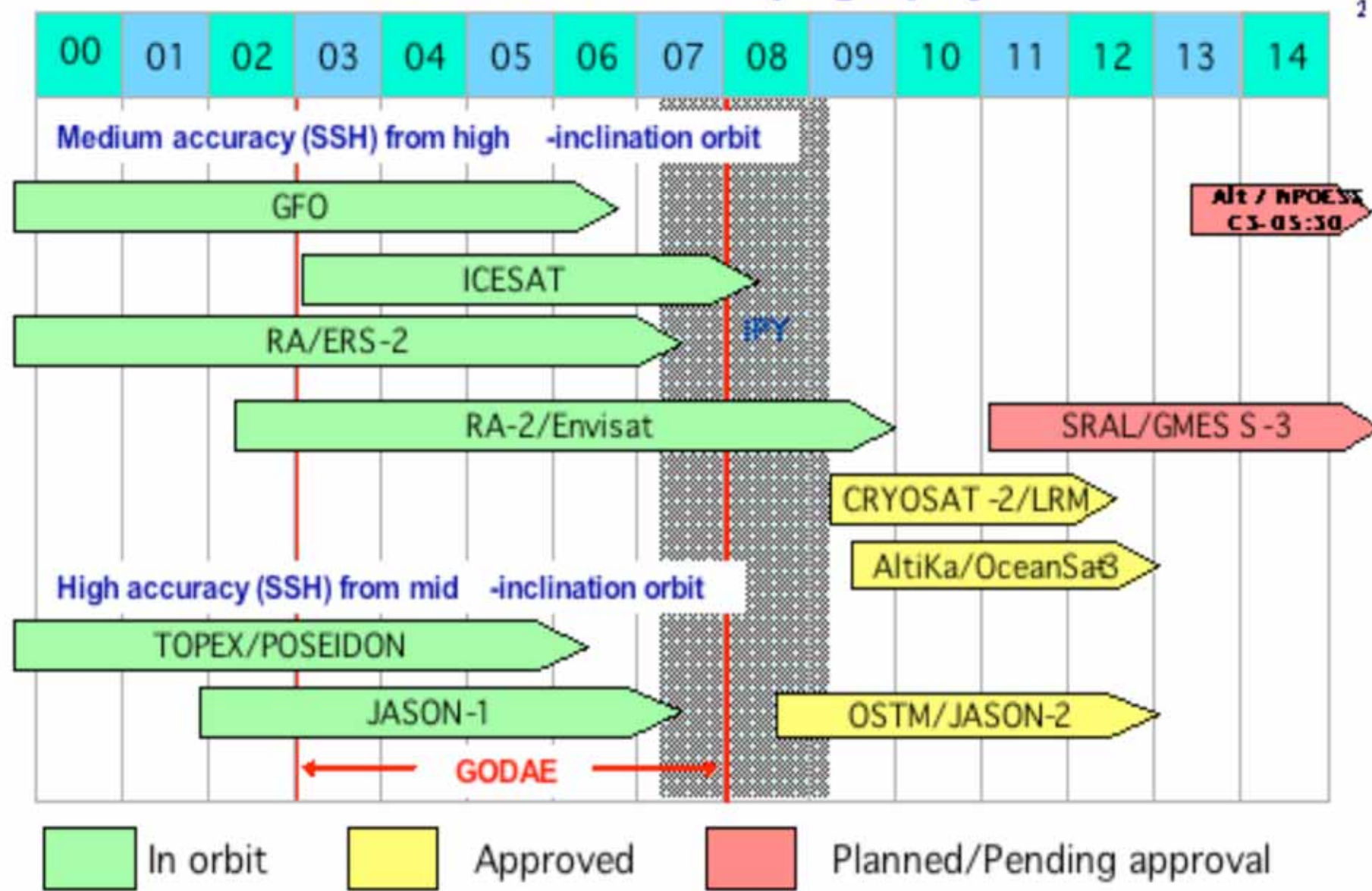
Model simulations and assimilation on super computers

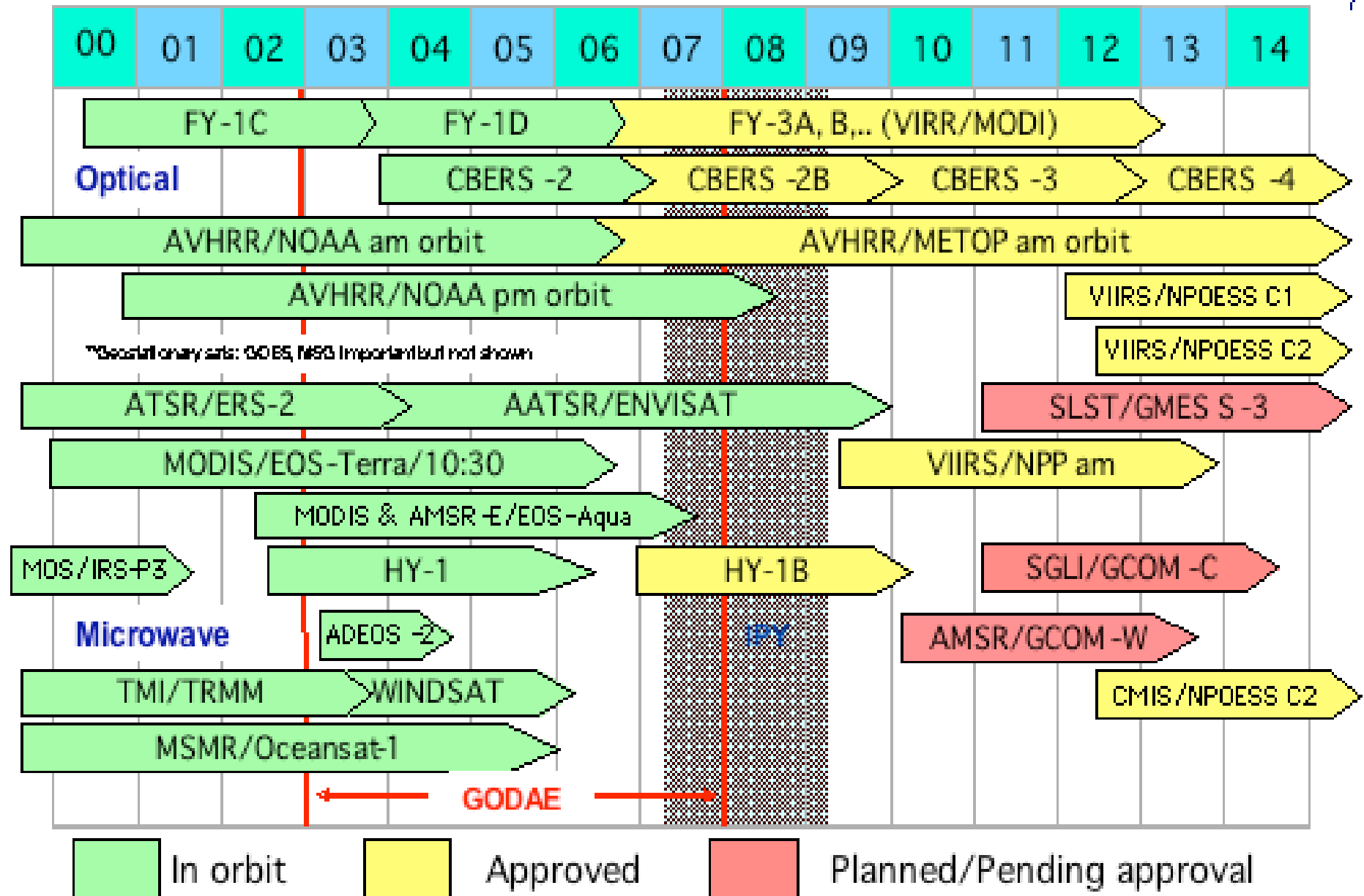


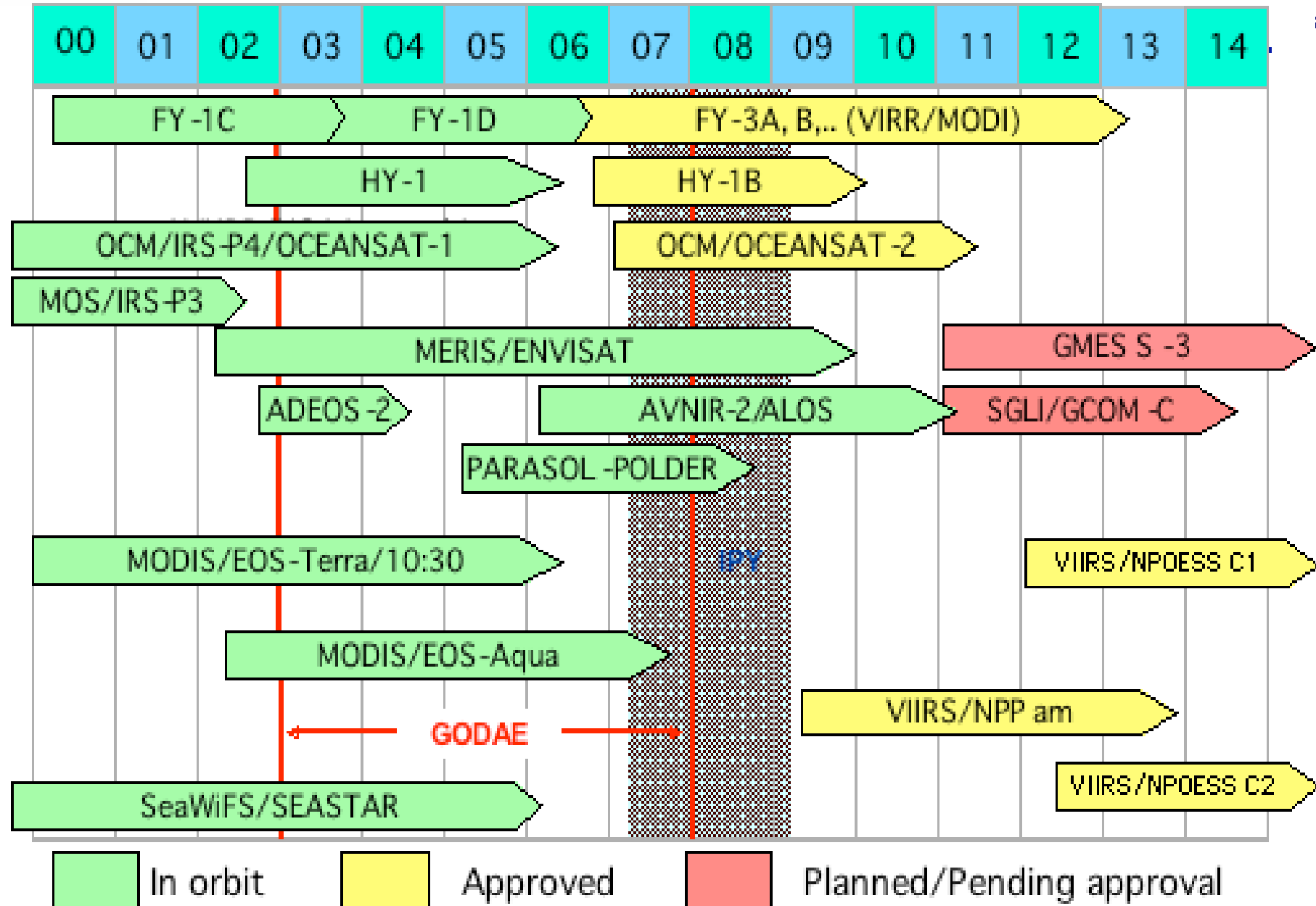
Autonomous in situ observing systems

Ocean Surface Topography

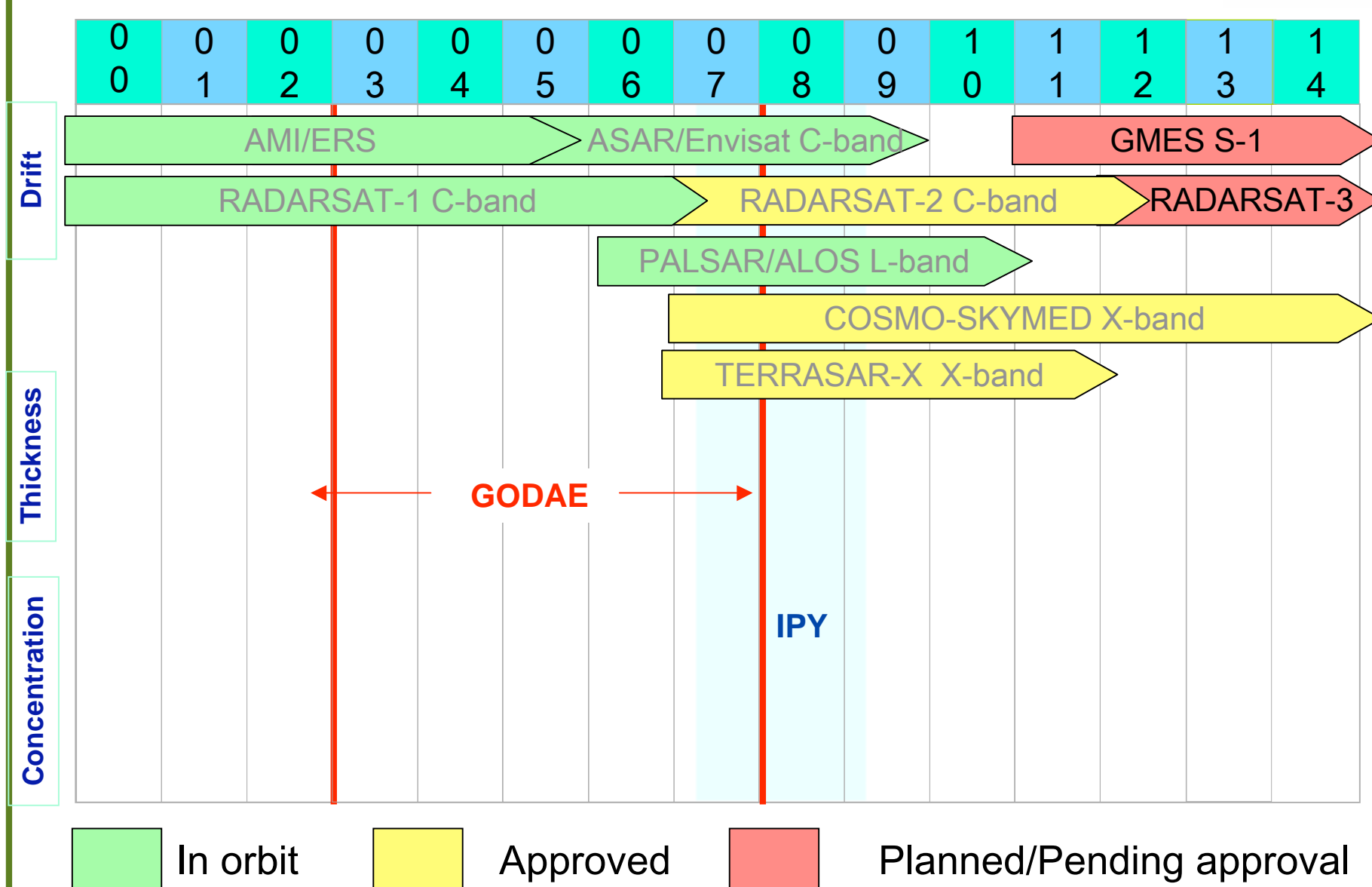
2



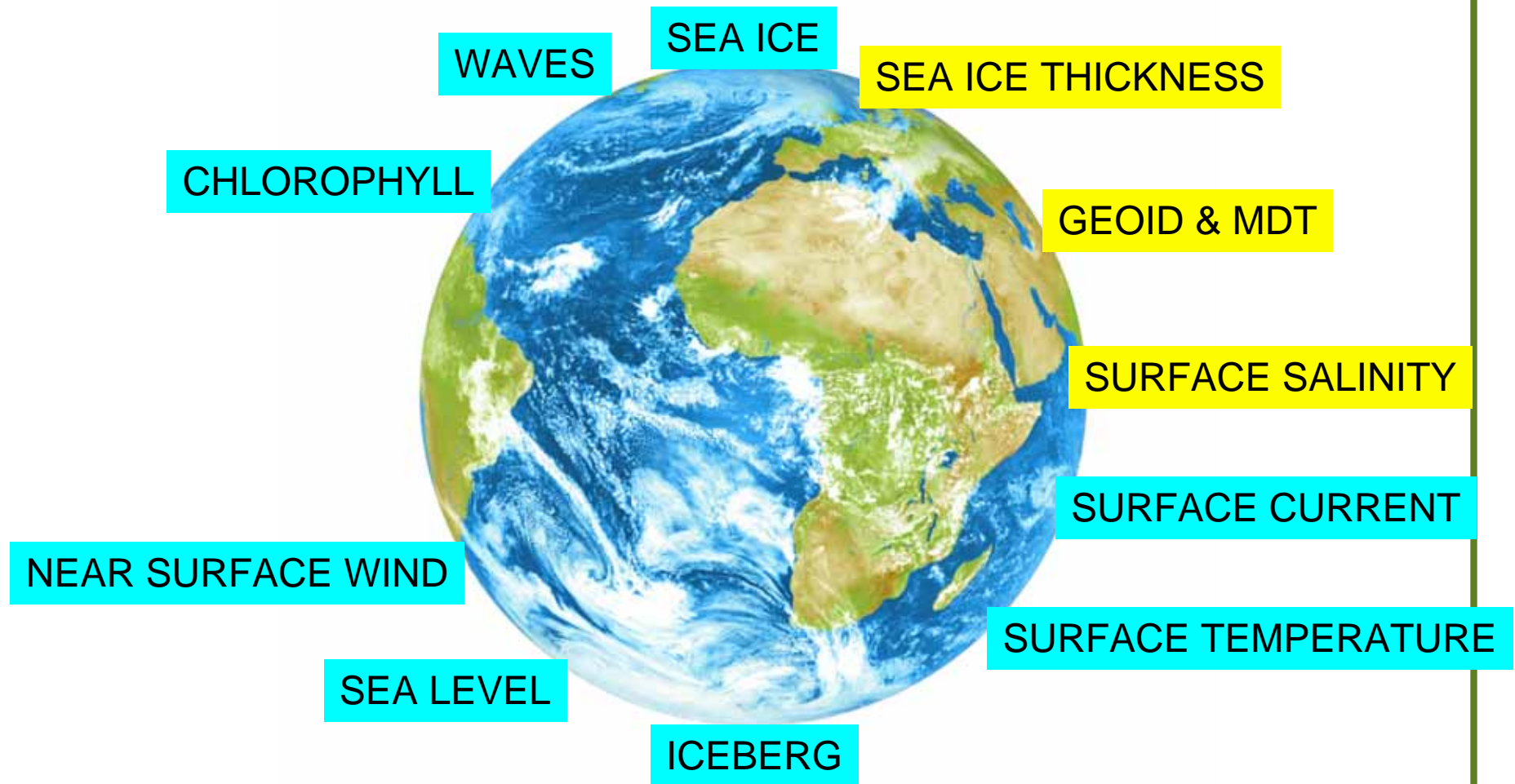




SAR for oil pollution, sea ice, sea state

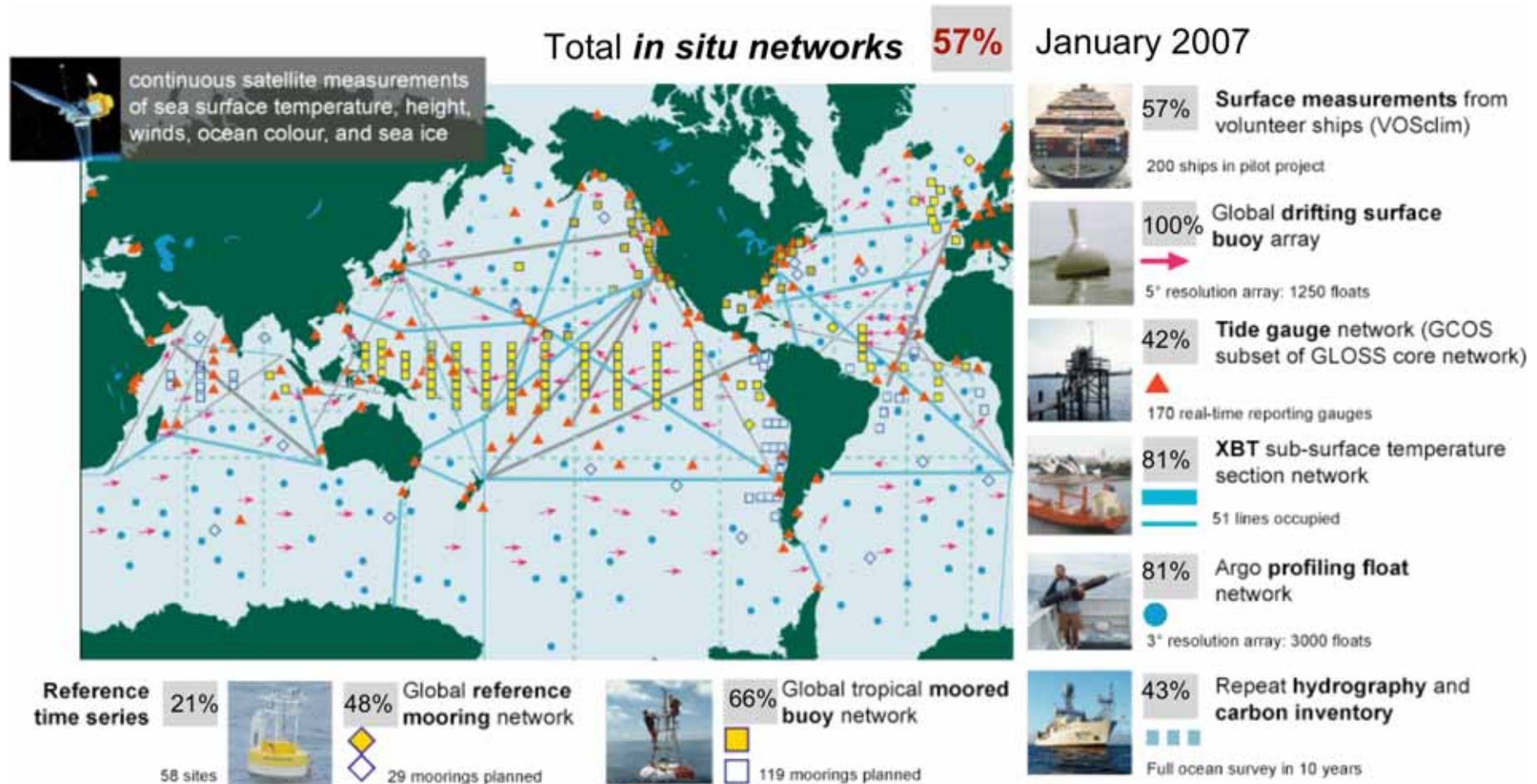


OCEAN SURFACE QUANTITIES MEASURED FROM SPACE?



Initial Global Ocean Observing System for Climate

Status against the GCOS Implementation Plan and JCOMM targets



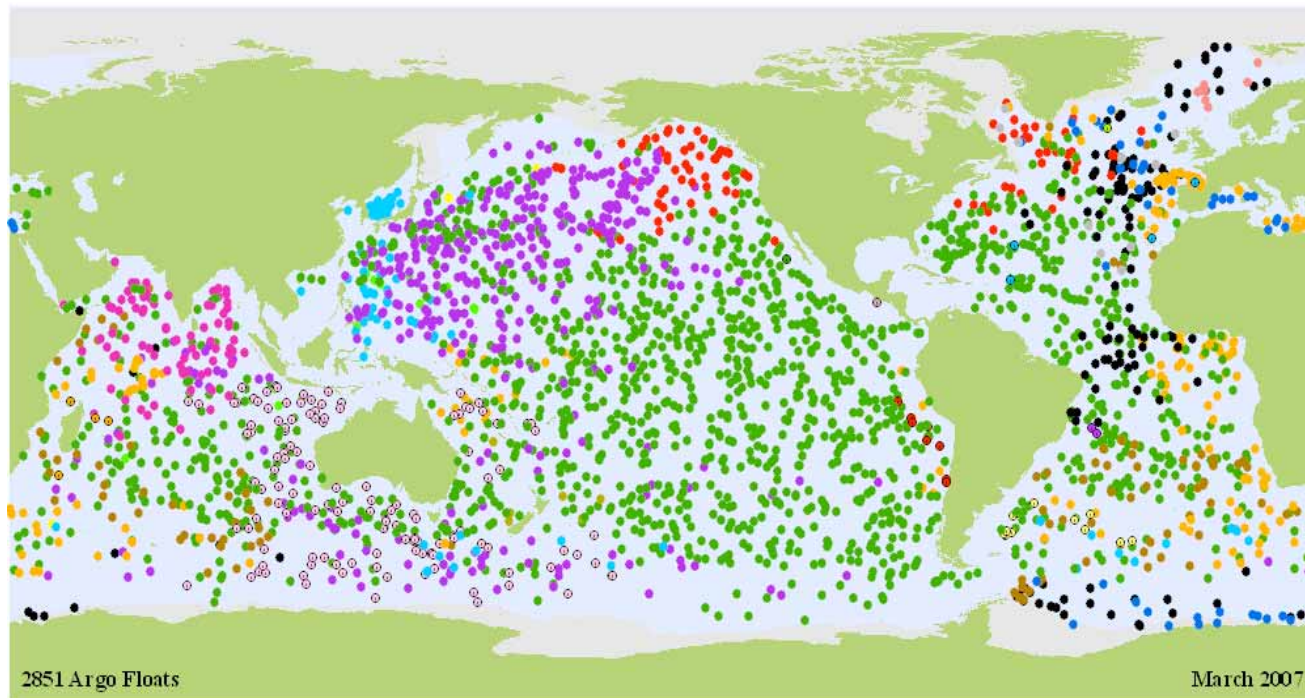
- A total of 5635 platforms are maintained globally.

ARGO

part of the integrated global observation strategy



The pre-GODAE in-situ ocean observing system was clearly inadequate for the global scope of GODAE => Argo : a joint GODAE/CLIVAR pilot project.



ARGENTINA (12)	CHILE (8)	FRANCE (179)	JAPAN (385)	NETHERLANDS (10)	SPAIN (4)
AUSTRALIA (125)	CHINA (14)	GERMANY (140)	SOUTH KOREA (102)	NEW ZEALAND (6)	UNITED KINGDOM (39)
BRAZIL (2)	COSTA RICA (1)	INDIA (79)	MAURITIUS (4)	NORWAY (8)	UNITED STATES (1533)
CANADA (89)	EUROPEAN UNION (46)	IRELAND (1)	MEXICO (1)	RUSSIAN FEDERATION (3)	

jcommops
JCOMM Operational Pilot Project

Outstanding progress thanks to international cooperation.

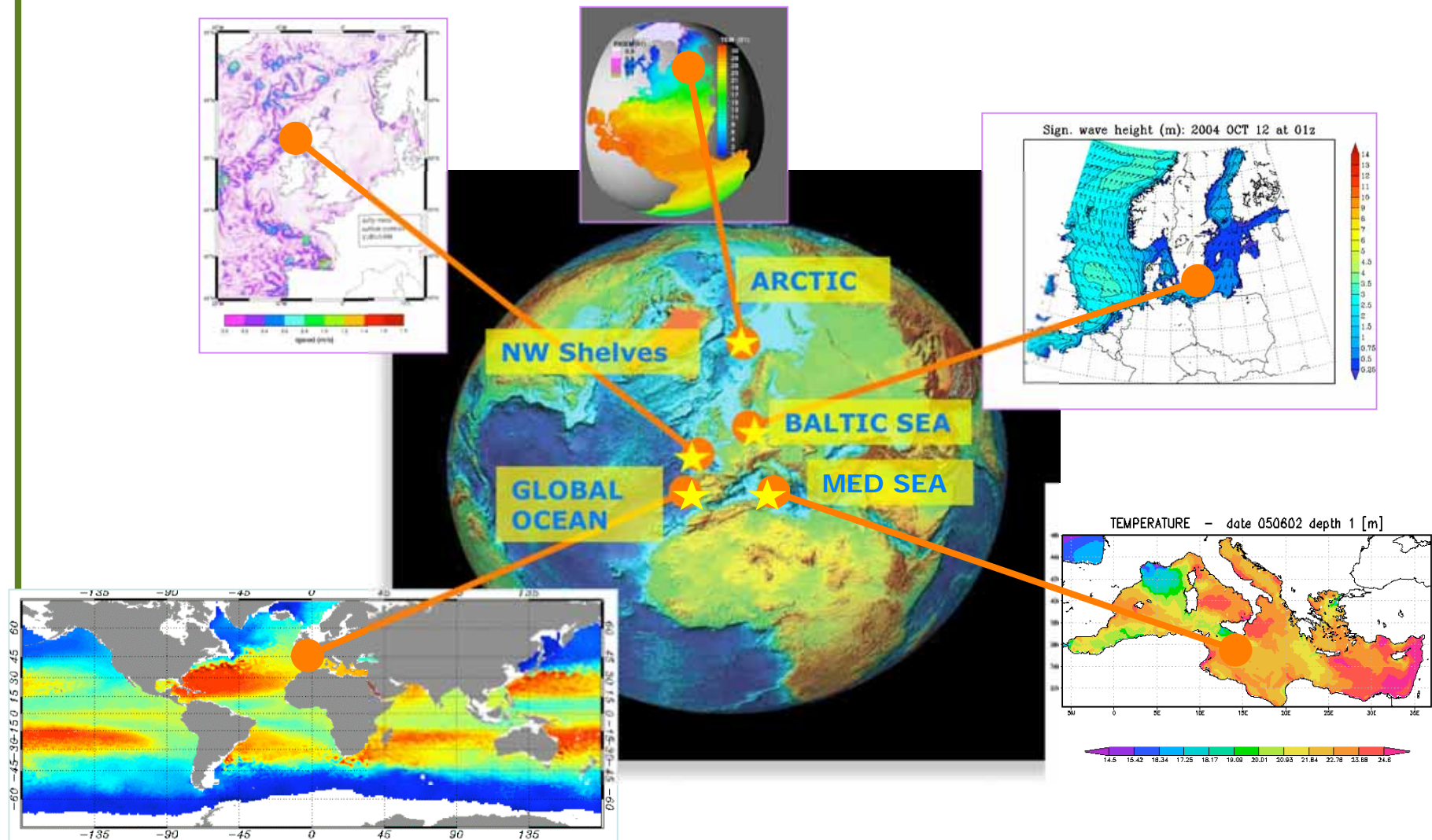
A global array (3000 floats) is now in place

An efficient data management system is in place.

Main issue is long term sustainability

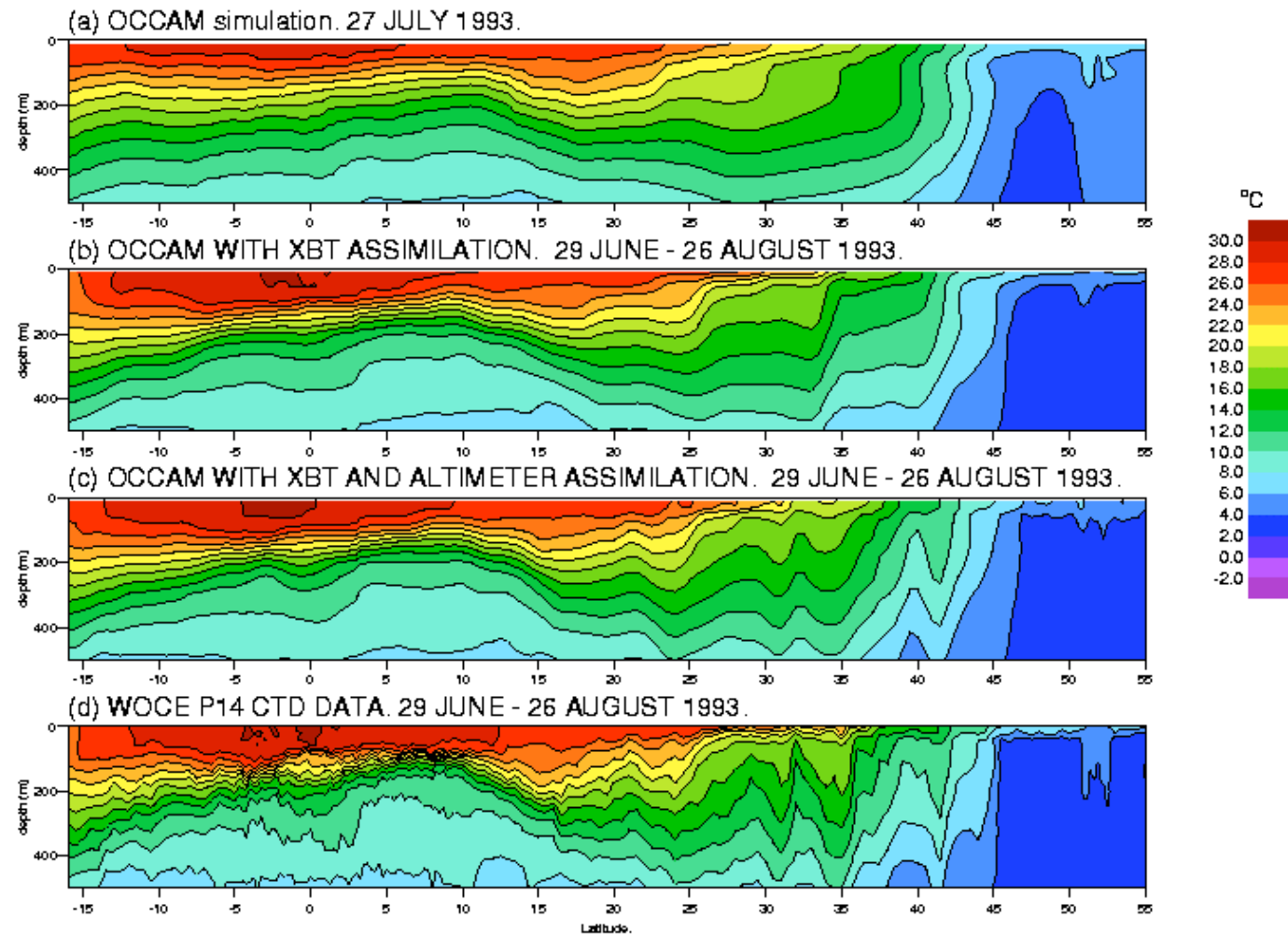
<http://argo.jcommops.org>

Bringing the MERSEA Integrated System to P.R. China



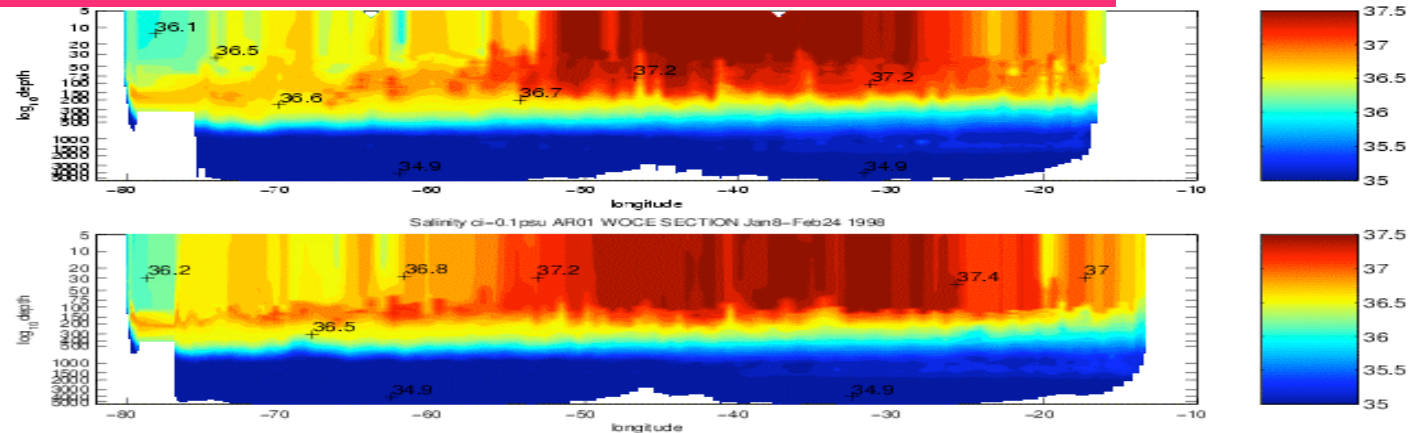
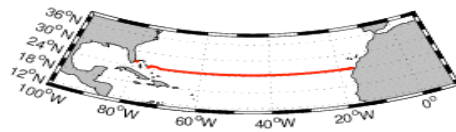
WOCE Comparison N-S Pacific Temperature section P14

**The value of data
assimilation
(K. Haines)**

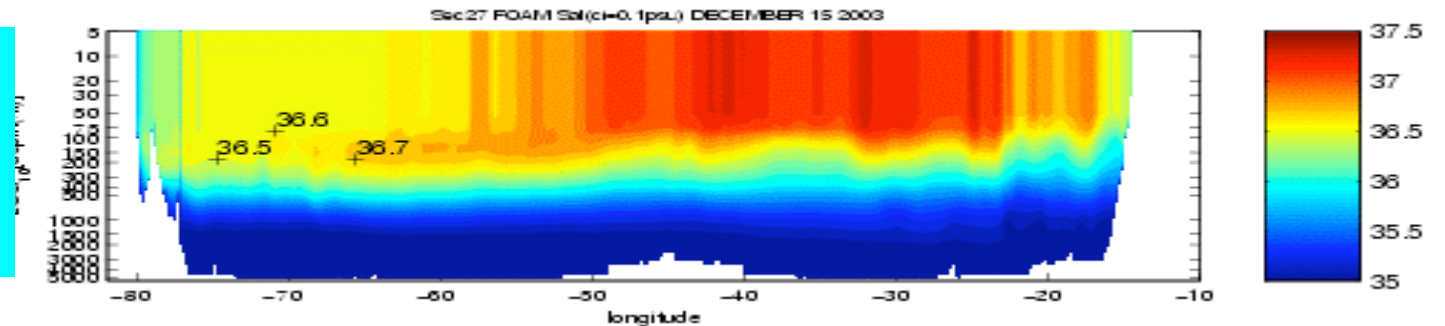


IMPACT OF ASSIMILATION OF ARGO SALINITY PROFILE

WOCE

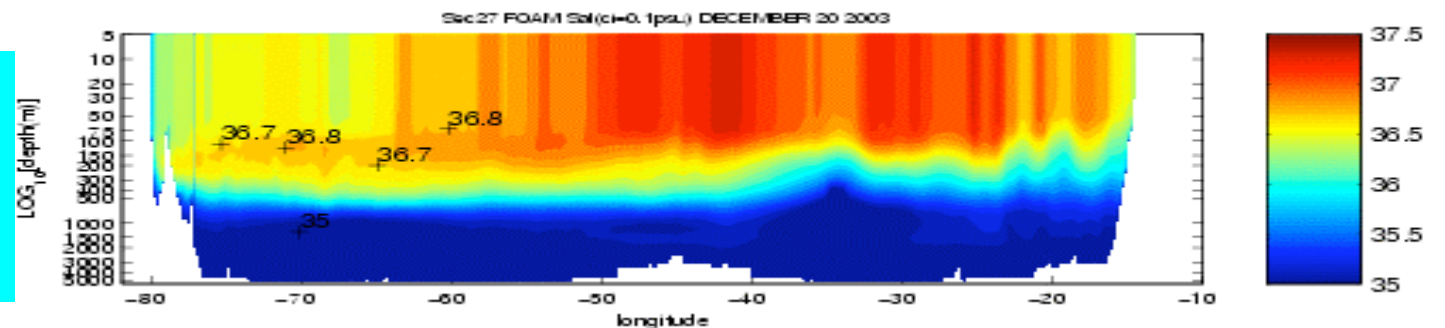


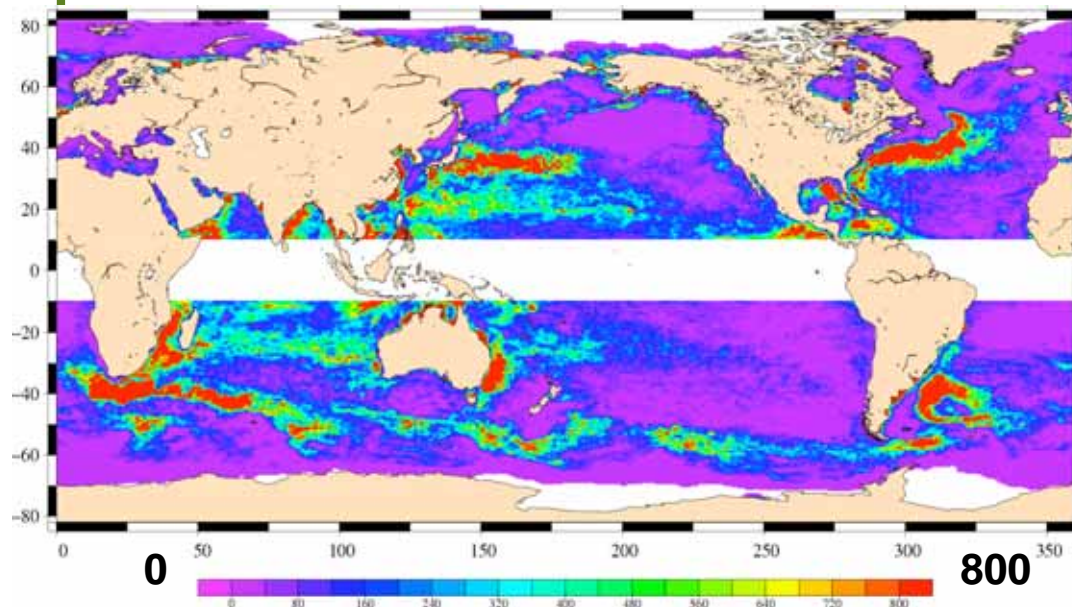
FOAM (DEC15 2003)
Before assimilation
of ARGO salinity
profiles



assimilation of ARGO salinity profiles from DEC17 2003 on

FOAM (DEC20 2003)
After assimilation
of ARGO salinity
profiles



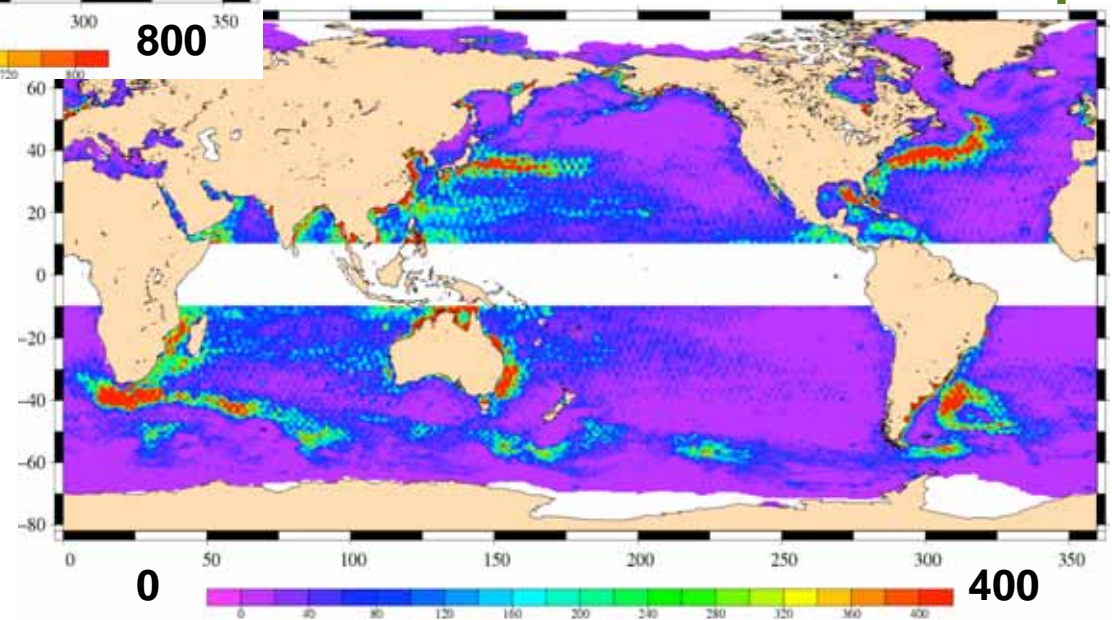


EKE
estimated with 4 satellites missions
(Jason-1, T/Pi, ERS-2/ENVISAT, GFO)

Units are in cm^2/s^2

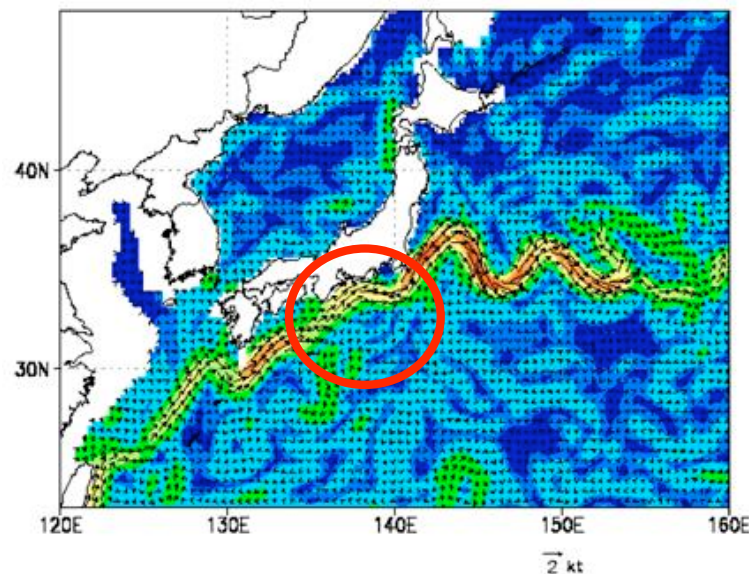
EKE differences
between 4 and 2 satellites
missions

Units are in cm^2/s^2

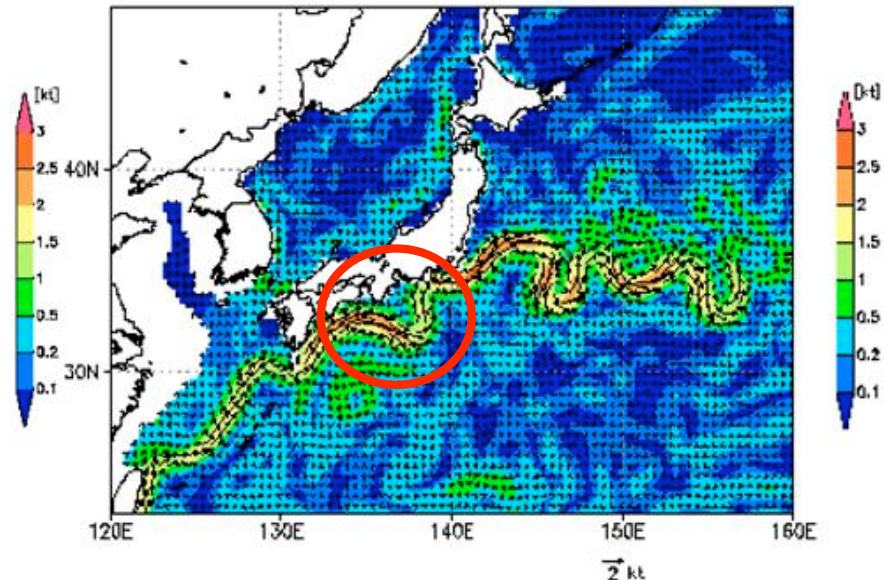


Utility: Forecast of Kuroshio Large Meander

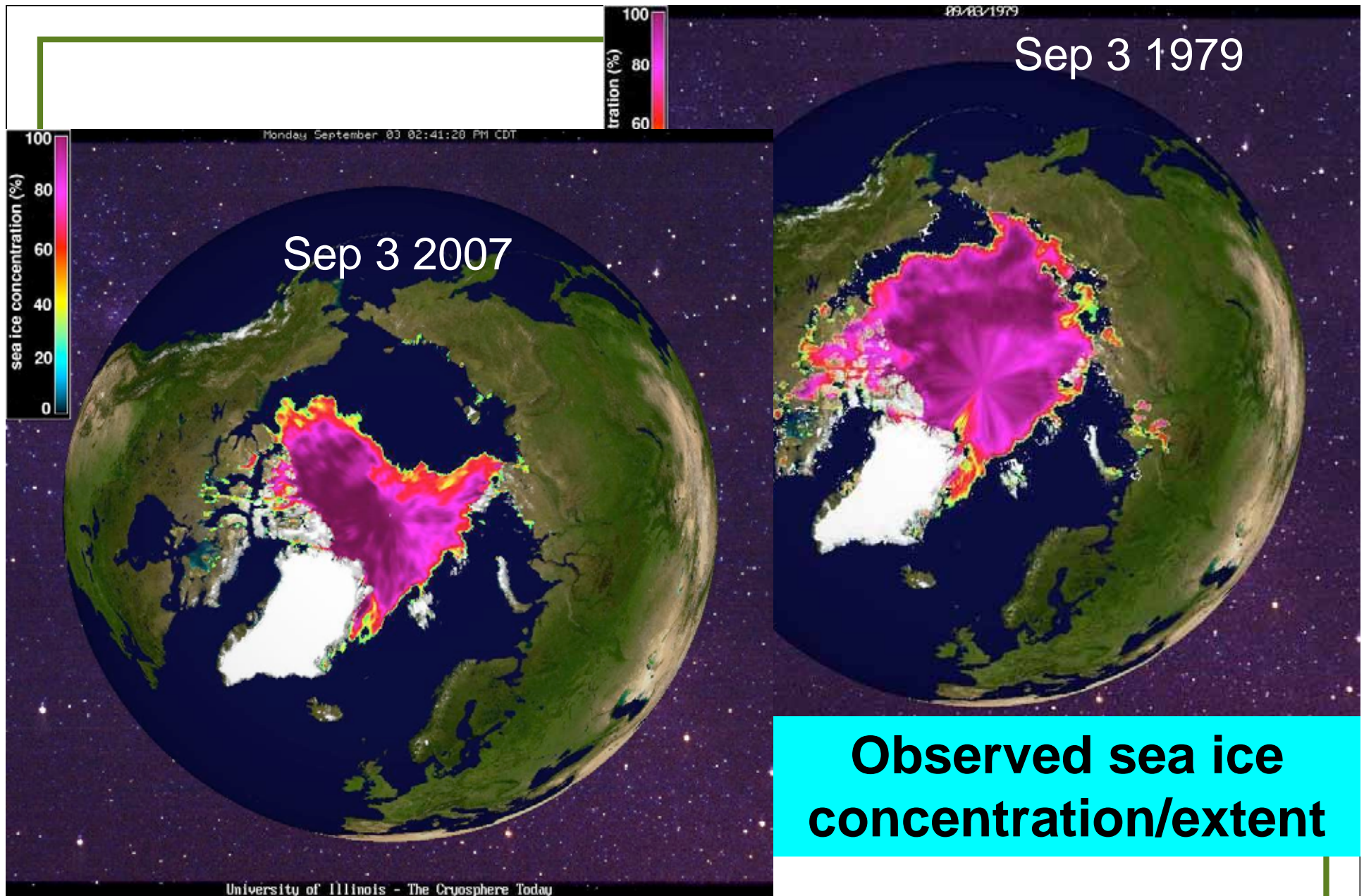
- In 2004 the Japan Meteorological Agency made a 60-day forecast of the largest Kuroshio Large Meander for 10 years
- A large meander induces strong upwelling with impacts on fisheries and the local climate
- The forecast was front-page news and praised by fisheries agencies



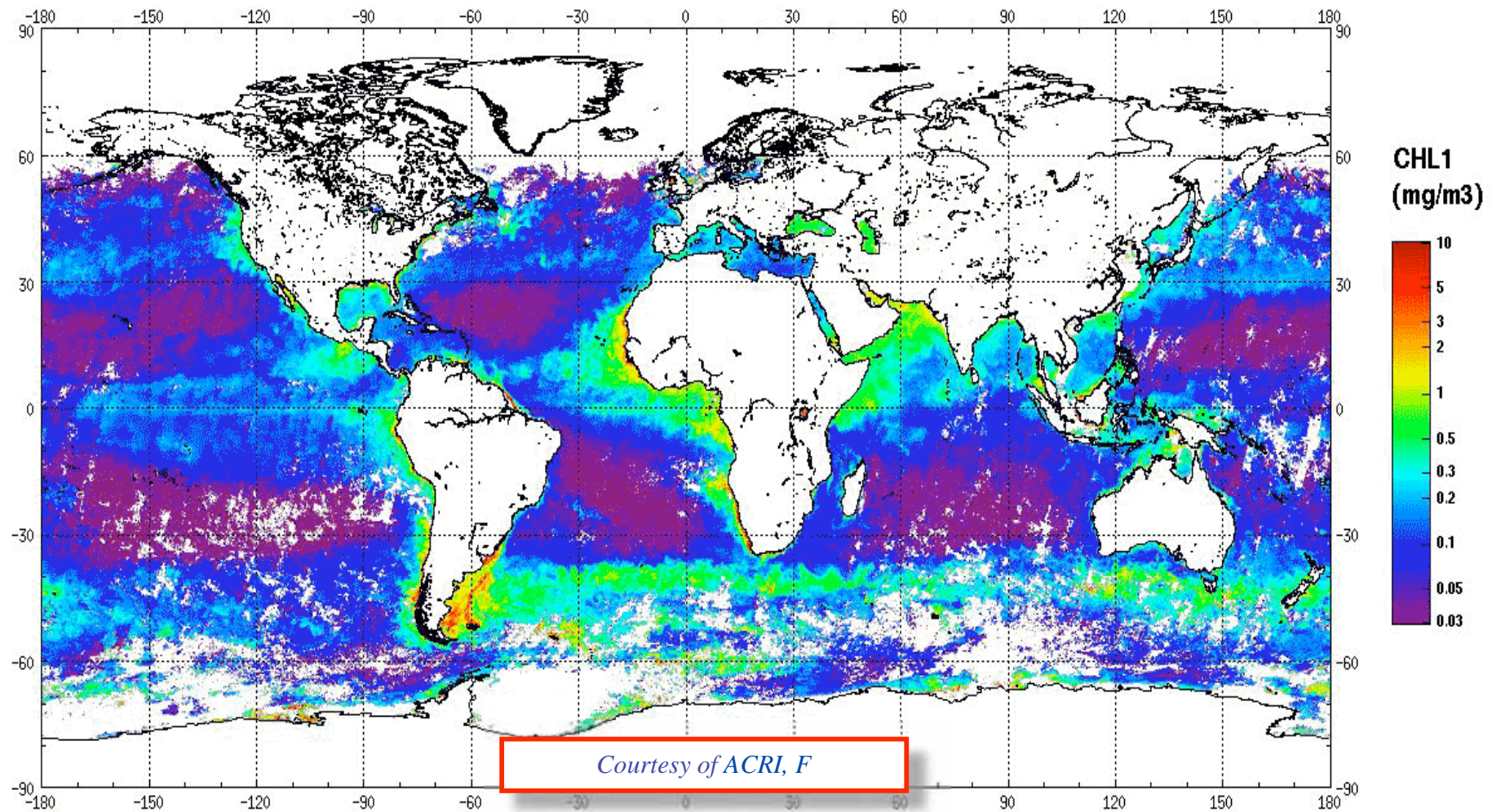
Assim/initial state (2004/05/09) Velocity field



Forecast (2004/06/30)

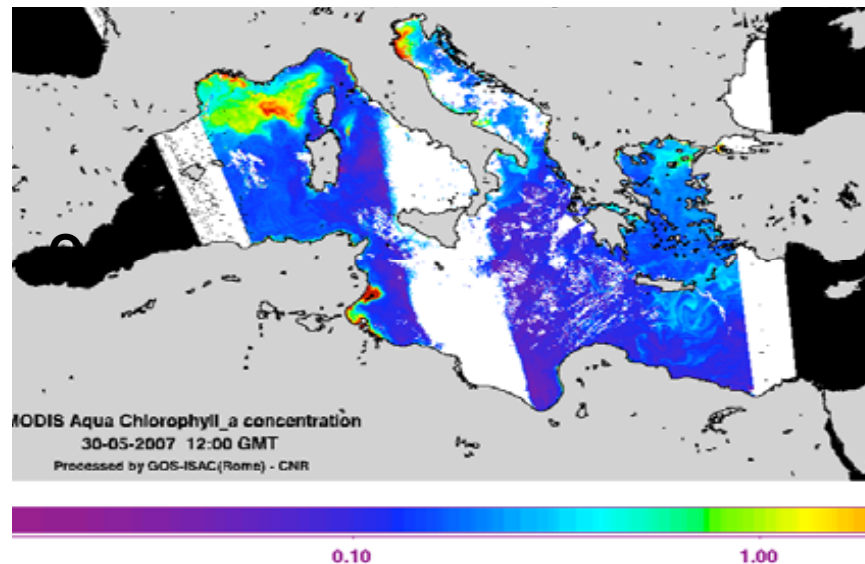
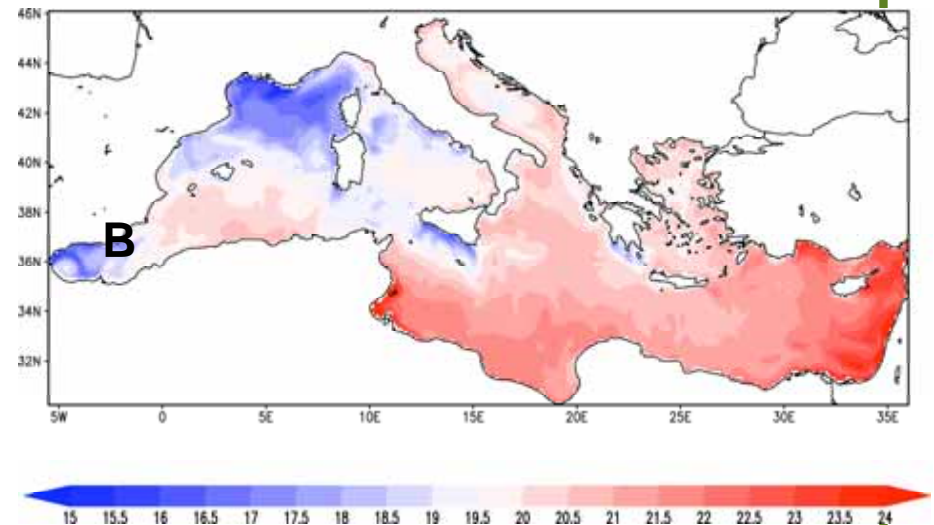
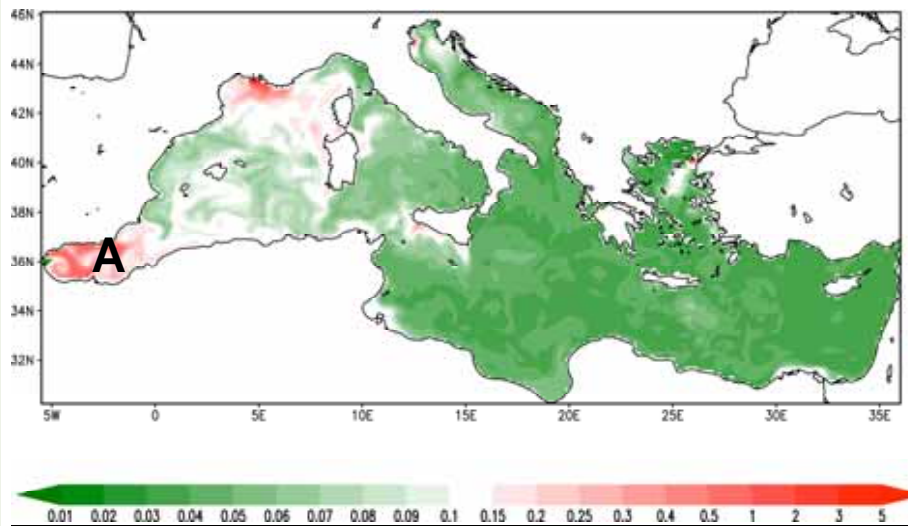


ENVISAT - MERIS
Chlorophyll-a case 1 - Global coverage - Monthly average - January 2003



Copyright ESA 2004 (processed by ACRI-ST)

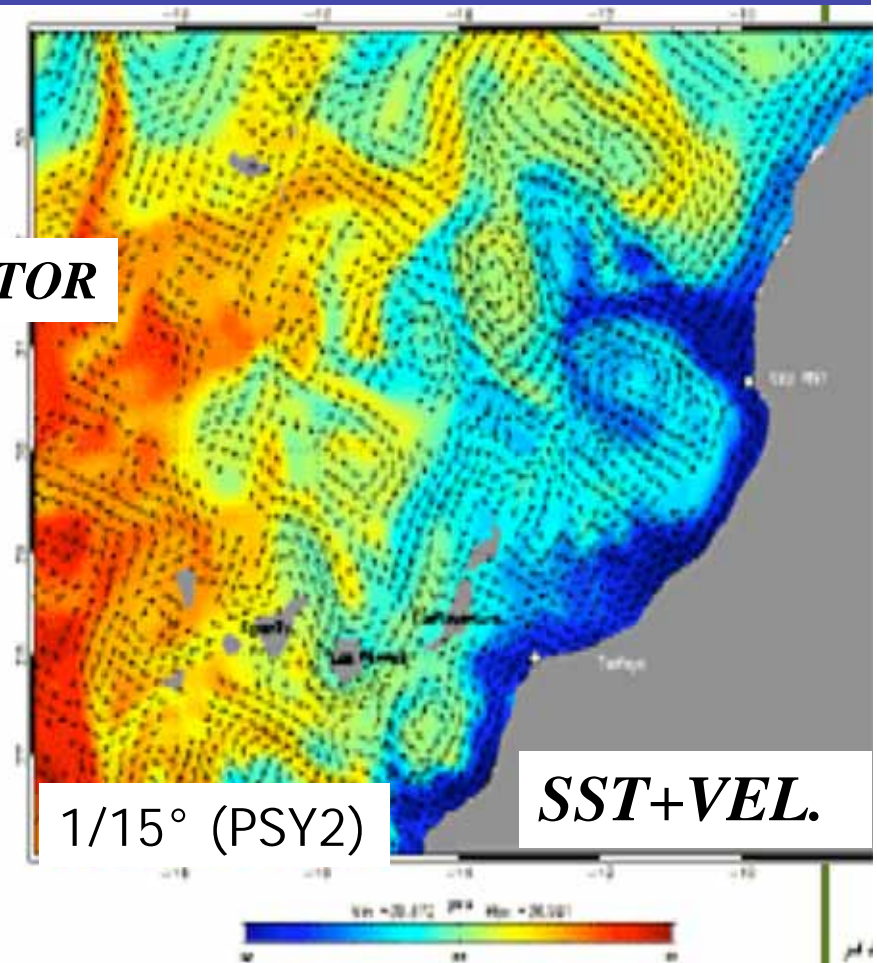
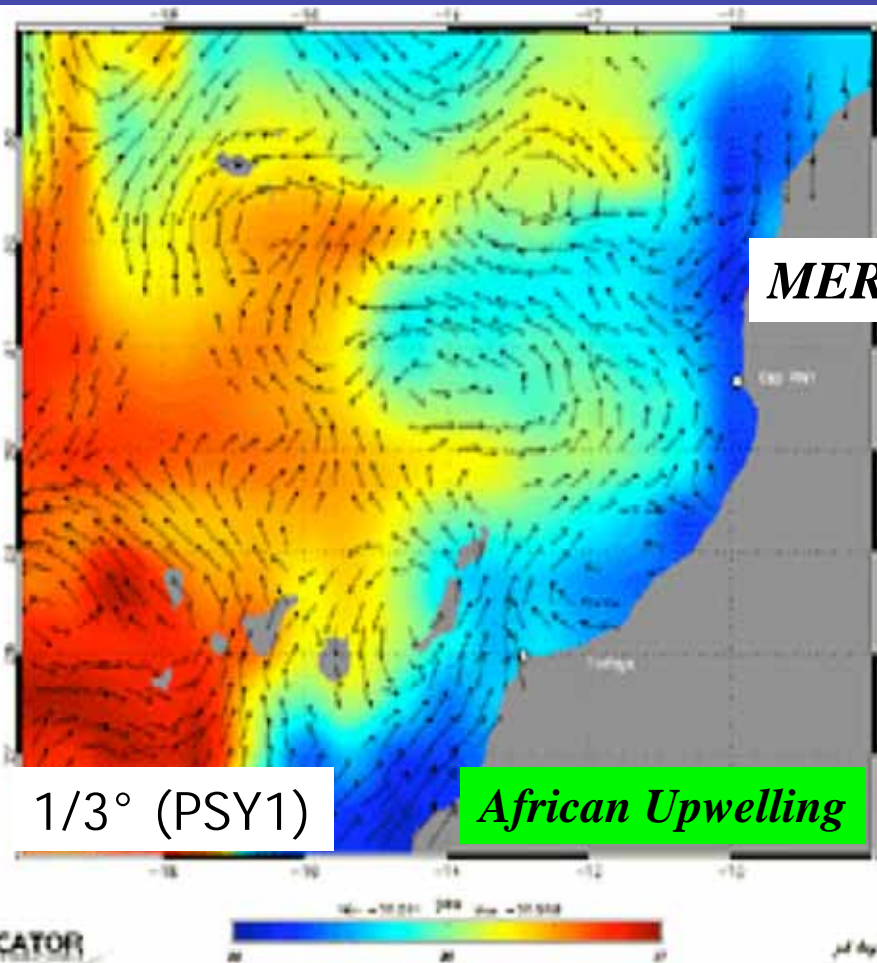
Mediterranean Sea Monitoring and Forecasting System, Courtesy N. Pinardi



May 31, 2007 forecasted surface chlorophyll (A), sea surface temperature (B). (C) shows the MODIS chlorophyll image for the same day of the forecast. The bloom in the Gulf of Lyon is correctly captured by the forecast.

COURTESY INGV, ITALY

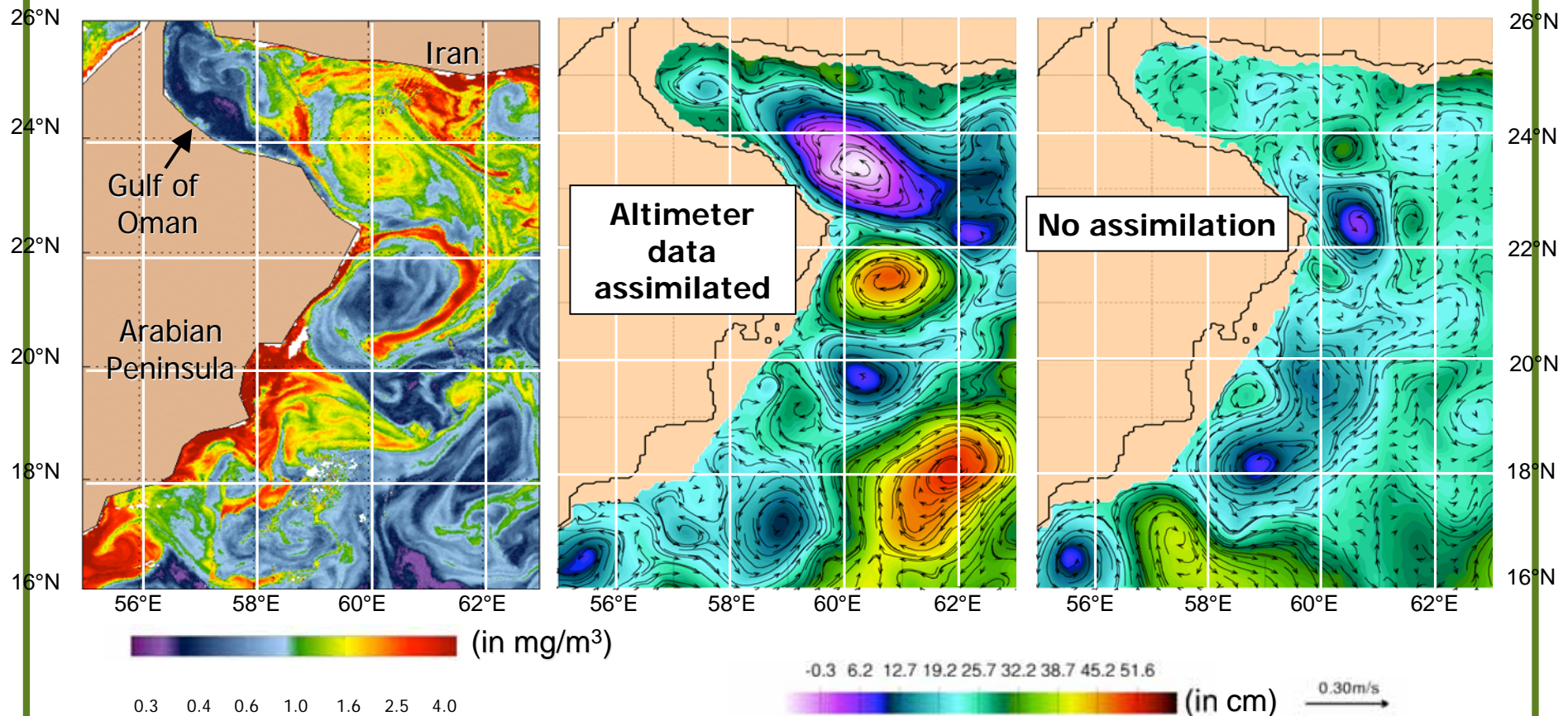
Model resolution; enhanced resolution in the vertical and horizontal to obtain reliable simulations



Feasibility: Forecasting of ocean mesoscale using altimeter data

SeaWiFS ocean color

1/32° NLOM sea surface height (SSH) and surface currents



Composite of most recent data
Oct 2-Oct 6 2002, mostly Oct 6

Oct 6 2002

Oct 6 2002

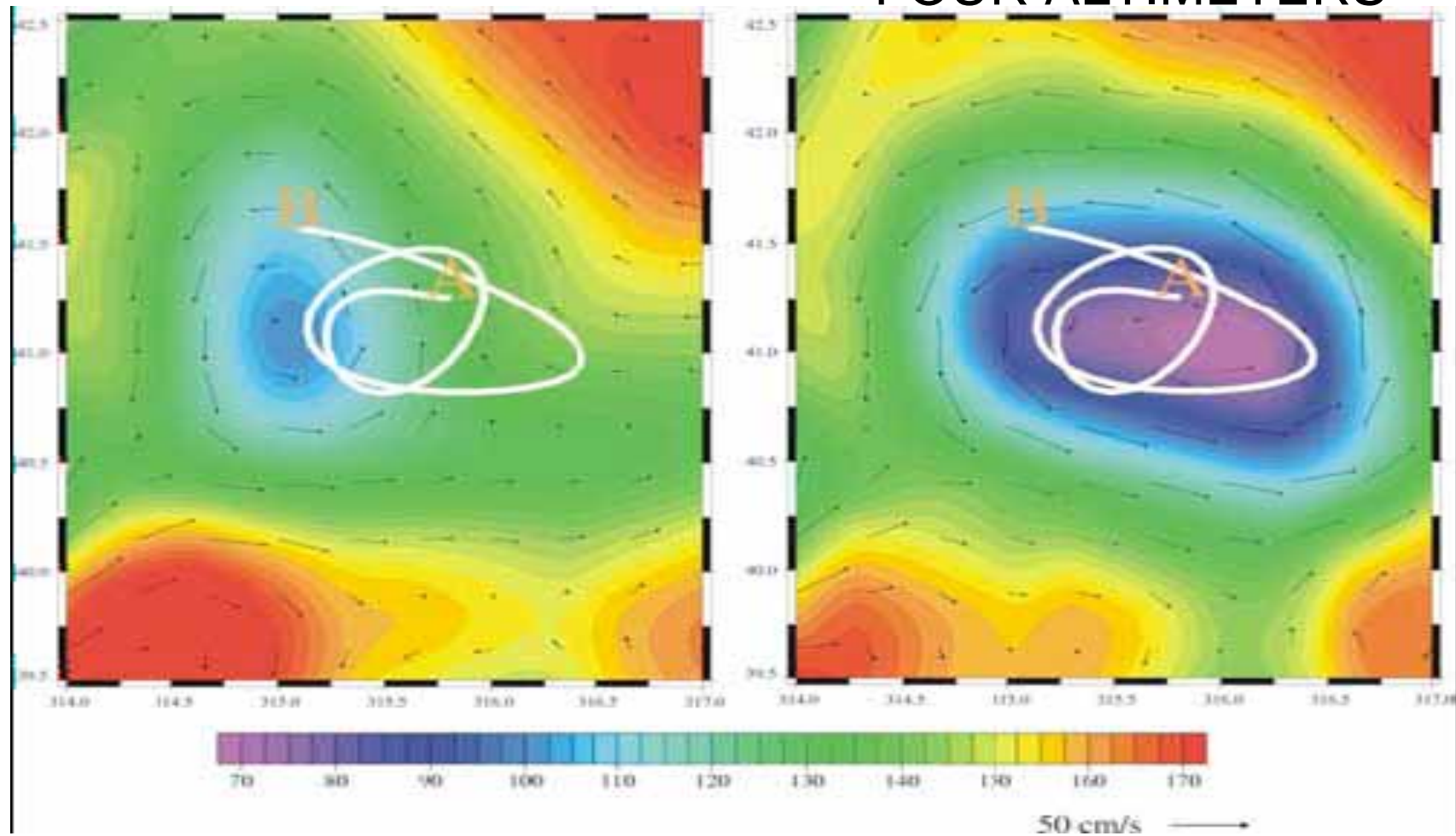
http://www.ocean.nrlssc.navy.mil/global_nlom

Shriver et al. (JMS, 2007)



TWO ALTIMETERS

FOUR ALTIMETERS



Courtesy CLS, France

KEY GEOPHYSICAL PRODUCTS



Relevance to Objectives of the Specific Program Call

State Variables	Products from		Value-added higher level derived products
	Observations	Models	
Sea surface height	V	V	Sea level
<i>3D Temperature</i>	V	V	Upper layer heat content Mixed layer depth
<i>3D Salinity</i>	V	V	Mixed layer depth
<i>Currents</i>	V	V	Transports (volume, heat and salt)
Surface winds	V		Upwelling regime
Surface waves	V	V	Extremes, SWH, Spectra, location of intense wave-current interaction
<i>Sea ice (extent, concentration, type)</i>	V	V	Ice cover, mapping origin of melting sea ice
<i>Sea ice thickness</i>	sparse, improve with Cryosat from 2010	V	Ice mass and volume
<i>Sea ice motion</i>	V	V	Sea ice deformation, Sea ice trajectories, sea ice flux
Iceberg motion	V	V	Occurrence, Simulated iceberg drift
Freshwater influx	V		River and Glacier discharges, Sea ice melting
Incoming short wave radiation	V	V	Light
<i>Chlorophyll</i>	V	V	Mostly derived from satellite observations
<i>Phytoplankton</i>	V	V	Primary production, Chlorophyll a, Diatoms, Flagellates, timing of spring bloom
<i>Dissolved inorganic nutrients</i>	sparse	V	Eutrophication
Spreading of oil spill		V	

Potential Impact

Contribution to standards

- (i) data validation and fusion from multiple sources;
- (ii) data assimilation and integrity;
- (iii) data delivery processes of observation systems (satellite, in-situ);
- (iv) interoperability and interconnection of the data processing and delivery systems;
- (v) data handling, management, dissemination, organization and related information service architectures and operation

Contribution to policy developments

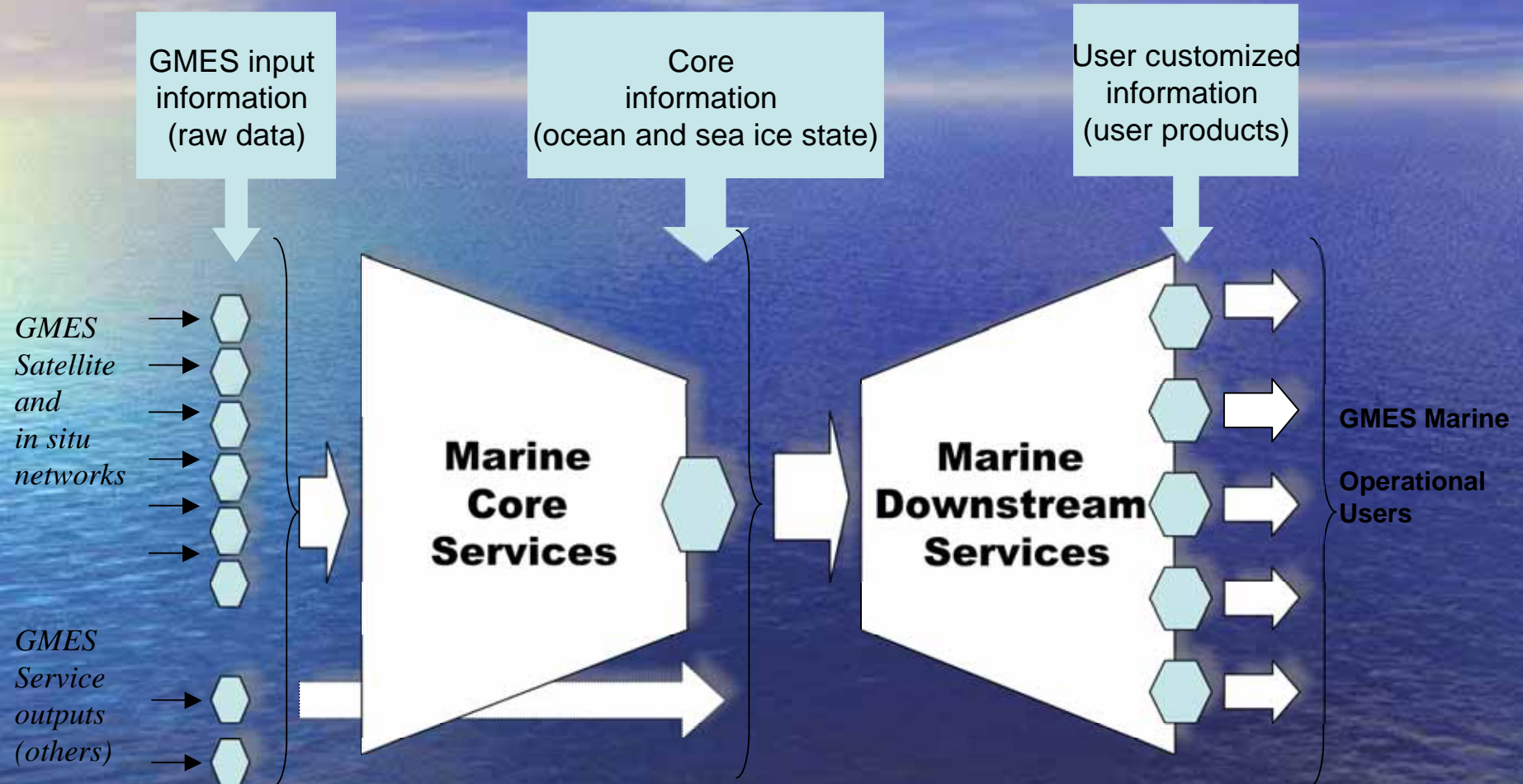
- (i) support to GEO; GEOSS, GMES and Marine Core Services
- (ii) understanding environmental factors affecting human health;
- (iii) understanding climate, and assessing and mitigating climate change impacts;

Risk assessment & related communication strategies

- (i) improving marine environmental and information and prediction;
- (ii) improving the management and protection of coastal and marine ecosystems.

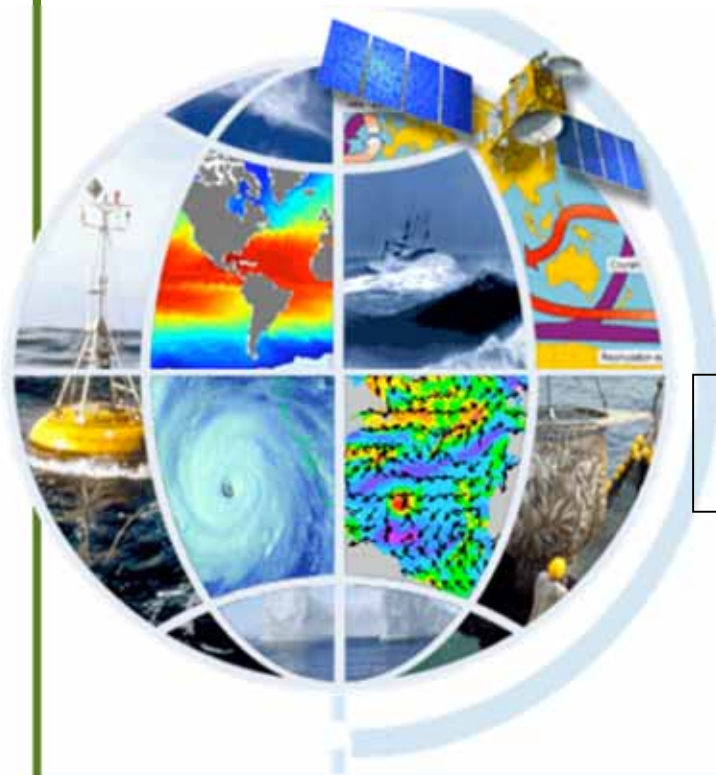
Marine Core Services for GMES:

Structure of Products, Services and Delivery system



MARINE CORE SERVICE for GMES

regular and systematic reference information on the state of the oceans and regional seas: at the resolution required by intermediate users & downstream service providers, of known



Data handling, Modelling and Assimilation



Variables: T, S, UV, SSH, ice, Chl-a, ...



Products: Catalog of reference products : pre-defined data fields, reanalysis, indicators, reports, ...



Service: Real time, Delayed Mode, On request,

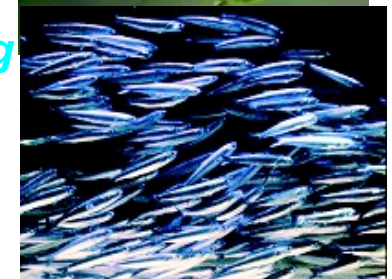
EO and Oceanography is highly relevant to the *Societal Benefit Areas* identified by GEO

- **Reducing loss of life and property from natural and human-induced disasters:** forecasting of ocean currents, waves and sea-ice, provide upper-ocean heat content as input to hurricane prediction, coastal management, support to search and rescue operations at sea.
- **Understanding environmental factors affecting human health and well-being:** coastal water quality monitoring, pollution detection monitoring, harmful algal blooms, responsible fishing strategies.
- **Improving management of energy resources:** support to offshore operations and maritime transport.
- **Understanding, assessing, predicting, mitigating, and adapting to climate variability and change:** the role of the ocean for climate development of ocean climate indicators.



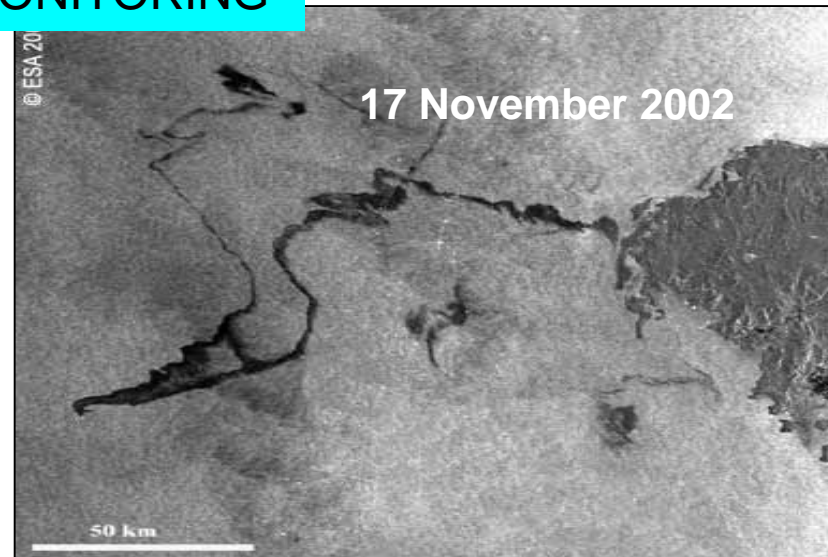
EO and Oceanography is highly relevant to several of the *Societal Benefit Areas* identified by GEO

- **Improving water resource management through better understanding of the water cycle:** role of the ocean in global water cycle, evaporation-precipitation.
- **Improving weather information, forecasting and warning:** extended weather forecasts need timely high quality ocean information.
- **Improve management and protection of coastal & marine ecosystems:** Development of ecosystem models in the coastal domains is an active area of research; their implementation and validation is ongoing.
- **Understanding, monitoring and conserving biodiversity:** operational oceanography services give the understanding of the oceanic environmental factors at the basis for ecosystem based fishery management.
- **Supporting sustainable agriculture (including fishery) and combating desertification:** the physical and biogeochemical coupling and influence on ecosystem development of importance for sustainable fishery.

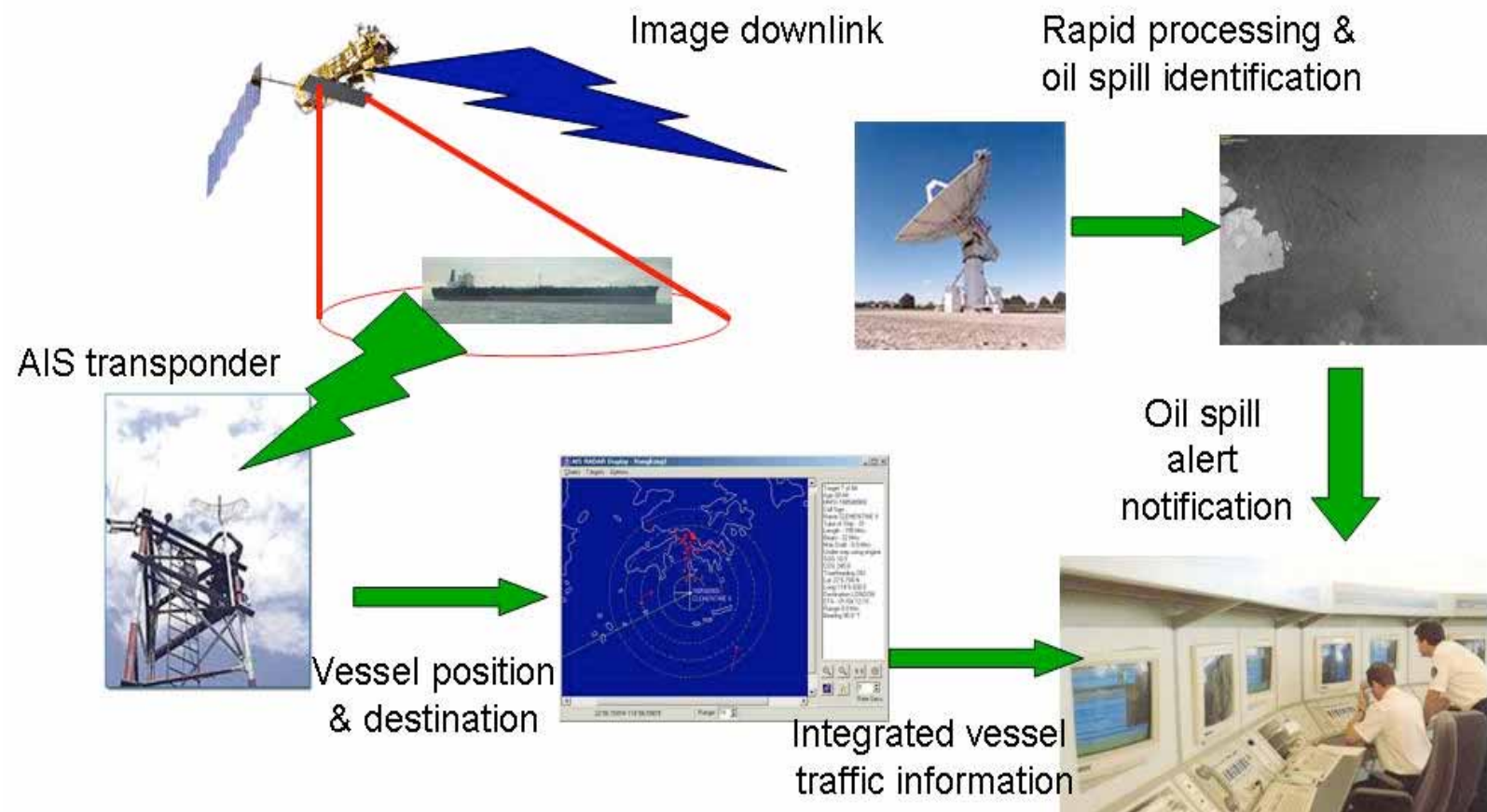




OIL SPILL MONITORING



Oil Spill detection service - EMSA



Data and Product Servers

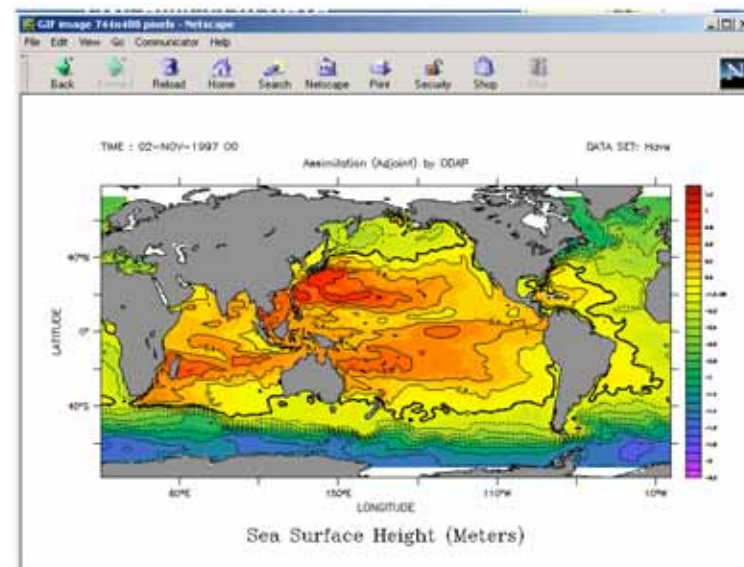
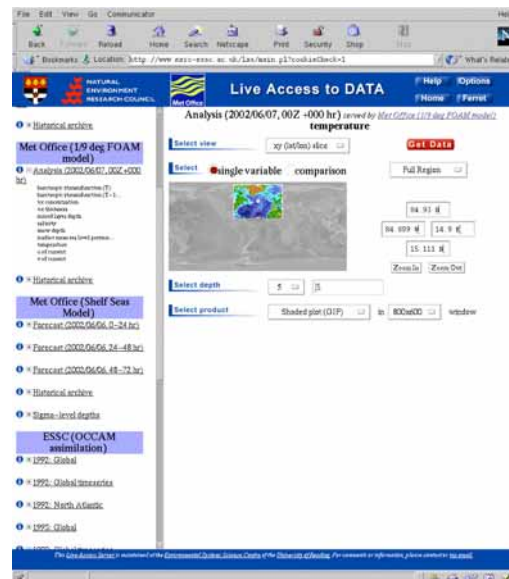
Specialized servers : SSALTO/DUACS (altimetry), Coriolis (in-situ), etc

GODAE Monterey server established to provide real-time in situ observations, atmospheric forcing, assimilation products

ECMWF analyses/forecasts available through ESSC (Reading University)

Product servers for the different GODAE centers

=> use of OpenDaP (DODS) and Live Access Server (LAS) technology



Serving gridded products

APDRC LAS 6.3 Search:

single data set

compare two

Datasets

Variables

Constraints

Output

Output Options

Previous Output

Define variable

About

1 Datasets > Public Access > Assimilated Model Output > NRL NLOM
Variable(s): SST

Select your desired view (geometry of output) and output (type of product).
Then set the 4-D region (lon-lat-depth-time) and any additional constraints.

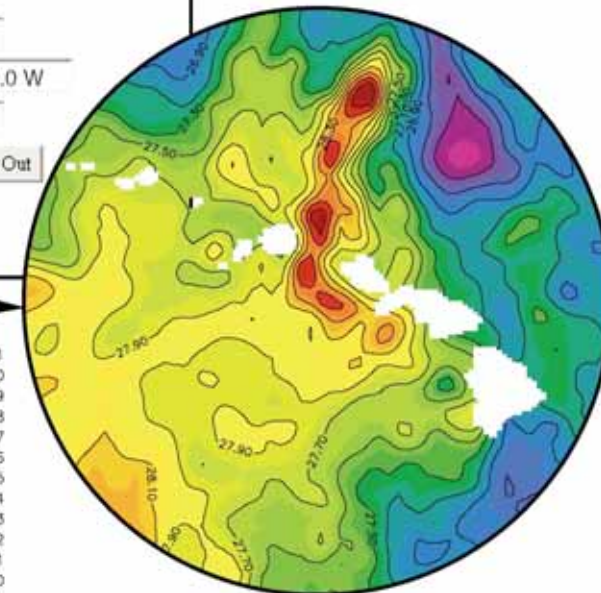
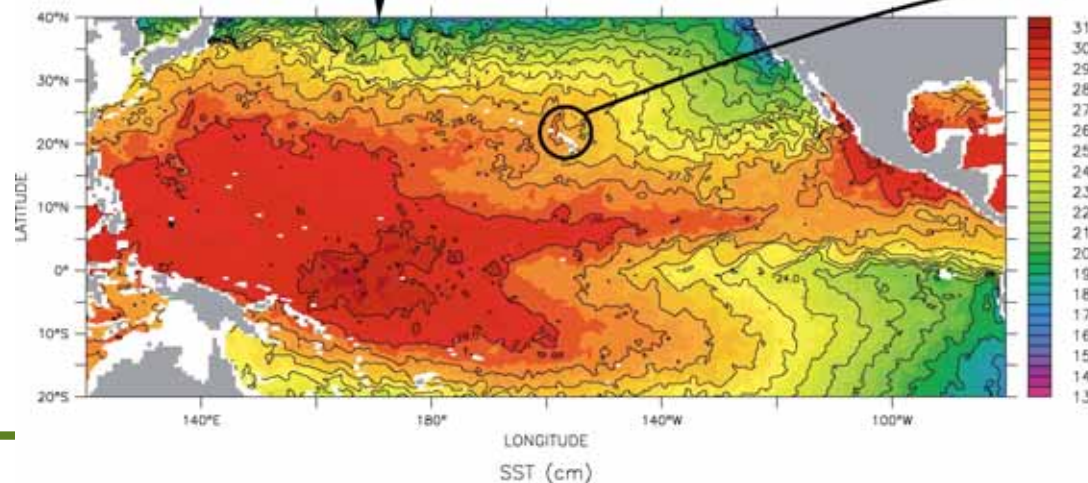
Select view: ☐ xy (lat/lon) slice ☐

Select output: ☐ Shaded plot (PostScript) ☐

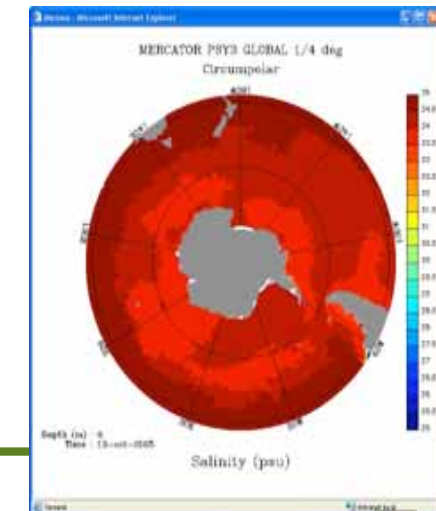
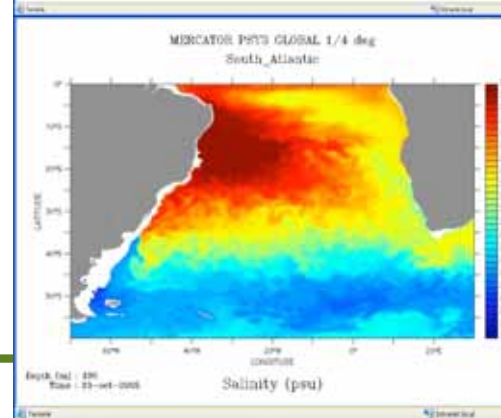
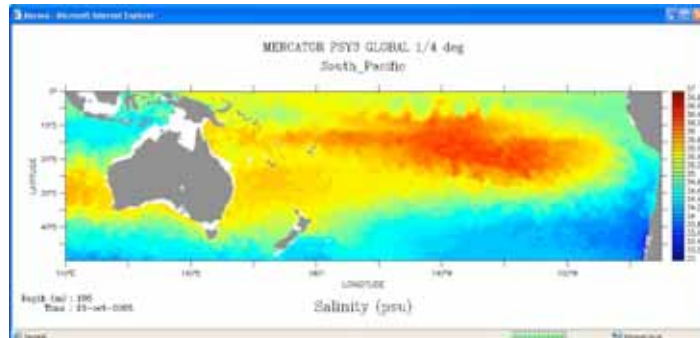
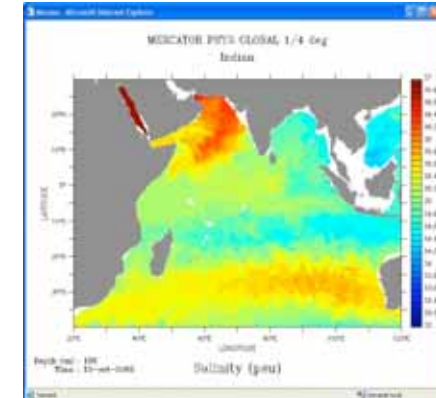
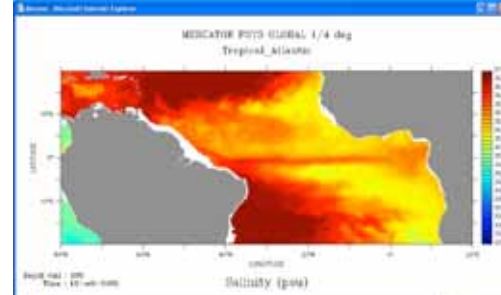
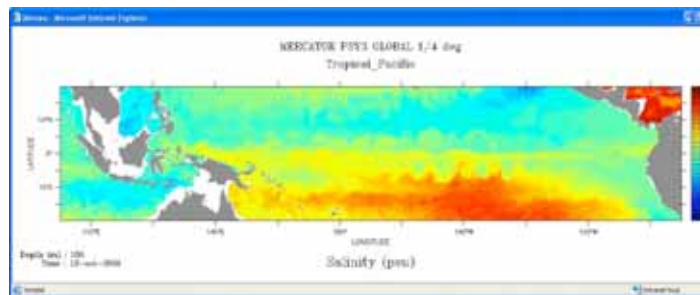
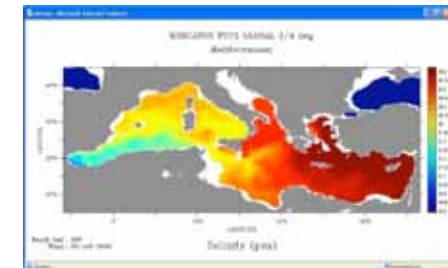
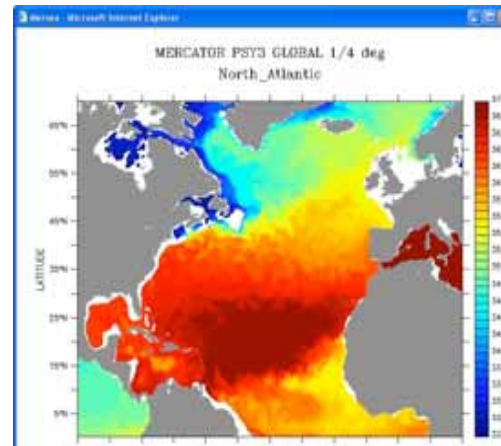
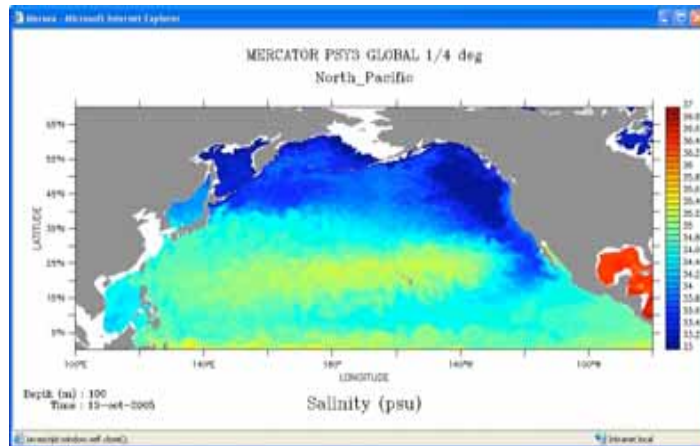
Select region: ☐ Full Region Don't use map applet

Select time: 16 Oct 2004 16-Oct-2004

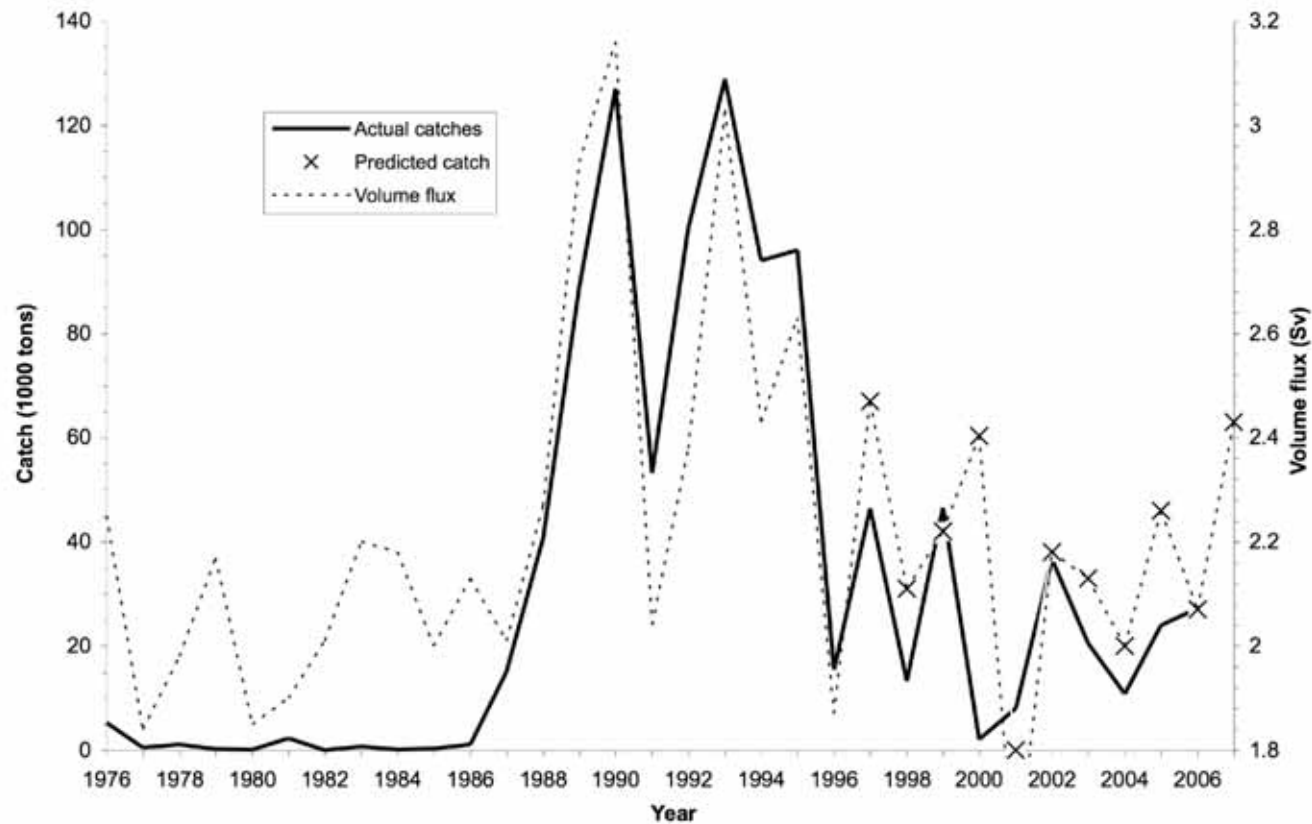
LAS



100 m Depth Salinity



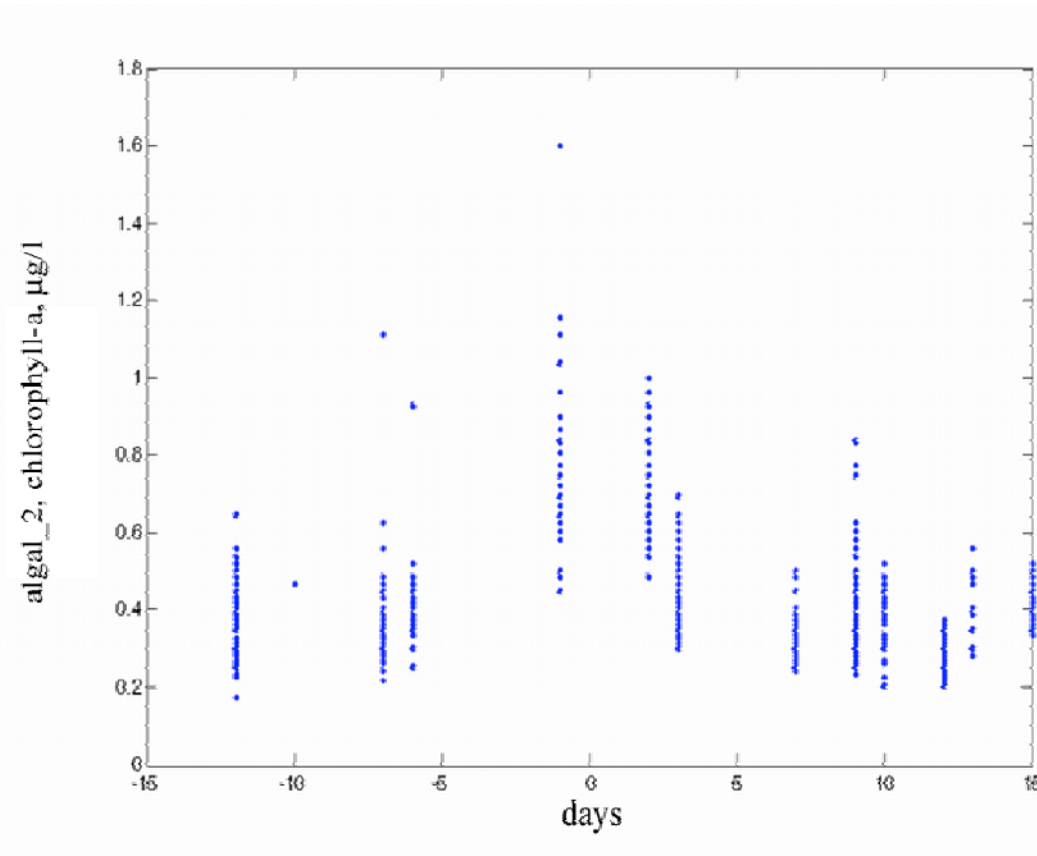
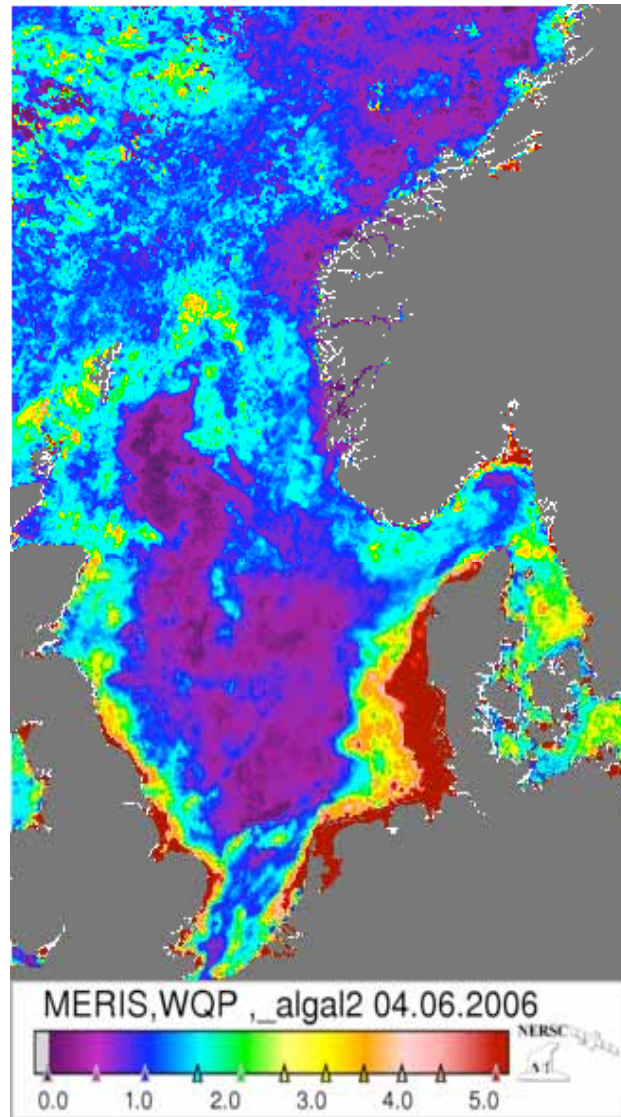
Relevance to Objectives of the Specific Program Call



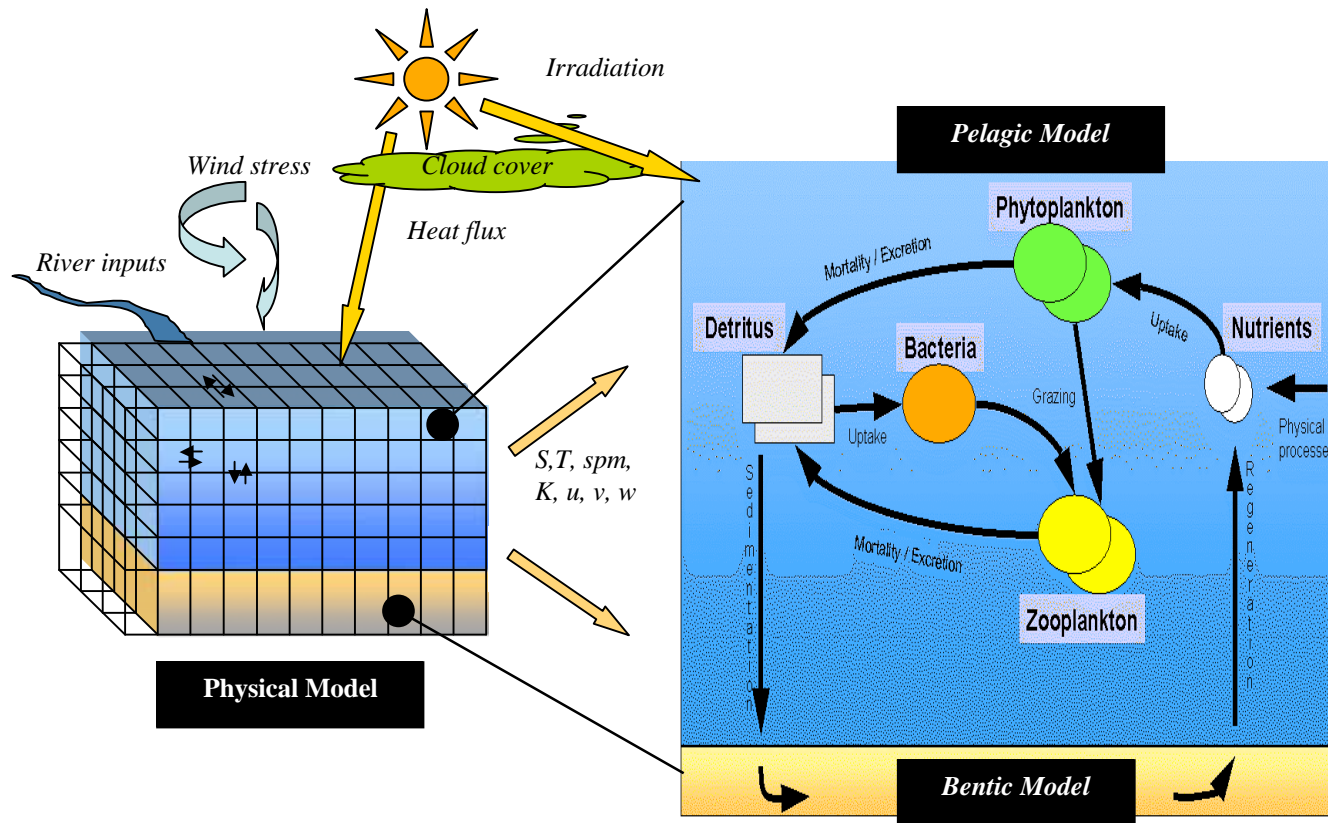
Norwegian horse mackerel catches 1976-2006, the modelled influx of Atlantic water

to the North Sea the first quarter 1976-2007 and the predicted

Relevance to Objectives of the Specific Program Call



Relevance to Objectives of the Specific Program Call



DRAFT AGENDA

DAY 2 - FRIDAY 12 OCTOBER

- **Management and Financial Status (0900-1045)**
 - Project Management, Overall budget (J.A. Johannessen)
 - Requirements, responsibilities, consortium agreement (J.A. Johannessen)

Coffee Break (1045-1115)

- **Description of Workpackages (1115-1730)**

- Key objectives
- Main working tasks
- Deliverables
- Milestones

Coffee Break (1500-1530)



WP leaders + WP partners

DRAFT AGENDA

DAY 2 - FRIDAY 12 OCTOBER (cont.)

- **Review of Action Items (1730-1800)**
- **Any Other Business (1800-1830)**
- **Agree Date and Place of 1st Progress Meeting (1830-1900)**
- **Adjourn (1900)**
- **Dinner at QiLuJingDian Restaurant (1930)**

Project overall goal and DoW review

1. PROJECT SUMMARY

2. OBJECTIVES AND STATE OF THE ART

4. RELEVANCE TO THE OBJECTIVES OF THE SPECIFIC PROGRAMME

5. POTENTIAL IMPACT

- **5.1 Contribution to standards**
- **5.2 Contribution to policy developments**
- **5.3 Risk assessments and related communication strategies**

7. WORKPLAN

- **7.1 Introduction-general description and milestones**
- **7.2 Planning and timetable**
- **7.3 Graphical presentation of work packages**
- **7.4 Work package list**
- **7.5 Deliverables list**
- **7.6 Work package descriptions**

To be substantiated in P.4

9. OTHER ISSUES/ Clarifications

Relevance to Objectives of the Specific Program Call

- Promote, implement and strengthen international cooperation between Europe and P.R. Of China
- Link between DRAGONESS and DRAGON (<http://earth.esa.int/Dragon>)
- Relevance to GOOS, GEO and GEOSS
- Relevance to completed and ongoing projects funded under GMES Space
- Advances in two-way exchange of data between Europe and China
- Two-way support to advances in data validation and calibration
- Capacity building and harmonization in the field of marine monitoring and forecasting.

POTENTIAL IMPACT

- **5.1 Contribution to standards**
- **5.2 Contribution to policy developments**
- **5.3 Risk assessments and related communication strategies**

POTENTIAL IMPACT

- 5.1 Contribution to standards
- 5.2 Contribution to policy developments
- 5.3 Risk assessments and related communication strategies

The DRAGONESS inventory will support harmonization of European and Chinese marine monitoring system in specific areas with potential socio-economic benefits, including:

- (i) understanding environmental factors affecting human health;
- (ii) understanding climate, and assessing and mitigating climate change impacts;
- (iii) improving marine environmental and information and prediction;
- (iv) improving the management and protection of coastal and marine ecosystems.

POTENTIAL IMPACT

- **5.1 Contribution to standards**
- **5.2 Contribution to policy developments**
- **5.3 Risk assessments and related communication strategies**

Support and benefits will be realized by communication with a broad range of user communities, including decision-makers, stakeholders, industry and service sectors, scientists and educators, and the general public. The project will also provide potential impact on important cross-topics such as:

- data validation and fusion from multiple sources;
- data assimilation and integrity;
- data delivery processes of observation systems (satellite, in-situ);
- interoperability and interconnection of the data processing and delivery systems;
- data handling, management, dissemination, organization and related information service architectures and operation.

Workplan

- **7.1 Introduction-general description and milestones**
- **7.2 Planning and timetable**
- **7.3 Graphical presentation of work packages**
- **7.4 Work package list**
- **7.5 Deliverables list**
- **7.6 Work package descriptions**

Planning and timetable

[illegible]

Work Package List, Person-months and Deliverables

WP No.	WP TITLE	Lead contractor	Person months	Start month	End month	Deliverable number
0	Management and Coordination	NERSC	2,5	1	36	D0.1
		ORSI	3			D0.2 D0.3
1	Review and utilization of in-situ observing system	ORSI/ NERSC	18,9	1	34	D1.1 D1.2 D1.3
2	Review and utilization of spaceborne observing system	ORS/ ORSI	18,6	1	34	D2.1 D2.2 D2.3
3	Review of level of data integration and information management	ORSI/ IFREMER	24,7	1	34	D3.1 D3.2 D3.3
4	Review of ocean and coastal information products and services	NMEFC/ CLS	32,1	1	34	D4.1 D4.2 D4.3
5	Capacity building in view of gaps and eventual European capabilities	MOST / GKSS	22,8	6	36	D5.1 D5.2 D5.3
6	Workshop, Summer school and Symposium	NERSC / NZC/ ORSI	12,6	6	36	D6.1 D6.2 D6.3
	Total (person months)		135.2			

Deliverables list

Deliverable number	Deliverable Title	Delivery month (#)	Nature RE: Report	Dissemination level PU:Public
D0.1	First Annual report	12	RE	PU
D0.2	Second Annual report	24	RE	PU
D0.3	Final DRAGONESS report	36	RE	PU
D1.1	1 st , 2 nd and final report on existing in situ observing systems, methods and protocols with recommendations to fill possible gaps and harmonize measurement protocols.	12	RE	PU
D1.2		24	RE	PU
D1.3		34	RE	PU
D2.1	1 st , 2 nd and final report on existing spaceborne systems, their performance, algorithms and data processing procedures with recommendations for harmonizing data products.	12	RE	PU
D2.2		24	RE	PU
D2.3		34	RE	PU
D3.1	1 st and 2 nd report on available data + information systems including the identification of gaps and a strategy to develop integrated systems. Report on methods for use of data in models	12	RE	PU
D3.2		24	RE	PU
D3.3		34	RE	PU
D4.1	1 st and 2 nd report on current ocean/coastal information services in P.R. China. Report on the service structure for Chinese monitoring for coastal environment and security.	12	RE	PU
D4.2		30	RE	PU
D4.3		34	RE	PU
D5.1	1 st , 2 nd and final report on existing gaps and a strategy and recommendations to build up the capacity by training and education	12	RE	PU
D5.2		24	RE	PU
D5.3		34	RE	PU
D6.1	Workshop report	12	RE	PU
D6.2	Summer school /CD-ROM for lecture material	24	RE	PU
D6.3	Final symposium report	34	RE	PU

SCIENTIFIC SUPPORT ACTION



DRAGON in support of harmonizing European and Chinese marine monitoring for Environment and Security System

Making an inventory of Chinese and European capacities of marine monitoring for environment and security including routine use of Earth observation data.

<Deliverable number and name>

<Document ID>

<Issue number>

Project No. 030902

Sixth Framework Programme

Priority GMES: Aeronautics and Space



Start date of project: 01/03/07

Duration: 36 months

Project coordinator name: Dr. J. A. Johannessen

Project coordinator organisation name: Nansen Environmental and Remote Sensing Center

Document Release Sheet

<i>Book captain:</i>	Name (Company)		<div>Sign</div> <div>Date</div>	
<i>Approval</i>	Task Manager (Company)		<div>Sign</div> <div>Date</div>	
<i>Endorsement:</i>	Coordinator (NERSC)		<div>Sign</div> <div>Date</div>	
<i>Distribution:</i>	All DRAGONESS consortium, or Sub-task members, or Selected partners			

Work package descriptions

To be provided in details by each WP leader

Other Issues and Clarifications

Management and Financial Status

6. PROJECT MANAGEMENT AND EXPLOITATION/DISSEMINATION PLANS

- 6.1 Project management**
- 6.2 Plan for using and disseminating knowledge**
- 6.3 Raising public participation and awareness**

8. PROJECT RESOURCES AND BUDGET OVERVIEW

- 8.1 Efforts for the full duration of the project**
- 8.2 Overall budget for the full duration of the project**
- 8.3 Management level description of resources and budget**

PROJECT MANAGEMENT AND EXPLOITATION/DISSEMINATION PLANS

- 6.1 Project management**
- 6.2 Plan for using and disseminating knowledge**
- 6.3 Raising public participation and awareness**

PROJECT MANAGEMENT EXPLOITATION/DISSEMINATION PLANS

Project management

NERSC will coordinate the project with **Prof. Johnny A. Johannessen (NERSC)** as the formal responsible project coordinator vs. the European Commission.

The project coordination within China will be strengthened with **Prof. Ming-Xia HE (ORSI/OUC)** acting as coordinator for the Chinese participation.

Assistant coordinating institutes are Ifremer (Dr. Jean-Francois Piollé) and ORSI/OUC (Dr. Lei Guan).

The project coordinators will act as the overall project managers and will be the main points of contact between the European Commission and the European and Chinese project partners

Workpackage List and Leaders

Work package	Lead contractors (European and Chinese)
WP0 Management	NERSC (ORSI)
WP1 Review of in-situ observing system	ORSI (NERSC)
WP2 Review and utilization of spaceborne system	ORS (ORSI)
WP3 Level of data integration	ORSI (IFREMER)
WP4 Information production and services	NMEFC (CLS)
WP5 Capacity building	MOST (GKSS)
WP6 Workshop, Summer school and Symposium	NERSC (NZC, ORSI)

Work package managers. Shared leadership per work package is made between one Chinese and one European project partner.

The DRAGONESS steering committee (DSC) is composed of the WP leaders/co-leaders. In addition Dr. Yves-Louis Desnos (ESA) and Dr. Zengyuan Li (NRSCC) are invited to be members of the DSC

KEY SCIENTISTS

Prof. Ming-Xia HE	mxhe@orsi.ouc.edu.cn	ORSI-OUC
Prof. Yongqi GAO	yongqi.gao@nersc.no	NZC
Prof. Yongqi GAO	yongqi.gao@nersc.no	IAP
Prof. Xuejia SONG	sxj@nmeffc.gov.cn	NMEFC
Prof. Junwu TAN G	jwutang@mail.nsoas.gov.cn	NSOAS
Prof. Delu PAN	pandelu@sio.hzcnc.net	SIO-SOA
Dr. Keping D U	kpdu@bnu.edu.cn	BNU
Prof. Liqin SHAO	shaolq@nrsc.gov.cn	MOST

Dr. Roland Doerffer		GKSS
Dr. Helene Etienne/ Dr. Gilles Larnicol		CLS
Dr. Werner Alpers		ORS Cons.
Dr. Jean-Francois Piollé/ Bertrand Chapron		IFREMER
Dr. Laurent Bertino		NERSC

PROJECT MANAGEMENT AND EXPLOITATION/DISSEMINATION PLANS

- 6.2 Plan for using and disseminating knowledge**
- 6.3 Raising public participation and awareness**

Dissemination of knowledge and raising public awareness

Documentation of regular progress, key findings and results and recommendations from DRAGONESS SSA will be disseminated and distributed through:

- Web pages
- Annual project reports
- Inventory of standards and protocols
- Workshop
- Summer school
- Bi-lateral EU-China Symposium
- ESA-MOST DRAGON project

Part. No.	# staff	Laboratory, education, software and models	Data	Funding sources
1	5	HYCOM ocean model and TOPAZ assimilation system, RIM radar model, optical retrieval algorithms. Ocean GIS. Provide satellite oceanography courses at the University of Bergen.	Multi-sensor and multi-satellite database. Specific optical and SAR data archive for Chinese waters	National, ESA, EU, Oil companies
2	1	Optical and radar remote sensing laboratories. Hydrodynamic and optical models	Optical database. In-situ calibration and validation data for MERIS.	National, ESA, EU
3	1	SAR processing and retrieval algorithms.		ESA,
4	4	Ocean models, satellite retrieval algorithms. Ocean GIS. Design of data management system.	Coriolis in-situ data base. CERSAT satellite database. Archiving facilities and network.	National, ESA, EU
5	1	Satellite altimetry processing and dissemination system for real-time and off-line support	Database for global altimetry SSALTO-DUACS	National, ESA, EU
6	2	Coupled atmosphere-ocean climate models, air quality models.	Air quality database	National
7	10	Processing and retrieval algorithms for satellite data. Development of ocean laser remote sensing device. Ocean GIS. Education and training.	Satellite database including those from Chinese satellites.	National
8	3	Atmospheric pollution models. Ocean weather models. Developed atmospheric sounding devices.	Atmospheric data base. Met-Ocean data.	National
9	1	Design and implementation of satellite application services facilities. Responsible for management of ocean satellite operation and application. In charge of HY-1 satellite ground segment design and upgrading.	Satellite data archive from Chinese satellites.	National
10	1	Responsible for education and research in remote sensing and GIS.	Education and training databases.	National
11	1	Represented by National Remote Sensing Center of China. Counterpart to ESA in the bilateral DRAGON project.		National
12	3	Numerical models. Engaged in marine environmental forecasting and serving the national marine disaster pre-warning, mitigation and reduction.	Real-time and off-line data from forecasting system.	National
13	1	Advanced instruments and equipment for use in oceanography including seabed sounding and remote sensing technology. Numerical ocean models and forecasting system.	In-situ data and satellite data.	National

PROJECT RESOURCES AND BUDGET OVERVIEW

- **8.1 Efforts for the full duration of the project**
- **8.2 Overall budget for the full duration of the project**
- **8.3 Management level description of resources and budget**

PROJECT RESOURCES AND BUDGET OVERVIEW

Partner	Monthly rates incl. 20% overhead (Euro)	Number of person months	Total Labour Costs (€) per partner
P1: NERSC	10530	6,6	69498
P2: GKSS	10750	3,2	34400
P3: ORS Consulting	10000	3,5	35000
P4: Ifremer	7771	4,5	34970
P5: CLS	7650	4,5	34425
P6: NZC	3000	10,6	31800
P7: ORSI	1500	58	87000
P8: IAP	3000	10,6	31800
P9: NSOAS	1500	5	7500
P10: BNU	1500	5	7500
P11: MOST	1500	5	7500
P12: NMEFC	2900	11,5	33350
P13: SIO-SOA	1500	7,2	10800
Total person efforts		135.2	425543

PROJECT RESOURCES AND BUDGET OVERVIEW

Total budget (EURO)	NERSC	GKSS	ORS	IFREMER	CLS	NZC	ORSI	IAP	NSOAS	BNU	MOST	NMEFC	SIO-SOA	TOTAL
Progress activities														
Person months	4,2	3,2	3,3	4,5	4,5	10,6	54,0	10,6	5,0	5,0	5,0	11,5	7,2	128,6
Labour cost	36855,0	28666,7	27500	29142	28687,5	26500	67500	26500	6250	6250	6250	27791,7	9000	326892,9
Travel and subs. (* see note)	13083,0	5583,3	8333	5583	5583,0	2500	7500	1000	1000	1000	2500	2500,0	1000	57165,3
Consumables														
Equipment														
Other	5322,5													5332,5
Overhead	11054,5	6850,0	7167	6945	6854,5	5800	15000	5500	1450	1450	1750	6058,3	2000	77879,3
Total	66325,0	41100,0	43000	41670	41125,0	34800	90000	33000	8700	8700	10500	36350,0	12000	467270,0
Requested from EU	66325,0	41100,0	43000	41670	41125,0	34800	90000	33000	8700	8700	10500	36350,0	12000	467270,0
Management activities														
Person months	2,4	0	0,2	0	0	0	4,0	0	0	0	0	0	0	6,6
Labour cost	21060,0		1667				5000							27727,0
Travel and subs (* see note)														
Auditing														
Overhead	4212,0		333				1000							5545,0
Total	25272,0		2000				6000							33272,0
Requested from EU	25272,0	0	2000	0	0	0	6000	0	0	0	0	0	0	33272,0
Total Activities														
Total	91597,0	41100	45000	41670	41125	34800	96000	33000	8700	8700	10500	36350	12000	500542,0
Requested from EU	91597,0	41100	45000	41670	41125	34800	96000	33000	8700	8700	10500	36350	12000	500542,0

PROJECT RESOURCES AND BUDGET OVERVIEW

68.600 Euros (direct and indirect costs) is allocated for all partners for the three years project period in order to accommodate the scheduled DRAGONESS kick-off meeting (month 1) and combined annual project meetings, one workshop, a summer school and one open symposium.

For cost effective reasons these meetings will be, if possible, organized jointly with the ESA and MOST DRAGON project annual meetings.

It is also foreseen that the coordinator will make 2 additional trips to attend Chinese progress meetings.

In addition **6399 Euros** (direct and indirect costs) are allocated to coverer some of the expenses (i.e. part of travel costs, part of subsistence allowance) associated with eventual invitation of a few external experts as well as accommodation of PhD students and/or Post Docs at the summer school.

PROJECT RESOURCES AND BUDGET OVERVIEW

ADVANCE PAYMENT BREAKDOWN DRAGONESS p 487

Start 01.09.2007

NO	Partner	Tot. EC contribution	advance		Rest
1	NERSC	91597	42,856.03		48,740.97
2	GKSS	41100	19,229.70		21,870.30
3	ORS	45000	21,054.42		23,945.58
4	IFREMER	41670	19,496.39		22,173.61
5	CLS	41125	19,241.40		21,883.60
6	NZC	34800	16,282.08		18,517.92
7	ORSI	96000	44,916.09		51,083.91
8	IAP	33000	15,439.91		17,560.09
9	NSOAS	8700	4,070.52		4,629.48
10	BNU	8700	4,070.52		4,629.48
11	MOST	10500	4,912.70		5,587.30
12	NMEFC	36350	17,007.29		19,342.71
13	SIO-SOA	12000	5,614.51		6,385.49
14			0.00		0.00
15			0.00		0.00
16			0.00		0.00
	SUM	500542	234,191.57	0.00	266,350.43

234191.57
0.467875962

PAYMENT ARRANGEMENT

BANK INFORMATION

- Name and address of account holder
- Name and address of Bank
- Bank account number
- IBAN number (not applicable for China)
- SWIFT (BIC) Code