

**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

2nd Annual Meeting, 8-10 September 2009

ORSI, OUC, QingDao, China

AGENDA



DAY 1 – Tuesday 8 September

- **Welcome (0900-0930)**
 - ORSI/OUC (Prsident, OUC)
 - NERSC (Director, International Office, OUC)
- **2nd year Project Overview (0930-1230)**
 - Status of activities (J.A. Johannessen)
 - Management (J.A. Johannessen)
 - Cost reporting (J.A. Johannessen)
 - Issues for clarifications (all partners)
- **Lunch 1230 - 1400**

AGENDA



DAY 1 – Tuesday 8 September (cont.)

- **Activity Reporting by WP leaders (1400-1700)**
 - WP 1 – Review of in-situ observing system
 - WP 2 – Review and utilization of spaceborne system
- **Break at 1530 – 1545**
- **Adjourn at 1700 – Visit to ORSI Optional**
- **1830: Dinner hosted by the president of OUC**

AGENDA



DAY 2 – Wednesday 9 September

- **Activity Reporting (0900 – 1230) (cont.)**
 - WP 3 – Level of data integration
 - WP 4 – Information production and services
 - WP 5 – Capacity Building
- **Lunch 1230 – 1400**
- **Activity Reporting (1400 – 1500) (cont.)**
 - WP 6 – Workshop, summer school and symposium

AGENDA



DAY 2 – Wednesday 9 September

- **Review of action items**
- **Any other business**
- **Agree date of final meeting to be held in Beijing**
- **Adjourn at 1730**
- **1830: Dinner hosted by MOST/NRSCC**

AGENDA



DAY 3 –Thursday 10 September

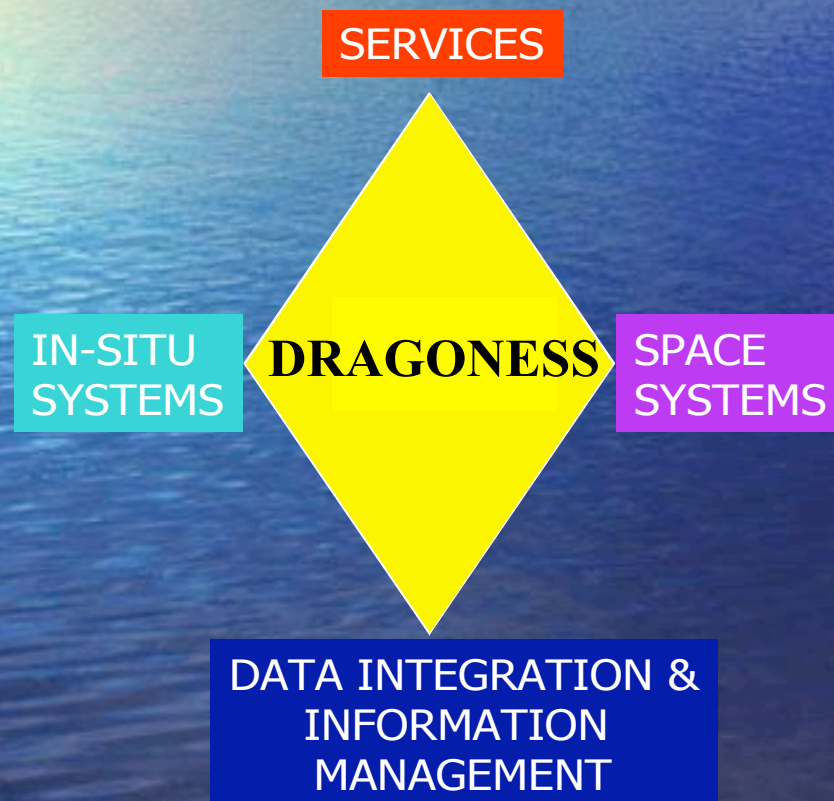
- **0900 -1500 Excursion to Mount Laoshan**
- **1830 Dinner hosted by ORSI/OUC**



2nd ANNUAL PROJECT OVERVIEW

MAIN OBJECTIVE

Establish an inventory of European and Chinese capacities in marine environmental monitoring in the 'frame of the Global Earth Observation System of Systems (GEOSS) and the Global Monitoring for Environment and Security (GMES) diamond.



WP 1 - Review in-situ observing system

WP 2 - Review satellite observing system

WP 3 - Review data management routines

WP 4 - Review information and service provision

WP 5 – Capacity building

WP 6 – Workshop, Summer School, Symposium



SOME HIGHLIGHTS

- (i) Kick-off meeting in Beijing from 11-12 October 2007. Meeting report published in EOS, 13 May 2008.
- (ii) Brief Progress meeting jointly with DRAGON symposium in Beijing on 24 April 2008.
- (iii) First Annual meeting in Bergen, Norway, 12-15 September 2008. Report published in Science and Technology, January, 2009.
- (iv) Included in the joint ESA-MOST DRAGON-2 program. Presented in Barcelona on 22-25 June 2009.
- (v) Second annual meeting in QingDao, 8-10 September 2009.
- (vi) DRAGONESS ends in August 2010

MEETINGS

Ocean Monitoring Collaborations Between Europe and China

DRAGONESS Project Kickoff Meeting
Beijing, China, 11-12 October 2007

A coordinated, concerted action between Europe and China in ocean monitoring kicked off with its first meeting held in Beijing.

The project, named DRAGONESS (DRAGON in support of harmonizing European and Chinese marine monitoring for Environment and Security System), is funded by the European Union's (EU) Framework Programme for 3 years. Researchers from the two continents will establish an inventory of Chinese and European capacities in marine monitoring.

Identified within such as Global Ocean Earth Observing Global Monitoring In particular, (1) assess existing information products (2) integrated use of observations, models, and forecasts (3) identify needs (e.g. restrictive information products) (4) stimulate exchange

and initiation of a new European-Chinese partnership in Earth observation science and technology in support of global environmental monitoring.

The DRAGONESS project is both benefiting from and complementing the joint European Space Agency (ESA) and China's Ministry of Science and Technology (MOST) DRAGON collaboration, with a focus on Earth observations from satellites. DRAGON will run until 2012.

More than 30 participants from five European research institutes and eight Chinese institutes attended the kickoff meeting, which was hosted by MOST and the Ocean University of China. An official welcome was provided by the director of the National Remote Sensing Center of China, Guocheng Zhang. A detailed revision and discussion of the project background, objectives, tasks, and milestones followed (see <http://dragonesc.nersc.no>).

In particular, meeting participants agreed that monitoring the marine environment is urgently needed to advance understanding

of mesoscale and submesoscale processes and physical and biogeochemical interaction. Monitoring the marine environment is also crucial to tracking pollution, forecasting and tracking extreme events, understanding climate change, and aiding operational oceanography. Because of the myriad of important applications, sustainable monitoring of the ocean is necessary speakers stressed. In this context, the five work packages in the project (review of in situ observing systems, review of spaceborne observing systems, specification of data integration and information management, specification of ocean and coastal information products and services, and capacity building) are therefore highly relevant.

The project is now evolving around these work packages, with the first progress report delivered in April 2008. This will be followed by the first annual meeting, to be held in Bergen, Norway in the autumn of 2008. The second and third annual meetings and a final symposium will be coordinated with the DRAGON program to secure a wider promotion of the DRAGONESS achievements.

For more information, contact the program coordinator, Johnny Johannessen (johnnyjohannessen@nersc.no), and the Chinese coordinator, Ming-Xia He (mhe@rsi.ocean.ucas.ac.cn).

—JOHANNESSEN, Nansen Environmental and Remote Sensing Center, Bergen, and Geophysical Institute, University of Bergen, Norway; and Ming-Xia He and CHANGMIN HU, Ocean Remote Sensing Institute, Ocean University of China, Qingdao

profile

Ocean monitoring

Collaborations between Europe and China...

A Specific Support Action (SSA) has been initiated between Europe and China with the overall goal to establish an inventory of Chinese and European capacities in marine monitoring for environment and security including routine use of Earth observation data. The project, named DRAGONESS (DRAGON in support of harmonizing European and Chinese marine monitoring for Environment and Security System) is funded by the European Union's (EU) Framework Programme 6 for a three year period running from September 2007 to August 2010. Researchers from the two continents will deliver the inventory in the contents of need and challenges identified within international programmes such as Global Ocean Observing System (GOOS), Global Earth Observing System of Systems (GEOSS), and Global Monitoring for Environment and Security (GMES). To do this, the DRAGONESS project aims to:

- Identify observation capacity monitoring gaps and barriers;
- Assess existing Chinese and European information products and services arising from integrated use of remote-sensing and in-situ observations, models, and data assimilation methods;
- Investigate the possibility for extending and foreseen services to be exchanged between the two continents for necessary regional development and implementation;
- Stimulate interaction and exchange of new European-Chinese partnerships in Earth observation science and technology in support to global monitoring for environment and security.

These specific aims extended with some preliminary results were highlighted at a training course and a symposium, hosted in respectively Hangzhou and Beijing from 15-20th October 2007 and 23-25th April 2008. In addition the project objectives and workplan were announced in the EOS Transactions, published by the American Geophysical Union (Volume 89, Number 20, 13th May 2008).

DRAGONESS is both benefiting from and complementing the joint European Space Agency (ESA) and China's Ministry of Science and Technology (MOST) Dragon collaboration programme that focuses on Earth observations from satellites. Dragon will run until 2012. A more detailed description of the DRAGONESS project background, objectives, tasks, milestones and partners is available at <http://dragonesc.nersc.no>. This website is also offering a direct link to further detailed information about the ESA-MOST collaborative Dragon programme.

The execution of the five dedicated project work packages including:

- Review of in situ observing systems;
- Review of space borne observing systems;
- Specification of data integration and information management;
- Specification of ocean and coastal information products and services;
- Capacity building are therefore highly relevant.

It is highly relevant in the context of assessing the capabilities for forecasting and tracking extreme events, aiding operational oceanography, monitoring water quality, tracking

WP 1 - Status



- **WP1: Prof. Zhischen Liu: “Review of in-situ observing system”**

- Overview of Marine Observing Stations

More than 100 tide gauge stations along coast, operated under the possession of SOA (State Ocean Administration)

- Overview of Marine Buoys

Several types of buoys that can measure many different parameters

20 active Chinese Argo floats

- Overview of Marine Survey ships

- Overview of Voluntary Observing Ships (VOS)

- CASs China Marginal Sea observing network. Data not freely distributed

4 long term observing platforms

3 coastal stations in marginal China Seas

2 cruise sections

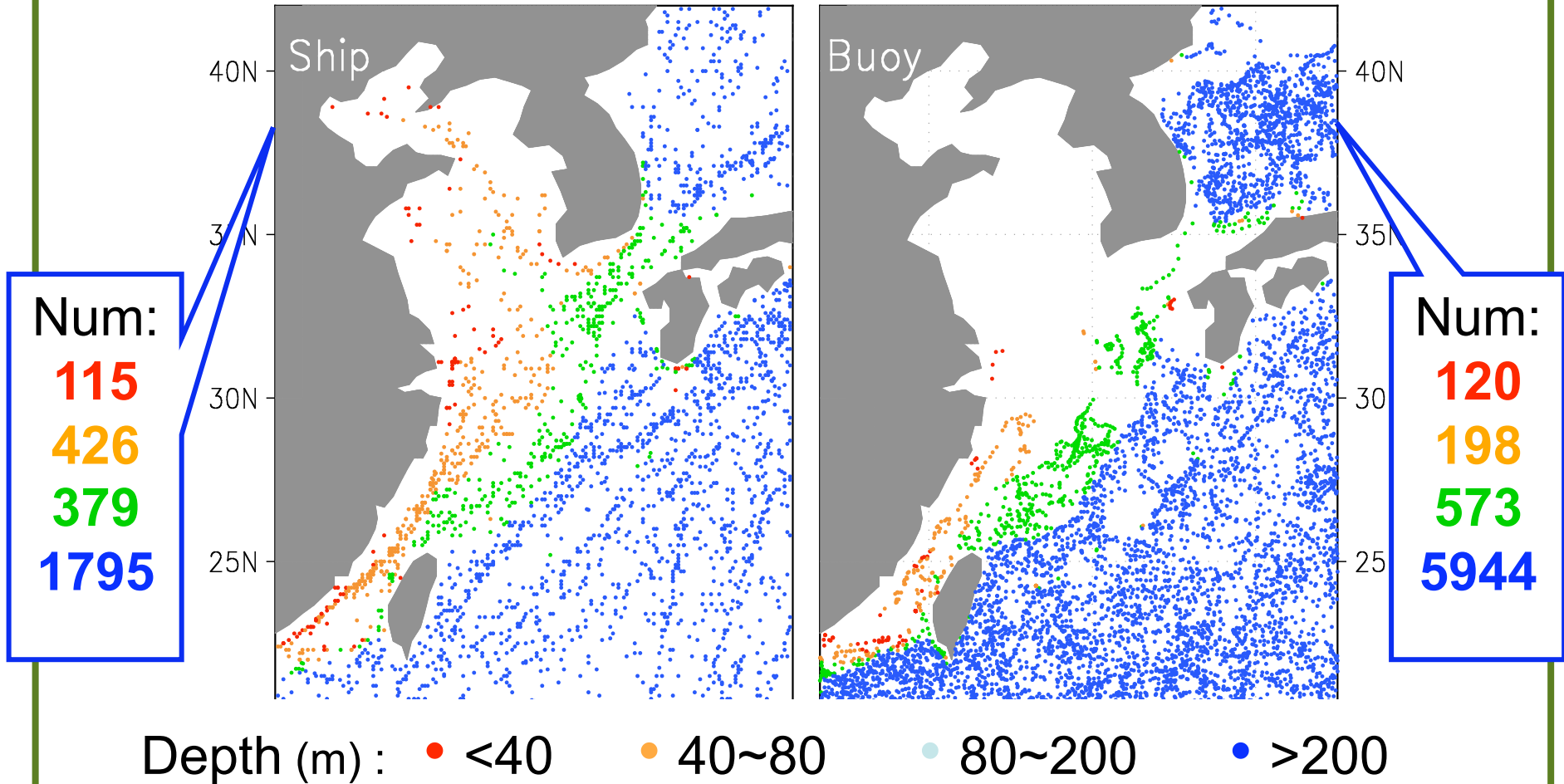
- Near-Goos area: North East Asia. China, Japan, Korea, Russia. Oceanographic data freely distributed.

- Antropogenic tracers, e.g. CFC Data Sets from cruices and stations. Free access to data.

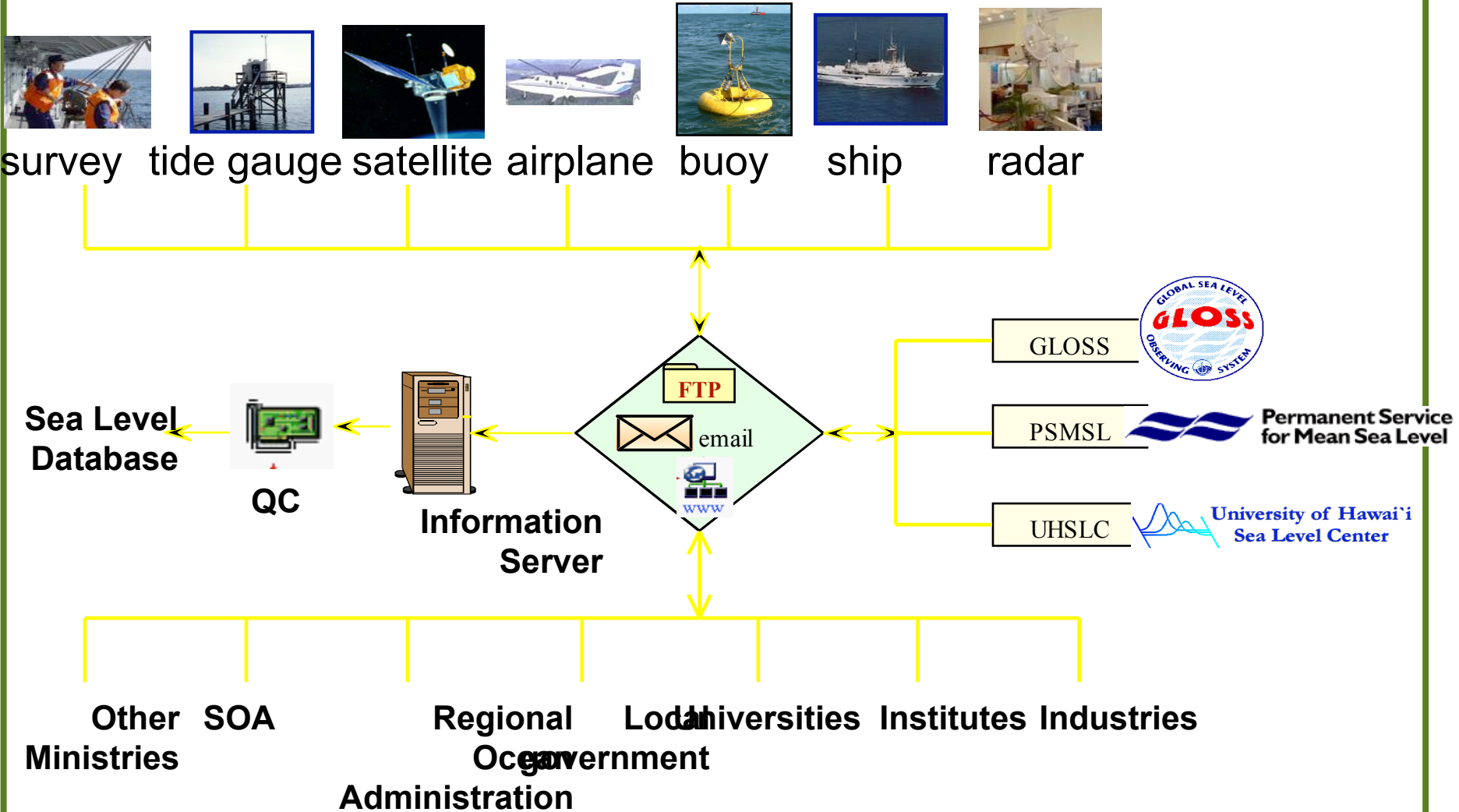
Marine observing and monitoring network is developing for public service and scientific research in China. It includes:

- (i) Coastal observatory
- (ii) Research vessels and VOS
- (iii) Buoy (anchored buoy, floating buoy and Argo)
- (iv) Satellite observations (e.g. Envisat, HY-1 series)
- (v) Airplane monitoring for sea ice, oil spill, etc
- (vi) Land-based Radar system for sea ice and sea surface current monitoring
- (vii) Near real-time data availability disseminated by VSAT

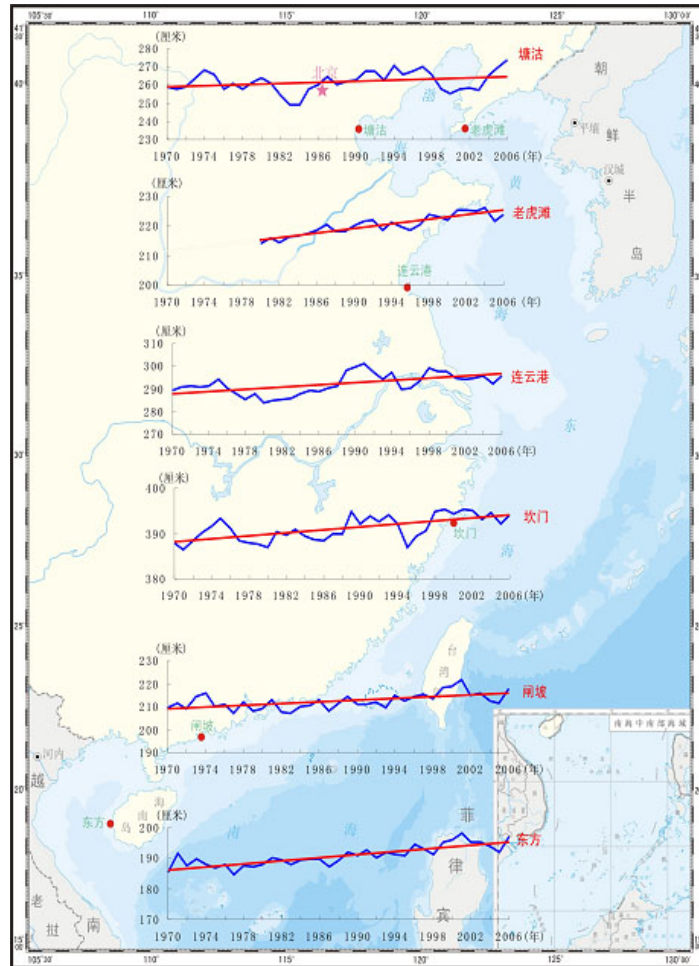
Distributions of in situ daily SST observations with data quality control
(2005.10-2006.9)



Sea level monitoring system

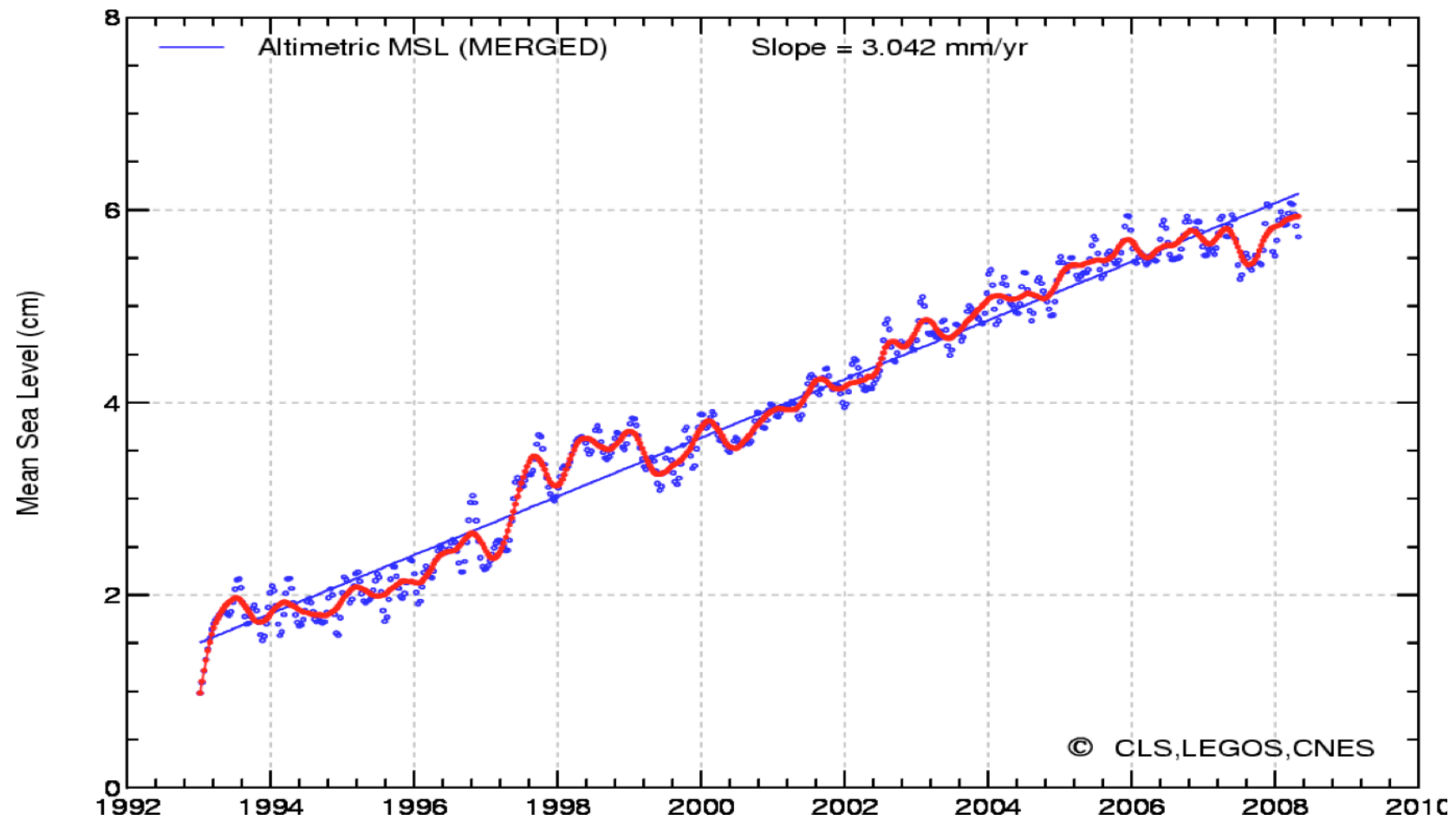


Sea level rise

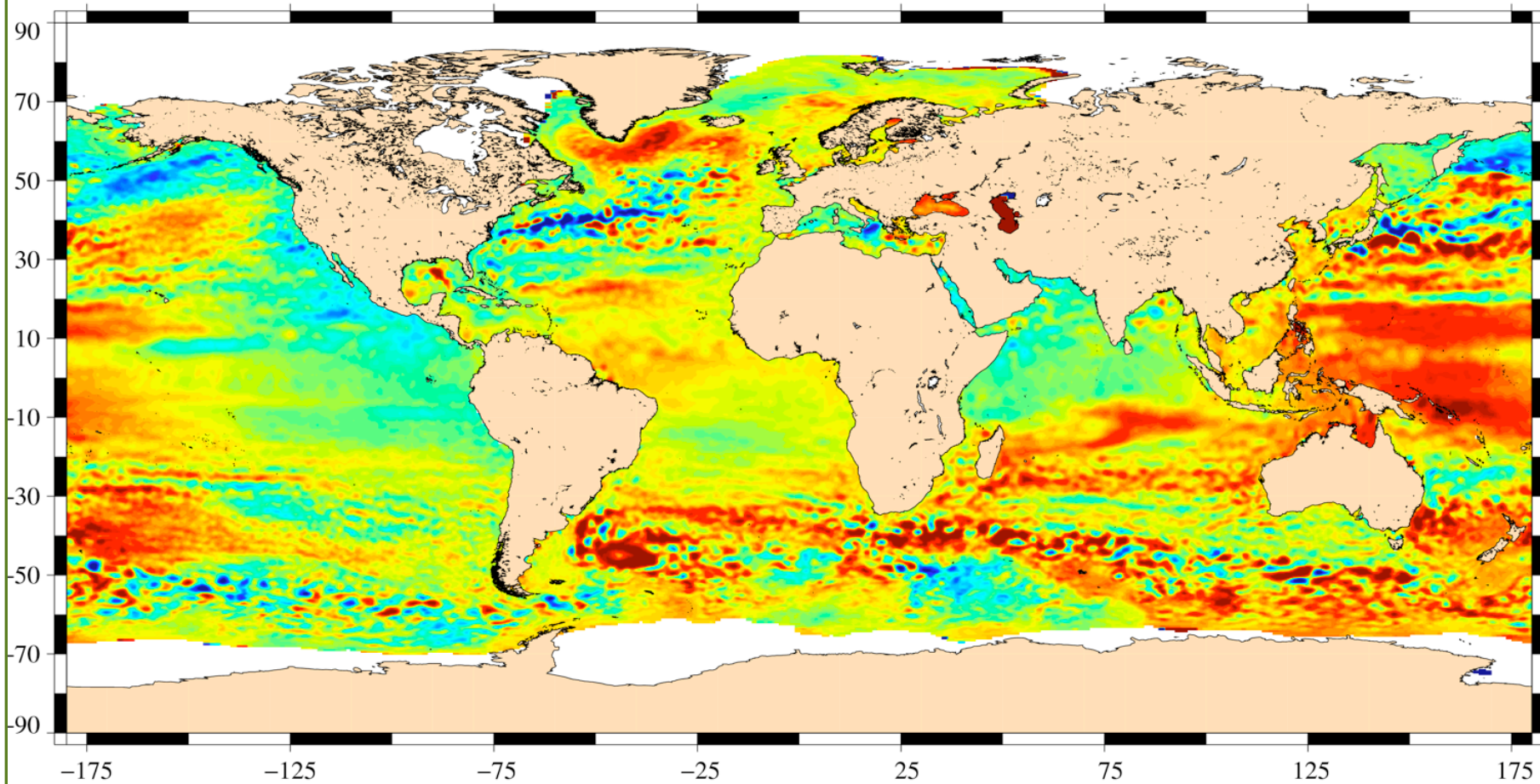


Forecasting Relative to 2006 MSL (mm)

	2009年	2016年
Liaoning	10	34
Hebei	4	12
Tianjin	9	35
Shandong	8	28
Jiangsu	9	30
Shanghai	10	38
Zhejiang	11	36
Fujian	8	23
Guangdong	9	30
Guangxi	11	37
Hainan	12	36
Bohai Sea	8	28
Yellow Sea	9	30
East Sea	11	38
South Sea	10	31
State	9	31



SPATIAL TRENDS



Trends (mm/year, inverted barometer included, seasonal signal removed)



WP 1 - Status

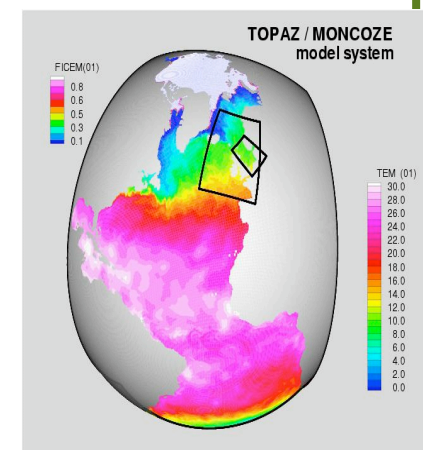
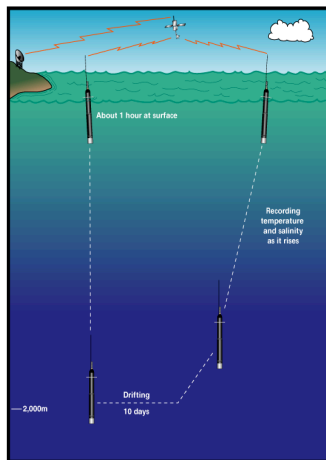
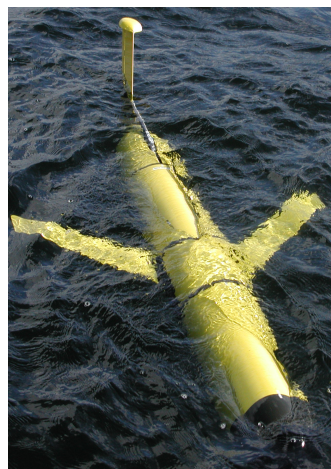


- **WP1: Marine Core Service in Europe (J.A. Johannessen)**
 - ARGO floats, data available online in near real time, efficient data management system, sustainable
 - Assimilated data: Argo floats, XBT from VOS, FerryBox data, CTD from RV
 - Data for validation: Moorings and Drifters
 - HF radar network far from being fully implemented in Europe
 - Upcoming: Gliders, not yet operational
 - All in all open ocean to regional in-situ observing capacity is fairly good. Local and coastal is more fragmented. And this is also the case for the Arctic.

OPERATIONAL OCEANOGRAPHY CAPITALIZES ON

*Data collection and analyses
using conventional and advanced technology*

*Models and data
assimilation*

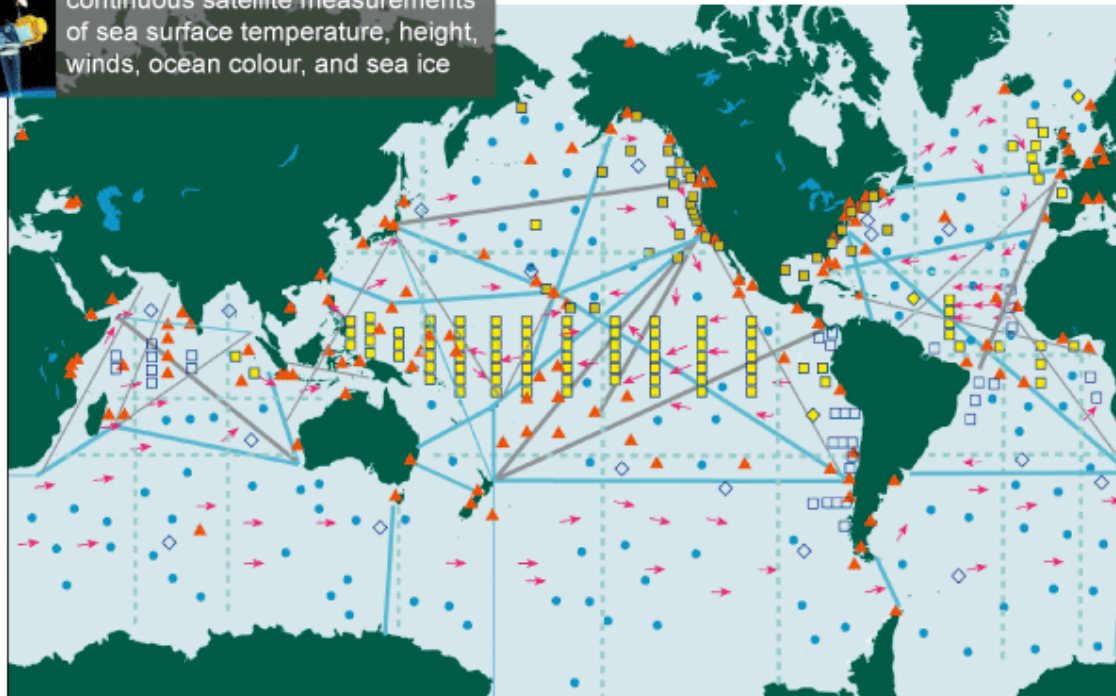
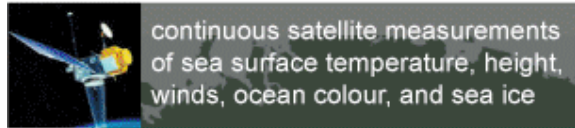


Initial Global Ocean Observing System for Climate

Status against the GCOS Implementation Plan and JCOMM targets

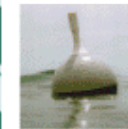
Total *in situ* networks **57%**

January 2007



57% Surface measurements from volunteer ships (VOSclim)

200 ships in pilot project



100% Global drifting surface buoy array

5° resolution array: 1250 floats



42% Tide gauge network (GCOS subset of GLOSS core network)

170 real-time reporting gauges



81% XBT sub-surface temperature section network

51 lines occupied



81% Argo profiling float network

3° resolution array: 3000 floats



43% Repeat hydrography and carbon inventory

Full ocean survey in 10 years

Reference time series **21%**

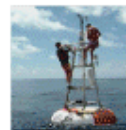
58 sites



48% Global reference mooring network



29 moorings planned



66% Global tropical moored buoy network



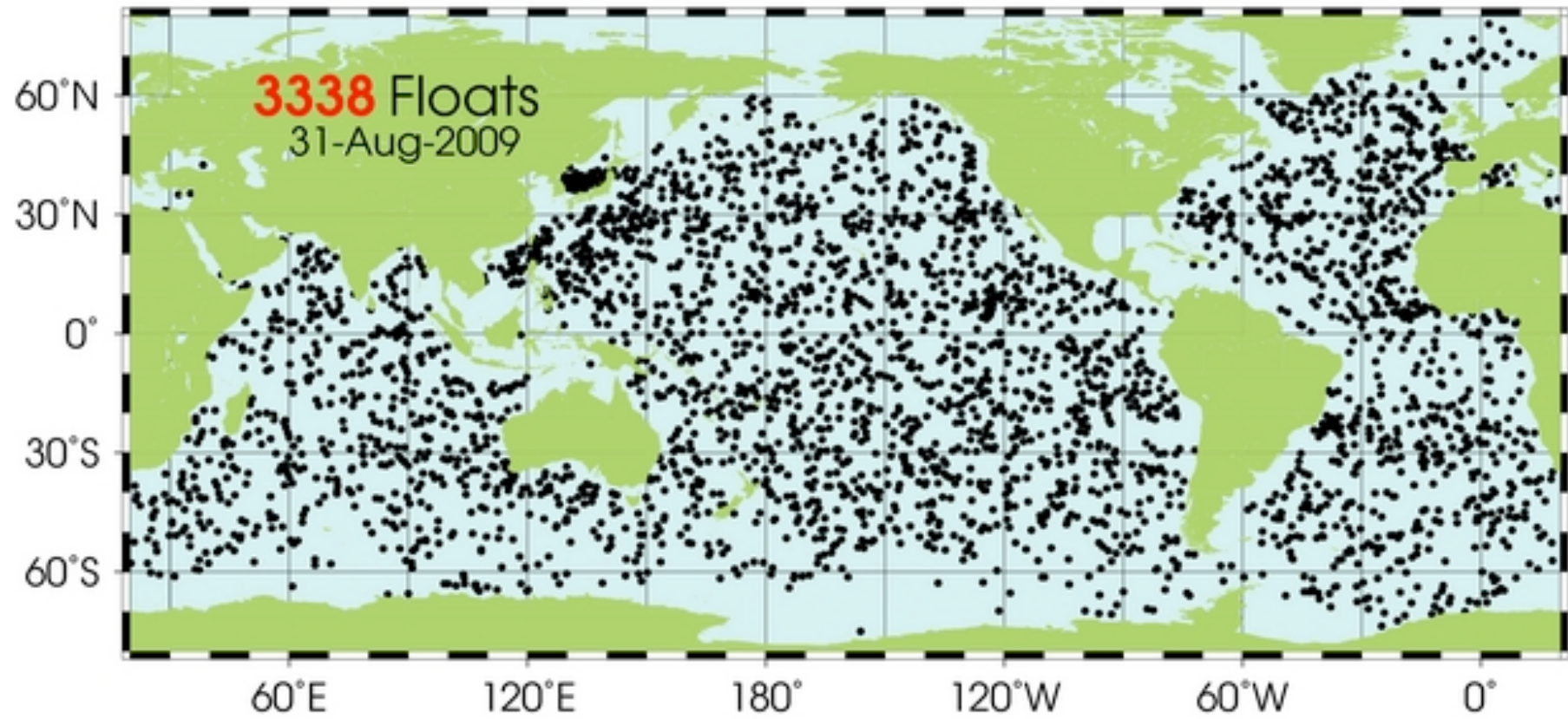
119 moorings planned



• A total of 5635 platforms are maintained globally.

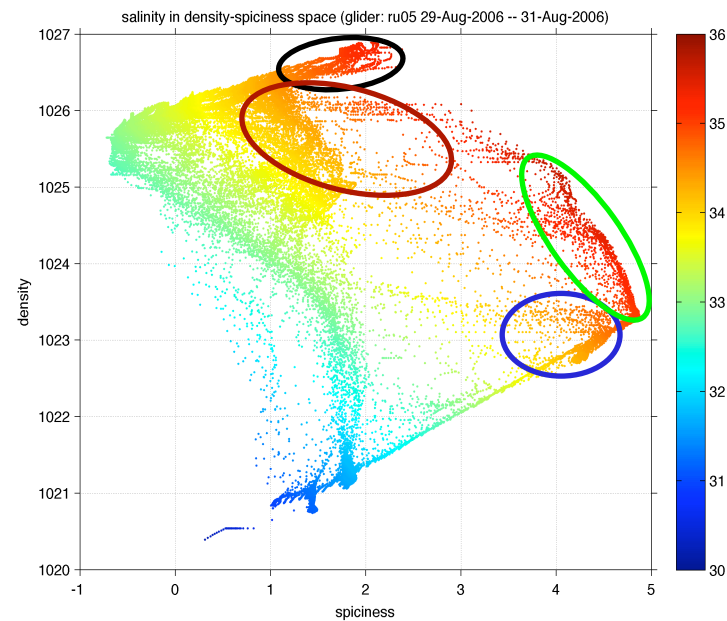
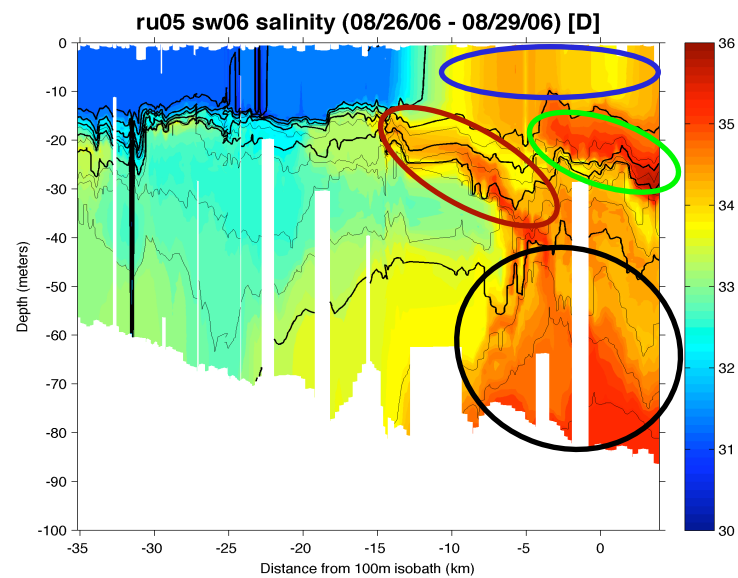
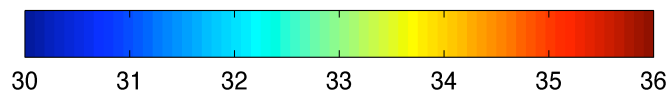
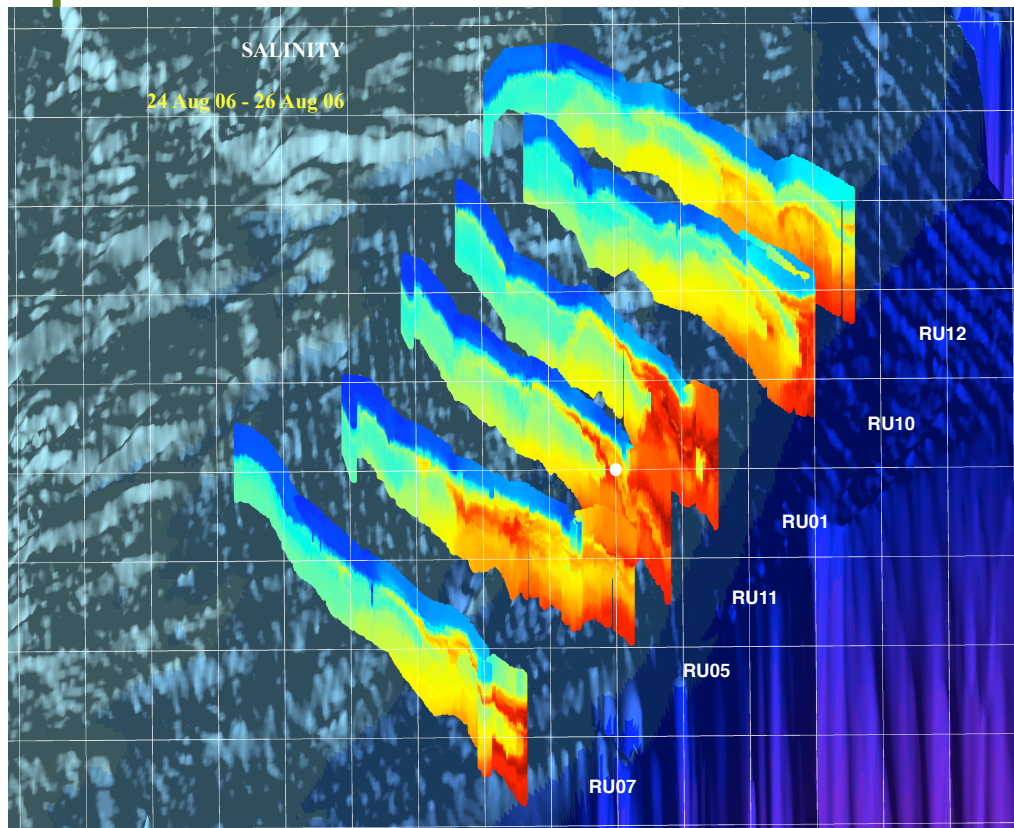
Initial Global Ocean Observing System for Climate

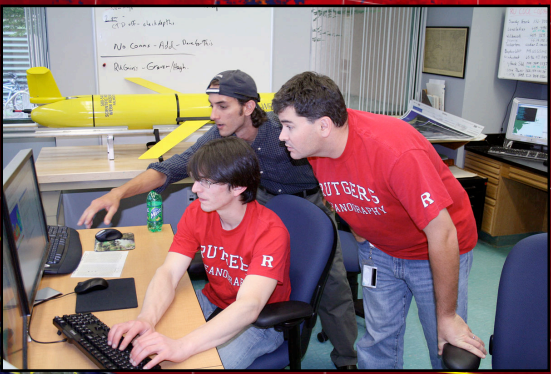
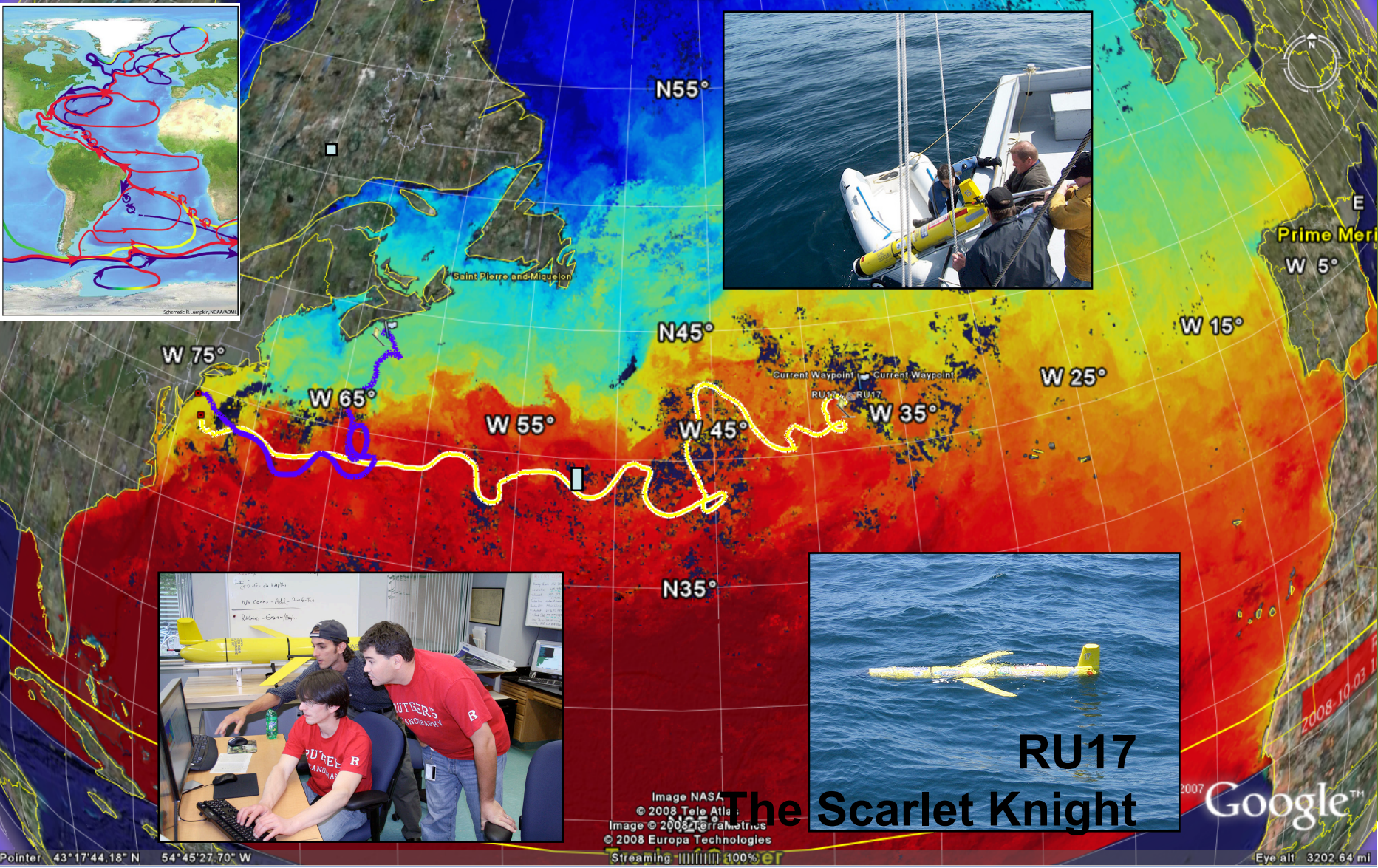
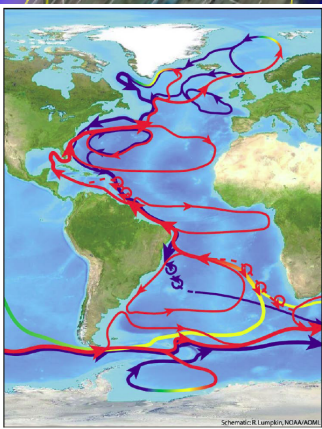
Status against the GCOS Implementation Plan and JCOMM targets





Cross-shore Transport at the Shelf Break





RU17
The Scarlet Knight

Pointer 43°17'44.18" N 54°45'27.70" W

Image NASA
© 2008 Teje Atlas
Image © 2008 TerraMetrics
© 2008 Europa Technologies
Streaming 100%

2007 Google™
Eye alt 3202.64 m

WP 2 - Status



WP 2: Prof He et al. "Chinese Spaceborne Ocean Observing Systems and Onboard Sensors (1988-2025)"

- 1st year: focus on satellite systems

Seven satellite series:

- FY-n (Chinese met. agency, wind/clouds)
 - HY-n (Chinese Ocean Agency)
 - ZY-n (resource)
 - HJ-n (Environment)
 - SZ-n (Spacecraft)
 - CRS-n (Chinese remote sensing)
 - DMC/BJ-1 (disaster management, series of small instruments)
- 2nd year: focus on data products, and how they are used

In general comparison of Chinese and other international sensors for ocean observation reveal less microwave sensor missions. But also possible gap in ocean color missions.

Harmful alga bloom and ecosystem modeling

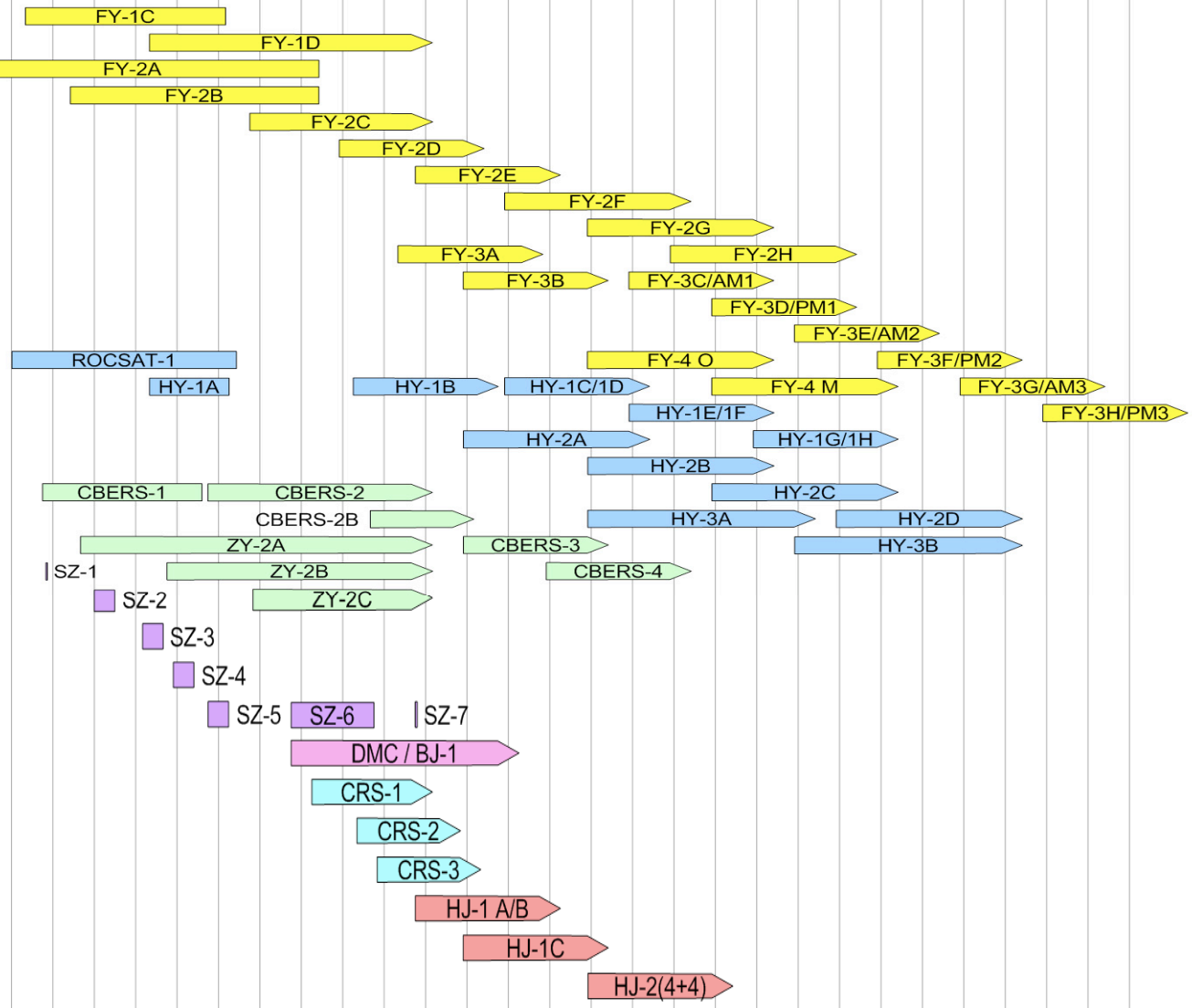
	2001	2002	2003	2004	2005	2006
Bohai & Yellow Sea	28	17	17	25	22	17
East China Sea	34	51	86	53	51	64
South China Sea	15	11	16	18	9	17
total	77	79	119	96	82	98



CHINESE SPACEBORNE EARTH OBSERVING SYSTEM

88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

FY-1A FY-1B



 FY	 HY	 CBERS,ZY	 SZ	 DMC/BJ-1	 CRS(YG)	 HJ
Meteorological	Ocean	Resource	Spacecraft	Disaster Monitoring	Remote Sensing	Environment

Satellite Sensor and Product Levels requested in DRAGON 2

HY-1B Ocean Colour and Temperature Scanner-COCTS Level 1b and Level 2.

FY-3 VIRR Level 1b and Level 2 MERSI Level 1b and Level 2

HJ-1-C S-band SAR Level 1b and Level 2 with a ground resolution of 20 m and a swath of 100 km

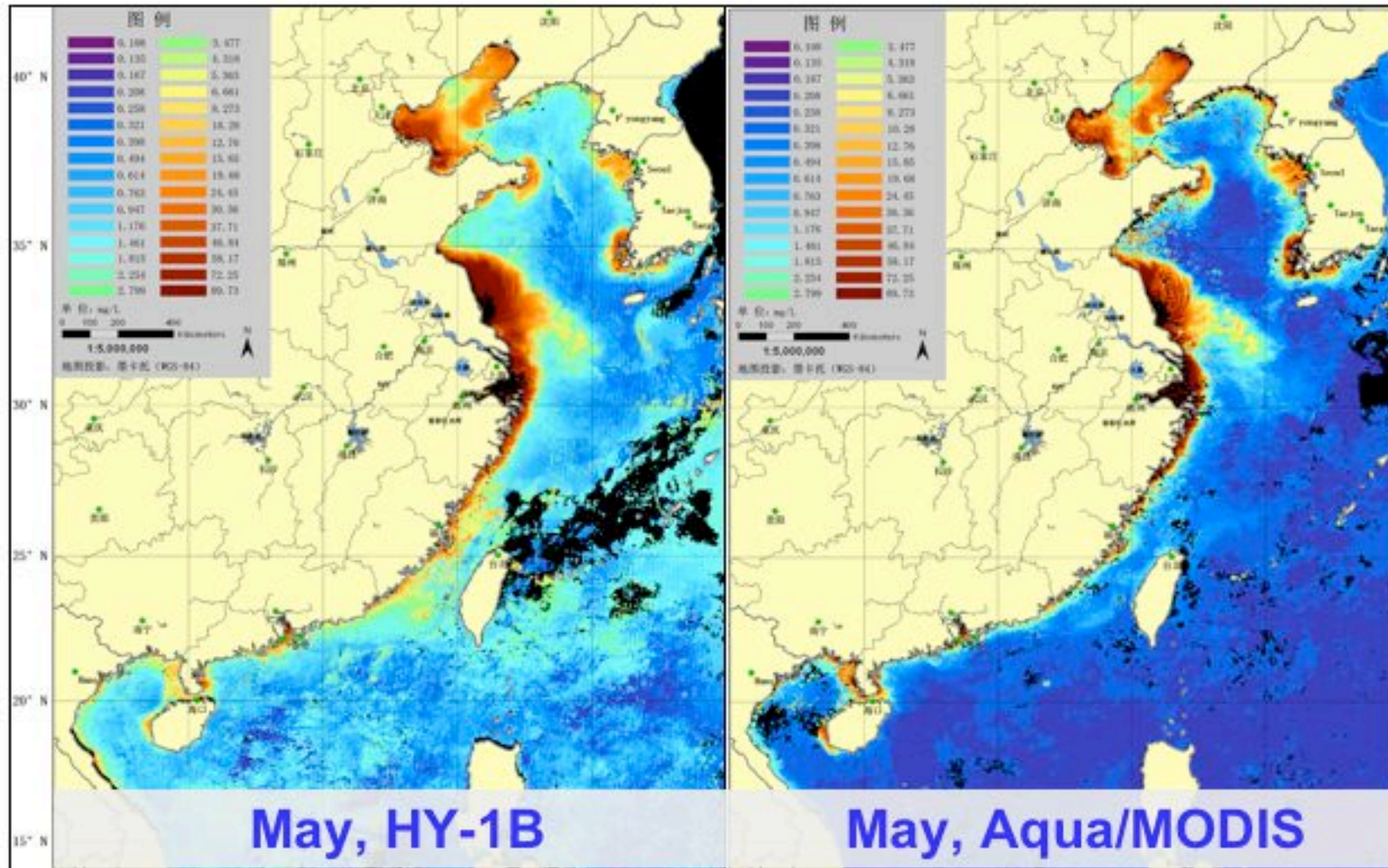
ALOS L-band SAR, Level 1b and Level 2, polarimetry mode, steerable beam mode and a ScanSAR mode.

Envisat The RA-2, AATSR, ASAR and MERIS are sensors with dedicated applications for marine environmental monitoring.

GOCE Geoid height Level 2 in Earth coordinates.

SMOS Salinity data at Level 2, every 10 days at 200 km resolution and higher resolution data at more frequent acquisitions on a case-by-case basis.

WATER QUALITY MONITORING



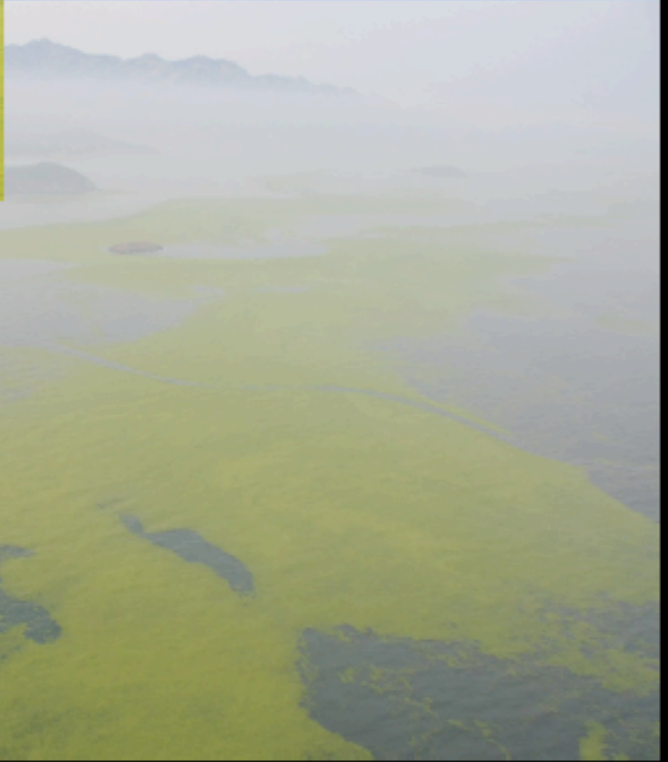
Enteromorpha Emergency Forecast

May 2008, a large amount of phytoplankton –Enteromorpha occurs in the Middle of the Yellow Sea (especially near Qingdao city).

June 2008, Enteromorpha substantial growth, endangered the safety of the Olympic sailing in Qingdao.

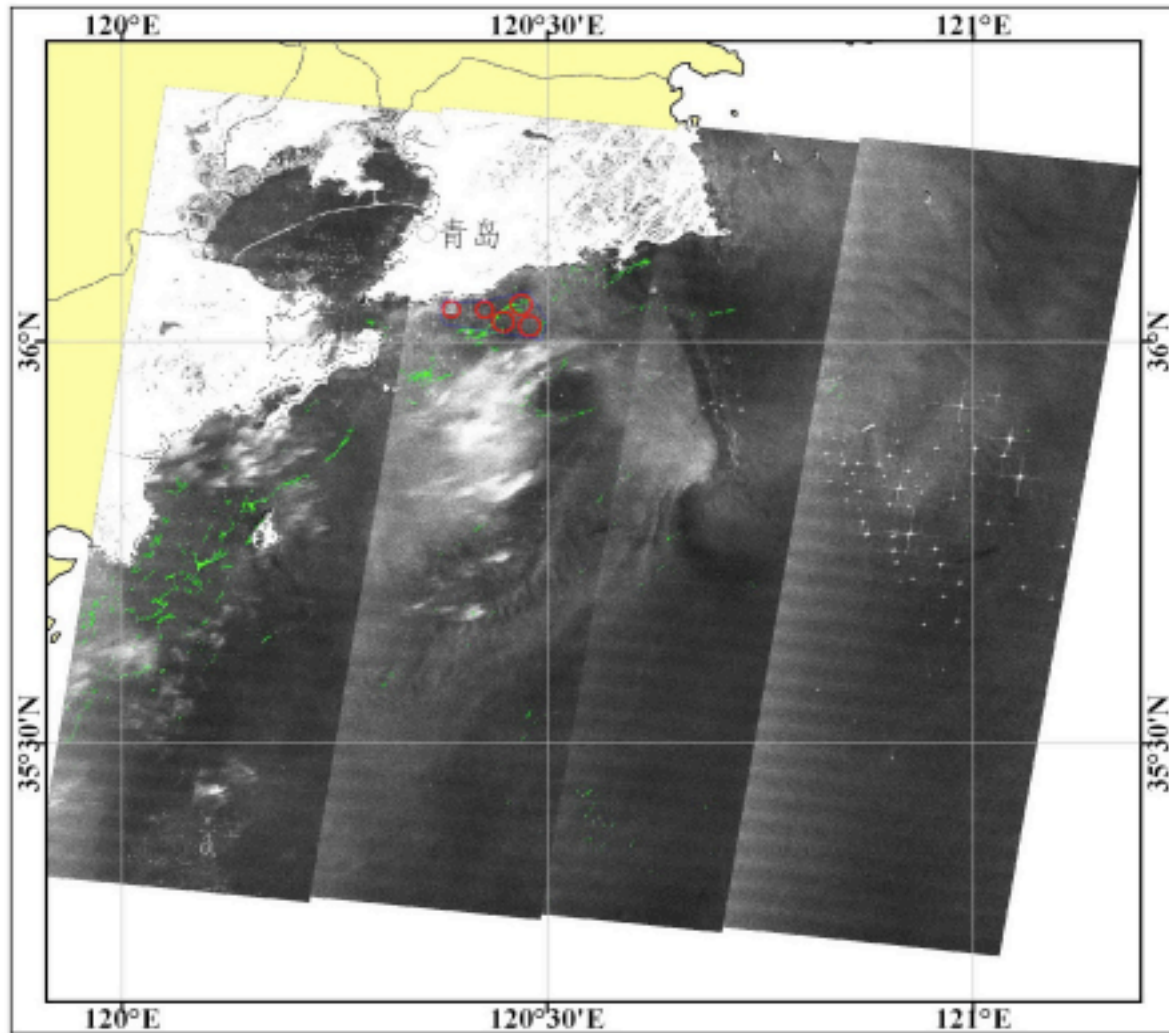
State Oceanic Administration started the emergency plans, which include strengthening of the satellites, aircraft and ships' monitoring and observation.

The forecast on the drift of the Enteromorpha has been started in NMEFC, which provided the forecasting products to Emergency Command Center every day.

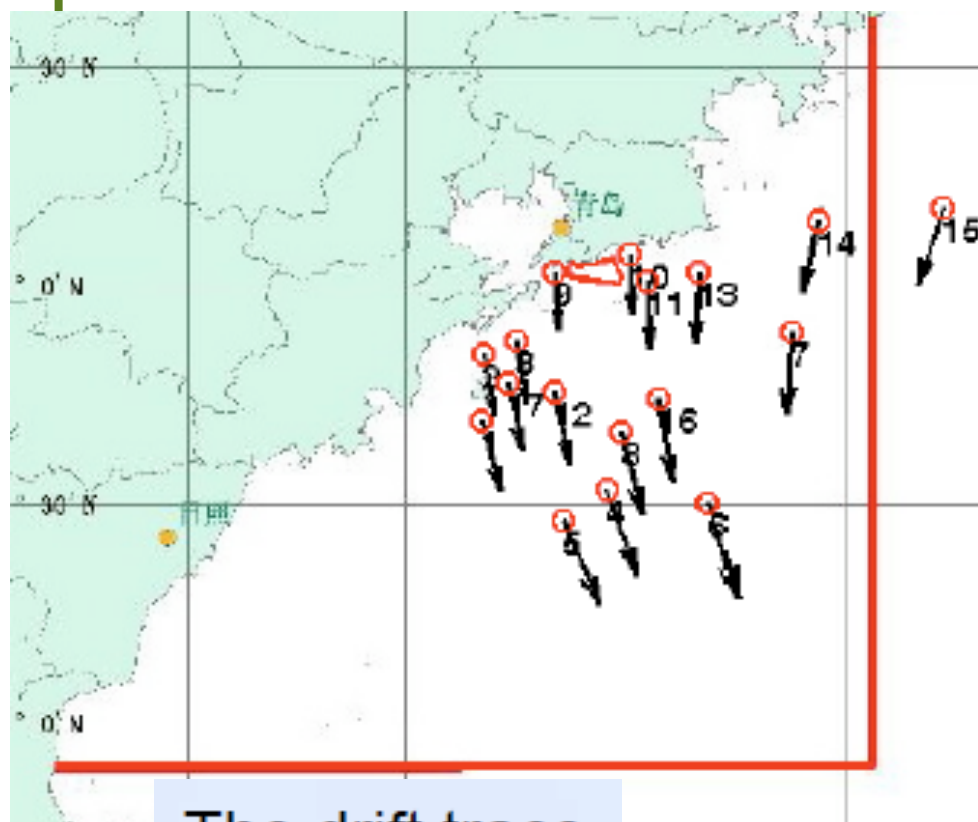


The photos of
Entermorpha
by aircraft

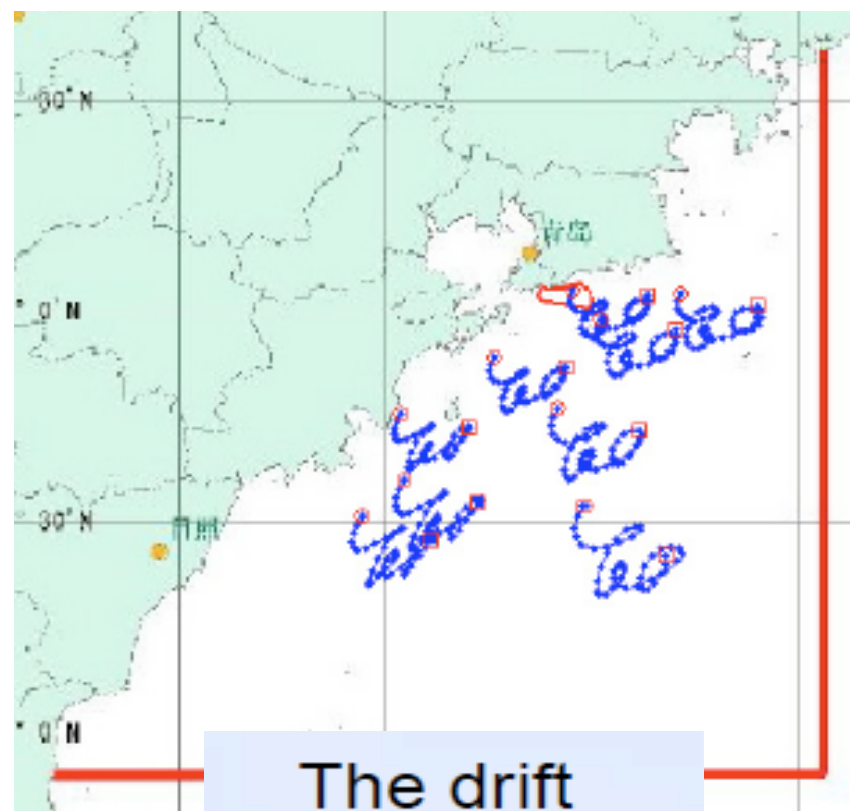
2008.06.27



Satellite remote
sensing image
of Entermorpha
2008.07.20

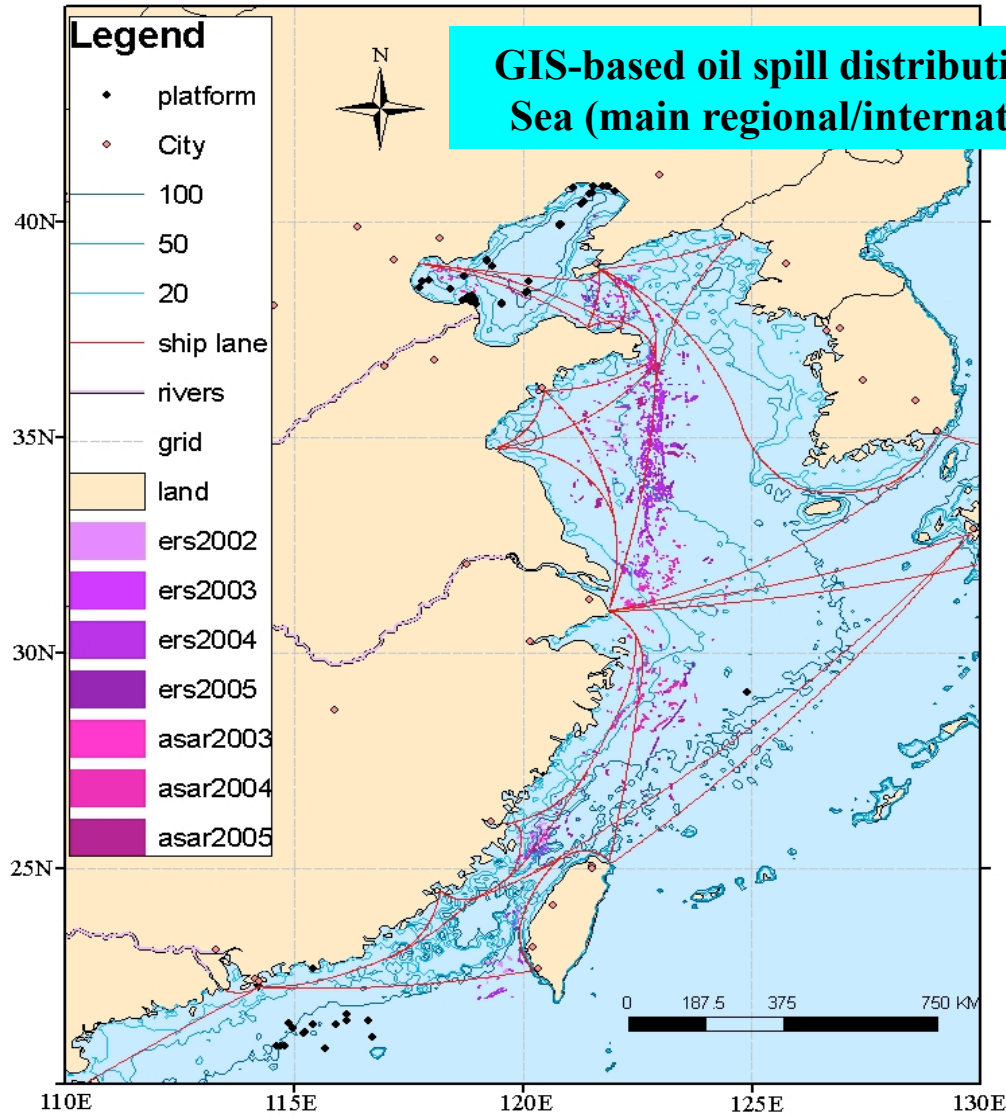


The drift trace
of the
Entermorpha
2008.07.20

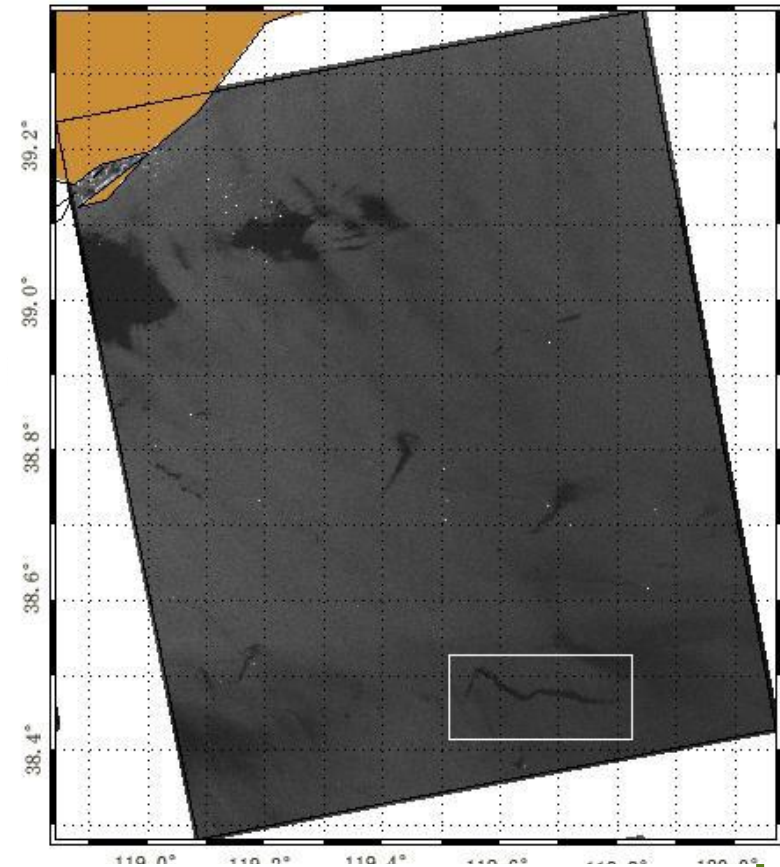


The drift
direction and
distance of the
Entermorpha
2008.7.20

GIS-based oil spill distribution map for the Yellow Sea and East China Sea (main regional/international ship routes are shown by solid lines).



ASAR ENVISAT IMP_1P 北京时间: 2007-03-20 21:55:52



WP 2 - Status



WP 2: Prof Werner Alpers, European Earth Observation Missions

- ESA mission overview
 - Meteorology satellites (e.g. MSG, METOP)
 - Earth Explorers (e.g. GOCE, SMOS) to better understand the Earth System
 - Earth Watch (e.g. Sentinel) application services, long term monitoring systems for environment and security

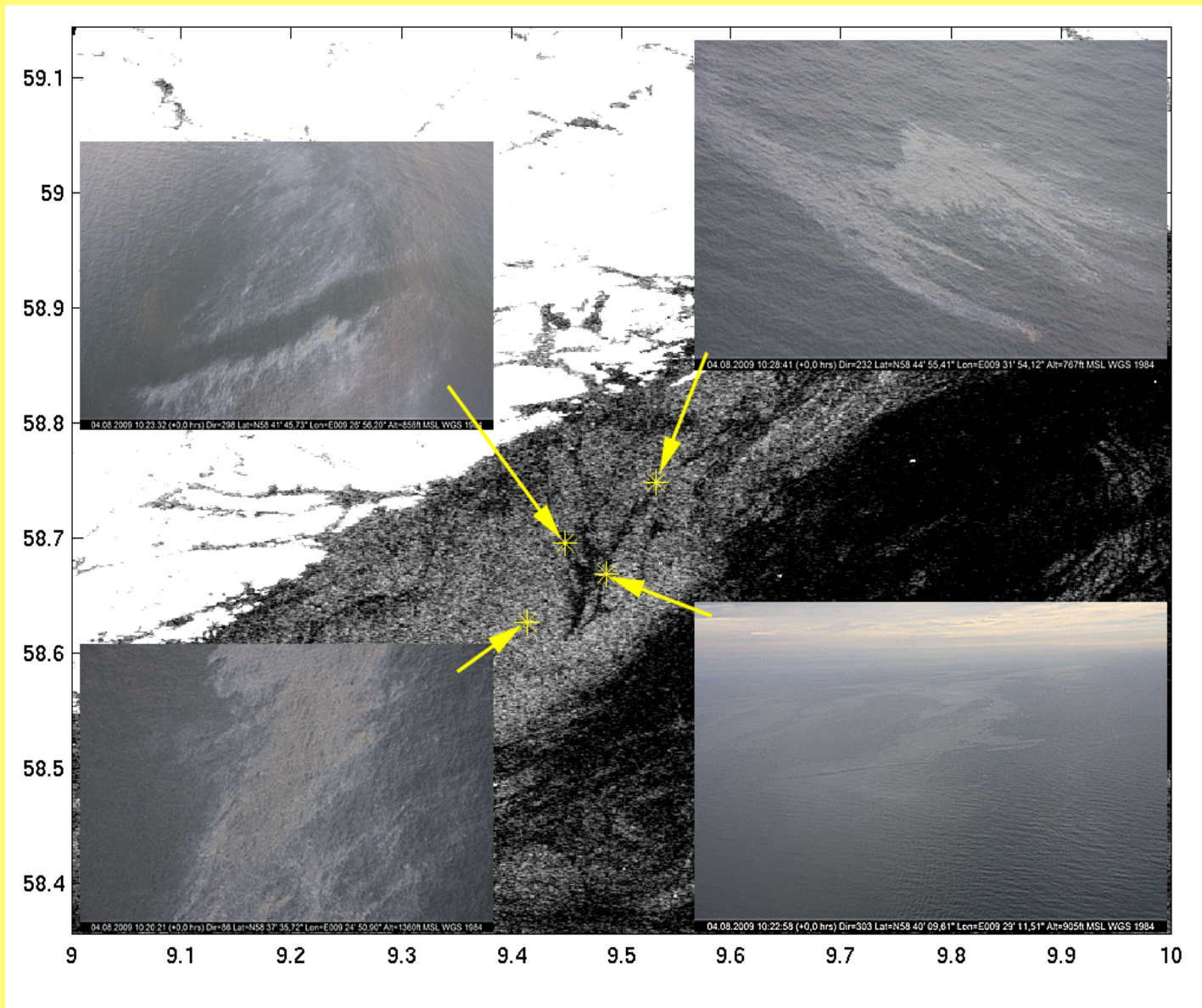
- German TerraSAR-X satellite

- Italian COSMO-SkyMed, 5 satellites, special focus on Mediterranean Sea, limited access to data, partly military

For second year report a table should be made, identifying all Chinese and European missions/sensors, and indicating to which degree data is further used for research and development, assimilation and for routine operations.

FULL CITY SØL





Observing Systems > Remote Sensing

MERSEA OCEAN REMOTE SENSING PORTAL

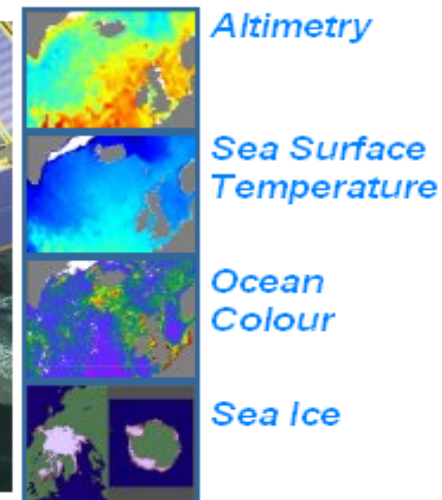
Welcome

Data centers

- Altimetry
- Sea Surface Temperature
- Ocean Colour
- Sea Ice

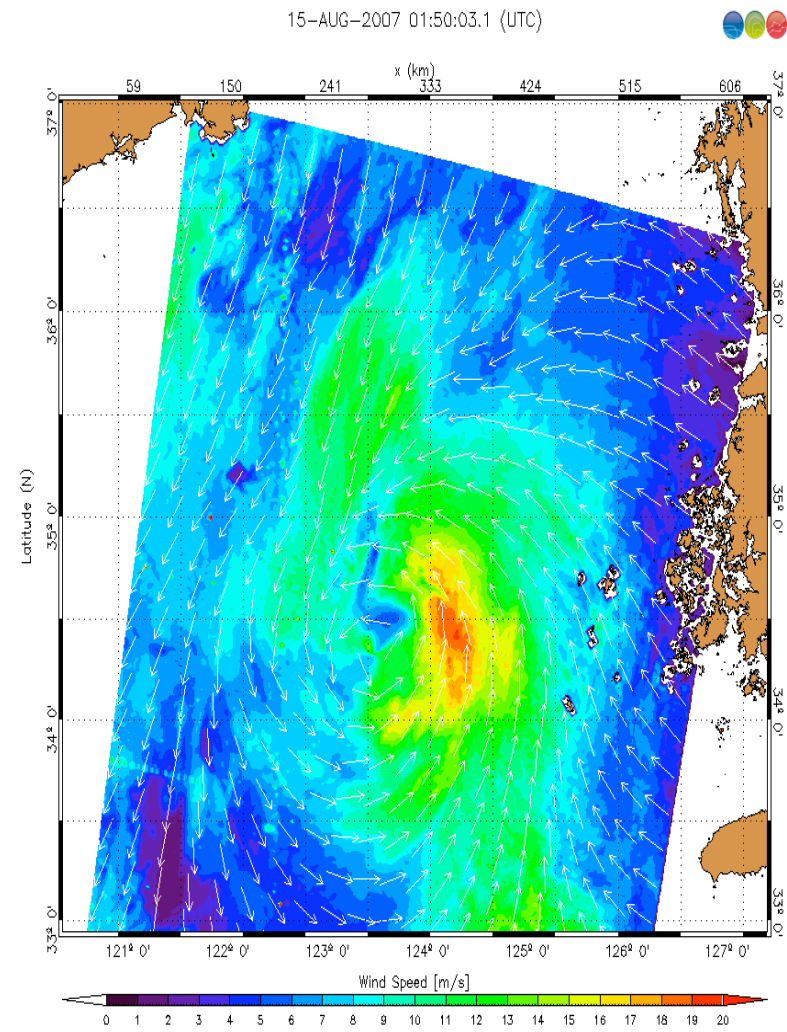
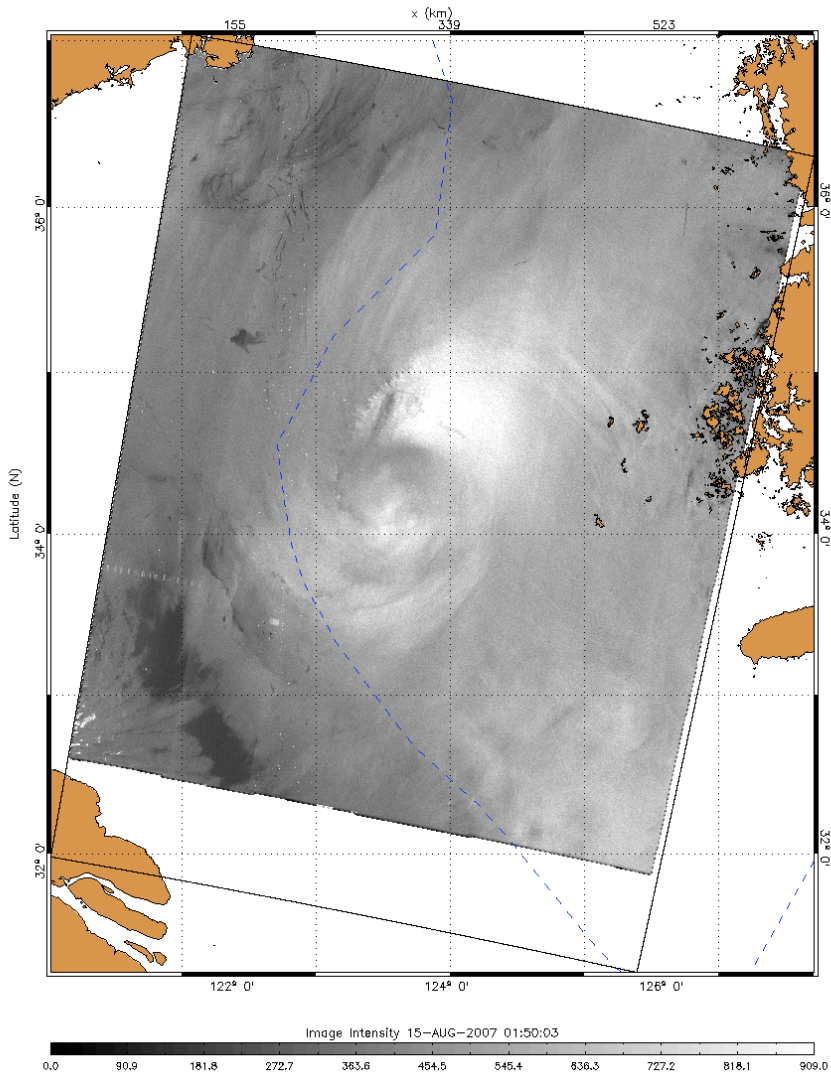
Project Activities

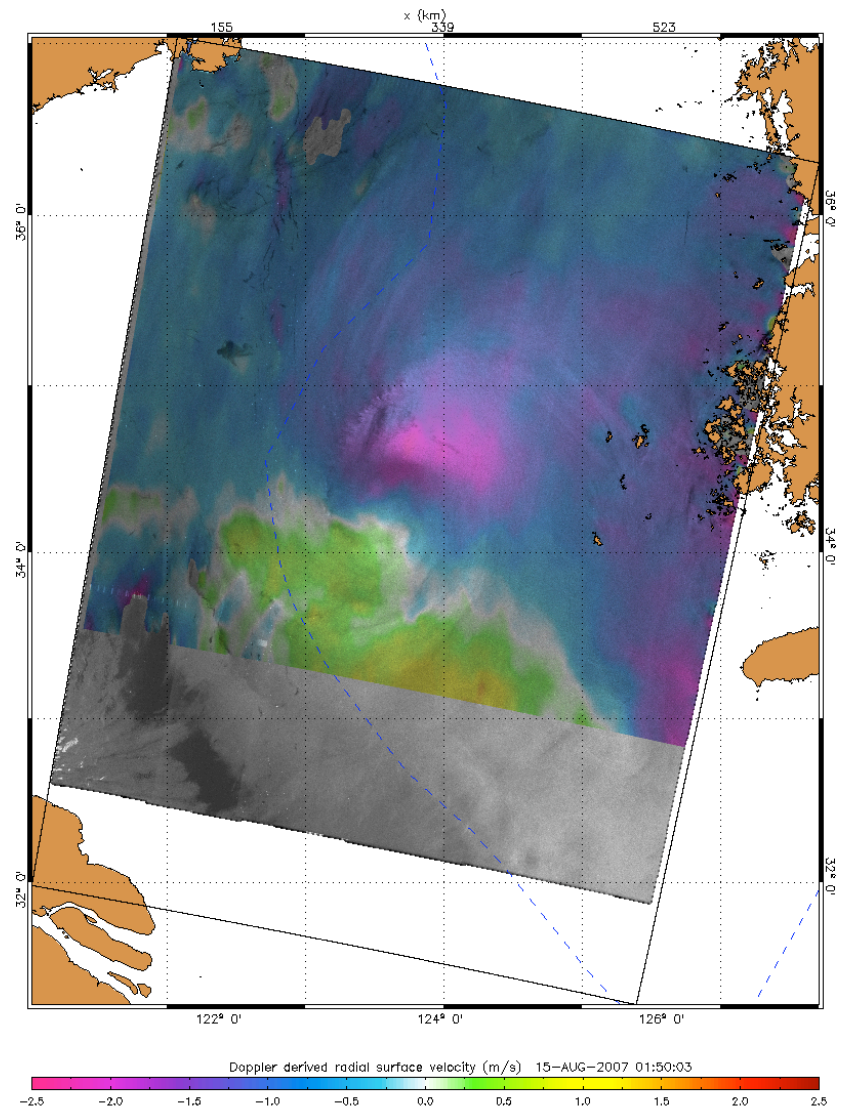
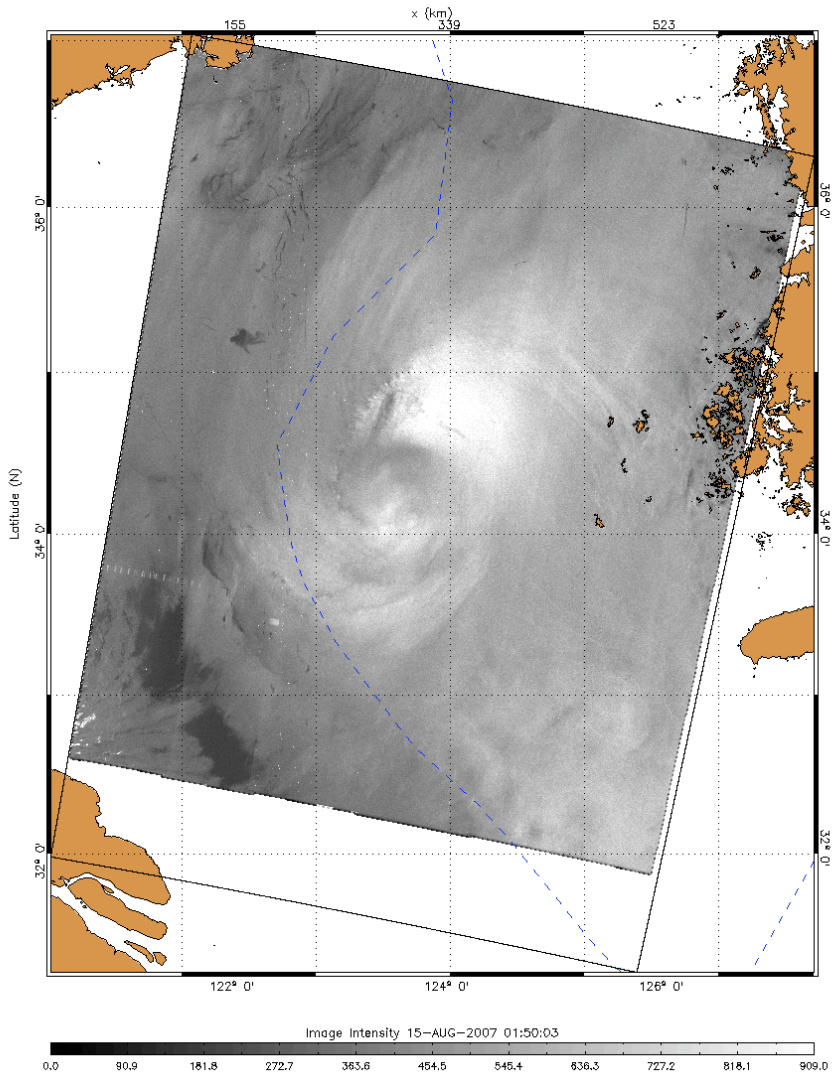
Ocean observation from space provide long-term, high resolution and global coverage of major sea surface parameters, that are key input for forecasting systems. Satellite data are essential to constrain ocean models and are used for assimilation, forcing and validation. Mersea Remote Sensing component provide **standardized** and **interoperable** satellite datasets for **operational** applications.

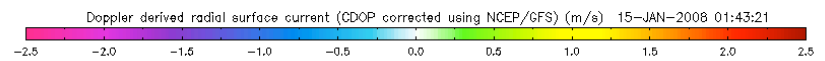
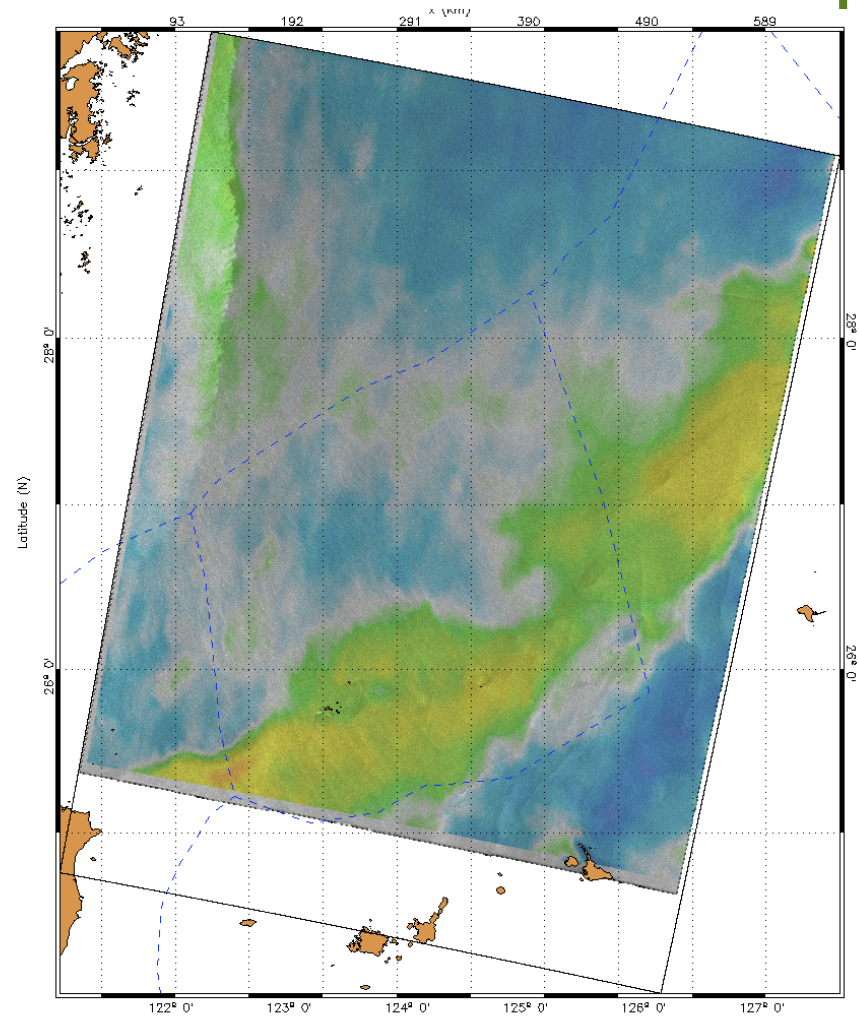
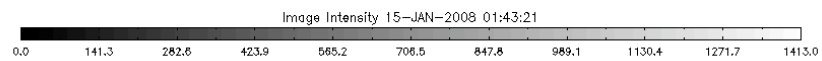
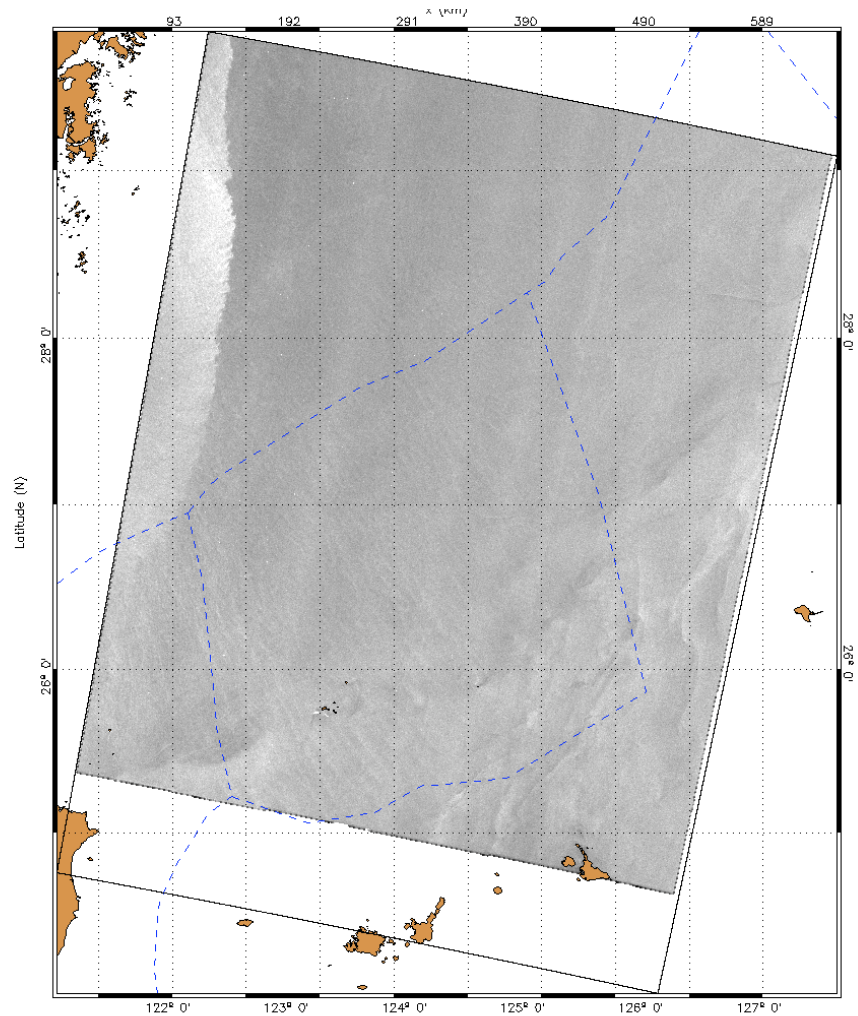


R/S TACs are based on existing European processing facilities: **CNES/CLS SSALTO/DUACS for altimetry**, **Eumetsat SAF for sea ice**, **SAF, GHRSSST and Medspiration for SST**, **Ocean colour to be built from MERSEA, Marcoast and Globcolour**.

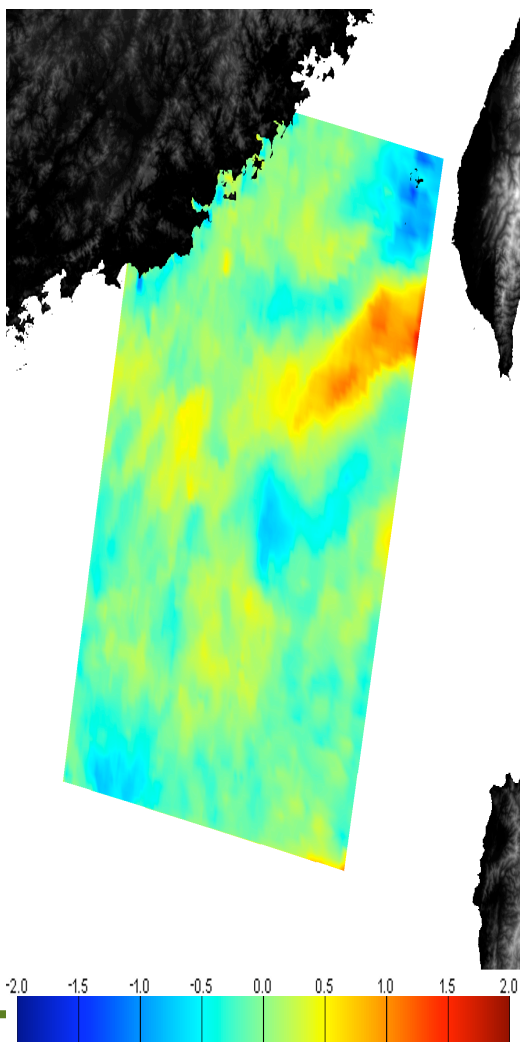
R/S TAC has **contributed to data harmonization and integration**, **established interface with modelling and assimilation centers**, **provided inputs to the GMES MCS Implementation Group** (Space Working Group)



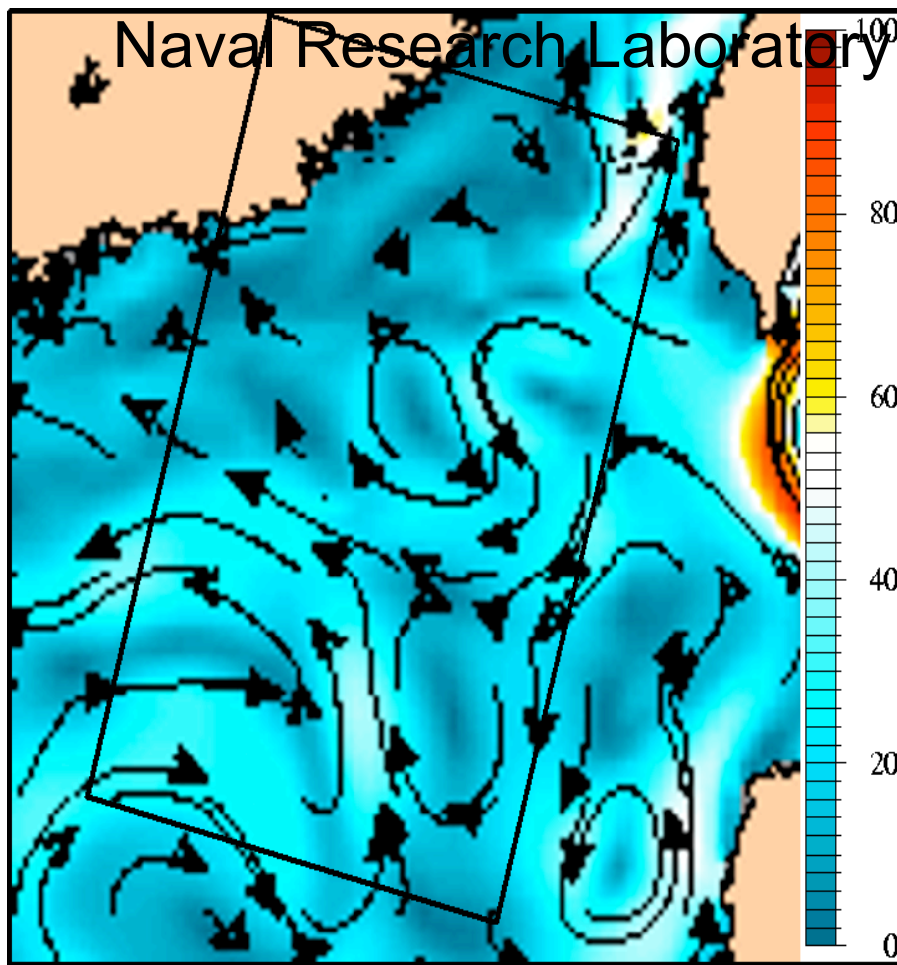




Current from SAR Doppler

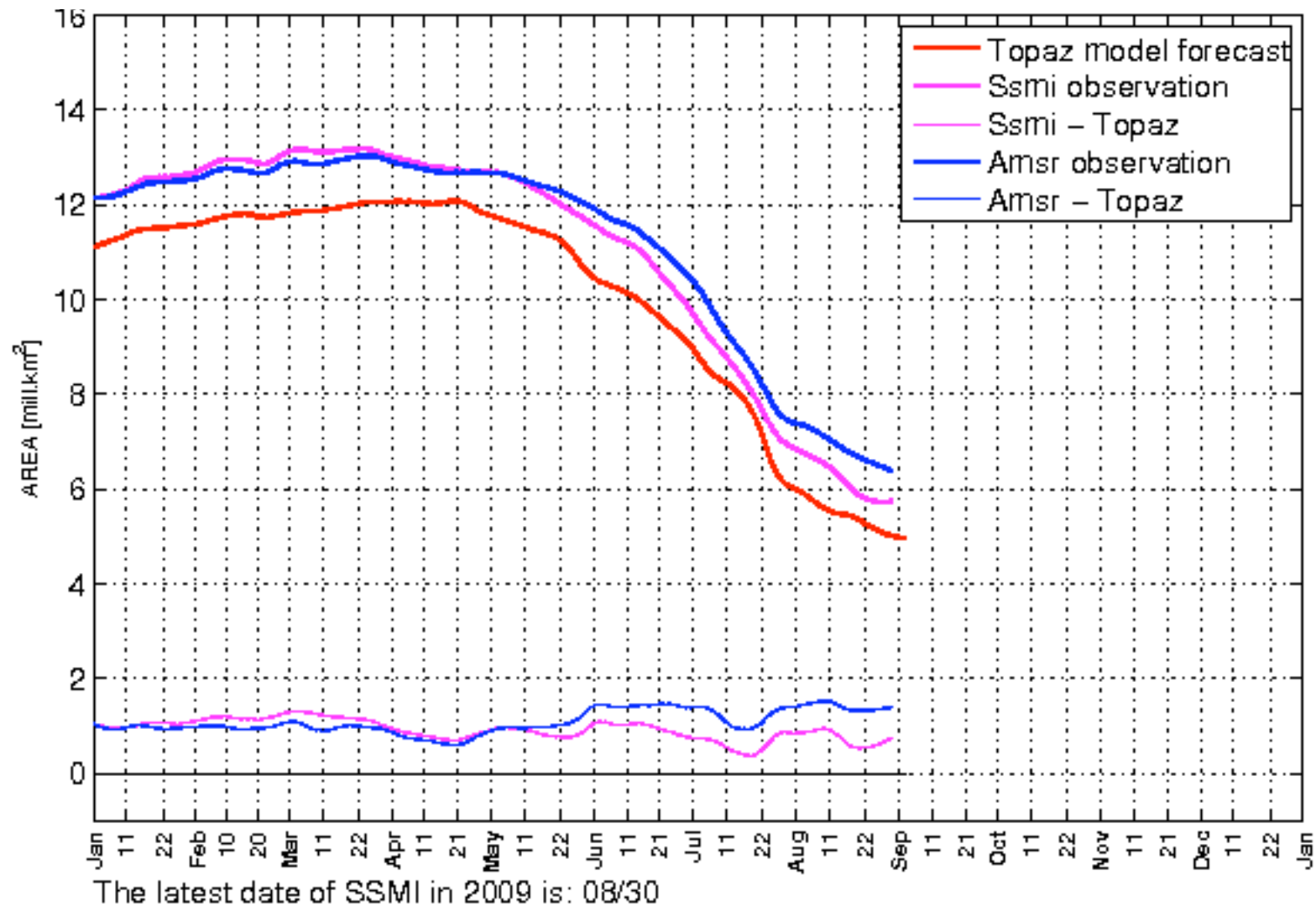


Sea surface currents (cm/s) as modelled with the NCOM, U.S. Naval Research Laboratory



SEA ICE OBSERVASJONER OG ASSIMILASJON

www.arctic-roos.org



WP 3 - Status



WP 3: Prof Ge Chen, Review of Level of Data Integration and Information Management

Following institutions are examined:

- 10 institutions affiliated with SOA
- 5 institutions affiliated with CAS
- 3 institutions affiliated with CMA
- 4 universities under MOE
- 5 military agencies

National Marine Data and Information Service undertake data integration

Example of cruise data sharing between the two largest oceanographic institutes in China, both affiliated with CAS. Generally data sharing is easier between institutions which are under the same administration (e.g. CAS, SOA...)

For Argo: two websites manage Argo data in China today: "China Argo Data Center" and "China Argo Real-Time Data Center"

Data policies (availability and cost) are reviewed for the Chinese, and some international, satellites, and subsequently for in situ data

WP 3 - Status



WP 3: Review of Level of Data Integration and Information Management in Europe

Experiences from MERSEA and GODAE projects (e.g. standards and format) are taken forward and is now implemented in GMES Marine Core Service project MyOcean. Data and products are in principle following OGC (Open Geographic Consortium) standards and data is generally freely available.

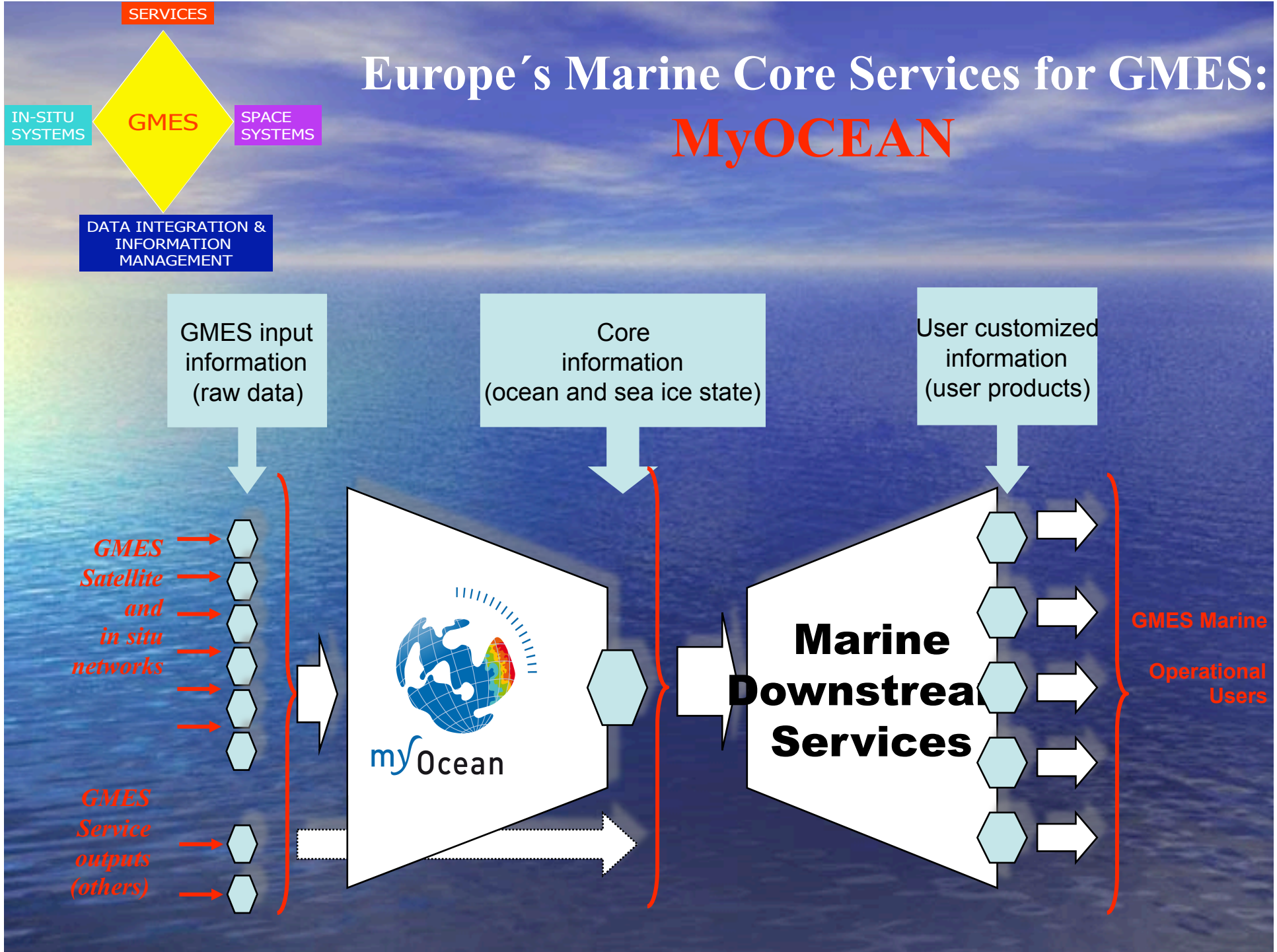
MyOcean is user driven with focus on 4 user groups:

- Marine Safety
- Marine Resources
- Marine and Coastal Environment
- Climate, Seasonal and Weather Forecasting

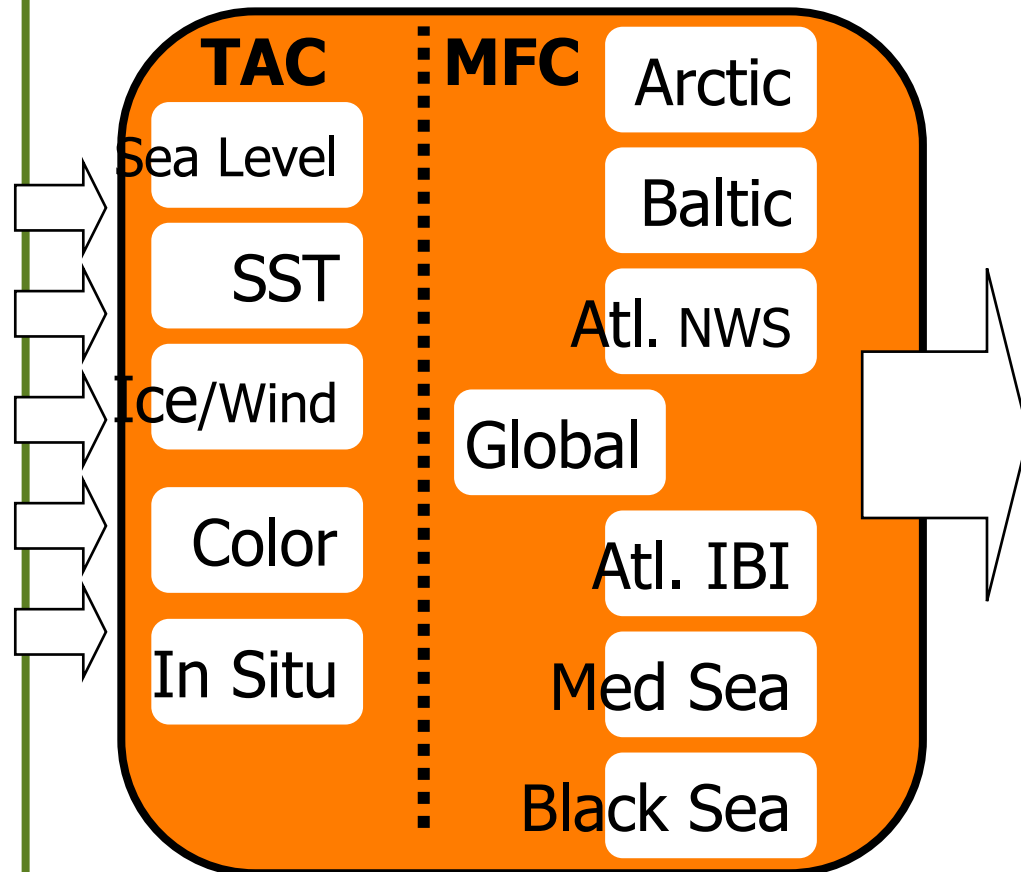
MyOcean has 12 production units

- 5 Thematic Assembly Centers (TAC). Operate servers to which people can connect to get either satellite or in-situ data. Produce information products.
- 7 Modeling and Forecasting Centers. Operational agreements with the TACs to get data for assimilation. Automated push/pull of data.
- One entry point for the users via the MyOcean service and help desk. Provide links

Europe's Marine Core Services for GMES: **MyOCEAN**

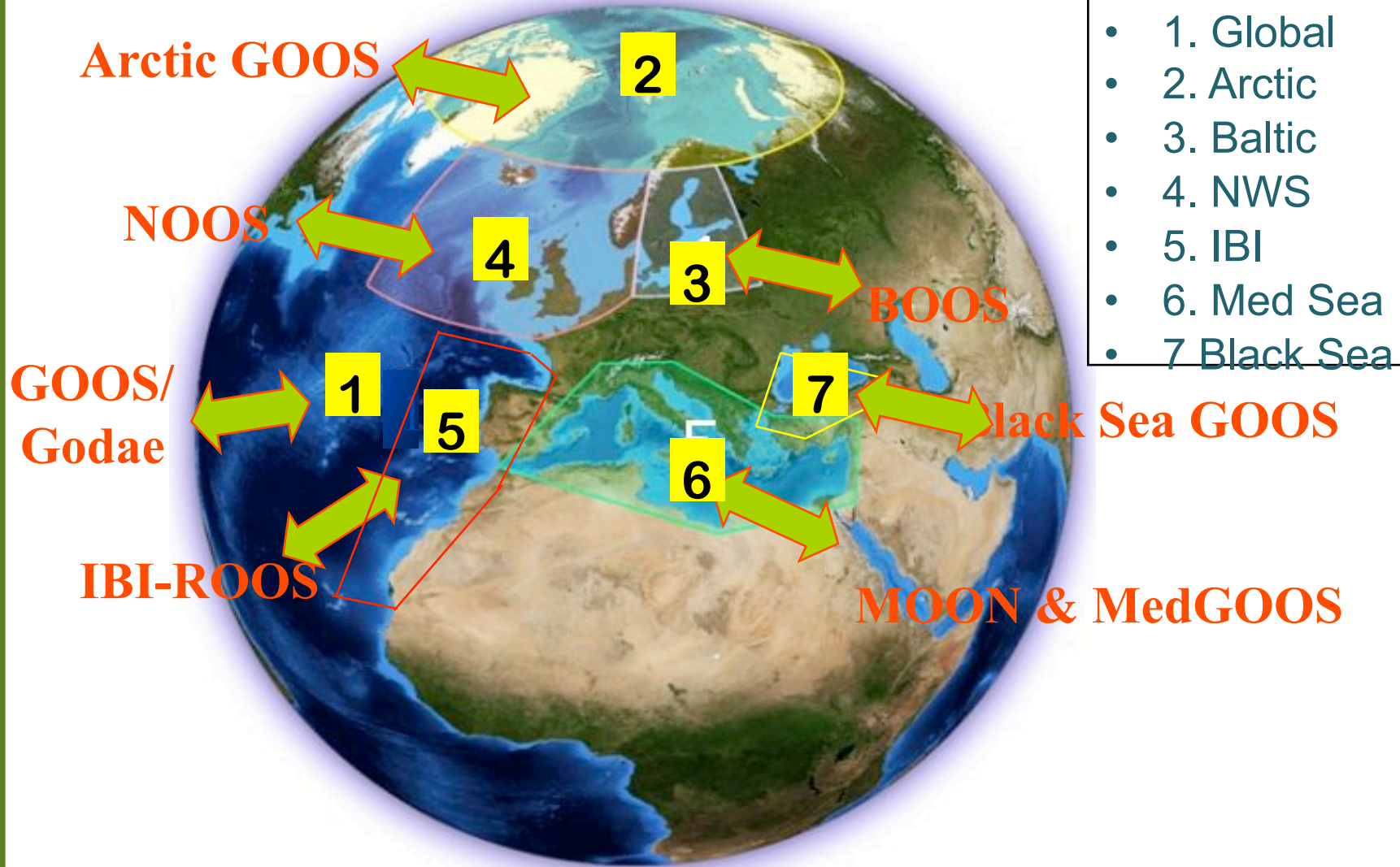


12 PRODUCTION UNITS



- **5 TAC : Thematic Assembly Centers**
 - “Observations”
- **1 global and 6 regional MFC: Monitoring and Forecasting Centers**
 - “Model / Assimilation”
- **Each Production Unit**
 - under operational commitments to deliver a service
 - Conducting R&D, Integration, Operations, and Assessment

MyOcean Regions



- 1. Global
- 2. Arctic
- 3. Baltic
- 4. NWS
- 5. IBI
- 6. Med Sea
- 7. Black Sea

- MyOcean users, their requirements, their assessment

Area 1

« MARINE SAFETY »

(marine operations, oil spill combat, ship routing, defense, search & rescue, ...)

Area 3

« MARINE AND COASTAL ENVIRONMENT »

(water quality, pollution, coastal activities, ...)

Area 2

« MARINE RESSOURCES »

(fish stock management, ICES, FAO, ...)

Area 4

« CLIMATE & SEASONAL FORECASTING »

(climate monitoring, ice, seasonal forecasting, weather forecasting)



Project

Products & Services

User's Feedback

MyOcean Products & Services

PORTFOLIO

CONTACT DESK

PORTFOLIO

Effectuez une recherche multicritères ou accédez au catalogue complet.

Full Catalog

GO >>

SELECT AN AREA

1



SELECT A PHYSICAL PARAMETER

2

- Temperature
- Wind
- Sea ice
- Salinity
- Current
- Sea level
- Biogeochemistry (oxygen)
- Biogeochemistry (CO2)

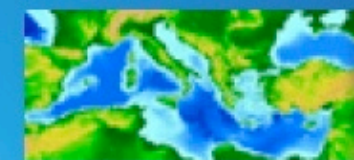
SELECT A PRODUCT TYPE

3

- Observation



- Analysis and forecast



SEARCH

Project Organization

■ Board

- **P.Bahurel** (chair, coord), M.Bell (UK), J.She (DK), F.Jacq (FR), J.Johannessen (NO), PY Le Traon (FR), N.Pinardi (IT)

■ Executive Committee

- Project manager: **F.Adragna** (Mercator Ocean)
- Assisted by the PMO (Project Management Office) : 4 persons
- 17 WP Leaders

■ Advisory Committee

■ Core User Group

■ Scientific Advisory Group

WP 4 - Status



The administrative infrastructure of the marine environment forecasting systems in China, its marine environment forecast products and services.

The State Ocean Administration (SOA) of China with its organization of subordinates entities and their responsibilities include:

- the NMEFC activities, its products and services
- the National Marine Data and Information Service,
- the National Marine Environmental Monitoring Center,
- the Polar Research Institute of China
- the North China Sea Branch of The State Oceanic Administration
- the East China Sea Branch of The State Oceanic Administration
- the South China Sea Branch of The State Oceanic Administration
- the Mindong Marine Environment Monitoring Central Station
- the Whenzou Marine Environment Monitoring Central Station
- contributions to other institutes and organization to the different extreme event pre-warning services.

WP 4 - Status



WP 4: Dr. Liying Wan, Review of ocean and coastal information products and services

- State Ocean Administration of China (SOA) is responsible for the marine environment forecasting and information products and services
- China Meteorological Agency (CMA) provides marine weather forecast services.
 - Overview of short-term forecast products
 - Sea Surface temperature (NMEFC and other centers)
 - Ocean wave and swell (NMEFC and other centers)
 - Tide (other centers)
 - Beach (water quality, temperature, wave height, tide etc (NMEFC)
 - Ship Routing (NMEFC)

Medium range forecast

- Ten-day SST
- Ten-day Sea Ice (winter)

Long-term forecasting - El Nino

Marine disaster pre-warning systems

WP 4 - Status



WP 4: Prof Z. Chaofang, Oceanic research and numerical modeling by different institutions in China

- Informed about evolution and status of Chinese ocean/wave models
- Sea ice monitoring and forecasting

WP 4: Prof Y. Gao, Ocean/climate models at IAP/Nansen-Zhu/NERSC

- MICOM
- Bergen Climate Model, coupled model, Solar radiation is the only driving source
- Nested Air Quality Level (MM5). Used to predict air quality during Beijing olympics
- Regional HYCOM (M. Fang can work on this setup during upcoming stay at NERSC)

WP 4: Dr. H Etienne,

- About GODAE, GMES and MERSEA
- Next Step: MyOcean

Chinese model systems seem to be more developed to also catch local/coastal systems. However, automatic online distribution of data to users seems to be more developed in Europe with more websites and servers. Chinese websites mostly distribute images, not so often data.

WP 5 - Status



WP 5. Prof L. Shao and Dr. Y. Bai, China and Europe Marine Capacity Building Investigations

This WP relies on input and achievements from WP 1-4 and it will also take benefit of Dragon 2

- Comprehensive overview of Chinese universities and laboratories complying marine research
- Broad list of European marine research institutes
- Specific content for three yearly reports of WP5:
 - 1. Capacity building identifications
 - 2. Identify and describe major gaps
 - 3. Future Chinese and European building design, in compliance with GMES/GEOSS

WP 6 - Status



WP 6: Workshops, summer school and symposium

- A small workshop was planned in parallel with the DRAGON 2 Symposium in Barcelona, Spain from 23-26 May 2009. It was cancelled.
- Some DRAGONESS project partners attended the summer school at CAS/IAP in October 2008
- DRAGONESS symposia should be held in conjunction with Dragon2-symposia. No explicit Dragoness symposium will be held.
- Future Dragoness meetings:
 - Progress meeting or workshop to be planned in connection with Dragon 2 symposium in China in 2010.
 - **3rd year annual meeting/ Final meeting in Beijing in September 2010**

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

Year 2 reporting

Filling in Form C

Legal name: According to contract

Cost model according to contract

Audit costs under Management of the consortium and also of which subcontracting.

Legal name of the audit firm and cost and the certificate.

Conversion rate on the first date of the first day of the first month following Form C. Conversion rate according to ECB.

Name and signature of authorized persons according to the contract.

Excel format of Form C to be sent by E-Mail and 2 signed originals together with Audit certificate to be sent by post (courier).

Audit Certificate with amount similar to Form C. Cost of the certificate mentioned and according to the Commission's requirements for audit certificate.

谢谢!

Thank you for your attention