



ESA-MOST Dragon Cooperation

中国科技部-欧洲空间局合作“龙计划”

## DRAGON 2 FINAL RESULTS AND DRAGON 3 KO SYMPOSIUM

“龙计划”二期总结研讨会暨三期启动会

# Data and model synergy for ocean and coastal dynamics

Project id: 10593

PIs from Europe:

Prof. Johnny A. Johannessen (NERSC),  
Dr. Fabrice Collard (CLS),  
Dr. Bertrand Chapron (Ifremer)

PIs from P.R. China:

Prof. Yunxuan Zhou,  
Prof. Fang Shen (SKLEC, ECNU)  
Prof. Ming-Xia He (ORSI, OUC)

# CO-PI Investigators

## ORSI / OUC:

- Prof. Ming-Xia HE
- Prof. Lei Guan
- Dr. Kan Zeng
- Dr. Mingqiang Fang
- Dr. LianboHu
- Dr. Yili Zhao
- Dr. Chuntao Chen

## SKLEC/ENCU:

- Dr. Bo TIAN
- Dr. Jianzhong GE
- Lihua WANG (PhDstud)

## NERSC (Norway)

- Dr. Anton Korosov
- Dr. Morten W Hansen

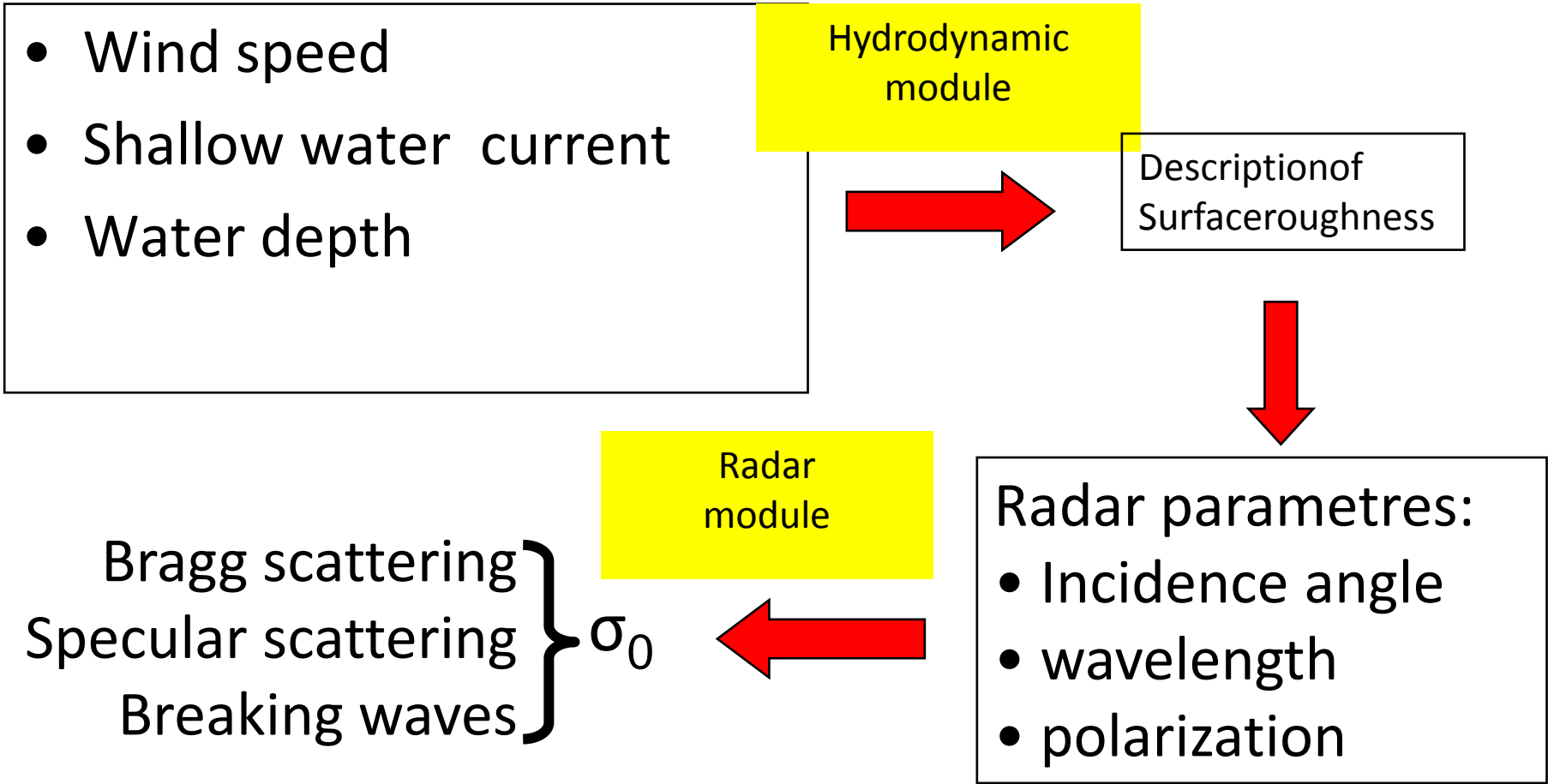
## UHAM (Germany)

- Prof. Werner Alpers

## CLS (France)

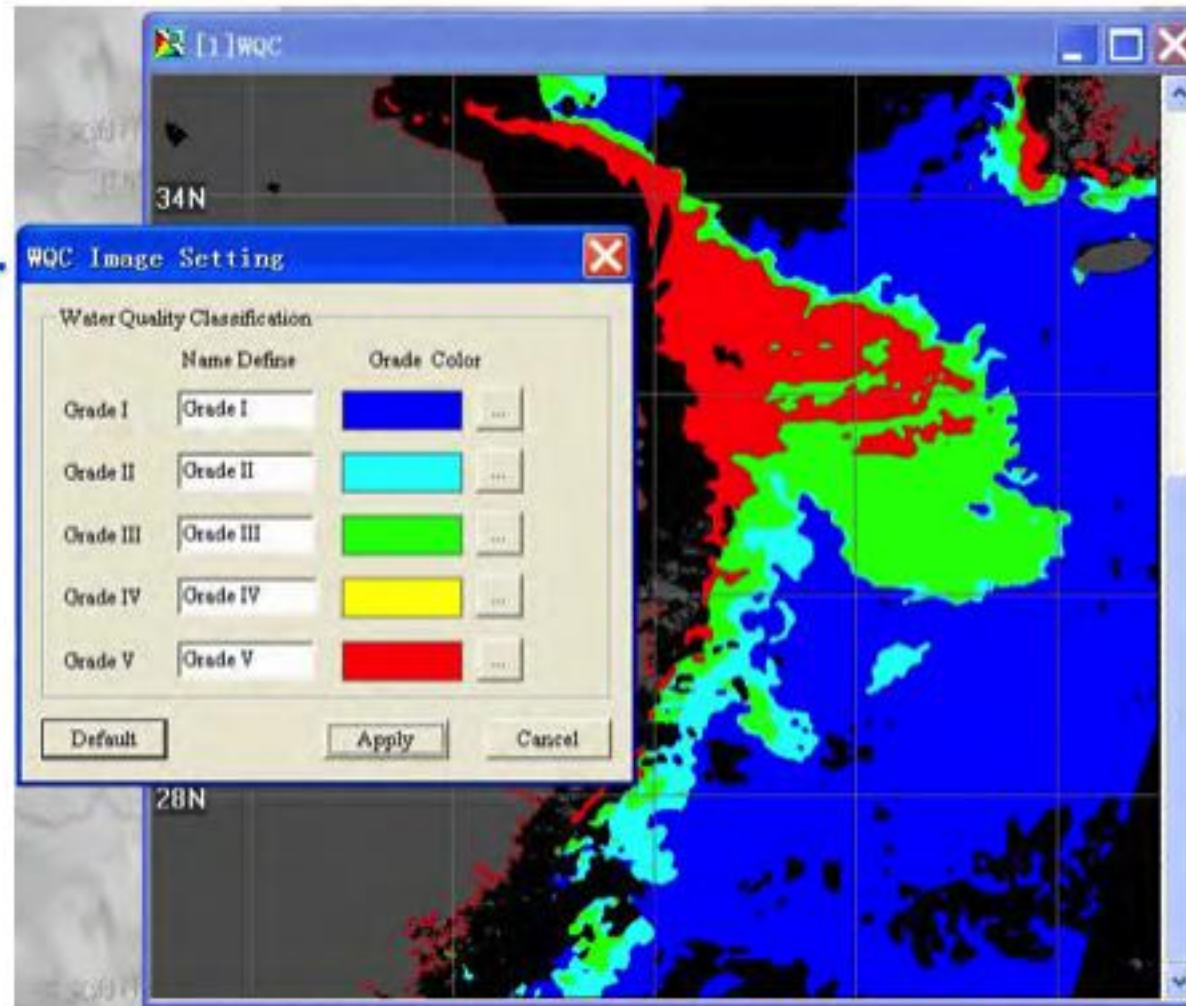
- Dr. Alexis Mouche

# Shallow water depth inversion



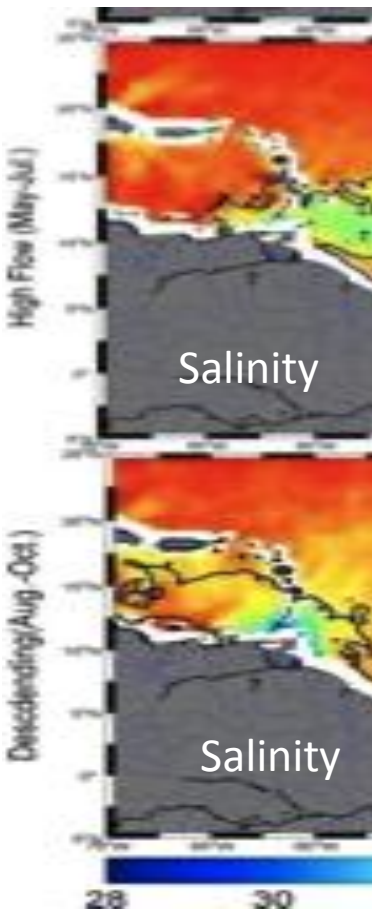
# Operational Application of on-orbit Sensors

## Operational System for Monitoring of Water Quality in Zhejiang Coastal Water

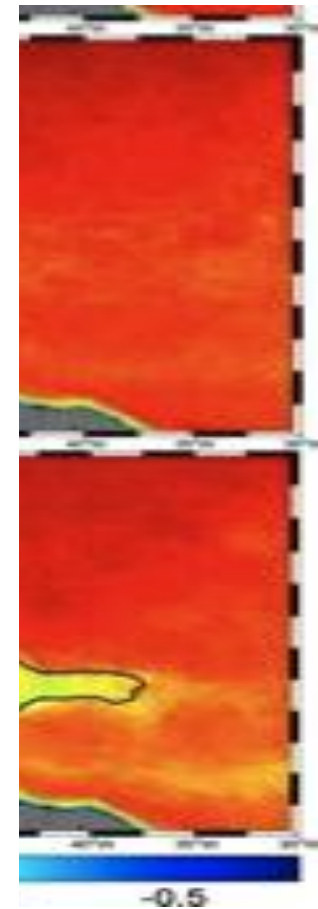
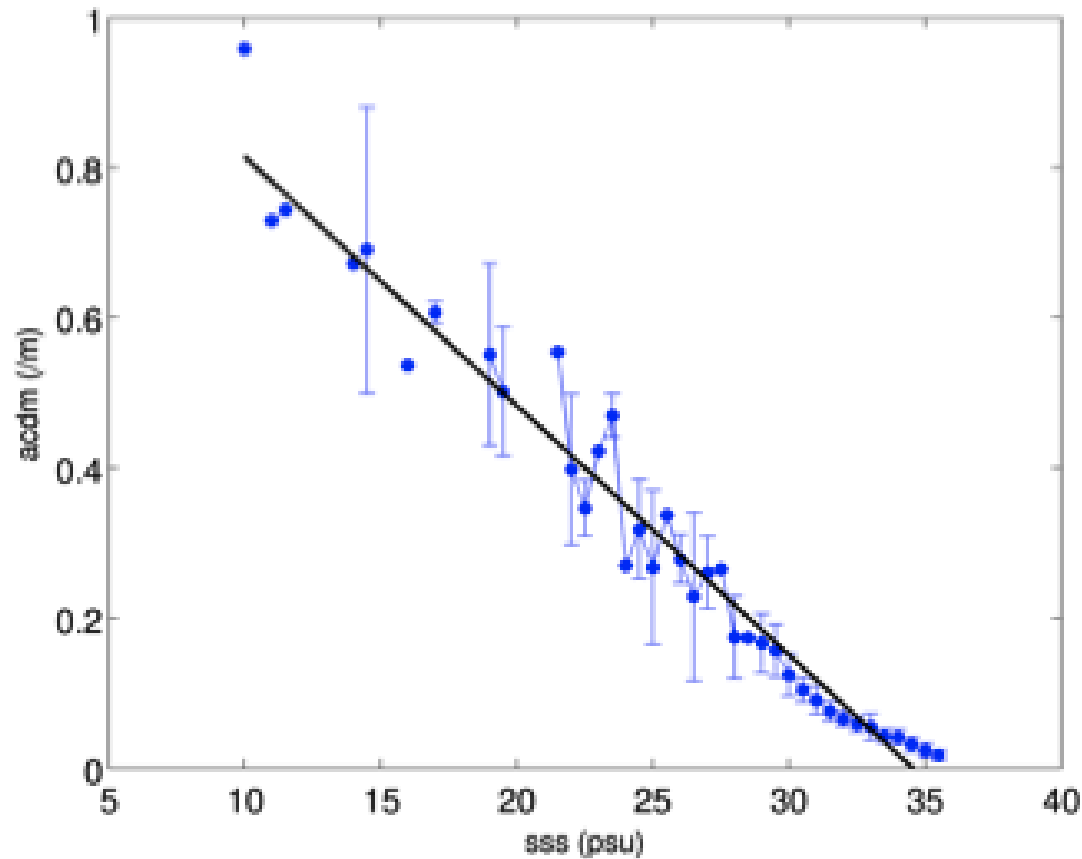


Results of water quality monitoring

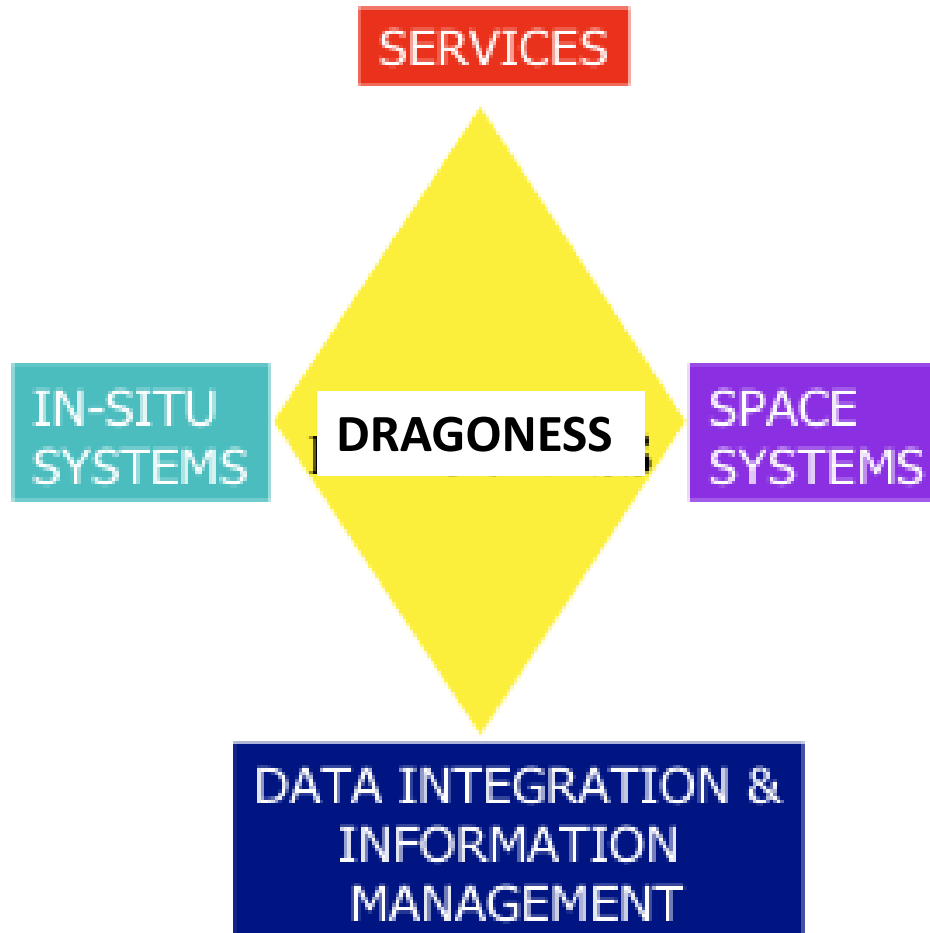
# Project objectives (cont.)



Amazon Plume - Mean salinity-cdm relationship 2010



# Key elements in marine services



# ESA, Chinese, TPM data to be investigated

## ESA:

Archived C-band SAR data (WS, IM mode)  
Archived ATSR, MERIS and AATSR images  
SMOS, GOCE

Sentinel 1 WS SAR data (from 2014)

Sentinel 3 SLSTR (for SST) and OLCI (for ocean color) data (from 2014)

## Chinese satellite data:

Archived data  
S-band SAR data (HJ-1C)  
Ocean color data (HJ-1A , HJ-1B)

## TPM:

L-band ALOS/PALSAR images (JAXA).  
C-band Radarsat images

# In-situ data measurements and requirements

- Dredging and bathymetric data in the coastal region around Shanghai for validation of shallow water retrievals from SAR.
- Direct current measurements of the Yangtze River outflow for validation of range Doppler velocity
- In-situ data for validation of water-quality retrievals from imaging spectrometers
- In-situ data for validation of CDOM to SSS relationship characterization



# Training of young scientists

- Training and exchange of young scientists is foreseen between the East China Normal University, Shanghai, the Ocean University of China, Qingdao, the Nansen Environmental and Remote Sensing Center in Bergen, Norway and Ifremer, Brest, France.
- Young scientists will be involved in development of the hydro-optical model and processing of optical satellite data as well as in in-situ data collection.
- Several members of the team have been involved in the ESA-MOST Dragon Advanced Training Courses in Ocean Remote Sensing in QingDao, 25-29 October 2004, in Hangzhou, 15-20 October 2007 and in Shanghai, 24-29 October 2011. Expected to continue in 2013-2015

# Expected results

- New and updated retrieval methods to derive ocean dynamic information associated with river runoff, shallow water bathymetry, and strong and persistent surface current regimes.
- New retrieval algorithms for water quality monitoring.
- Tentative establishment of CDOM-sea surface salinity relationship in the river outflow region and further offshore.
- Annual progress reports;
- Final report upon the project completion;
- Scientific papers in peer-reviewed international journals.
- Contribution to training courses offered in 2013 and 2015.

# Project Planning and Schedule

- **Year 1:** Data preparation, methodology development;
- Exchange of young scientists and PhD students
- **Year 2:** Data preparation, methodology development, calculation, analysis; The first training courses in remote sensing of China coastal waters.
- Exchange of young scientists and PhD students
- **Year 3:** Calculation, analysis, validation;
- Exchange of young scientists and PhD students
- **Year 4:** Analysis, validation, pre-operation and demonstration.
- The Second training courses in remote sensing of China coastal waters

## Collaboration with other DRAGON 3 projects

- Coastal Zone – 10470
- OPAC – 10705
- Ocean Resources and Microwave RS – 10412
- Applications of RA data – 10466
- Marine safety and security – 10580
- Oil spill monitoring - 10689