

# Global Processing and Products from MERIS Full Resolution Data for the Coastal Zone

User Consultation Meeting 3

## **Project Status**

Carsten Brockmann (BC)

19.-21.10.2011

Lisbon, Portugal



CoastColour

# UCM 3 Objectives

- Inform CC users about project progress since last UCM, its status and plans
- Give floor to CC users to report back experience with CC demonstration products
- Provide a platform for the global Coastal Remote Sensing Community for information exchange and scientific discussion
- Give directions for future Coastal Ocean Colour work (within CoastColour and beyond)

# Meeting Layout

- Wednesday Morning: team presentations
  - Work since last UCM, status, plans
  
- Wednesday Afternoon & Thursday Morning
  - User & team presentations on validation and new algorithm developments
  - Poster session
  
- Thursday Afternoon
  - User presentations on applications
  - Presentation and discussion: towards protocols for Case 2 algorithms
  
- Friday
  - Round Robin Workshop
  - Products Interactive Workshop and Training Course

# Objectives of CoastColour

- **MERIS FR data of challenging/important coastal zones at a regional scale**
- **Internationally discussed protocols for complex waters processing including algorithm performance assessment;**
- **An international comparison of processing algorithms for complex waters;**
- **Actively demonstrating and promoting MERIS capabilities for complex water;**
- **Preparation of the future exploitation of MERIS and Sentinel 3 products for applications in complex waters and for climate change studies.**

# CoastColour Team

- **ESA & Core Team**

- Simon Pinnock, Brockmann, Fomferra, Doerffer, Krasemann, Sathyendranath, Groom, Vicente, Ruddick, Santer, Brotas, Sá, Mota, Peters, Poser, ...

- **Consultants**

- Mark Dowell, Zhongping Lee, Yu-Huan Ahn, Stewart Bernart, Thomas Schroeder/Arnold Dekker, Jim Gower, Bryan Franz

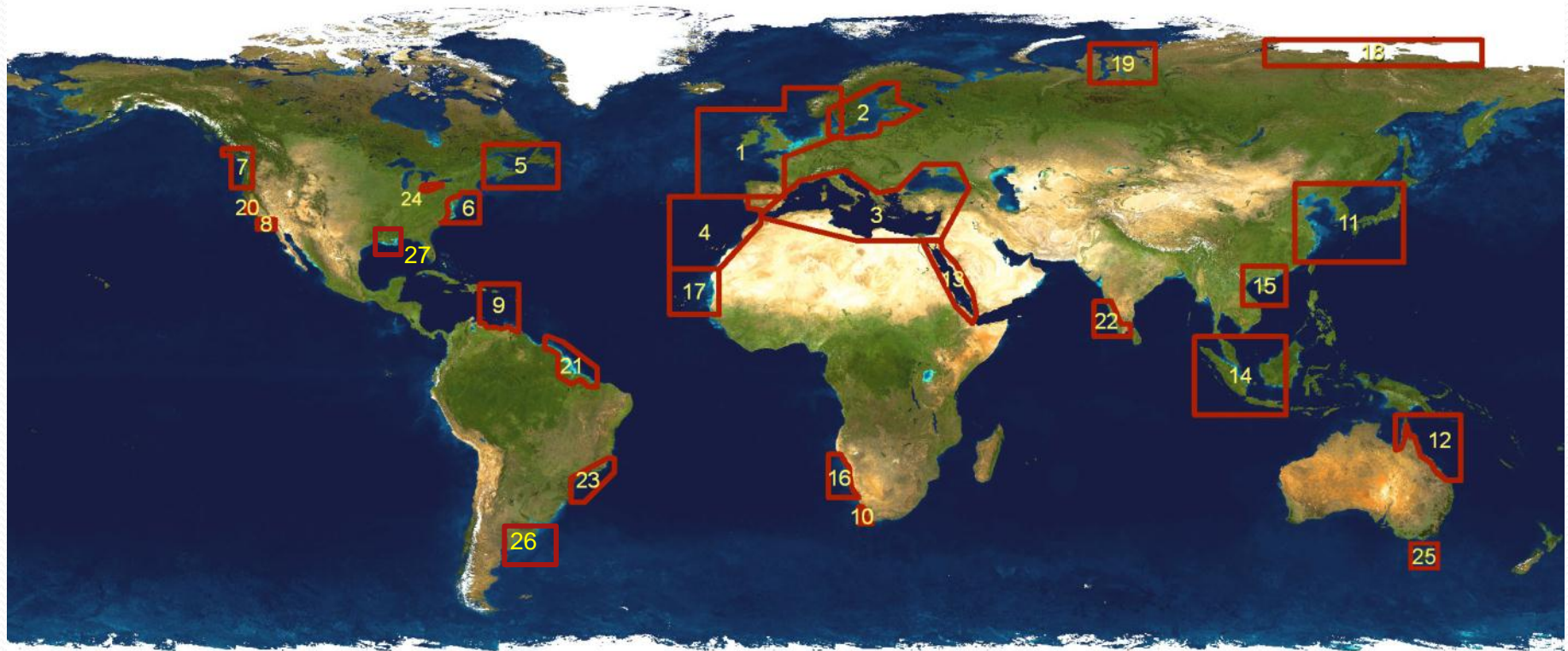
- **Science Team**

- Mark Dowell, Gene Feldman, Paul DiGiacomo, Jürgen Fischer, Hubert Loisel, Kai Sorensen, Prakesh Chauhan, Trevor Platt, Steef Peters



# Global Network of Users

## Global Distribution of Sites



Background Image: Blue Marble © NASA

**> 50 users, increasing, > 75.000 MERIS FRS Products**

# CoastColour User Consultation Meetings



March 2009  
First CoastColour UCM  
Cork, Ireland



November 2010  
Second CoastColour UCM  
Frascati, Italy

October 2011  
Third CoastColour UCM  
Lisbon, Portugal



# Recommendations from UCM 2

- Need for regional algorithms as well as one global algorithms
- Error characterisation
- Need for additional regions
- Need for continuity; transition to operational
- Stewardship of in-situ data
- Round Robin Exercise should be extended beyond CoastColour
- Multiple products, beyond current CoastColour product list
- Speedy delivery
- Open access
- Link to OC-CCI
- Link to other Space Agencies should be continued and strengthened



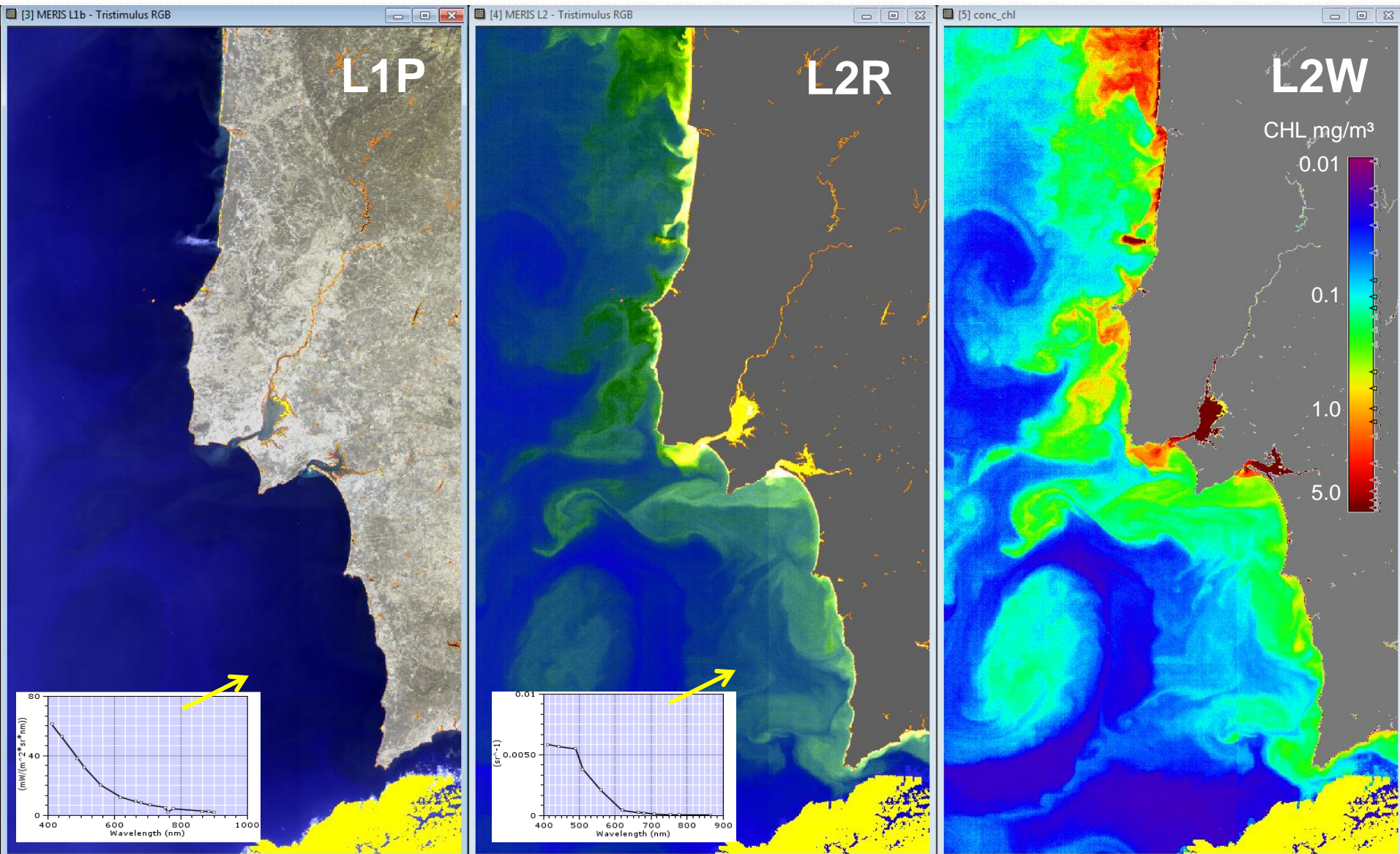
# Recommendations from UCM 2

- Coastcolour has demonstrated the strong need for a continuing forum in the coastal community of users. Coastcolour should develop and enhance ways to meet this need and thereby consolidate the synergy already needed in the coastal community

# Main achievements of last 12 months (1)

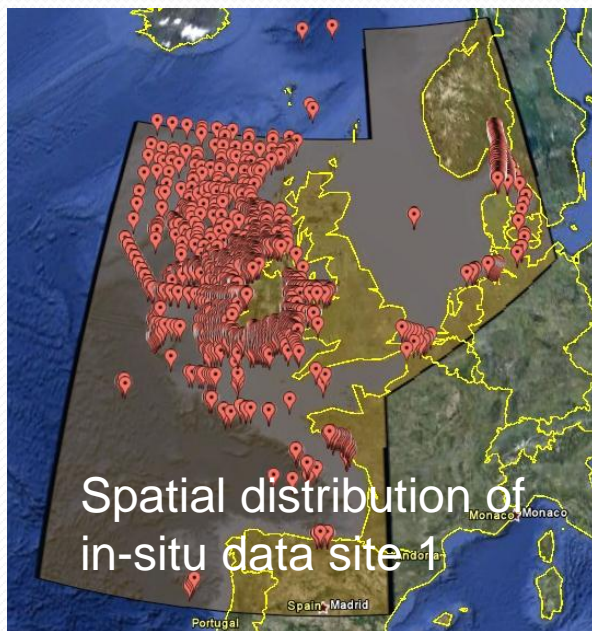
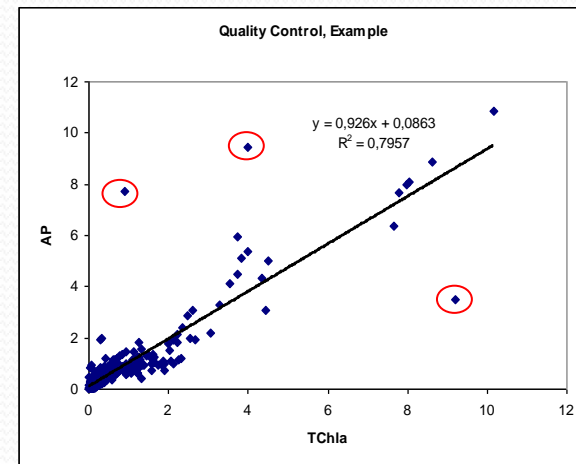
- Development and consolidation of the **L1P** product
  - Geometric and Radiometric corrections
  - Pixel classification (Land/water, clouds, glint)
  - netCDF format
- Development of **L2R** and **L2W** prototype processings
  - L2R = marine reflectances; L2W=water products
  - Using NOMAD database & user supplied in-situ data
  - Several approaches for regionalised neural networks
  - Integration of QAA approach
  - Linking with Optical Water Type classification
  - Experimental products (fluorescence, primary production)

# MERIS 11.10.2011; Portuguese coast

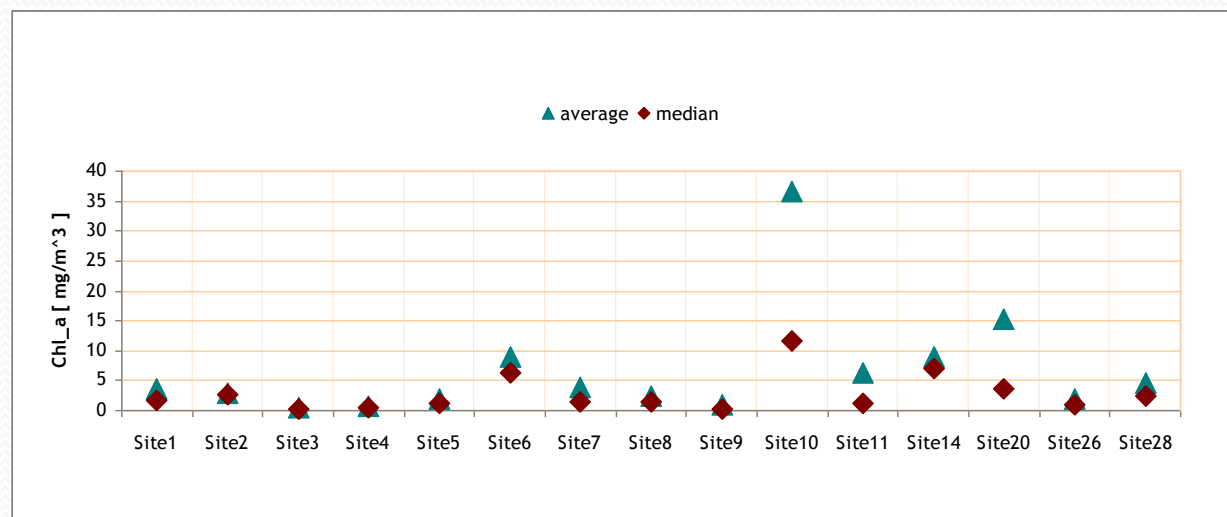


# Main achievements of last 12 months (2)

- Compilation of **in-situ** database
  - Input to regional algorithm development
  - Input to Round Robin dataset
  - Input to validation dataset
  - Technical Note online



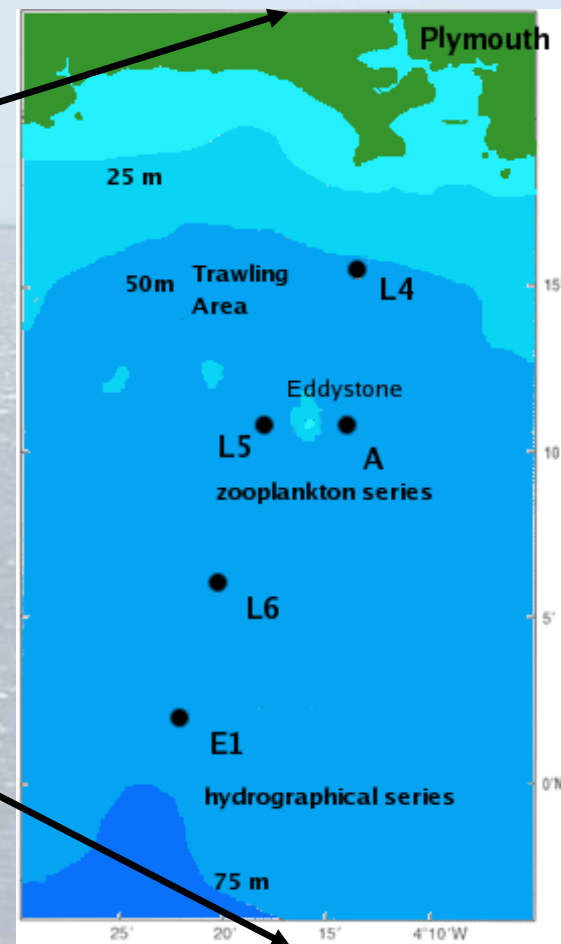
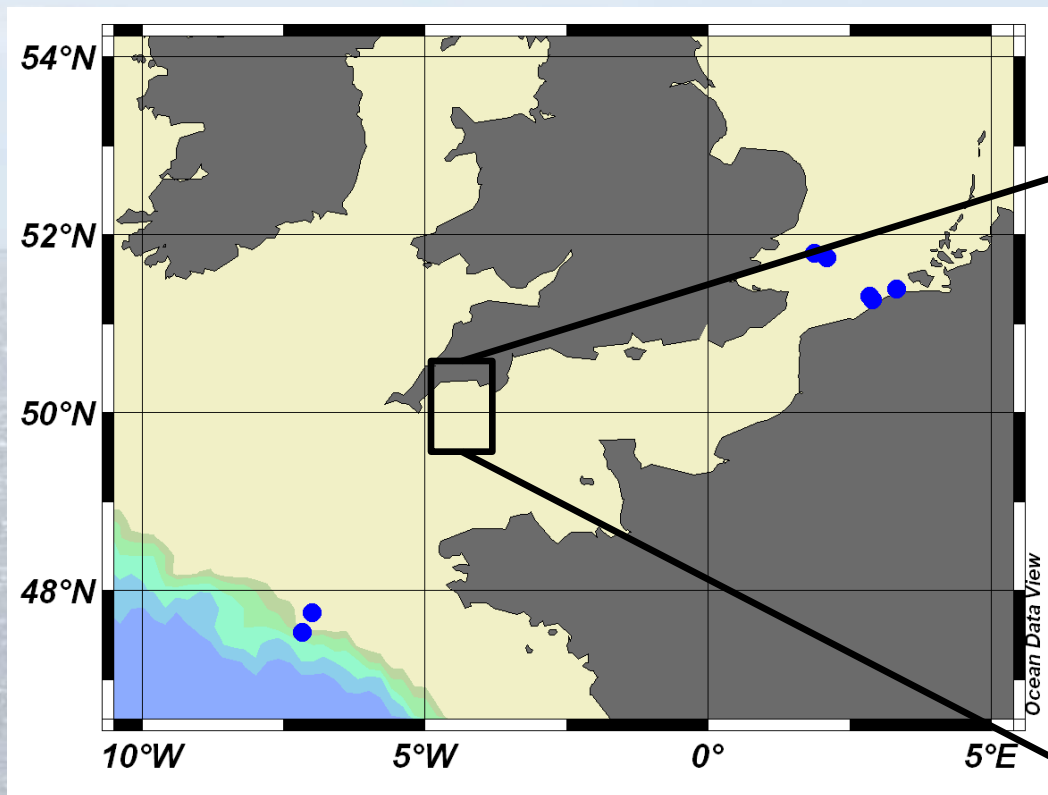
Chlorophyll Concentration, all sites

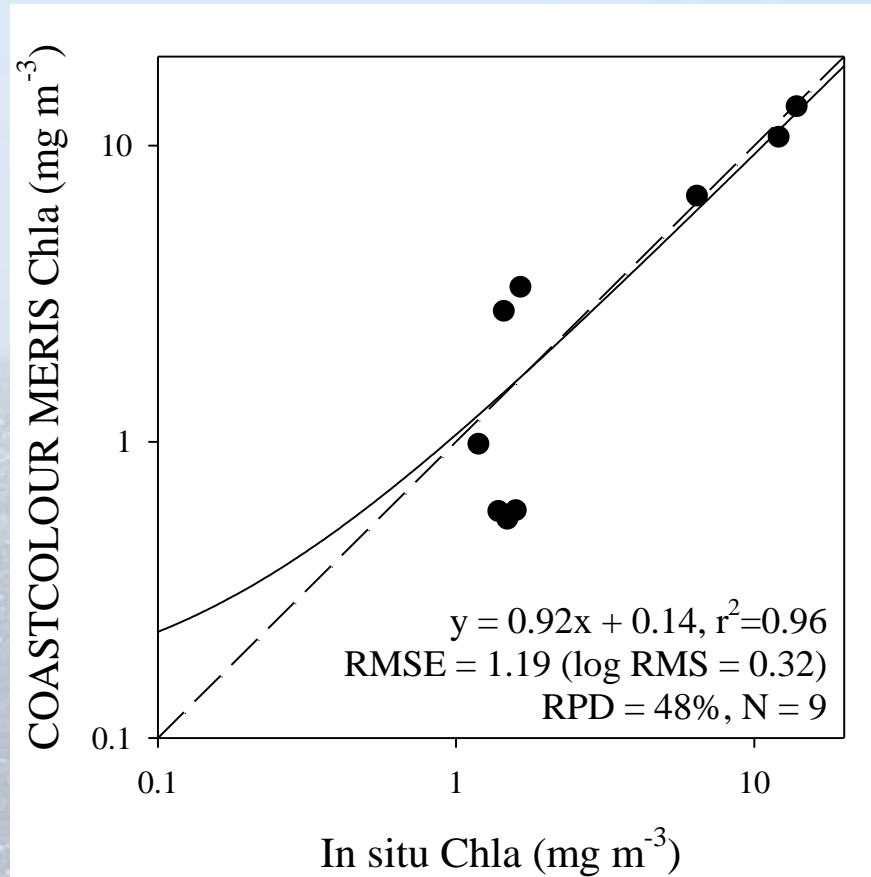


2006 data

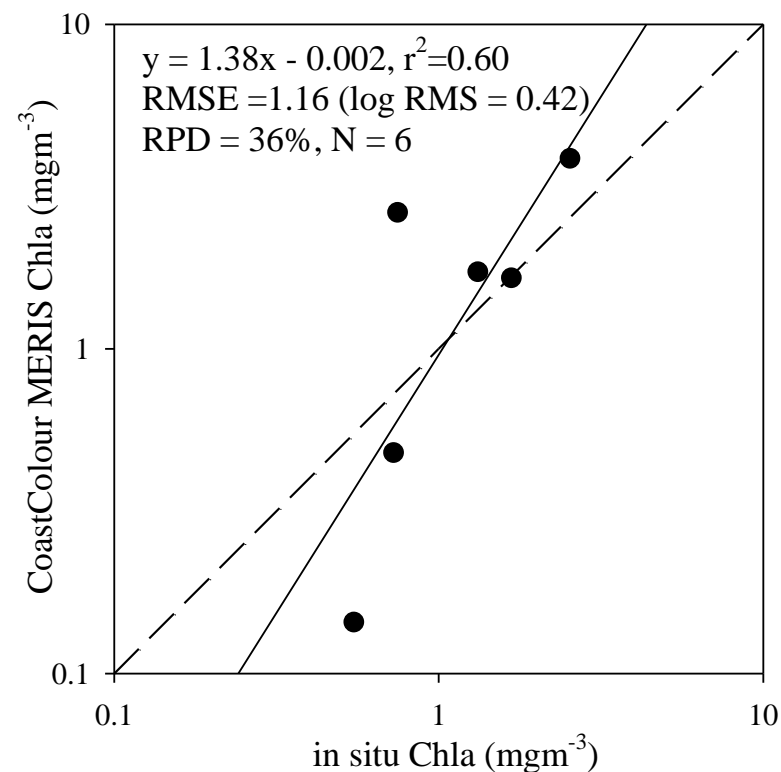
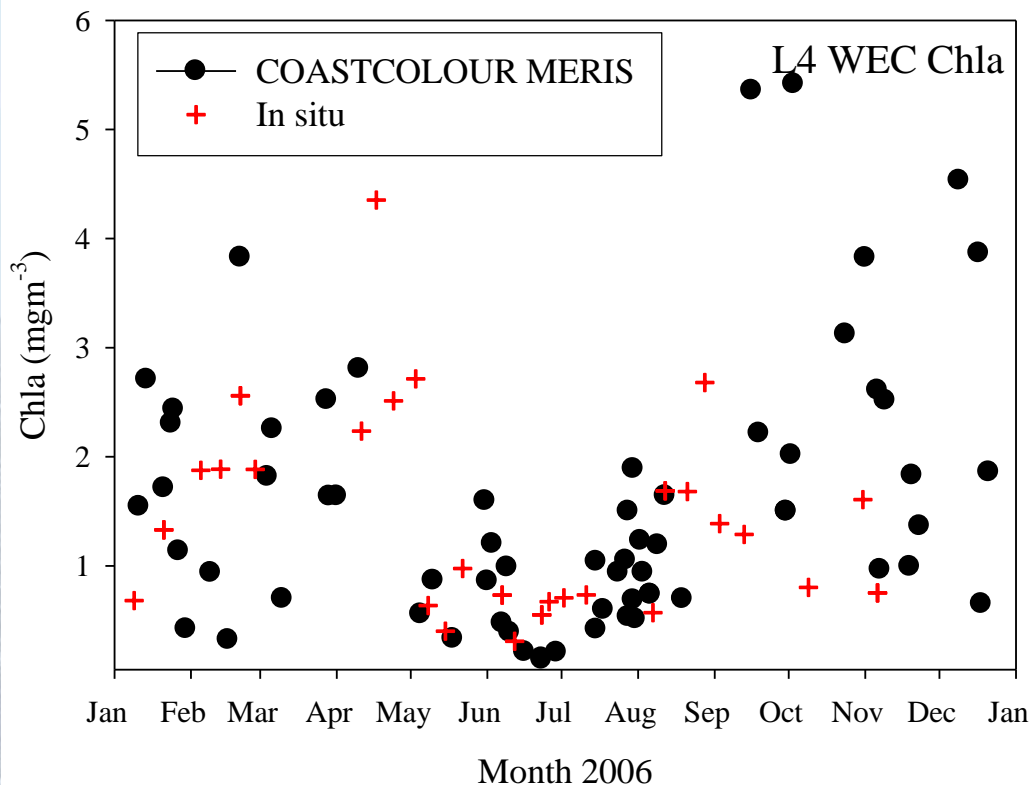
“North Sea” Validation Stations.

Western English Channel Validation Station: L4.

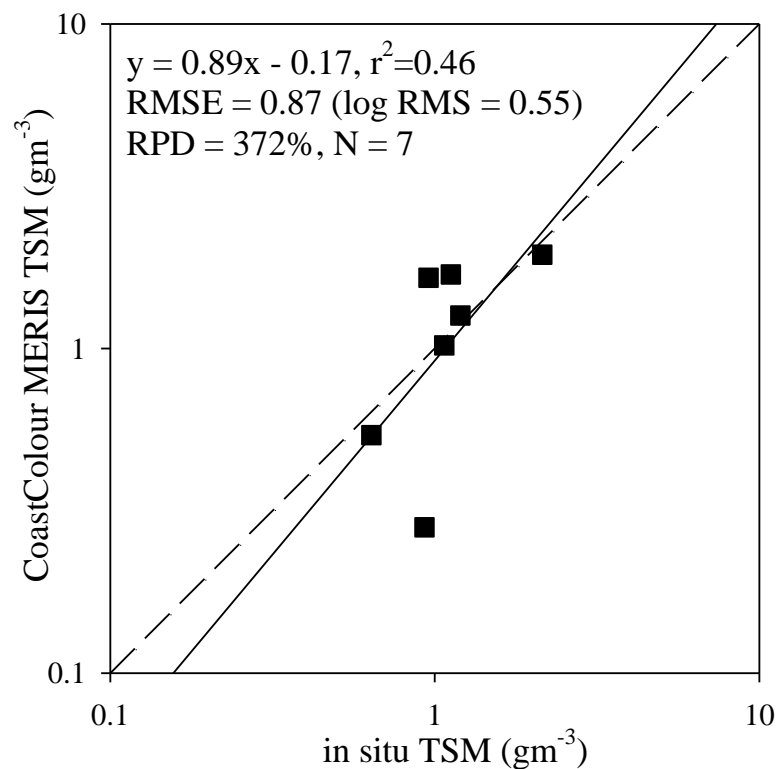
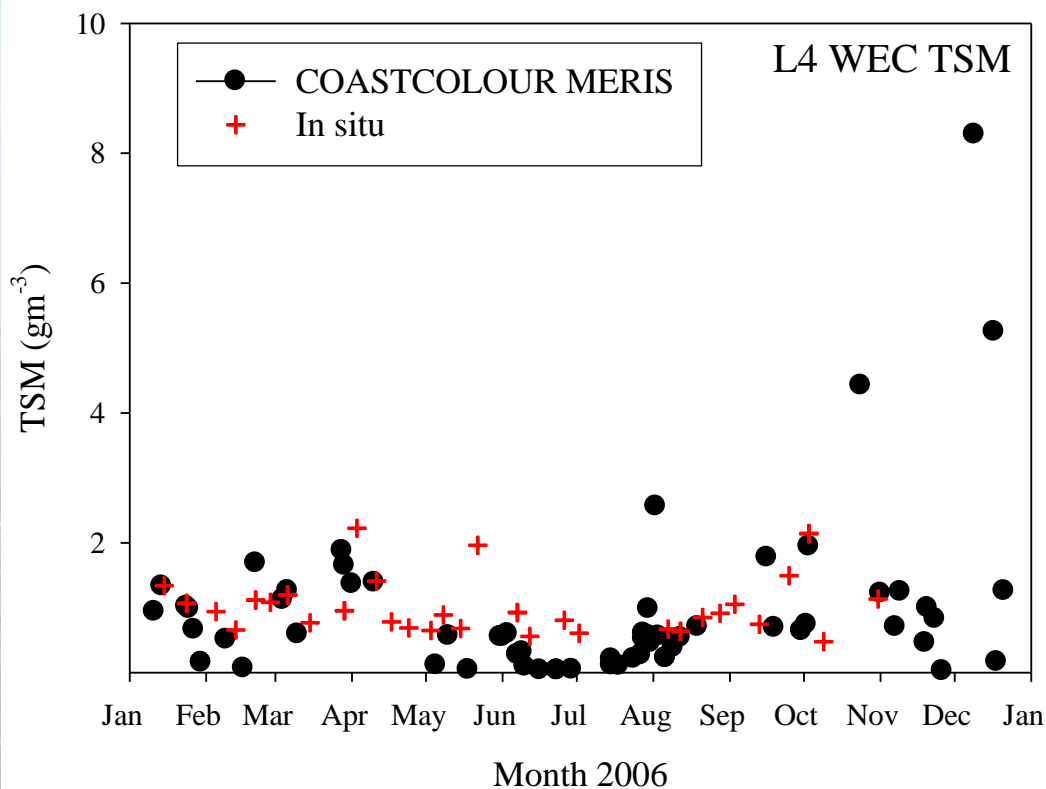




## L2W invalid and sunglint flags removed

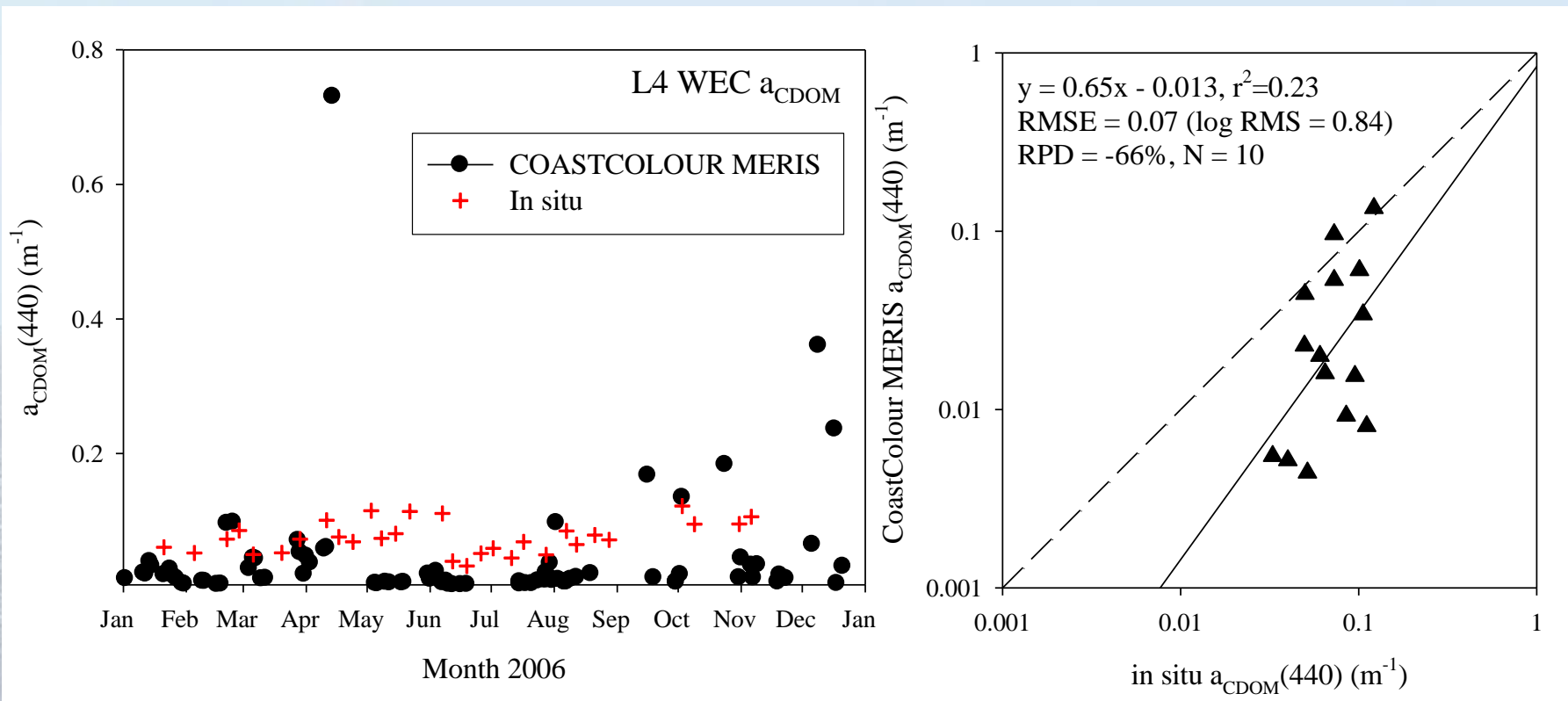


## L2W invalid and sunglint flags removed

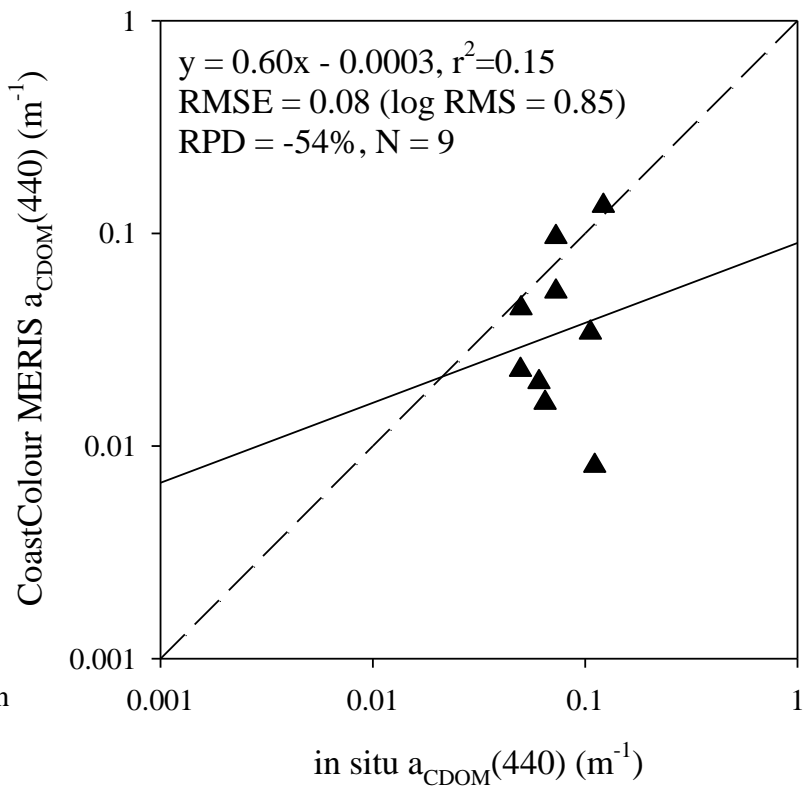
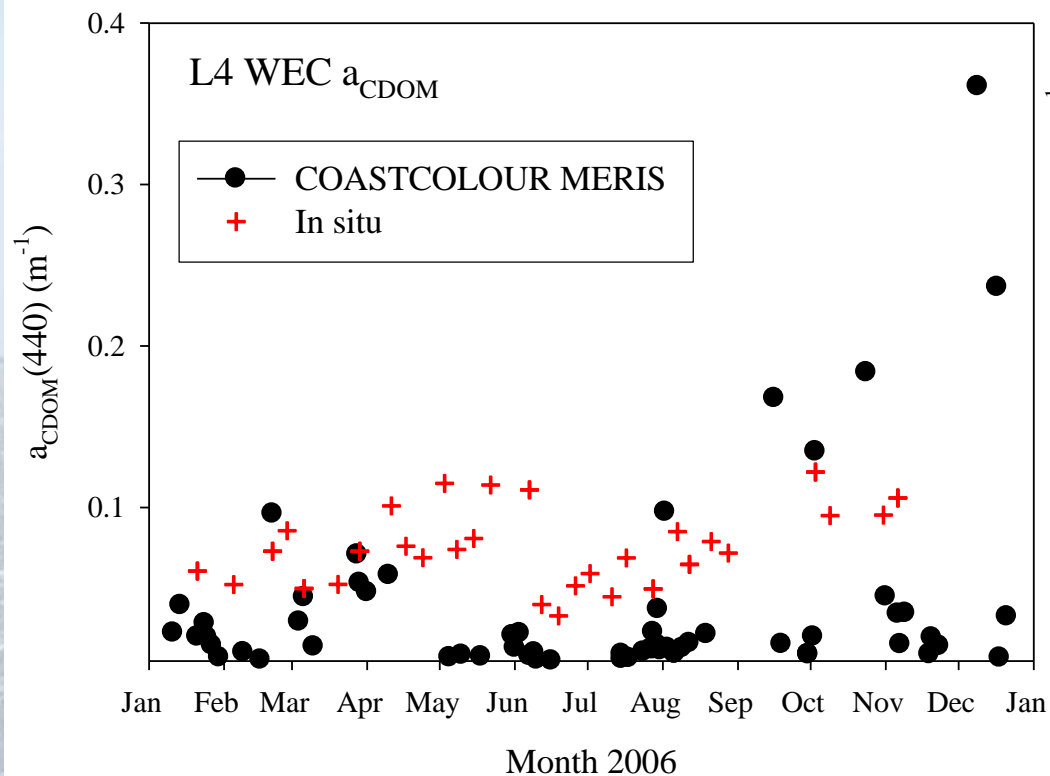




All data – no flags removed

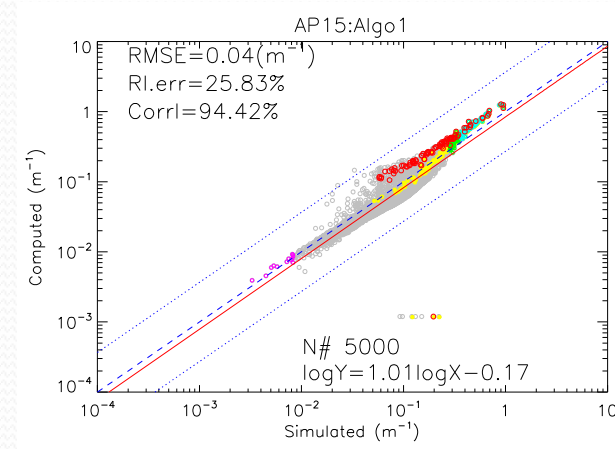
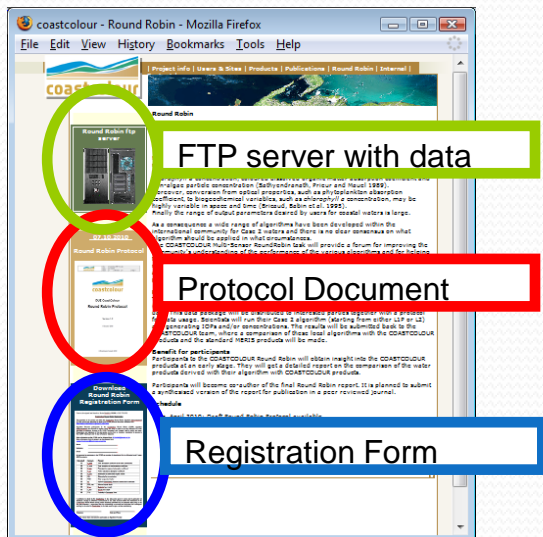


L2W invalid and sunglint flags removed



# Main achievements of last 12 months (2)

- **Round Robin Exercise**
  - Development of the RR Protocol (online since 10/2010)
  - Compilation of the RR dataset (online since 12/2010)
  - First RR workshop in April 2010 (Brussels)
  - Second RR workshop in June 2010 (video conference)
  - Third RR workshop in October 2010 (Lisbon)
  - IOCCG Round Robin Working Group initiated (led by K. Ruddick)



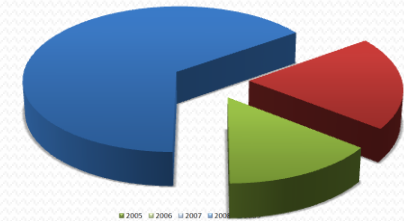
# Main achievements of last 12 months

- Setting-up the **production** system
  - Large storage facility
  - Calvalus processing facility
  - Large ftp distribution facility
- Processing of **complete dataset L1P**
  - Available since June 2010
  - Free and open access
- Processing of **demonstration dataset L2R and L2W**
  - 1 year (2006) L1P, L2R and L2W
  - Available since May 2010 to CC Champion users for validation
- Setting-up **NRT service**



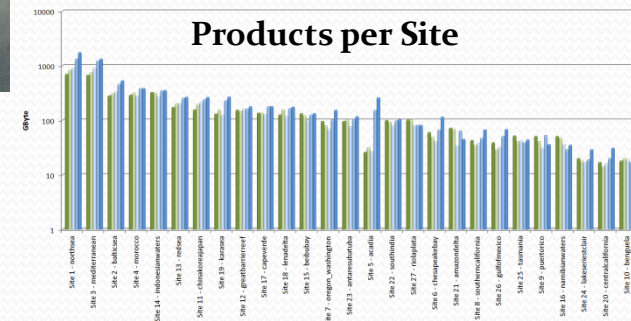
Processing Time

■ L1P ■ L2R ■ L2W



■ 2005 ■ 2006 ■ 2007 ■ 2008

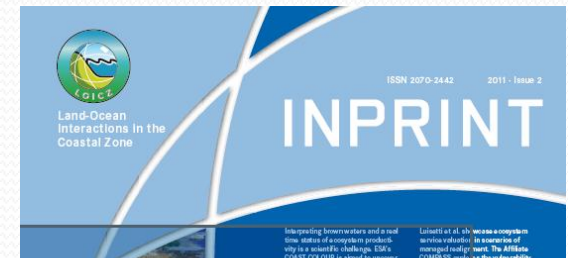
Products per Site



# Main achievements of last 12 months

- **International networking**

- Close liaison with NASA, Jaxs and KORDI on validation data and product validation
- Intense interactions with all champion users on in-situ data
- Continued contact with GeoHAB, Pogo, LOICS
- Common progress meetings with OC-CCI
- Project presentations at meetings & conferences



**IOCCG/GEOHAB Working Group and CoastColour: Potentials for Synergy**

- HAB Working Group assessing performance and applicability of a wide range of ocean colour products, using both MERIS and MODIS, for a range of bloom types in many of the CoastColour Champion User sites with a range of bio-optical and other in situ data...
- HAB Working Group assessing information content of spectral reflectance with regard to the phytoplankton assemblage type through changes in biomass and bio-optical water type...
- HAB Working Group, with monograph and special issue as outputs, has the ability to showcase MERIS FR a CoastColour products to broad community...
- MERIS FR, given spatial resolution and availability of the 709 nm band, is an optimised sensor for HAB appli and is extremely important to the HAB working group, particularly to assess advanced processing options: IC C2R, MCI/FLH, and other atmospheric correction and empirical/analytical algorithm options...

INPRINT 2011/2

## Scientific Highlights

### CoastColour delivers water quality information for 27 globally distributed coastal areas

Authors:

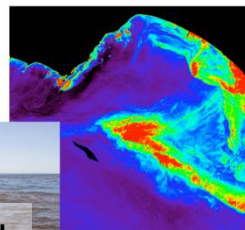
Carsten Brockmann  
Brockmann Consult,  
Max-Planck-Str. 2,  
21502 Geesthacht, Germany,

Katharina Poser  
Brockmann Consult,  
Max-Planck-Str. 2,  
21502 Geesthacht, Germany

Elisabete Mota  
Fundação Faculdade Ciências  
Universidade Lisboa, Campo  
Grande, 1749-01 6 Lisbon,  
Portugal.

Simon Pincock  
ESRIN European Space  
Agency, Via Galileo Galilei,  
I-00044 Frascati (Rom) Italy

Assistance with access to the FR data, at both L1 and L2, for the case studies would be extremely useful to the HAB Working Group, and it is hoped the case studies could form part of the CoastColour algorithm inter-comparison, and that case study output could be used to showcase CoastColour achievements.



courtesy: Cheriton/Kudela

Slide courtesy of S. Bernard

Introduction

through their effect on the phytoplankton. A good example of the latter is the input of inorganic fertilizers from agriculture

# Past and Future Milestones

- December 2010: Round Robin Dataset out
- January 2011: Newsletter 2 published
- April 2011: 1<sup>st</sup> Round Robin WS
- May 2011: Demonstration dataset available to Champion Users
- June 2011: L1P Full Dataset free available (2005 – 2009) & 2<sup>nd</sup> Round Robin WS
- July 2011: Newsletter 3 published
- September 2011: in-situ Technical Note published
- October 2011: UCM<sub>3</sub>, RR 3<sup>rd</sup> WS, NRT started
- December 2011: Round Robin Report
- January 2012: L1P Reprocessed (2005 – 2010)
- March 2012: Protocol for Case 2 algorithm development
- March 2012: L2R & L2W (2005 – 2010)