

Remote sensing products for water quality monitoring.

Araceli Pi Figueroa, Antonio Reppucci, Laia Romero, Laura Moreno-Patricio, Masayo Haneda

Starlab Barcelona S.L., C/ Teodor Roviralta 45, 08022 Barcelona, Spain

Araceli.pi@starlab.es

Introduction

Through the European Global Monitoring for Environment and Security (GMES) Programme, the European Space Agency (ESA) and the European Community (EC) are supporting partnerships to establish operational services, targeted at users charged with the responsibility of implementing environmental policy.

The activities presented here have been performed under the GMES program by providing operational water quality monitoring services, based upon applications of satellite data. A number of key Spanish governmental entities in charge of EU policies implementation are federated and involved in the services validation.

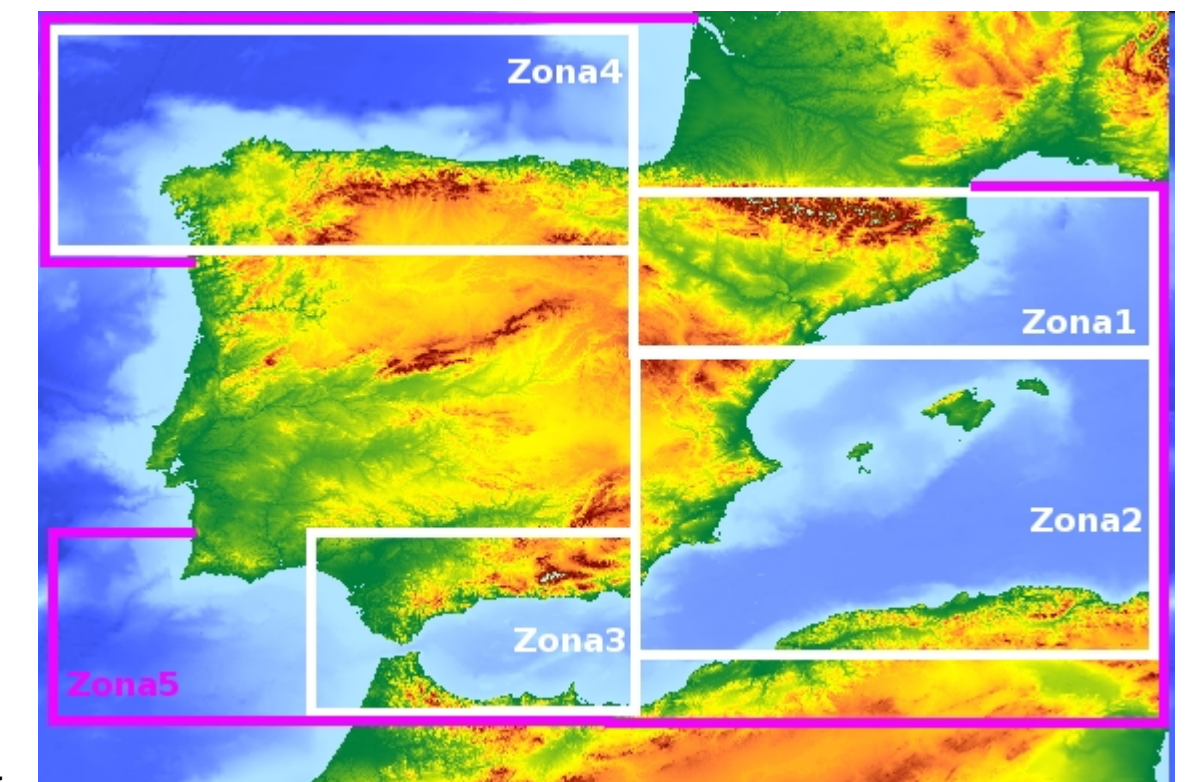


Fig.1: Study area

Satellite Data as source of information

Satellite data has been revealed as valuable source of information to cover not only open ocean but also coastal waters. It provides a panoramic view to be complementary to the in situ data.

Water quality monitoring and algae blooms monitoring and alert rely – beside SST from AVHRR and AATSR – on data provided by two ocean colour instruments: MERIS onboard ENVISAT and MODIS on Aqua. Raw data are processed using case 1 and case 2 algorithms and delivered with a resolution of 1 km and 300 m (MERIS FR).



Fig.2:ENVISAT-MERIS. (Credit: European Space Agency)

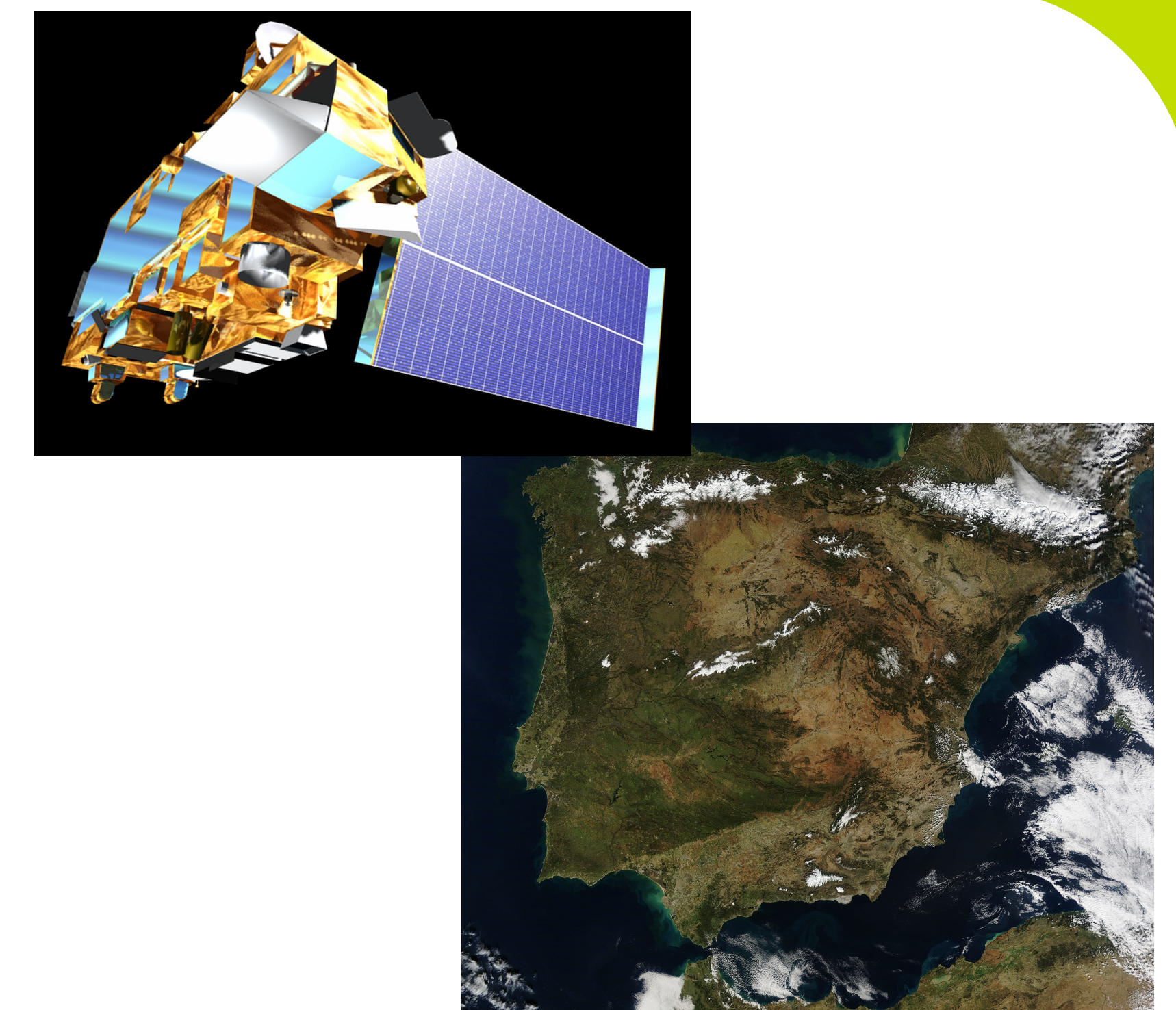


Fig.3: Terra-MODIS. (Credit: NASA)

Water quality monitoring service

MarCoast

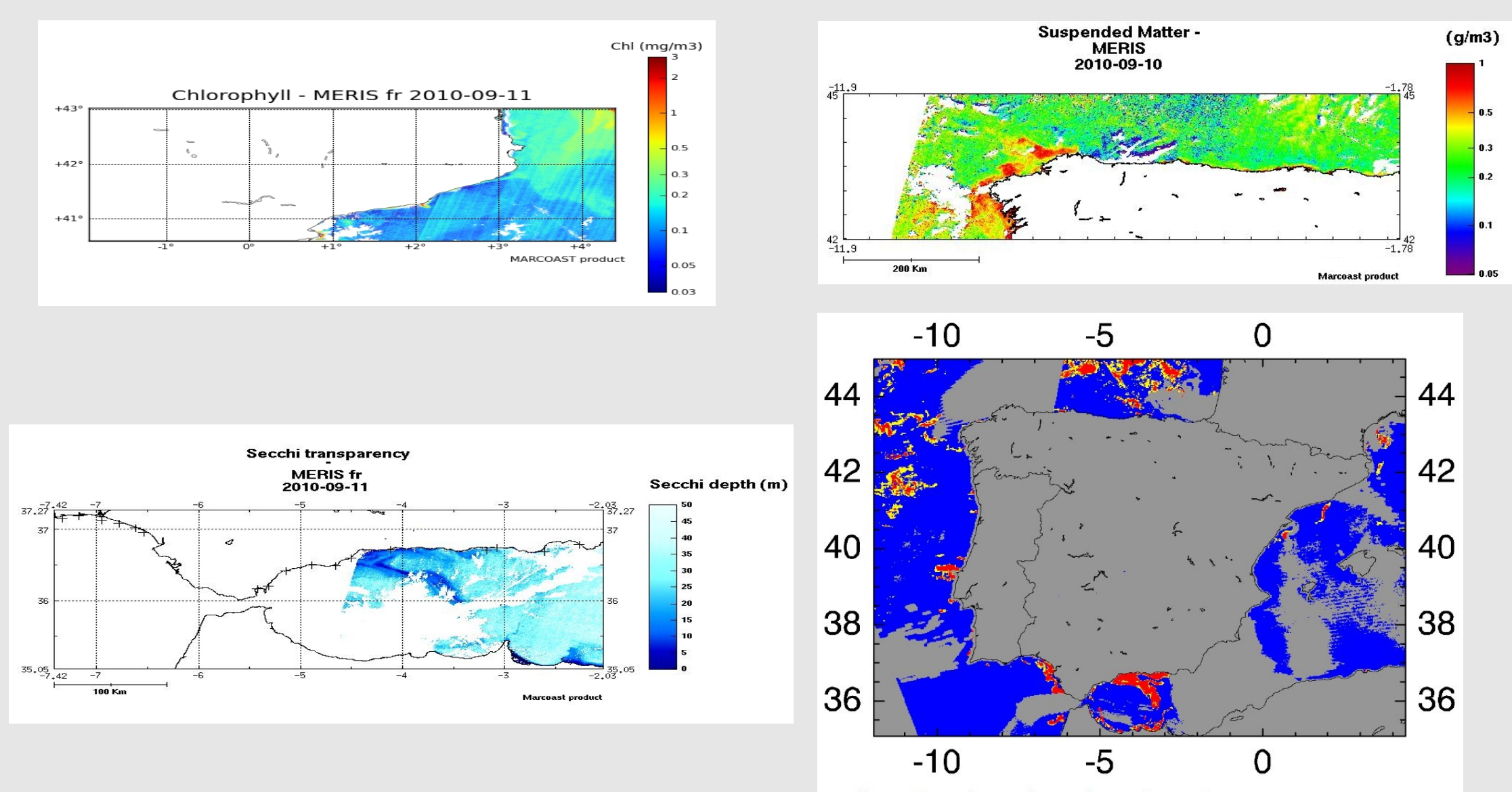


Fig.4: Marcoast products. From upper left clockwise: Chlorophyll, Total Suspended Matter, Transparency, Alga Bloom

Barnamar

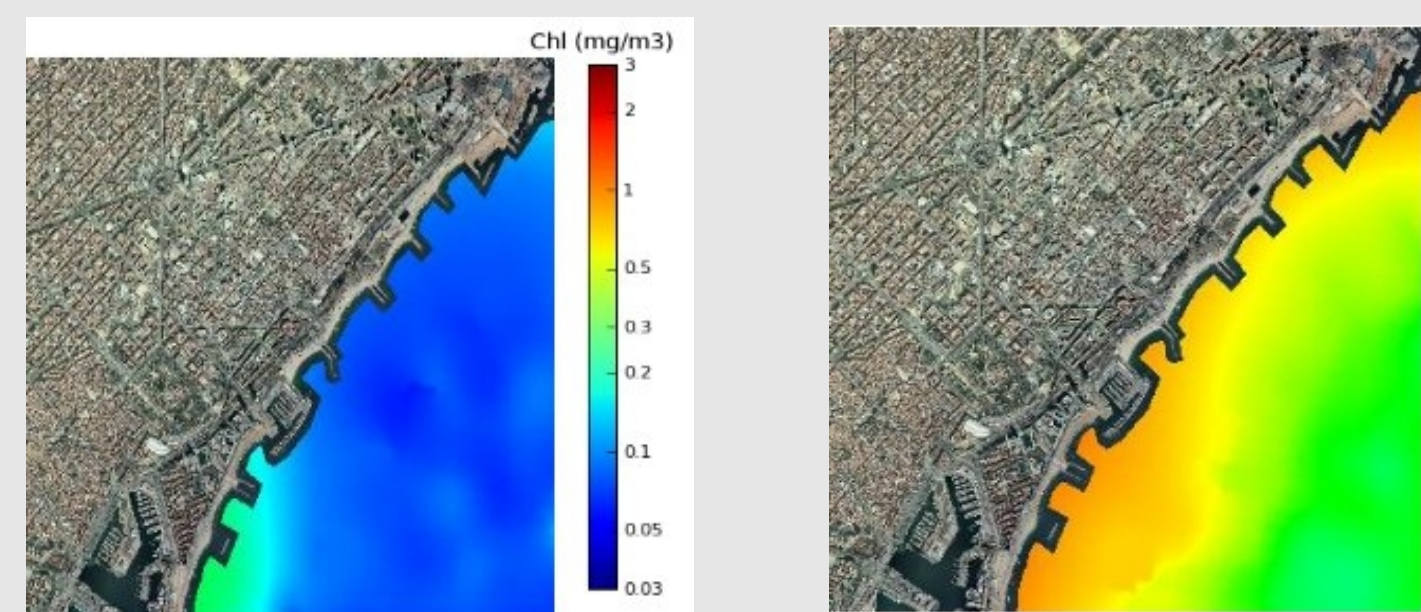


Fig5: Barnamar products. Chlorophyll (left), Total Suspended Matter (right)

MarCoast

MarCoast (Marine & Coastal Environmental Information Services) is a project fully funded by the European Space Agency (ESA) in the framework of the GMES Service Element Programme. MarCoast is delivering on a regular basis a wide array of water quality products to support the monitoring of European Seas.

Starlab participates as the Spanish service provider. The Spanish service is presented through a dedicated web site password protected. The system provides, in a single platform, the integration of different marine indexes allowing the user a better ocean characterization (Total Suspended Matter, transparency, chlorophyll-a, Yellow Substance and Algae bloom). The service provision includes the validation of EO data using in situ data provided by the user.

The project involves a representative number of Spanish authorities in charge of marine policies implementation:

- Ministerio de Medio Ambiente, y Medio Rural y Marino (MARM)
- Agència Catalana de l'Aigua (ACA)
- Laboratorio de Control de Calidad de los Recursos Pesqueros, del Servicio de Ordenación y Recursos Pesqueros y Acuícolas de la Junta de Andalucía
- Instituto Tecnológico para el Control del Medio Marino en Galicia (INTECMAR)
- Dirección General del Agua (DGA), Conselleria de Medio Ambiente, Agua, Urbanismo y Vivienda de Valencia

Barnamar

Barnamar is a customized service provided to the Barcelona City Council. It covers the summer campaign and offers chlorophyll-a, transparency and total suspended matter (MERIS FR). Barnamar is used as complementary service to the Ajuntament's environmental monitoring tasks.

Barnamar products are disseminated to the general public through the Barcelona City Council web site.

Conclusions and acknowledgements

Water quality monitoring services based on satellite data have demonstrated to be efficient for environmental monitoring. Users have been involved since the beginning and contributed to better define service customization. All of them have expressed the need and importance of the continuity and sustainability of the service in the future in order to benefit in a better way the impact of the products daily delivered.

We acknowledge the support of all MarCoast Spanish users as well as our MarCoast partners and ESA project officer. All of them have been always generous with their time and dedication to the Spanish services' success. Special mention to the Barcelona City Council for their support on launching the Barnamar service.