



# QUALITY CONTROL OF MODIS DATA ON BEHALF OF THE EUROPEAN SPACE AGENCY

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## INTRODUCTION

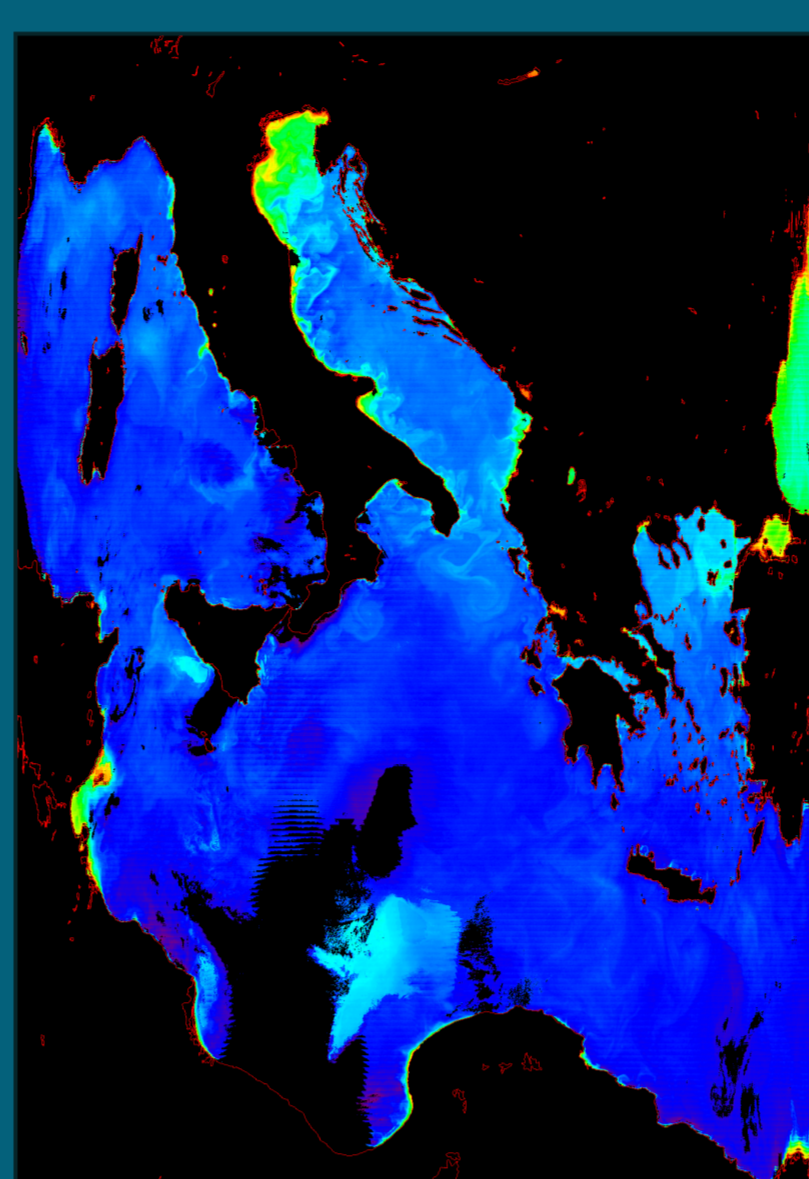
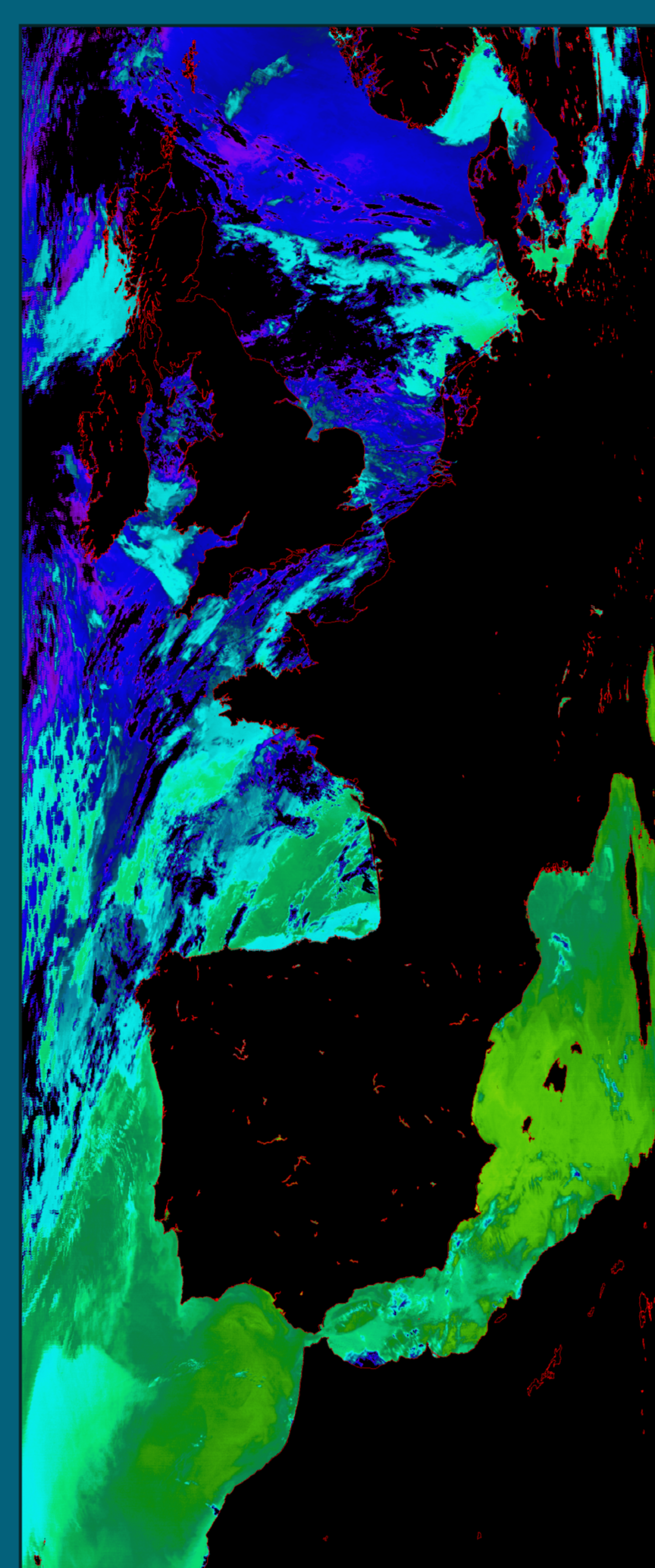
The European Space Agency (ESA) acquires and distributes MODIS data as a Third Party Mission (TPM). Data is acquired over Europe and used to populate the MERCI MODIS and GMES MyOcean Catalogues, available to Users in Near Real Time (NRT). The GMES MyOcean dataset also contains SeaWiFS data collected up to the mission end in December 2010. Plans to reprocess ESA archives of SeaWiFS data using the most recently available NASA code and calibration configurations (available via SeaDAS 6.2) are imminent, as well as research activities aimed to increase awareness of ESA acquired MODIS and SeaWiFS data products.

ARGANS Ltd is a UK based company, Plymouth and Harwell Oxford, run by Earth Observation expert Samantha Lavender. It has close links to ESA and works collaboratively on a number of projects, such as the VEGA Space Ltd lead IDEAS SPPA service which supports the Quality Control (QC) and handling of MODIS and SeaWiFS data.



### IDEAS SPPA QUALITY CONTROL

MODIS SPPA activities carried out at ARGANS include the daily QC of products through download and processing using the SeaDAS processor. Assessment of products is fed back to ESA and the GMES Coordinated Quality Control (CQC). Reporting to ESA is carried out on a daily, monthly and cyclic basis and a suite of evolving bespoke QC tools is utilised. In addition, help to User queries and anomaly investigations are conducted on demand.



Left: MODIS Sea Surface Temperature (SST) product showing western Europe, 21<sup>st</sup> June 2011; Above: MODIS Chlorophyll-a product around Italy, 22<sup>nd</sup> August 2011. Images courtesy of ESA



GMES is the European Programme for the establishment of a European capacity for Earth Observation. It consists of data collected from multiple sources (earth observation satellites and in situ sensors).

Policymakers and public authorities, the major users of GMES, can use the information to prepare environmental legislation and policies with a particular focus on Climate Change, monitor their implementation and assess their effects.

GMES also supports the critical decisions that need to be made quickly during emergencies, e.g. natural or man-made catastrophes or humanitarian crises.

Services are focussed around six thematic areas; marine, land, atmosphere, emergency, security and climate change.

## ESA MODIS DATSETS



The MERCI MODIS Online Catalogue is populated with both MODIS Aqua and MODIS Terra Level 1B data. Data is made available to registered Users in NRT. The Catalogue holds data for up to one year.



Level 1A MODIS Aqua MyOcean Data is available to registered Users via rolling FTP Servers located at European Ground Stations Matera, Italy and Maspalomas, Gran Canaria. Level 1A data products are available alongside their associated NRT Attitude and Ephemeris files. The MyOcean datasets hold approximately the past month of data.

### KEY ACRONYMS

- ARGANS - Applied Research in Geomatics, Atmosphere, Nature and Space
- CEOS - Committee on Earth Observation Satellites
- CQC - Coordinated Quality Control
- GEO - Group on Earth Observations
- GEOSS - Global Earth Observation System of Systems
- GMES - Global Monitoring for Environment and Security
- IDEAS - Instrument Data quality Evaluation and Analysis Service
- QA4EO - Quality Assurance for Earth Observation
- SPPA - Sensor Performance Product and Algorithm

ESA MODIS products are acquired at European Ground Stations Matera, Italy and Maspalomas, Gran Canaria using the MEOS Polar System and processed using the embedded SeaDAS Processor. Information regarding access to the datasets is available through the **ESA Earth Observation Helpdesk Team**

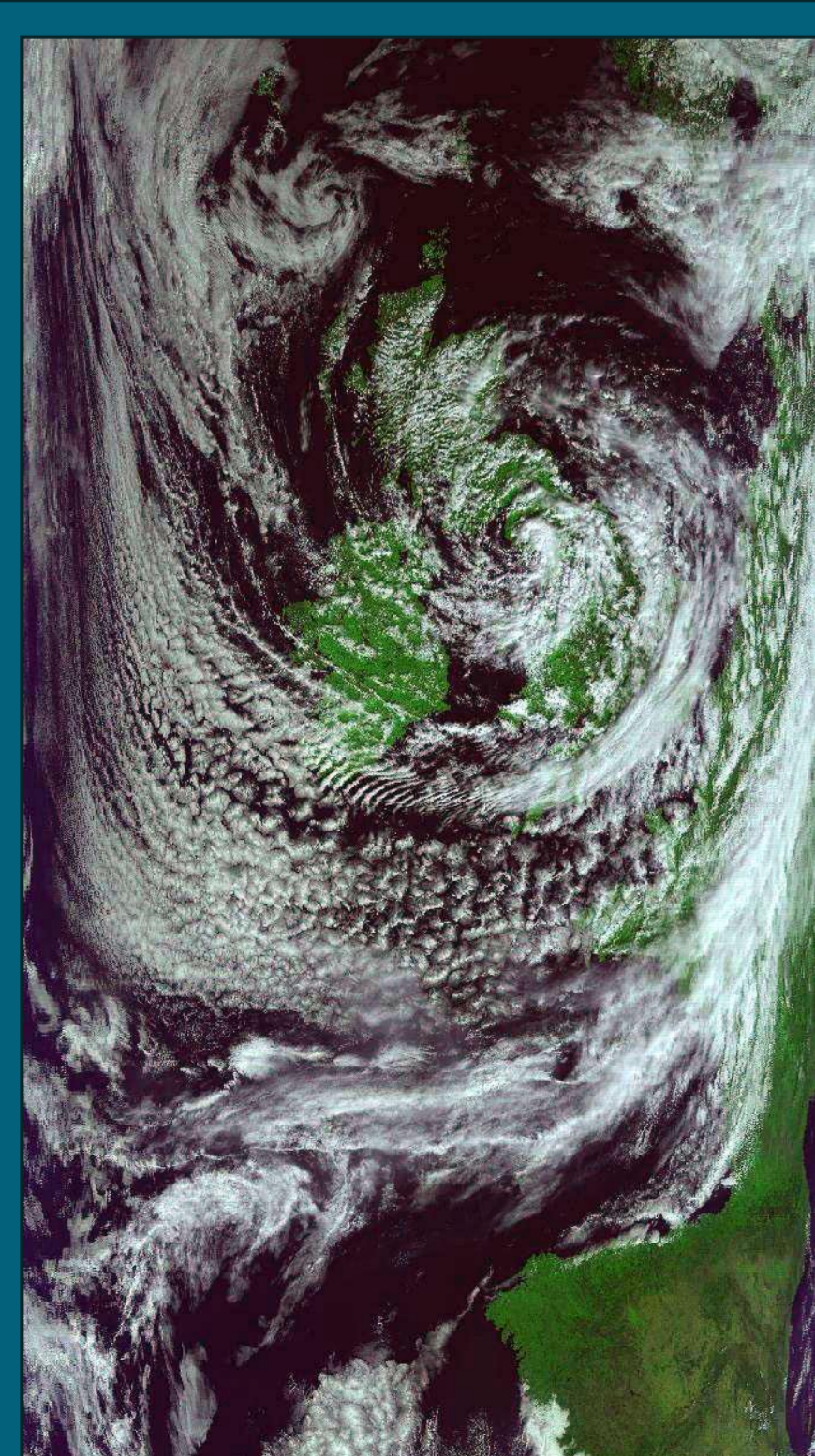


MyOcean is the EU-funded project responsible for the development of the pre-operational GMES marine monitoring service. MyOcean provides information on the ocean for the large scale (worldwide coverage) and regional scales (main European basins and seas), for example, temperature, salinity, currents, ice extent, sea level and primary ecosystems.



QA4EO is a framework established by the Committee on Earth Observation Satellites (CEOS) to facilitate the Group on Earth Observations (GEO) vision for a Global Earth Observation System of Systems (GEOSS). GEOSS aims to provide near-real-time environmental data, information and analysis worldwide to meet the needs of a number of predefined societal benefit areas.

QA4EO facilitates the interoperability of this system through a set of key guidelines. QA4EO is referenced in the GMES statement of work.



Clouds over the UK, MODIS Terra, 13<sup>th</sup> Sept, 2001. Image courtesy of ESA

### RESEARCH ACTIVITIES

Ongoing research includes the comparison of ESA and NASA atmospheric correction schemes through analysis of MODIS, SeaWiFS and MERIS satellite data alongside in situ data from the MERMAID, NOMAD and AERONET-OC datasets. The intention being to enhance awareness of the availability of ESA MODIS and SeaWiFS products to the Earth Observation User Community.



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### USEFUL LINKS

- MERCY MODIS: <http://merci-modis.eo.esa.int/merci/welcome.do>
- ESA Earth Observation Help Desk: [eohelp@esa.int](mailto:eohelp@esa.int)
- GMES: <http://www.gmes.info/pages-principales/overview/>
- MyOcean: <http://www.myocean.eu/>

### OTHER IDEAS SPPA ACTIVITIES

Additional instruments monitored at ARGANS Ltd include the Medium Resolution Imaging Spectrometer (MERIS) plus Landsat as a TPM. Significant activities have included; validation of the updated Level 0 generation software for MERIS allowing Near-Real-Time processing of global Full Resolution data; and generation and validation of the new Lifetime Model (LTM) in-flight radiometric calibration for Landsat 5 TM.