

# ODESA as a tool to support CoastColour validation

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ODESA

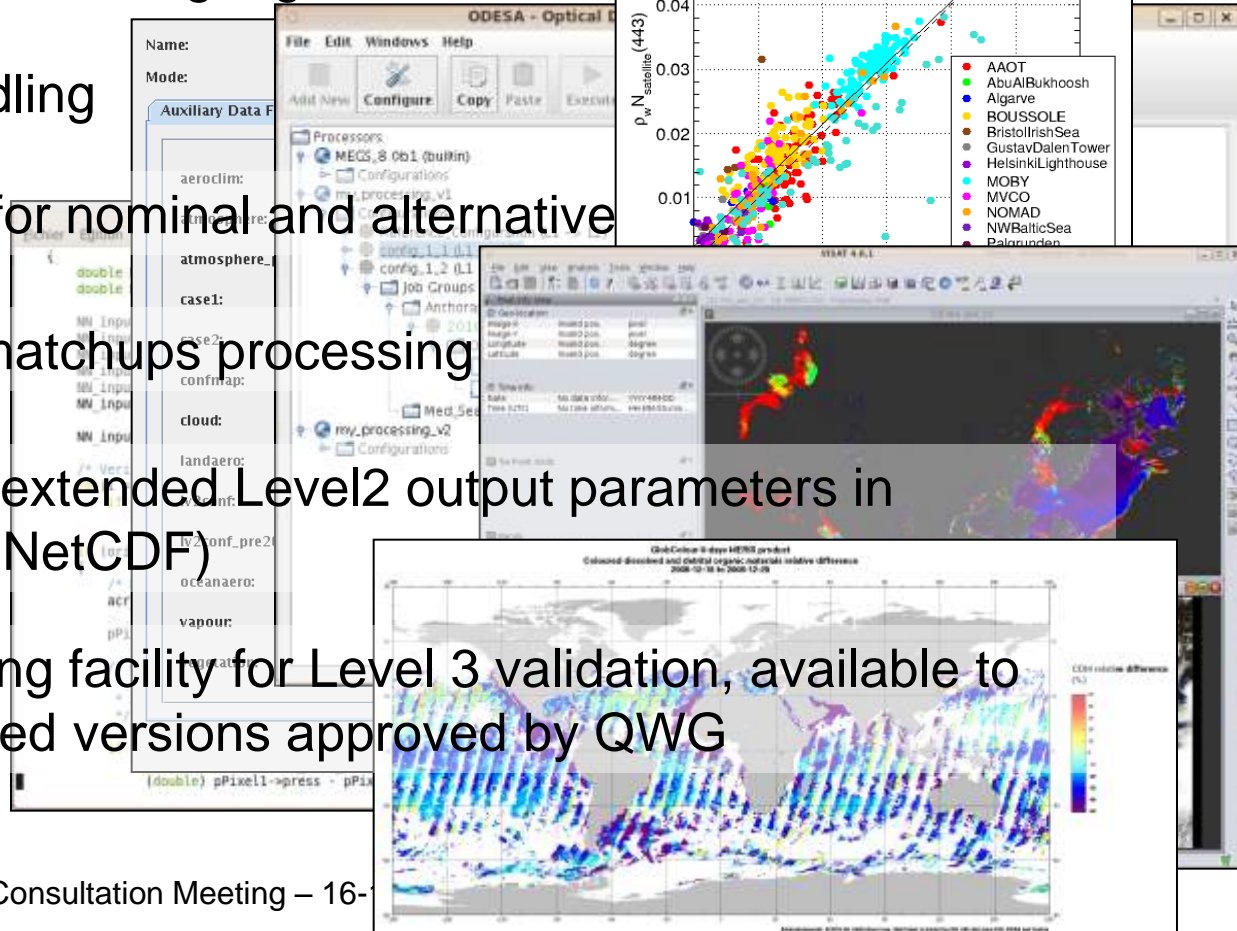
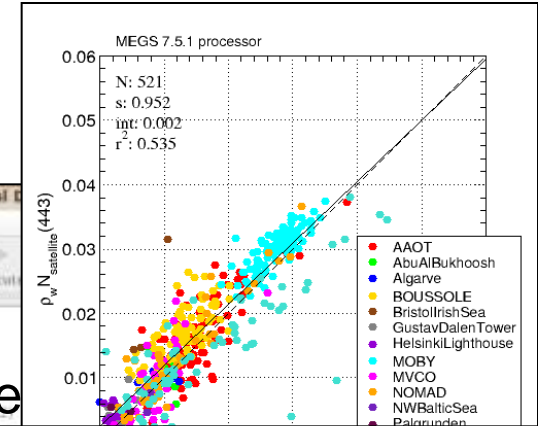
# Project overview

# ODESA goals

# ODESA

Provide the scientific community a complete Level 2 processing environment for MERIS:

- ✓ Source codes in a scientific language
- ✓ Auxiliary data files handling
- ✓ Development platform for nominal and alternative
- ✓ Validation facility with matchups processing
- ✓ Validation support with extended Level2 output parameters in common format (Envisat, NetCDF)
- ✓ Remote mass processing facility for Level 3 validation, available to nominal and user's qualified versions approved by QWG



# ODESA goals

ODESA

Help and foster the ESA optical sensor community with a forum (announcements, data access, algorithms, products ...)



The screenshot displays the ODESA forum interface, organized into several sections. Each section has a header with the category name, and a table below it listing individual forum topics. The table columns are 'TOPICS', 'POSTS', and 'LAST POST'. Each row also includes a small icon representing the topic.

ANNOUNCEMENTS & FAQ	TOPICS	POSTS	LAST POST
MERIS, OLCI events	5	5	by jppm Wed Jun 16, 2010 9:06 am
FAQ	0	0	No posts

DATA ACCESS	TOPICS	POSTS	LAST POST
Level 1 / Level 2	1	5	by jppm Wed Apr 22, 2010 9:06 pm
Level 3	1	1	by jppm Wed Apr 22, 2010 9:07 pm

ALGORITHMS AND PRODUCTS	TOPICS	POSTS	LAST POST
Documentation	0	2	by jppm Thu Apr 23, 2010 4:30 am
Ocean	1	3	by jppm Mon Feb 01, 2010 11:24 am
Land	0	0	No posts
Clouds	0	0	No posts
Other	1	2	by jppm Thu Jul 08, 2009 12:57 pm

ODESA	TOPICS	POSTS	LAST POST
Software & Tools	0	3	by jppm Tue Jun 23, 2010 2:01 pm
On-line processing	1	1	by jppm Thu Apr 23, 2010 5:44 pm

VALIDATION	TOPICS	POSTS	LAST POST
Ocean Colour: MERMAID	1	5	by jppm Wed Apr 22, 2010 9:14 pm

Prepare the Ocean Colour community to Sentinel 3: algorithms, software, data format, validation protocols...

# ODESA status

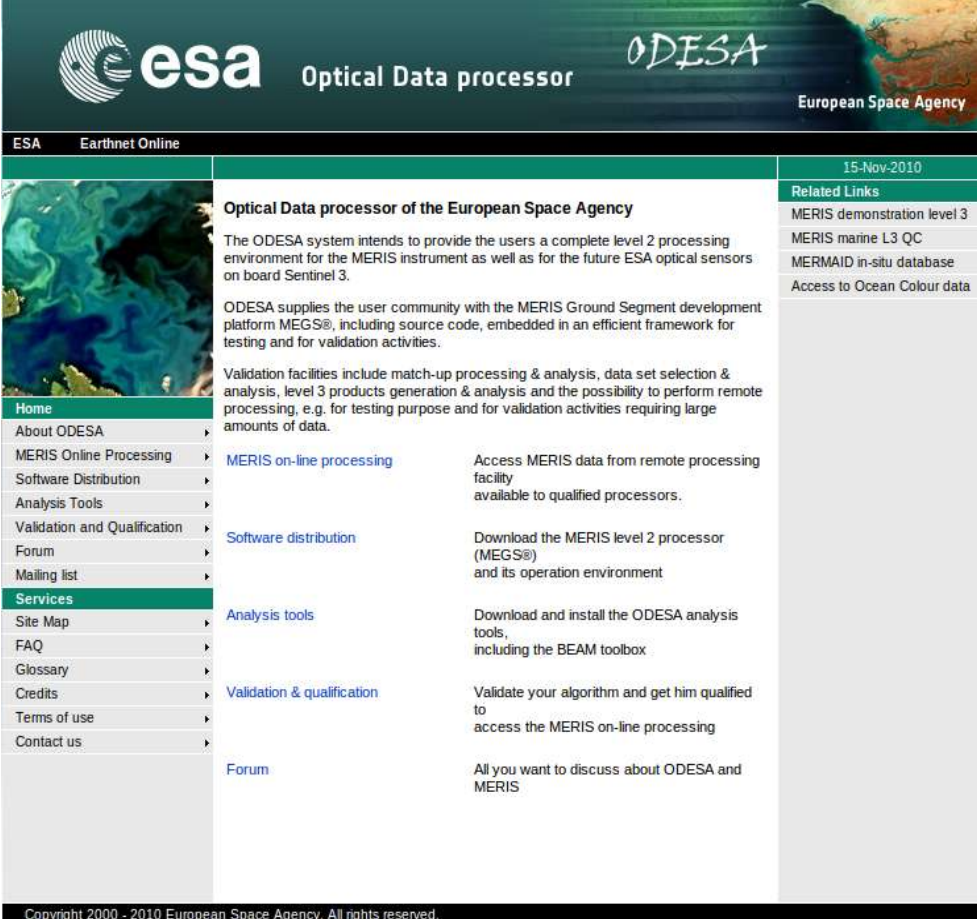
ODESA

All facilities implemented. Website project <http://earth.eo.esa.int/odesa>

Source code and interface provided for tests to QWG

Final delivery pending on 3<sup>rd</sup> reproc. final configuration: 2011

Contact: [service@odesa-info.eu](mailto:service@odesa-info.eu)



The screenshot shows the ODESA website interface. At the top, there is the ESA logo and the text "Optical Data processor" and "ODESA" with the European Space Agency logo. Below this is a navigation bar with "ESA" and "Earthnet Online". The main content area is titled "Optical Data processor of the European Space Agency" and includes a description of the system and its capabilities. A navigation menu on the left lists various sections like Home, About ODESA, MERIS Online Processing, Software Distribution, Analysis Tools, Validation and Qualification, Forum, Mailing list, Services, Site Map, FAQ, Glossary, Credits, Terms of use, and Contact us. The right side of the page features a "Related Links" section with links to "MERIS demonstration level 3", "MERIS marine L3 QC", "MERMAID in-situ database", and "Access to Ocean Colour data". The footer contains the copyright information: "Copyright 2000 - 2010 European Space Agency. All rights reserved."

# Algorithm development within the MERIS L2 ground segment

ODESA software runs on user's device and comprises:

- Level2 binary and source codes in C language (possibility to call other compiled sources e.g. Fortran)
- All Auxiliary Data Files: nominal + way to include user's files
- A JAVA interface for managing code + configuration + jobs
- Documentation

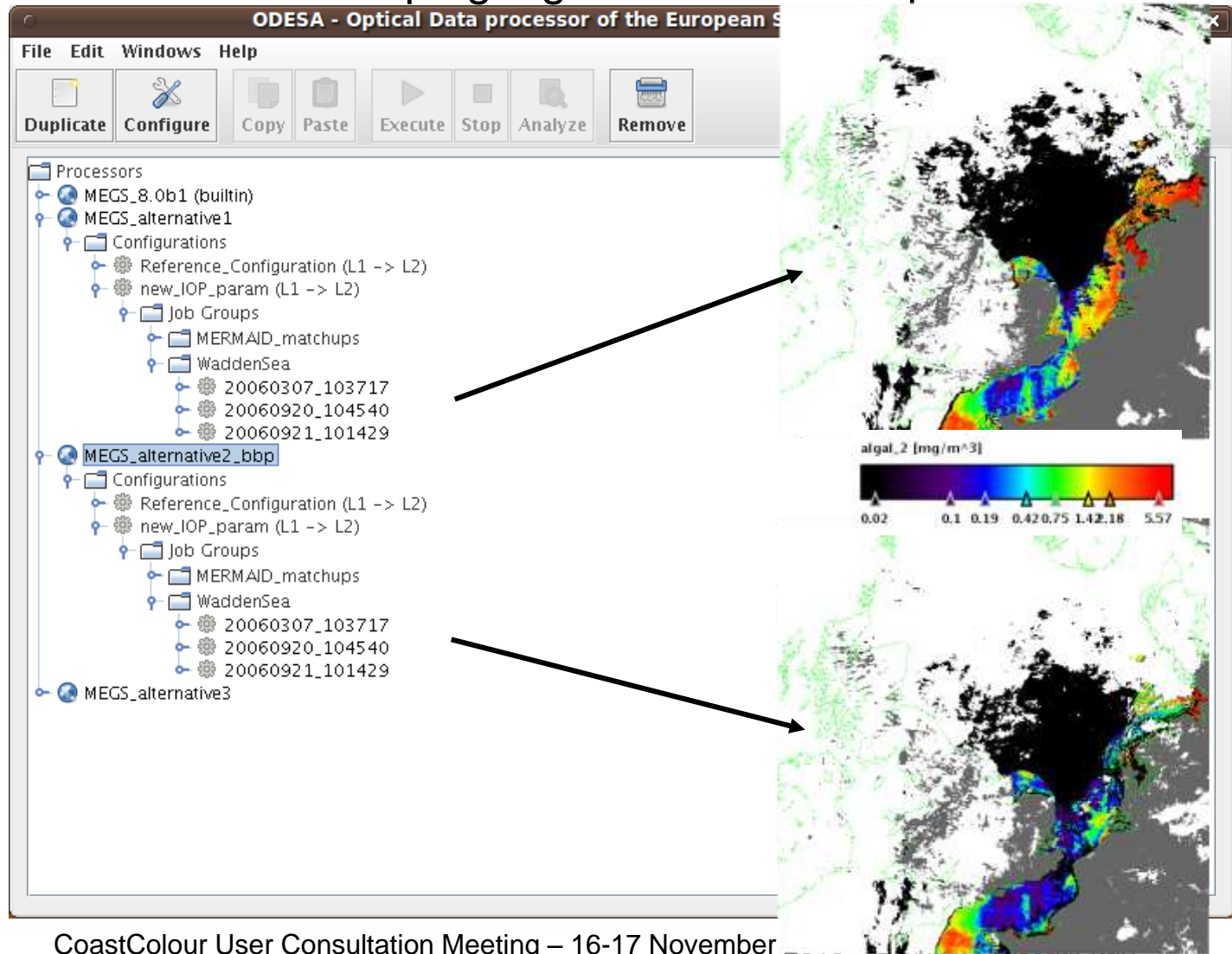
ODESA code contains a strict copy of the MERIS 3<sup>rd</sup> reprocessing Level 2 chain: improved classification, improved O2 correction, new BPAC C2R NN, vicarious adjustment, new atmospheric correction LUTs ...



# Run & development platform

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ODESA architecture aims at helping algorithms intercomparison





# ODESA outputs

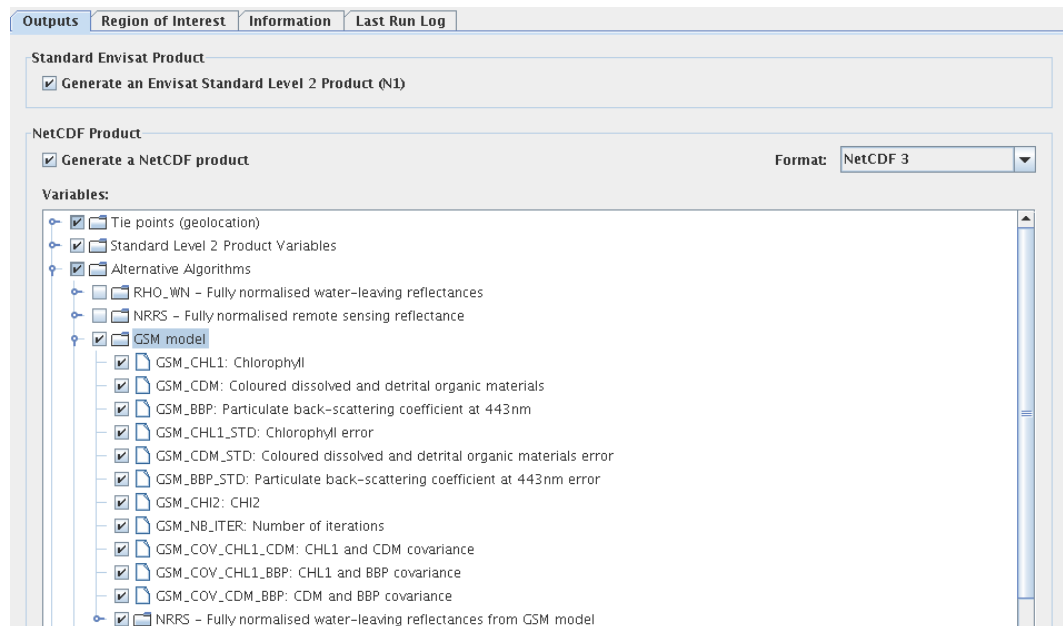
ODESA

ODESA outputs are fully parameterizable:

- Nominal Level2 data in Envisat product
- Nominal Level2 data in NetCDF format
- « breakpoint » and « intermediate » parameters in NetCDF format
- Any new variables in the code may be stored in output netCDF

Latest version of BEAM can read these outputs (Brockmann Consult development)

Example of alternative algorithm and outputs: GlobColour (GSM method) at Level2



# Matchup processing and validation

# MERMAID database

ODESA

Status on the database :

- ✓ 14 sites
- ✓ More than 3500 MERIS matchups
- ✓ Initially marine reflectance  
+ OC-AERONET atm. products  
+ now progressively adding IOPs
- ✓ MERIS data: currently RR  
Level1+Level2+Interm. products
- ✓ Continuous evolution and  
maintenance (+ 2 sites soon from H. Loisel and S. Maritorea)
- ✓ Protocols and documentation written in collaboration with PI

esa  
MERMAID  
MERIS MATCHUP In-situ Database  
European Space Agency

Welcome to MERMAID, the MERIS MATCHUP In-situ Database

**Purpose**

The MERMAID project aims at making available an easy-to-use centralised database of merged in-situ optical measurements with concurrent MERIS acquisitions to Ocean Colour researchers involved in the MERIS mission. The access is open to the MERIS Validation Team (MVT), the MERIS Quality Working Group (MQWG), and to any independent collaborating Principal Investigator (PI).

The long-term objectives of this database are to:

- Enable the assessment of the MERIS marine Level 2 products delivered by the ENVISAT ground segment.
- Support the monitoring of these MERIS products over the lifetime of the mission by providing a complete temporal coverage of the mission.

<http://hermes.acri.fr/mermaid>

**About MERMAID**

Home  
In-Situ data and protocols  
Data policy  
Data submission  
MERMAID Tools  
Extract matchup  
Data format  
Version  
ODESA Validation  
ODESA processing  
Download level matchups

**Procedure**

The MERMAID database has been initiated by ACRI-ST and is maintained with support of ARGANS Limited in the framework of MERIS calibration and validation activities, with the expertise of the MVT and the MQWG. ACRI-ST lead the MERIS data processing, extraction, merging with in-situ data and web site development. ARGANS lead the in-situ data collation and normalisation, protocols documentation in collaboration with PI, and provide validation reports. PIs are warmly invited to contribute to this central tool in MERIS ocean validation, and are provided with full access to all the matchups and extractions in return. Any enquiries regarding data submission or the database can be made via the address provided below.

# MERMAID contributors

ODESA



Acknowledgment to all contributing PIs: G. Zibordi (JRC), J. Icely (Univ. Algarve), D. Antoine (LOV), D. McKee (Univ. Strathclyde), M. Ondrusek (NOAA), J. Werdell (NASA) + NOMAD's PI, P.-Y. Deschamps (LOA), S. Kratzer (Univ. Stockholm), A. Hommersom (IVM), D. Vandmark (Univ. New Hampshire), H. Loisel (Univ. Littoral), S. Maritorea (UCSB)

New PIs are welcome! Contact [mermaid@esa.int](mailto:mermaid@esa.int)

CoastColour User Consultation Meeting – 16-17 November 2010 – ESRI, Frascati, Italy



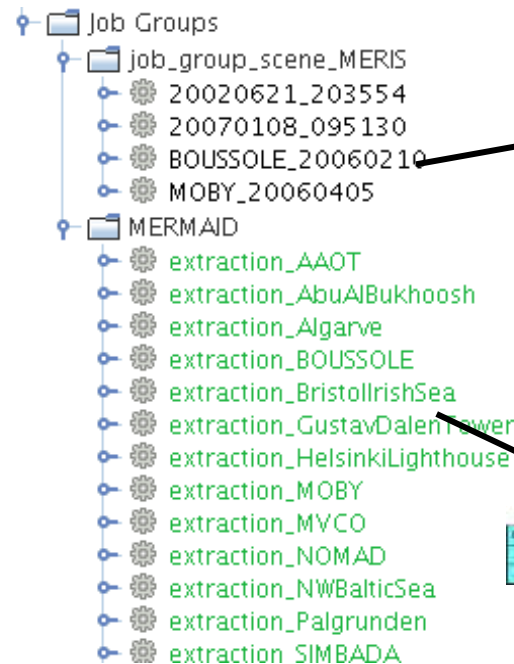
# Matchup format and processing

ODESA

ODESA deals with « Mermaid-like » format: texte file (csv), one pixel per line.

In-situ data (optional, free)					Level1b data (mandatory, fixed)					Level2 outputs (user's choice)				
Date	PI	Chl	...	rhow	time	thetas	thetav	LTOA	...	rho_aer	Rhow	Bbp	cdm	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Same platform for processing  
 - ENVISAT Level1b product  
 - matchup text file

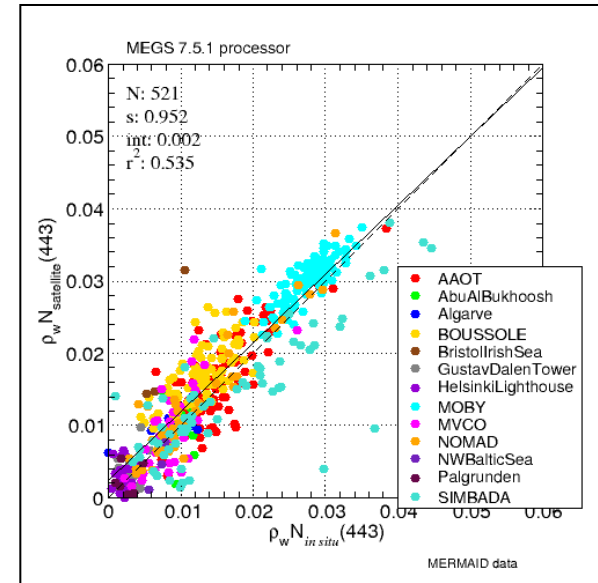


# Validation and data policy

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MERMAID operationnaly used by QWG  
to assess MERIS Ocean branch

Data policy defined by ESA and PI:  
access restricted to PI, QWG, MVT.



Any contributing PI get access to the full DB, validation facility (data screening, plots, ...) as well as L1b extraction for ODESA processing

A dedicated mechanism allows any user to process MERIS matchups without accessing in-situ data but only validation results

**user ↔ MERMAID web site ↔ in-situ data**



ODESA

# Conclusion

ODESA contribution to CoastColour could be twofold:

- 1) A platform for developing and comparing alternative algorithms within the nominal MERIS 3<sup>rd</sup> reprocessing chain
  
- 2) A matchups processing capability applied to:
  - Either MERMAID matchups already existing  
→ a dedicated mechanism respects the data policy
  
  - Or new CoastColour (FR) matchups to be incorporated, with simple text format

**Thank you !**

**<http://earth.eo.esa.int/odesa>**

**[service@odesa-info.eu](mailto:service@odesa-info.eu)**