

May 2022



## SATELLITE MONITORING OF SUSPENDED PARTICULATE MATTER

### >>> A few years later

In the last few years, the availability of EO data at higher spatial resolution has increased the capability of monitoring bio-optical parameters variability for small-medium inland freshwater bodies. In particular, the Total Suspended Material (TSM) spatiotemporal variability was analysed for Pertusillo lake (Basilicata region, Italy). Such analysis was based on satellite-based data integration with in-situ measurements.

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BENEFICIARIES	Italian National Research Council (CNR)	Basilicata Region	LRA technical staff; Aquaculture companies	Citizens and Society
	TIER 1: SERVICE PROVIDER	TIER 2 PRIMARY USER	TIER 3 SECONDARY USER	TIER 4 END USER BENEFICIARIES
SERVICES	Sentinel-2	Suspended Particulate Matter (SPM) dynamics and variability in inland waters; Information on anomalous SPM concentration	Freshwater quality monitoring; Water Lake health monitoring; Implementation of recreational activities	Safeguard of biodiversity

Value chain definition following SeBS Methodology - <https://earsc.org/sebs>

### The space-based solution

This Copernicus-based solution was produced by a scientific entity for a Public Administration. In the past few years, there were significant performance and automation improvements.

### The Usage Maturity Level

Since 2018, the solution has consolidated at User Maturity Level 2. The main reason for this was found in the increased awareness about Copernicus programme at decision-making level.

Thematic Area



CLIMATE, WATER AND ENERGY

Region of Application



BASILICATA

Sentinel mission used



S2

Copernicus Service used



-

Usage Maturity Level



2

## Overall benefits

### ECONOMIC



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### INNOVATION



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### ENVIRONMENTAL



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### SCIENCE



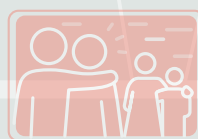
No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### REGULATORY



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### SOCIETAL



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

Benefits classification following SeBS Methodology - <https://earsc.org/sebs>

## Interesting facts...

The solution is now focused on inland water monitoring, by implementing an ad-hoc procedure integrating MSI-S2 and OLI-Landsat8 data. This approach has allowed to perform the characterization of the spatial behaviour of the lake waters in terms of suspended material variation, as well as the evolution of this parameter over a long-time period.

## Outlook to the future

In the future, analysis of other in-water optical constituents, such as chlorophyll-a, is foreseen. For these purposes it is envisaged to exploit, if available, LRA facilities and funds to install continuous in-situ monitoring stations. Such a constant ground-truth validation would allow improving the accuracy of the EO-based products.

## Acknowledgements

This work was carried out in the framework of the OP European Regional Development Fund (ERDF) Basilicata Region 2007–2013 IOSMOS (Ionian Sea water quality Monitoring by Satellite data) project, the Italian Ministry of University and Research RITMARE (Ricerca Italiana per il MARE) Flagship project and the OP European Social Fund (ESF) Basilicata Region 2007–2013 MOMEDAS (MONitoraggio delle acque del mar MEDITerraneo mediante DATi Satellitari) project.

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