

# SATELLITE ASSISTED WATER QUALITY MONITORING: A CASE STUDY OF VRUTCI AND BARJE RESERVOIR IN SERBIA

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## Introduction and context

The study presents the data on water quality parameters obtained by the satellite in the Vrutci and the Barje Reservoir (Serbia) in order to improve the decision-making process for users and decision makers. The SPACE-O platform is currently functioning as a prototype - an IT product is at developing stage, and testing, upgrading and adapting to the actual operational conditions carried out to ensure that all options are in accordance with the proposed requirements in the drinking water supply sector. The presented data should be used for analyzing water supply system and decision-making process from the reservoir to the water treatment plant.

## Materials and approaches

The Water Information System (WIS) integrates modern satellite-derived and *in situ*-measured in the field data on water quality monitoring in order to improve decision-making process in reservoir management. In this study the following satellite assisted water quality parameters are included:

○ *Chlorophyll-a (CHL)*. Satellite-derived *chlorophyll-a* derives from information of in-water organic absorption, in-water turbidity and spectral characteristics of the corresponding water body.

○ *Turbidity (TUR)* is a key parameter of water quality linearly related to the backward scattering of light of organic and inorganic particles in water. The measurement unit is Nephelometric Turbidity Unit [NTU].

○ *Secchi-Disc-Depth (SDD)* in [m] indicates the clarity in the water column.

The sites of monitored parameters in the Vrutci and the Barje Reservoir are given in the RGB („True color“) figures.

## Outcomes

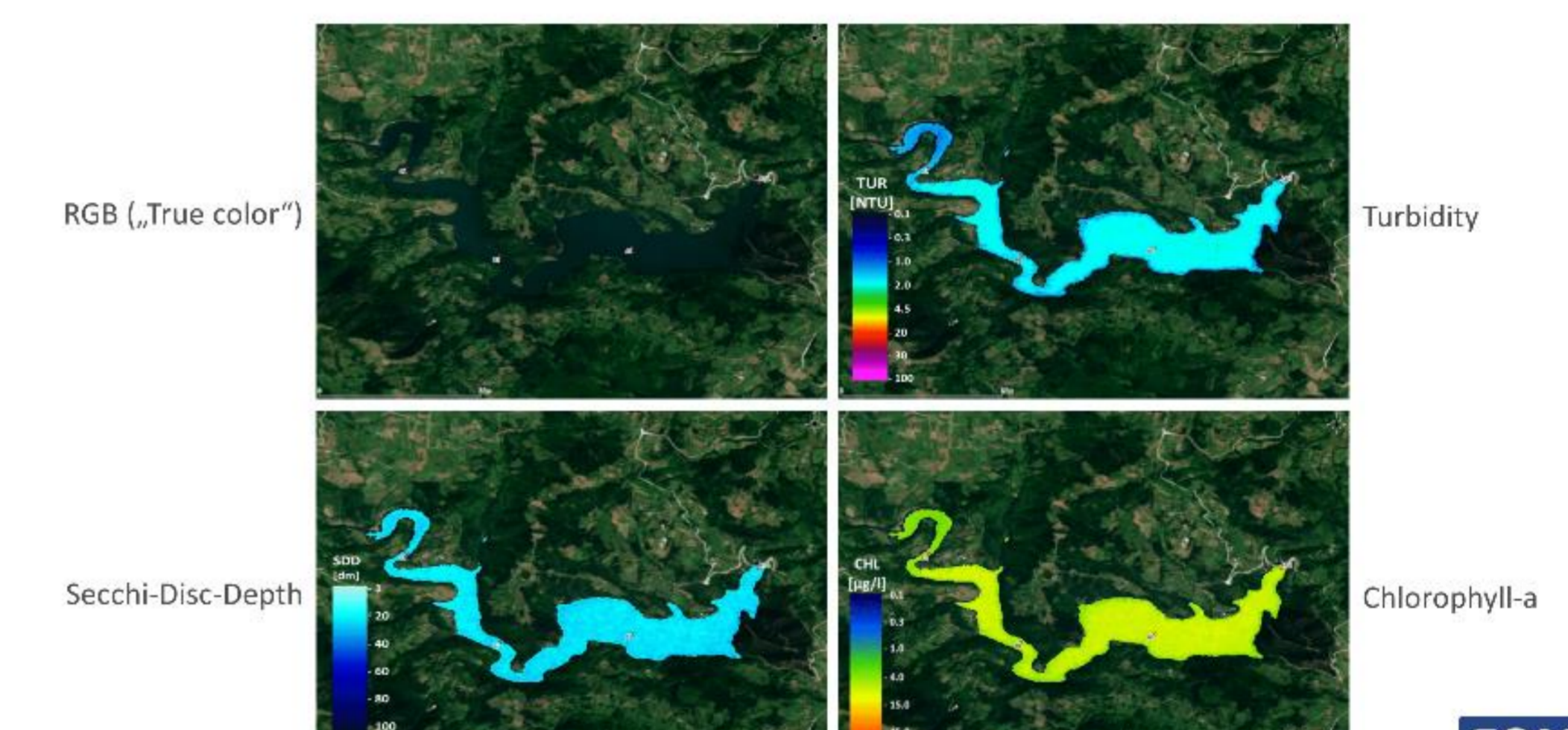
The measurements of monitored parameters provided by the EOMAP ([www.eomap.com](http://www.eomap.com)), Sentinel-2 Sensor, in the Vrutci and the Barje Reservoir are given in figures. The spectral range for each water quality parameter (*CHL* in [ $\mu\text{g/l}$ ], *TUR* in [NTU] and *SDD* in [m]) is shown as a legend.

The obtained data should be used as a comparative to the measurements analyzed *in situ* in terms of ensuring data quality management.

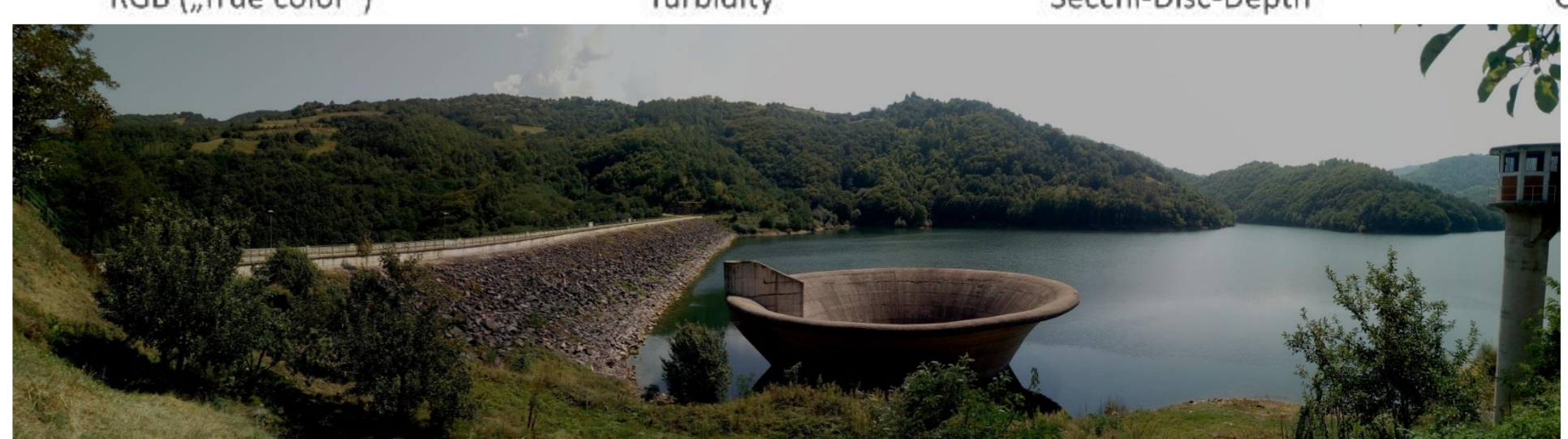
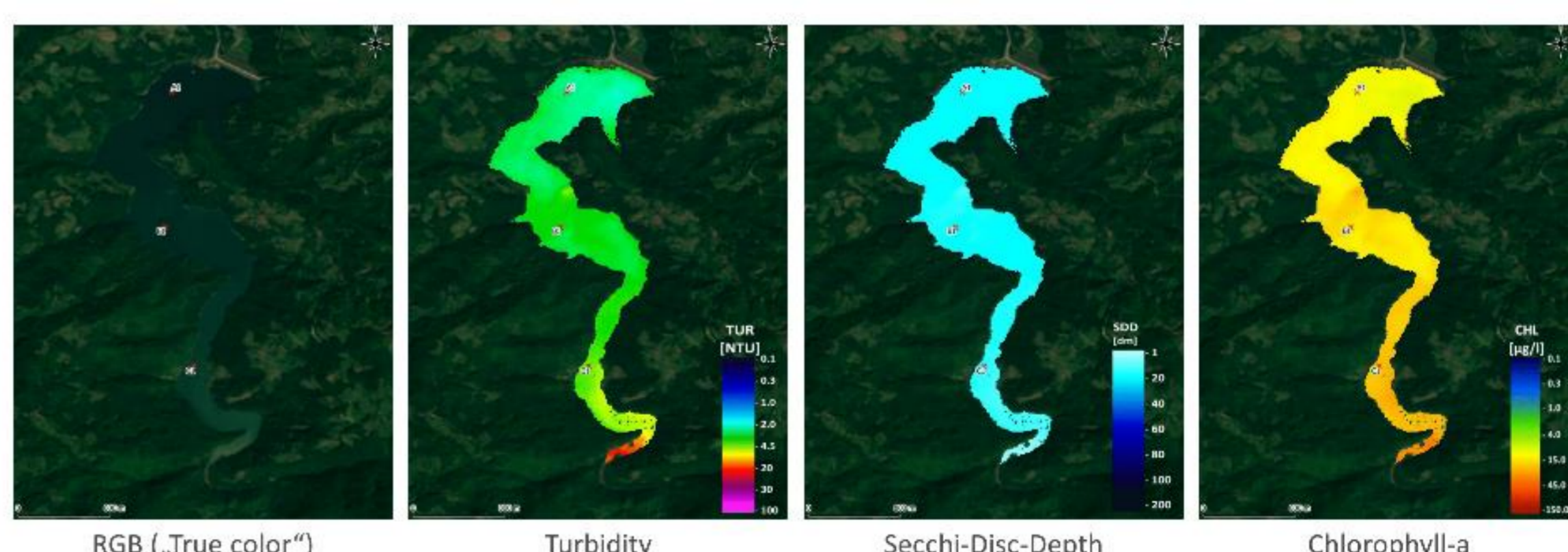
## Transferability

Satellite-assisted Portal (SPACE-O), together with National Water Monitoring Programme conducted by the Serbian Environmental Protection Agency-Ecological Potential of Reservoirs based on the WFD 2000/60/EC criteria and the Local User Reservoir Monitoring Programme represent a good example of coupled monitoring in the drinking water supply sector.

Vrutci – 2018/08/10 – Sentinel-2 (10m)



Barje – 2018/08/30 – Sentinel-2 (10m)



**Acknowledgments** The Barje Reservoir (the dam and bell-mouth spillway)

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