

Use of Sentinel 2 – MSI for water quality monitoring at Alqueva reservoir, Portugal

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Alqueva reservoir located in southeast of Portugal has a surface area of 250 km² and total capacity of 4150 hm³. Since 2006 the water quality of this reservoir is explored by the authors using remote sensing techniques. First using MERIS multi-spectral radiometer on-board of ENVISAT-1 and presently with MSI multi-spectral radiometer on-board SENTINEL-2. The existence of two satellites (A and B) equipped with MSI enable the area to be revisited, under the same viewing conditions, every five days. Since 2017 the multidisciplinary project ALOP (ALentejo Observation and Prediction systems) expands the team knowledge about the physical and bio-chemical properties of the reservoir. This project includes an integrated field campaign at different experimental sites in the reservoir and its shores, at least until September 2018. Previous algorithms from the team were tested with a new spectroradiometer and improvements were done for water turbidity, concentration of chlorophyll a and density of cyanobacteria. To support the study of these variables, there is a floating platform equipped with a set of meteorological devices, including measurements H₂O and CO₂ fluxes, water temperature at fourteen levels down to the bottom (60 meters) and dissolved CO₂ concentration near the surface. Results from micro-algae bloom occurred in late summer / early autumn 2017 on the reservoir are presented, showing the capabilities of the MSI sensor. These results were validated with in situ measurements for physical and bio-chemical parameters associated with the bloom.

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