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The ALOP Experiment

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The ALentejo Observation and Prediction system (ALOP) is a Portuguese project that aims to develop multi functional activities in the field of interactions between atmosphere, water and ecosystems, covering observation, forecasting and risk alert. Alentejo, in South Portugal is a dry region with mean annual precipitation between 350 and 700 mm. In order to store water, a large reservoir of 250 km2 was created in 2002: Alqueva. The project intends to develop, in an integrated way, observation, forecasting and warning tools in the fields of meteorology and water (quantity and quality) at regional level with the objectives of: Improve knowledge of the state of the atmosphere and reservoirs in the region with special emphasis on the study about Alqueva - the strategic water reservoir of Alentejo; (ii) improve the prediction of the evolution of the atmosphere and its impact on the quantity and quality of water in people life and economic activities; (iii) test, develop and apply models that can predict the amount of water and the evolution of biological and chemistry water quality in lakes, with application on the management of water resources; (iv) Understand and model the water, energy and carbon (CO_2 and CH4) fluxes in the interface fresh water / atmosphere; (v) evaluate the effects of global warming on the quantity and quality of water (ecological and chemical quality quality); (vi) Identify and test technologies for rapid assessment of potential risk situations. For that propose an observational field campaign is in progress, which involve in situ measurements, of meteorological, hydrological, chemical and biological parameters as well as remote sensing techniques, at different experimental sites in the reservoir and its shores. In addition to a detailed description of the experimental procedures, some results from a micro-algae bloom that occurred in late summer / early autumn 2017 are presented, showing the advantages of use MSI images combined with in situ measurements of physical (in water and atmosphere) and bio-chemical parameters to understand and monitor the evolution the event.