



## **The PLANAQUA platform: a cutting-edge experimental infrastructure for multi-scale studies on aquatic ecosystems**

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The “PLAteforme expérimentale Nationale d’écologie AQUatique” is a multi-scale experimental infrastructure created in 2011 to make possible the analysis of human disturbance on aquatic biodiversity, community structure, and ecosystem functioning. It is funded by the «Investissements d’avenir Equipex» program and is partner of the ANAEE-France research infrastructure. PLANAQUA provides the scientific community with access to experimental highly instrumented platforms available year round through calls for projects open to all researchers around the world. It includes: 1) Microcosms (1-6 L), developed for studying plankton ecology and physiology under highly controlled environmental conditions in the dedicated laboratory or in the climatic rooms of the Ecotron IleDeFrance. Organisms and ecosystems activity and dynamics are precisely monitored by a series of dedicated sensors and instruments. 2) Mesocosms (1-15 m<sup>3</sup>), have a high degree of replication. They are installed outdoors and can house complex communities of organisms. Among them a series of twelve is equipped with beaters that generate waves, making possible to control the physical structure of the water column thus to study the link between physical constraints and functioning of aquatic systems. 3) Macrocosms, sixteen artificial lakes (650 m<sup>3</sup>) dedicated to understand the functioning of complex natural communities with heterogeneous spatial distributions; they will allow ascertaining the consequences of anthropogenic pressures on biodiversity, up to the top of the food chains. They are equipped with automated sensors and data loggers for high-frequency data collection of the main physical-chemical parameters. PLANAQUA is located at the CEREEP research center (CNRS-ENS, UMS 3194) near Paris.

### Keywords:

Aquatic ecosystems functioning and dynamics, plankton eco-physiology, biodiversity, environmental changes, experimental platform, multi-scale studies, instruments and sensors