



WATERCARE WITH STUDENTS

Dr. Mauro Marini held an on line seminar with students and teachers from the Polo Scolastico "Carlo Urbani" in Porto S. Erpidio, Volterra-Elia high school in Ancona and University of Bologna.

During the seminar the Watercare Project was introduced to the students; first sampling activities in Fano and the importance of the WQIS. The issue of bathing water pollution was introduced to students to raise awareness on this ecological problem among young people.



INTRODUCTION

The vulnerability of the Adriatic area to the climate changes, in particular of the Italian territory but also Croatian, and its natural resources, is very high. Massive rainy events are causing floods of rivers and streams with relevant consequences on environment. These events significantly affect the quality of bathing and coastal water.

WATERCARE aims to improve the quality of the microbial and environment and resource efficiency in bathing and coastal waters reducing the microbial contamination by using innovative tools in waste management and treatment. WATERCARE will: develop an innovative Water Quality Integrated System (WQIS) composed by a real-time hydro-meteorological monitoring network; realize an ad-hoc infrastructure for bathing waters management in a pilot site through a forecast operational model; realize feasibility studies in other 4 target sites to improve planning and management of environmental problems of the marine system; develop a real-time alert system able to preventively identify the potential ecological risk from focal contamination of bathing waters and to support governance decision and processes in bathing water management.

PARTNERSHIP

- CNR IRBIM
- Aset Spa
- Marche Region
- Abruzzo Region
- University of Urbino
- Split-Dalmatia County
- Dubrovnik-Neretva Region
- University of Split
- Istrian University of Applied Sciences (former Metris)
- Croatian Water Agency

BUDGET

2.833.019,40 EUR

PROJECT DURATION

January 2019 - 31 December 2021.



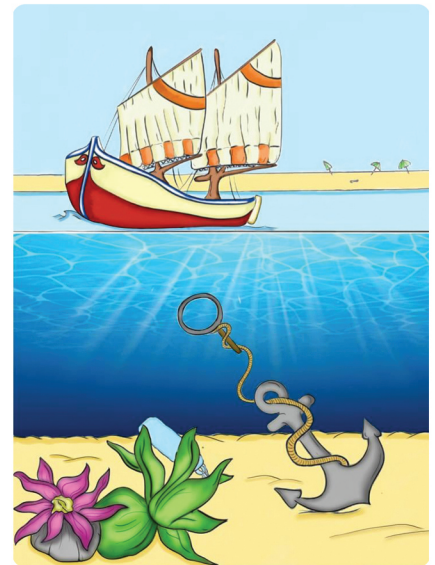
WATERCARE MEETINGS

In the period 2020-2021 project WATERCARE partners held 3 STC meetings and 2 technical meetings. Also, WATERCARE organized 4 public events, one in Split (June, 2020), one online meeting WATERCARE-MARCHE REGION with coastal municipalities (December, 2020), one online Info day WATERCARE (April, 2021) and one Info day joint ASTERIS-WATERCARE projects (May, 2021). WATERCARE representatives participated at Climate change in transitional environments - International Conference of Change we care project (April, 2021), at open online ECOSS Project Meeting (May, 2021) and 6th EUSAIR FORUM of the EU Strategy for the Adriatic-Ionian Region's SIDE EVENT: "Bathing water: the potential risks for urban wastewater management in consideration of the effects of climate change" and presented WATERCARE activities and goals. (May, 2021)

WATERCARE WITH ART SCHOOL

Dr. Mauro Marini (CNR-IRBIM, Ancona), professor Silvia Mazzacava and professor Paola Mancini met with Director Samuele Giombi of Nolfi-Apolloni high school in Fano to arrange high school students introduction with project WATERCARE through:

- two seminars at the end of January during which have been presented the main aim and the objectives of the project and the delicate ecological issue of environmental quality and risks due to bacterial contamination of coastal waters;
- stimulate students with a challenge dealing with the decoration of the small cabins, realized by ASET along and at the mouth of Arzilla river to keep the sampling instruments, to make them more attractive for the public. Decorations will be realized based on marine themes and up to the imagination of the students.



MASTER THESIS ON WATERCARE

After one year of sampling activities and laboratory analyses, Michele Intocca defended his master thesis on WATERCARE project at Università degli Studi di Napoli Federico II. This thesis was one of the results of the fruitful collaboration between the University Federico II and the CNR-IRBIM Ancona and the involvement of motivated students.





ARZILLA WATER SAMPLER

In the pilot site Arzillo stream in Fano, CNR has installed the downstream water sampling system at the Arzillo mouth, the weather station in a position free from obstacles, the level sensor and the second sampling station located upstream the Arzillo river. These two sampling stations are equipped each with an automatic sampler positioned into an adapted box to protect the instrument. The upstream station is located 7 meters higher from the river level making more complicated to suck the water from the Arzillo. For this reason an efficient pump system was realized to carry the water from the river to the automatic sampler. The entire sampling system to monitor the rainfall events along the Arzillo stream is completed.



PILOT SITE ARZILLA TANK

Project partner ASET is building a sewage storage tank in order to definitely eliminate faecal impact of wastewater discharge in bathing waters. Although the execution of the works has been delayed due to the pandemic, the works are about to be completed. A storage tank will be at the service of the spillway of urban waste water site on the right bank of the stream Arzillo in Fano, a few hundred meters upstream from the mouth of the creek, together with the construction of a pumping plant and electrical, control and monitoring accessory works. The storage tank for excess stormwater will have a detention volume of 1.600 cubic meters with a return time equal to ten years. The waters accumulated will be pumped to existing sewage system and then to the municipal waste water treatment plant with a delay time variable between 24 and 48 hours. The development and execution of an ad-hoc infrastructure tank will result in positive effects in terms of environmental, health and hygiene and with a significant improvement of water quality at the mouth of the stream Arzillo and bathing water surroundings.





PESCARA, ITALY



PESCARA RIVER

WATERCARE BOX

PESCARA

Equipment is installed on Pescara river. The box is located within a fenced area close to the north quay along the Pescara river, flowing out the Adriatic Sea.

Like on other project sites, specialized equipment will measure and chemical parameters of river water polluted with sewage waters of Pescara.



WATERCARE BOX

NERETVA

Dubrovnik Neretva Region installed the specialized equipment on their site, the mouth of river Neretva. After a careful review and analysis of potential locations in cooperation with stakeholders and experts, the location on Neretva was selected and the equipment was installed. Equipment will measure meteorological, hydrological and bacteriological data and will take samples of water at weather-adjusted intervals.





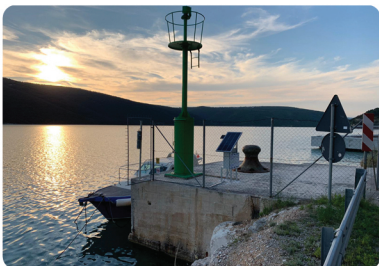
RAŠA

Equipment for WQIS is installed on Pump station Štalište in River Raša site. It will test microbiological (Escherichia coli and Enterococci) and chemical parameters of river water polluted with sewage waters of Krapan stream depending on meteorological conditions, especially quantity of rain. In addition, parallel METRIS team will analyze sea water on the nearest beaches and transitional water to gain more information of pollution spreading in Raša bay during sunny weather conditions and heavy rain weather.



CETINA

In order to enable the fulfillment of the objectives of the WATERCARE project, which is the development of an integrated water quality system (WQIS) to connect meteorological events and the response of the drainage system in relation to the microbiological impact on bathing water, measuring equipment was installed in the Cetina River in Split Dalmatia County. The installed equipment will measure meteorological, hydrological and bacteriological data to better understand how to assess sea quality at different distances from the coast to recreational waters and highlight current urban wastewater and the health status of the coastal system.





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SAMPLINGS

Samplings were done immediately after a meteorological event characterized by a strong rainfall and massive land inputs by the rivers into the sea. Water samples, for microbiological analyses (E. coli and Enterococchi contamination) and environmental parameters (e.g. pH; dissolved oxygen, salinity, redox, chlorophyll-a) were taken from rivers and from the sea along the coastal area in front of the river outlet and also samplings after nice weather periods were taken to compare results!

