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SEAWATER QUALITY MONITORING IN AUGUSTA HARBOUR (SIRACUSE, ITALY) TRHOUGHT THE USE OF AN AUV ECOMAPPER

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ABSTRACT

Human and industrial activities have caused a heavy environmental pollution in marine ecosystems during the last fifty years, due to uncontrolled industrial wastewater discharges. An ecological awareness, mutually to a strict environmental law, has brought to develop new monitoring systems technologies to simplify and accelerate the operations of field pollutants assessment. The Autonomous Underwater Vehicles (AUVs) are the up to date environmental quality state assessment tools. They can monitor autonomously very wide areas, even in waters where critical contamination condition results in a health hazard for scuba divers. EcoMapper AUV was used in Augusta Harbour (Sicily, Italy), one of the most polluted ports of Mediterranean Sea. It is the offshore area of the Site of National Interest (SNI) of Priolo Gargallo (Siracuse, Italy) and object of SIBSAC, an industrial research project funded on economical resources of the Italian Programma Operativo Nazionale Ricerca e Competitività 2007-2013 n° 01_01844 Ministero dell'Ambiente e della Tutela del Territorio e del Mare. This particular harbour is extended about 25 km2 and it hydrodynamically looks like a lagoon, where several torrents and streams flow into it. Seawater quality conditions were obtained by means of a side-scan sonar dual-frequency (330/800 kHz), the bathymetry and the morphology were mapped concurrently to conductivity, temperature, salinity, pH, redox potential and dissolved oxygen of the water column. Raw data were post processed using GIS software, where prediction maps were created using geostatistical analyst tool, in order to evaluate and show the physical and chemical state of seawater system.