Monitoring riverine litter by advanced technology

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Rivers are according to literature key vectors of marine litter input into the oceans. And the ongrowing concern towards plastic pollution is making authorities to seek for new technology and approaches. We developed a riverine floating litter detection and monitoring system to quantify the litter passing through a river mouth. The system, that is comprised of a hardware (camera system) and a software (detection algorithm), has been implemented in 3 sites, 2 in the SE Bay of Biscay (Orio in Spain; Bayonne in France) and 2 in the NE Mediterranean Sea (Marseille, France). We investigated the effectiveness of different configurations and camera settings for litter detection at rivers. Particularly we focused on the validation of the algorithms to detect litter under different environmental conditions. The system provides a near-real time quantitative indicator of the floating riverine litter released in the coastal area by a specific river. The information provided by the system is currently being embedded in the LEMA tool, platform devoted to gather and display information on: (1) the floating marine litter collection activities undertaken in the SE Bay of Biscay, (2) the prediction of floating marine litter hotspots to guide the vessels devoted for the collection activities where to go to do such activity, and (3) the historical data regarding these activities and data. Our results provide useful information regarding the amount and size of litter coming from the rivers, the role of the rivers in the onshore plastic inputs into the ocean, and the onshore and offshore black hotspots that need attention in order to prevent the plastic pollution in water bodies.