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## Site identification and discharge measurements through Mobile Crowdsensing in the Mar Menor region

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Hydrological models need continuous streamflow data for calibration, however these data are not always available due to the lack of monitoring stations or properly functioning ones. Mobile Crowdsensing (MCS) can help alleviate this problem. MCS relies on data collection from mobile sensing devices, it is inexpensive and its spatial coverage can be outstanding. Moreover, it can be an effective way of increasing local and citizen awareness of socio-environmental issues.

Herein, we introduce the MCS strategy developed in SMARTLAGOON, a H2020 project (grant agreement No. 10101786). The main study area of the project is the Mar Menor in Spain, which is the largest hypersaline coastal lagoon in Europe, it is under many pressures which are compromising the ecosystem stability. A SWAT model will be built which needs streamflow data for calibration. It is expected that DischargeApp (<http://photrack.ch/dischargeapp.html>) can provide some of the lacking information. DischargeApp is a user-friendly smart-phone application which provide fast and accurate volumetric flow measurements in rivers and canals. For this, citizens are invited to use their mobile devices to voluntarily monitor stream flow.

First, users located potential sites through the watershed and uploaded the calculated pixel displacement to the cloud using the DischargeApp. A selection of final sites was done based on the flow velocity (pixel displacement) and the cross section. Finally, those sites were fully setup for participatory discharge measurements. Additionally, the DischargeApp is connected to a cloud data-based which can be accessed via a web platform, any user can see the data recorded making the data transparent to everyone.

We also propose the use of social sensing to leverage user-contributed data from social media. This mode of MCS considers participants as "social sensors", i.e., agents that provide information about their environment through social-media. We use sensingTools.com, a framework for the development of applications based on social sensing. The main objective of using this strategy is threefold; to obtain videos of affected areas in the Mar Menor for discharge measurements, to locate sites of interest to subsequently in situ infrastructures and to identify potential users who can

collaborate in citizen science activities.