

EGU21-7306

<https://doi.org/10.5194/egusphere-egu21-7306>

EGU General Assembly 2021

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Evaluation and analysis of riparian vegetation through satellite images

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One of the main goals of the EU political agenda, supported by the green agenda, and one of the Sustainable Development Goals (SDGs) is the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services. Within these ecosystems is the riparian vegetation, an essential element in river ecosystems that influences the processes related to the surface and underground flow, modifying the temperature and humidity, it also functions as a filtering tool for the water. The riparian vegetation has been degraded as a cause of changes in land use, or the increase in population. In order to guarantee the biodiversity of ecosystems, as well as guarantee water security, it is necessary to explore environmental governance solutions. In this sense, new technologies can be useful tools that facilitate their characterization. For this reason, the feasibility of using satellite images has been evaluated to characterize the degradation of the riparian vegetation, facilitating decision-making by the administration. In this way, the improvement of riparian vegetation can be promoted, as a nature-based solution (NBs) with multiple environmental, social and economic benefits. Nowadays, there are multiples indices for determining the quality of riparian vegetation but all of them involve a high time, technical and economic effort. The implementation of solutions based on satellite images will improve and facilitate these actions. For this purpose, the images from the WorldView 2 satellite were analysed. The treating these images through geographic information systems, a scale is obtained that adapts to existing indices. With these new methods it would no longer be necessary to visit all the sample points, thus reducing the time to obtain results. The verification of the data obtained through the mapping of images (Riparian Strip Quality Index) was compared with data taken in the field (QBR index), obtaining a value of 92% of truthfulness, and a Kappa coefficient of 0.88 (very good). In other words, a methodology with high concordance with the data collected in situ was obtained. The application of this index through satellite images will facilitate the environmental governance of multiple ecosystems. Providing tools to implement best practices allowing an improvement of the NBs. In this way, biodiversity will be improved, and water quality will be improved, guaranteeing or improving water security, contributing to the achievement of the SDGs.