

PS1-01

## USE OF MULTI-PLATFORM-SENSING FOR CHARACTERISATION OF LAND USE IN RIVER CORRIDORS

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The European Water Framework Directive (WFD) aims at implementing strategies to restore the good ecological status of water bodies. This ecological status is characterized by physicochemical parameters and freshwater biodiversity indicators (invertebrates, fish, diatoms, macrophytes). It is related to reference conditions influenced by natural parameters (climate, topography, geological substratum...), and impacted by anthropic variables (water use, land use on the watershed, hydro-morphological pressures, diffuse and point-source pollution...). Land use in the river corridor, and particularly riparian vegetation, has a significant influence on the ecological status of water bodies : restoring good riparian conditions could therefore constitute a major action in the strategy for the WFD implementation.

Remote sensing is a powerful tool for homogeneous mapping of land use along river corridors. Considering the size of these systems and the diversity of land cover, data with high to very high space resolution and Near InfraRed information, to classify vegetation areas and waterbodies, are required. Therefore we use multi-platform-sensing to characterise land use (cover) in river corridors : aerial photography (0.5 m.) and SPOT 5 XS (10 m). Several protocols for multi-source and multi-date classifications, using object-oriented classification (eCognition software from Definiens), have been compared on a buffer of 1.2 km along 80 km of the Hérault river (southern France). Tests were run in order to both select the best protocol and to assess the complementarities of different images (space resolution, spectral information, date). The best classification reached an accuracy of 70 %. This presentation is dedicated to describe classification methods of these different protocols, analyse their results (confusion matrix) and calculate gain accuracy of multi-platform-sensing use. In the future map of land use in rivers corridors will be improved with other sources from image and thematic layers.

Spatial indicators were computed from the resulting classification, in order to characterize this land use in the vicinity and/or upstream of the stations where river ecological status indicators were measured. Both linear (length along the river of a given land use type) and bi-dimensional (distribution of area in the river buffer of a given land use type) indicators were computed and their spatial distribution was analysed. The influence of the river corridor land use on instream ecological status can then be analysed through statistical approach (Partial Least Square regressions, Principal Component Analysis,...) between land use indicators and ecological status indicators. A preliminary approach will be presented.