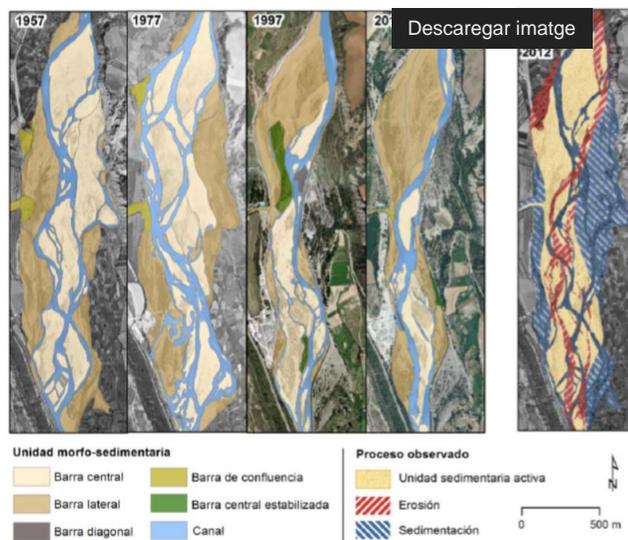


A methodology for historical analysis of changes in fluvial geomorphology

Recently, an article has been published in the **Cuaternario y Geomorfología** journal that presents the workflow for obtaining spatial information used for the analysis of fluvial geomorphological changes. Specifically, this methodology has been applied to study the changes produced in the upper section of the Cinca River (Aragonese Pyrenees) between 1927 and 2015, where the **RIUS Research Group (Fluvial Dynamics** <http://www.macs.udl.cat/en/recerca/rius/> [<http://www.macs.udl.cat/en/recerca/rius/>]) of the Department of the Environment and Soil Sciences carries out part of its projects. The research is based on the historical reconstruction of ortomosaics through the application of photogrammetric algorithms called "Structure from Motion SfM". The results have shown that the study section of the



Alto Cinca has suffered a strong reduction of the active width of the channel (52%) with a high incision process (e.g. > 5 m in some points). In addition, there is a clear simplification in the channel pattern (reduction of the multiplicity of channels and the transition from multichannel to single-channel pattern). These processes are directly influenced by anthropogenic impacts associated with the extraction of aggregates and the construction of breakwaters (section scale), and by the effects on the production and transfer of sediments (basin scale) due to changes in the uses of the floor from the 1950s of the twentieth century. The methodology presented in this work is very useful for the diagnosis of the morpho-sedimentary state of fluvial systems. In the particular case of the Alto Cinca, the results are of great interest for the improvement of the understanding of cause-effect relationships in the morpho-sedimentary dynamics observed for the period 1927-2015. This improvement can help to modify the basin management plans through a more integral vision of contemporary processes. Publication reference: Llena, M., Vericat, D., Martínez-Casasnovas, J.A., 2018. Application of Structure from Motion (SfM) algorithms for historical analysis of changes in fluvial geomorphology. *Quaternary and Geomorphology* (2018), 32 (1-2), 53-7, <https://doi.org/10.17735/cyg.v31i3-4.5524> [<https://doi.org/10.17735/cyg.v31i3-4.5524>]. Link to the article in PDF format: [click here](#) [

http://tierra.rediris.es/CuaternarioyGeomorfologia/revista/volumen_32/CyG_32_1y2_aplicacion.pdf].