The Relational SYstem of water course Hydromorphology Auditing

French multi-scale decision-making tool for the WFD implementation

A. Chandesris#[1], N. Mengin[1] , JR. Malavoi[2], JG Wasson[1] & Y. Souchon[1]

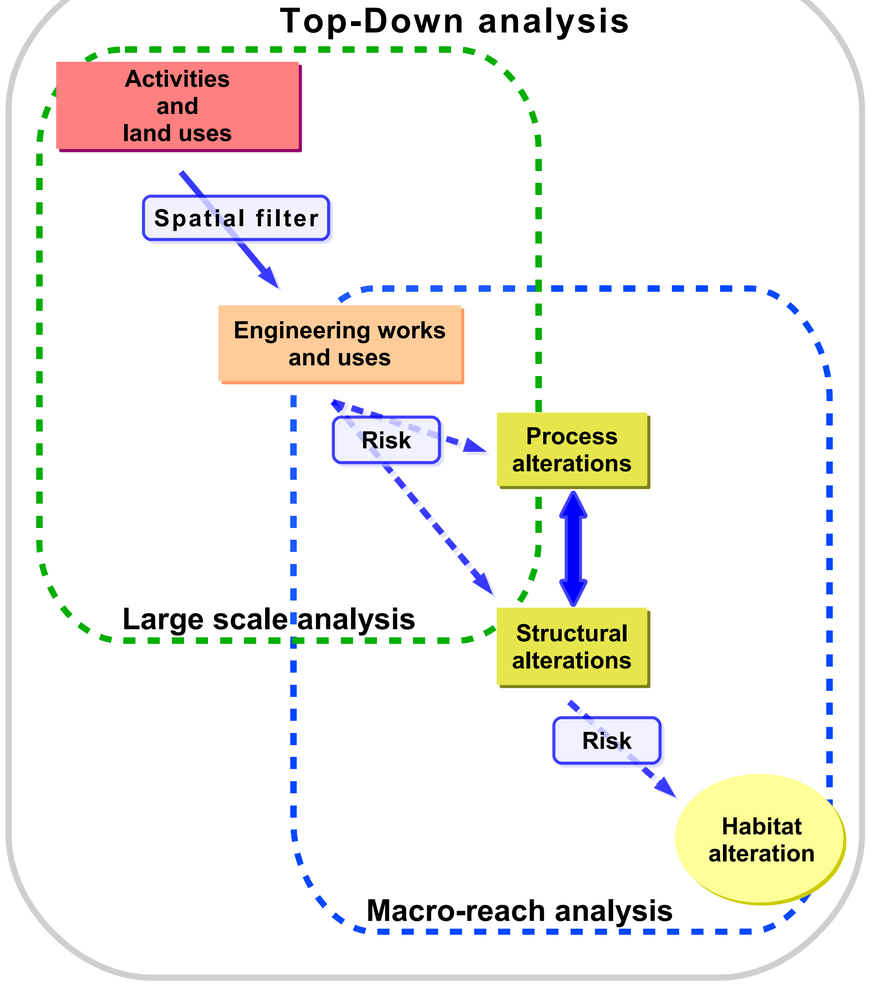
#andre.chandesris@cemagref.fr

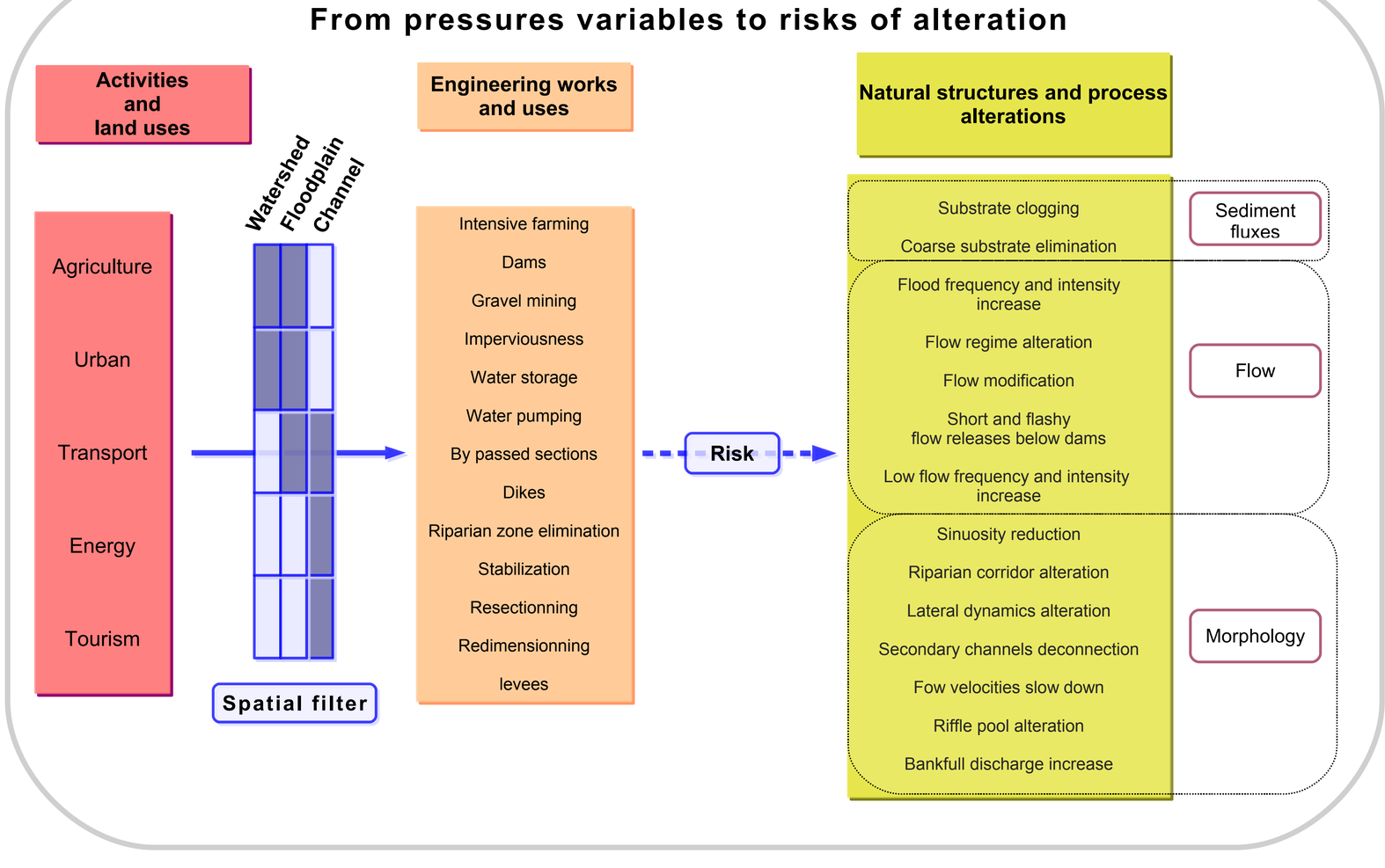
[1] CEMAGREF, 3bis Quai Chauveau – CP220 ; FRANCE - 69336 LYON Cedex 09

[2] MALAVOI Ingénieur Conseil, 207 rue de l'Eglise ; FRANCE - 01600 PARCIEUX

What is SYRAH-CE ?

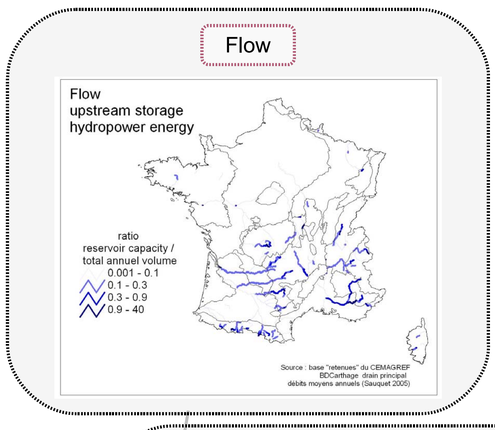
Conservation or restoration of aquatic habitat supporting the biological quality elements (sensus ecological status, WFD 2000) is dependant of healthy physical fluvial process and morphological structure. At watershed and reach scale, SYRAH-CE is based on an audit of elements, which are selected by their potential negative impact (risk) on physical functioning. These elements are articulated in a GIS. Elementary description of reach physical characteristics and stratified oriented field description complete SYRAH-CE. In a near future, SYRAH-CE will produce the physical relevant data necessary to explore and interpret the links between physics and biology at the nation level.





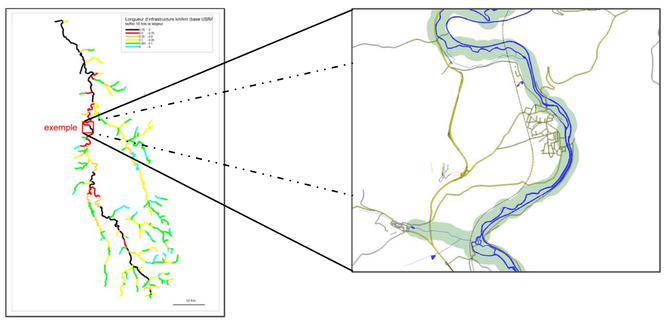
Large scale analysis

The large scale analysis is based on available national data bases and is relevant for 50 km² surfaces. 15 thematic maps, corresponding to “engineering works and uses” are produced to screen the coarse grain level of risk.

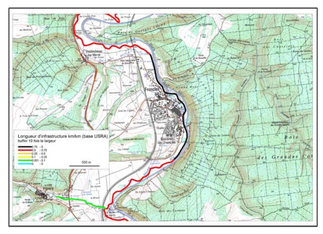


Geomorphological macro-reach analysis

At the reach scale, structural elements in the vicinity of rivers (land use, roads, levees, riparian area,..) or in the river (dams,…) and channel characteristics (width, slope,..) are automatically extracted from BdTopo IGN®, a vectorized map of aerial views at 1:25000 scale (pixel precision 0,5 m). These parameters can be mapped without transformation or aggregated to produce significant indices at the reach scale (2 to 33 km for 1 to 7 stream orders), describing hydromorphological modification and risks for habitat alteration.



Example of results : Roads in floodplain



BdTopo IGN® anlysis in floodplain

Selected elements on a topographic map

Connectivity

Alluvial forest

Natural riparian forest

Banks without protection

Structures & Processes Alterations

Simplified flood plain river system

Extreme urban buffer

No riparian forest

Artificially stabilized banks

Pictures : Jean-René Malavoi