



Growing  
ideas  
through  
networks

## Riparian vegetation assessment in France


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 **cost**  
EUROPEAN COOPERATION  
IN SCIENCE & TECHNOLOGY

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## Introduction

- **No monitoring system dedicated to riparian vegetation**
- 4 mains national sources of informations
  - **Water Framework Directive**
    - SYRAH
    - CARHYCE
  - Natura 2000
  - European vegetation survey (see Dejan presentation)
  - Local monitoring (Natural reserves, see Dufour and Pont, 2006)

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## SYRAH

- Système Relationnel d'Audit de l'Hydromorphologie des Cours d'Eau
- inventory of hydromorphological alterations of water courses at the **national scale**
- Pressures, risk of alteration
- based on **existing maps** (e.g. land cover, cartographic, geological, soil erosion maps, etc.) and the uses of GIS techniques
- Developed by IRSTEA (André CHAN DESRIS, Jean-René MALA VOI, Yves SOUCHON, Hervé PELLA, Jean-Gabriel WASSON, etc.)
- See <http://www.irstea.fr/la-recherche/unites-de-recherche/maly/pole-onema-irstea/hydromorphologie-et-alterations-physiques-0>



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## SYRAH

Pressures on river processes

- risk of sediment fluxes alteration,
- risk of flow regime,
- lack of lateral dynamic because of bank protection structures,
- risk of alteration of channel morphology, etc.



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## SYRAH

- bank and riparian zone : 5 m and 3 times the channel width
- floodplain : 12 times the channel width

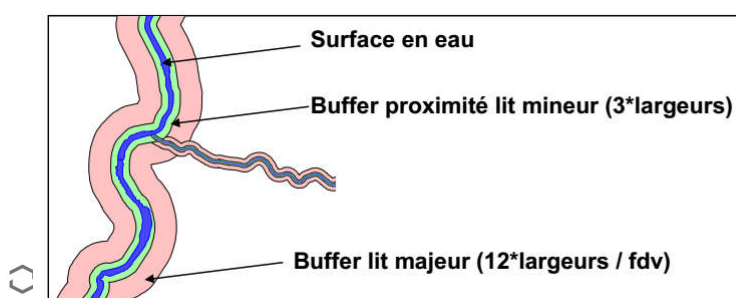


Fig. 3 Zones d'extraction des données (fdv = fond de vallée).

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## SYRAH

### Features

- RIPARIAN VEGETATION STRUCTURE
  - Alteration of riparian vegetation structure/presence (e.g. available surface/river corridor surface)
- LONGITUDINAL CONTINUITY OF RIPARIAN VEGETATION
  - Lack of riparian forest
- ARTIFICIAL FEATURES AND STRUCTURES
  - Riparian zone artificialization, embankments, resectioning, dikes, stabilization, channelization, levees, etc.
- LAND USE
  - Intensive farming, gravel mining, roads, plantations, etc.

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## SYRAH

- Example : risk of morphological degradation => % of artificial landcover in the floodplain

  
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Chansderis, 2009

### Risques d'altération de la morphologie: occupation du sol

Indicateur : type artificiel en lit majeur

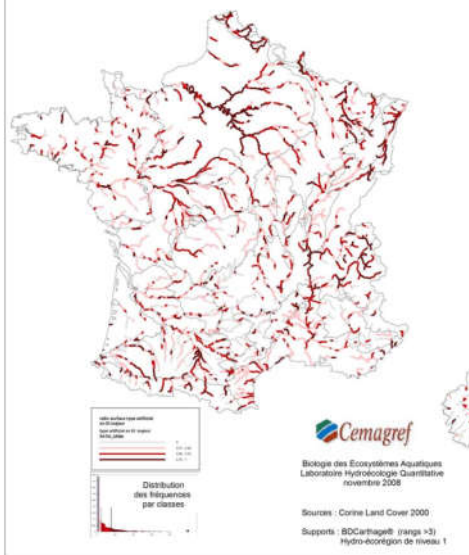
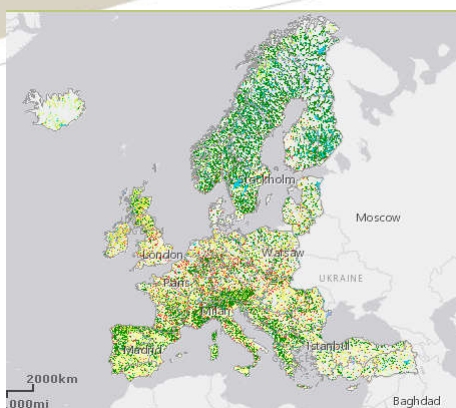


Figure 18 - Morphologie : occupation du sol type « artificiel » dans le lit majeur (assimilé à 10 largeurs)

## For europe

- Copernicus ?
- state and characteristics of riparian zones across the EEA member and cooperating countries:
  - Land Cover / Land Use
  - Delineation of Riparian Zones
  - Green Linear Elements
- Only large stream (order 3-4)

  
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 remote sensing

 MDPI

### Article Europe's Green Arteries—A Continental Dataset of Riparian Zones

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## CARHYCE

- Goal assessment of hydromorphological conditions
- **Field based** (weadable streams), every 6 years
- Based on the network built to monitor chemical status (and aquatic populations)
- Developed by AFB (F. GOB, etc.)

<http://www.naiades.eaufrance.fr/acces-donnees#/hydromorphologie>



Almost 1000 sites  
(11000 water bodies)



## CARHYCE

- Site : 14 x mean bankfull width
- 15 cross sections
- Bank : type (natural, rocks, etc.) and habitats (woody debris, etc.)
- Riparian zone
  - Vegetation structure (yes/no strata <2 m ; 2/7m ; >7m)
  - Width (0-5 m, 5-10 m, 10-25 m, > 25 m)
  - Type (native, non-native, plantation), but no list of species
  - Dominant strata
  - Longitudinal continuity (classes)

No associated index at this stage



		G	D
Absence		<input type="checkbox"/>	<input type="checkbox"/>
Isolée		<input type="checkbox"/>	<input type="checkbox"/>
Espace- régulière		<input type="checkbox"/>	<input type="checkbox"/>
Bosquets éparses		<input type="checkbox"/>	<input type="checkbox"/>
Semi-continue		<input type="checkbox"/>	<input type="checkbox"/>
Continue		<input type="checkbox"/>	<input type="checkbox"/>

		RIVE GAUCHE		
		STRATE PRESENTE	EPAISSEUR	TYPE DE VEGETATION
CORRIDOR RIVULAIRE ET RIPISYLVE	<input type="checkbox"/> Absence	<input type="checkbox"/> <5m	<input type="checkbox"/> Naturelle	
	<input type="checkbox"/> Arborée	<input type="checkbox"/> 5 à 10 m	<input type="checkbox"/> Exotique	
		<input type="checkbox"/> 10 à 25m	<input type="checkbox"/> Plantée	
		<input type="checkbox"/> >25m		
	<input type="checkbox"/> Arbustive	<input type="checkbox"/> <5m	<input type="checkbox"/> Naturelle	
		<input type="checkbox"/> 5 à 10 m	<input type="checkbox"/> Exotique	
		<input type="checkbox"/> 10 à 25m	<input type="checkbox"/> Plantée	
		<input type="checkbox"/> >25m		
	<input type="checkbox"/> Herbacée	<input type="checkbox"/> <5m	<input type="checkbox"/> Naturelle	
		<input type="checkbox"/> 5 à 10 m	<input type="checkbox"/> Exotique	
		<input type="checkbox"/> 10 à 25m	<input type="checkbox"/> Plantée	
		<input type="checkbox"/> >25m		
STRATE + RECOUVRANTE :		<input type="checkbox"/> Arborée	<input type="checkbox"/> Arbustive	
BERGES	MATERIAU : <input type="checkbox"/> Mat. Naturels <input type="checkbox"/> Aménagement Végétalisé <input type="checkbox"/> Enrochement <input type="checkbox"/> Mat. Artificiels			
	HABITAT(S) CARACTERISTIQUE(S) : <input type="checkbox"/> Bloc Rocheux <input type="checkbox"/> Chevelu Racinaire			
	<input type="checkbox"/> Débris Ligneux grossiers, embâcles <input type="checkbox"/> Sous Berge <input type="checkbox"/> Végétation Surplombante			

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