

Mapd'O web application:

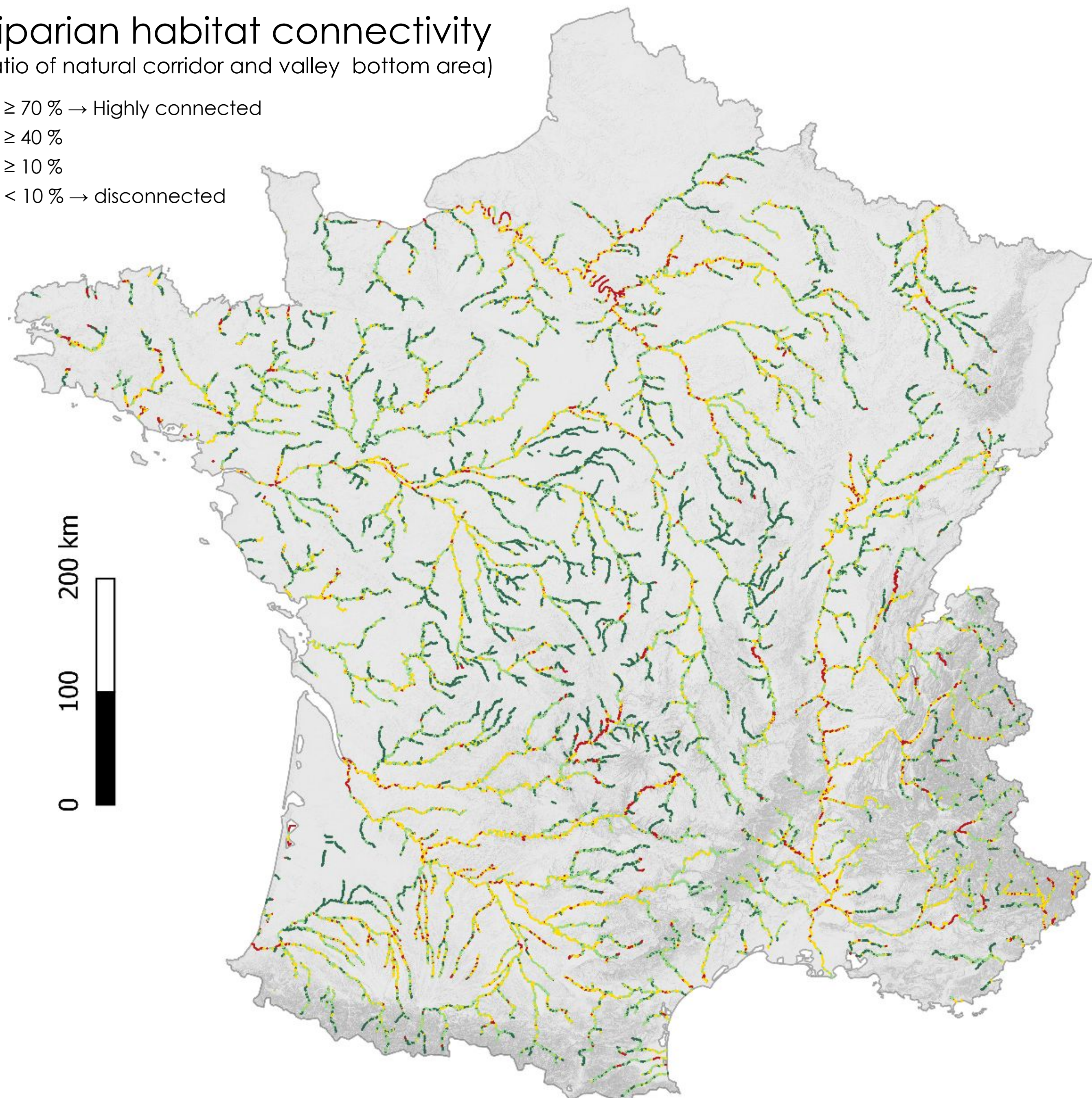
Visualize & analyze river hydromorphology on the national scale

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Riparian habitat connectivity
(ratio of natural corridor and valley bottom area)

- ≥ 70 % → Highly connected
- ≥ 40 %
- ≥ 10 %
- < 10 % → disconnected

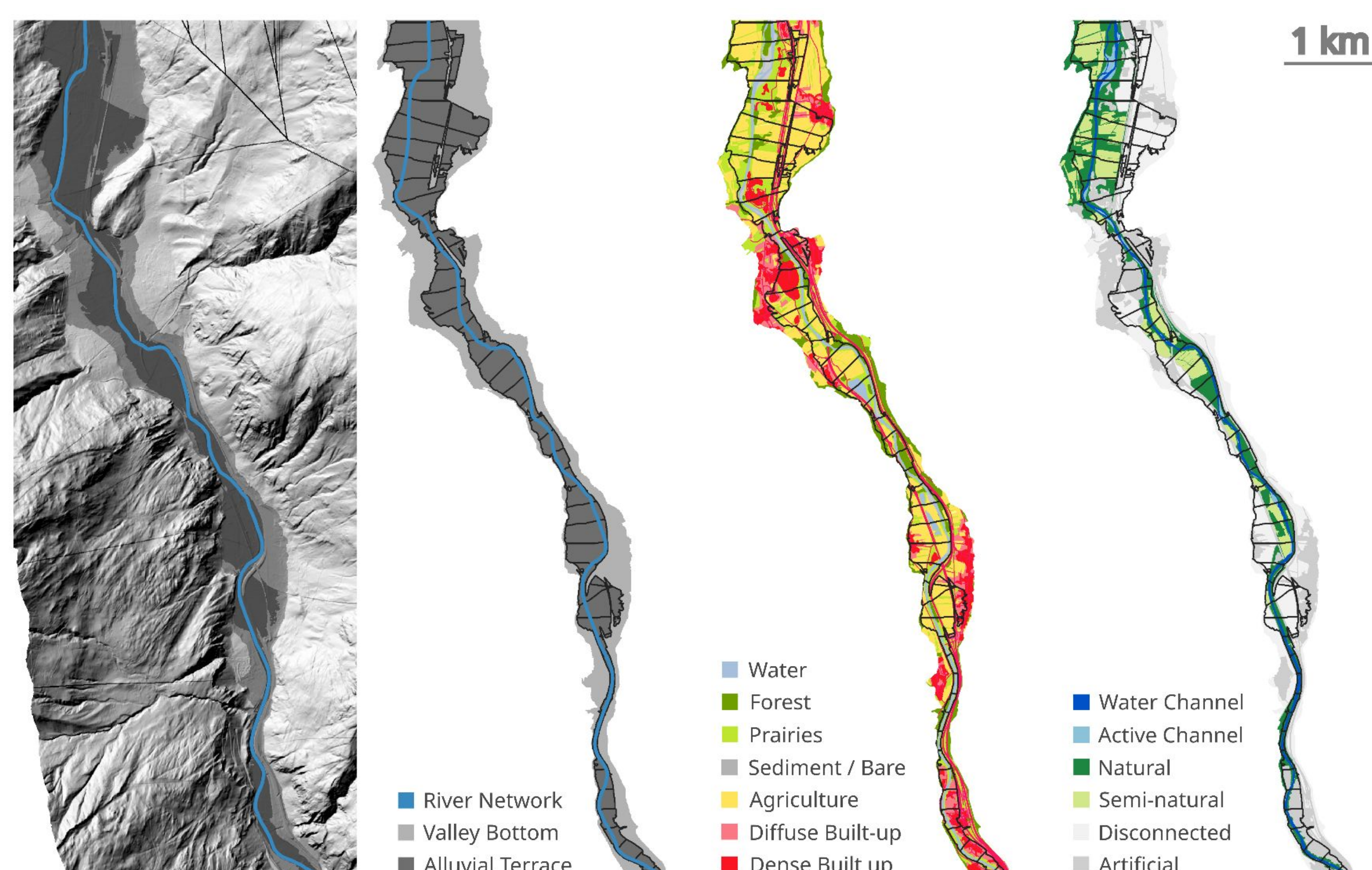


Example classification of the French river network with Mapd'O data

National-scale data production

The Mapd'O datasets are built with the algorithms of the **Fluvial Corridor Toolbox**, applied to all French rivers with ≥ 5 m width based on the national hydrographic network *BD Topage*®:

1. **Production of valley bottom areas** (based on 5-m digital terrain model *RGE ALTI*®)
2. **Segmentation into 200m DGOs** (discretized geographic objects)
3. **Production of land cover map** (*BD TOPO*® & *Graphical Parcel Register*, *RPG*)
4. **Extraction of 37 metrics for each DGO**, characterizing topography, hydromorphology, and land cover



Valley Bottom

Discretized Corridor

Land Cover

Natural Corridor

Methodological approach behind Mapd'O, here the example of the creation of the *Natural Corridor Map* (L. Helling, 2025)



Try the app!

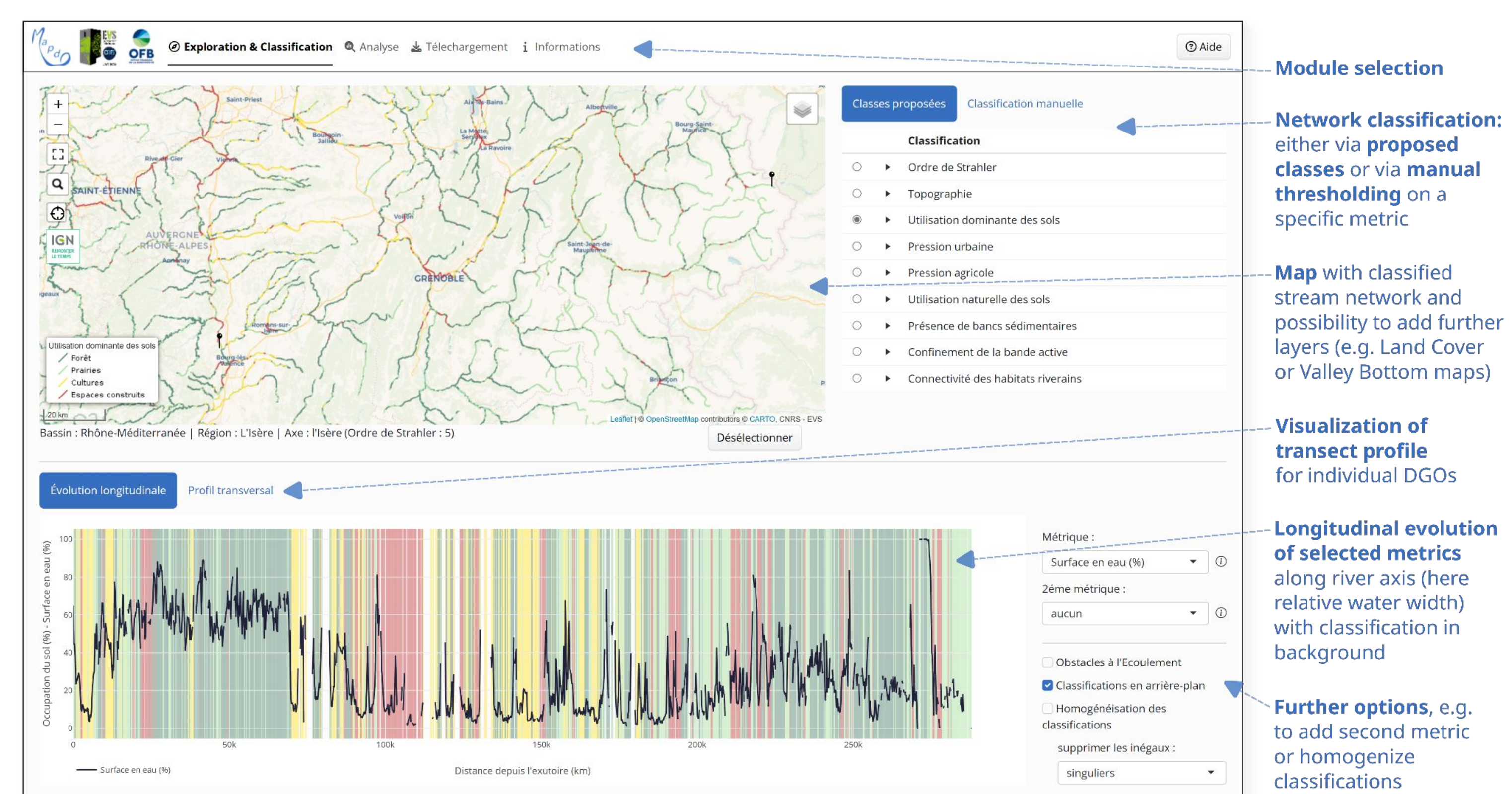
<https://isig-apps.ens-lyon.fr/apps/mapdo/mapdoapp>

Novel tool for geomorphological river analysis

Mapd'O provides **datasets** and a **web app** to facilitate **pre-analysis of the hydromorphological functioning of French rivers** from the segment to the watershed scale. It enables identifying fluvial corridors and critical river reaches, analyzing river styles, and assessing pressures like urbanization, agriculture or damming.

A new 1-m **national land use map**, as well as the first **national valley bottom** and **lateral continuity maps** at 5 m resolution were produced. The data can be analyzed in the web app, but also downloaded or accessed via a WMS service. This initiative supports researchers and practitioners in planning conservation and restoration efforts in line with the EU Water Framework Directive.

Web Interface:



Exploration & Analysis via web-app

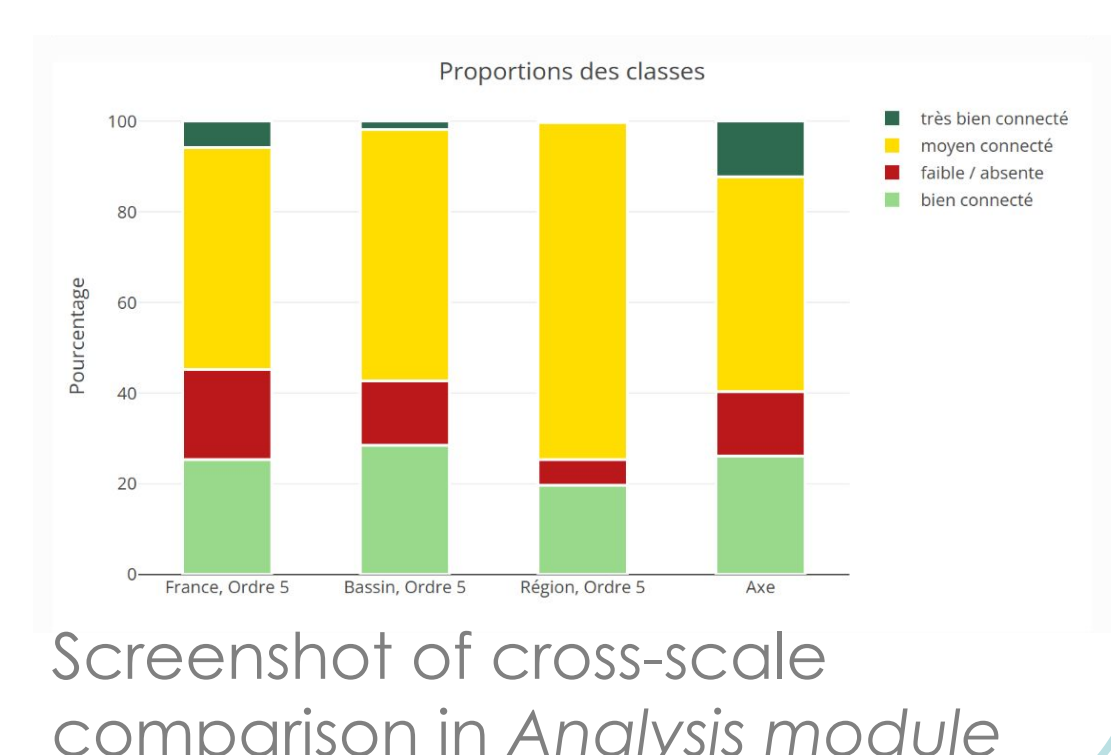
The app has a user-friendly interface built in R Shiny. Both project and external data (e.g. stream obstacles, discharge gauges) are integrated.

The **Exploration & Classification module** allows to apply either proposed or manual network classifications, based on topography, land use or confinement indices. Their longitudinal evolution can be visualized for selected reaches, helping to identify morphological transition zones.

The **Analysis module** facilitates analysis of applied classifications or individual metrics, and cross-scale comparison, e.g. between an axis and its parent watershed. In addition, a bivariate analysis of individual axes can be performed. A third module enables the **download** of specific datasets and classifications.

Example use cases

1. Identification of **topographical breakpoints**
2. Identification of **dams along river length**
3. Identification of **most urbanized segments**
4. Comparison of **river axis characteristics** with those of **watershed** and **country**
5. **Download** of classified network



Screenshot of cross-scale comparison in *Analysis module*

Upcoming project steps

The entire national river corridor network in metropolitan and overseas France will be processed. A **new module for assessing temporal changes** is planned. Additionally, **statistical methods for automatically segmenting metric series and detecting changepoints** will be provided, facilitating the identification of homogeneous reaches or discontinuities.