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# New map reveals discrepancies in protection for watercourses in France

**The Water Law[1] protects freshwater ecosystems by regulating activities and infrastructure with a potential impact on watercourses, whose legal definition was established in 2015. A research team at INRAE has developed the first national watercourse map. This map reveals disparities in how this definition is applied from one French *département* (administrative region) to another, to the detriment of small headwater streams – which are often rich in biodiversity – and intermittent streams. These results appear on 19 September in Environmental Science & Technology.**

From glacial streams to large rivers, watercourses are essential to the well-being of our societies but highly vulnerable to the consequences of human activities. These ecosystems are safeguarded by environmental legislation that regulates potentially harmful activities and infrastructure.

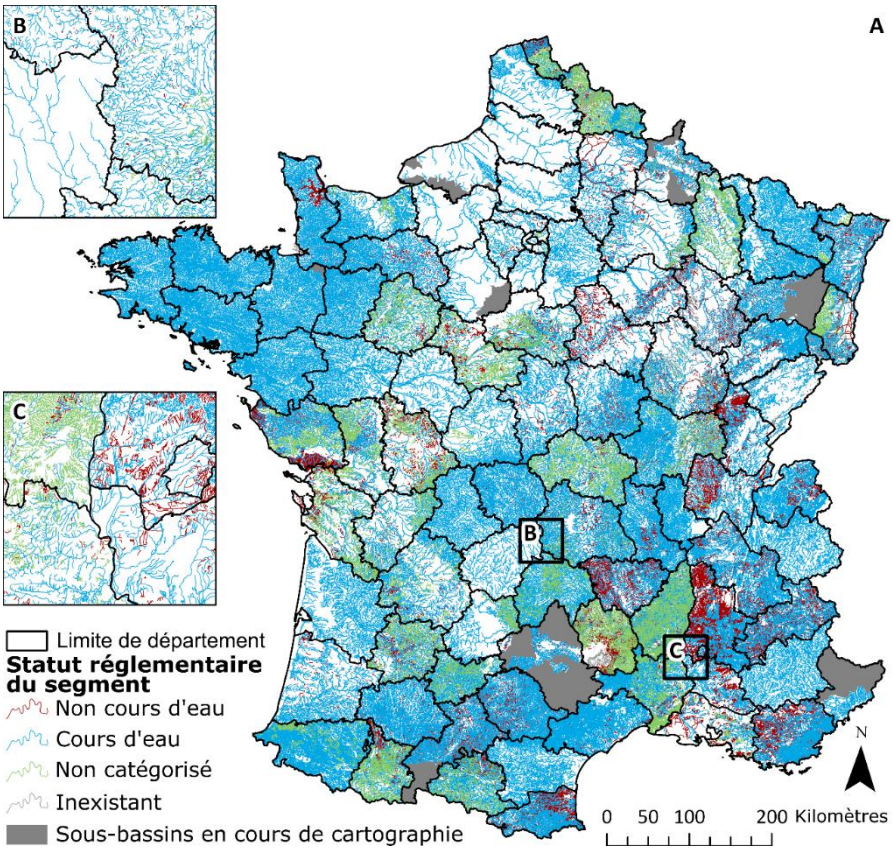
The definition of what constitutes a watercourse according to the Water Law was established in 2015, and dictates three criteria for a flowing water body to qualify: having a channel of natural origin; being fed by a source other than rainfall alone and carrying sufficient flow for most of the year. Based on this definition, départemental authorities established a map of their region using topographical data from the National Institute of Geographic and Forest Information (IGN) as well as additional expertise.

On this basis, INRAE researchers assessed this cartography of watercourses in France to obtain a clearer picture of the impact of this official definition on the protection of freshwater ecosystems.

Using 91 departmental maps, scientists constructed the first national watercourse map, which includes over two million hydrographic segments extending over 680,000 kilometres and covering 93% of metropolitan France (excluding Corsica).

Researchers compared this map with IGN data and found that approximately one quarter of the segments listed on previous maps of the hydrographic network were disqualified as non-watercourses

[1]Current water policies are based on the Water Law of 16 December 1964, the Water Law of 3 January 1992, and the Water Law of 30 December 2006.




***National map of watercourses protected by the Water Law in France in 2023***

Intermittent streams (which stop flowing and/or dry up for part of the year) and headwater streams – essential to protecting water quality and ecosystem health – are the most prone to disqualification. Based on cartographic analysis, the scientists estimate that intermittent streams represent 60% of the mapped hydrographic network but approximately 80% of the segments that have been disqualified. Headwater streams identified on IGN maps represent 42% and 56% respectively.

Differences in classification were noted between and within *départements*. Eighteen *départements* established a map with a total network length greater than that of the IGN database and identified new watercourses; 15 other *départements* disqualified at least 50% of the total hydrographic network length.

Such variations between *départements* and compared to previous maps can be explained by different interpretations of the definition of a watercourse (the criterion of sufficient flow, for example); by discrepancies in resources available to conduct the assessment, and by the involvement of local stakeholders in the mapping process. Researchers identified 1,500 cases of discontinuities in the maps, involving for example a segment qualified as a watercourse surrounded by disqualified segments and vice versa.

The study highlights the complexity involved in defining and evaluating hydrographic segments as watercourses in France, as well as a need for greater consistency at the national level in a context of climate change where numerous streams could dry up for part of the year.

## Reference

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