



HAL
open science

Rainwater harvesting techniques deciphered: unravelling the current use and limitations of the ditches term with a textual analysis of scientific literature

Davide Rizzo, Jean-Stéphane Bailly, Fabrice Vinatier

► To cite this version:

Davide Rizzo, Jean-Stéphane Bailly, Fabrice Vinatier. Rainwater harvesting techniques deciphered: unravelling the current use and limitations of the ditches term with a textual analysis of scientific literature. AGU24 What's next for Science, Dec 2024, Washington, D.C., United States. , 2024, 10.5281/zenodo.14510112 . hal-04834593

HAL Id: hal-04834593

<https://hal.inrae.fr/hal-04834593v1>

Submitted on 17 Dec 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NoDerivatives 4.0 International License

Rainwater Harvesting Techniques Deciphered: Unravelling the Current Use and Limitations of the Ditches Term with a Textual Analysis of the Scientific Literature



Daive Rizzo
Jean-Stéphane Bailly
Fabrice Vinatier

LISAH, Univ Montpellier, AgroParisTech, Institut Agro Montpellier, INRAE, IRD, Montpellier, France

Context

"Ditch" is a straightforward description of human-made elongated ground depressions used for reducing soil erosion or for water re-infiltration, drainage or irrigation.

However, this term's specificity might fail to convey the historical significance of the related structures, their management diversity, or environmental impacts.

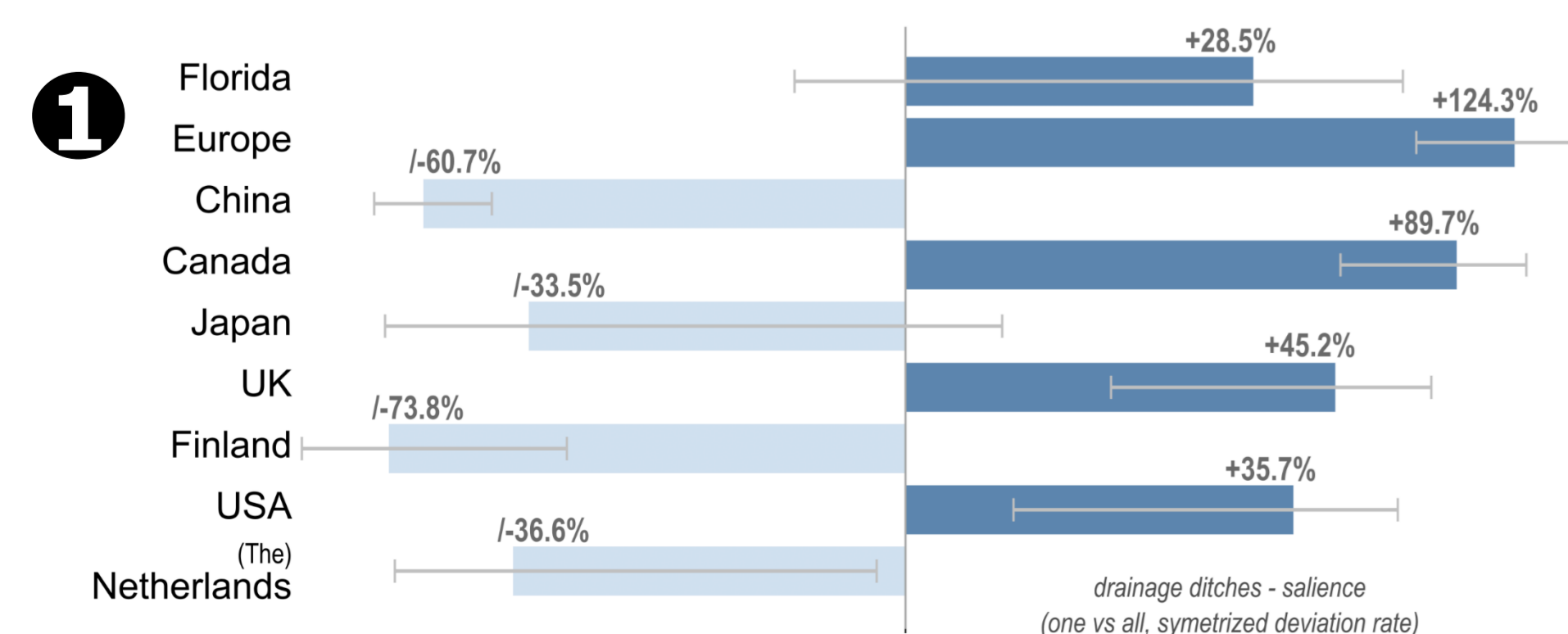
For this reason, researchers use different terms (e.g. trenches, channels, waterways) together with ditches or even as synonyms, generating confusion.

Aim

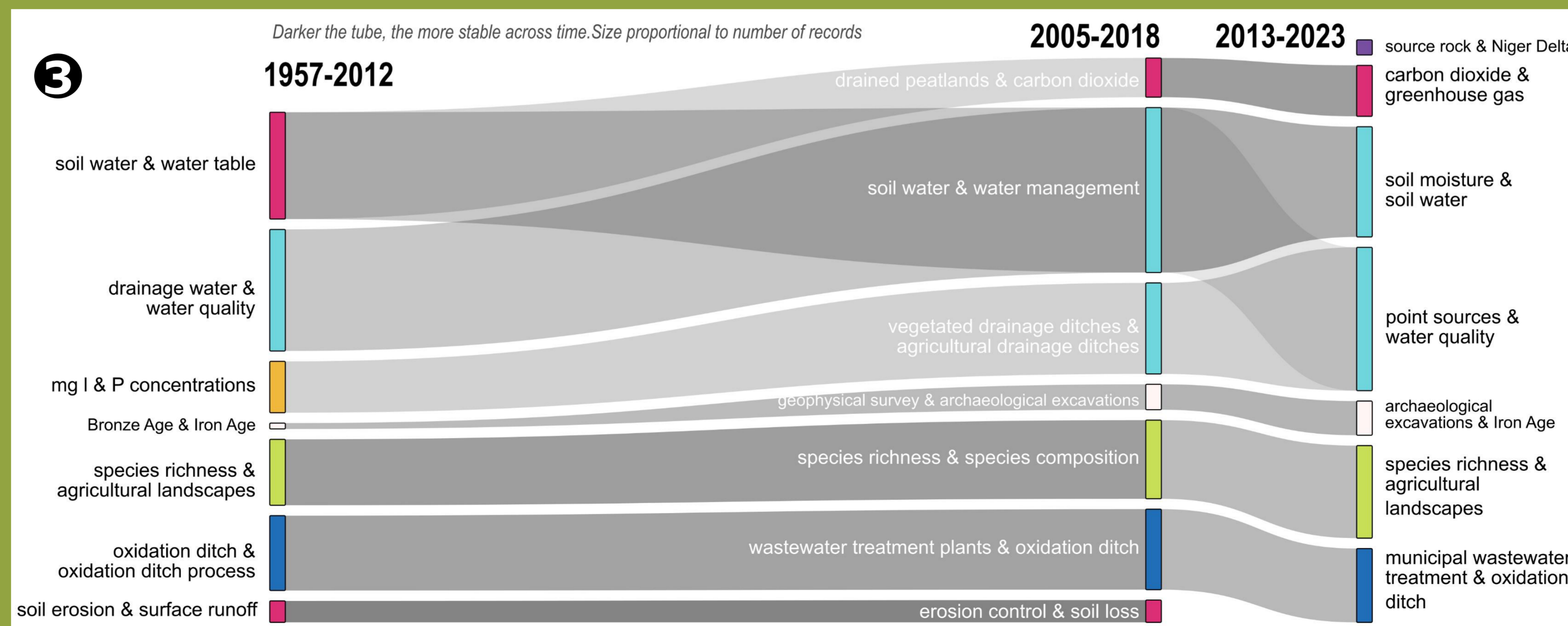
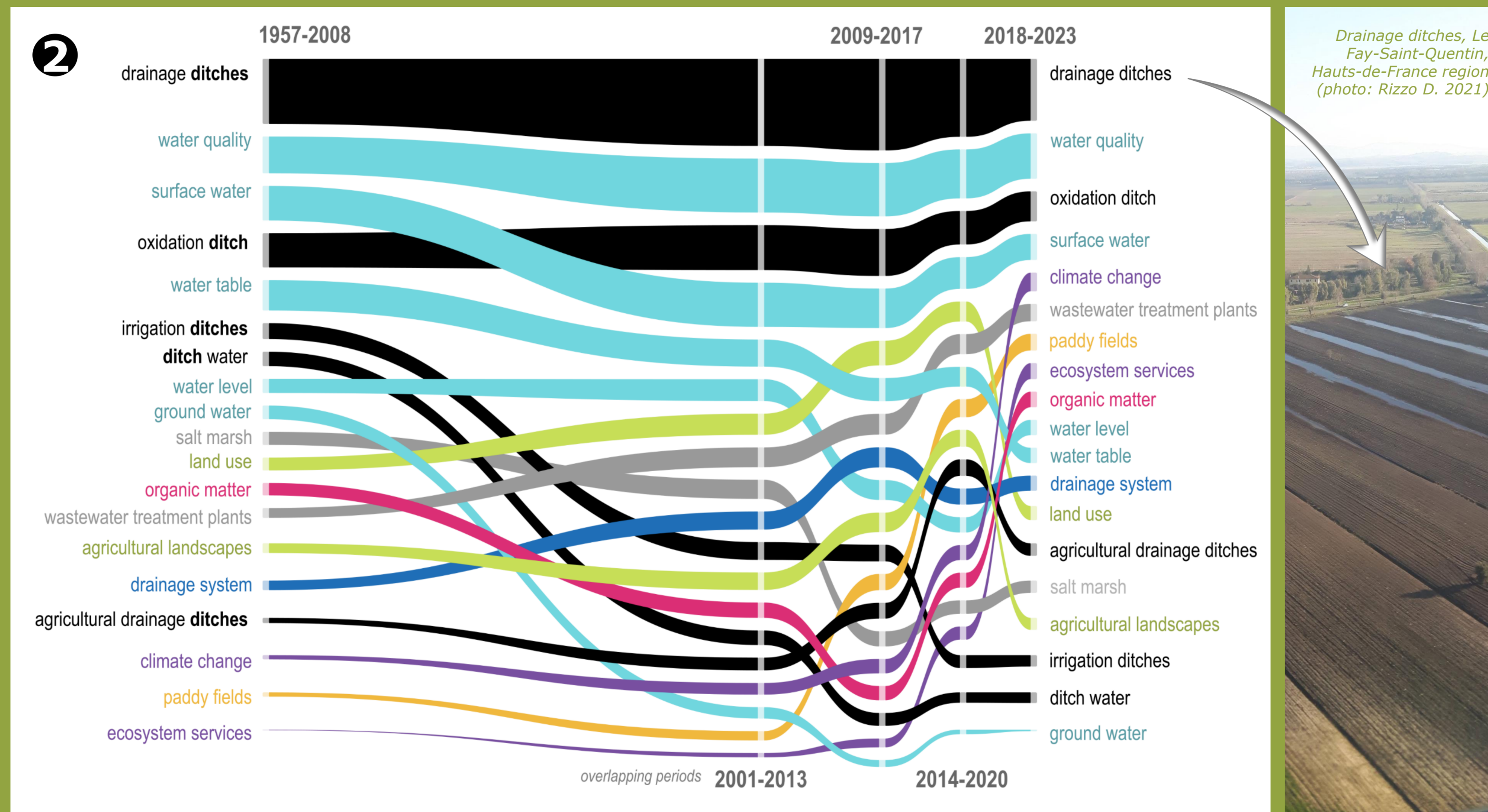
Decipher the use of the term "ditch" to provide background of its occurrences and promote a clear understanding of its specific uses and contexts.

Method

Semantic analysis of scientific literature on the **CorText** online platform [cortext.net] for bibliometric analysis using natural language processing scripts.



Textual analysis shows 'ditch' usage in scientific literature evolving from technical focus to ecosystem services



GC51S - Nature-Based Solutions to Ensure Food and Water Security in Rising Aridity Regions Friday, 13 December 2024 | 08:30 - 12:20 | Hall B-C (Poster Hall) (Convention Center)

Sample description

8162 documents – journal and conference papers, books and book sections –spanning from 1957 to 2023 retrieved on 2023-07-29 with the query (TI=(ditch*) OR AB=(ditch*) OR AK=(ditch*)) on Web of Science "Core collections", all editions, exact search.

Method details

Terms are meaningful units of language extracted from the analyzed text, composed up to three words (and exclusion of monograms) extracted from titles, abstracts, and authors' keywords

Graphs are composed selecting the N most frequent terms per each period with a tube size proportional to number of items

Graphics and scripts

1 – Profiling: comparison between the term "drainage ditches" and the nine most frequent named geographic entities automatically extracted from the literature body. Frequency significantly lower (left, light blue) or higher (right, blue) than the literature body

2 – Bumpy diagram: occurrences of most frequent terms over five homogeneous overlapping periods (overlaps = 1/2 of each time period)

3 – Epic Epoch: temporal description of group of terms into three overlapping periods (Sankey diagram)

DOI 10.5281/zenodo.14510113

