International Conference "Groundwater, key to the Sustainable Development Goals".

Paris, May 18-20<sup>th</sup>, 2022

<u>02k - ROUND TABLE - Hydrogeology and hydrogeologists in Sahelian countries: specific</u> <u>challenges for the achievement of SDG targets</u>

# An overview of Sahelian hydrogeology through a bibliometric analysis (2000-2020) to sustain the groundwater resources management in the Sahel.





V. Plagnes <sup>(1)</sup>, M. Lalonde<sup>(1)</sup>, J. Riaux<sup>(2)</sup>, Y. Tall<sup>(2)</sup>, C. Becaye Gaye<sup>(3)</sup>, F. Bertone<sup>(4)</sup>, J. Albergel<sup>(5)</sup>











In the Sahel, water scarcity and management issues due to:

- Climate aridity
- Economic, political, security and development conditions
- Lack of local expertise in hydrogeology

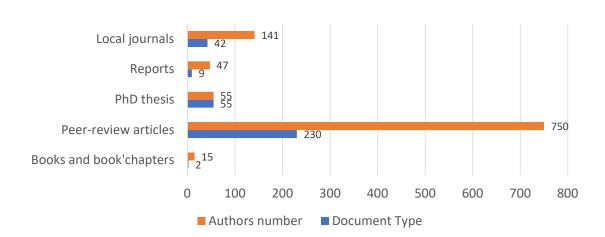
Literature review of the **international scientific research on Groundwater (2000-2020)** in 6 Sahelian countries :

Burkina Faso, Chad, Mauritania, Mali, Niger, and Senegal

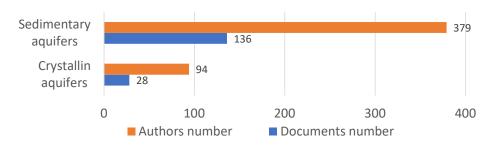
Framework of the *Sahel Groundwater Initiative* led by the World Bank

#### Creation of a database:

- 1008 authors and 338 documents exclusively on groundwater in the Sahel



- author's names, gender, affiliations, city and country of practice
- 5 scientific topics (GW resources identification/characterization, Water quality and pollution risks, Impacts on GW ressources, GW management/water policy, GW uses)
- type of aquifer



#### **Networks visualization**







- Authors
- Keywords
- Gender
- Institutions
- Country/Cities



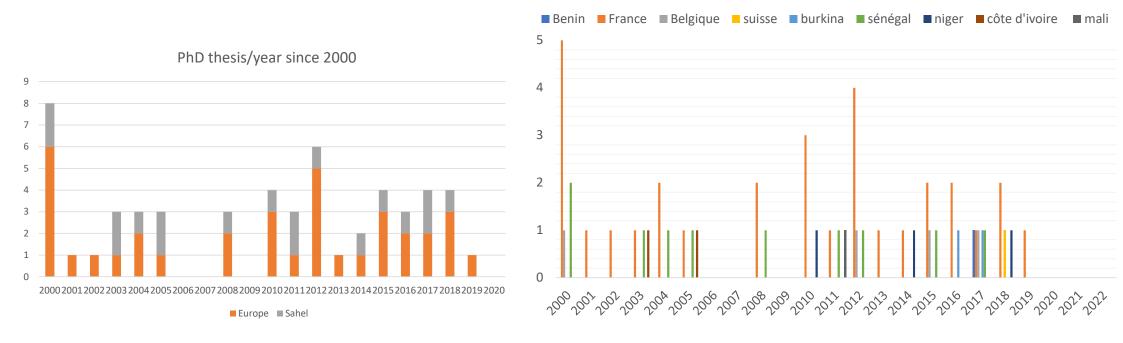




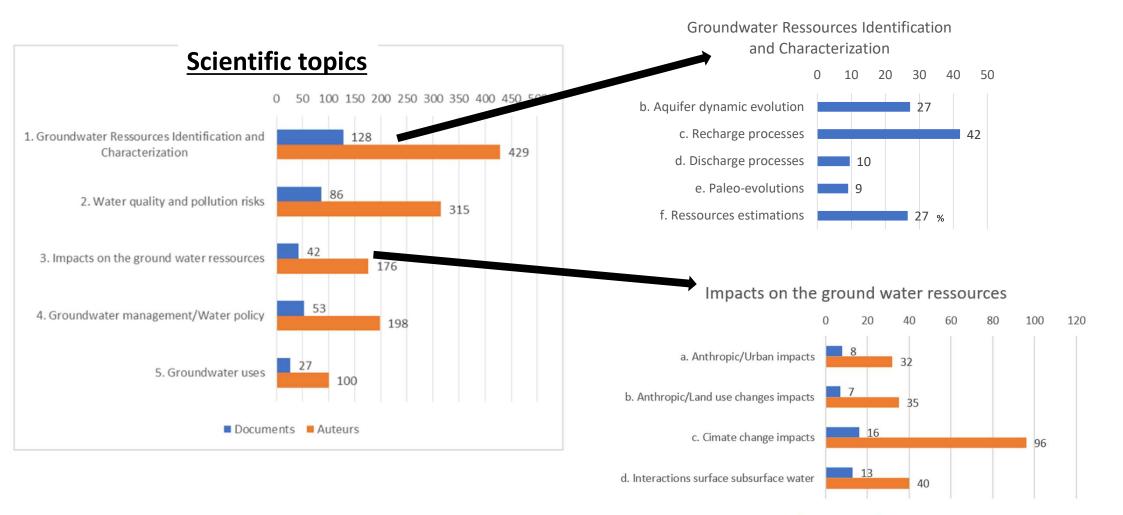
Nees Jan van Eck and Ludo Waltman Centre for Science and Technology Studies Leiden University

#### **Academic training:**

55 PhD thesis since 2000: 31 realized in France, 10 in Senegal, 4 in Belgium.....



Efficient South-North cooperation for academic training of young Sahelians

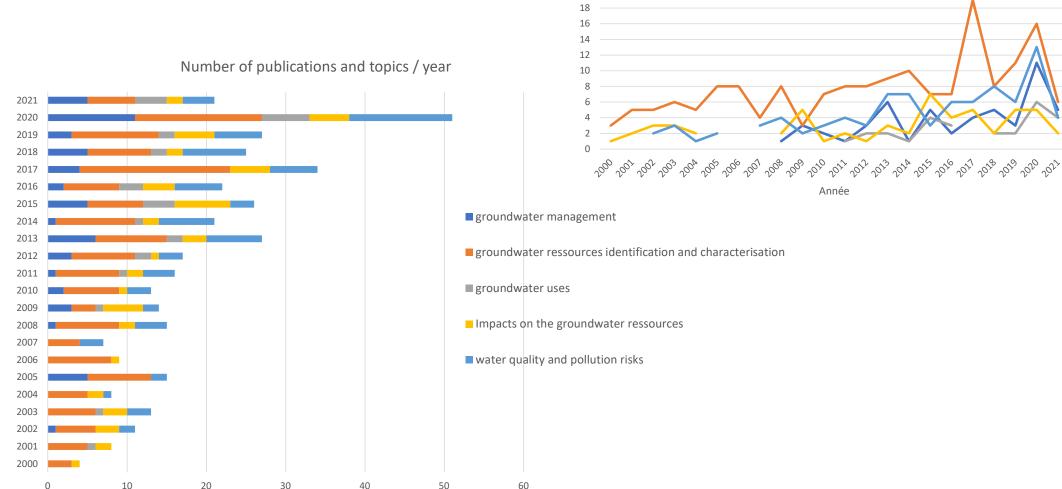


■ Documents ■ Auteurs

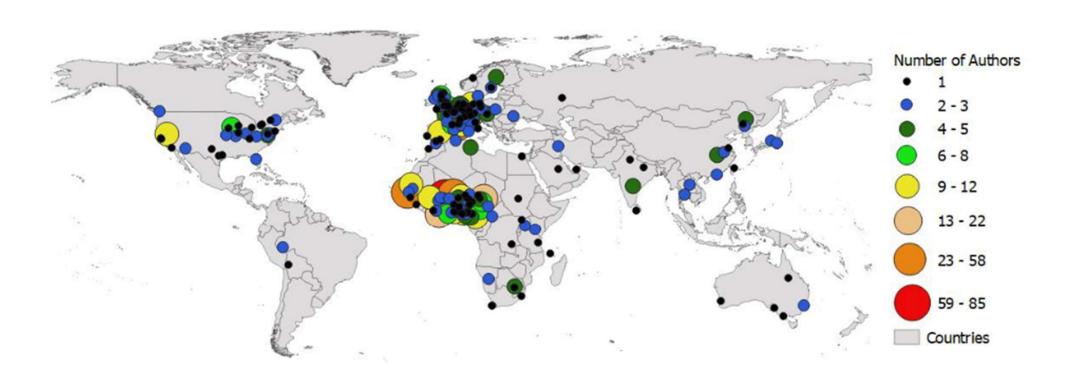
20

Number of publication by topic /year

### **Scientific topics**



**<u>Authors</u>**: publishing about GW in Sahel, all over the world

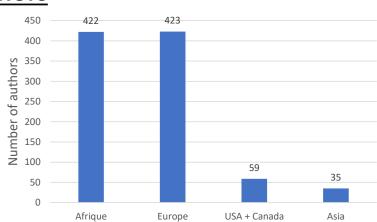


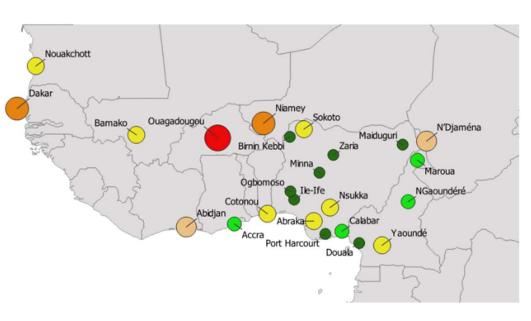
## **Context** Material, methods

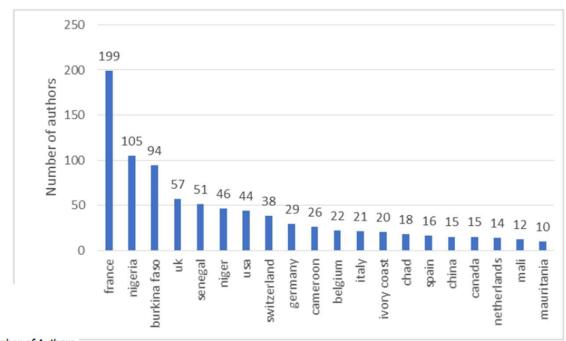
## Results

## Conclusion

### **Authors**







#### Number of Authors

4-5

6-8

9-12

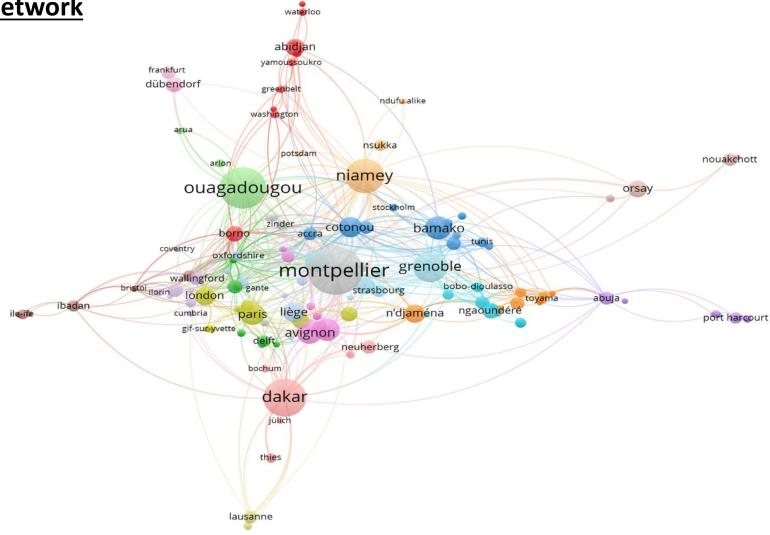
13 - 22

23 - 58

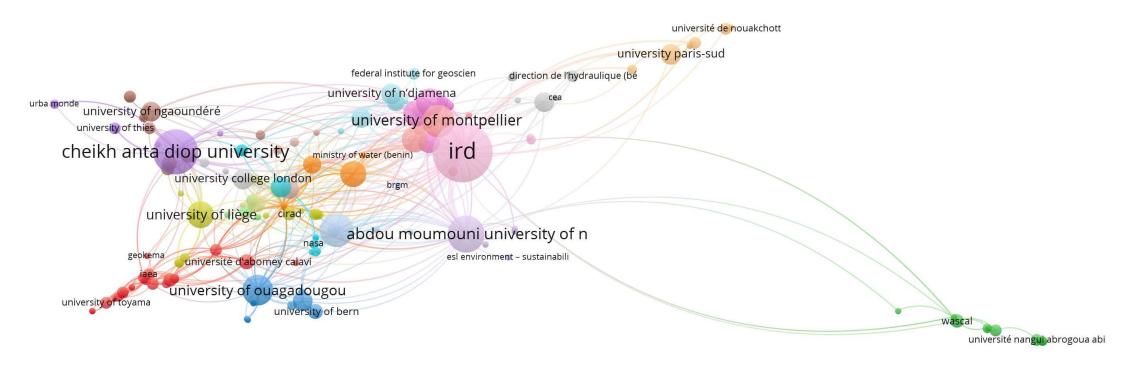
59 - 85

Countries

#### **Affiliation Cities network**



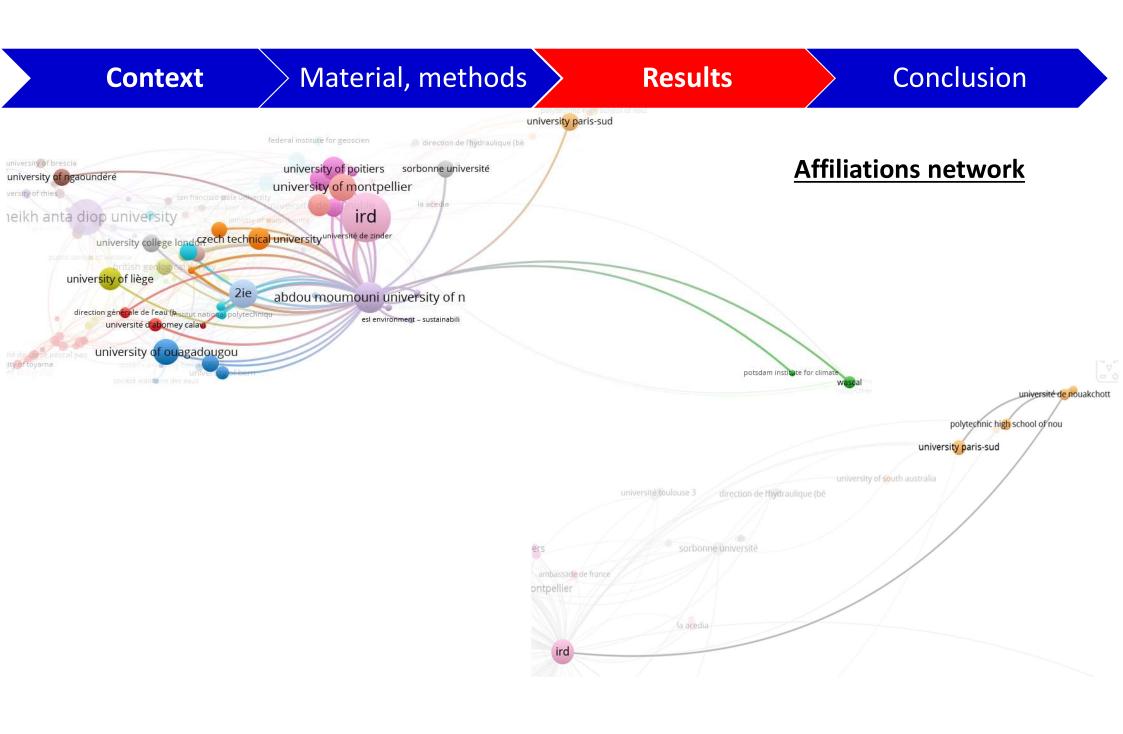
#### **Affiliations network**



Identification of the existing collaboration networks between Sahelian and international organizations/universities

#### Material, methods **Results** Conclusion **Context** university of brescia university of poitiers sorbonne université university of ngaounderé university of montpellier university of thies **Affiliations network** université de grenoble cheikh anta diop university ird hydraulic ministry (senegal) czech technical university university college london public service of wallonia british geological survey university of liège 2ie abdou moumouni university of n direction générale de l'eau (b esi environment - sustainabili institute for health sciences university of poitiers sorbonne université ministère des mines de l'energ university of rennes university of montpellier university of ouagadougou an francisco state university université de grenoble of mining and geolog groundwater reso société wallonne des eaux ird ministry of water (benin) global water operators partner université de zinder czech technical university university college london international water management ice of wallonia british geological survey university of fada n'gourma cirad abdou moumouni university of n direction générale de l'eau (b institut national polytechniqu esl environment - sustainabili université d'abomey ca te of hydrau university of ouagadougou queen's university belfast university of bern société wallonne des eaux

#### Material, methods **Results** Conclusion **Context** federal institute for geoscien **Affiliations network** university of brescia university of poitiers université de lausanne sity of ngaoundéré university of avignon university of thiesreenwishiversity of rough san francisco state university liversité de grenoble nternational groundwater reso cheikh anta diop university ird university college london international water management public service of wallonia british geological survey 2iemmu agrandalique meditaria abdou moumouni univ federal institute for geoscien federal ministry of water reso university of n'djamena université de corse nascal nan of brescia iversite aix marseluniversity of poitiers institut de physique du globe university of ngaoundéré university of rennes university of montpellier université de franche-comté université de strasbourg université de grenoble forschungszentrum jülich centre for ecology and hydrologersity cheikh anta diop university ird hydraulic ministry (senegal) avignon university german research center for env czech technical university university college london



- Research collaborations support academic formation development in the countries
- Publications involving several Sahelian universities are limited
- Main scientific topic in publications = processus and evolution of Sahelian aquifers recharge
- This study:
  - proposes actions in terms of orientation and to support local research
  - provides guidelines for the reinforcement of academic training in hydrogeology
  - a reference for evaluating financial investments

Thank you for your attention

## Contexte

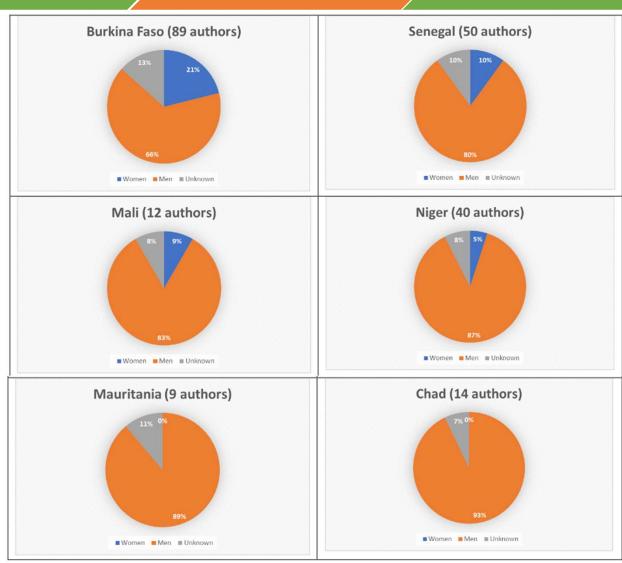
## Méthode

## Résultats

# Perspectives

- 1) Base Zotero
- 2) Cartes et diagrammes
- 3) Réseaux

Figure 13 : proportion d'auteurs hommes et femmes dans les 6 pays du Sahel



# Contexte Méthode Résultats Persepectives



Figure 19 : Cartographie des affiliations des auteures à l'échelle de l'Afrique de l'Ouest