



MAWAC-ENA WORKSHOP

PARIS

November
2025





Session 4

Organizing cities to cope with extreme events

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What is an extreme event ?

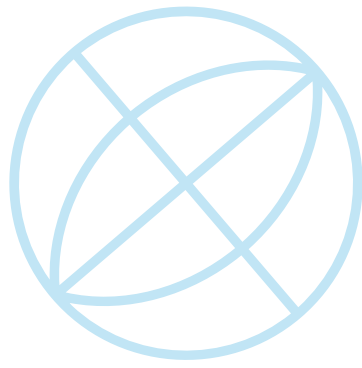
Disruption ?

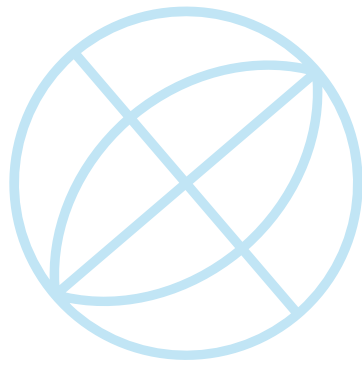
Increase in demand ?

New challenge ?



Dreamstime.com

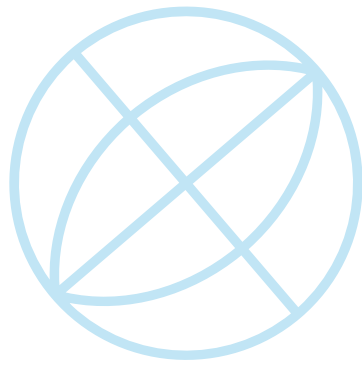




Different times of an extreme event

- Preparation
 - knowledge and data available
 - long time or short time preparation
- Duration
 - minutes, hours, days, weeks...
- Return to normal
 - weeks, months, years, decades
- Return of experience

The olympic games – an extreme event ?



Paris Olympic Games 23/07 to 07/08

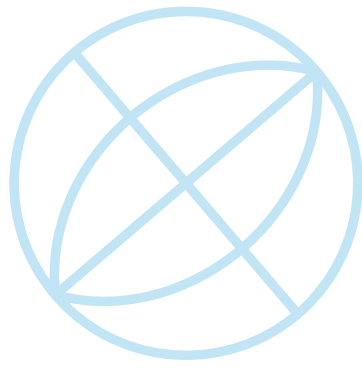
Not so many more people : only +4% compared to 2023

- 11,2 M visitors
- 3,2 M tourists

But a necessity to improve and secure :

- **Drinking water : sanitary and terrorism risk**
- **A special organization for Seine river quality monitoring**
- Sewage treatment and sewers systems : for the swimming challenge
- Flood prevention : summer can be a period of floods (a big flood took place in June 2016) , spring 2024 was one of the rainiest spring since 2013
- Drought : in 2022 France faced an important drought (one of the worse since 1976), the water resources had to be secured
- Heat wave





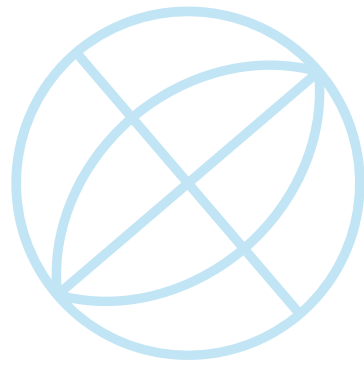
Online monitoring of water quality

Drinking water : sanitary and terrorism risk

- Help to detect **sudden change** in water quality in the network (human threat or hydraulic problem...)
- A more than 5 years project
- Selection of detectors and parameter (pilot scale)
- Selection of point of interest in the network
- Installation (and maintenance) of several detectors
- Mathematical work on signal treatment to automatically detect “abnormality” (Algorithm/Machine learning) / Collaborative work with an applied mathematic group

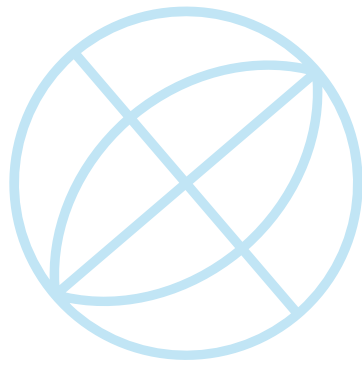
Daily monitoring of the Seine river quality

A special organization for Seine river quality monitoring

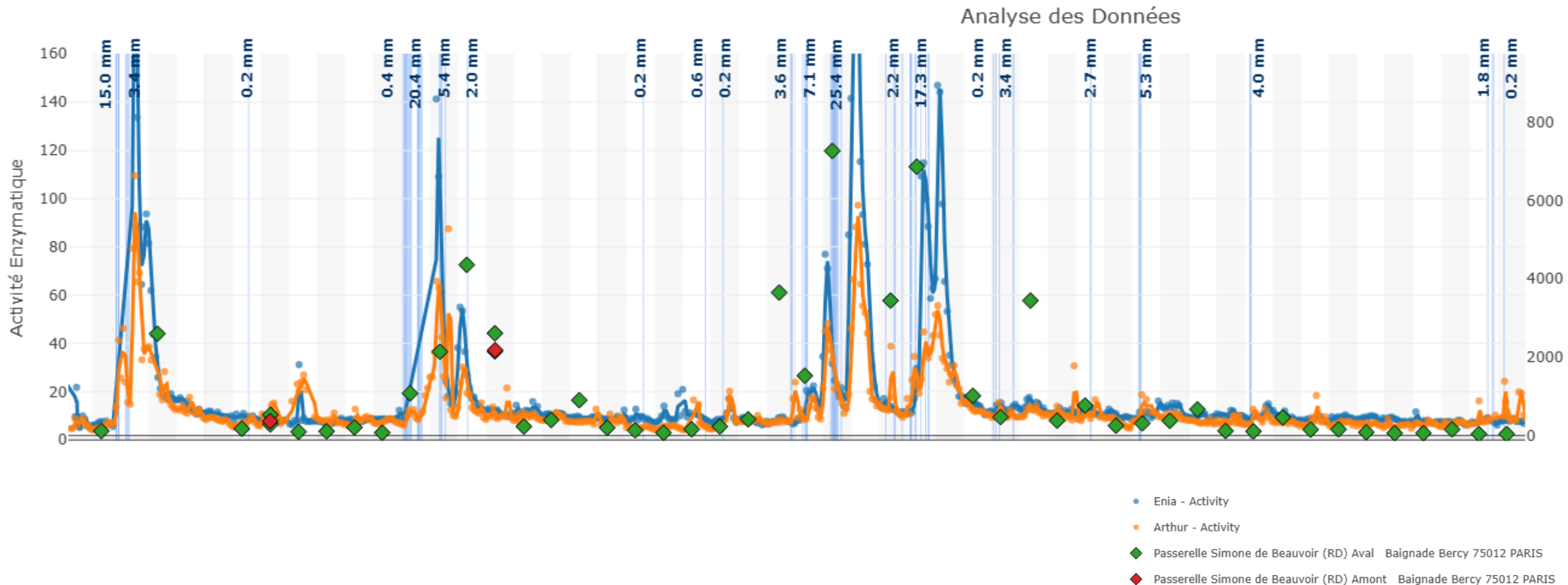


- How to detect change of the river quality to allow protection of athletes (and after the OG bathers)
- Bacterial indicators methods are long (24h...)
- Daily Sampling (including weekend)
- Nightly sampling and lab work to allow results to be available at 5 am each days.
- Utilization of online detectors (a 5 years research project)
“Coliminder” to detect change in quality between two sampling time

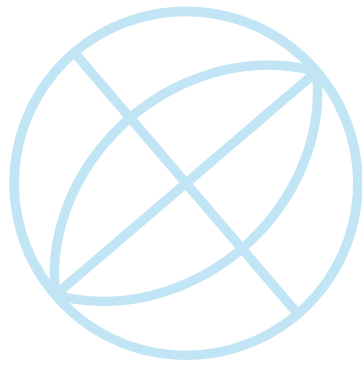
A quality sensitive to rain (but not only...)



Example of Seine River monitoring by both Regulatory and online monitoring



The swimming challenge in the river Seine



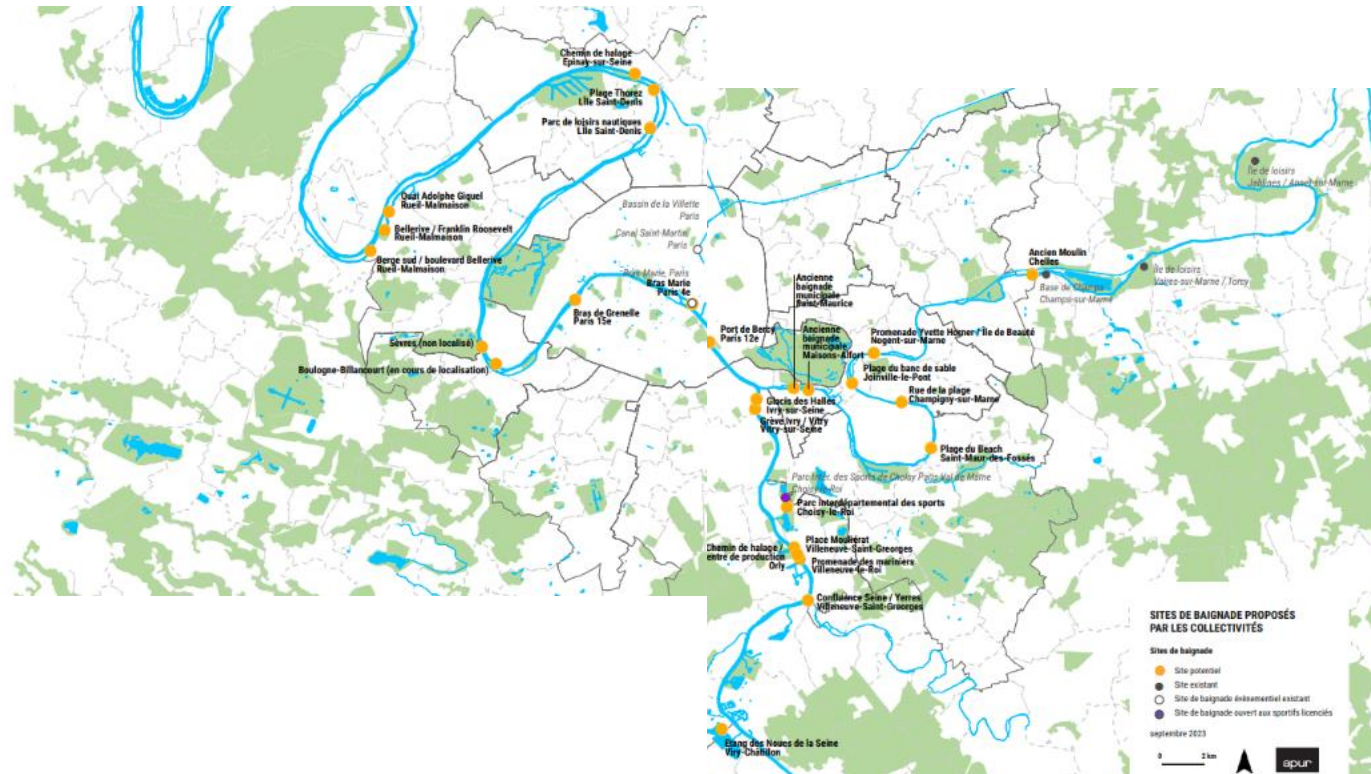
For the swimming challenge

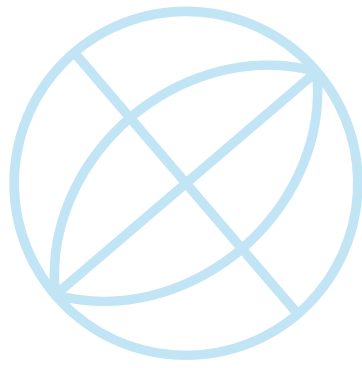
- **A state involvement since 2016 “plan baignade”** 1.6 billion \$ (sewers, sewerage treatment plants).
 - For disinfection but mostly to improve the sewer systems and pollutions tracking. According to the wastewater systems and treatment organization in France, every level of local and territorial public government had to be involved.
 - General engagement was signed in October 2019 by the public stake holders.
 - The state, through the regional state official was involved in managing monthly meetings to check the progress of works.
- **Flood preventing** : Paris region flood protection relies on local dikes but also on upstream dams. Their management had to be adjusted for the event because they regulate floods and low water periods (drought).
- Public services had to change their organization and built special “on-call duty” to analyze water quality and adapt the systems to regulate the flow of sewers and run off water discharge (see previous example).

Swimming in rivers : a heritage

As soon as 2018 many cities were candidates for having a swimming site –

in 2023 :





Swimming in rivers a heritage

- In 2025 : 7 sites were (temporary) open during summer

Paris Bercy / Seine



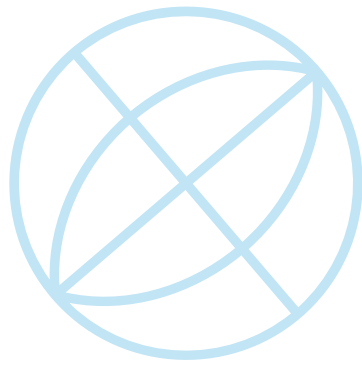
Joinville / Marne



Saint-Maur / Marne



- Still with a important involvement of local authorities and laboratory



Questions

- The necessity of a special governance for cooperation and solidarity
- How to use/work with the citizens to collect information ?
- What technical tools ?

Thank you for your attention



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MEGACITY : Paris



Métropole
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SEINE
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Water Security Management
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