



### THOË, THE TECHNIQUE SERVING PERFORMANCE

- Possibility of exposing 12 DGTs sequentially
- Programming time sequences from a few hours to several weeks
- Built-in temperature sensor for accurate concentration calculation
- Titanium rotating axis to direct the DGTs towards the current
- Maximum immersion depth of 1000 m
- Structure, carousel and seals made of chemical inert materials (PEEK, PETP, PTFE and Silicon)
- Autonomy in immersion mode of more than one year

### THOË ADAPTS TO ALL ENVIRONMENTS, AND FOR A MULTITUDE OF FIELDS OF APPLICATION

- Research programs
- Aquatic environment restoration programs
- Regulatory environmental monitoring
- Risk assessment for aquatic media
- Industrial accident



# THOË

THOË adapts to the monitoring of all aquatic environments, catering to a multitude of application domains, ranging from fundamental research to regulatory monitoring

MONITORING OF ALL AQUATIC ENVIRONMENTS



## THOË IN FRESHWATER

# THOË

ASK US FOR YOUR OWN TAILOR MADE APPLICATION

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## AN OPPORTUNITY TO INNOVATE WITH A LONG TERM PROCESS

In the early 2000s, Vale mining group established operations in New Caledonia, utilizing an innovative ore processing technology for extracting nickel. This technology generates aqueous solutions with high concentrations of dissolved metals that require treatment before being discharged into the sea via an effluent plume.

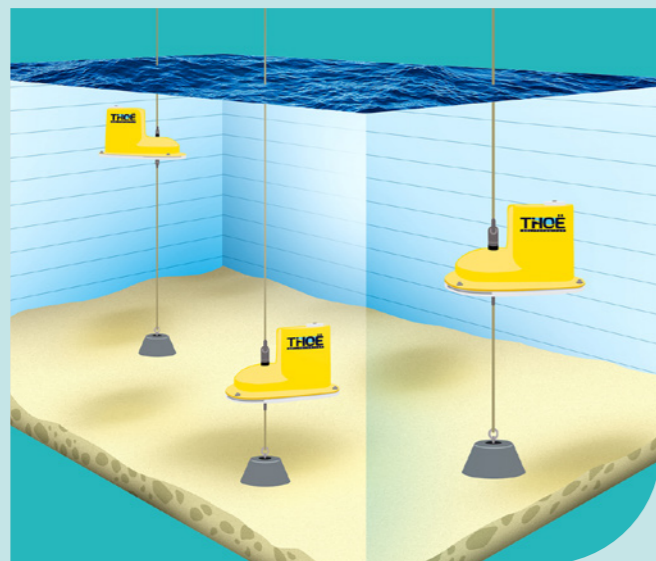
In 2010, monitoring of effluent plume dispersion was initiated using spot

sampling. In order to improve monitoring quality, reduce costs, and address logistical challenges, several comparative studies were conducted to evaluate the performance of DGTs compared to traditional preconcentration techniques. The utilization of DGTs (Diffusive Gradients in Thin films) was seen as an efficient solution, and the development of an automated device was initiated.

In 2018, THOË was born !



## 1 UNDERSTAND THE CONTEXT AND THE PROBLEM



### THOË, the guardian of hexavalent chromium and dissolved metals in the rivers of New Caledonia

THOË has been deployed in rivers to assess hexavalent chromium concentrations. With conventional techniques, synchronisation between water sampling, pre-treatment and analysis is crucial to obtaining reliable measurements. With the use of DGT (Diffusive Gradients in Thin films) technology, the water is directly stripped of particles by a membrane when the device is immersed and the hexavalent chromium can then be immediately stabilised in a resin. This operation is repeated at regular intervals, predetermined in the THOË autosampler programme. The combination of these two technologies offers an ideal solution for monitoring remote sites.

## 2 MONITORING SITES AND POLLUANTS SELECTION



### THOË, the investigator of phosphate pollution from an agricultural catchment in Finland

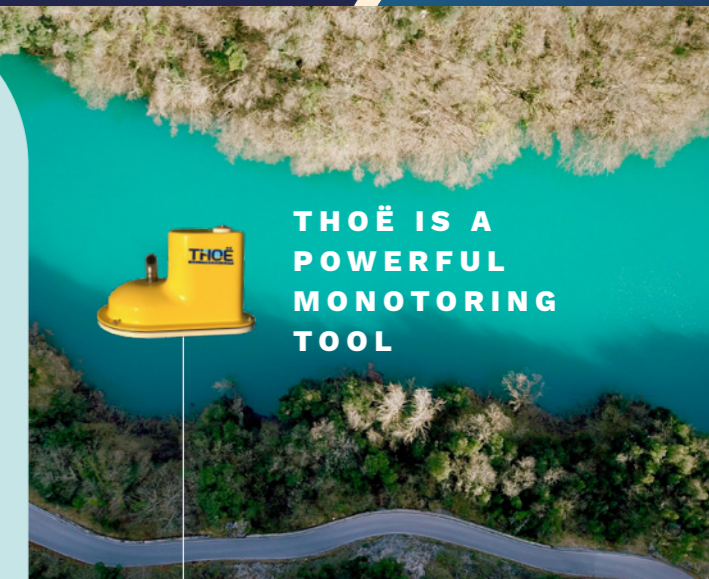
In a small creek downstream of farmland, the THOË autosampler enabled the identification of a significant pollution event, with phosphate concentrations reaching over 10 times the lowest values recorded through spot sampling. By exposing DGT devices for twelve consecutive 24-hour periods, the pollution event was traced back to the cleaning of manure from a cow house.

## 3 DEPLOYMENT OF THE AUTOMATIC PASSIVE SAMPLERS DEVICES



### THOË, THOË, the advanced technology for high-quality environmental monitoring in New Caledonia

Concentrations of dissolved cobalt measured in river water during a flood: the graph shows the temporal evolution of the concentrations during two successive rainy episodes of different intensities. Concentrations are correlated to the amount of rain that has fallen in a month and reflect the extent of leaching from the watershed. Interesting consequence observed, the maximum concentrations are measured after the flood peaks and the natural levels are obtained after approximately 9 days of slow decrease.



## THOË IS A POWERFUL MONITORING TOOL

- 1 TIME SERIES COLLECTION OF POLLUTANT CONCENTRATIONS
- 2 BETTER LOQ (BY X 50) AND DETERMINATION OF AVERAGE CONCENTRATIONS FROM HOURS TO SEVERAL WEEKS OF EXPOSURE
- 3 REDUCES MONITORING COST BY AT LEAST 30% AND COLLECTS DATA WHATEVER THE WEATHER