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Monitoring agricultural pollutions from the catchment area to coastal areas

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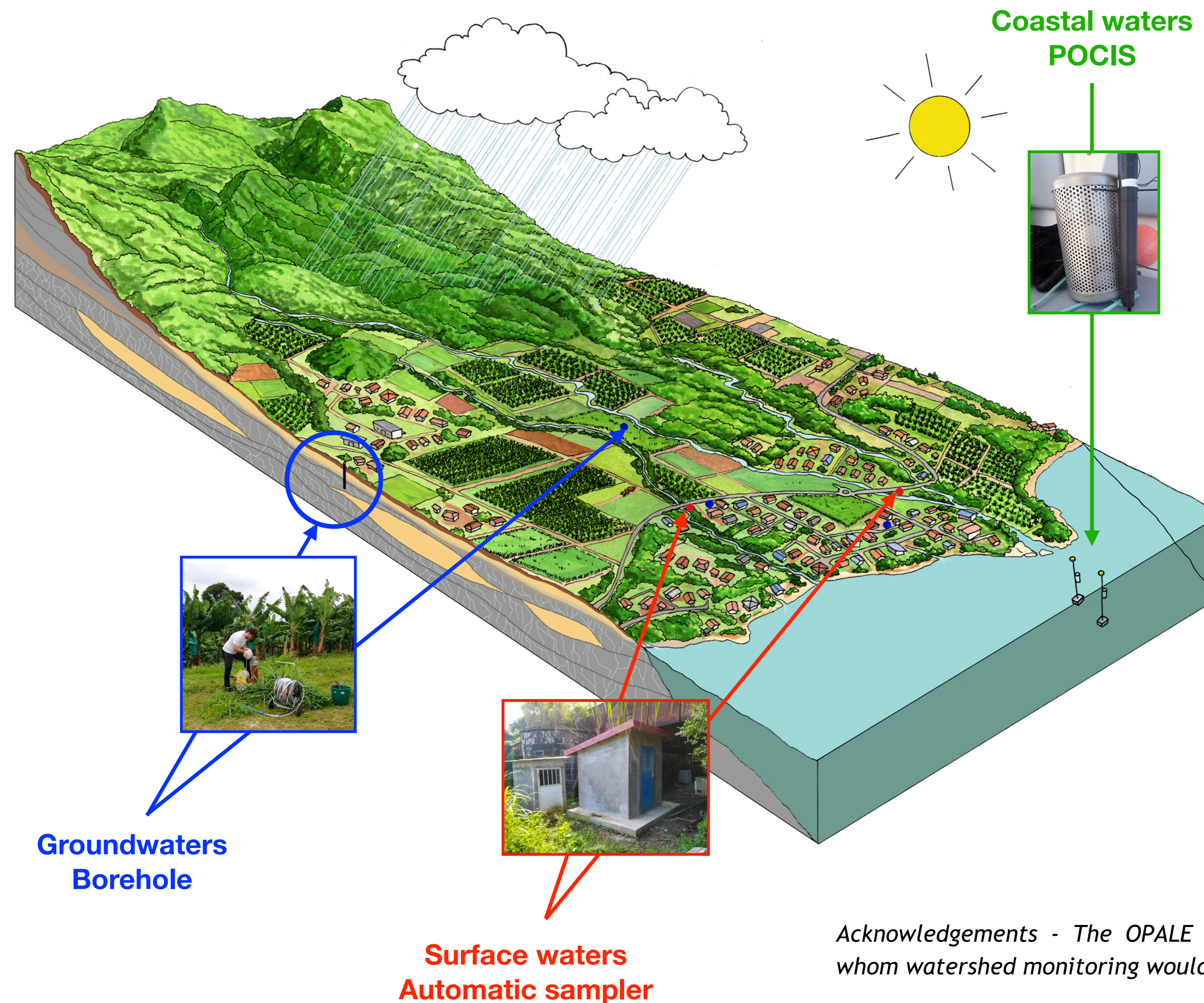
Introduction

Coastal marine environments are particularly exposed to pollutants emanating from human activities such as agriculture. Phytosanitary products follow the path of the water cycle, reaching rivers and aquifers, then coastal waters through run-off, infiltrations and resurgences.

« **OPALE** » is an observatory dedicated to the monitoring of agricultural pollutions at the scale of the rivers Pérou-Père catchment area, located in Guadeloupe (Lesser Antilles). The main objectives of OPALE are to monitor and make available data on contamination levels and study the transfer of pollutants between the different aquatic compartments (surface waters, groundwaters and coastal waters).

Methodology of census

- Surface waters are collected weekly with an automatic sampler (472 molecules tested)
- Groundwaters are sampled monthly using boreholes (472 molecules tested)
- Coastal waters are monitored using passive samplers (POCIS), on a quarterly basis (70 molecules tested)
- Plankton and sediment are collected for analysis of chlordecone, a very remanent pesticide used in banana plantations from 1972 to 1993.



First results

In 2022, 35 molecules have been detected in the river, including six with a detection frequency of over 25%. Chlordecone (and its metabolites) is the most abundant molecule found in surface waters, but also in groundwaters samples. In coastal waters, POCIS are still being analyzed. Zooplankton and sediment samples show chlordecone concentrations of 536 $\mu\text{g.kg}^{-1}$ and 491.8 $\mu\text{g.kg}^{-1}$ respectively, which represent high levels in relation to regulatory limits (20 $\mu\text{g.kg}^{-1}$ in fish and shellfish intended for consumption and marketing).

Perspectives

- Continue the monitoring of agricultural pollutants over long term period
- Study variations in contaminations levels over time
- Model the transfer of chemicals through the different environmental compartments
- Follow agricultural practices in the studied catchment area

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