

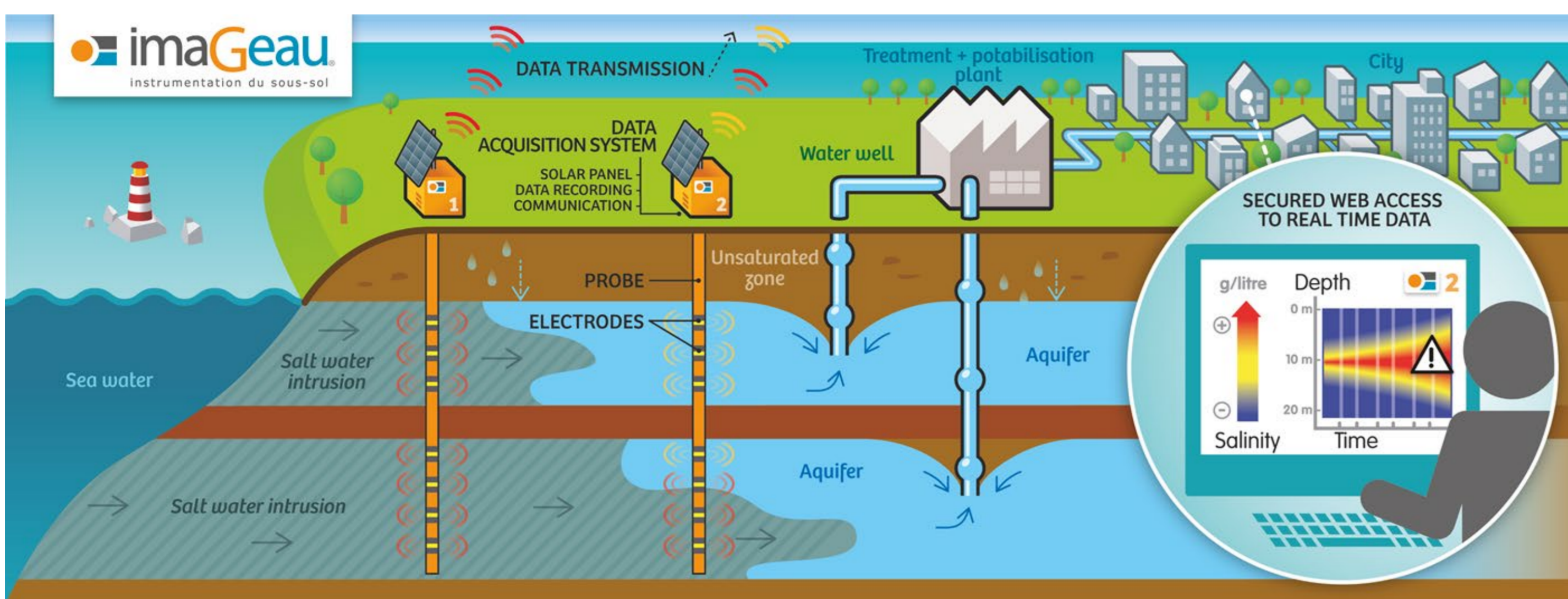


Subsurface Monitoring Device

Real time monitoring of the dynamic of salt water/fresh water interface

Challenge : Protecting coastal aquifers

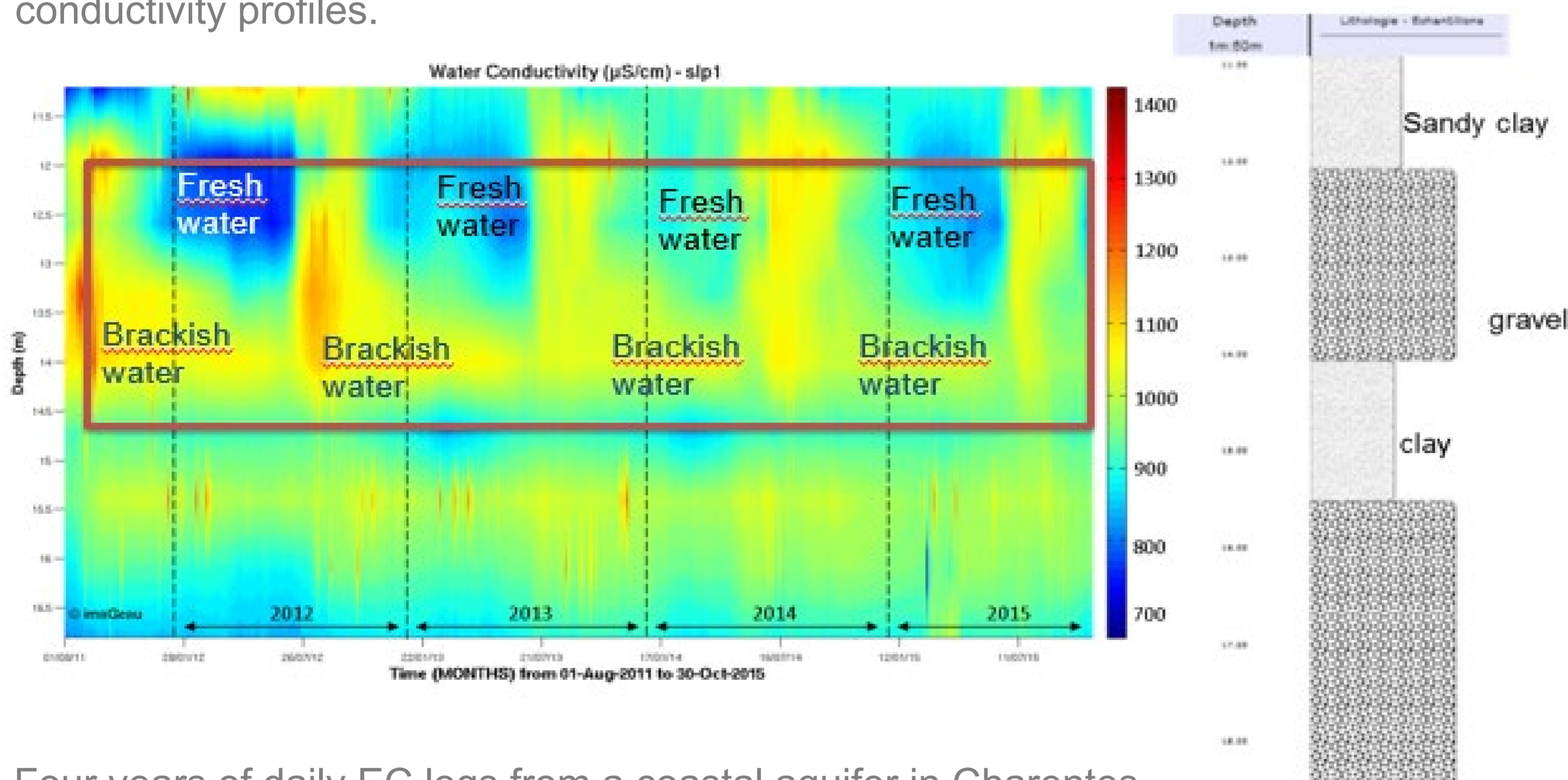
In coastal regions, saltwater intrusion can penetrate several kilometers inland after a drop in the piezometric level caused by over exploitation and/or droughts. This phenomenon needs to be monitored sharply otherwise it can put in danger then region's water supply and economic activity.



Monitoring the saltwater intrusion and understanding of its position is a key element in ensuring optimum coastal water resource management

Demonstrated solution

The saline intrusion dynamics is revealed from this SMD image of the coastal aquifer thanks to more than 2000 automatic and successive water conductivity profiles.



Four years of daily EC logs from a coastal aquifer in Charentes Maritimes (France) (August 01, 2011 to november 01, 2015).

Conclusion (customer testimonies)

- “... automatic EC logs, used by SMD, are considered to be the most effective methods for measuring the interface between freshwater and saltwater.” (Nienhuis P., 2010, SWIM21).
- “... furthermore, SMDs have demonstrated their robustness and the repeatability of their measurements in determining the position and the dynamic of the Saltwater intrusion.” (Tal A 2017, AIH).
- Monitor in real time and automatically the Aquifer Recharge efficiency
- No drift in the measurements and the longevity of the monitoring system thanks to electronic systems located in the head unit
- See your data every where on every display 7/7 – 24/24

Contact

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AN INTEGRATED SOLUTION

“ INSTRUMENTATION & WEB APPLICATION ”

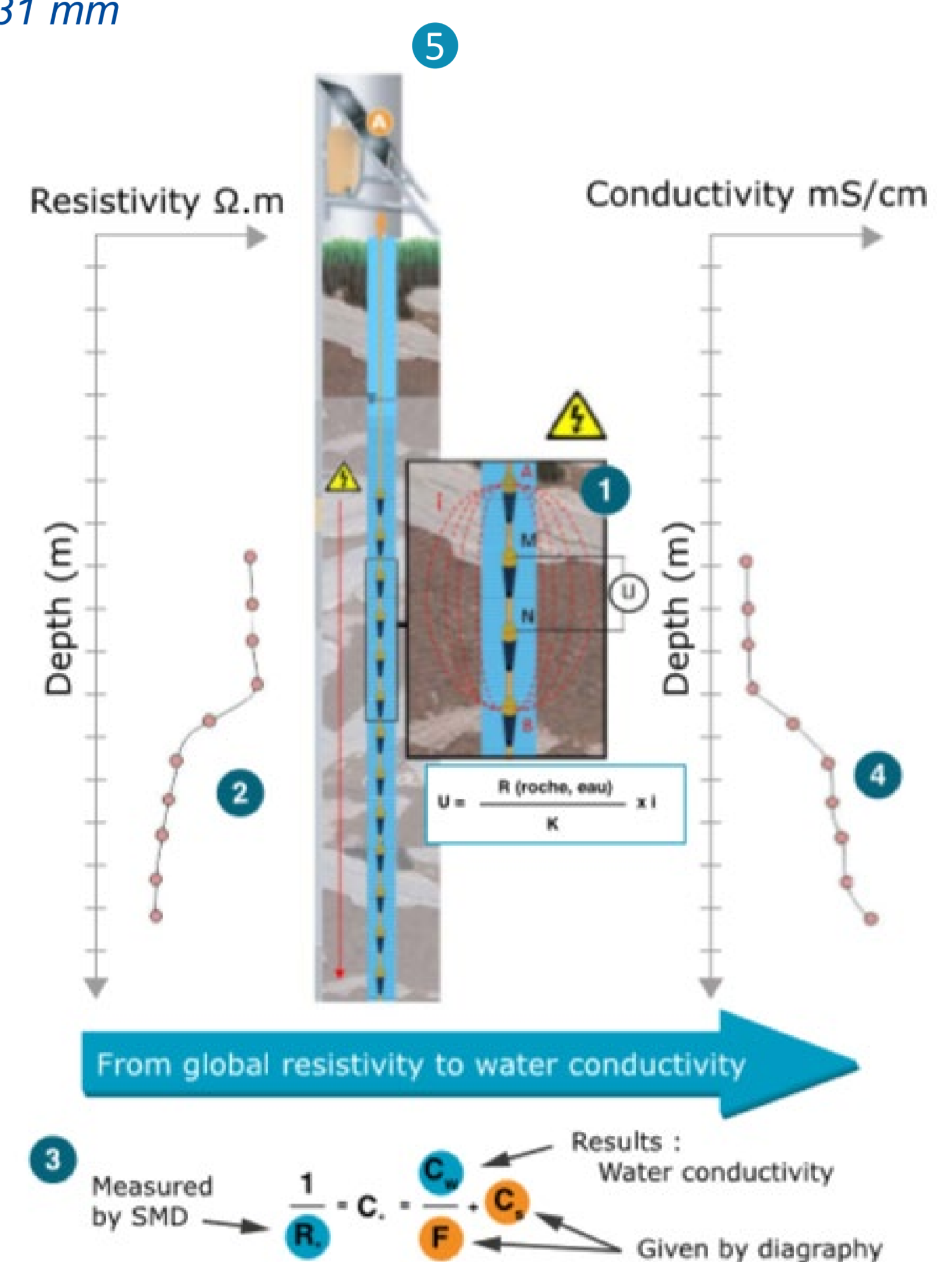
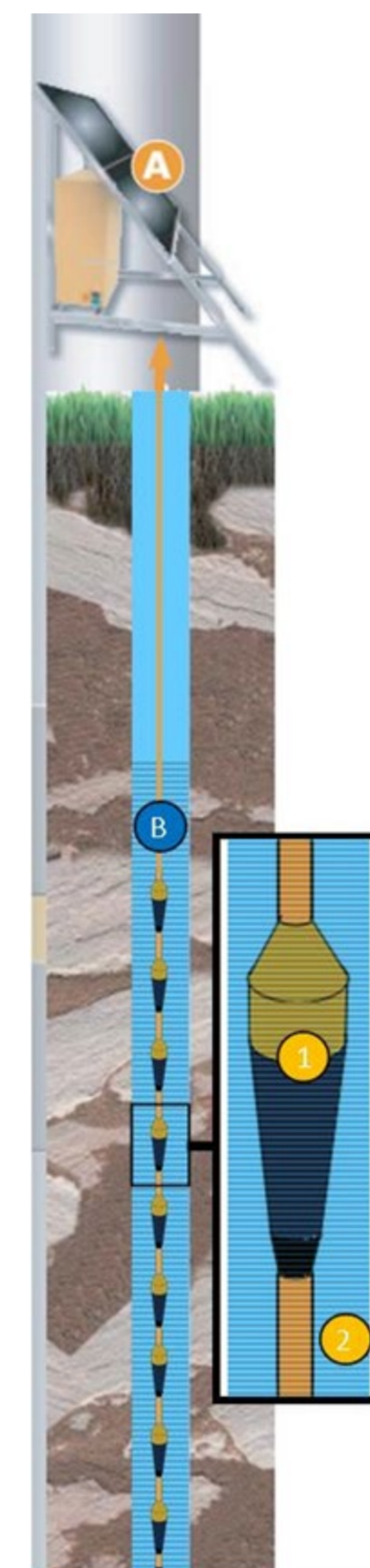
for monitoring the position of the saltwater intrusion in real-time.



SMD and operating principles

A SMD (Subsurface Monitoring Device) is a geophysical tool installed in a PVC piezometer used to constantly record water's electrical conductivity along the aquifer's vertical axis. It provides a real-time picture of the position and evolution of the saltwater intrusion.

- Data acquisition frequency : up to 15 mn
- Power supply: solar or 220 V
- Max depth : 300 m
- Measurement points : up to 60 pts
- Borehole diameter : 31 mm



- An electric current is injected between two electrodes to measure resistivity in the environment around the unit.
- Repeated current injections in descent to obtain a resistivity profile.
- Automatic conversion of the total resistivity signal into water conductivity
- A water conductivity profile is obtained..
- Data are sent and displayed via web application

Illustrations : AquaNES demonstration site, Agon-Coutainville, FR



Acquisition Box



Box



Acquisition Box outside



Electrode



Cable with electrodes



Solar system