

System Setup of Real Time Water Quality Monitoring in the Sebou basin -Morocco



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Environmental
Monitoring
Workshop '22



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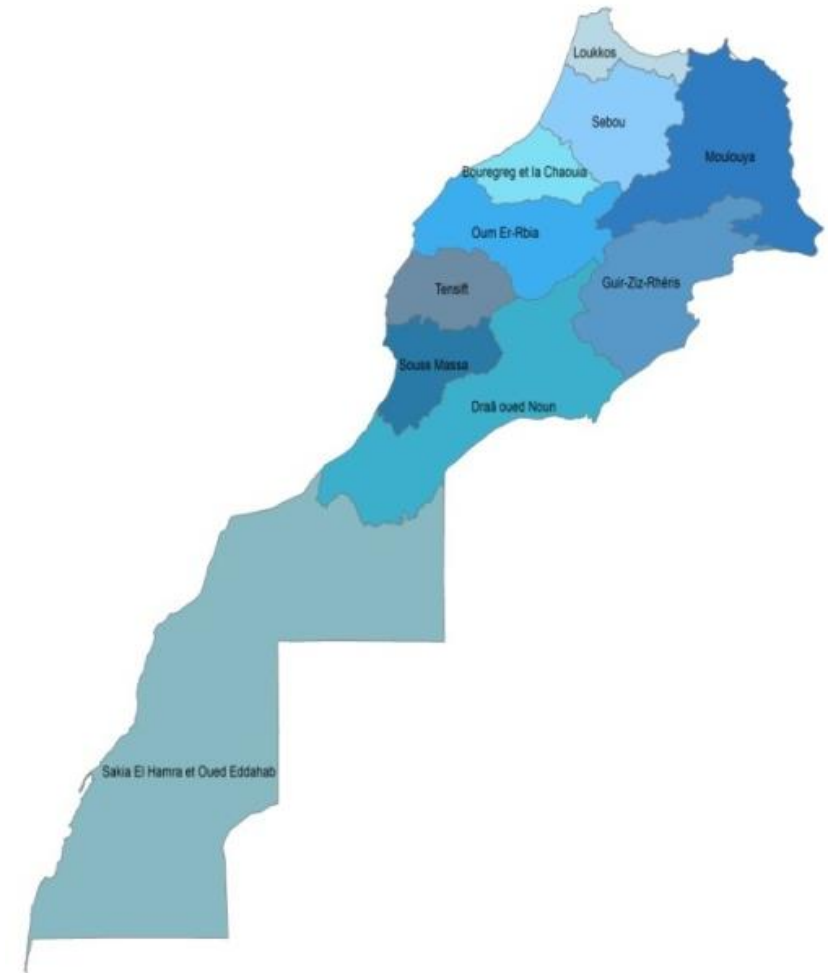
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2. Right click on image > select "send back"
3. Delete grey temporary image



Sebou hydraulic basin agency.

Public establishment with legal personality and financial autonomy.

- Water resource assessment
- Development of water resource planning documents (PDAIRE, drought plan, local management plan,,)
- Management and preservation of the hydraulic public domain
- Participation in flood protection works
- Funding and technical assistance for water stockholders who request it
- Give its opinion on any project that may have impact in water resource



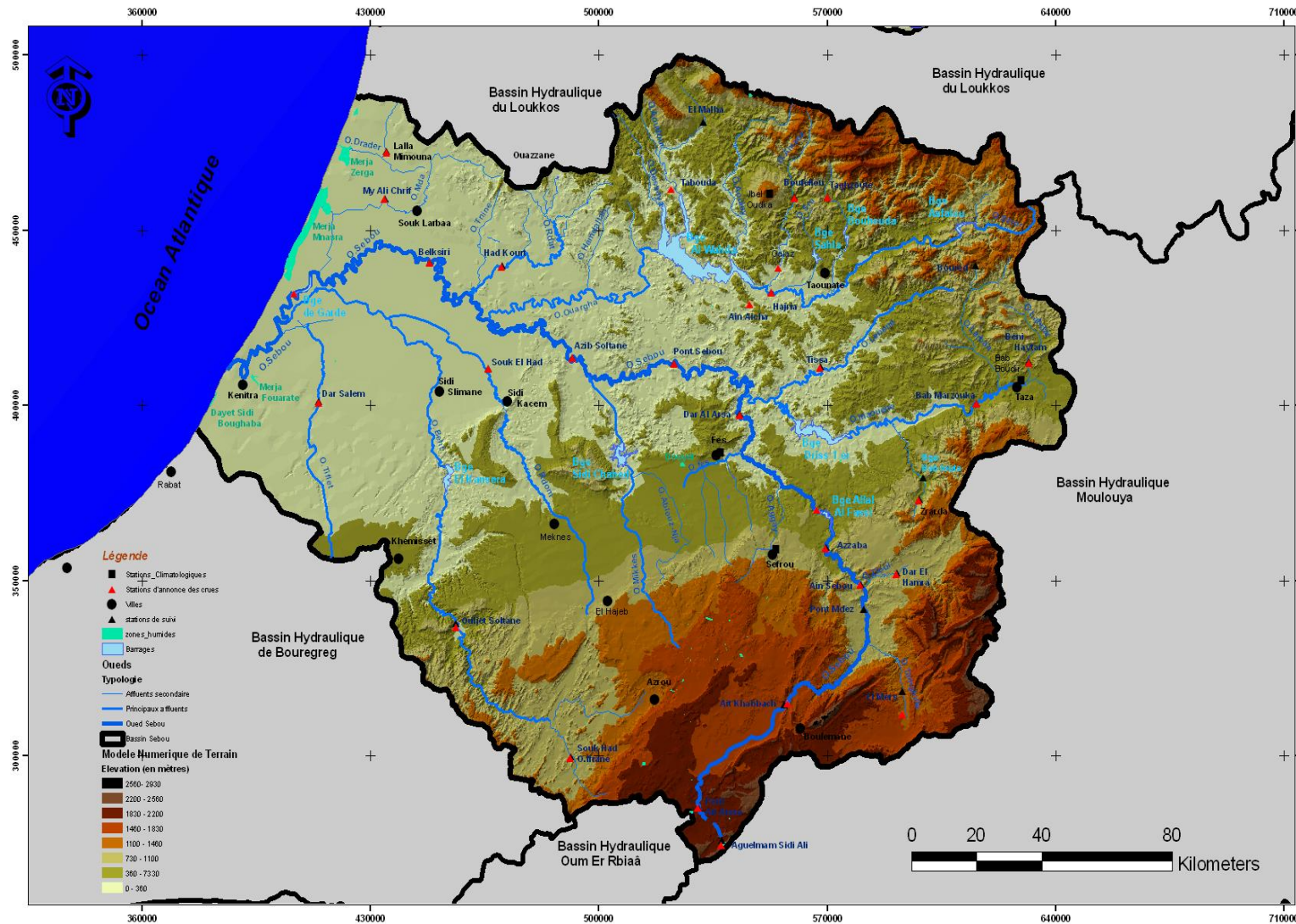
Sebou hydraulic basin .

40.000 km²

6.2 millions inhab.

9 000 ha wetlands

1.2 M.ha forest



SW: 5.6 billions (28%)

Rainfall : 600 mm/y

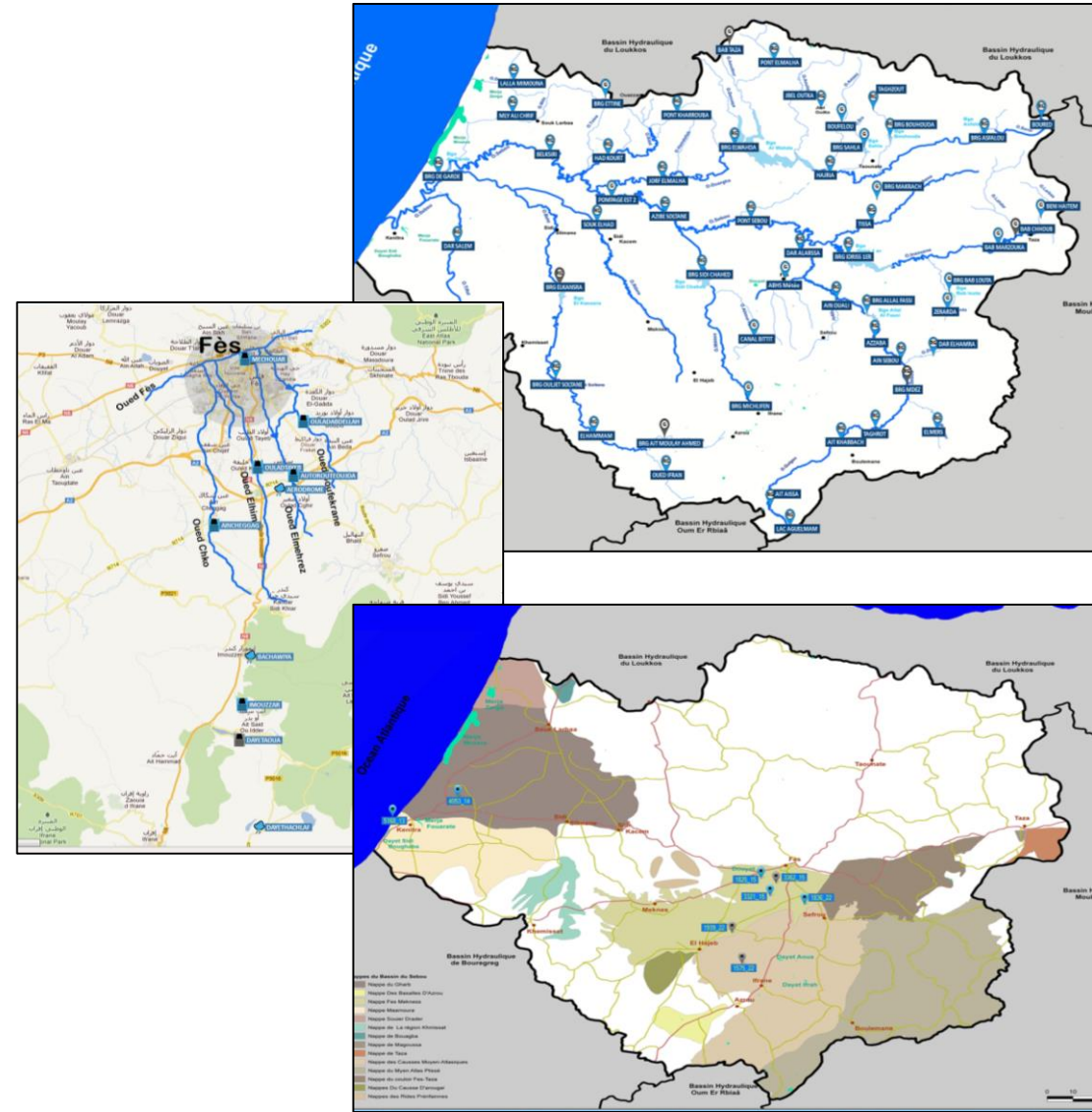
GW: 1 billions (25%)



ABHS Telemetry System

Since 2010, the ABHS has introduced an automatic hydroclimatological data telemetry system at different sites in the action area.

- Used for continuous measurement, real time acquisition and management of hydraulic situation of the entire Sebou basin
- Currently consists of more than:
 - 60 hydrological stations
 - 20 piezometric stations
 - 10 whether stations (in dams)
 - 3 water quality systems (in dams)
 - 30 measured parameters
- Management and visualization software suite is 100% Moroccan developed by Qualitas Env.



ABHS Water Quality Telemetry System

Water Quality is always one of the big challenges faced by the Sebou Agency.

- Started for 10 years ago.
- Consists of 600R multiparameter sondes from YSI.
- Monitors parameters like Temperature, conductivity, Salinity, Dissolved Oxygen and pH.
- Aims to fight against the negative impacts generated by different sources of pollution.
- Extended in 2020 with Exo2 multiparameter sonde.
- Installation and maintenance entrusted to Qualitas Env. as partner and service provider of the ABHS for more than a decade.



ABHS new generation Water Quality System

ABHS has adopted a new modern water quality control system to spread in different monitoring points.

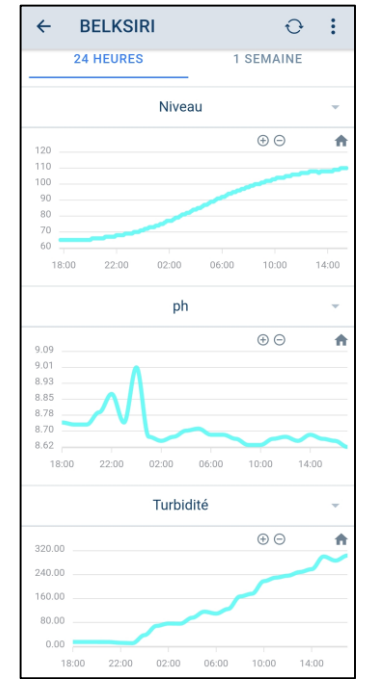
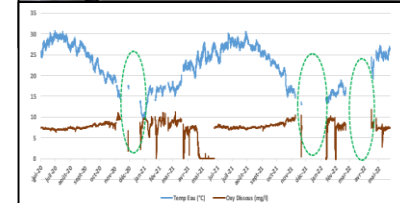
- Pilot project implemented since June 2020 at an existing hydrological station in Mechraa Belksiri.
- Uses YSI new generation multiparameter Exo2 to monitor DO (Optical), Temperature, pH, Conductivity, Turbidity, Nitrate concentration and Chloride in the Sebou river, the main river of Sebou Basin.
- A project carried out in partnership with Ibn Tofail University (Kenitra) and Qualitas Env.
- A real time observatory system baptized O'Sebou.



ABHS new generation Water Quality System

High-performance system to monitor water quality under harsh operating conditions.

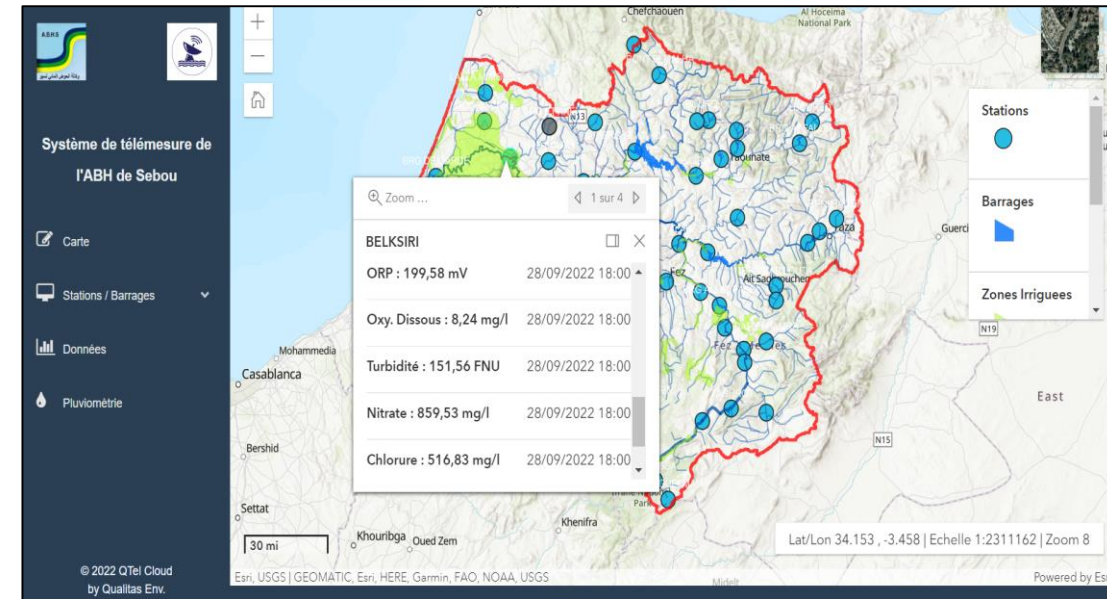
- 7 sensor port robust multiparameter including central wiper for automatic sensor cleaning from biofouling.
- Outputs calculated parameters: Salinity, Specific Conductance, TDS, OD saturation,...
- Data collected and stored in-situ using local Datalogger and automatically transmitted via 4G network to the central telemetry platform located in ABHS headquarter.
- Data visualization ensured via web-based monitoring and alerting system (Q-Tel SurfaceWater By Qualitas) and mobile app (Smart Q-Tel) for real time observation of pollutant components.



ABHS Central Telemetry Platform

Integrated software suite developed and maintained by Qualitas Env.

- Different modules for monitoring surface water, underground water, radio & mobile communications.
- SCADA systems for surveying and early alerting.
- Flood warning systems.
- Several supported platforms:
 - Desktop Windows applications.
 - Web-based interfaces for anytime & anywhere access.
 - Mobile app available on Android and iOS stores.
- Secured access via VPN and in-app authentication.
- Third-party data integration support.



SCADA ABHS

Station	Dernière acquisition	Qualité du réseau	Nbr. de paramètres mesurés	DMS	Type de site
ABHS Météo	28/09/2022 18:00:00	99,92%	11	26/04/2016	Station météorologique
AIN OUALI	28/09/2022 17:30:00	96,20%	6	01/01/1978	Station hydrologique
AIN SEBOU	28/09/2022 17:50:00	94,34%	5	15/10/1951	Station hydrologique
AIT AISSA	28/09/2022 17:50:00	91,25%	6	01/01/1978	Station hydrologique
AIT KHABBACH	28/09/2022 17:00:00	94,05%	6	01/01/1970	Station hydrologique
AZIBE SOLTANE	28/09/2022 17:20:00	93,02%	6	01/01/1961	Station hydrologique
AZZABA	28/09/2022 17:20:00	88,45%	6	13/10/1957	Station hydrologique
BAB CHHOUB	28/09/2022 17:50:00	84,65%	6	01/01/1990	Station hydrologique
BAB MARZOUKA	28/09/2022 18:00:00	91,53%	6	01/01/1970	Station hydrologique
BAB TAZA	00:00:00	0,00%	4	08/09/2022	Station hydrologique

Accueil

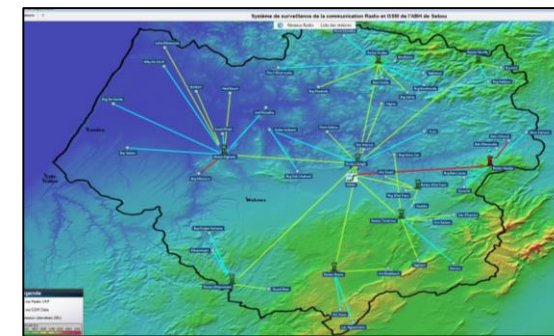
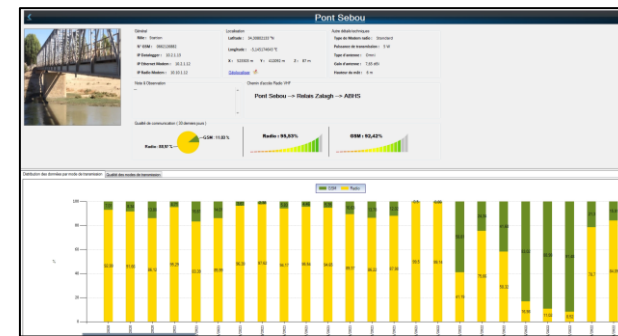
Paramètre Favoris : Niveau

AIN OUALI	208,0 cm
AIN SEBOU	241,0 cm
AIT AISSA	105,0 cm
AIT KHABBACH	87,0 cm
AZIBE SOLTANE	91,0 cm
AZZABA	129,0 cm

ABHS Central Telemetry Platform

Central Telemetry Platform features:

- Simple & intuitive visualization interfaces
- Based on GIS maps with several layers (Hydrological network, road, satellite, etc...).
- Quick and instantaneous access to recent data.
- Quick anomaly detection based on station icons.
- Data history display in graphical and table format.
- Data comparison from different stations.
- Thresholds setup for individual measurement for up to 3 warning levels.
- Auto generation of periodic reports (data, floods, alerts, station status, etc...).
- Data backup and archiving.



Future prospects

Morocco has currently launched a major project to transfer water from the Sebou basin through the Garde dam to the SMBA dam in the Bouregreg basin to supply drinking water to two large cities. The implementation of this project requires continuous monitoring of water quality. So, it is planned to install probes to measure the quality of the water along the Sebou river and to control the quality of the water downstream of the wastewater treatment plants



- predict pollution peaks and issue alerts
- act quickly and decisively

Parameter to monitor:

DO, Temperature, pH, Conductivity, Turbidity, Nitrate concentration and Chloride, COD

Polyphenol.....

Divider/Section Title Goes Here

Questions?

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