MicroStep-MIS

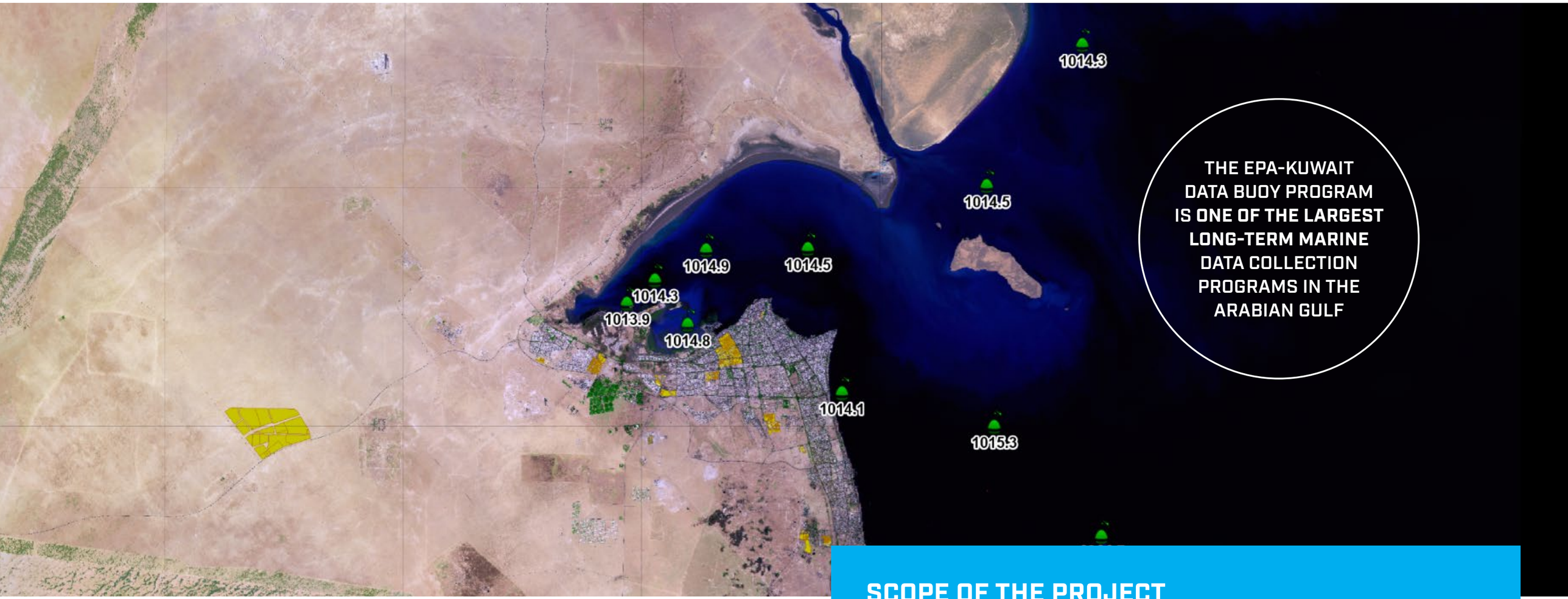
COMPLEX SOLUTIONS FOR THE REAL WORLD

SUCCESS STORY

Integrated Met-ocean Monitoring System for Kuwait

SUCCESS STORY

Integrated Met-ocean Monitoring System, Kuwait



Current Data Map for 15 data-buoys showing the current atmospheric pressure for each data buoy

MicroStep-MIS was contracted for design, development and commissioning of an integrated system for monitoring of meteorological, oceanographic and water quality data in near-shore and offshore regions of Kuwait.

This strategic project implemented for Environment Public Authority of Kuwait (EPA-Kuwait) consists of 15 large 3 m diameter data buoys deployed at locations from north bordering Iraq, Kuwait Bay and the offshore regions bordering Saudi Arabia to provide a complete spatial and temporal coverage of Kuwait waters. The project duration was 3 years including commissioning and maintenance support.

The project is strategically important for Kuwait as it alerts potential pollution threats that could result in significant harm to the environment and living creatures in the area. Moreover, it provides data and information enabling EPA and other scientific institutes to perform effective analytical long term studies. The program incorporates some of the latest technologies in marine monitoring and the success of this program shall have a huge influence on similar marine monitoring programs in the Arabian Gulf.

THE EPA-KUWAIT DATA BUOY PROGRAM IS ONE OF THE LARGEST LONG-TERM MARINE DATA COLLECTION PROGRAMS IN THE ARABIAN GULF

SCOPE OF THE PROJECT

- ***Design, supply, installation and maintenance of 15 pcs. of real-time environmental monitoring data buoys***
  - *Installation of 10 new data buoys*
  - *Maintenance of 5 existing data buoys*
- ***Centralized data collection, quality control and processing***
- ***Data integration with eMISK Environmental Information System of Kuwait***

SUCCESS STORY

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Environment Public Authority of Kuwait (EPA-Kuwait) is responsible for putting and applying general policies of protecting water, air and soil environment in Kuwait. The organization executes an intensive program aimed to monitor, provide early warnings and aid during emergency response to marine pollution and events such as fish kill phenomenon or red tides.

EPA-Kuwait program includes a network of data buoys for providing critical marine data for long-term deployments while providing a dependable and effective solution for marine monitoring and early warnings.

After an extensive tendering process, MicroStep-MIS was chosen to deliver the marine monitoring network. The scope of it consists of design, development and commissioning of an integrated system for monitoring of meteorological, oceanographic and water quality parameters in near-shore and offshore regions of Kuwait. The project consists of upgrade of the existing 5 steel buoys with completely new sensor package, data logging, power package and telemetry system and commissioning of 10 new monitoring platforms based on the latest polyethylene buoys with similar sensor and monitoring package, provision of centralized data collection, quality control and processing, integration of the data with eMISK and data publication on web and mobile platform.

One of the main objectives of EPA-Kuwait marine monitoring program is to observe any unnatural change of reproduction and development of the harmful plankton qualitatively and quantitatively via studying the distribution and concentration of chlorophyll and other physical factors. The floating buoys transmit real-time data to the EPA-Kuwait centralized data center via redundant communication network (GPRS and VHF).

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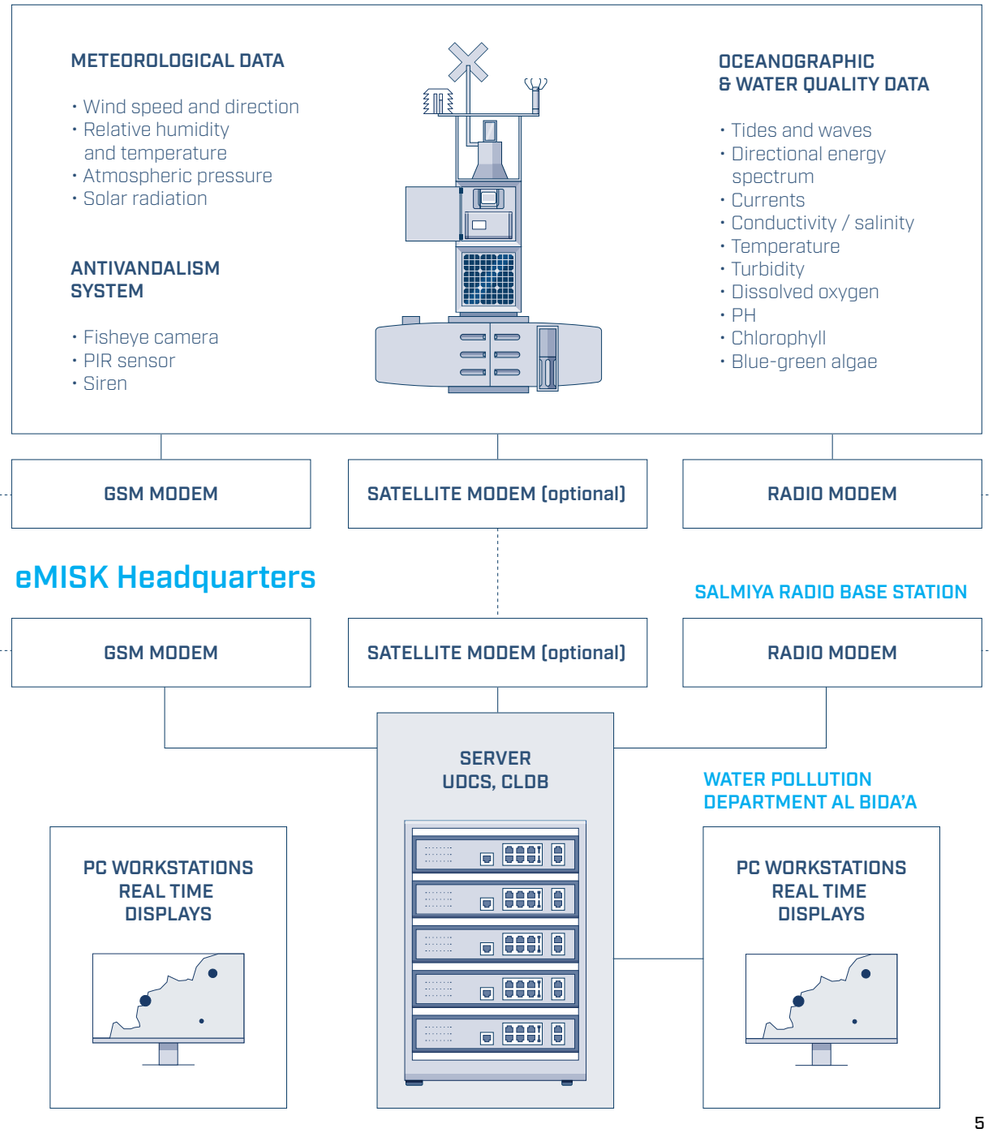
System design

- State of the art latest and proven technology
- Enables issuance of warning from real time data output on the screen
- Automatic triggering warning for other systems
- Long term data storage and archiving
- Web based display of real time data
- Comparison of real time and forecast data
- Display of real time data and the graphic data on one screen
- Support multiple communication media RS 485 / 422 / 232, LAN, FOC, UHF/VHF, satellite etc.

15x MARINE BUOY STATION



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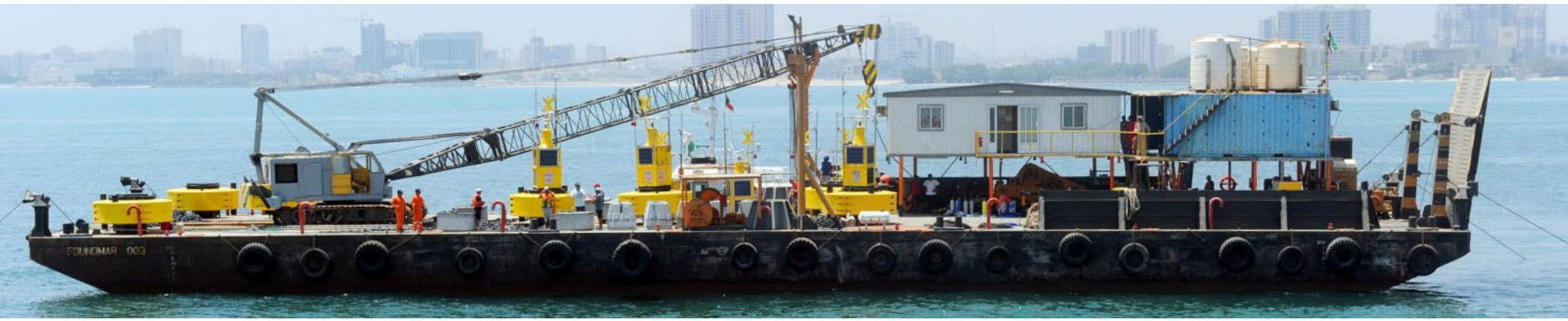
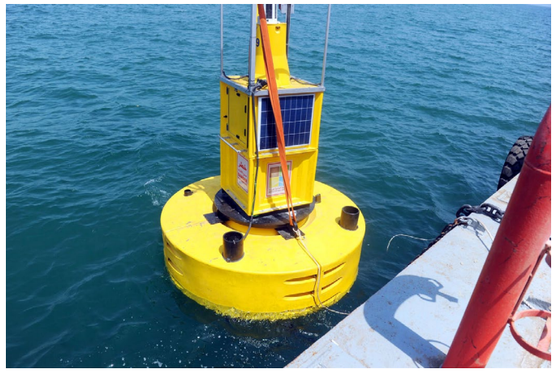


Barge loaded with buoys

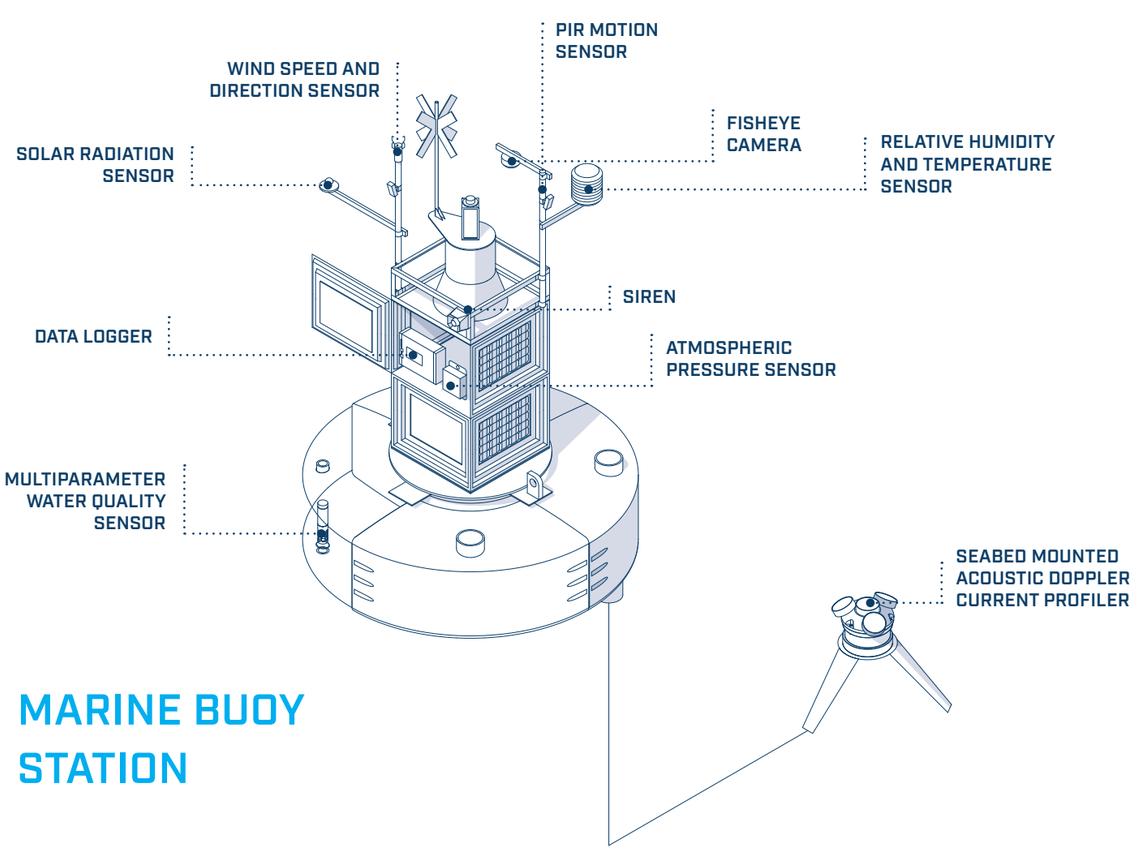
The project is playing a very important role in supporting marine industries, environmental studies and tourism. Integration of the sensors and testing of the system configuration was performed in our factory under our testing standard procedures.

The buoy float and sensors were shipped from vendors around the world and assembled at our onshore facility in Kuwait. A dry test was performed to test the entire system on land prior to deployment. For deployment, the buoys were loaded to the barge and deployed using a crane and a support vessel with high precise positioning and survey equipment at EPA defined locations.

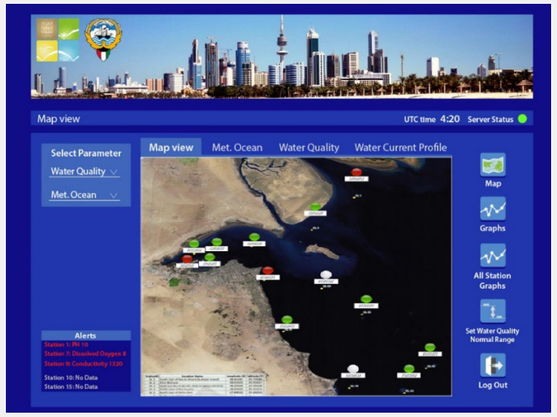
Buoys ready for deployment

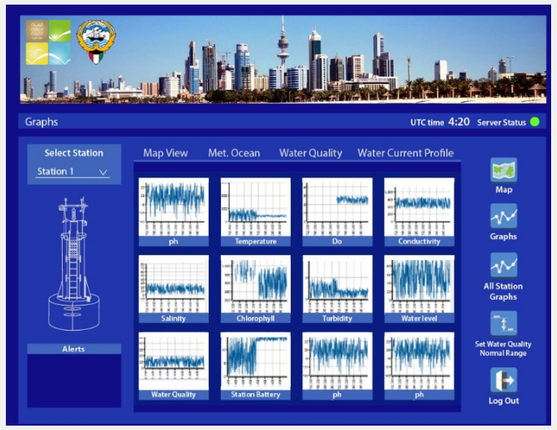


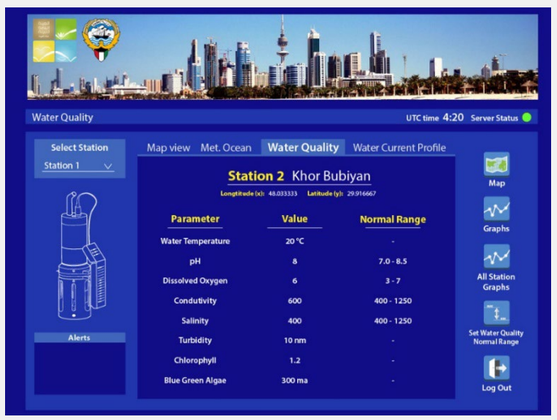
Buoy and sinker during the deployment

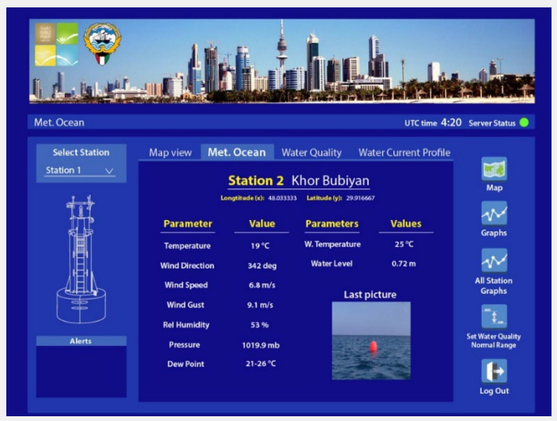


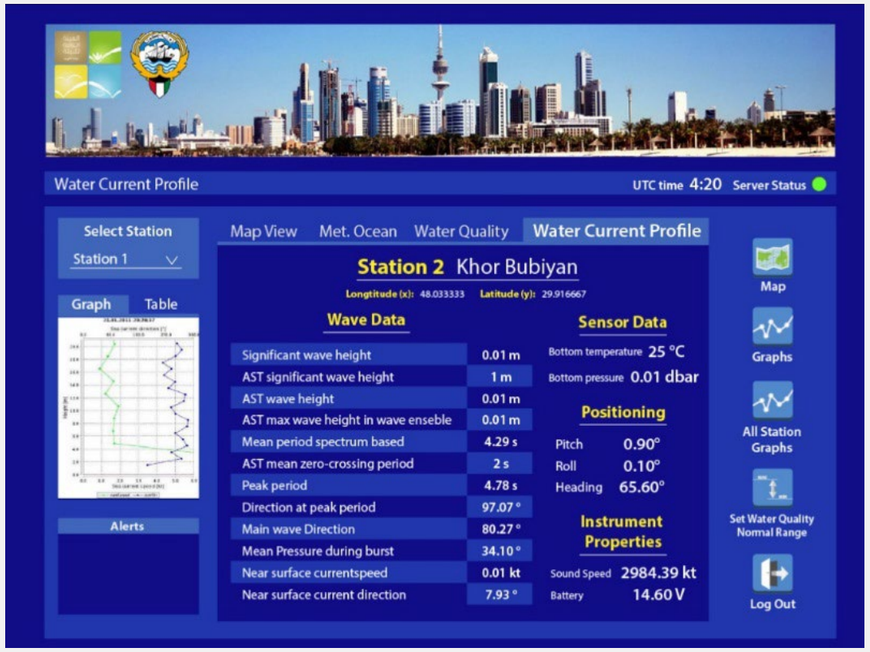
Development of customized displays











CHALLENGES

- 15 locations spanning across the country's territorial waters were a logistics challenge to cover all buoy stations for maintenance and emergency breakdown visits.
- Provision of a long term, accurate water quality measurement against the aggressive biofueling due to shallow coastal waters.
- Integration of numerous types of specialized sensors into our data logger.
- Provision of an effective vandalism protection into our system.
- Provision of a reliable dual redundant communication between the buoys and central station.

OUR SOLUTION

- Use of UV technology to reduce the biofouling affect in the water quality readings.
- User friendly data logger and central software system.
- Selection of long-term stable sensors to provide reliable data.
- Use of buoy radios as repeater stations to provide backup communications where GSM/ GPRS signal coverage were weak.

ACHIEVEMENTS

- The EPA Marine Monitoring System based on an open architecture and scalable platform designed of hardware, interfaces and software architecture allowing any combination of user-specified sensors to be integrated and facilitated easily with an option of flexible system expansion.
- The real-time as well as historical data and/or early warnings are available to decision makers and assist them in planning and management of marine environmental protection activities in Kuwait.
- The EPA-Kuwait data buoy program is one of the largest long-term marine data collection programs in the Arabian Gulf. The program incorporates some of the latest technologies in marine monitoring and the success of this program with will have a huge influence on similar marine monitoring programs in the Arabic Gulf.

150+

talented and dedicated professionals working together

CONTACT US

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