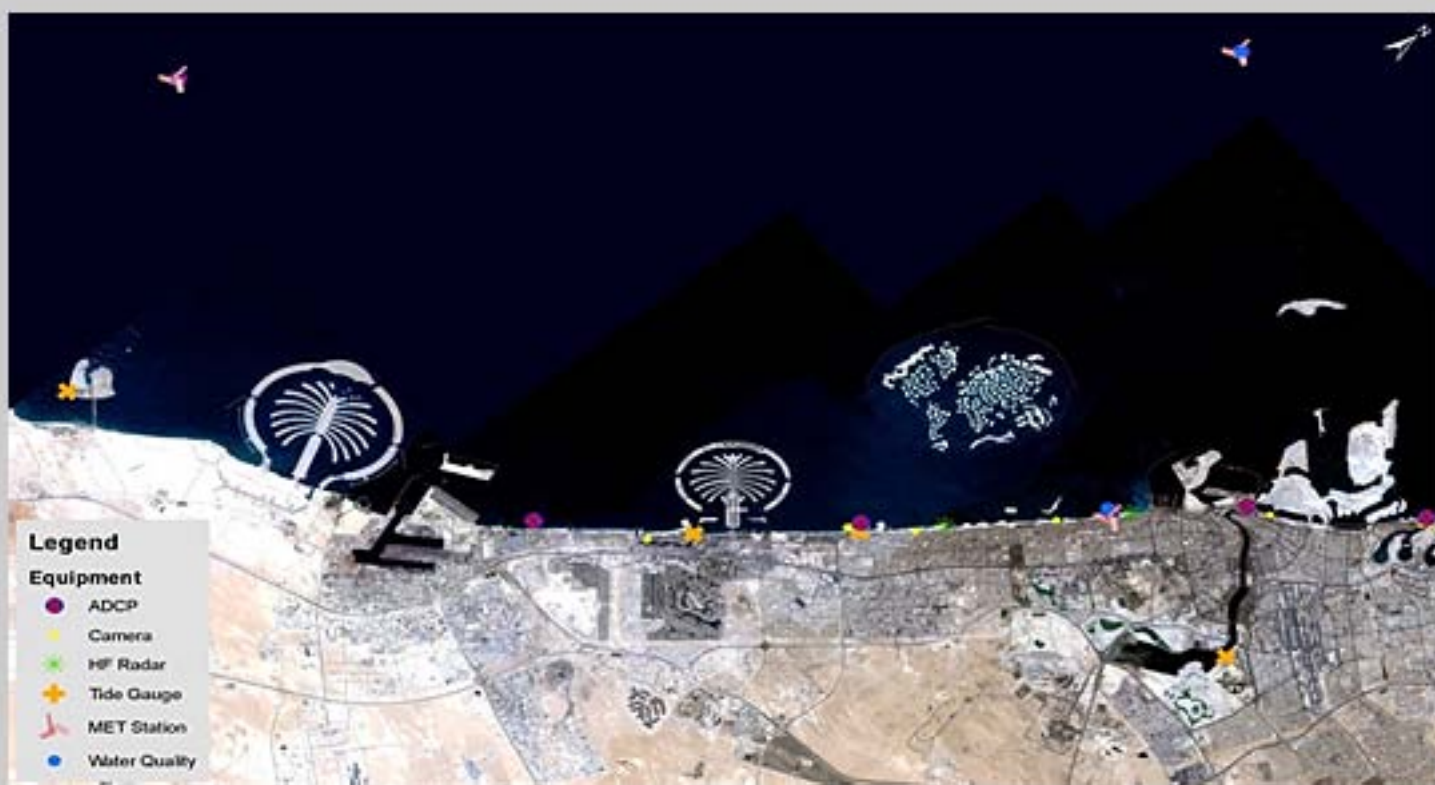


Dubai Municipality is Monitoring and Predicting Coastal and Environmental Changes

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Determining the clear vision of Dubai Government to initiate developing, ambitious and exceptional projects has been the motivation for all the associations and authorities working in Dubai to outline the goals towards making Dubai a worldwide model.

The program includes a fleet of state of art monitoring stations along the coastline. the Department runs around 13 marine and land stations spreading from the borders of the Emirate of Sharjah in the north spanning to the Emirate of Abu Dhabi in the south. In addition, these stations are equipped with various types of sensors and the latest measurement devices that work on three main strategic axes; expanding the coverage area, insuring the accuracy and quality of data and the real time supply of the data.



As a result of the enormous, exclusive and unique developing projects that the Emirate has witnessed in different areas over the past years making Dubai a destination for investors seeking settled, safe and secured life and as precautions for the natural disasters striking the many areas around the world; Dubai Municipality, using the latest technology and international best practice in monitoring the coastal area, initiated a systematic monitoring program entitled "Dubai Coastal Zone Monitoring program" since July 2002. The program has adopted several distinctive outstanding projects contributing to serving the strategic directions of the Emirate towards establishing the environmental sustainable development.

These stations were deployed, according to the priority of the current situation, systematically distributed to the following regions; Al-Mamzar, Jumaira First Beach, Umm Suqaim, Al-Sufooh, Hussian and Jabal Ali Area. Also, another two stations were installed covering Dubai Creek; the first was established at the entrance of the Creek and the second near Dubai Festival City. Another two offshore stations were deployed in the sea around 25 kilometers from the shoreline; one facing Palm Deira and the other one directly opposite to Palm Jabal Ali.

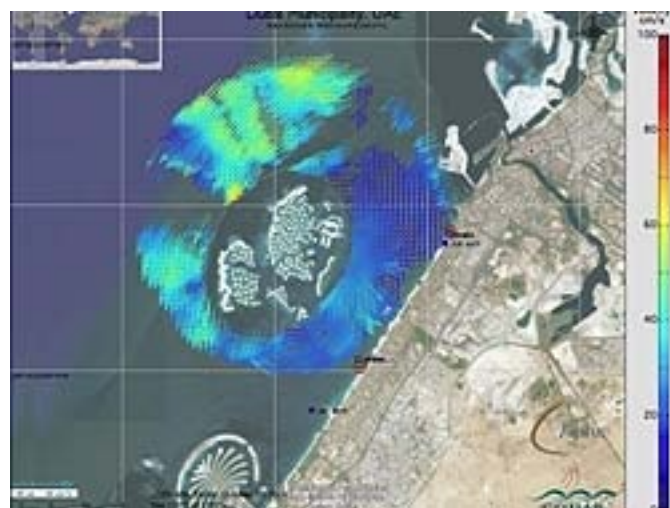


Most of these monitoring stations are working using renewable sources of energy such as solar power as an innovative approach to enhance environmental side. The stations include sensors harvesting information and data about current speed and direction, peak wave period, significant wave height, peak wave direction, water temperature and water level. In addition, these sensors record data weather conditions as wind speed and direction, gust speed, air temperature, air pressure and relative humidity as well as measure the physical and chemical aspects of the water quality as salinity, chlorophyll, dissolved oxygen, turbidity.



Two high frequency radar stations were employed with a frequency of 45 MHz, scanning a large portion of Dubai sea from Port Rashid to Palm Jumaira and extending to

a distance reaches up to 14 nautical miles offshore with spatial resolution is about 300x300m.



Dubai Municipality is the first to apply this technology in the region as the digital data collected is translated into a set of two-dimensional maps, this technique contributes significantly in the understanding of the physical processes associated with the impact of waves and currents on the natural changes along the coastline



Additionally, 10 video monitoring cameras were installed covering multiple areas in the Emirate including (Deira Courniche, Jumaira Open Beaches in the north and the south, Jumaira Fishing harbour, Um Suqaim Beach in the south and north, Dubai Marina and in Burj Al-Arab Hotel). Those cameras work continuously under all weather conditions. They are also known for their ability to compile and analyze live images through specialized computer programme softwares, as well as storing and tabulating these images.

The program also includes regular hydrographic and topographic surveys of the beaches. This survey task is carried out by a specialized team using the latest survey equipment and new technologies like DGPS. The Hydrographic and topographic data are analyzed to determine the changes on the coastline and the sea bed level change. It can also reveal the sediment movement pattern along the coast which helps in taking the necessary precautions and maintenance that ensures the stability of the coastline.

Non conventional survey method like LIDAR is used by Dubai municipality to collect accurate and high density hydrographic data. This data is used in managing and planning the coastal zone. The Lidar survey excels in covering a large area of the coastline in a short period of time and with high density of data and accuracy. This project, implemented in 2007, is considered to be an extension of a previous laser scanning project which was executed by Coastal Zone and Waterways Management section way back in 2004. This project is the first of its kind in the United Arab Emirates and will be updated regularly to study subsequent changes on the coastal zone.

It must also be noted that the data, collected by the utilization of these systems and the modern technologies, are then analyzed and processed by physical and numerical models to meet desired goals and to fulfill integrated management and sustainable environmental coastal development that can be beneficial in conducting research, studies and applied research regarding the coastal region and the waterways in the Emirate. This data is considered to be a main reference in observing the changes of the coastline and is the main advance towards designing and implementing all marine projects that Dubai Municipality carries out to protect the coastline.

One of the outstanding pioneering initiatives and strategic projects implemented successfully is the developing of operational forecasting system for Dubai coastal zone. The program aims to serve large sectors of society that will directly benefit from its outcomes. This includes: swimmers, fishermen; navigation companies, marine carriers operators, marine contractors companies, coastal resorts, Marine transport operators.

In addition this system will assist in supporting the concerned authorities to take crucial decisions through early warning system in exceptional circumstances and oil pollution crises and other.

The project provides a constant forecasting system for future data related to the wave conditions, wind conditions and currents conditions for 3 calendar days. The system is operated on continues basis through a set of applications, highly technical simulation systems, which are supplied and tuned with data collected by integrated network for sea monitoring run by the section. The system transfers information automatically for inspection through many means of telecommunication such as websites (www.dubaicoast.ae) and SMS in addition to direct link system with concerned authorities.

