

# REAL TIME COASTAL MONITORING FOR EFFECTIVE MANAGEMENT OF DUBAI COAST

Ibrahim Mohammad Juma, Dubai Municipality, [imiali@dm.gov.ae](mailto:imiali@dm.gov.ae)  
Alya Abdulrahim AlHarmoudi, Dubai Municipality, [aaaamin@dm.gov.ae](mailto:aaaamin@dm.gov.ae)  
Noora Mohammed Hokal, Dubai Municipality, [nmhokal@dm.gov.ae](mailto:nmhokal@dm.gov.ae)  
Abdulla Sharief Kizhisseri, Dubai Municipality, [askizhisseri@dm.gov.ae](mailto:askizhisseri@dm.gov.ae)

## INDRODUCTION

The Dubai coastal zone is defined as a land mass stretching from the Abu Dhabi border in the south to Al Mamzar lagoon in the north, from approximately +4 m DMD (Dubai Municipality Datum) onshore to 10 nautical miles offshore. In its natural state this approximately 70km long coastline consists primarily of long sandy beaches backed by low level dunes and ridges. However, recent infra-structural developments related to trade, tourism and real estate have resulted in significant development within the Dubai coastal zone. These developments have interfered with the natural coastal processes of waves, tidal currents and sediment transport. To understand the dynamics of coastal processes Coastal Zone & Waterways Management Section (CWMS) of Dubai Municipality (DM) developed an advanced coastal real-time monitoring system for coastal management and future planning.

This paper provides an overview of the coastal monitoring programme and how these data are used in managing the coastal zone and decision making.

## DUBAI COASTAL MONITORING SYSTEM

Systematic coastal monitoring of Dubai coast started in 2002 with a single station (Jumeirah Open Beach) to record waves, currents and meteorological data. The system underwent a major upgrade in April 2010 and currently has three offshore, ten nearshore and three Dubai Creek stations (figure 1). Latest technologies and instruments like Acoustic Doppler Current Profilers (ADCPs), water quality sondes, meteorological sensors, tide gauges, HF RADAR and Beach Monitoring Cameras are deployed as part of the monitoring programme. Each station is equipped with 3G modem to push the data in real-time to the central data server. Real-time QA/QC is carried out on the data and is made available for public in the website ([www.dubaicoast.ae](http://www.dubaicoast.ae)).

Dubai coast monitoring system is seen as a "State-of-the-Art" system, one of its kind in Arabian Gulf region because of its geographical distribution, the number of stations and instruments deployed, the type and frequency of data captured and the live dissemination of data to the public.



Figure 1 - Offshore Monitoring Station

## CONCLUSION

The data collected over the years helps Dubai Municipality in understanding the coastal processes and assessing the impacts of the existing and forthcoming developments. These data are used to calibrate and validate hydrodynamic, wave, morphological and shoreline evolution and water quality models used by Dubai Municipality for managing, planning, assessing and developing guidelines for sustainable coastal development (Dubai Municipality,2010). Data are also used by coastal developers to design coastal developments and perform Environmental Impact Assessment (EIA) studies associated with the development.

## REFERENCES

Dubai Municipality, Environment Department, Coastal Zone and Waterways Management Section (2010): Coastal Development Guidelines for Dubai Coast.