The 10th International Conference on Coasts, Ports and Marine Structures (ICOPMAS 2012)
Tehran, Iran, 19-21 Nov. 2012

SIMULTANEOUS ANALYSIS OF TIDE, CURRENT AND WAVE OF GENAVEH REGION BASED ON THE FIELD MEASUREMENT DATA OF MONITORING AND MODELING STUDY ON SOME COASTAL PARTS OF BUSHEHR PROVINCE PROJECT

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Key Words: Measurements Devices, Tidal Current, Current induced by wave and wind

Introduction

Monitoring and Modeling Study on Some Coastal Parts of SISTAN & BALUCHESTAN and BUSHEHR Provinces is one of the projects which was performed by coastal and harbor headquarters of Ports and Maritime Organization (PMO). This project targets have been performed for three regions (3 phases) which consisted of Chabahar Bay region as the first phase and from Naiband bay to Dayyer and finally from Dayyer to Boushehr bay as the next two phases.

In this study current and wave are measured as depth profiles by Doppler systems with simultaneous tide measurement for one year.

Simultaneous analysis of storm and tide that has effect on current is discussed in this study based on the wave, current and tidal data measured in the Genaveh and Deylam ports.

Measurement devices

Acoustic Doppler Current Profiler (ADCP) has been used to measure current profile and the pressure gage has been used in order to measure the tide. These instruments are modern and their performances are checked each six month during the measurements. The measurement devices which are used in this study are shown in figure 1.

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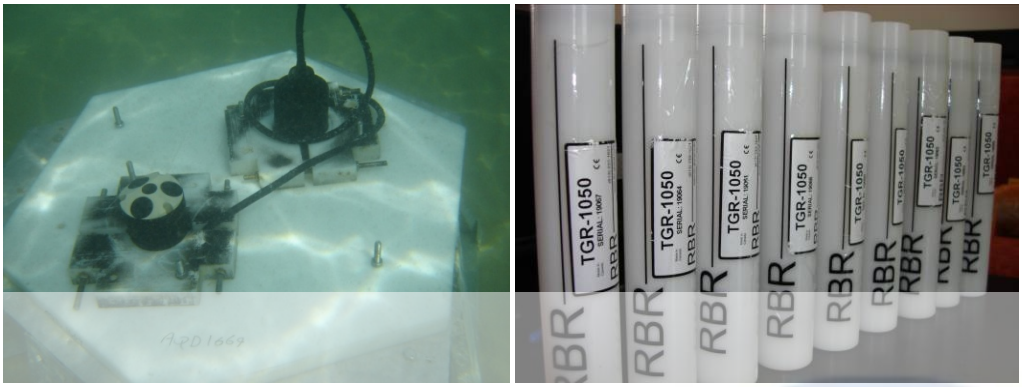

Figure 1) the instruments which used in this study

The reason of gravity between the earth, the sun and the moon and rotating around each other and the other celestial bodies in the galaxy are influenced on sea level which the main impact are due to the moon and then the sun. This impact produced a long wave with diurnal and semidiurnal periods and produced the tide current as well. But in the Persian Gulf the tide generally is mixed and is semidiurnal which are happened with two tide cycle that their phases and the amplitudes are different. The magnitude of this current in the spring tide reaches to about 0.25 m/s in Genaveh and Deylam areas. A sample of the tidal current which was happened in the calmed condition is shown in figure 2 that its magnitude is around 0.2 m/s.

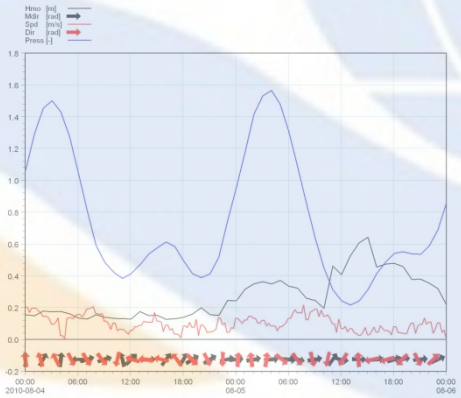

Figure 2) tidal current changes during calm condition

Effect of wind and wave on the current

The near shore current is generally induced by tide and the current due to storm has not been recorded in the Persian Gulf. When wind blowing on the sea, sea waves are generated due to friction between wind and sea surface that sea current induced due to wind are produced in addition. During the storm that have occurred in the Genaveh and Deylam area the recorded current shown the effect of the storm on the sea current in the region (Figure 3).

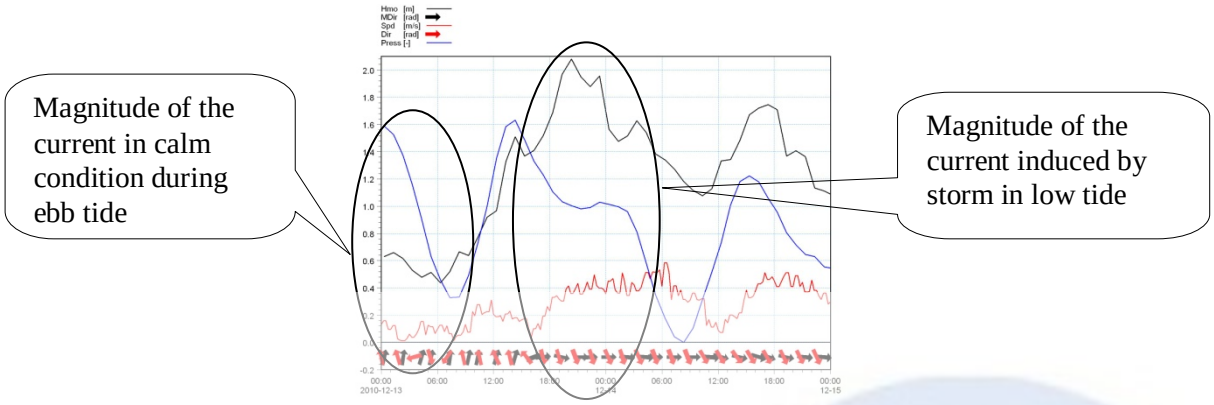

Figure 3) effect of storm on the rigonal current in the Genaveh area

Conclusion

Investigation of tide current in the Genaveh and Deylam area are shown the current magnitude is around 0.25 m/s during the spring tide. But in the mentioned storm that the tide amplitude is in minimum order, the recorded current is around 0.4 m/s that this result shows this current is induced by the storm.

References

[1]-Monitoring and Modeling Study on Some Coastal Parts of SISTAN & BALUCHESTAN and BUSHEHR Provinces, final report of Field Measurement in the Lavar to the Deylam Area (phase 3). Report No. 17, Jahad Energy and Water Research Company, December 2011.