

## Prediction of Gorgan Bay Inlet Performance and Morphological Stability

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### Abstract

The aim of this research was to study the stability and performance of Gorgan Bay and Miankaleh sand spit in order to find out the mechanisms of Gorgan Bay closure. According to the result of Miankaleh coasts' numerical model (by DHI Mike21 package), wave energy and current speed reduced from west to east. Simultaneously, the sensitivity of coasts to local storm surge due to storm increased. The most probable storm surge at eastern coasts was about 40 centimeters and can make 15-20 cm sea level rise. Ashooradeh was a low wave energy mode region. The currents out of the bay were mostly from west to east and in the bay were counter clockwise. The total rate of sediment discharge in Gorgan inlet was  $0.001 \text{ m}^3/\text{sec}/\text{m}$  that resulted in 1 cm/day bed level changes in inlet, while the rate of total sediment discharge in Miankaleh beach was less than  $0.00002 \text{ m}^3/\text{sec}/\text{m}$ . Finally, the Gorgan bay inlet stability study (by Escofier popular model) showed that under the current conditions of the storm and low rate of sediment transport from upstream, it remains stable.

Keywords: *Stable inlets, Mike 21, Escofier model, Hydrodynamic model, Gorgan bay inlet, Gorgan Bay.*

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