

STUDY OF WAVE CLIMATE IN AMIR ABAD PORT USING SETUP OF LOCAL MODEL AND SEMI-ANALYTICAL METHODS

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ABSTRACT

During the past 50 years, wave forecasting using numerical models according to wave energy balance equation develop extremely. These models also change significantly until new generation spectral wave models such as Mike21-SW are suggested as most advanced wave forecasting models. These models using formulation of basic physical wave generation by wind, wave transport and special processes of shallow waters e.g depth-induced wave breaking and bottom friction represent reasonable results. In this study semi-analytical methods and numerical model, Mike21-SW runs at the AMIR ABAD port and is specified method which has strongest agreement with buoy.

INTRODUCTION

Waves in coastal engineering application have great importance. Waves are also very important factor in specifying geometry and shape of the shore. They also have major effect on design of harbor entrance projections and ports, bars and beach preservation and coastal structures projections and coastal works. Waves characteristic extremely change in time and space. A suitable assessment of wave characteristic in an area need to perform long-time measurements (about 10 years and longer) in short-time interval (about 1 hour and shorter) at many points of study area. In AMERICA, JAPAN, NETHERLANDS and engineering sea and oceanography sciences from some last decade develop extremely. Developments of these countries in background of design and performance of fishing, trading and army bars and formation of oil rig and working another engineering actions are salience.

Shallow-water wave transformation strongly depends upon coastal geomorphology and bottom sediment characteristics. Accurate prediction of wave parameters is vital for the coastal infrastructure developments and other activities. MIKE 21 SW is a new generation spectral wind wave model based on unstructured meshes. The model simulates the growth, decay and transformation of wind-generated waves and swell in offshore and coastal areas.

EQUATION IN SEMI-ANALYTICAL METHODS

One of wave forecasting methods is semi-analytical methods. When being defective long-term data, or in beginning studies like probability performance of projection are used from these methods. These methods are more simpler and faster and in our country, IRAN, due to this fact, using these methods is very abundant. These methods are based on equations between the non-dimensional parameters of waves.

In these methods according to fluid mechanics and dimensional analysis, non-dimensional parameters are defined and experimental coefficients between these non-dimensional parameters are determined from observations and measurements. These methods are based on this assumption that uniform and steady wind blown over ocean. This assumption means that wind velocity and direction in wind blowing duration and in fetch are constant. In this study using semi-analytical methods such as SMB, SPM, CEM, JONSWAP and local SW model significant wave height, period and wave direction are acquired and compared with Amir Abad buoy and Neka buoy data.