Storm Model Application at Indonesian Tropical Ocean

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Abstract. The ocean phenomenon consists of mixed types of wave condition. In order to simulate the actual ocean phenomena, Tomita proposed "storm model" in which take into account the changing of wave history during ocean voyage. The wave history is modeled based on "storm" and "calm-sea" condition while in storm is configured from crescendo de crescendo amplitude wave blocks, and calm-sea are configured by time random history. Tomita developed storm model from actual wave height history determined from the ships in which voyage along North Pacific Ocean. The period of 2010 to 2013, one of the author members developed the advanced of Storm model so that can configure storm profile, simulate variation of storm duration and generate equivalent short sea sequence from variable observation period data. Since that the development both of storm model is on the basis of wave data of non Tropical Ocean, that is North Pacific and North Atlantic Ocean, the wave history of Indonesian ocean area as a part of tropical area, in which positioned across between two continents; Australia and Asia, and two oceans; Indian Oceans and Pacific Ocean are examined in this work. This paper presents an analysis of wave history on the chosen tropical ocean by using the storm model. The analysis of storm duration and its changing nature is examined. The storms configuration, the number of storm classes, and the changing nature of amplitude wave block in each storm class are determined based on these wave histories.

Keywords: Ocean phenomenon · Storm model · Indonesian tropical

1 Introduction

The main components that to be considered during design and assessment process of ship structures is stated by 4 parts that defined as a state beyond which the structure no longer satisfies the applicable requirement [1]. Those are serviceability limit state (SLS), ultimate limit state (ULS), fatigue limit state (FLS) and accidental limit state (ALS). The limit state mostly is dependable to the load applied to the ship structure, and the

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