UNIVERSITI TEKNOLOGI MARA

APPLICATION REAL TIME KINEMATIC TIDE METHOD USING DIFFERENTIAL GLOBAL POSITIONING SYSTEM FOR MEASURING TIDE

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ABSTRACT

Tide is a very important component in the bathymetry survey, this is because the tide was used in bathymetry data processing to produce the actual depth of the survey area. Inaccurate tidal data will end up with inaccurate water depth which it will affect the purpose of the survey. This project aims to determine the capability of Atlas L Band for Real-Time Kinematic tide measurement. The reduce tide data are taken involve in this project were taken at Kampung Baharu, Lumut This research consisted of tide observation data which is collected by Real-Time Kinematic tide method and auto tide gauge method in the same location. The use of auto tide gauge because this method gives accurate data for comparison with the Real-Time Kinematic Tide method. The potential of this Real-Time Kinematic Tide method. These tide data will be compared using a mathematical analyst for determining the accuracy of the data. From the result of the research, it is can be seen that there was no difference between observation tide data of Real-Time Kinematic Tide and auto tide gauge even it has a different method to the measuring reduce tide. It is hoped that this study will make the hydrographic survey can use this method to help hydrographic surveyors use the Real-Time Kinematic Tide in reducing tide measurements without hesitation.

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INTRODUCTION

1.1 Background Study

The tide of seawater is a sea-level phenomenon due to the gravity impacts of celestial objects, especially the moon and sun and also the rotation of the earth (Mahmud, Othman, & Din, 2008;Ahmad Fawaiz Safi, 2017; Narni, 2014). According to (Stewart, 2008) there are other things that can affect tides especially partially closed waters, for example, the narrow coastal frame conditions and topographical conditions at the sea.

Tidal observations have usually been done at the dock or harbor. The areas such as offshore or mangrove swamps cause difficulty in carrying out the tide readings so the cortical chart is used to predict the tidal characteristics of the area (Poerbondono & Djunasjah et al., 2005).The purpose of tidal observation is to record or record vertical movements of sea level that occur periodically (Ahmad Fawaiz Safi et al ., 2017; Alkan et al., 2001). One of the uses of tidal observations is to correct depth obtained from measurements using echo sounders in bathymetry surveys.

Tidal observations are carried out every time a bathymetry survey is conducted. Sometimes the bathymetry survey area and tidal observation points are not close together or the bathymetry survey area is offshore. Whereas the characteristics of tides can differ from one region to another regions (Narni, 2014).So there is a possibility that the tidal data will be invalid if it is used to correct the bathymetry survey area. To answer this problem are use GPS for measuring the tide. Real time kinematic tide is a one method that use for collecting tide data(Augustineet al., 2008;;Ahmad Fawaiz Safiet al., 2017;Almeida Et Al., 1995) To achieve high accuracy using GPS, a differential kinematic method can be used both in real-time (RTK).(Alkan, 2001;Augustine, 2008)

This study was conducted to prove tidal observations can be done using method real time kinematic tide for differential global positioning system for measuring tide, so that for practical purposes such as depth correction does not require direct observation using tide gauge. To prove this method, the other method of measuring the tide is also done. Data from the measurement of this gauge can be used for data comparison process for the purpose of analyzing the accuracy of real time kinematic tide.