

Submarine Topography and Beach Survey of Gang-Neung Port in South Korea, Using Multi-Beam Echo Sounder and Shipborne Mobile Light Detection and Ranging System

Authors : Won Hyuck Kim, Chang Hwan Kim, Hyun Wook Kim, Myoung Hoon Lee, Chan Hong Park, Hyeon Yeong Park

Abstract : We conducted submarine topography & beach survey from December 2015 and January 2016 using multi-beam echo sounder EM3001(Kongsberg corporation) & Shipborne Mobile LiDAR System. Our survey area were the Anmok beach in Gangneung, South Korea. We made Shipborne Mobile LiDAR System for these survey. Shipborne Mobile LiDAR System includes LiDAR (RIEGL LMS-420i), IMU ((Inertial Measurement Unit, MAGUS Inertial+) and RTKGNSS (Real Time Kinematic Global Navigation Satellite System, LEIAC GS 15 GS25) for beach's measurement, LiDAR's motion compensation & precise position. Shipborne Mobile LiDAR System scans beach on the movable vessel using the laser. We mounted Shipborne Mobile LiDAR System on the top of the vessel. Before beach survey, we conducted eight circles IMU calibration survey for stabilizing heading of IMU. This exploration should be as close as possible to the beach. But our vessel could not come closer to the beach because of latency objects in the water. At the same time, we conduct submarine topography survey using multi-beam echo sounder EM3001. A multi-beam echo sounder is a device observing and recording the submarine topography using sound wave. We mounted multi-beam echo sounder on left side of the vessel. We were equipped with a motion sensor, DGNSS (Differential Global Navigation Satellite System), and SV (Sound velocity) sensor for the vessel's motion compensation, vessel's position, and the velocity of sound of seawater. Shipborne Mobile LiDAR System was able to reduce the consuming time of beach survey rather than previous conventional methods of beach survey.

Keywords : Anmok, beach survey, Shipborne Mobile LiDAR System, submarine topography

Conference Title : ICGG 2017 : International Conference on Geology and Geophysics

Conference Location : Barcelona, Spain

Conference Dates : February 26-27, 2017