

EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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RESEARCH ON SPACE-BORNE LIDAR SURVEYING NERITIC SEABED TERRAIN

Abstract

Light Detection and Ranging (LiDAR) is a kind of new technical fast developing from 1960s especially in last 30 years. This technical processes high measurement accuracy, high resolution, powerful recognition capability and anti-interference capability. Space-Borne LiDAR which had wide field of view caused the big astronautical countries more attention, and it became an important part of global 3-D terrain detection, aerosphere detection, wind velocity detection, imagination and rendezvous and docking. In this paper, water depth measurement technology with airborne LiDAR was summarized. Neritic seabed terrain detection schematic was put forward, and then the key components and the different points of the schematic were analyzed. Pertinence suggestions were described in this paper which could supply further research on space-borne LiDAR. The space-borne laser emits several beams which form laser array, and detects the ground target by one dimension scanning. The laser includes multiple-beam emission system and multiple-signal reception system, but no flexible components in order to increasing the system dependability. The multiple-beam mode can make an observably increase of detection efficiency comparing with the single-beam mode. Each single laser pulse can return several different distance signals, so the repeat frequency can be lower. The laser pulse can be reflected by the sea surface and neritic seabed, so the depth can be calculated by the two reflection signals. The space-borne LiDAR data can be used to analyze sea gravitational field, change of the sea level and tide, sea weather and thickness of ice band.