AIRBORNE LASER MEASUREMENT TECHNOLOGY IN JAPAN

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Keywords: GPS, Laser Profiling, Garbomirror scanner, CG, 3d-modeling.

ABSTRACT

Kinematics GPS and inertia movement instrumentation technology has developed rapidly, which achieved to provide a high and stable accuracy of spatial positioning, attitude in three dimensions for high-speed movement platform such as aircraft.
The airborne laser measurement system, which is based on the laser scanning technology, has been integrated to the GPS inertia movement instrument on the aircraft platform.
The advantage of airborne laser data is the possibility of displaying, operating and generating of 3D spatial model in the computer. Further development is being done to extend to wide variety of applications in scientific manner.
This trend is based on the characteristics of airborne laser data, which can be acquired in digital with high accuracy and high density, and differs from the traditional survey technologies such as photogrammetry.
The technique to get more accurate results, concerning ground control sites, has been researched and developed for the expansion of new applications.
The applications based on these airborne laser data are used in the field of mapping, analysis of land deformations, city modeling, flood control simulation, and CG or virtual realities.
The visualization techniques for three dimension models, which were generated from the airborne laser results, has been a new approach of creation of new fields, that indicates itself as one of the unique latest technology for the 21st century.
Also, the research and development on spatial operation function technology for three-dimension spatial model acquired by airborne laser measurement system, is now applied for the expansion uses of latest 3D-GIS.
The analysis result of the airborne laser measurement, by using the electronic ground control points as reference points, which is established by Geographical Survey Institute, extending over 1000 points in Japan, and the research result concerning the preparation of the manual for public survey, indicates the vision of the prospect of the laser measurement in Japan.

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