Radar technology for humanitarian demining and its application

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【Outline of survey】

This research project is the extension of the former research "Humanitarian Landmine Detection by GPR and MD "Dual Sensor" (2002-2005). In this research, we developed a few advanced landmine detection systems including a bistatic radar system using optical electric field sensor and ALIS(Advanced Landmine Detection System). In the new research project, we will apply the technologies developed for landmine detection to other fields such as target identification by radar for security of society.

(1) Application of landmine detection technology to mine affected courtiers. Discussion on the technical issues of GPR evaluation and deployment for humanitarian demining.

(2) Practical application of bistatic GPR using optical electric field sensor. Application to landmine detection and inspection of constructions.

(3) More general application of the technologies developed for the landmine detection. It will include: Subsurface fracture detection and monitoring, identification of buried pipes, identification of tree types by airborne and space borne SAR, natural disaster detection and prevention by Ground-Base SAR and borehole radar.

【Expected results】

We are planning to have a long-term evaluation test of ALIS in Cambodia during FY2006. This project will be also supported by ODA. JSPS Japan-Netherlands Bilateral joint seminar "Joint seminar for evaluation procedure of advanced sensors for landmine detection" will be held for intensive discussion for GPR evaluation and deployment for humanitarian demining.

【References by the principal researcher】

• Dual Sensor ALIS Evaluation Test in Afghanistan, Motoyuki Sato, Jun Fujiwara, Xuan Feng, Takao Kobayashi, IEEE GRSS Newsletter, 22-27,September 2005.

• GPR using an array antenna for landmine detection, Motoyuki Sato, Yusuke Hamada, Xuan Feng, Fan-Nian Kong,Zhaofa Zeng, Guangyou Fang, Near Surface Geophysics, 2, 7-13, 2004

【Term of project】 FY2006－2010	【Budget allocation】20,700,000 yen

【Homepage address】 http://cobalt.cneas.tohoku.ac.jp/users/sato/reserach2.htm