

Principal Researcher	Motoyuki Sato			Number of Researchers	3	
Research Institution · Department · Title	Professor, Center for Northeast Asian Studies, Tohoku University			Location of Institution	Sendai	
Title of Project	Land Mine Detection by Polarimetric and Interferometric Radar					
Abstract of Research Project	<p>Humanitarian demining in post-war areas is gathering the worldwide interest. It is well known that the difficulties of demining by human and its time-consuming and expensive process should be replaced by other demining techniques. Ground Penetrating Radar (GPR) is one of these promising techniques. Many researchers in the world have carried out research on its application to demining, however at the same time, we found many technical difficulties. Clutter from the ground surface roughness and inhomogeneous subsurface material shades targets and identification of landmines from other targets is difficult. The aim of this research is technical and scientific approaches to this problem by using an international researchers network and innovative radar technologies including radar polarimetry and interferometry. In this research, we will also develop a new bistatic GPR system using an opto-electric sensors, and new algorithms for landmine identification and we also plan field evaluation. The polarimetry and interferometry radar technologies, which will be developed in this research project, can be used in many applications. We will investigate the use of the scientific results to subsurface fracture characterization, detection and identification of geology and buried objects. Also, air borne and space borne synthetic aperture radar (SAR) for identification of tree types and environment and infrastructure observation will be important applications.</p>					
References	<p>Motoyuki Sato, The state of the art of the abandoned land mines by GPR, Proc. Workshop on humanitarian demining of anti-personnel mines, Science Council of Japan, pp49-54, April 2001.</p> <p>Zeng Zhaofa Fang Guangyou Mohammad Fazeli Bin Kamarudin and Motoyuki Sato, Analysis of Balanced Antipodal Vivaldi Antenna and its Application for Mine-like Targets Detection, IEICE, Technical Report, AP2002-13, May 2002.</p> <p>Zeng Zhaofa and Motoyuki Sato, Experiment of anti-personnel land mine detection by GPR, Proc. of the 106<sup>th</sup> SEGJ Conference, Society of Exploration Geophysicists of Japan, May 2002.</p>					
Term of Project	Fiscal years 2002-2006. (5 years)					
Budget Allocation (in thousand of yen)	FY2002	FY2003	FY2004	FY2005	FY2006	TOTAL
	25,800	20,200	17,000	9,300	10,900	83,200
Homepage Address	<a href="http://cobalt.cneas.tohoku.ac.jp/users/sato/index-j.html">http://cobalt.cneas.tohoku.ac.jp/users/sato/index-j.html</a>					