



Profile

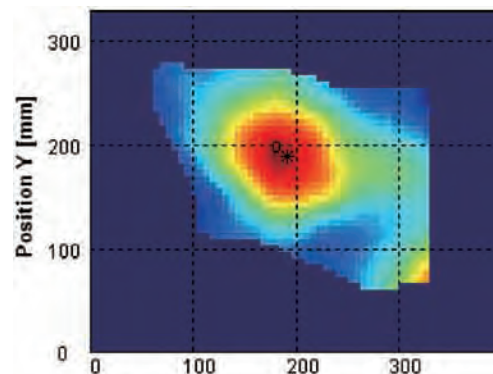
Prof. Motoyuki Sato graduated from Tohoku University, Faculty of Engineering, Dept. of Electrical Communication in 1980. He then studied Information Sciences at the graduate school of Tohoku University, and obtained the degree of Dr. Eng. in 1985. He started to work as a research associate for geothermal energy development at Tohoku University in the same year. After he spent one year in Germany at the Federal Institute of Geoscience and Mineral Resources, he was promoted to a professorship at Tohoku University, Center for Northeast Asian Studies, in 1997. His major is applied electromagnetic waves, and his research interests are the electromagnetic measurement of environment, especially by Ground Penetrating Radar (GPR). He has been involved in GPR researches including radar systems development, an archaeological survey in Sendai castle, a groundwater survey in Mongolia and a permafrost survey in Siberia. Recently, he has been developing GPR for humanitarian demining. At the same time, he is working toward remote sensing technology for environmental study in the North and East Asian regions using the Japanese earth observation satellite ALOS.

Research Activities

Humanitarian demining is an activity to clear buried landmines after conflicts, something for which interest is gathering in the world. The efficiency of mine detection by metal detectors, which have widely been used for humanitarian demining is low, due to their high false-alarm rate. Thus, new methodologies have been required. Prof. Sato has developed a hand-held sensor ALIS, which combines a metal detector with a GPR. GPR can visualize the buried mines, and can identify them, which metal detectors could not achieve. However, in order to deploy the technology developed in a laboratory, we must test them in real environments, to shorten the distance between the ideal situations in a laboratory to practical conditions in the real world. Prof. Sato has tested ALIS in some mine affected countries including Afghanistan, Cambodia, Egypt and Croatia. The key issues in these tests are not only technical, but also closely related to social problems. They include how science can contribute to international society, and we have to keep close contact with UN organizations and local demining action centers. ALIS has been used in Croatia for more than a half year, and it will be commercialized soon.



ALIS evaluation test in a mine filed in Croatia



Visualized image of anti-personnel Mine PMA-2 by ALIS.

Message

Unique ideas and creative research are essential at universities. At the same time, if the science and technology can be used in society, it inspires us to further work. I started the research on GPR for humanitarian demining, because applied electromagnetic wave technology is my original major. However, I realized soon that the ideal conditions in a laboratory are very far away from real environments such as the jungle in Cambodia. We have to visit the sites where the technology is required, and we have to understand what the local people are demanding. Then, the research work can be more fruitful. We had thought that international organizations such as the UN were very far removed from engineering, but we found that they work effectively in bringing our technology to people in mine-affected countries. Engineering is a science which contributes to society and living people. I found that close attention to society is one of the key issues in applications of engineering.