2022（令和 04）年度　東北アジア研究センター共同研究報告書

提　出　（令和）　5 年 5 月 19 日

代表者　Tsogtbaatar Amarsaikhan

（本報告書はセンター内外への公開を原則とします）

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<tr><td>研究題目</td><td colspan="4">和文）
英文）3D GPR survey for Archeological investigations in Mongolia</td></tr>
<tr><td>研究期間</td><td colspan="4">2022（令和 4）　年度　～　2023　（令和 5）　年度（　1 年間）</td></tr>
<tr><td>研究領域</td><td colspan="4">（A）環境問題と自然災害　（B）資源・エネルギーと国際関係　（C）移民・物流・文化交流の動態　(D)自然・文化遺産の保全と継承　（E）紛争と共生をめぐる歴史と政治
［以上から最も近い領域を一つ選び、他を削除］</td></tr>
<tr><td rowspan="8">研究組織</td><td>氏名</td><td>所属・職名</td><td>専門分野</td><td>役割</td></tr>
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<tr><td rowspan="3">研究経費</td><td>学内資金</td><td colspan="3">センター長裁量経費　［金額］　300.000 円</td></tr>
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300.000 円</td></tr>
<tr><td>合計金額</td><td colspan="3">300.000　円</td></tr>
<tr><td>研究の目的と本年度の成果の概要
(600-800 字の間で専門家以外にも理解できるようまとめてください。)</td><td colspan="4">Research purpose: Sato lab has various research activities based on radar technology in many countries. Due to the geological condition and climate uniqueness of the survey site, the penetration depth of the radar signal can vary in a high range. We were involved in a number of archeological projects and requested to conduct a GPR survey in Japan. However, we could not clearly visualize subsurface structures and buried objects in some survey sites due to the high attenuation of subsurface layers and soil inhomogeneity. Based on the Sato lab experience of GPR survey in Mongolia for more than 20 years, GPR measurement always showed deep and clear subsurface structures, including a fault, groundwater table, horizontal layers, etc. This fact is caused by dry soil condition which allow a radar signal to penetrate deep.
To investigate man-made buried objects, especially archeological investigations, GPR is one of the best methods due to its non-destructive data acquisition. Sato lab has very strong GPR facilities both software and hardware. We planned to conduct a 3D GPR survey at an archeological site, in Mongolia. Since Sato lab has developed 3D Migration algorithm, we apply a 3D migration for regularly or irregularly acquired GPR data at any topographic condition. We planned to acquire GPR data with different antenna frequencies, including 100 MHz and 500 MHz antenna.</td></tr>
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	The nomadic dynasty of Mongolia had great influence on history. We planned to conduct a GPR survey at “Shoroon bumba” archeological site which is located at Bayannuur soum, Bulgan province. “Shoroon bumba” is a group of burial mounds historically belonging to the 7th to 8th centuries AD. Research summary: Nomadic vast land has plenty of historical and archeological sites related to historical long period. 3D GPR investigations were carried out at Shoroon Bumbagar archeological site in Bulgan province, Mongolia. Our research site has been belonged to 7th century. The importance of this area is due to presence of previous research area investigated by excavation. It is a magnificent first ever discovered tomb with a wall painting and deliver ancient nomads’ view. GPR survey was performed, with MALA RAMAC 100 MHz and 500 MHz antenna gathering data, along parallel profiles 0.25 m spaced. Data were collected during the GPR survey carried out at the top of the mound structure. After data acquisition, we applied 3D migration developed in Sato lab. We have distinguished several structures that we believe man-made structure and objects. Archeologists have planned to excavate based on our 3D subsurface image. We hope that our research work will be valuable assist for archeological investigation.			
本年度の活動における東北アジア地域研究としての意義についてアピール				
研究集会・企画	研究会・国内会議・講演会など： 1回		国際会議： 1回	
	研究組織外参加者（都合）： 4 人		研究組織外参加者（都合）： 4人	
研究成果	学会発表（ ）本	論文数（ ）本	図書（ ）冊	
専門分野での意義	[専門分野名] Archeological Geophysics	[内容] High density 3D GPR method allows to investigate near-subsurface structures. The significance of this research work was to visualize 3D subsurface image and assist for archeological investigation. Archeologists have planned to excavate research area based on our 3D results. We believe that objects related to the archeological treasure and historical evidence will be successfully found.		
学際性の有無	[(有)／無]	参加した専門分野数：[2] 分野名称 [Archeology, History]		
文理連携性の有無	[(有)／無]	特筆事項：		
社会還元性の有無	[(有)／無]	[内容] Archeological survey identify and record historic. The analysis of archeological remains informs a lot of our knowledge of human society. In central Asia, archeological investigations cannot be easily found because of nomadic cultures. Fortunately, there are number of archeological sites have been investigated. We hope our research study contribute to investigate archeological and historical information.		
国際連携	連携機関数： 2	連携機関名： Mongolian University of Science and Technology, Mongolian Academy of Science		
国内連携	連携機関数：	連携機関名：		
学内連携	連携機関数：	連携機関名：		
教育上の効果	参加学生・ポスドクの数： 2		参加学生・ポスドクの所属： Mongolian University of Science and Technology	
第三者による評価・受賞・報道など				

研究会計画全体のなかでの当該年度成果の位置づけと今後の課題	
最終年度	該当　[　無]

本共同研究に関わる業績（発表予定含む）

We have planned to disclose our research result with an archeological investigation, especially excavation result. Archeological excavation will prove our research work and its practical outcomes. We plan to publish a research work in international and domestic journal.

[学会発表]

[雑誌論文]

[その他]

*ファイル名は KyodoRpt_年度_代表者ローマ字とする。二つある場合、代表者名の後に１，２と記入する（例 KyodoRpt_2013_oka1）。