ARCHAEOLOGICAL GEOPHYSICS IN NORTHERN MONGOLIA

One of the best things about my job as an archaeological scientist is that my research isn't tied to a particular geographic region or period and so I get to work with fantastic colleagues from all around the world. This is well illustrated by the comparison between my Day of Archaeology post from last year (co-authored with colleagues from IMS-FORTH) where I spent the day testing electromagnetic induction equipment on a Cretan beach and this year where I have been conducting a ground penetrating radar (GPR) and geomatic survey of the Neolithic/Bronze Age Soyo site in Northern Mongolia. This site is being studied as part of the Northern Mongolia Archaeology Project headed by Dr Julia Clark from the American Center for Mongolian Studies and Dr Bayarsaikhan Jamsranjav from the National Museum of Mongolia. This project is using a range of multidisciplinary techniques to examine the archaeology of the Darkhad Depression region in Northern Mongolia. Over the last few years it has particularly focused on the site of Soyo which is located at the intersection of the dense forest taiga and the grass steppe-land of the basin and so is uniquely positioned to examine interaction between hunting and herding practices. Previous research on prehistoric domestic sites in Mongolia has been frustrated by the prevalence of thin, jumbled deposits of artefacts with few preserved features. However, Soyo contains a ~ 2m thick stratified archaeological record that covers more than 7000 years.

Dr Bayarsaikhan Jamsranjav collecting GPR data at the Soyo site

My role on the project is to use GPR to map the subsurface stratigraphy of the site in 3D to correlate between the eight excavation units. In particular, I concentrated on determining the thickness of the unconsolidated sediments and mapping the depth and thickness of a number of palaeosols containing archaeological material within the site. This work was supported by an extensive program of kite photography and DPGS survey to provide a high resolution map and digital elevation model of the survey area. I also worked in collaboration with Dave Putnam (University of Maine at Presque Isle), Stefani Crabtree (Washington State University and Université de Frache-Comté) and Evan Holt (Florida State University) to record the stratigraphy of archaeological excavations and test pits in order to calibrate the GPR results.

Adam Gates and Baynandelger Chinbold logging the stratigraphy of a test pit and collecting DGPS data

While the GPR data interpretation is only preliminary at this stage, the results look excellent with the key features showing up very clearly even in unprocessed profiles. Similarly the geomatics data provides a rigorous spatial context to the site investigation so will facilitate a robust comparison between the excavation units. Most importantly, this project has generated a great deal of interest and provided training opportunities in the use of geophysical and geomatic techniques among Mongolian researchers and so will hopefully facilitate their widespread adoption for archaeological research in this region in the future. For me, this project also provided the opportunity to enjoy life in this remote region of Mongolia, including watching a Naadam Festival in the local town of Ulan Ul, spending time taking in the spectacular scenery and enjoying plenty of local delicacies.

Getting my teeth into Mongolian archaeology (and a goat)