2011

Preliminary GIS Analysis of Selected Archaeological Sites in Western Mongolia

Cole, Daniel G.; Chen, Catherine (Ke)

Cole, D.G. & Chen, C.K. "Preliminary GIS Analysis of Selected Archaeological Sites in Western Mongolia". Canadian Association of Geographers Annual Meeting and Conference, University of Calgary, Calgary, Alberta, May 31 - June 4, 2011.

http://hdl.handle.net/1880/48671

conference proceedings

Canadian Association of Geographers Conference 2011, May 31-June 4 2011, Calgary, Alberta

Daniel G. Cole, Smithsonian Institution

Catherine (Ke) Chen, East Tennessee State University

Preliminary GIS Analysis of Selected Archaeological Sites in Western Mongolia

Mapping and spatial analysis of archeological sites in western Mongolia presents some challenges and opportunities for the field season during the summer of 2011. Prior to going out in the field, as support for the project, we need to spatially analyze previously collected archaeological data collections from colleagues at East Tennessee State University with high resolution 3D renderings of the study areas. Compiling survey and GPS readings confirmed the elevation data created from the satellite image stereo-pairs.

After waiting for the snow to melt in the study areas, and after receipt of the ½ meter resolution stereo-pairs from GeoEye in June 2010, I worked with EastView Cartographic to create digital elevation models (DEMs) of the two primary study areas. From the DEMs, I was then able to create maps of shaded-relief, contours (1 and 3 meters), aspect, slope, and viewsheds with the geographic information system software, ArcGIS (Fig. 1, Three meter contours with GPS and archeological point overlay). Overlaying the collected archaeological points on the images and maps allowed us to conduct an initial evaluation of the landscape in relation to the points. Most of the points in the Biluut area fall on the slopes and ridges of the hills. Many of these points are easily visible from the surrounding landscape. While yet to be determined are the directions that individual features face, a large majority of these features were placed on southern and western aspects.

The second study area that was imaged, which is about 50 kilometers east-southeast of Biluut, illuminates a number of circular features, that are largely not visible in 3D but are easily noticeable on the imagery (Fig. 2). Most are seen as features in the dry landscape, and in vegetated areas, are plainly visible as features that disrupt the vegetation (Fig. 3). Once these features get mapped and an associated spatial database is created, we should be able to study their arrangement and layout in relation to the landscape and to each other.

Figure 1.

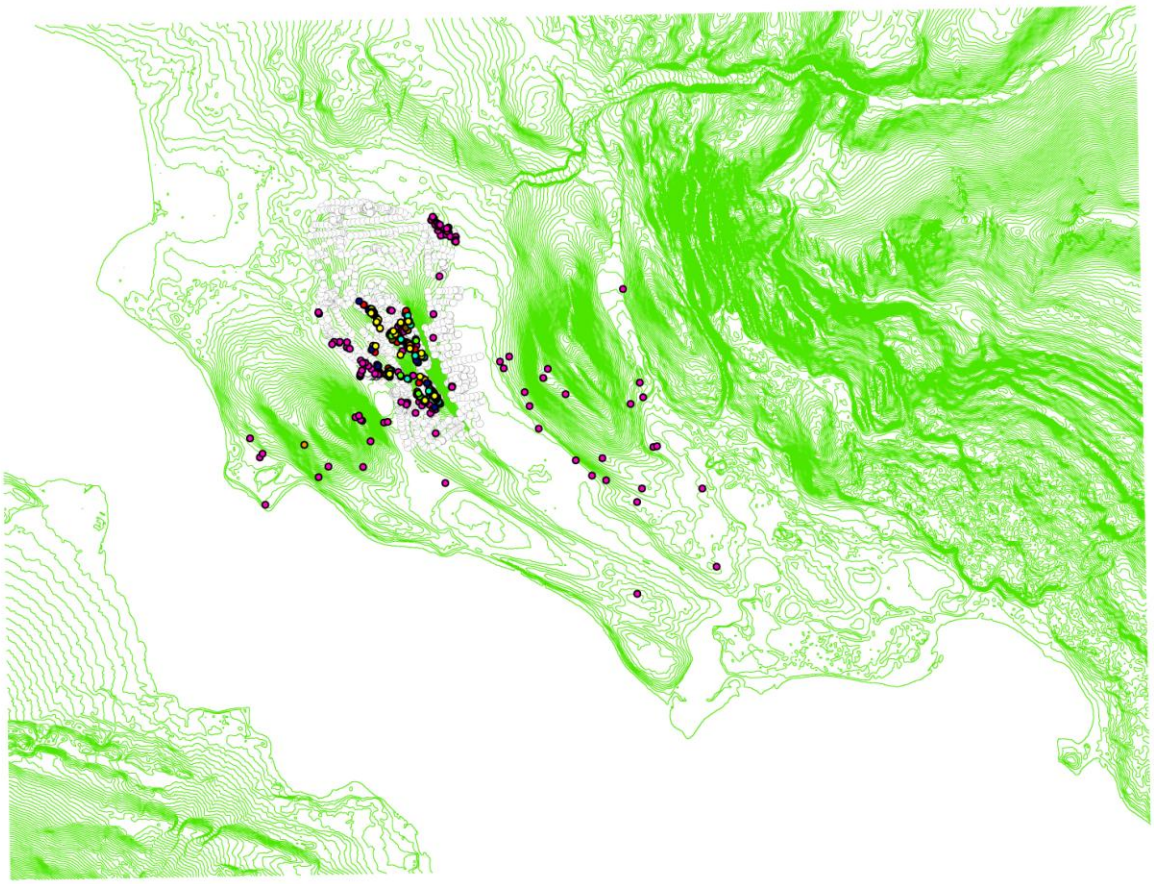

Figure 2.

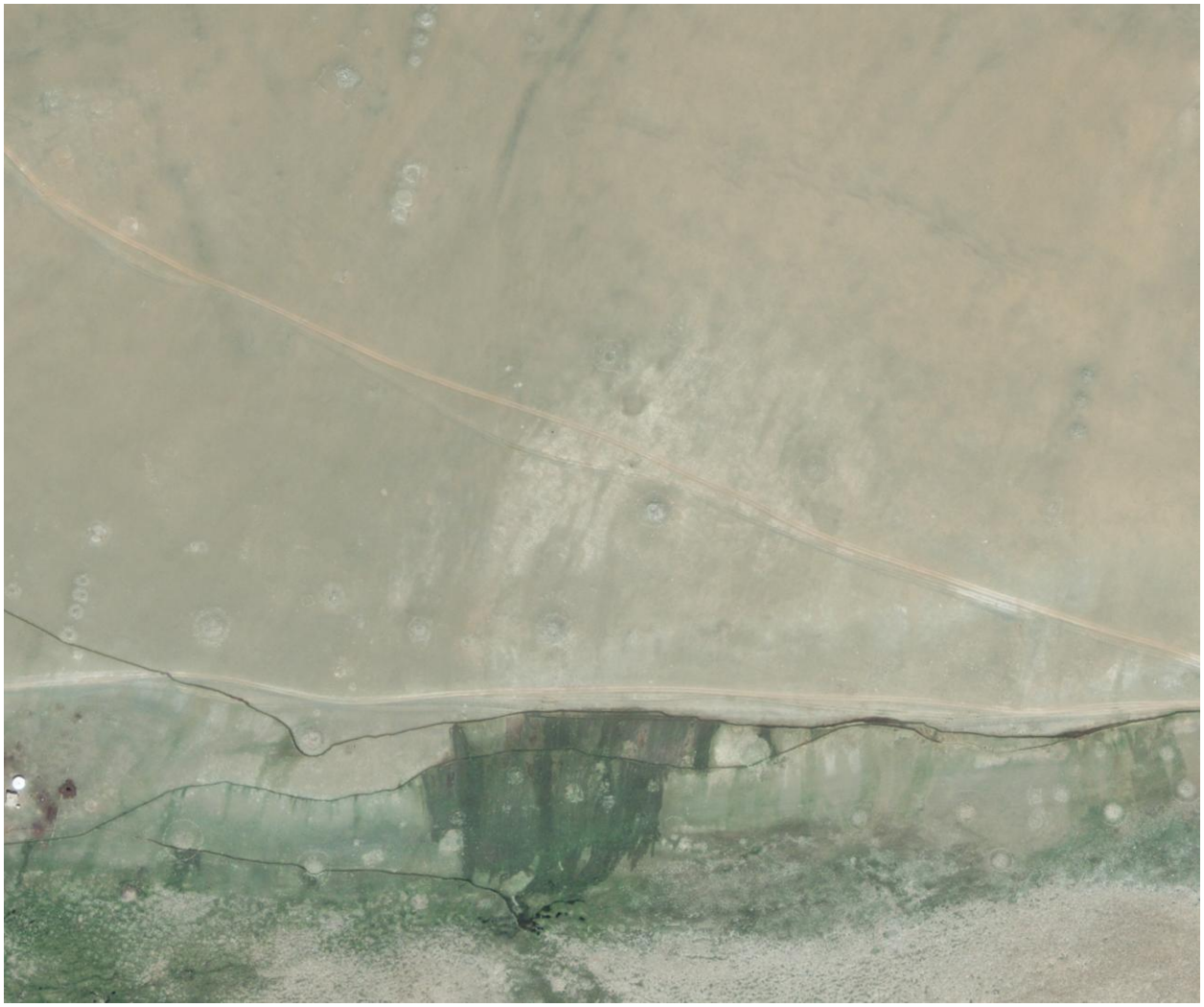

Figure 3.