Western Han Landscape and Remote Sensing Applications at Xi'an (China)

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In 2008 the University of California, Merced, School of Social Sciences, Humanities and Arts started a multidisciplinary project in the area of Xi'an (China) aimed to the study of the Western Han Dynasty in the light of the new archaeological discoveries in the area of Xi'an and on the use of 3D integrated technologies for the analysis and the reconstruction of sites and landscapes. The final goal of this project will be the creation of the Virtual Museum of the Western Han Dynasty but, in the meantime, the production of so many data and applications is addressed to different output also for geospatial analyses and interpretations. In this frame the work on the landscape's reconstruction contributes to the comprehension of the ancient entire territory, peopling and morphology. The landscape has suffered relevant agricultural and environmental transformations during the Cultural Revolution in the '60s and, recently, because of the rapid urban expansion of the city of Xi'an which today counts 8 millions of inhabitants. The study of the transformation of landscape is necessary for interpreting the cultural asset of the territory at the time of the Western Han Dynasty where different "mindscapes" were coexisting: the sacred-power landscape of the imperial mausoleum◎s and tombs, the construction and plan of the city of Chang Han, the use of Feng Shui as systematic methodology of space organization. In the North-Western area of Xi'an the imperial mausoleum were constructed according to specific principles of dominance based on different morphological and spatial features. The calculation of the elevation of the mounds by DGPS (with an accuracy of 15 cm for the vertical and 11 for the horizontal position after post-processing) has allowed understanding the sense of power attributed to each single tomb and mausoleum according to the shape, the size and the elevation.

All these elements and the construction of the city of Chang Han show that the Western Han Period was one of the first remarkable example of landscape transformation and organization of the territory of the history of China. This is still a work in progress but the

following geospatial analyses and reconstruction were applied for the landscape interpretation:

- multitemporal analysis and spatial comparison of Corona , Landsat ETM+ and aerial photos;
- DGPS survey and mapping in the areas of the imperial mausoleums and in the city of Chang Han;
- laser scanning in the area of the Mausoleum of Maoling;
- 3D reconstruction of the ancient landscape of the Western Han Period.