

3D modelling of heritage (Yar City, China)



At the Department of Geography, a drone is deployed serves as a platform for aerial observation. The images are processed by means of photogrammetry and computer vision techniques in order to reconstruct the environment in 3D.

The 3D models are useful for different purposes. In the field of archaeology and cultural heritage management, the latter are used to monitor the archaeological sites, to build a 3D cultural heritage inventory and to disseminate the information to the public, ... Moreover, these models support the archaeological research considering the detection, excavation and conservation of the remains.

The platform was already employed for the benefit of archaeological research in different countries such as Mexico, Honduras, Greece and China. In Mexico 3D models of Maya-sites were realized) in the Yucatan peninsula in cooperation with INAH (Instituto Nacional de Antropología e Historia). In the Chinese Xinjiang region, various field campaigns (2014-2015) were conducted so as to collect data and to reconstruct the Yar City ruins (nearby Turpan). These field campaigns have been established in the context of a cooperation agreement between Ghent University, the Xinjiang Institute for Ecology and Geography (Chinese Academy of Sciences) and the Academia Turfanica.

Besides the archaeological purposes, the Department also creates 3D models so as to study the geomorphological processes. In the Swiss Alps, these models are used to examine the geomorphological responses to the climate induced permafrost degradation. The focus of the study includes the talus slopes, which function as important debris storage in the high mountain surroundings and are subjected to various types of mass wasting (debris flows, permafrost creep, landslides, ...). In order to investigate the climate effect in this environment, 3D models of these talus slopes have been made over different years. In this way, the geomorphological dynamics could be assessed, together with the potential permafrost distribution. In France, the 3D models are handled to investigate the impact of the land management and climate change on the runoff and erosion dynamics.

Moreover, 3D models have been invented to look into the fish population and sediment deposit matter in the Galapagos and to study the reforestation projects in the mainland Ecuador.

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