

LiDAR (which stands for Light Detection and Ranging) is an innovative remote sensing method that is based on the laser scanning of the surface of the Earth in order to provide three-dimensional information about its shape and its surface characteristics. LiDAR uses light in the form of pulsating laser beams to measure distance from the ground. The aircraft is equipped with a measuring system that records the 3D geometry of the measured surface in the form of a point cloud during the flight. Recent research results based on the LiDAR technology, have demonstrated a great potential of this method in the field of ancient Maya studies. This civilization flourished in southeastern Mexico, Guatemala, Belize, western Honduras, and El Salvador. Nowadays, most of that area is covered with a dense rainforest, which impedes the ground-level archaeological survey. Application of LiDAR technology in such conditions brings revolutionary results, allowing to digitally penetrate the lush rainforest canopy and acquire data regarding the shape of terrain, including fragments of ancient architecture, and other cultural remains visible on the surface.

The main goal of this project is to investigate the peripheries of the Maya site of Nakum located in northeastern Guatemala (area of the so-called Yaxha-Nakum-Naranjo National Park, or the Triangle Park) in search of multiple traces of pre-Hispanic occupation and landscape modification by the ancient Maya, such as residential structures, agricultural terraces, reservoirs, fortifications and causeways. Neither the peripheries of Nakum, nor the whole area of the Triangle Park have ever been investigated with the use of the LiDAR. Therefore, the project will involve a detailed analysis of LiDAR data provided by the Guatemalan foundation of PACUNAM which has already scanned the area of Triangle Park using this technology. Ground-truthing and archaeological excavations of selected features located on the peripheries of Nakum will follow.

The research carried out by this project will bring answers to questions such as: a) how dense was the occupation in the area of the Triangle Park, specifically in the surroundings of Nakum?; b) is there any evidence of intensive agriculture, such as canals, terraces, raised fields?; c) what was the impact of warfare in this region (are there any remains of fortifications or features that could be defined as boundary markers)?

As a result, the proposed project may provide new and particularly important data on ancient lowland Maya civilization, specifically on such subjects as water management, demography and density of pre-Columbian Maya settlement, intensity of Maya warfare, and role of agriculture in the development of ancient Maya civilization.