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### **Analyses of Initial Geomorphic Processes by Microdrone-based Photogrammetry**

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In the last ten years digital photogrammetric measurement became very important for monitoring ecosystem development. For the monitoring of structures and processes of the artificial water catchment “Chicken Creek” the generating of automatic Digital Elevation Models (DEM) became a significant tool in order to measure and visualize landscape change, complex-shaped soil surfaces and water interaction processes. Within these key studies a sub catchment of the whole research area was reviewed by photogrammetric measurements. Instead of airplane based aerial photographs, here the option of a Microdrone-based aerial photography was applied by using a commercial digital camera. This affords a maximal terrestrial resolution of less than 1 square centimetres per pixel depending on the operating altitude. Due to the given camera settings it was necessary to choose an operational altitude of maximal 80m to get DEMs with a high spatial and temporal resolution. The aerial photographs were made with an overlap of at least 60%. For camera calibration and identifying of homologues points out of the overlapping images by image matching we used the photogrammetry-software “LISA FOTO”. The resulting DEMs visualize the soil surface of the artificial water catchment with a grid resolution of 10 cm. Due to the restricted geometric stability and calibration of the camera and other notable ascendancies a precision of 1 - 10cm in height was obtained for each DEM. Thus, this method allows a more detailed analysis of the soil surface and is important for ecohydrological modelling.