

Phenocam towers, gigapixel resolution timelapse systems and unmanned aerial vehicles – an overview of emerging technologies for ecosystem-scale monitoring and conservation.

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In the past decade a host of new imaging technologies have emerged to provide ecologists, conservation biologists and land managers with an unprecedented toolset for monitoring landscapes and wild areas. These tools range from wireless, solar powered, visible and infrared camera systems to semi-autonomous unmanned aerial vehicles (UAVs) and multi-billion pixel resolution timelapse cameras. For the past few years, we have been developing software and hardware systems for recording, analyzing and visualizing image data from ground-based imaging systems. We have focused in particular on connecting ground-based image data with more readily available satellite products such as MODIS and ASTER to better understand the impacts of the salt cedar beetle on Tamarisk populations in the Colorado Plateau. We will provide an overview of the state of current imaging technologies and their current and potential applications for conservation and ecological monitoring. We will also discuss conservation and monitoring applications for newly emerging sampling technologies such as unmanned aerial vehicles (UAVs) and remote controlled blimps.