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Title:

Direct Detection Modeling (DDM) for Archaeological Research and Heritage Management

Abstract:

Archeological sites are places where human activity has produced an enduring change in the natural environment. By analyzing that change, scientists can not only detect sites, but, more importantly, gain information about both human and environmental history. I report here on statistical treatments and computational capacity developed to detect environmental change associated with human activities by the analysis of data collected with remote sensing devices carried on aerial and satellite platforms. The sensors, statistics, and computational network employed can detect even subtle chemical, vegetative, and structural change. Our CSRМ, Johns Hopkins University, and NASA research team has modified statistical protocols used by engineers and medical scientists over the last two decades to our task. Analyzing the enormous volume of data collected by increasingly sophisticated sensors and aerial and satellite platforms has been made possible by the use of the Discover computational cluster at the NASA Goddard Space Center and NASA, with the assistance of scientists there and at the NASA Jet Propulsion Laboratory at Caltech (JPL/NASA). This collaborative effort has produced maps of anthropogenic micro-environmental change: a Direct Detection Model (DDM).