Remote Sensing Archaeological Sites through Unmanned Aerial Vehicles (UAV)

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Abstract

Advances in technology and lowering cost make drones, or Unmanned Aerial Vehicles (UAV), appealing platforms for remote sensing data acquisition. They are being used by many individuals in a number of different fields, including archaeology. They are especially beneficial in areas with vegetation or dense tree cover, but the ability to navigate through the canopy is limited by the type and density of vegetation. The primary objective of this research was to develop a workflow methodology for assessing the potential of UAVs for future remote sensing and archaeological research. The technology was used to study the location of potential archaeological sites, and then to map the site itself. This was done using the DJI Phantom 2 Vision/UAV, which has the ability to capture high-resolution images. The technology was used to identify and map the site of the abandoned Salmon River Village near the confluence of the Sawyer and Chowan rivers. Two of these two major rivers in eastern North Carolina. This village was a very significant site for the interpretation of our data. The project did not only demonstrate the potential of the UAV to acquire usable data, but contributed to the ongoing research.

Keywords—archaeology, aerial imagery, DJI Phantom 2 Vision/UAV, remote sensing, UAS

Introduction

UAVs as a sensor and platform offer a number of advantages over traditional collection methods. They are cost effective, can operate autonomously, and are not subject to natural weather conditions. The technological advancements in this field have enabled for high-quality observations to be performed with a high degree of accuracy. They are also capable of acquiring data in areas that are inaccessible to traditional methods.

In 2007 archaeologists identified the probable location of the Salmon River Village, a 16th-century Native American village, located in a set of agricultural fields just north of the Chowan. The site is located on a ridge near the confluence of the Salmon and Chowan rivers. This site is an important location for understanding the history of the area, its cultural history, and its impact on the region. The project was designed to map the site using the DJI Phantom 2 Vision/UAV, which has the ability to capture high-resolution images. The technology was used to identify and map the site of the abandoned Salmon River Village near the confluence of the Sawyer and Chowan rivers. Two of these two major rivers in eastern North Carolina. This village was a very significant site for the interpretation of our data. The project did not only demonstrate the potential of the UAV to acquire usable data, but contributed to the ongoing research.

Aerial imagery is a powerful tool for archaeological investigations. Aerial photography is a technique that captures images from above, allowing archaeologists to view the landscape from a bird’s eye view. This technique is particularly useful in areas with dense vegetation or difficult terrain, where ground-based surveys are not feasible. Aerial photography can provide valuable information about the landscape, including the location of potential archaeological sites, the size and shape of features, and the relationships between different features.

The DJI Phantom 2 Vision/UAV is a small, lightweight drone that is capable of capturing high-resolution images. The drone is equipped with a high-resolution camera that can capture images with a resolution of up to 12 megapixels. The drone can be controlled remotely, allowing it to be flown from a safe distance. The drone is also capable of flying at extremely high speeds, allowing it to cover large areas in a short amount of time.

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