



Background

The BuckEye Program was born in 2004 out of the need for unclassified high-resolution geospatial data for tactical missions. BuckEye began with a helicopter-mounted digital color camera that produced high-resolution imagery for intelligence, surveillance and reconnaissance (ISR) and change detection missions.

In November 2005, BuckEye deployed to Iraq on a fixed-wing aircraft to concentrate on the urban mapping mission. In addition to a digital color camera, a Light Detection and Ranging (LIDAR) sensor was added to collect high-resolution, high-accuracy elevation data. LIDAR data supports improved battlefield visualization and line of sight analysis. Because of its 3-dimensional accuracy, LIDAR also supports the ortho-rectification of imagery, making it more accurate as well. Once ortho-rectified, image frames can be combined into large mosaics.

In May 2006, a helicopter-mounted camera system was deployed to Afghanistan to conduct ISR missions in support of Operation Enduring Freedom. In November 2007, a fixed-wing aircraft with both a color camera and LIDAR sensor began operations at Bagram Airfield. Multiple fixed-wing aircraft were deployed to Afghanistan in 2010 and 2011 to increase support throughout the country.



Current Operations

In Iraq, BuckEye collected over 85,000 square kilometers of data over urban areas and along main supply routes. The resulting revolutionary data set includes over 2000 tiles of LIDAR elevation data at 1-meter resolution, and 1,800,000 color images at 10 to 15-centimeter resolution. With the change from Operation Iraqi Freedom to Operation New Dawn and the downsizing of Coalition Forces, BuckEye concluded its operational support to the Iraq mission in September 2010.

In Afghanistan, BuckEye requirements and tasking are controlled at the International Security Assistance Force (ISAF) level. A majority of the imagery and LIDAR is processed in-theater to provide rapid tactical response, and over 200,000 square kilometers of data have been collected to date. With five fixed-wing aircraft now operating in Afghanistan, the pace of collection has increased significantly.

Additionally, an Unmanned Aerial System (UAS) with BuckEye sensors is currently operating in western Afghanistan. The UAS is equipped with a miniaturized LIDAR sensor that can support a variety of UAS programs into the future.

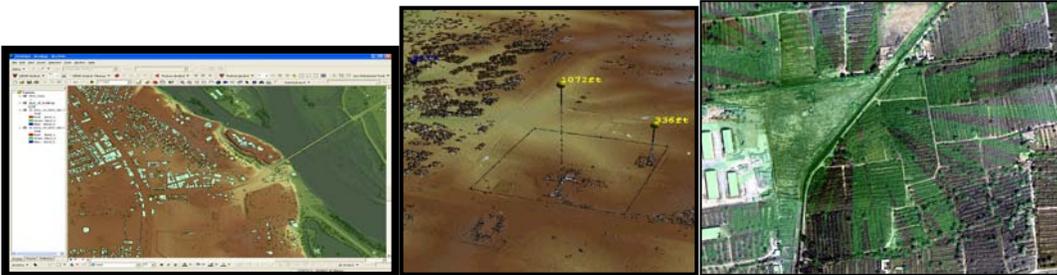
In January 2012, BuckEye deployed a fixed-wing system to Africa to support the geospatial needs of USAFRICOM.

Army Geospatial Center (AGC) strives to make BuckEye data readily available to our fighting forces and supporting agencies. Data is pushed to requesting units on DVDs/hard drives, and distributed via the Internet on all Department of Defense (DoD) networks. As soon as imagery and LIDAR data are received at AGC, they are quality-checked and posted to the Center's web sites. Other products available on-line, or through our Dissemination Team, include image mosaics as GeoPDF Mapbooks, NITF Geocoded Images, and high-resolution Urban Tactical Planner databases.

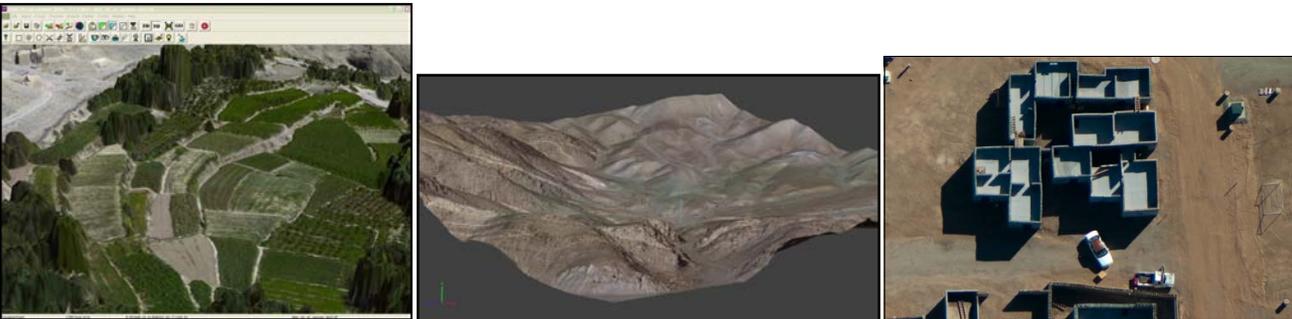
Future Developments: BuckEye will continue to investigate geospatial collection technologies for improved support to tactical forces. In partnership with other U.S. Government agencies, testing and deployment of a high altitude collector using Geiger mode LIDAR is underway. New sensor technologies to support collection of both LIDAR and color imagery from higher altitudes are under development.

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LIDAR / Elevation Data Uses : *Vertical Obstructions, Vegetation Analysis, Feature Extraction, 3D Views / Mission Planning / Fly-Through Database, Line of Sight / Viewshed, Flood Modeling / Slope Analysis, Contouring, Volume Calculation, Precision Foundation*



Color Imagery Uses: *Enhanced Situational Awareness, Mission Planning, Visualization, Feature Identification*



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