Contribution ID: **58**   Type: **Paper Presentation**

Horizontal Accuracy Variability in Drone-Based Photogrammetric Orthophoto Mosaic Derivation Methodologies: Terrestrial Ground Control versus Onboard Real-Time Kinematic Procedures

Friday, October 27, 2023 8:30 AM (20 minutes)

This presentation examines the variability in horizontal accuracy results in the photogrammetric processing and production of orthophotos from mosaiced drone-acquired aerial photographs, comparing imagery processed with ground control, without ground control, and onboard real-time kinematic (RTK) global navigation satellite system (GNSS) position derivation. The implementation of ground control points (GCPs) in photogrammetric processing of drone imagery establishes a link between the image coordinate system of the aerial photographs collected in flight, and ground coordinates in the rectification of images in the production of orthophotographs that is supposed to significantly improve the global horizontal and vertical accuracy of resulting maps. Implementation of the real-time kinematic method requires an unmanned aircraft designed to allow the utilization of additional GNSS receiver hardware (involving additional expense), but theoretically obviates the need for ground control through the high accuracy of position calculation of the onboard GNSS receiver on the drone in flight. This pilot study will provide evidence regarding the comparative horizontal accuracy in the production of orthophotos derived from the above methods, and aid in decision-making regarding methodologies required to obtain near survey-grade results from drone-based photogrammetry.

Primary author: Dr BENHART, John (Indiana University of Pennsylvania)

Presenter: Dr BENHART, John (Indiana University of Pennsylvania)

Session Classification: Paper Presentations

Track Classification: GIS