

Workshop A4: Technology in the field: GPS, iPads and Gigapans

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This workshop provided college/university-level faculty and researchers with hands-on experience with best practices in field GPS, including recent developments in GPS technology that make it possible to accurately determine positions in challenging environments, using iPads effectively in the field for research and teaching, and taking Gigapan panoramas for research, teaching, and visualization in Google Earth.

GPS

Jonathan Cobb of Waypoint Technology Group (www.waypointtech.com) reviewed the current state of GNSS (Global Navigation Satellite System), which includes the United States NAVSTAR satellite constellation and the Russian GLONASS satellite constellation. Currently these are the only two complete constellations providing global coverage. Some current GPS receivers can receive signals from both sets of satellites improving location positioning. Trimble hardware and software provides an integrated system using the GNSS and land based reference stations to determine 3D positions on the Earth's surface or atmosphere. For the field researcher, GPS receivers and how the data are processed can provide positions from tens of meters to centimeter accuracy. Best practices of configuring and using receivers as well as post processing techniques were covered.

iPADS

Barb Tewksbury demonstrated the use of several iPad apps that can be used in the field for both research and teaching, and participants had a chance to try out these apps, discuss their pros and cons, and brainstorm ways of using the iPad with students in the field. The apps included a variety of Brunton compass apps, note-taking apps, and field GIS apps.

GIGAPANS

Dave Tewksbury covered the setup and use of Gigapan camera systems (<http://www.gigapan.com/>) to capture high-resolution field imagery. The Gigapan camera system, developed from the Mars Rover Camera technology, uses a robotic camera head to move a digital camera in a set pattern capturing small sections to cover a large scene. These individual images are composited together by the Gigapan Stitcher software to create a single, large, high-resolution image of the scene. This image can be “zoomed-into” without pixelation. Although most Gigapans focus on expansive scenes from panorama to outcrop scale, macro to micro Gigapans (www.gigapan.com/gigapans/100119) are also possible. If GPS location data was recorded for the camera position, the image can be georeferenced and ported to Google Earth where it can be viewed by simply sharing a KML/KMZ file. The Gigapan website allows users to share Gigapan images with the ability to pan and zoom into the image. An iPad app allows access to Gigapan images via the iPad. High quality prints can be made on a large format printer.