

iPad Mapping Applications: Evaluation and Workflow

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Disclaimer: Any inaccuracies in features or costs are my fault and are not intentional.



iPad Field Use

- Cached and/or Custom data for offline
- Battery longevity; charge anywhere there is a powered USB port
- GPS/GLONASS in cellular models and available as plugin or bluetooth modules for wifi-only models (Dual XGPS150, GNS 8570 MFI, Garmin GLO GPS)
- Ease of back up
- Onboard magnetometer, gyroscope and accelerometer



iPad Field Work: To Consider...

- **Size** - iPad Pro (12.9 inch) seems to be too large to be comfortable in the field, but the iPad (9.7 inch) and iPad Mini (7.9 inch) work very well.
- **Fragility** - use a mil-spec field case to protect from dust, moisture and impacts and carry case in pouch
- **Battery** - need to practice active conservation (Airplane Mode) - auxiliary battery charger
- **Glare** - screen can be difficult to read at times
- **Thermal load** - keep temperature within limits - hot end try to keep in shade
- **Export** projects or data when possible:
 - hybrid USB/Lightning storage
 - email - requires Cellular or Wifi connection
 - iTunes sync
 - When possible and if appropriate transfer contacts and points to paper maps

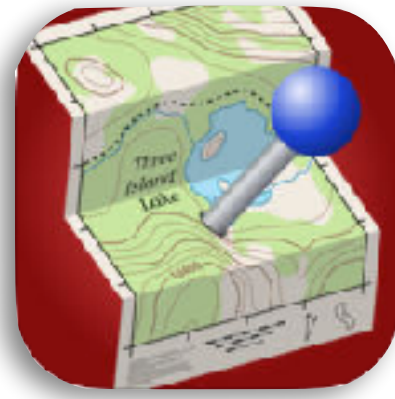
iPad Field Use Applications

- *iHikeGPS, Topo Maps* - Display cached USGS topographic maps and store waypoints, tracks, etc., after apps purchased all downloads free
- *Gaia GPS, GaiaPro* - Display wide variety of online maps that can be locally cached for field work
- *iGIS HD* - GIS, import and export ArcInfo Shapefiles, cache custom maps
- *Lambert* - Collect geological control information
- *FlightLine* - View cached low-res geology
- *Scenic View W,C,E* - View synthetic cached or online 2D/3D satellite image maps with topography, roads, place names, etc.
- *Geofieldbook, FieldMove, FieldMove Clino* - geologic field mapping tools
- *MapTiler* (Windows or Mac) - Georectify maps/images and translate into KML, MBTiles and other formats

Comparison of some Applications

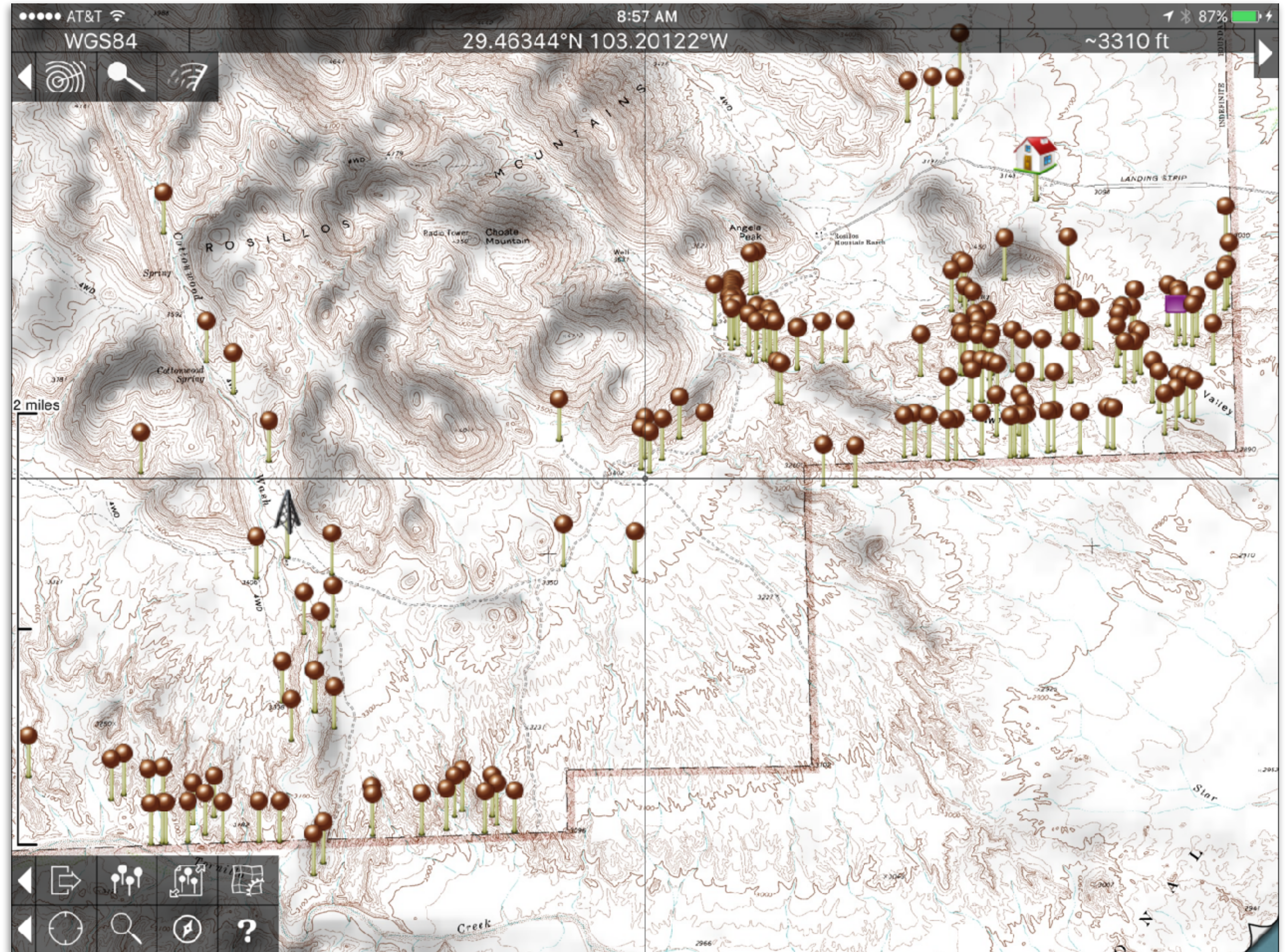
	Map Data	Waypoints/paths	Strike/Dip Bearing/Plunge	Stereonets	Formations	Images	Notes	Export
iHike GPS	Cache USGS GeoTIFFs and/or U.S. For. Srv. Maps	Import/Export					Attached to waypoints	GPX
Topo Maps	Cache USGS GeoTIFFs	Import/Export					Attached to waypoints	GPX, .kml, .csv
GAIA GPS	Cached Online or user imported TMS service Pro version has many more online maps available	Import/Export					Attached to waypoints	GPX, .kml
Lambert	Only online Apple Maps and OpenStreetMap	Export	Yes	Yes				.csv
Scenic Map	Online image or cached synthetic (online for whole world)	Import/Export					Attached to waypoints	GPX
FieldMove	Online (MapBox) or import GeoTIFFs, osgEarth, or MBTile files	Import/Export	Yes	Yes	Yes - and draw on maps	Yes, georeferenced images with drawing on images	Yes, georeferenced notes	.csv, .mve, .kmz
Geofieldbook			Record, does not take using onboard sensors		Yes	Yes, georeferenced images.		.csv

Topo Maps

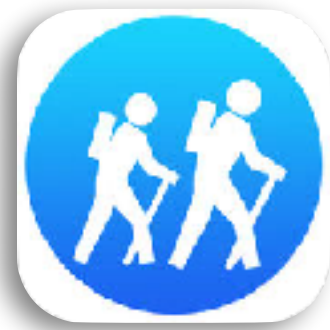


Phil Endecott
topomapsapp.com
\$7.99

Waypoints, tracks,
viewsheds, distance
rings, shaded
topography, lighting
angle, change
waypoint symbol,
view waypoints in
other apps

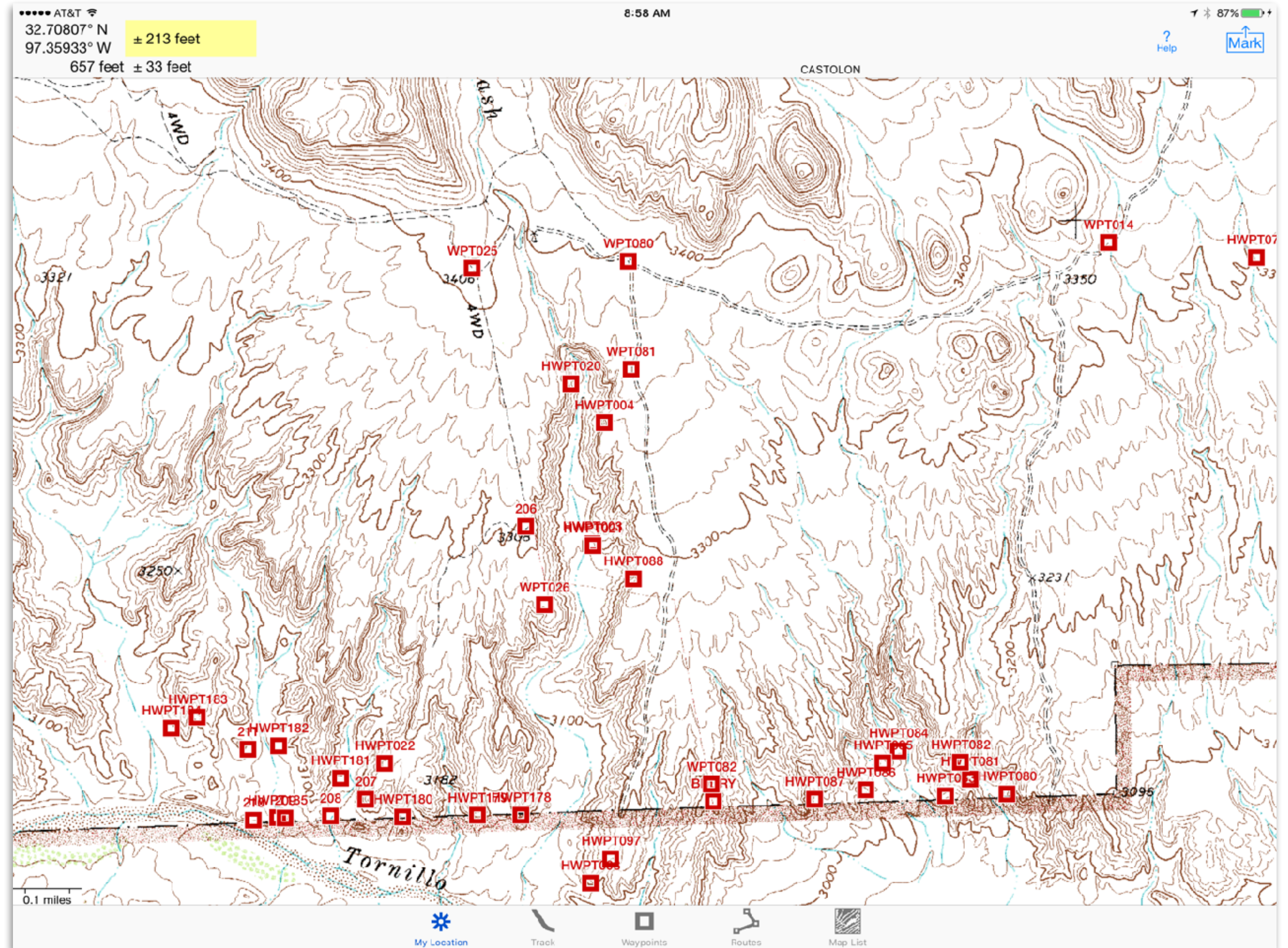


iHike GPS



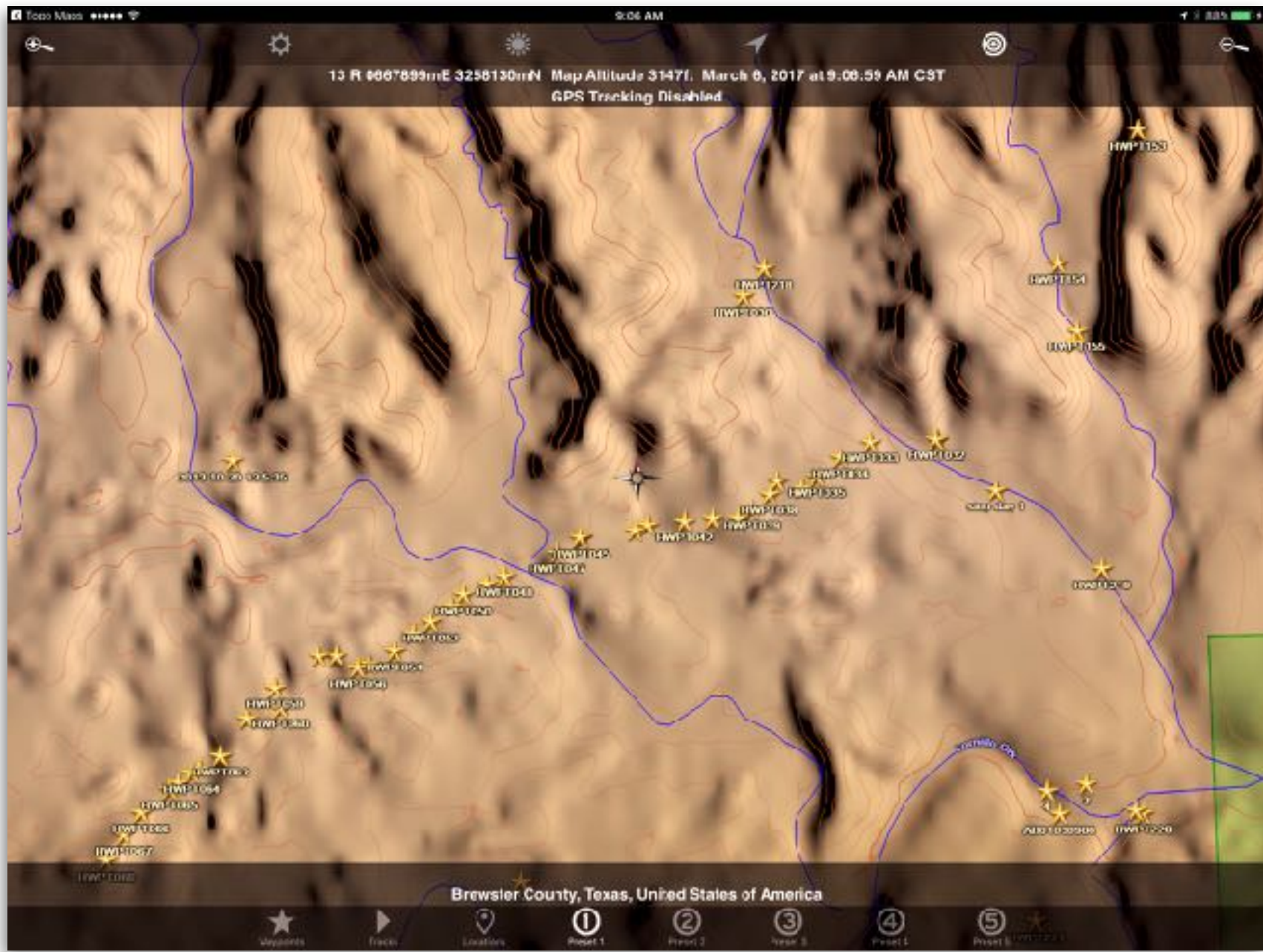
James Associates, Inc.
ihikegps.com
\$9.99

Waypoints, tracks,
topographic profiles





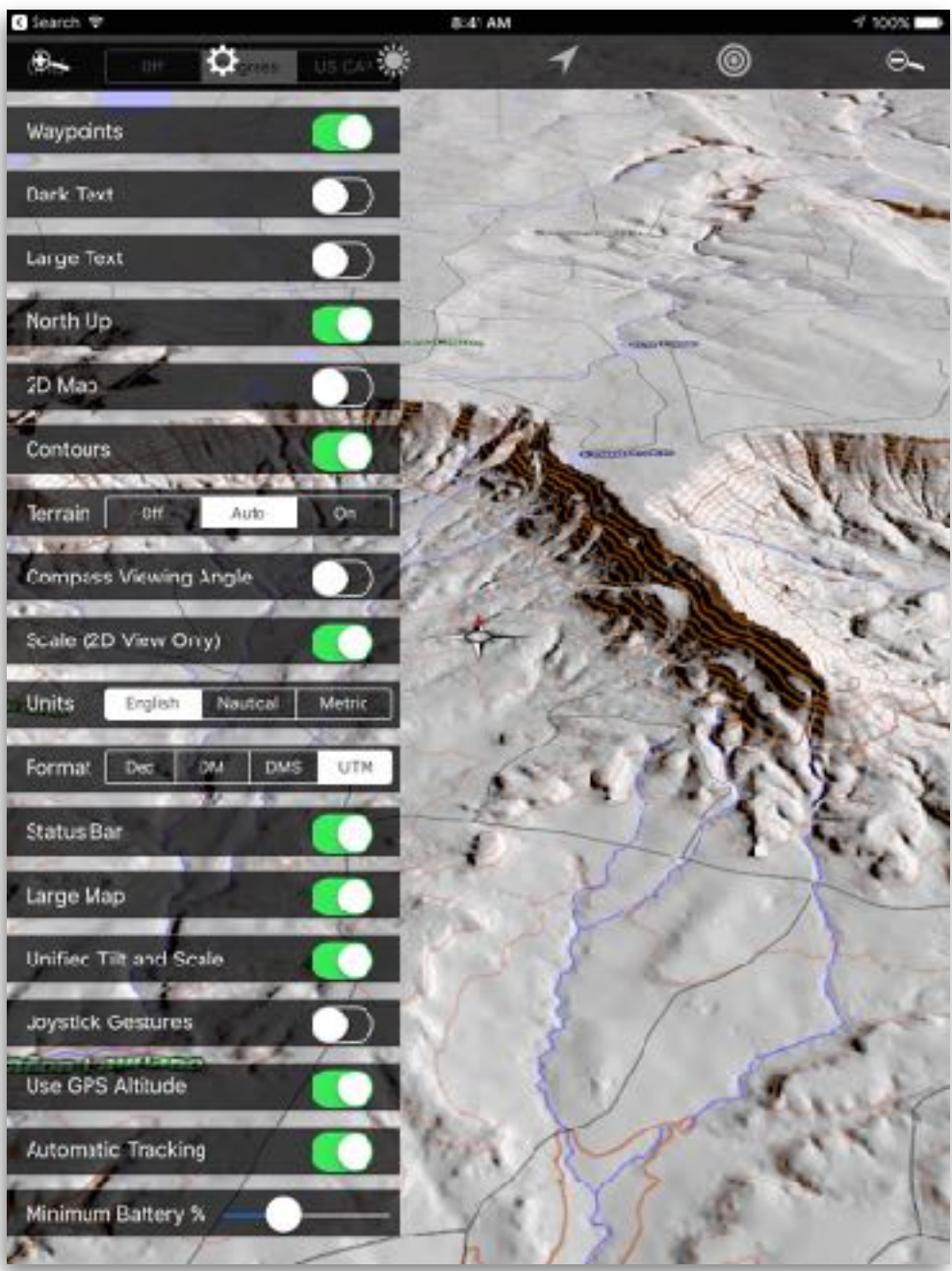
2D - online (above) - offline synthetic below



Scenic View

GrangerFX
scenicmap.blogspot.com
 \$9.99

Waypoints, tracks, online
 satellite imagery, off line
 synthetic maps (see
 lower pictures) with
 adjustable color themes.
 Many different data layers
 can be viewed.



3D - online (above) - offline synthetic below

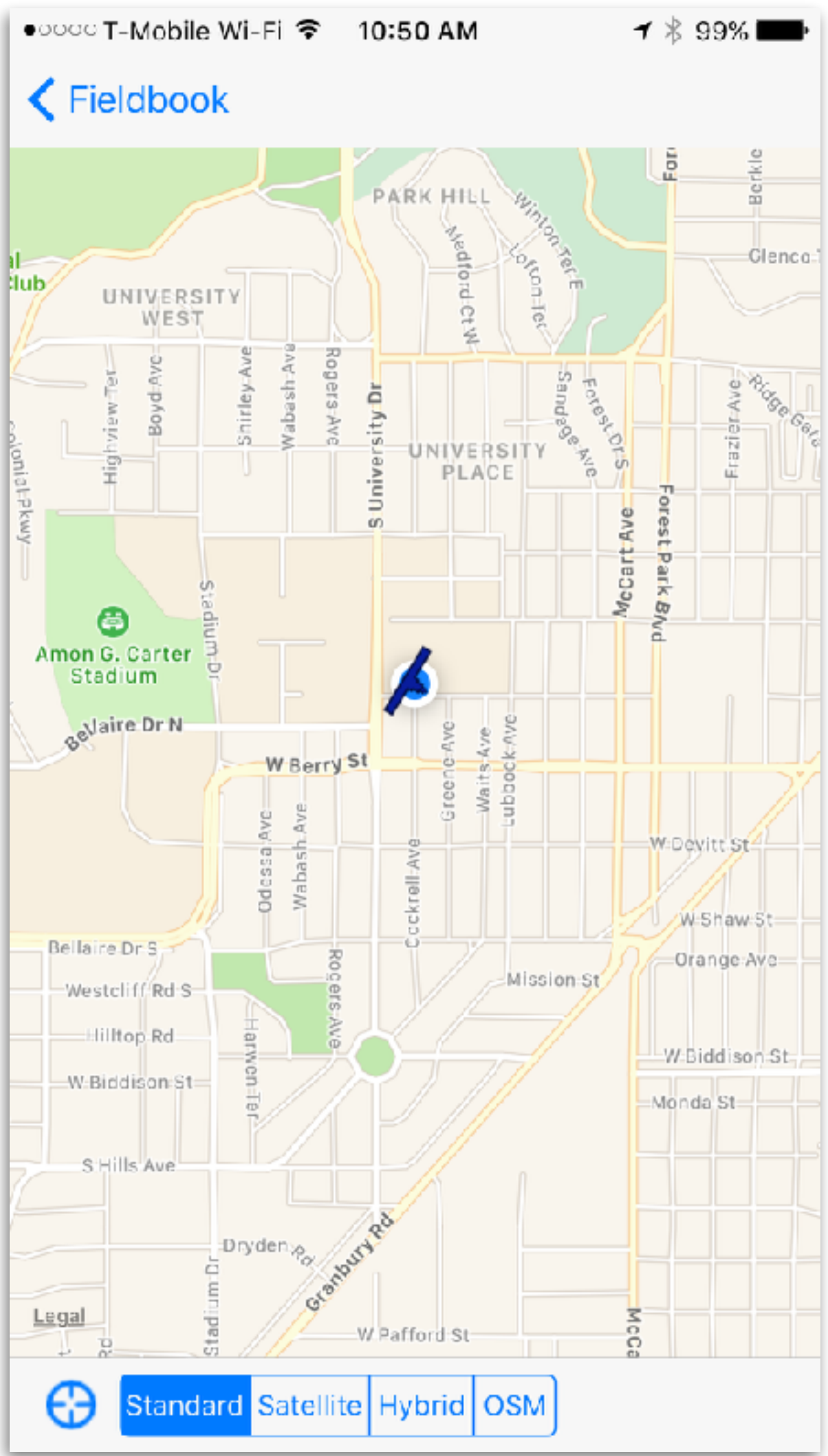
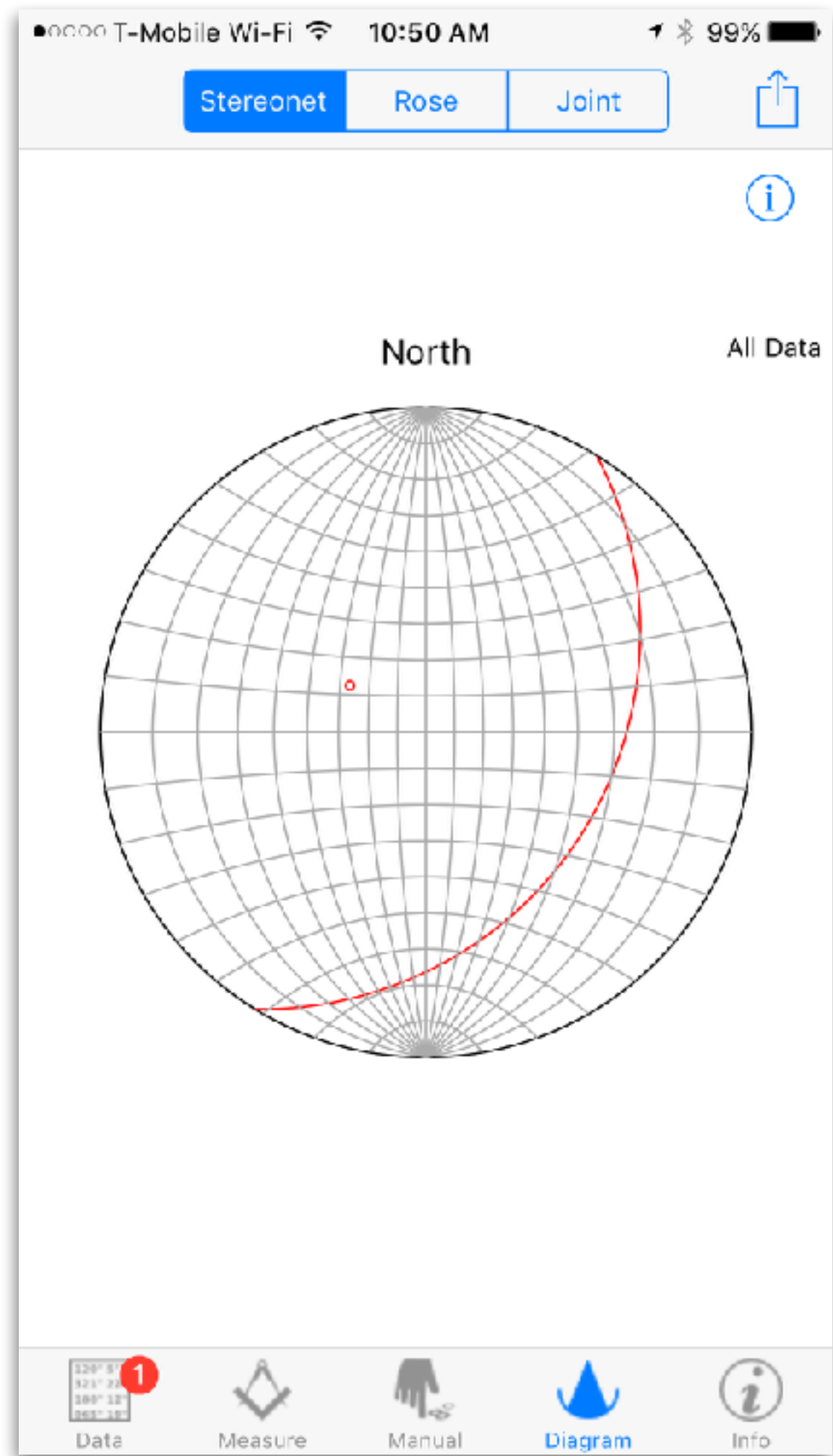
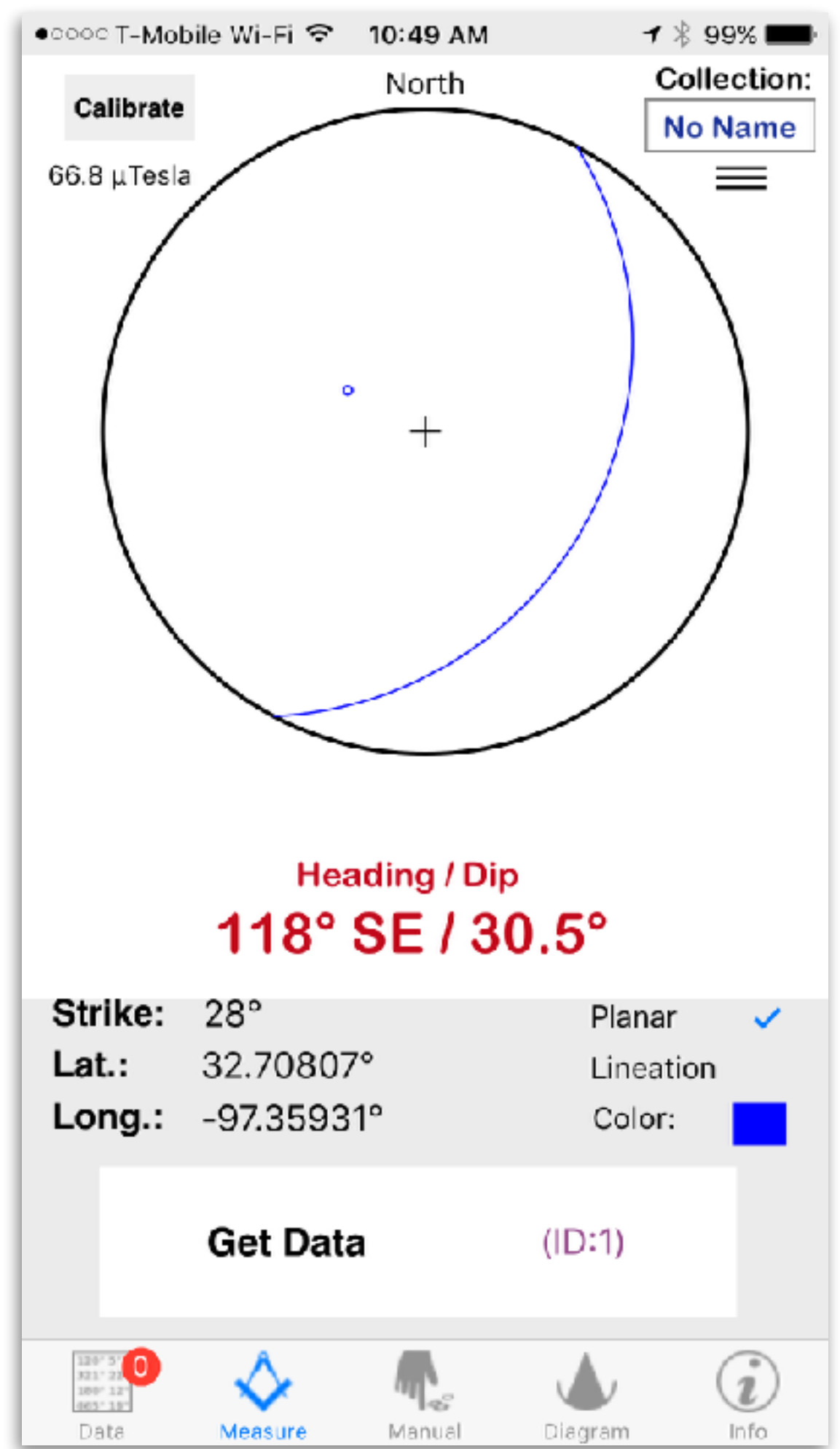


Lambert



Peter Appel
www.nileus.de/lambert/
\$2.99

Planar or lineation,
Change color, add notes
to each control point,
stereonet, rose or joint
diagrams



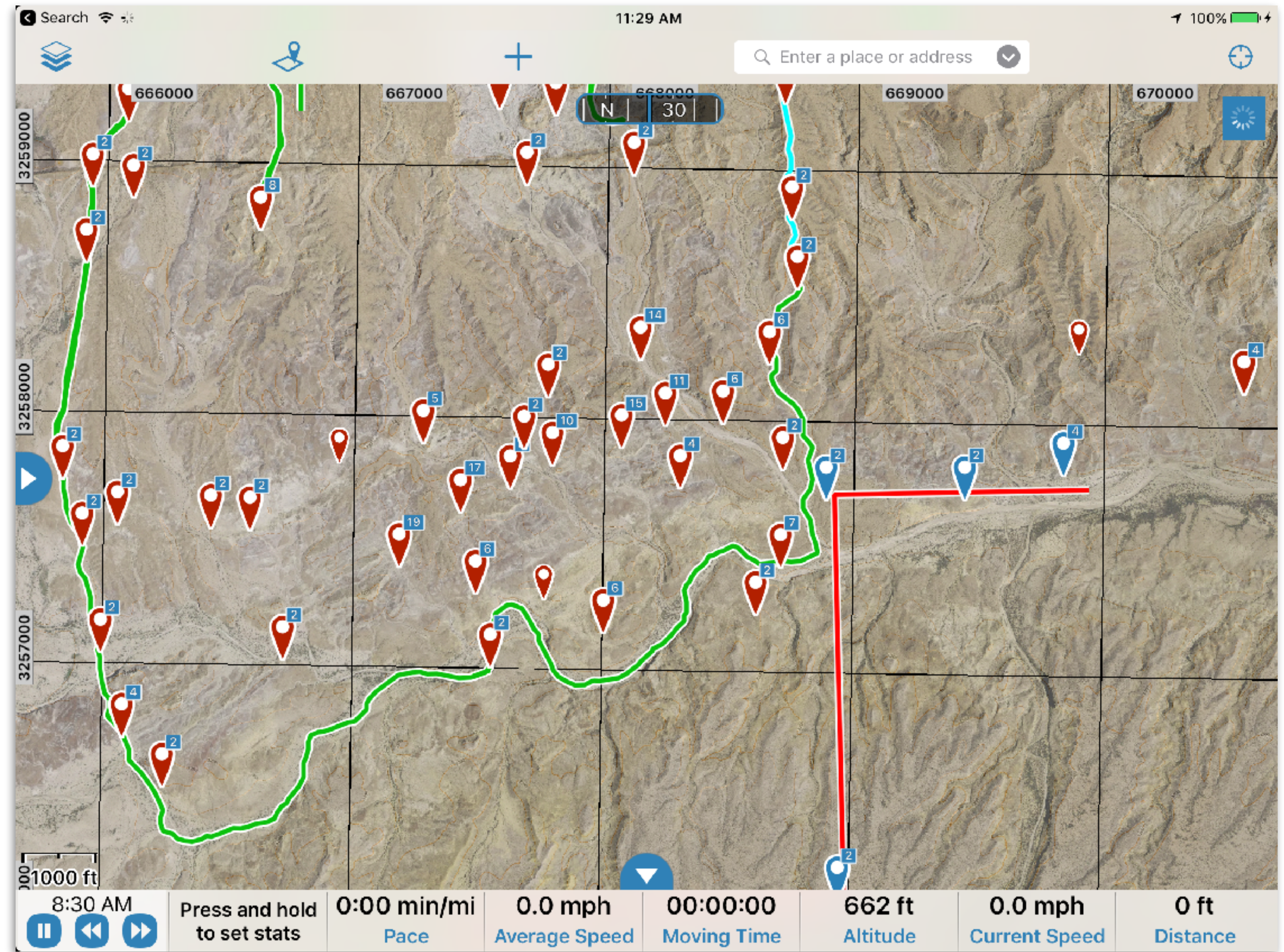
GAIA GPS

Gaia GPS

iOS, Apple watch, Android

gaiagps.com

Waypoints, tracks, topo
profiles along tracks, easy
to cache available online
maps, cache custom
maps through TMS, in-app
subscription to GaiaPro
(much larger library of
maps that can be locally
cached and polygons)



FieldMove Pro



Midland Valley

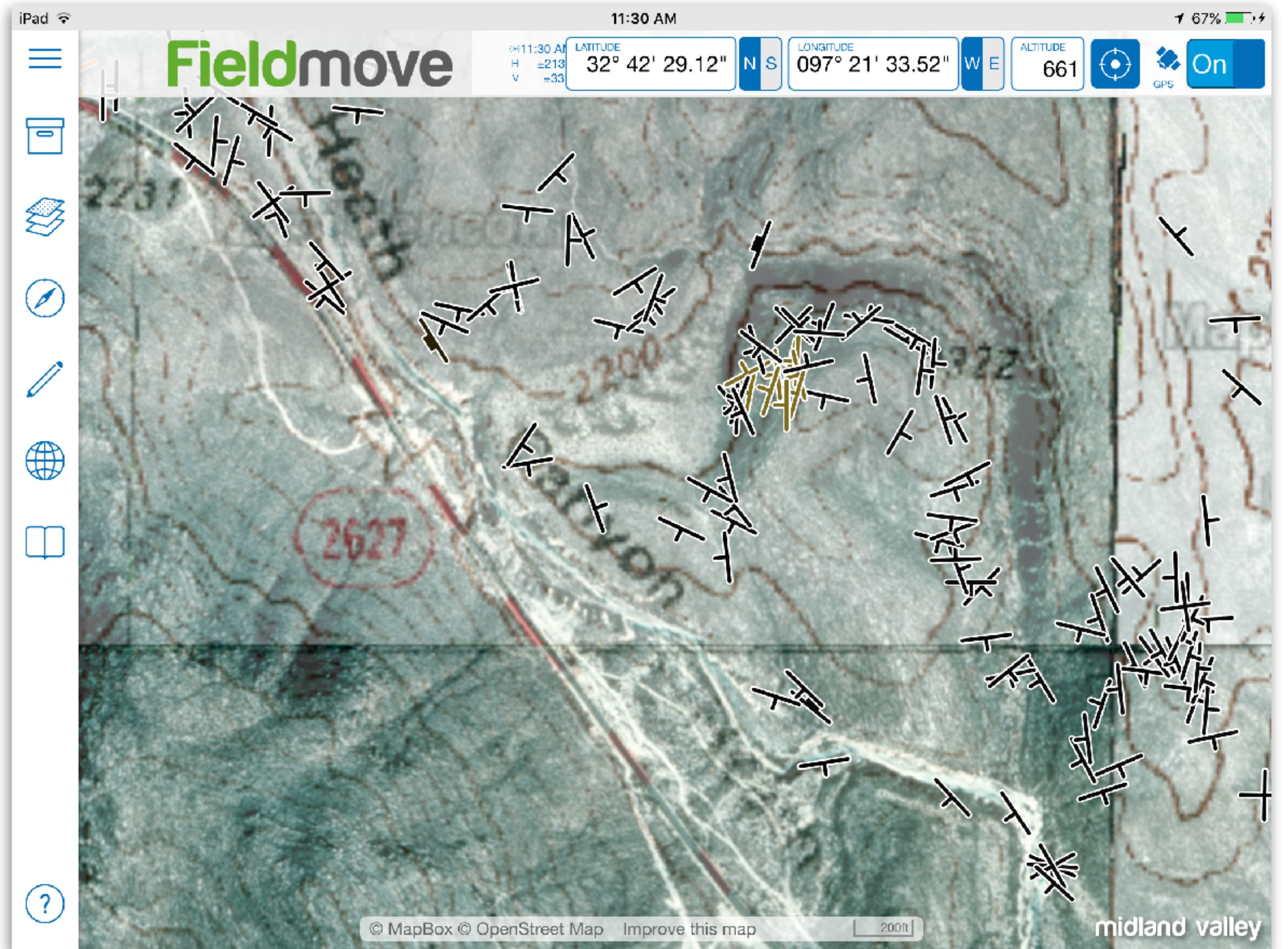
<https://www.mve.com/digital-mapping>

\$30 (add Pro version \$5)

Cache custom maps in MBtiles, GeoTIFF, osgEarth formats, stratigraphic data base, record georeferenced notes, photos, control points (custom symbols & stereonet), faults, contacts, etc.

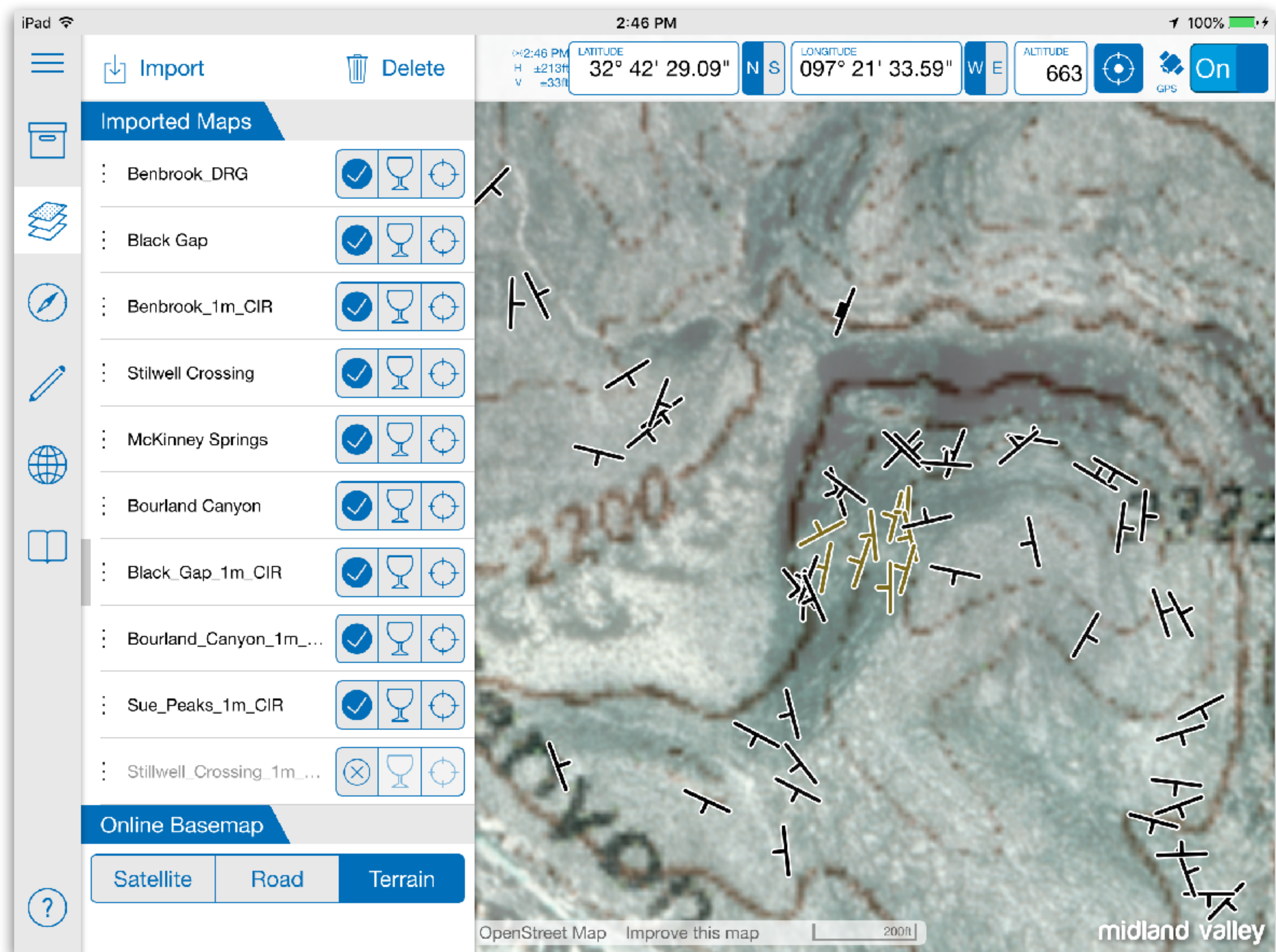


Layered satellite image
and USGS topo (using
opacity control), with
overlaid structural
control



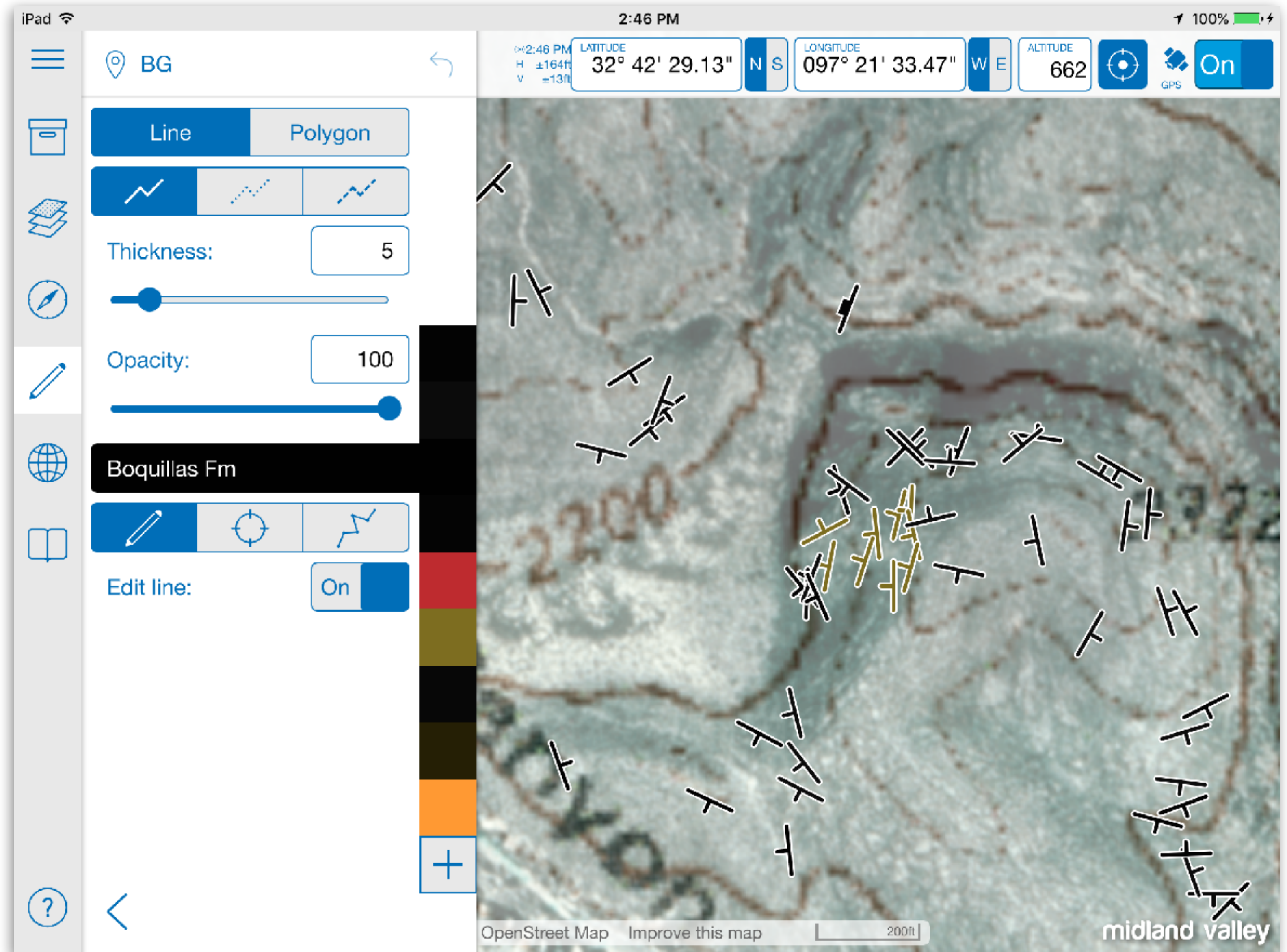
From thesis mapping project, John Williams, Blackgap Wildlife Management Area, Brewster Co., Texas

Listing of imported maps with controls to view, change opacity, or to pan to image.



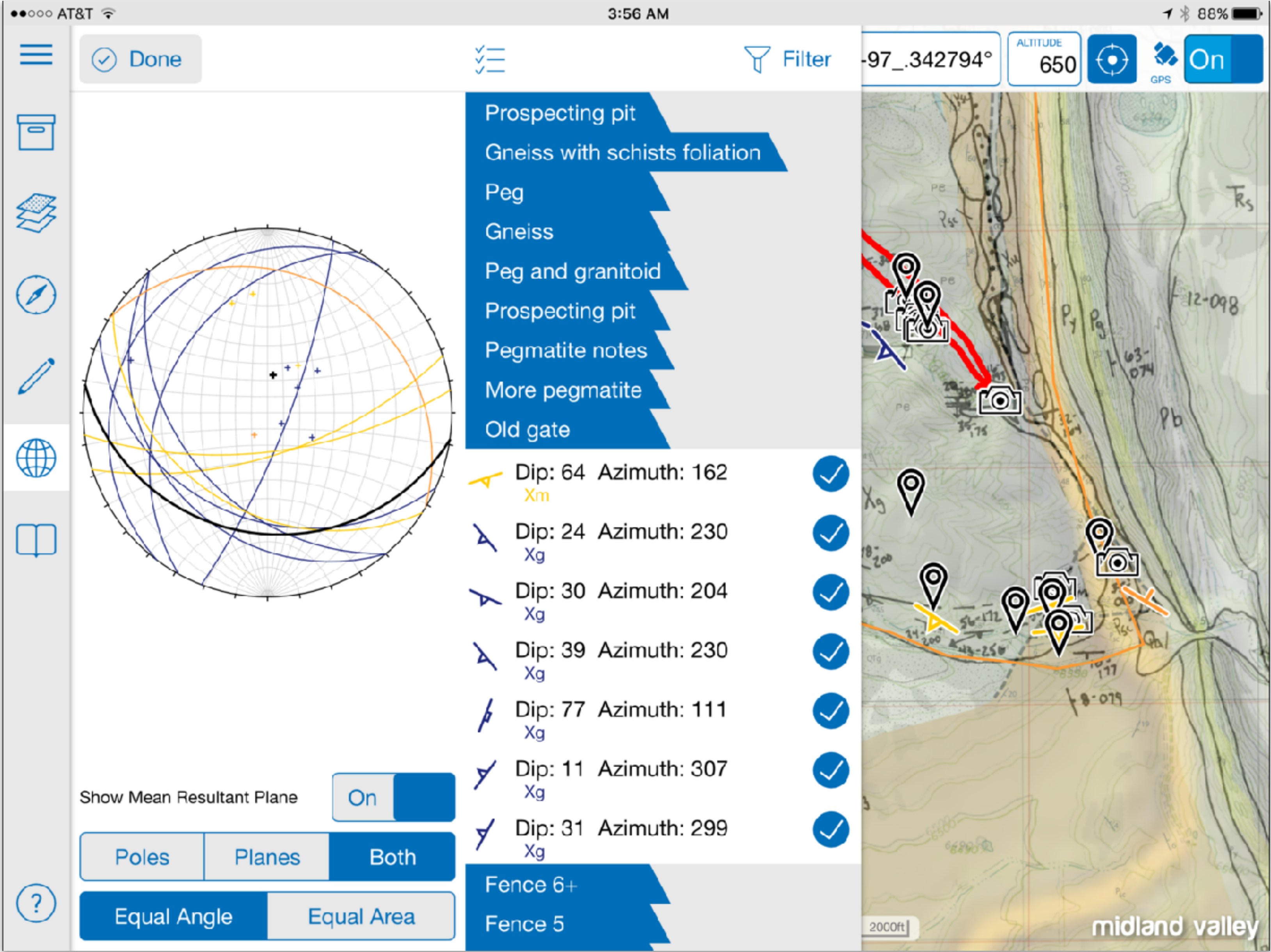
From thesis mapping project, John Williams, Blackgap Wildlife Management Area, Brewster Co., Texas

Drafting palette for map
with stratigraphic unit
selection along right
side of edit panel



From thesis mapping project, John Williams, Blackgap Wildlife Management Area, Brewster Co., Texas

Note and picture localities displayed on maps.



iPad FieldMove

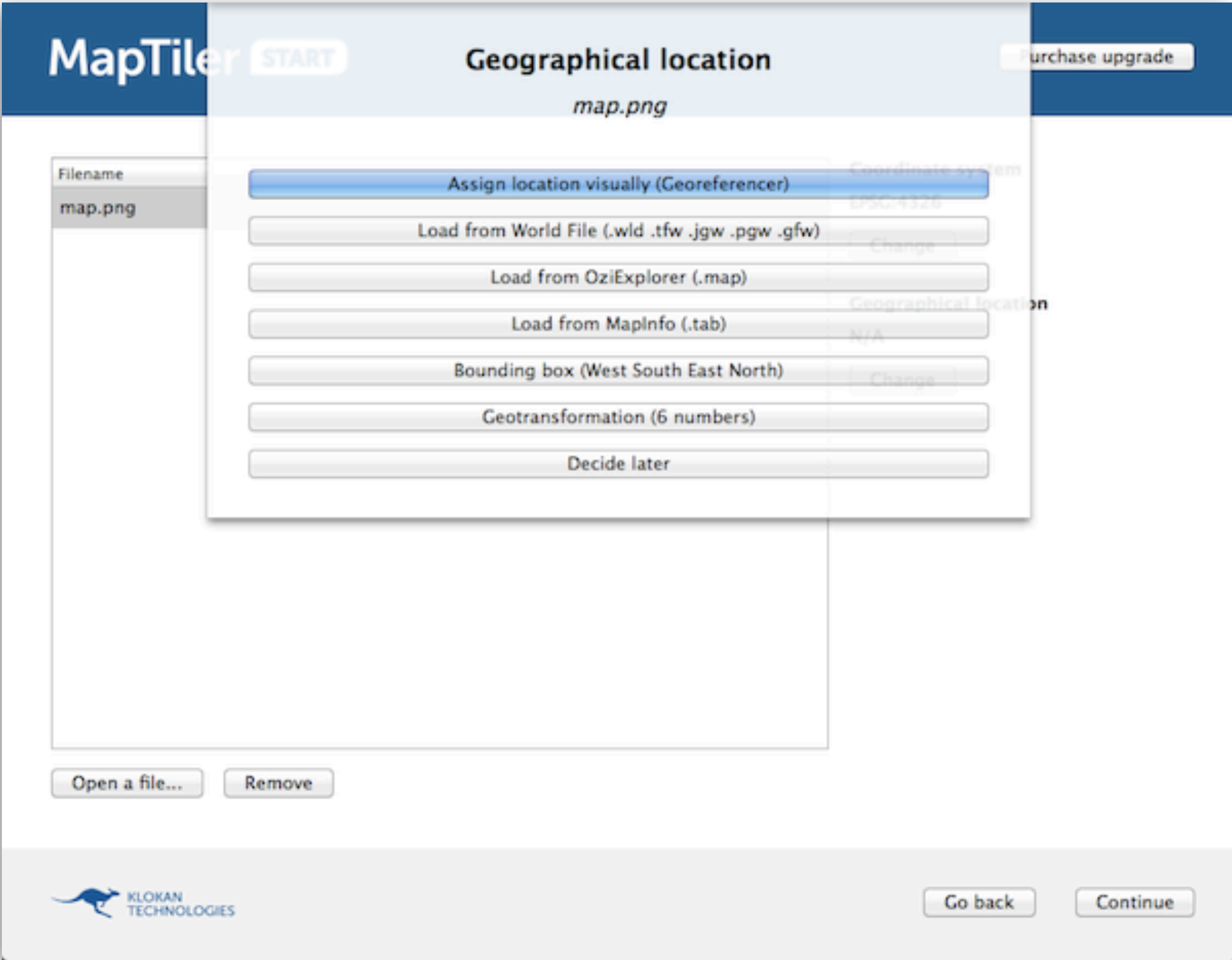
- Leverages platform sensors and ease of use for a tool for collecting data and drafting maps and notes in the field
- Add georeferenced images (with graphic annotations), and notes
- Strike/dip, bearing/plunge with appropriate map symbols plotted on maps and stereonet
- Set up stratigraphic units for drawing outcrop polygons in the field
- Import your own maps in MBTile format or GeoTIFF

Custom Maps

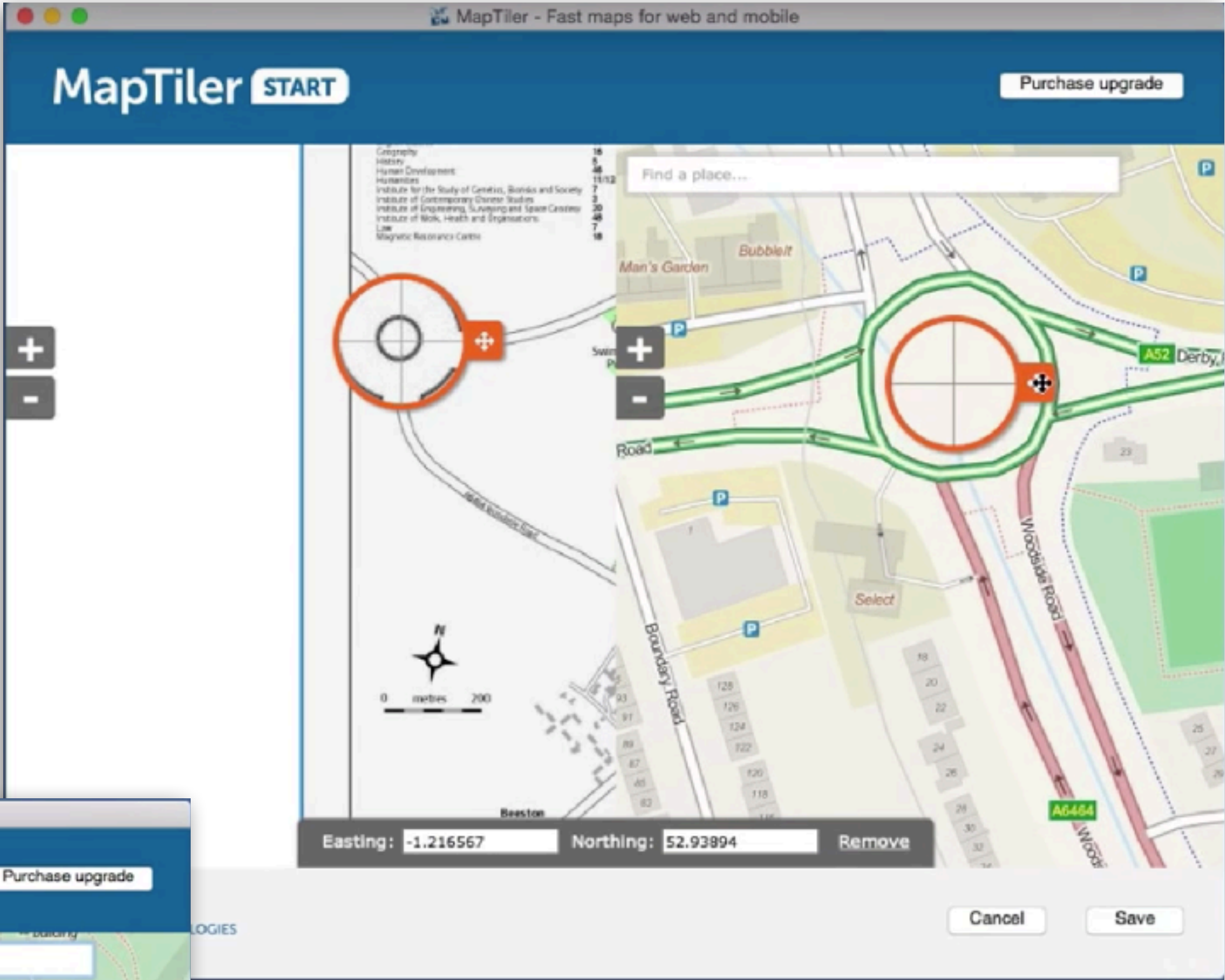
- *FieldMove* imports image MBTiles
- Projects can be exported as a .csv file (comma-separated values), a .mve file (for direct import into Midland Valley's *Move* software) and a *Google Earth* .kmz file.
- If GeoTIFFs not available easiest way to generate MBTile files of your custom maps is using the cross platform application - *MapTiler*

MapTiler

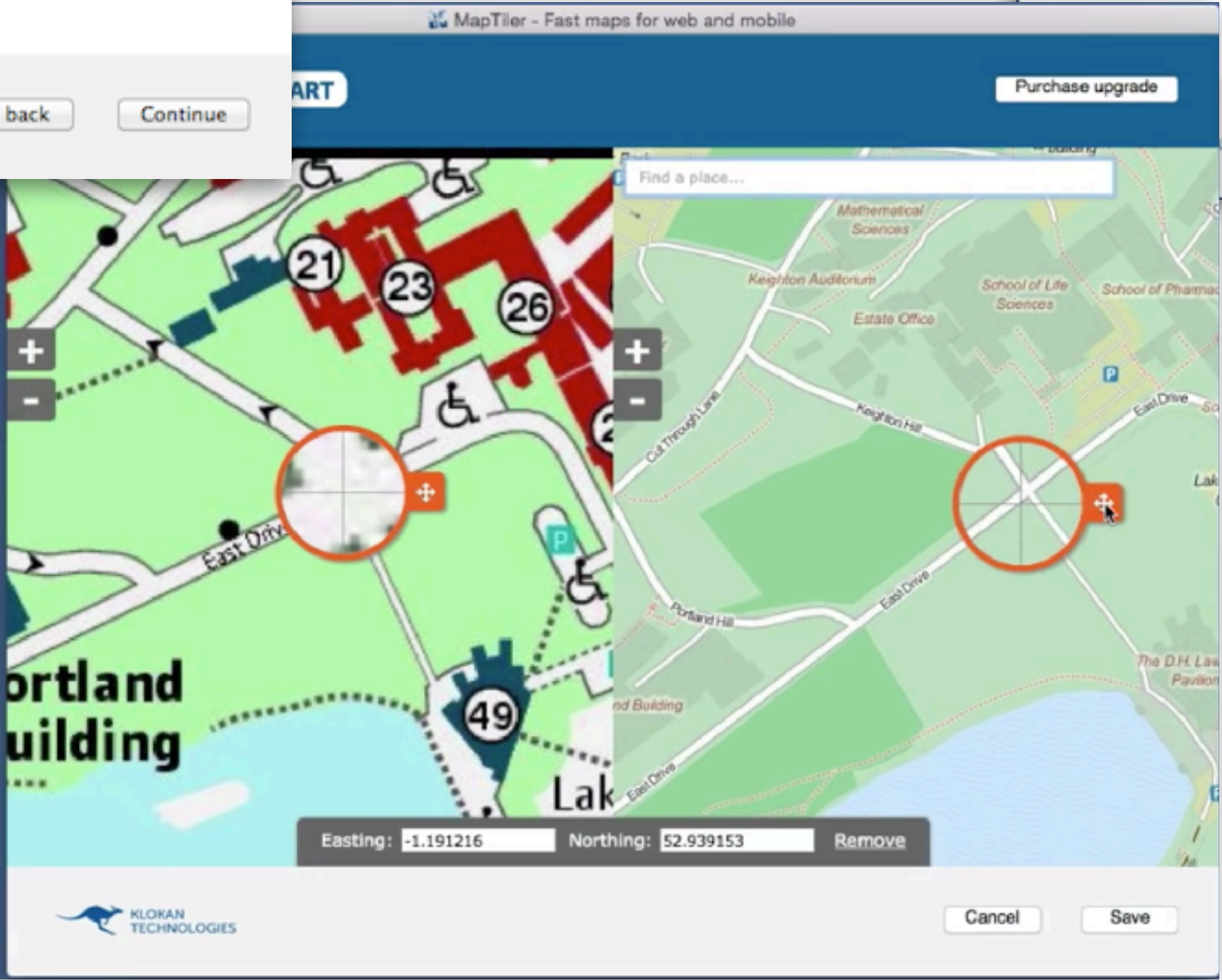
- Mac or Windows application for heavy duty lifting, mobile version to view MBtiles
- Georectify maps/images with very easy to use geolocation tool or import rectified images (such as GeoTIFFs)
- Export as MBtiles, KML, etc.
- Free version uses 1 core, staggered costs for versions using more cores and more features
- Klokant Technologies (klokantech.com)



from Klokan Technologies



from Klokan Technologies



from Klokan Technologies

Ipad in the field

- Excellent tools are available for field mapping
- At the simplest you can record locations as waypoints on maps
- At the most complex complete collection of fieldwork is available
- No matter what solution - archive the data as soon as possible after it is taken