Integrating the Geospatial Workplace

New Features in TerraPhoto

Terrasolid Workshop

ILMF 2013

Denver, CO

14 February 2013

Darrick Wagg
GeoCue Corporation
9668 Madison Blvd., Suite 202
Madison, AL 35758
+1 (256) 461-8289
support@geocue.com
www.geocue.com

Terrasolid

Integrating the Geospatial Workplace

Tie Status for Images

- **View / Fields** menu command for selecting visible fields in **Tie points** window
- Each image has a tie status – **Check** or **Approved**
- You can use **Define Color Corrections** to mark some images as approved (=you do not intend to collect a good number of tie points)
  - Link keyin command **tie set status a** to a function key
- Tie point report tells how many **Check** images do not have enough tie points
- **Search points** has **Skip approved images** so you can search tie points only in **Check images**

Terrasolid

Integrating the Geospatial Workplace

Tie Point Improvements

- **View / Fields** menu command for selecting visible fields in **Tie points** window
- Four different sizes for **Tie points** window
- 'Average mismatch' field in images list in tie points window.
- 'Focus point list automatically' setting in 'Tie points / Automation' category. If on, TerraPhoto will keep keyboard focus in tie point list which makes it possible to use arrow keys to move between pixels.
- Delete keyboard key deletes selected tie point pixel
- **Display position hint** setting shows location or pixel ray of first pixel entered

Terrasolid

Integrating the Geospatial Workplace

Various Improvements

- **Delete / By camera** command for image list
- **View / Sort images** can sort by image quality
- **Images / Delete / Outside ground** menu command for removing images which do not see any ground points

Terrasolid

Integrating the Geospatial Workplace

Various Improvements

- Support for using depth maps when extracting color for laser points from airborne images
- Builtin support for Swedish SWEREF 99 projection systems
- Color points use less memory than before
- **Filter bad** command for removing bad color points
- Compatibility with PowerCivil country versions 08.11.07.428 and 08.11.07.494

Terrasolid

14Feb2013 Terrasolid Workshop – ILMF 2013 – Denver, CO 5

Integrating the Geospatial Workplace

Export Orientation

- **Utility / Export orientation** menu command for writing exterior orientation into user defined file format using either HRP or OPK based rotation angles

14Feb2013 Terrasolid Workshop – ILMF 2013 – Denver, CO 6

Integrating the Geospatial Workplace

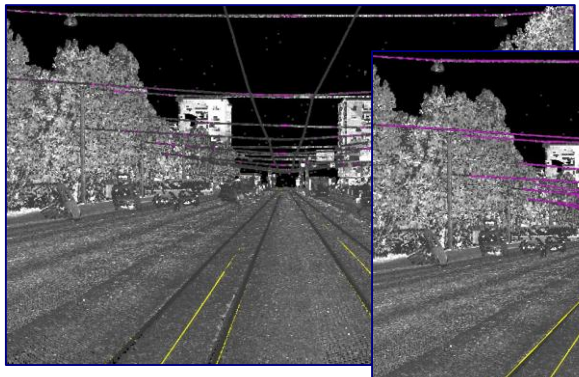
Edge Buffer in Rectificaton

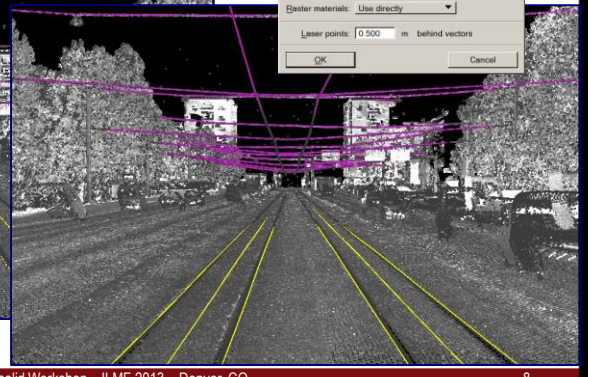
- Avoid edges of building roofs to be rectified on ground

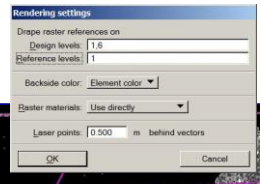
Integrating the Geospatial Workplace

Vectors & Points in Rendering

- Laser points computed as more distant from viewer to force vectors to be visible







XYZ Accuracy Estimates

- TerraPhoto now uses trajectory accuracy estimates
- For Applanix POS:
  - Use **File / Import files** first to read sbet_xxxx.out file
  - Use **File / Import accuracy files** to read smrmsg_xxx.out
- **Compute list** stores accuracy estimate for each image
- This will be stored in the image list file (.IML)
- Tie point calculation uses accuracy estimates to derive weight factors when solving location of common tie points

Depth Point Tie Points

- For matching mobile drive passes to each other using observations from images
- Uses depth value from image depth map to translate manually entered image pixel into a full xyz observation
- Workflow:
  - Run **Compute depth maps** with **Close in time only** setting on to compute depth maps using laser data from the same drive pass only
  - Collect **Depth point** tie points
  - Use TerraMatch to solve and apply fluctuating xyz correction

Integrating the Geospatial Workplace

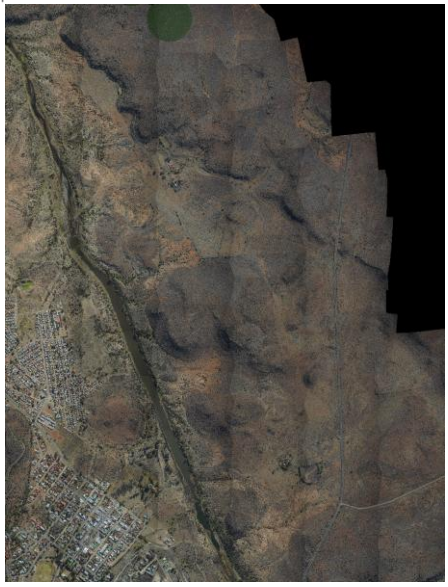
GeoCue

Tool/Derive Image Corrections

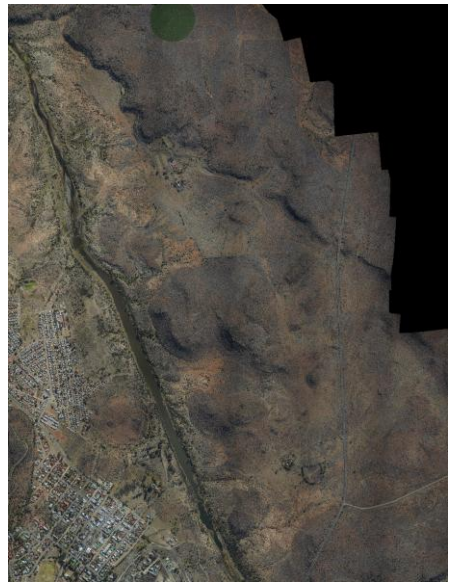
- Color points are observations of local brightness and coloring differences between images
- TerraPhoto has used color points to fix images locally to match other for ortho production
- Systematic effects such as sun hot spot have not been corrected – this may leave a striped pattern in the orthophoto when you zoom out
- **Utility / Assign groups** assigns images to groups based on sun direction
- Requirements:
  - Image time stamps are standard time → date
  - Mission definition has projection system → geographical location
- **Tool / Derive image corrections** solves a brightness distribution correction for each group

Integrating the Geospatial Workplace

GeoCue



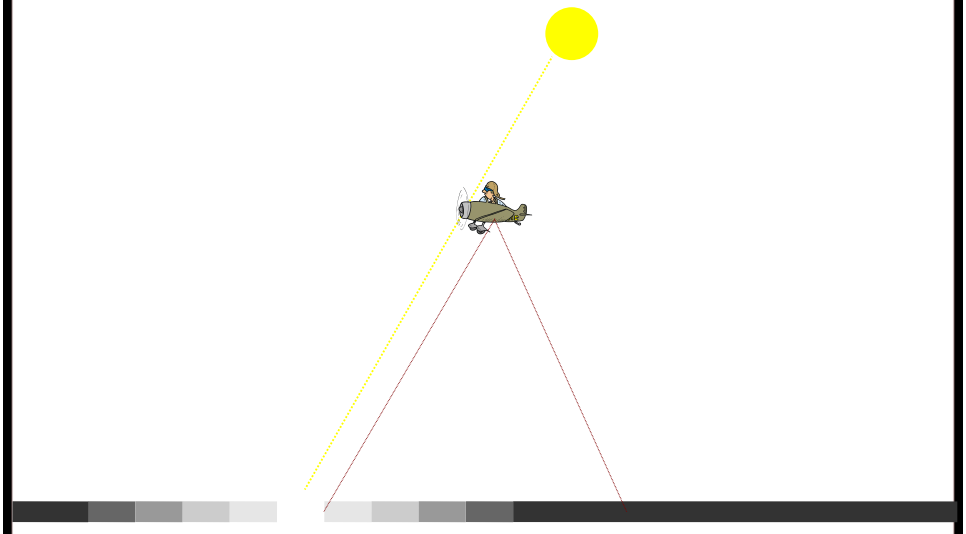
Raw ortho – no corrections



Local corrections from color points

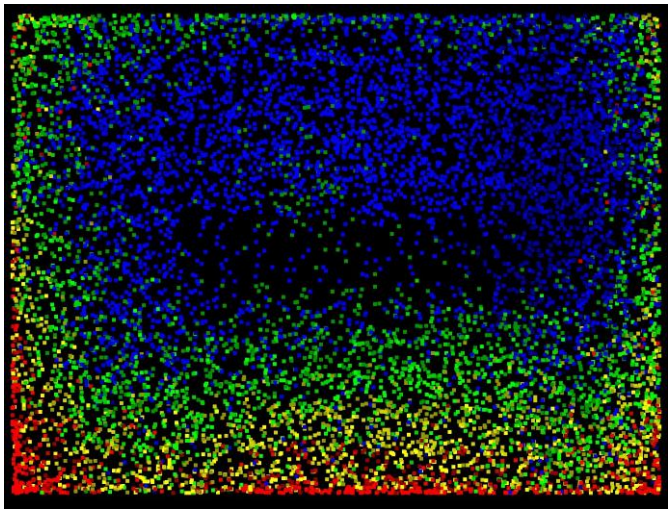
Integrating the Geospatial Workplace

Sun Hot Spot



Integrating the Geospatial Workplace

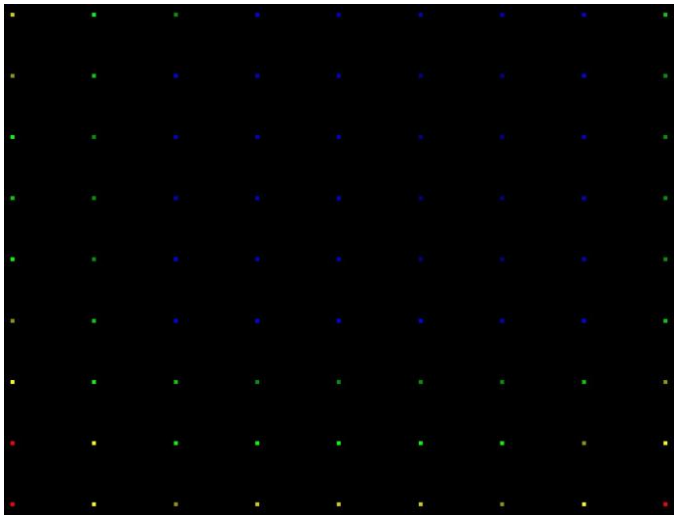
Sun Hot Spot Shape?



Brightness correction observations against image frame

Integrating the Geospatial Workplace

Grid Correction Model



Brightness correction grid derived from color point observations

Integrating the Geospatial Workplace

Systematic image correction applied

Systematic and local corrections applied