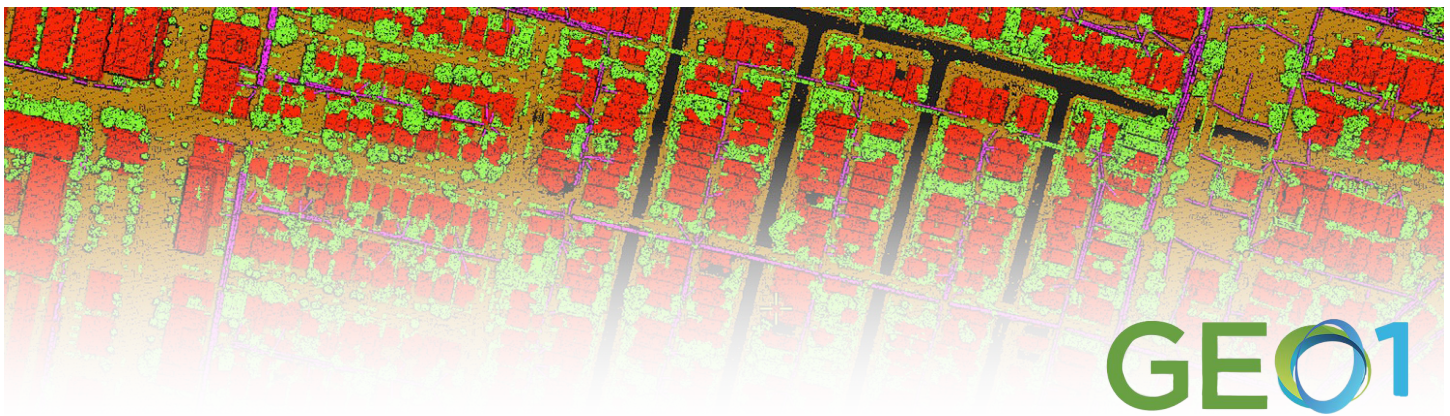


Geo1 flying high during the COVID-19 pandemic to capture pedestrian free datasets



INTRODUCTION

During the COVID-19 pandemic, GEO1 was flying high above Venice Beach, CA in a Bell 206 helicopter capturing high resolution data of the beach using the Phase One iXM-RS150F camera along with a Riegl VQ480II LiDAR sensor. The goal was to produce colorized LiDAR point cloud data of the beach and the strand, which is typically populated with tourists and locals. The team was able to efficiently acquire data despite logistical challenges of the project area, which is adjacent to Los Angeles International Airport. Fortunately, due the pandemic, air traffic at LAX was minimal allowing for an efficient airborne data collection.

INDUSTRY

Surveying

COUNTRY

United States

USE CASE

Using medium format digital metric cameras and LiDAR to generate a colorized point cloud datasets for various uses.

CHALLENGES

- Operations in restricted air space
- Time sensitive acquisition windows
- Operation during the pandemic
- Merging multiple sensor data

BENEFITS

- Homogeneous deliverables
- Color-balanced mosaics
- Colorized LiDAR point cloud data
- Rapid generation of results



"This was a typical project for us, except for the client's requirement for point cloud colorization. Correlator3D is an excellent software to process our RGB imagery, allowing us to import our lidar dataset and perform the colorization in the same application."

- Ron Chapple, CEO of GEO1.

WORKFLOW

With a short acquisition window due to the stakeholders desire for a dataset as pedestrian free as possible, GEO1 had to coordinate and capture data rapidly. Once acquired, an initial QC was performed for coverage. The LiDAR data acquired was processed and spatially corrected using photo identifiable control from Compass-Data's worldwide data library. The output las/laz file was then imported into Correlator3D as an intensity image and DSM. Aerial Triangulation was then performed on the RGB imagery from the PhaseOne camera. To assist in the accuracy, additional photo identifiable control is transferred from the LiDAR intensity image and DSM. The process involves selecting a photo identifiable point in the intensity image and then tagging that same point in the RGB imagery. Correlator3D will then cycle the user through the remaining images with that point. This is repeated for each additional photo identifiable point. Once all points are measured the final bundle adjustment can be run to constrain the imagery, followed by orthorectification and creation of an overall color balanced mosaic. A final mosaic was then produced, it was used to colorize the original LiDAR las/laz file.



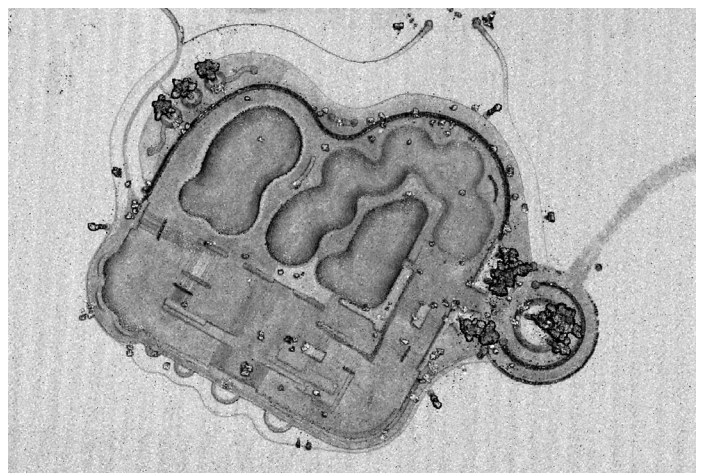
Sensor package

DELIVERABLES

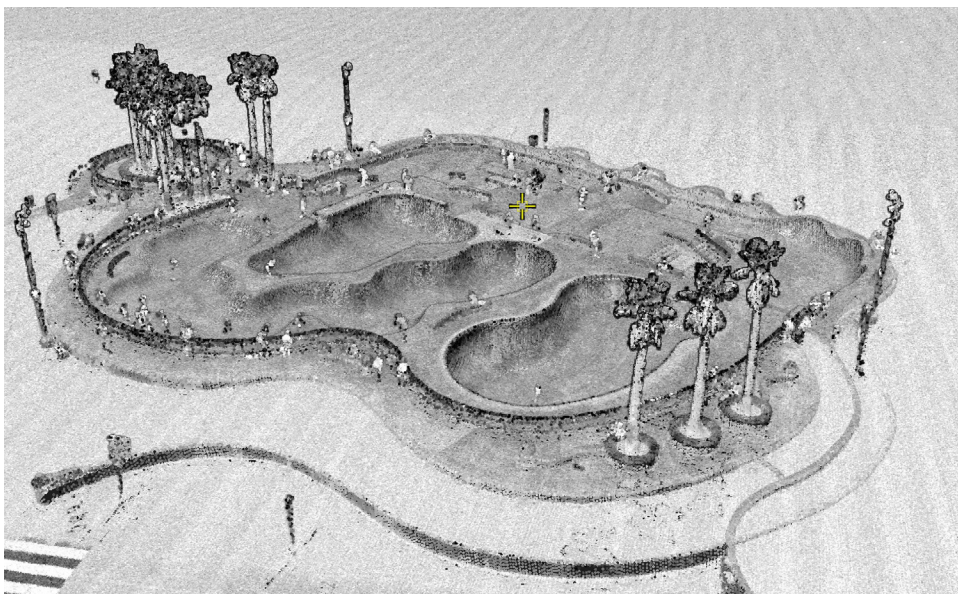
Typical outputs consist of tiled color (RGB) mosaics, and colorized LiDAR data.

BENEFITS

The benefits of using Correlator3D according to Geo1 are the ability to process medium format RGB imagery rapidly, import processed LiDAR data and merge the two into a colorized point cloud all within the same software. The script based automated workflows allow to run multiple projects continuously in Correlator3D as the team continue with other work. After processing is complete, QC and any additional editing can be performed quickly before export and delivery.



Skatepark and skatepark profile



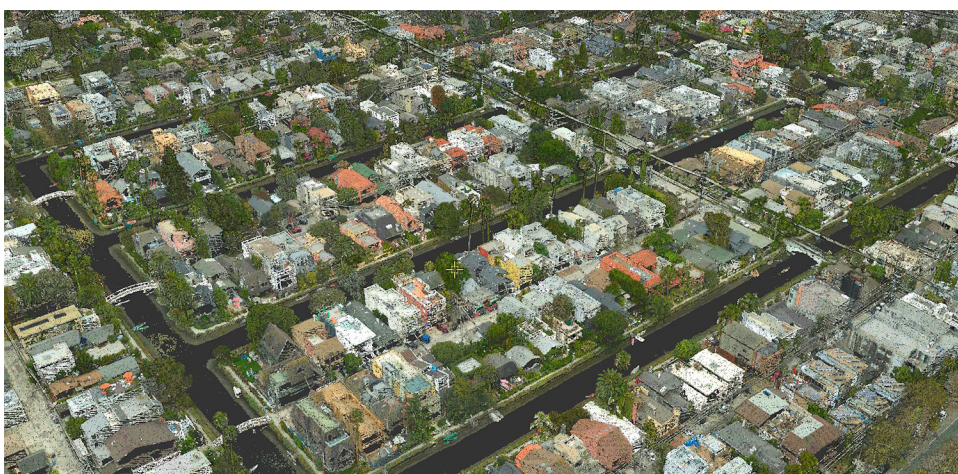
Skatepark oblique



Classified LiDAR



Project area



Colorized point cloud

ABOUT GEO1

Established in 2014, the award-winning GEO1 team enables creative vision through use of the newest lidar and imaging sensors. With skilled operators and analysts, the team acquires lidar and RGB imagery and produces digital models, colorized point clouds, annotated datasets, and provides a diverse range of geospatial analysis. GEO1 and their parent company, Aerial Filmworks, have completed projects in over 30 countries including lidar scans in Nepal, Colombia, and Hong Kong. Clients include National Geographic, BBC, Discovery Channel, PBS and USA Today. In partnership with USA Today, GEO1 was awarded a Pulitzer Prize for Exploratory Journalism after an in-depth survey of the US/Mexico border in 2018. For more information, visit www.geo1.com.

