Point cloud comparisons with CloudCompare

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Data collected with Erin DiMaggio (PSU) and David Feary (ASU)

Tutorial notes
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Detailed geology of Lee Adoyta, Ledi Geraru Research Project Afar Ethiopia:
Rapid acquisition of imagery of deformed fossiliferous and tuff-bearing sedimentary rocks in the Afar region of Ethiopia provide 3D control for paleontological provenance and environmental reconstruction studies.
Multiple acquisitions: how do the results compare?

_DJI Mavic Air (Arrowsmith)_

_DJI Inspire 2 + ZenMuse camera (Feary)_

*On board GPS positioning for cameras*

+_dGPS georeferencing_
CloudCompare

3D point cloud and mesh processing software
Open Source Project

Welcome to the official website of the CloudCompare project.

Want to know when a new release comes out? Subscribe to the newsletter by entering your email address and clicking JOIN.

You can now follow us on Twitter.

CloudCompare 2020 Developers training & Workshop: March 11-13 2020
Visit the event page

CloudCompare (view, edit and process)
ccViewer (light viewer only)

Download the short course presentations of the 2nd Virtual Geoscience Conference 2016 (in English) here
Télécharger le support de formation du congrès de la SFPT 2018 (in French) ici

CloudCompare and ccViewer currently run on Windows, MacOS and Linux.
You are free to use them for any purpose, including commercially or for education. This freedom is being defined by the GNU General Public License (GPL).
Step 1: Open the two point clouds in CloudCompare

It is built for opening lidar-derived point clouds which may have many attributes with each point.

Inspire data have been thinned to >0.1m spacing
Mavic data are original resolution

More accurate computations with a temporary local origin
Step 2: explore the data and interface

Make sure to make the right data set active
Step 3: Cut out the hill from both datasets (do each separately)

1) Make sure to make the right data set active

2) Click the scissors tool

3) Left click: add contour points / Right click: close

4) Click the red hexagon and then the green check
Step 4: Measure the distance between two common locations

1) Shift click the two cut pieces

2) Select the point picking tool

3) Click on the two matching points

Distance: 2.066235
X1: 0.945000, Y1: -2.21737
X2: -0.790000, Y2: 1.50000
X3: -1.659000, Y3: 1.837494
Step 5: Merge the data back together (do each separately)

1) Shift click the two pieces

2) Select the merge tool
Step 6: Thin the Mavic data

1) Select the Mavic data

2) Select the subsample tool

Cloud sub sampling

- Sampling parameters
  - Method: Space
  - Large: small
  - Min. Space between points: 0.1000

- Use active SF
  - SF Value: 0
  - Spacing Value: 0.100000

OK | Cancel
Step 7: Cloud to cloud distance between the two datasets

1) Select the two datasets

2) Select the cloud to cloud distance tool
Step 7: Cloud to cloud distance between the two datasets

[Image of a 3D terrain view with a histogram showing C2C absolute distances]

- Mean distance = 2.71134
- Standard deviation = 1.155215

Result has been split along each dimension (check the 3 other scalar fields with '_X', '_Y' and '_Z' suffix).