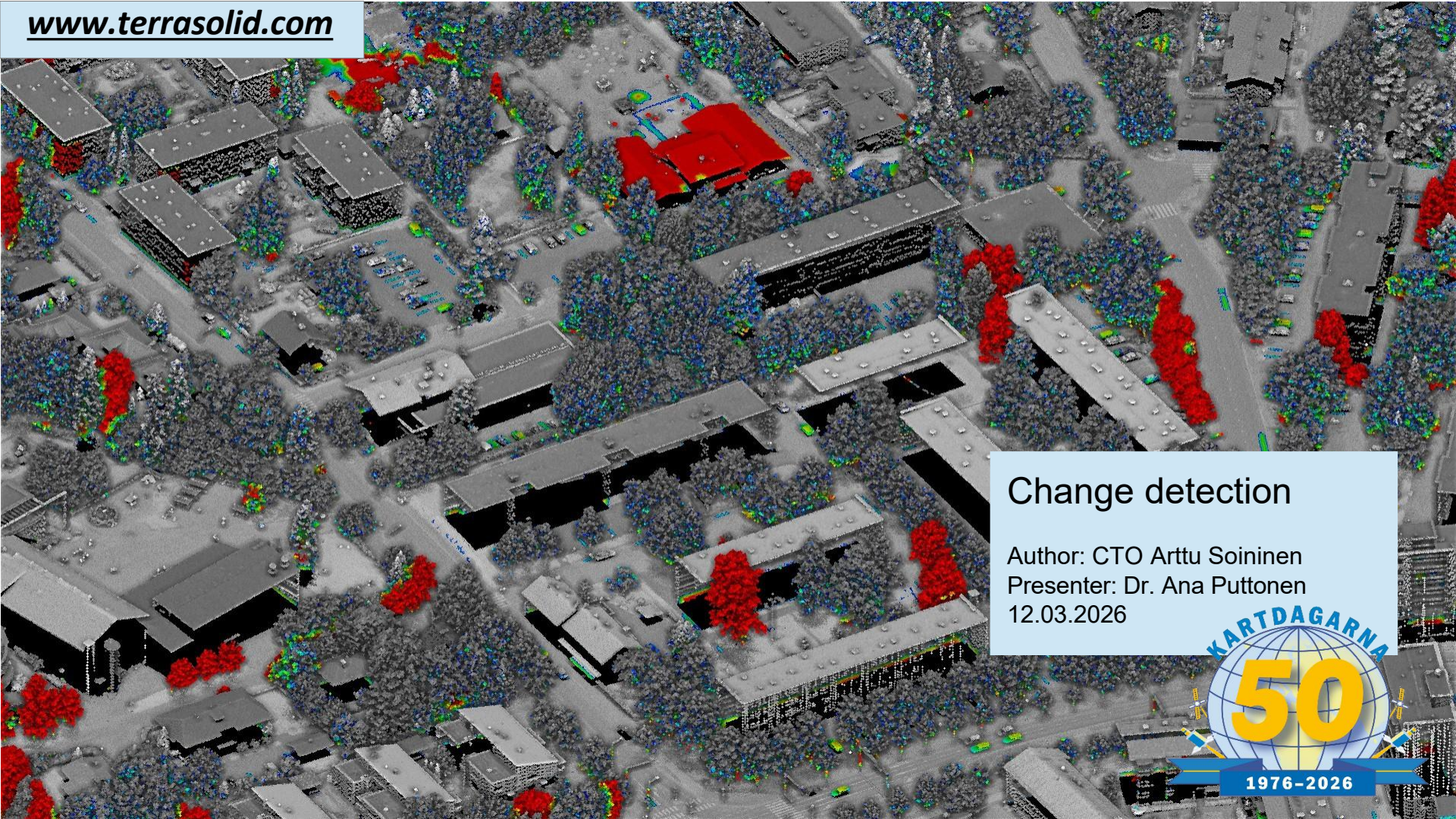
www.terrasolid.com



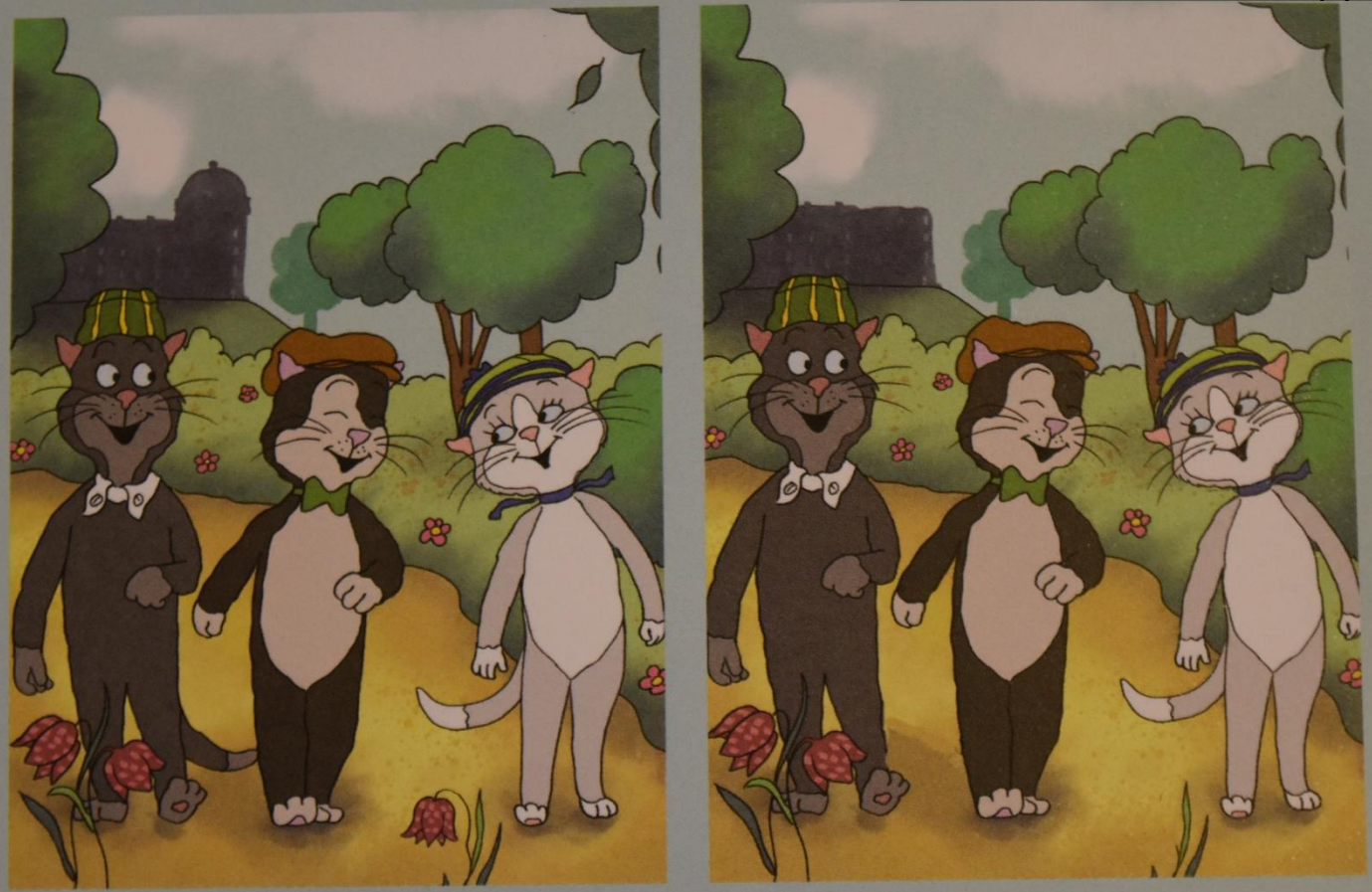
Change detection

Author: CTO Arttu Soininen
Presenter: Dr. Ana Puttonen
12.03.2026

KARTDAGARNA 50 1976–2026

FIND FIVE ERRORS

Pelle Svanslös from Uppsala

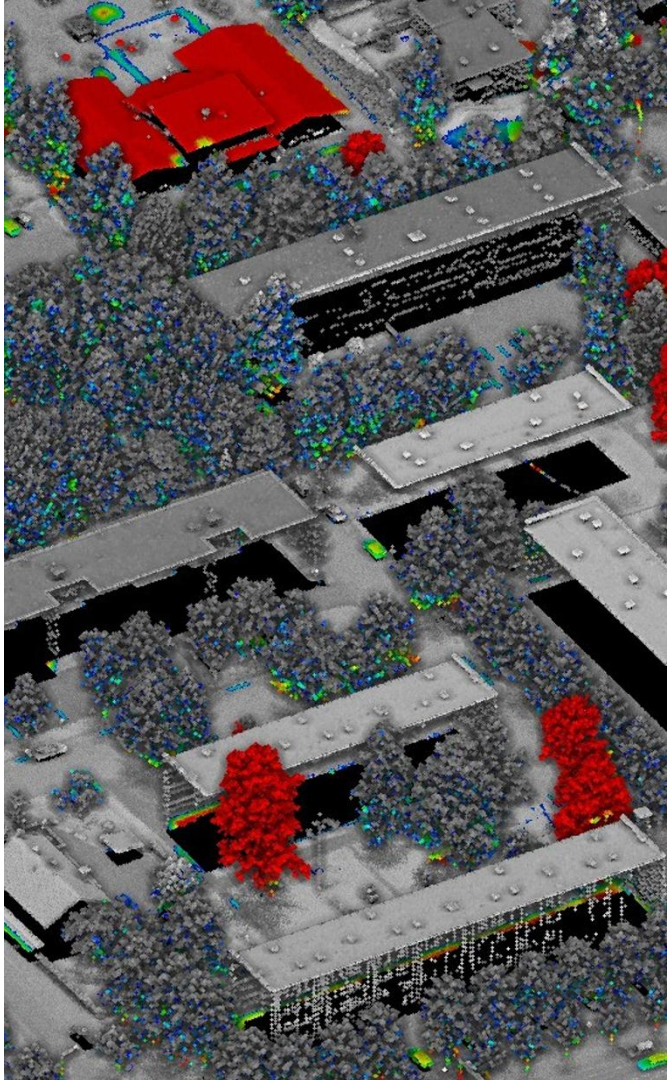


ALS data set (matched)

- Input data: 2 point clouds from different times/epochs
- National ALS data set from Finland
- Data sample 1 – Kerava city from 2021 and 2024
- Data sample 2 – Helsinki city from 2017 and 2021
- Urban/city area
- The algorithm calculates for each point the distance to the nearest point in the other point cloud.
- The points are displayed colored according to this distance.

The following changes can be seen:

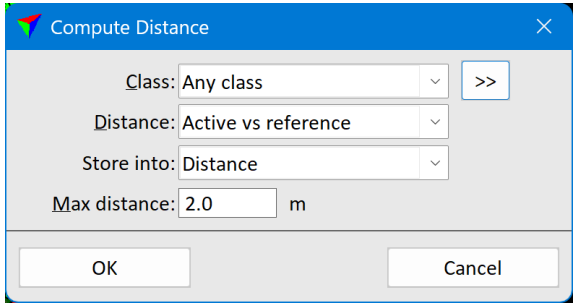
- Fallen/felled trees
- Newly planted trees
- Tree growth
- Demolished buildings
- New buildings and parts of buildings

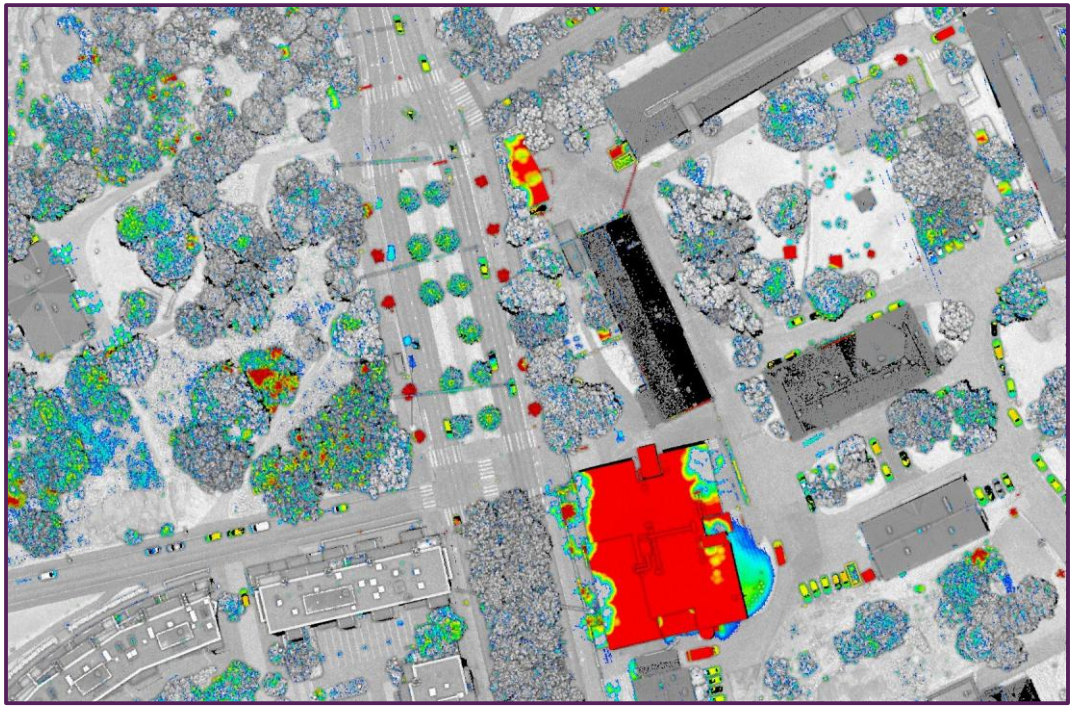


Compute Distance & Active vs Reference

- Calculates the distance between a point in the active point cloud and the nearest point in the reference cloud and vice versa

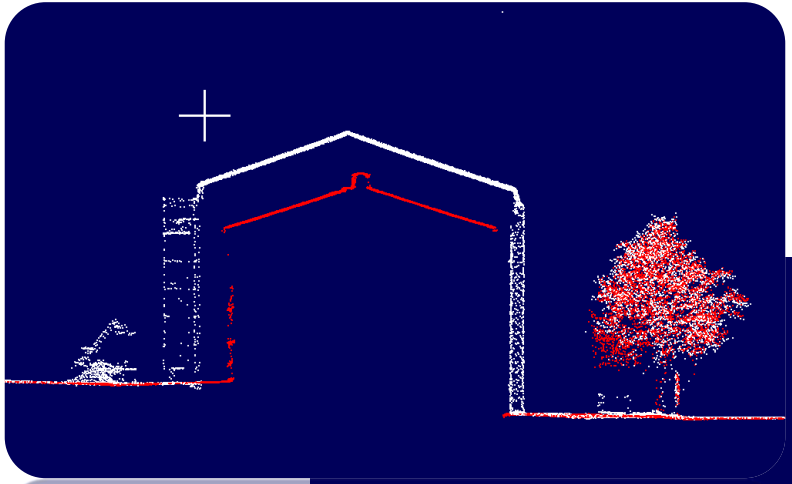
No need to do classification

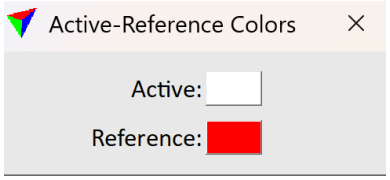


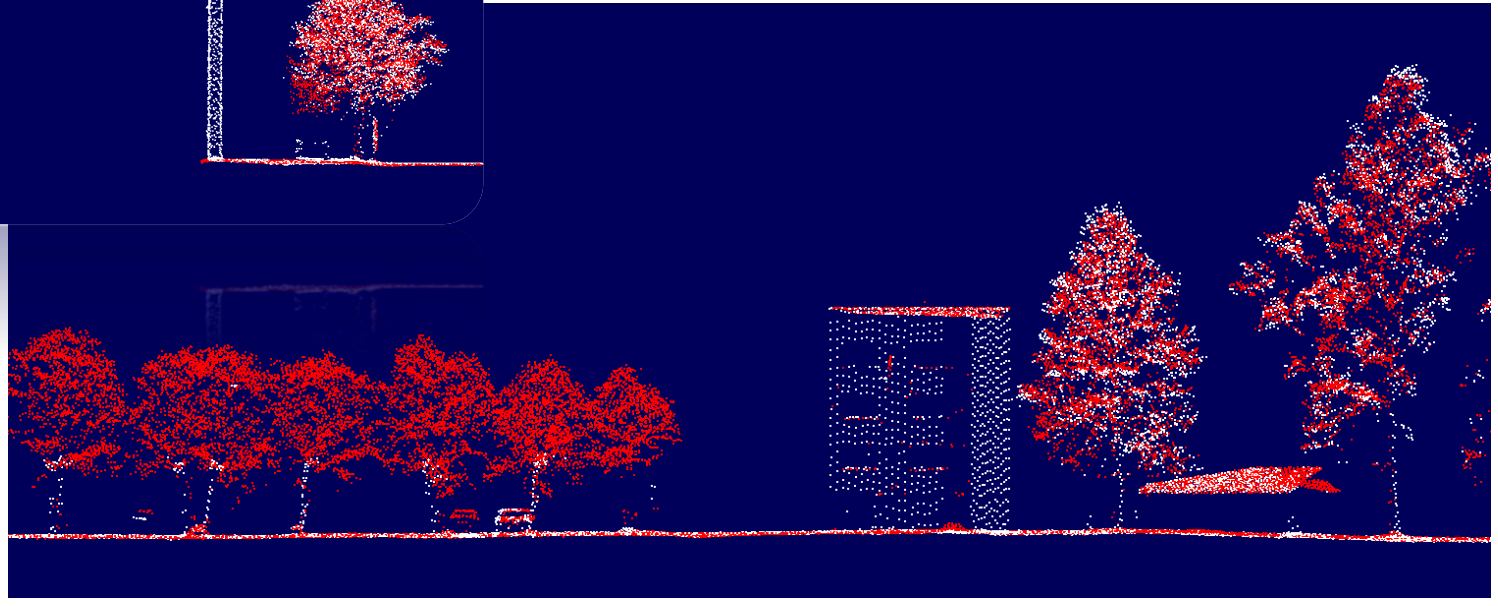


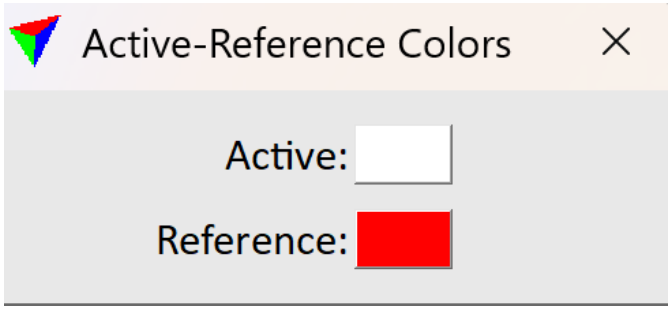
Point selection ‘Active-Reference”

One color for active cloud points, another color for reference points









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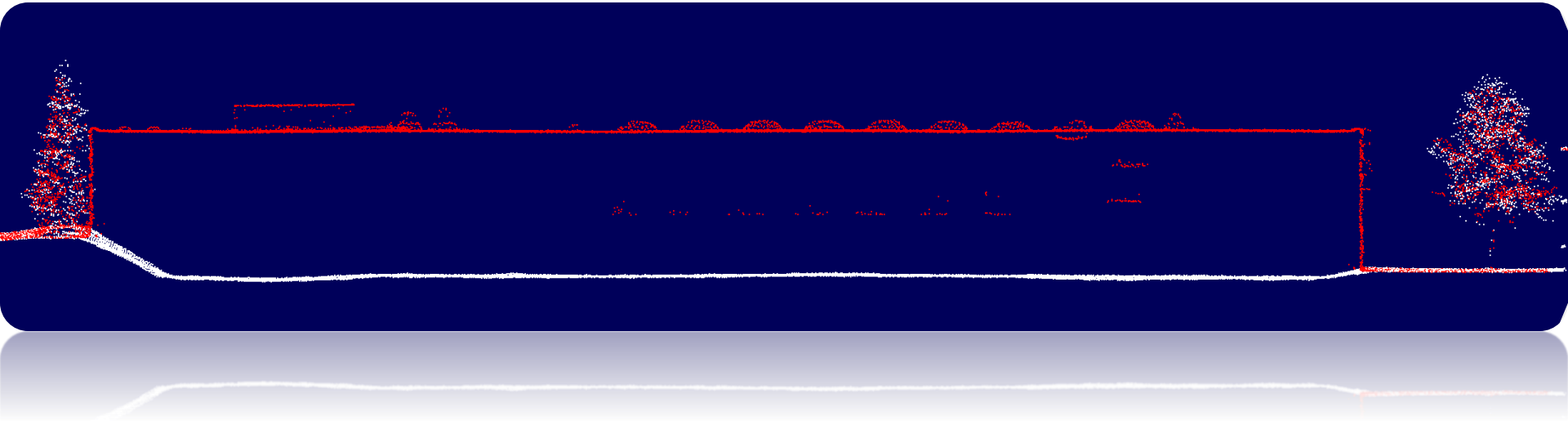
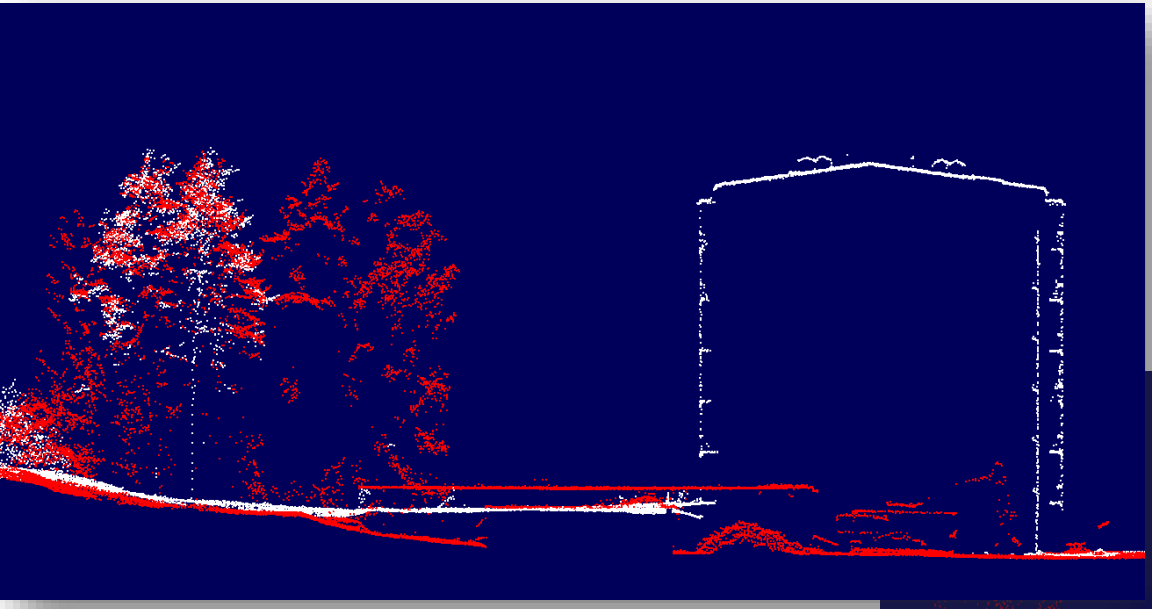
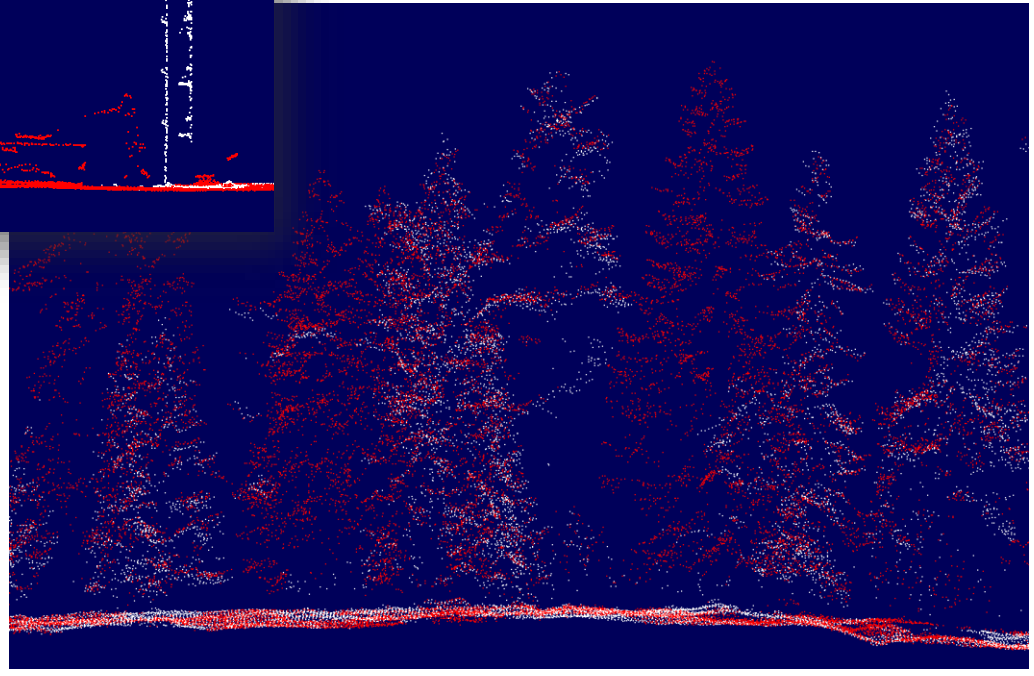
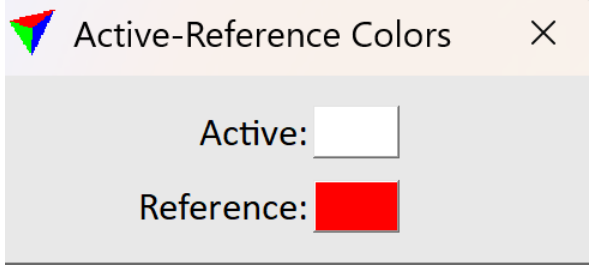
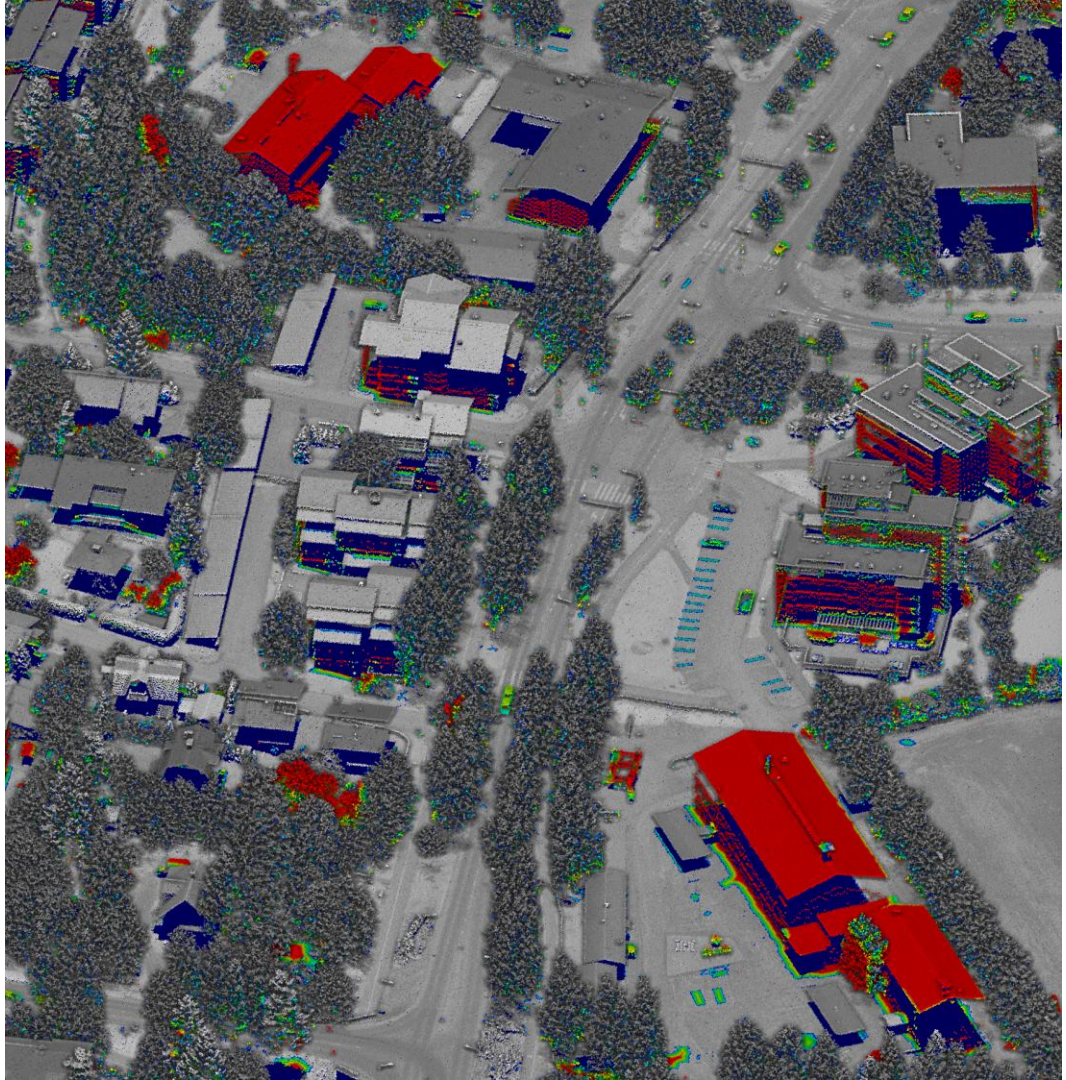
POINT CLOUD INTELLIGENCE








Active-Reference Colors
Active:
Reference:



Terra solid
POINT CLOUD INTELLIGENCE

Distance Coloring Scheme

File

+2.000
+1.500
+1.000
+0.750
+0.500

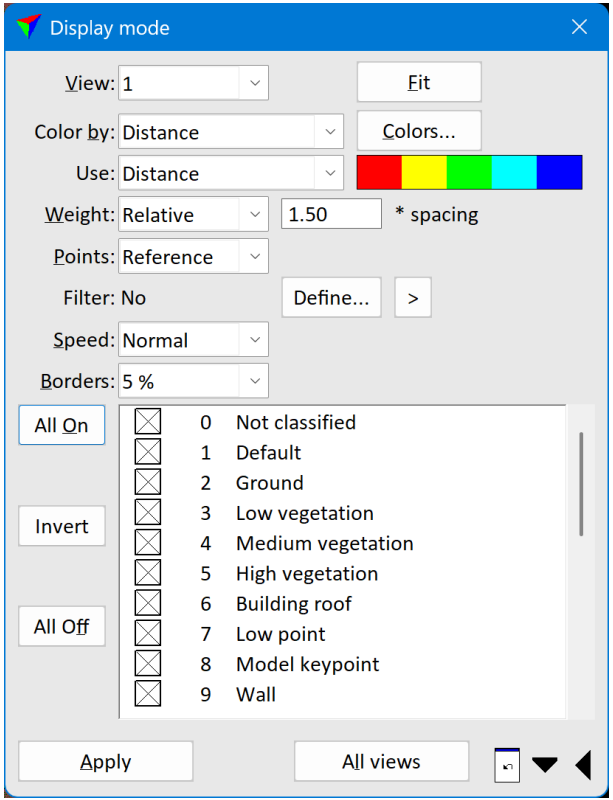
Add...
Edit..
Delete

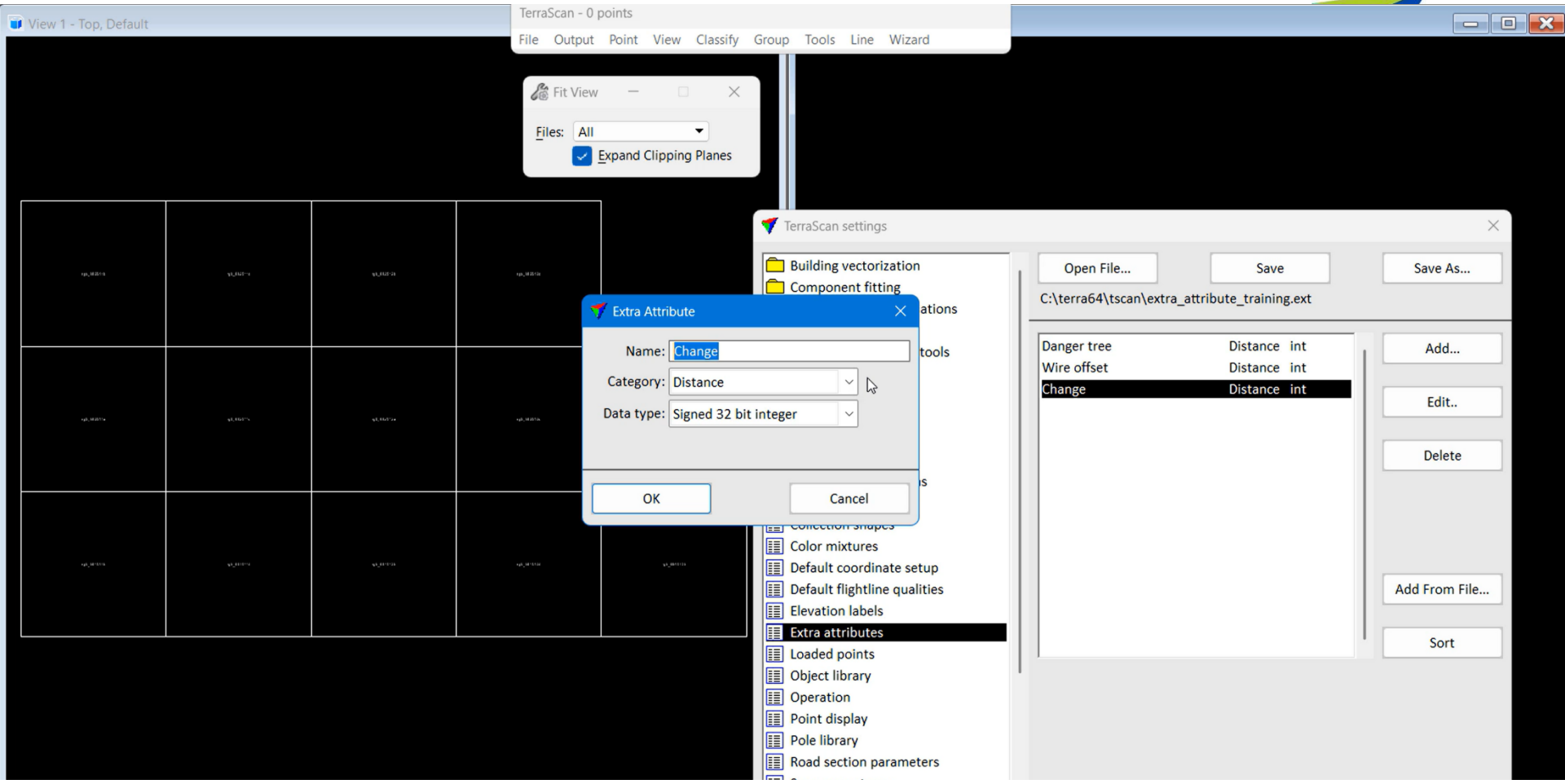
No distance: Color by intens

Color by intensity
Minimum: -9999.000 m
Maximum: 0.500 m
Brightness: 100 %

Display of active or reference points only

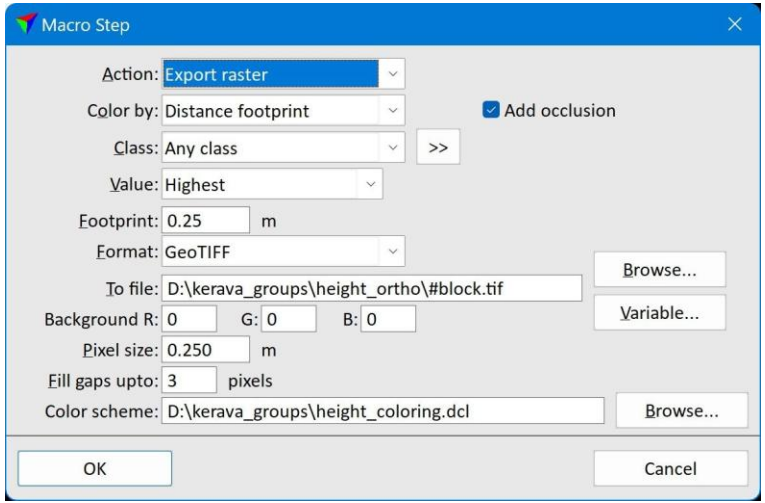
- You can set the view to show only the points in the active cloud or only the reference cloud.

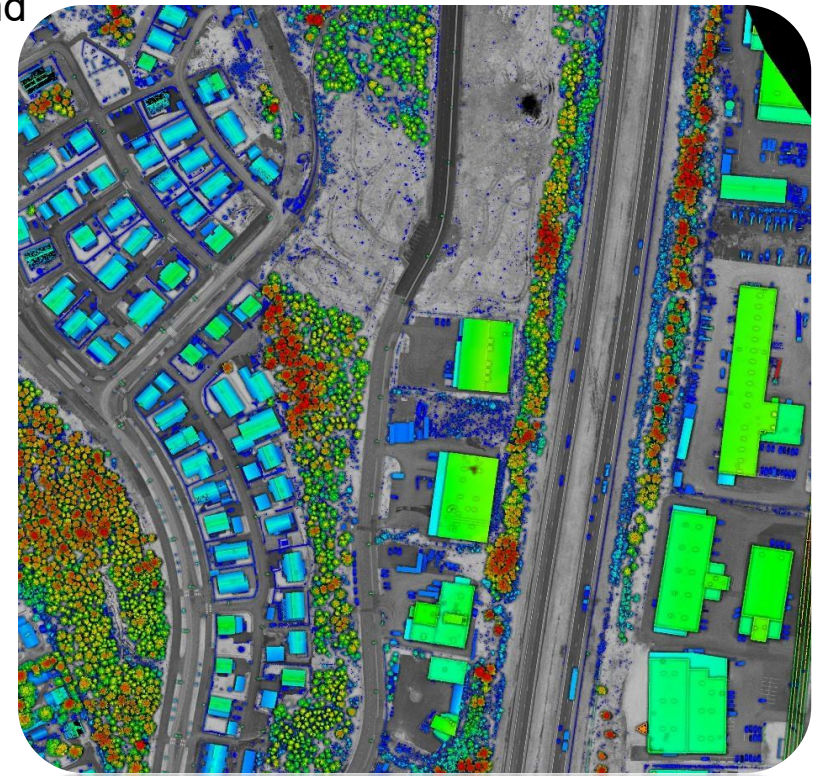



View 1 - Top, Default
TerraScan - 0 points
File Output Point View Classify Group Tools Line Wizard
Fit View
Files: All
Expand Clipping Planes
Extra Attribute
Name: Change
Category: Distance
Data type: Signed 32 bit integer
OK
Cancel
TerraScan settings
Building vectorization
Component fitting
Color mixtures
Default coordinate setup
Default flightline qualities
Elevation labels
Extra attributes
Loaded points
Object library
Operation
Point display
Pole library
Road section parameters
Open File...
Save
Save As...
C:\terra64\tscan\extra_attribute_training.ext
Danger tree Distance int
Wire offset Distance int
Change Distance int
Add...
Edit..
Delete
Add From File...
Sort

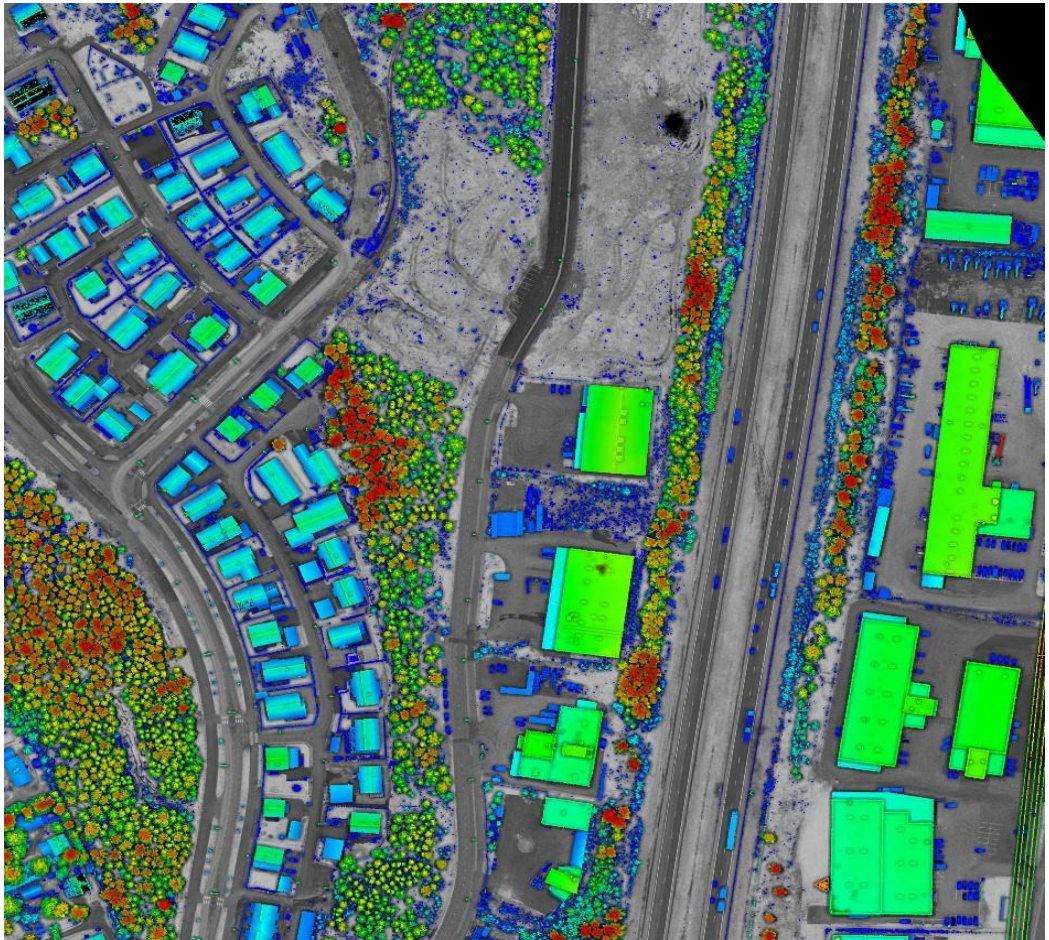
Height above ground raster production

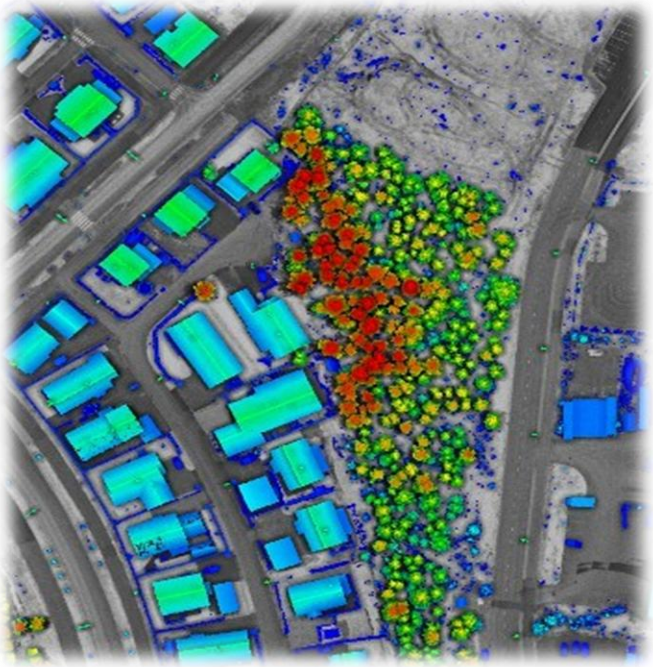
- Easy to produce GeoTIFF rasters, where the color indicates the height of the objects above the ground
- **Display option Occlusion** improves the visualization of objects requirements for the point cloud:
  - The ground surface has been classified
  - The height above ground has been calculated for the points

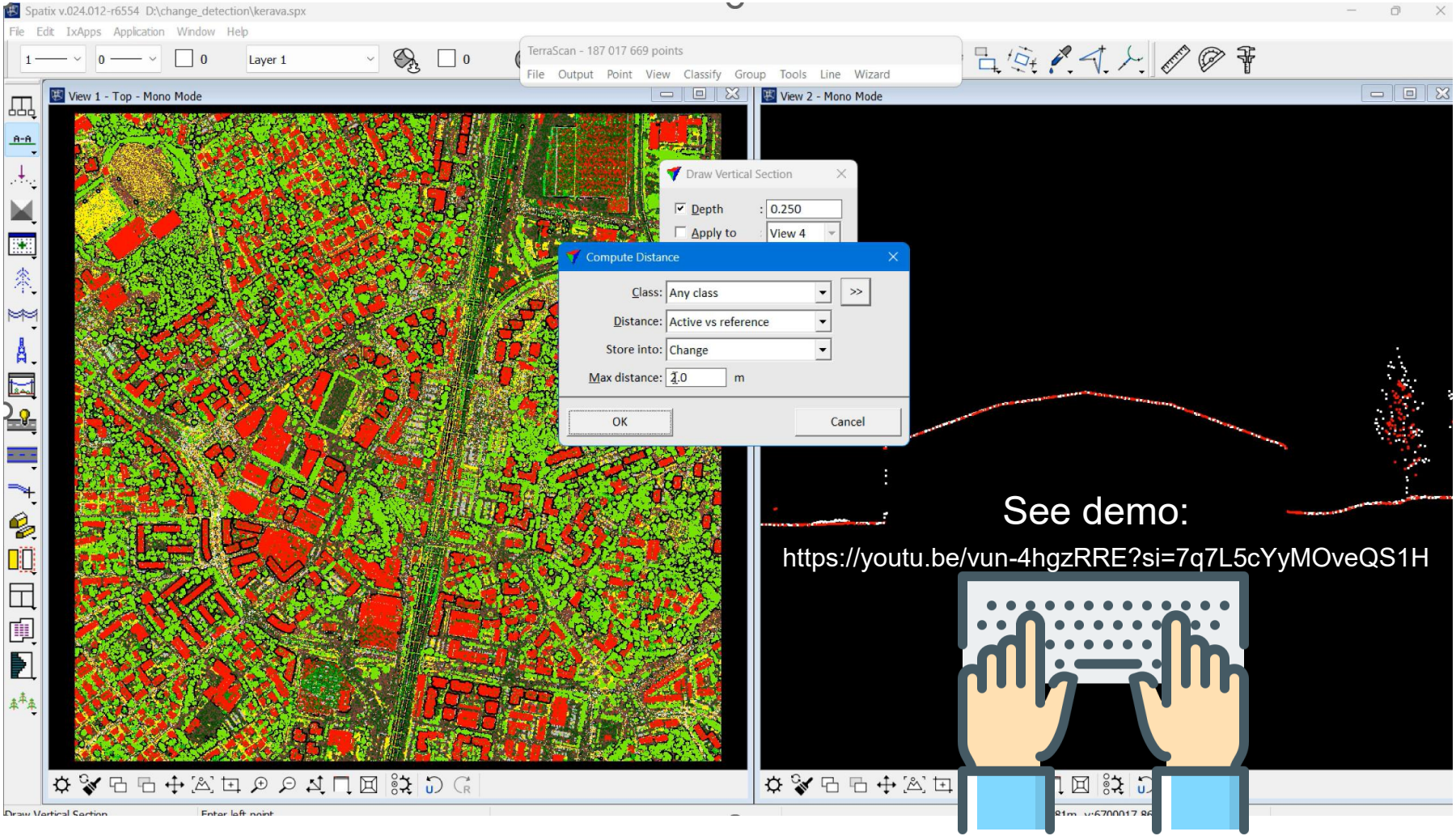




Raster production can be run on multiple TerraBatch






Spatix v.024.012-r6554 D:\change_detection\kerava.spx
File Edit IxApps Application Window Help
Layer 1
TerraScan - 187 017 669 points
File Output Point View Classify Group Tools Line Wizard
View 1 - Top - Mono Mode
View 2 - Mono Mode
Draw Vertical Section
Depth : 0.250
Apply to View 4
Compute Distance
Class: Any class
Distance: Active vs reference
Store into: Change
Max distance: 1.0 m
OK
Cancel
See demo:
https://youtu.be/vun-4hgzRRE?si=7q7L5cYyMOveQS1H

THANK YOU!

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