



OpenDroneMap



ONLINE

Open Source Data Processing with OpenDroneMap

EXERCISES

DroneCamp

July 28, 2021

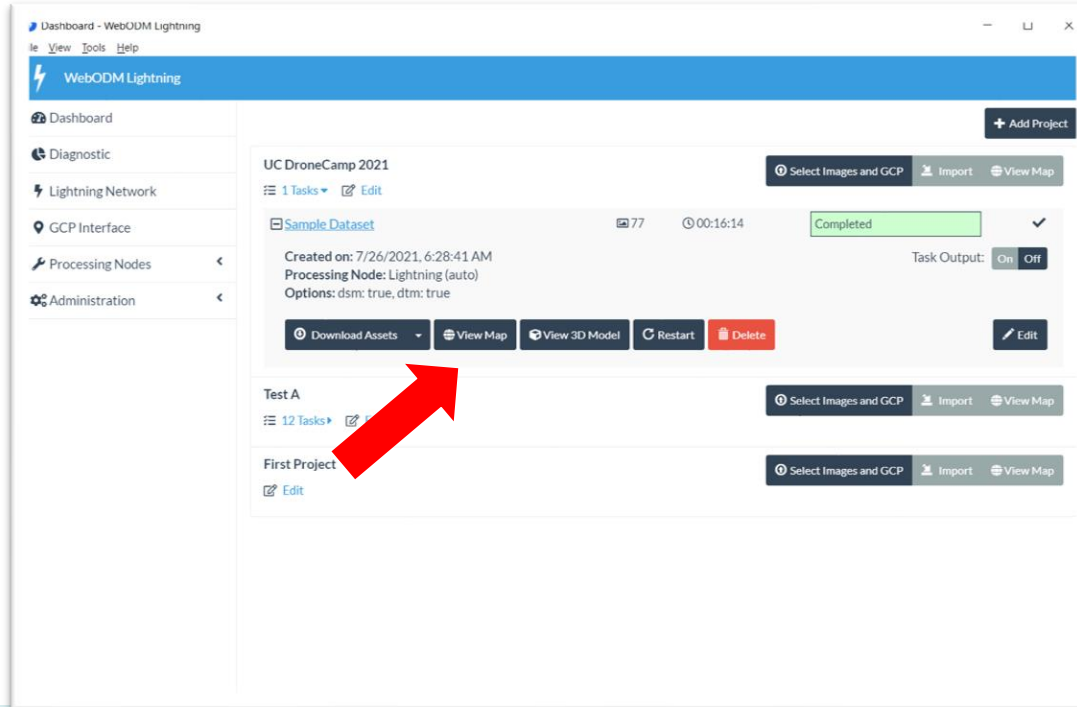


California State University
MONTEREY BAY



UC SANTA CRUZ

Exercises – 2D Orthophoto



The screenshot displays the WebODM Lightning web interface. On the left is a sidebar with navigation links: Dashboard, Diagnostic, Lightning Network, GCP Interface, Processing Nodes, and Administration. The main content area shows a list of projects. The first project, 'UC DroneCamp 2021', is expanded to show details: it has 1 task, was created on 7/26/2021 at 6:28:41 AM, and its processing node is 'Lightning (auto)'. A green 'Completed' status bar is visible. Below the details are buttons for 'Download Assets', 'View Map', 'View 3D Model', 'Restart', and 'Delete'. A large red arrow points to the 'View Map' button. Other projects listed include 'Test A' and 'First Project', each with buttons for 'Select Images and GCP', 'Import', and 'View Map'.



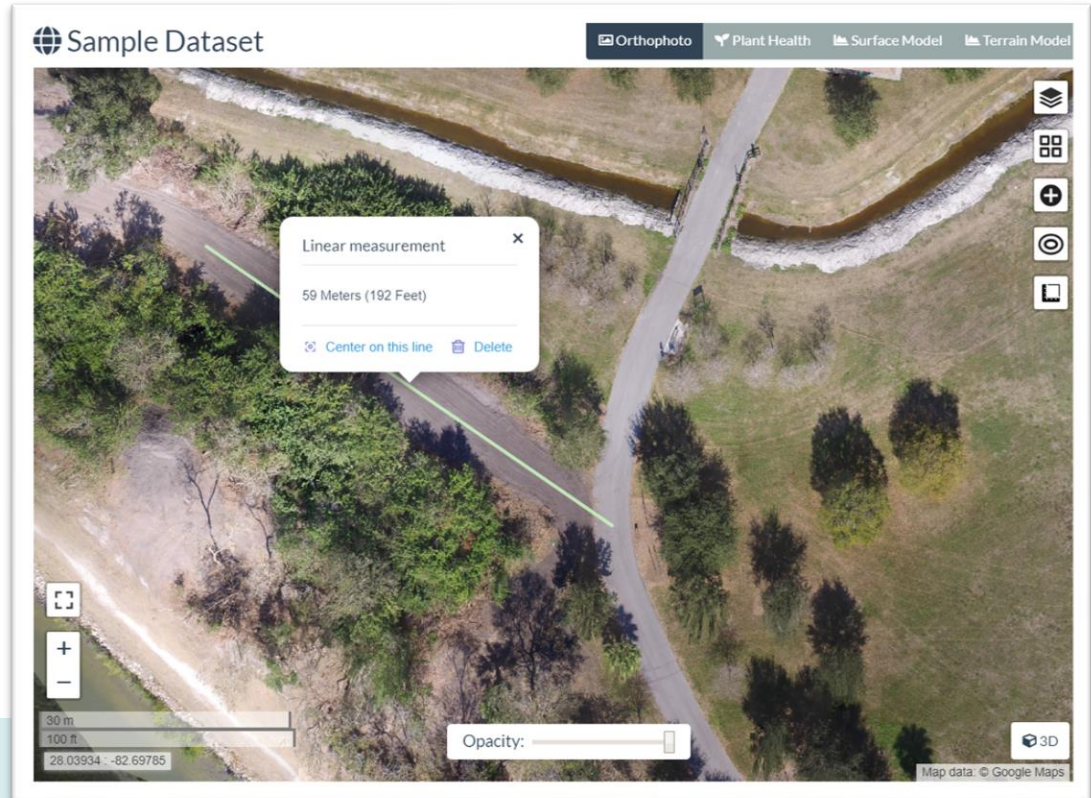
#1 – Orthophoto - Navigate

- A. Click+hold = move map
- B. Scroll wheel = zoom in/out
- C. Map controls +/- = zoom
- D. Map control square = full screen
- E. Top buttons:
 - A. Ortho
 - B. Plant Health
 - C. Surface Model
 - D. Terrain Model



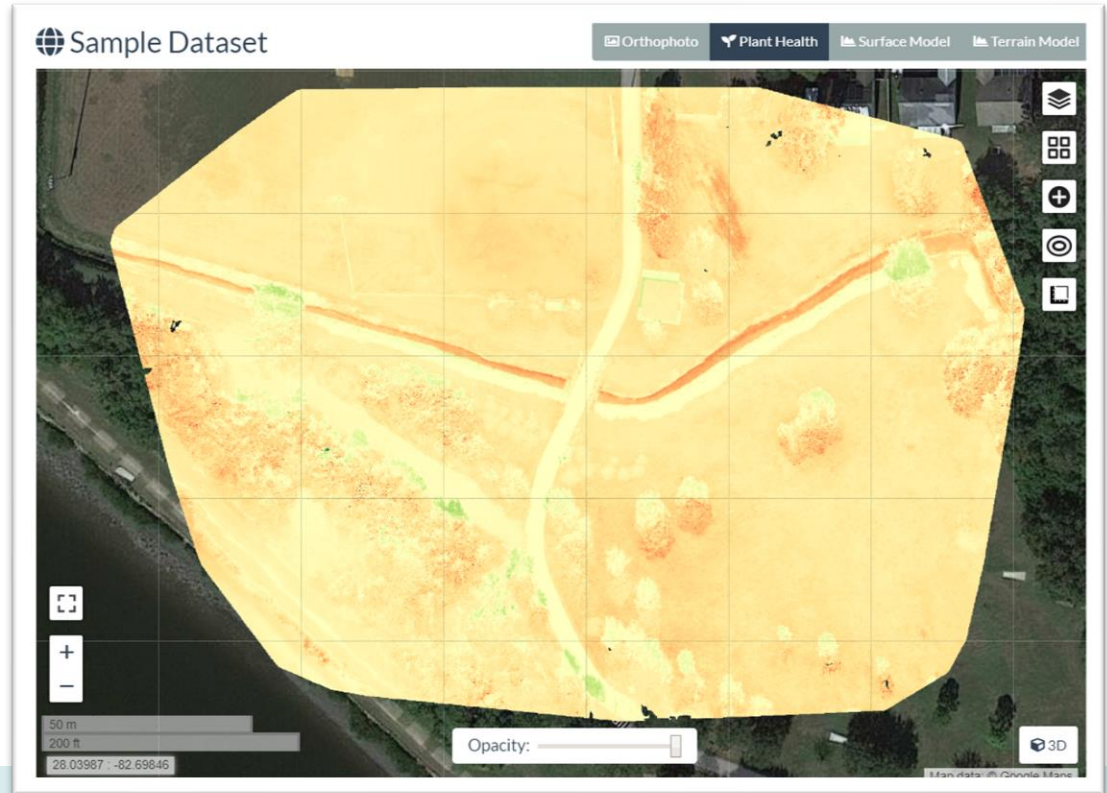
#2 – Orthophoto - Measure

- A. Click ruler (5th on right)
- B. Create new measurement
- C. Click 2 points on map
- D. Click “Finish measurement”
- E. View calculations in white balloon
- F. Close balloon with “x”
- G. Click ruler again, new measurement
- H. Click 4 points on map to make a box, click “Finish”
- I. View calculations
- J. Click “Delete” to remove it



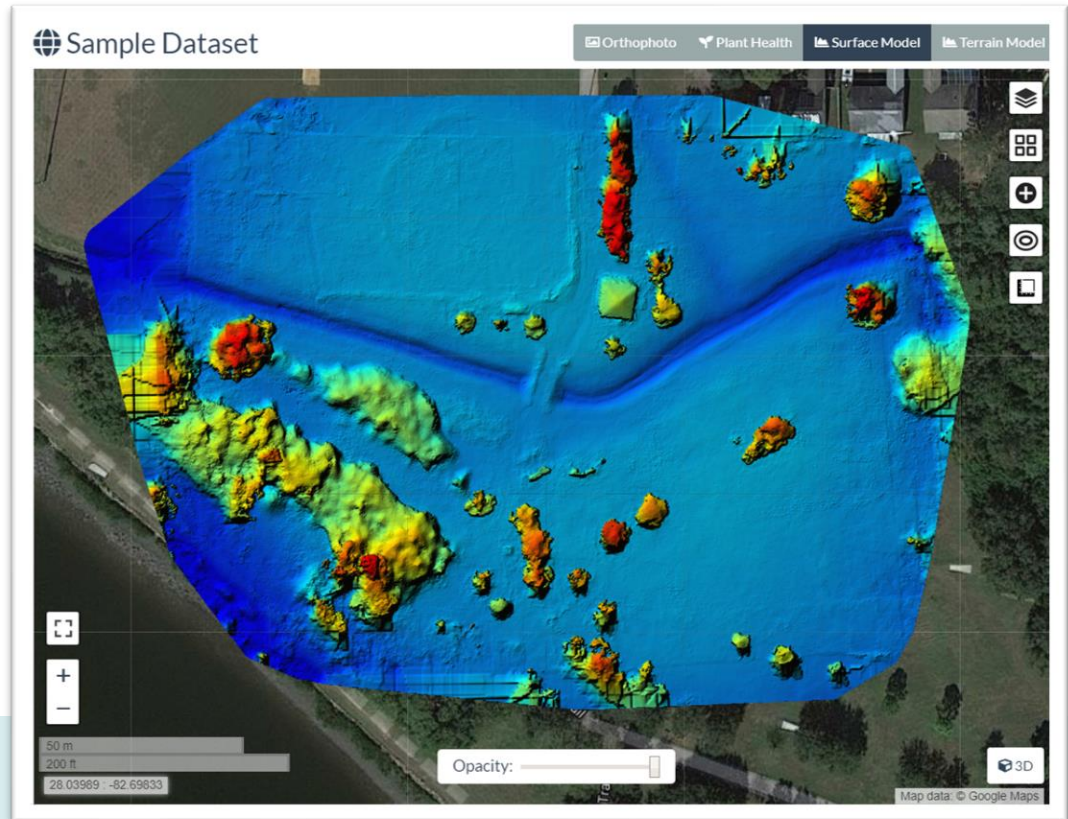
#3 – Plant Health

- A. 2nd Top Button: Plant Health
- B. Note color differences in different grassy areas
- C. Click top right “layers” icon
- D. View “Algorithm” options
- E. View “Color” options
- F. Drag min/max bars
- G. Export GeoTIFF



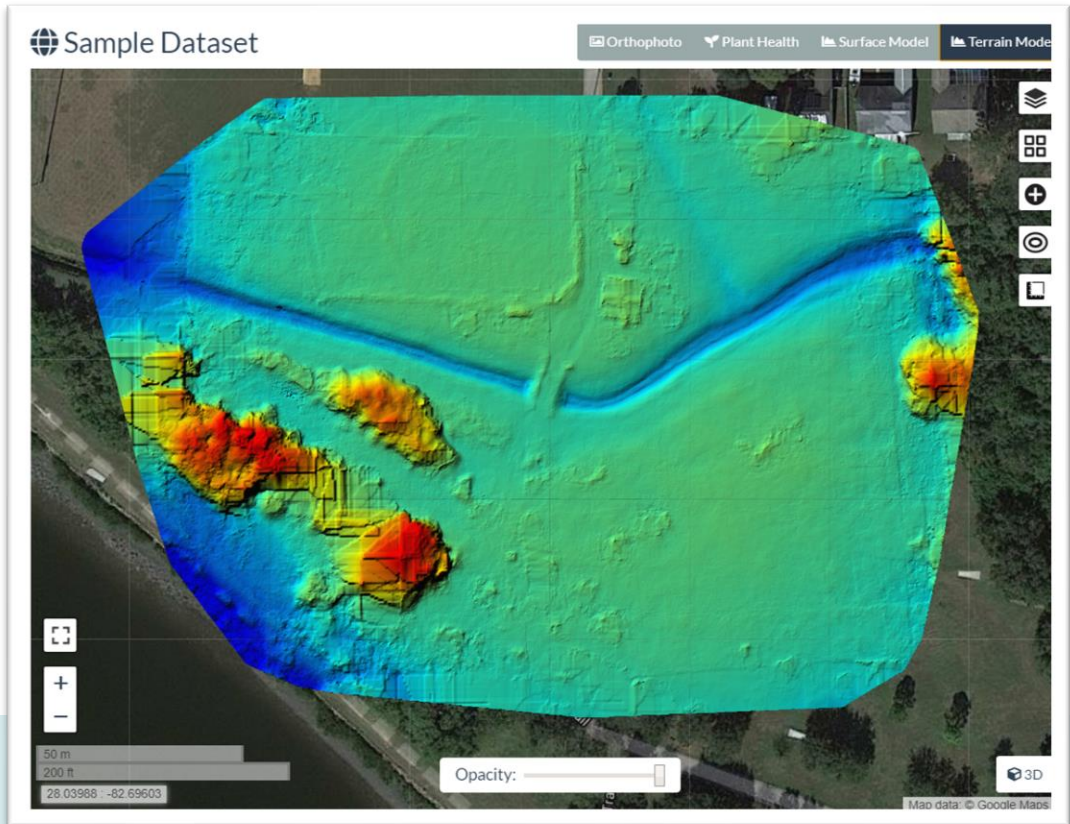
#4 – Surface Model (DSM)

- A. 3rd Top Button: Surface Model
- B. Wait for calc/load
- C. Note color varies by altitude
- D. Click top right “layers” icon
- E. View “Color” options
- F. Drag min/max bars
- G. Wait for refresh
- H. Export GeoTIFF

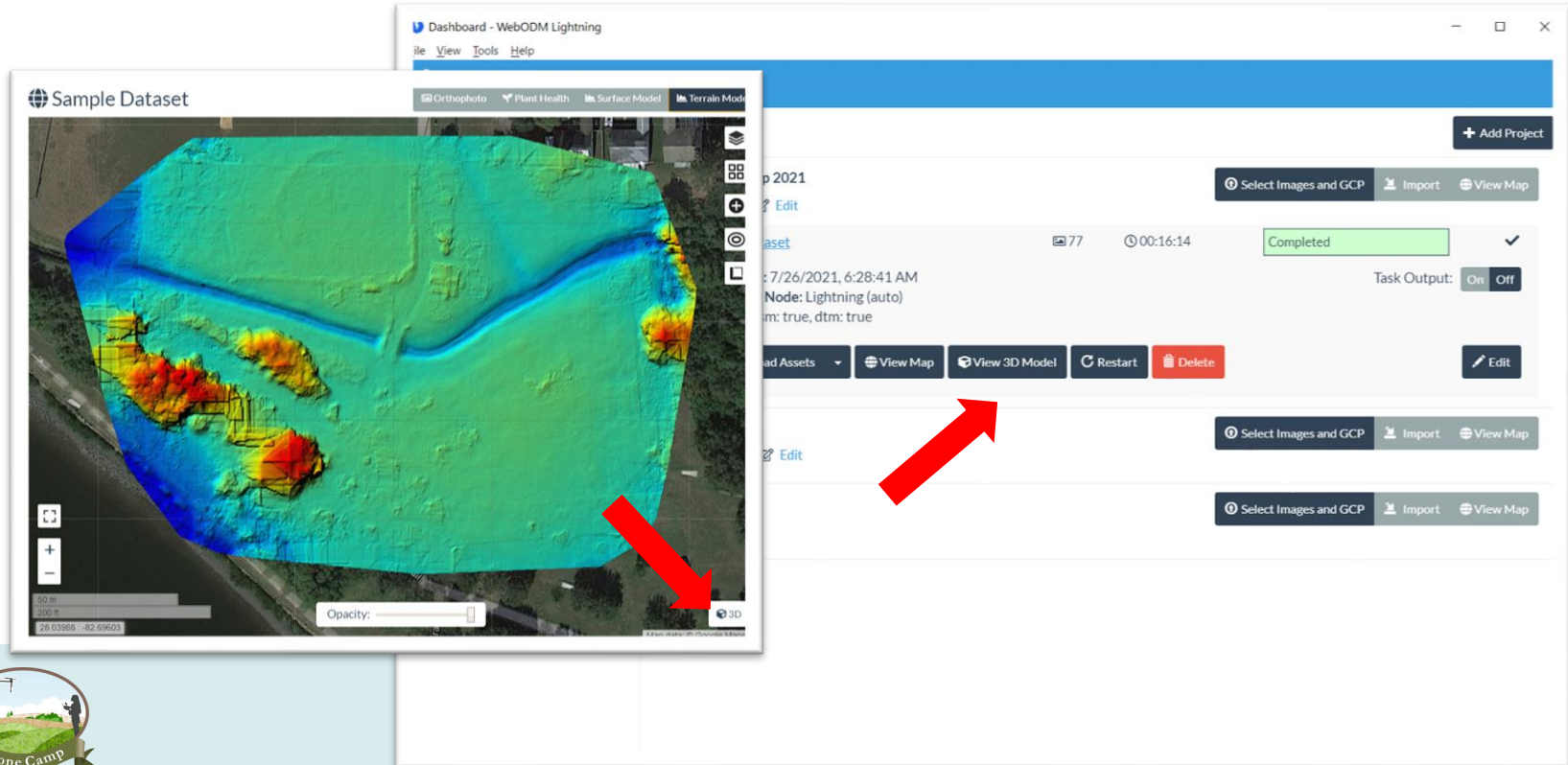


#5 – Terrain Model (DTM)

- A. 4th Top Button: Terrain Model
- B. Wait for calc/load
- C. Note color varies by altitude
- D. Click top right “layers” icon
- E. View “Color” options
- F. Drag min/max bars
- G. Wait for refresh
- H. Export GeoTIFF



Exercises – 3D Model



The image displays the WebODM Lightning web interface. On the left, a 'Sample Dataset' window shows a 3D terrain model with a color gradient from blue (low elevation) to red (high elevation). A red arrow points from the '3D' button in the bottom right corner of this window to the 'View 3D Model' button in the main interface. The main interface, titled 'Dashboard - WebODM Lightning', features a top navigation bar with 'Orthophoto', 'Plant Health', 'Surface Model', and 'Terrain Model' tabs. Below this, a list of projects is shown. The first project, 'p 2021', is highlighted and shows a status of 'Completed' with a green progress bar. It includes a timestamp of '7/26/2021, 6:28:41 AM' and a node name of 'Lightning (auto)'. The 'Task Output' is set to 'On'. A red arrow points from the 'View 3D Model' button in the project list to the 'View 3D Model' button in the 'Sample Dataset' window. The bottom left corner of the slide features a 'Drone Camp' logo.

Dashboard - WebODM Lightning

File View Tools Help

Sample Dataset

Orthophoto Plant Health Surface Model Terrain Model

3D

Opacity: [Slider]

7/26/2021, 6:28:41 AM

Node: Lightning (auto)

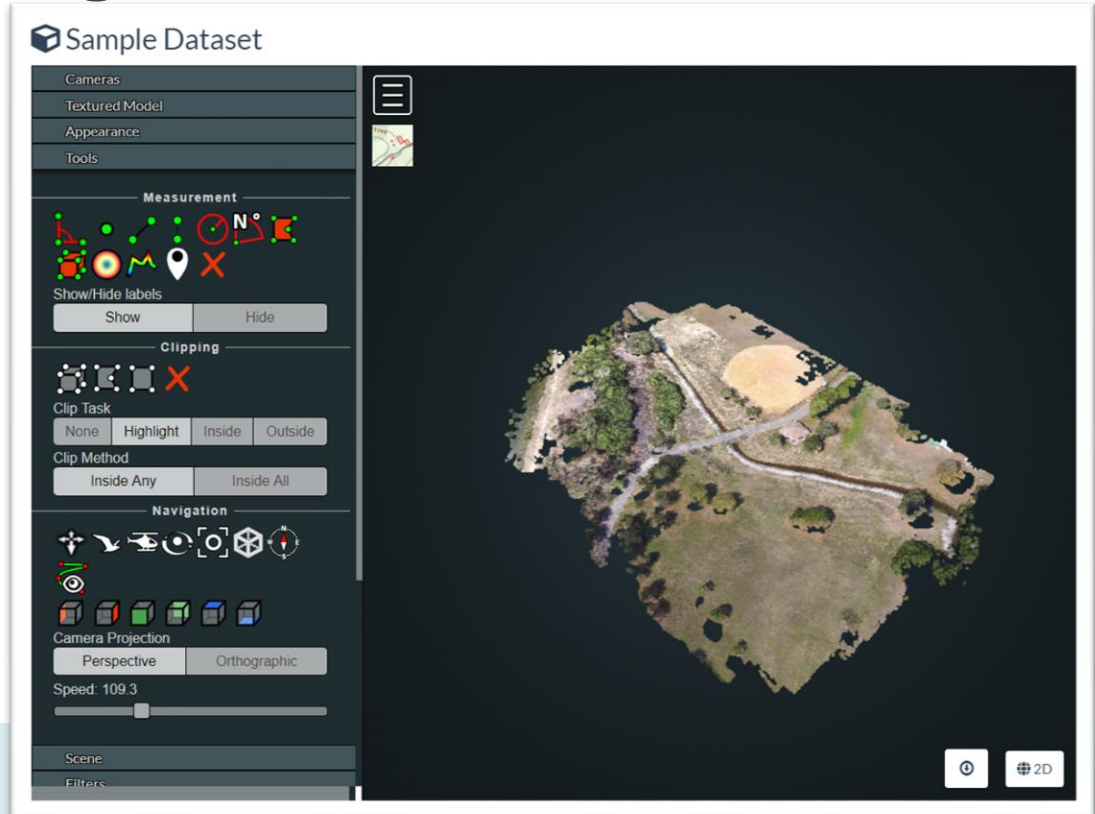
Task Output: On Off

View 3D Model

Drone Camp

#6 – 3D Model - Navigate

- A. Left click+drag = rotate model
- B. Right click+drag = move model
- C. Scroll wheel = zoom in/out
- D. Top left (3 bars) button = collapse tools
- E. Top left (map) button = show model location
- F. Tools
 - A. Measure
 - B. Navigation
- G. Appearance
- H. Scene



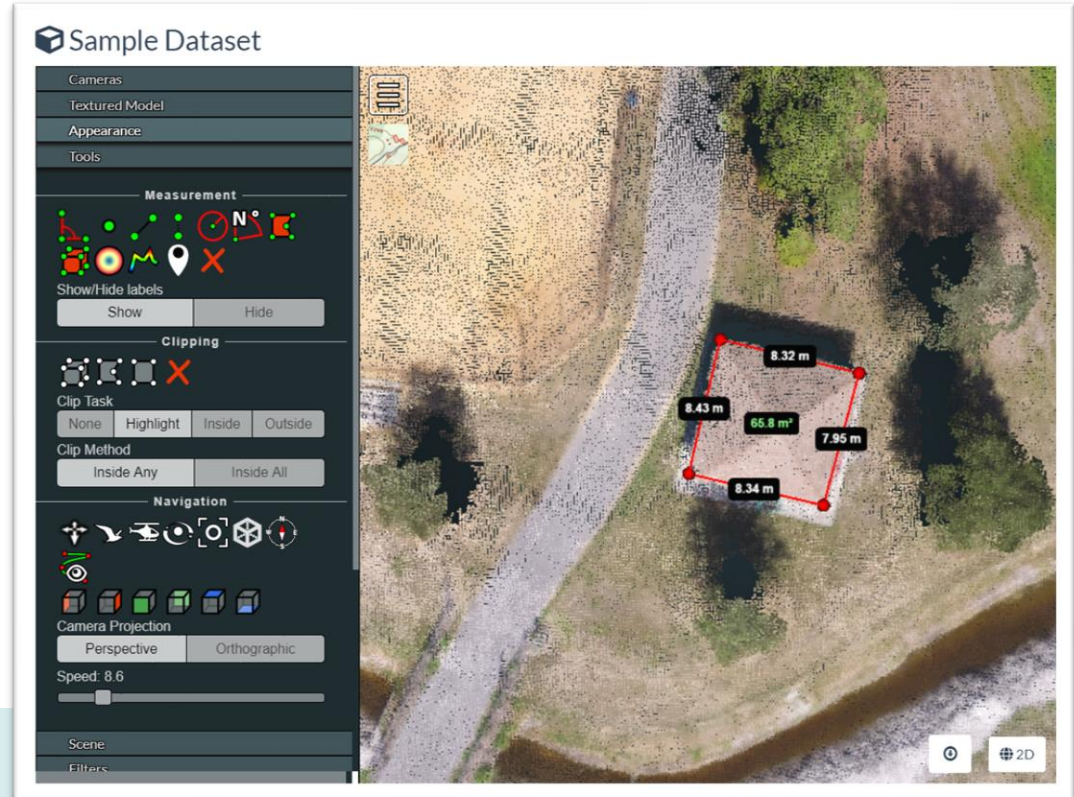
#7 – 3D Model – Measure (Linear)

- A. Adjust the model so you can see
- B. Click 3rd Measurement tool (angled line)
- C. LEFT click 2 points on the map
- D. Now RIGHT click the last point to finish
- E. View measured distance (m)
- F. Click red “X” in measurement tools, to delete



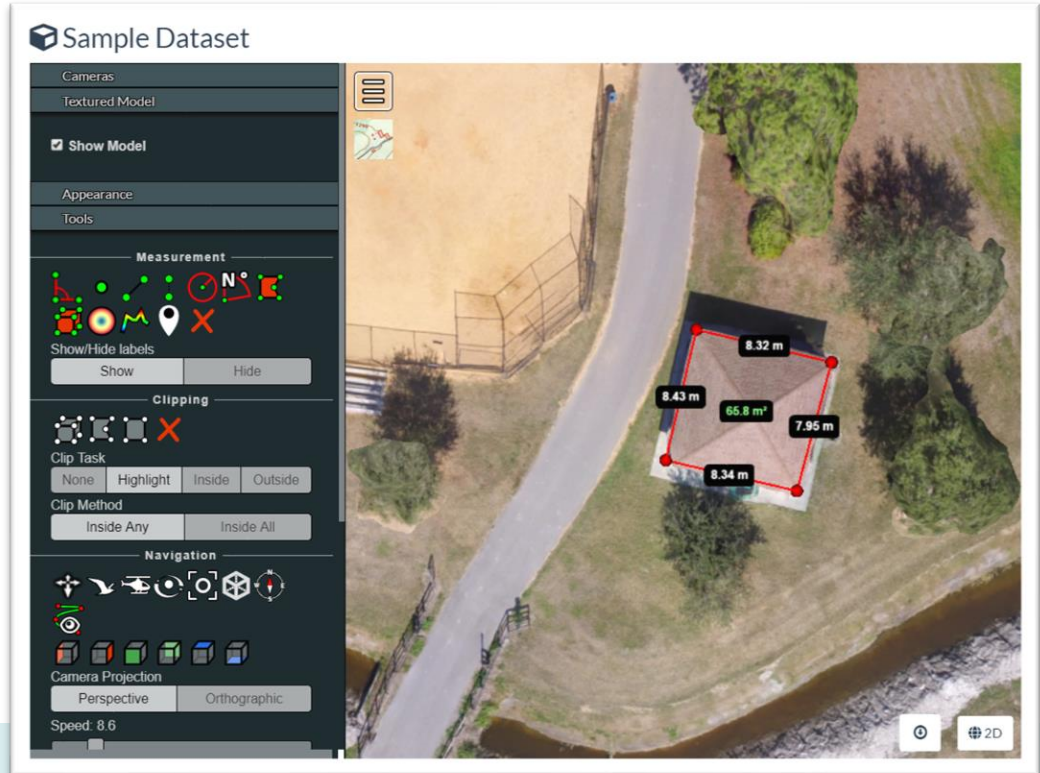
#8 – 3D Model – Measure (Area)

- A. Adjust the model so you can see
- B. Click top right Measurement tool (red box)
- C. LEFT click 4 points on the map
- D. Now RIGHT click the last point to finish
- E. View measured distances (white)
- F. View measured area (green)



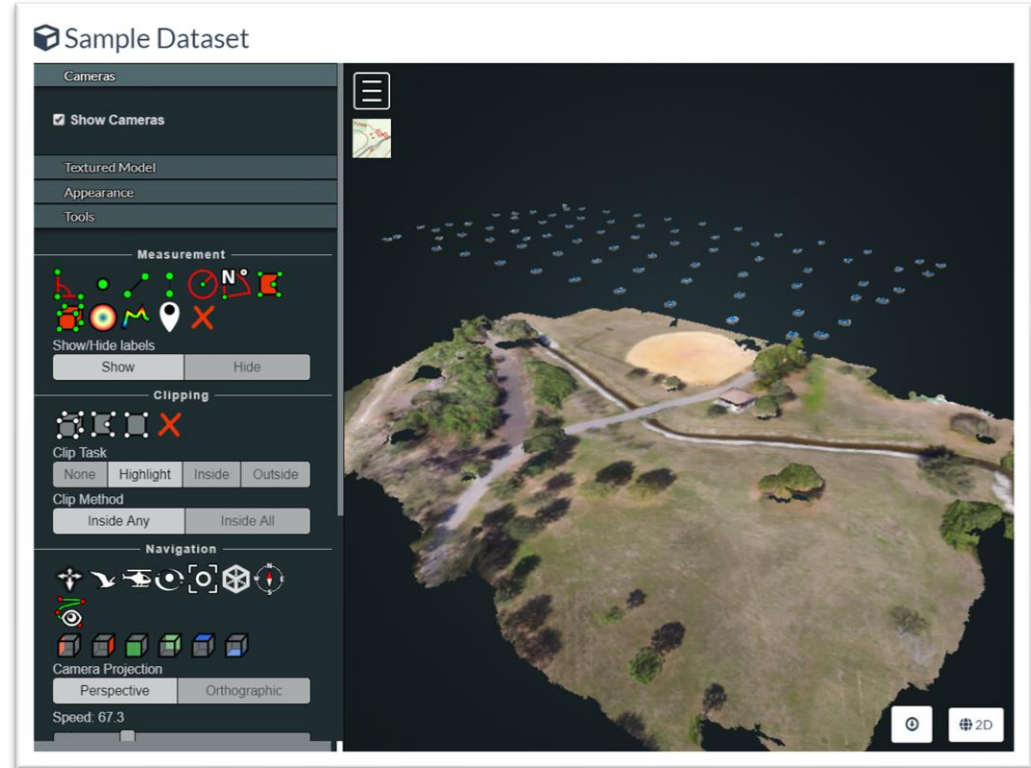
#9 – View Textured Model

- A. Find “Textured Model” near the top of the tool menu
- B. Click to expand, then click “Show Model”
- C. Wait a few seconds
- D. View how the scene becomes more detailed, holes are filled
- E. Uncheck and check the box to turn off, and on
- F. Move the model around to view other parts
- G. Edges of model = lots of error
Interior of model = better precision

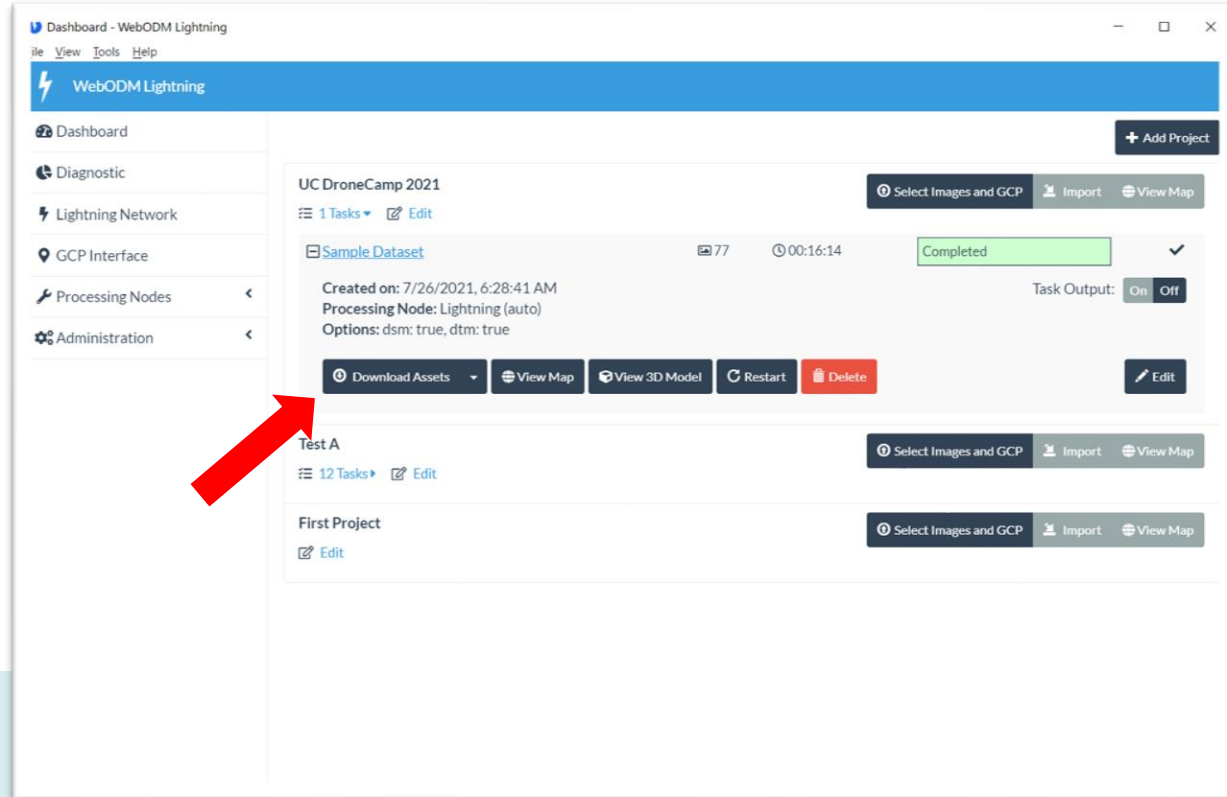


#10 – View Cameras

- A. Find “Cameras” near the top of the tool menu
- B. Click to expand, then click “Show Cameras”
- C. Zoom out (scroll) until you see the blue squares floating above the scene
- D. Note positions, angles of cameras
- E. Click one camera to see the photo from that position



Exercises – Download



The screenshot displays the WebODM Lightning dashboard interface. On the left is a sidebar with navigation links: Dashboard, Diagnostic, Lightning Network, GCP Interface, Processing Nodes, and Administration. The main content area shows a project titled 'UC DroneCamp 2021' with 1 task. Below this, a 'Sample Dataset' is listed with a status of 'Completed'. A red arrow points to the 'Download Assets' button within the dataset's action bar. Other buttons visible include 'View Map', 'View 3D Model', 'Restart', 'Delete', and 'Edit'. The top of the dashboard includes a header with the WebODM Lightning logo and a '+ Add Project' button.

Dashboard - WebODM Lightning

WebODM Lightning

+ Add Project

UC DroneCamp 2021

1 Task Edit

Sample Dataset 77 00:16:14 Completed

Created on: 7/26/2021, 6:28:41 AM
Processing Node: Lightning (auto)
Options: dsm: true, dtm: true

Task Output: On Off

Download Assets View Map View 3D Model Restart Delete Edit

Test A

12 Tasks Edit

First Project

Select Images and GCP Import View Map



#11 – Download Specific Outputs

The screenshot displays the UC DroneCamp 2021 web interface. At the top, the title 'UC DroneCamp 2021' is followed by buttons for 'Select Images and GCP', 'Import', and 'View Map'. Below this, a task named 'Sample Dataset' is shown with a status of 'Completed' (indicated by a green bar) and a checkmark. The task details include 'Created on: 7/26/2021, 6:28:41 AM', 'Processing Node: Lightning (auto)', and 'Options: dsm: true, dtm: true'. A 'Task Output' toggle is set to 'On'. A 'Download Assets' button is open, revealing a dropdown menu with the following options: 'Orthophoto (GeoTIFF)', 'Terrain Model (GeoTIFF)', 'Surface Model (GeoTIFF)', 'Point Cloud (LAZ)', 'Textured Model', 'Camera Parameters', 'Camera Shots (GeoJSON)', and 'All Assets'. Other buttons visible include 'View Map', 'View 3D Model', 'Restart', 'Delete', and 'Edit'.



#12 – Download All

UC DroneCamp 2021

1 Tasks ▾ Edit

Sample Dataset 77 00:16:14 Completed

Created on: 7/26/2021, 6:28:41 AM
Processing Node: Lightning (auto)
Options: dsm: true, dtm: true

Download Assets ▾ View Map View 3D Model Restart Delete

Orthophoto (GeoTIFF)
Terrain Model (GeoTIFF)
Surface Model (GeoTIFF)
Point Cloud (LAZ)
Textured Model
Camera Parameters
Camera Shots (GeoJSON)
All Assets

Select Images and GCP Import

all.zip

- dsm_tiles File folder
- dtm_tiles File folder
- entwine_pointcloud File folder
- odm_dem File folder
- odm_georeferencing File folder
- odm_orthophoto File folder
- odm_report File folder
- odm_texturing File folder
- orthophoto_tiles File folder
- cameras.json JSON File
- images.json JSON File

odm_orthophoto.tif

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proj.txt 7/26/2021 6:34 AM

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OpenDroneMap

<https://opendronemap.org>

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*Screenshots and interface images by
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Thank You!

