

UAV based assessment of forest cover and deforestation dynamics

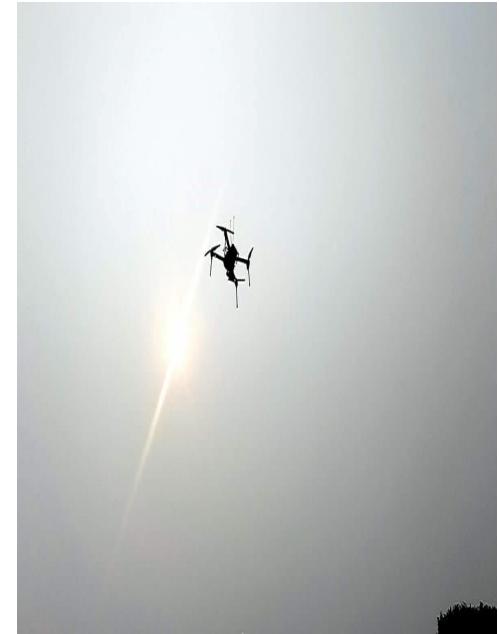
WHY DRONE MAPPING FOR DEVELOPING NATIONS FOREST AREA MAPPING



\$800 million dollars , Cost of forest monitoring satellite



Climate change effects for remote sensing . (Incise Carbon Dioxide lare)



Low Cost and Quality
Full mapping

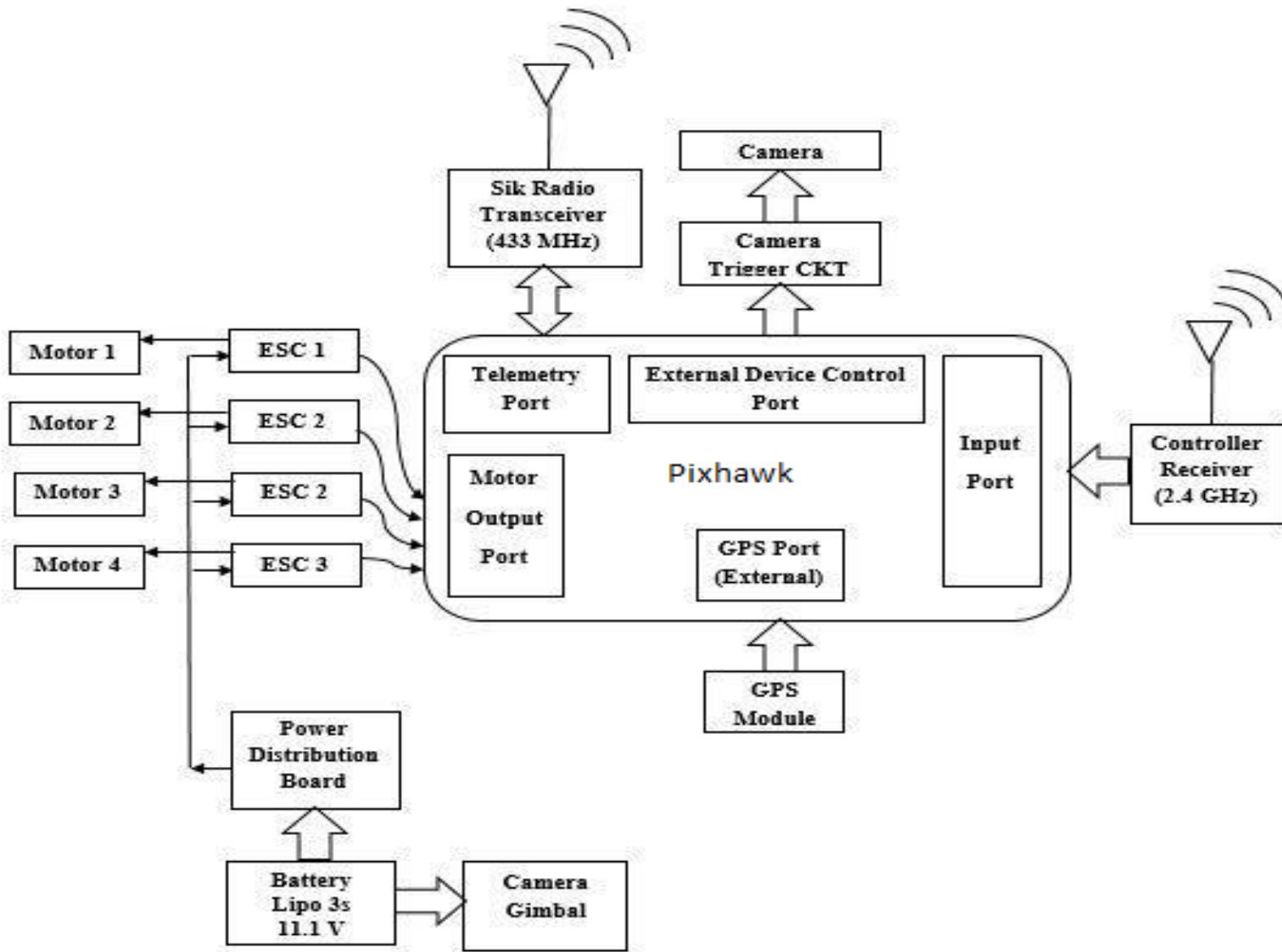
Modern Mapping Platforms



Lower Cost And Quality

	Satellite-1 Landsat 8	Satellite-2 RapidEye	Satellite-3 GeoEye-1	Drone
Area	1 sq.Km	1 sq.Km	1 sq.Km	1 sq.Km
Resolution	30m	5m	50cm	3.63cm
Cost	0.80(USD)	1.28(USD)	23(USD)	0.20(USD)

Connection Diagram



Our Small Lab For Drone Making



Our Drone And Its Ability



Weight (including battery and propeller)	1380g
Max Ascent Speed	6 m/s (Sport mode)
Max Descent Speed	4 m/s (Sport mode)
Max Speed	20 m/s (Sport mode)
Max Service Ceiling Above Sea Level	(150 m)
Max Flight Time	Approx. 15 minutes

SOFTWARE

Mission Planner

Mp Mission Planner 1.3.15 build 1.1.5442.12660 ArduCopter V3.2.1 (36b405fb)

FLIGHT DATA FLIGHT PLAN INITIAL SETUP CONFIG/TUNING SIMULATION TERMINAL HELP DONATE

Distance: 3.3289 km
Prev: 115.88 m AZ: 82
Home: 115.88 m

COM6 57600 DISCONNECT Link Stats...

Action

Zoom

GEO 23.833255 90.384575 5.66m

Grid View KML

GoogleChinaSatell Status: loaded tiles

Load WP File

Save WP File

Read WPs

Write WPs

Home Location

Lat 23.83282366°
Long 90.38043379°
Alt (abs) 1

©2016 Google - Map data ©2016 Tele Atlas, Imagery ©2016 TerraMetrics

Waypoints

WP Radius	Loiter Radius	Default Alt	Verify Height	Add Below	Alt Warn	Spline
2	45	100			0	
			<input type="checkbox"/>	<input checked="" type="checkbox"/>		

	Command							Delete	Up	Down	Grad %	Dist	AZ
1	TAKEOFF	0	0	0	0	0	30	X			0	0	0
2	WAYPOINT	0	0	0	23.8334293	90.3811505	70	X			70.5	99.2	47

02:32 AM 28/04/16

Pix4Dmapper

Pix4Dmapper Discovery - Non-Commercial

Project Process View Help

PIX4D Project Process Click for Pro Trial

Home Map View rayCloud Volumes Mosaic Editor Index Calculator Processing Log Output Processing Options

Projects Help Demo Project Upgrade

New Project...
Follow the wizard to create a new project with your own dataset.

Open Project...
Open an existing project.

sagufta area map.p4d
26 images Last modified: Mon Oct 24 2016

mission 1.p4d
20 images Last modified: Sun Oct 16 2016

thakurgaon boro math.p4d
25 images Last modified: Sun Sep 18 2016

Tips

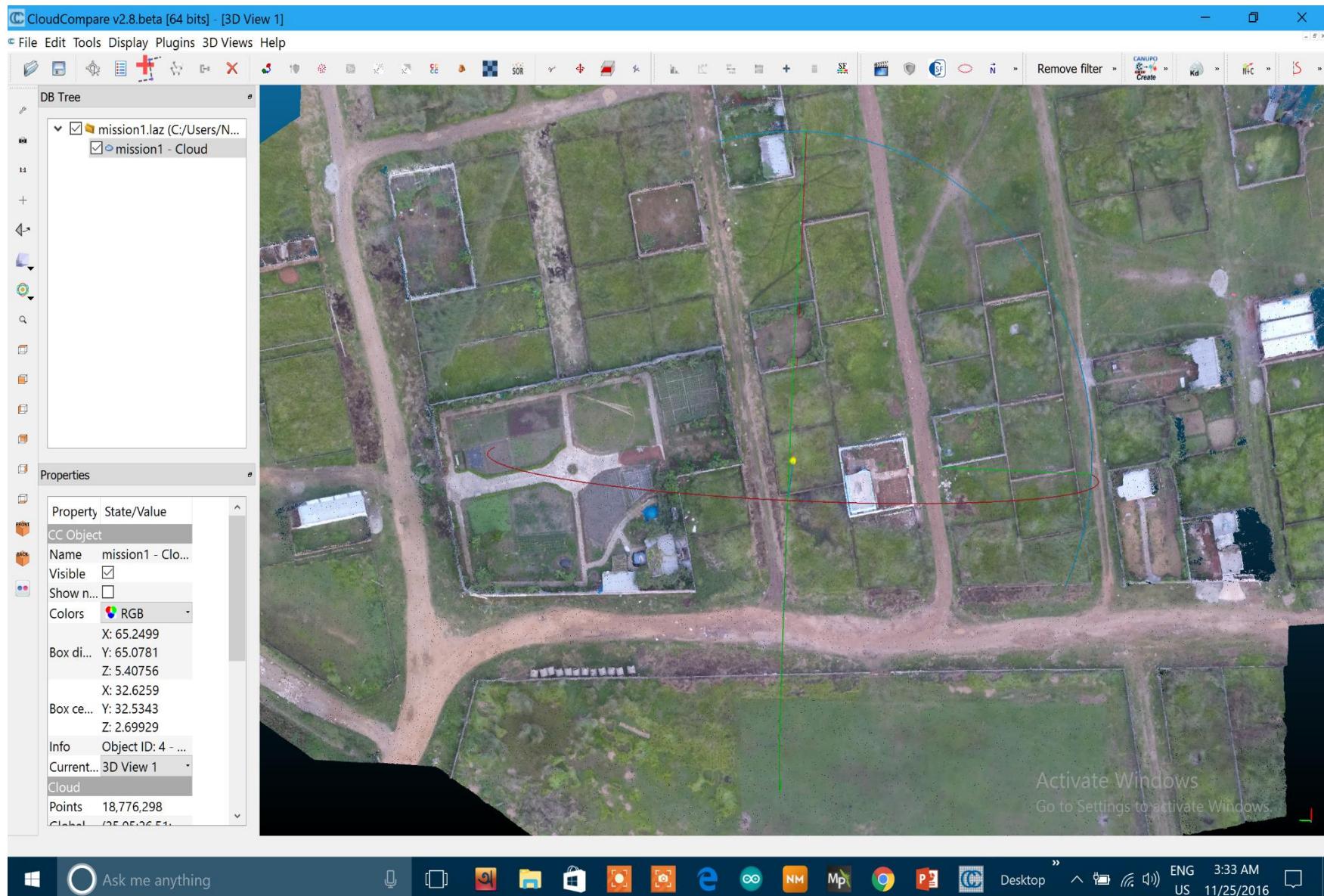
Did you know...
How to work with Indices - Formulas in the Index Calculator

Activate Windows
Go to Settings to activate Windows.

Ask me anything

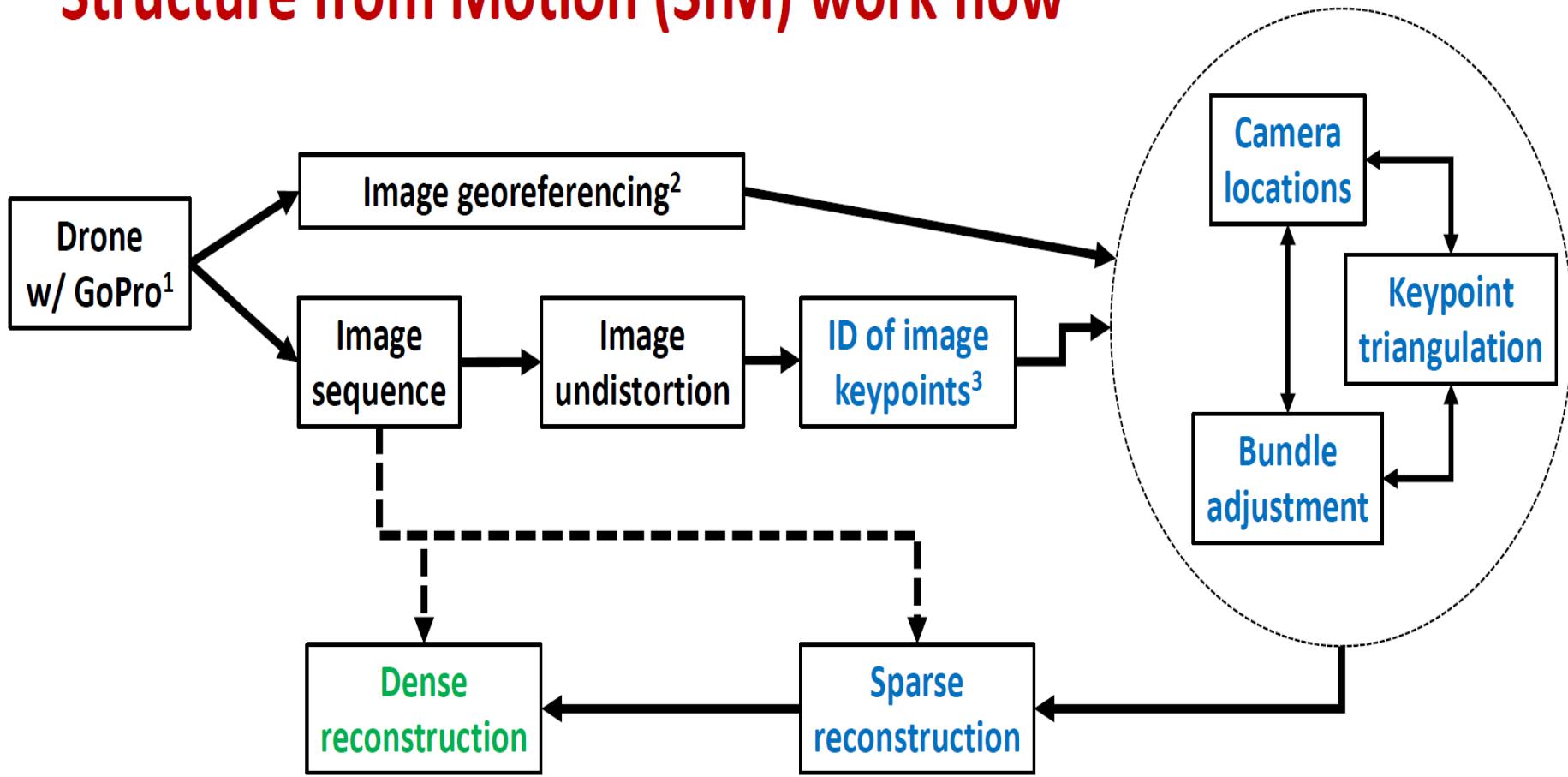
Windows Taskbar icons: File Explorer, Edge, Mail, OneDrive, Photos, Settings, Microsoft Store, Microsoft Edge, Microsoft Word, Microsoft Excel, Microsoft Powerpoint, Microsoft Access, Microsoft Project, Microsoft Visio, Desktop, Task View, Volume, Network, Battery, Signal, Sound, ENG US, 3:38 AM, 11/25/2016

Cloud Compare



WORKING PROCEDURE

Structure from Motion (SfM) work flow



¹ Determine optimal drone speed, elevation, trajectory

² Using onboard GPS

³ Based on user-specified parameter values

Computed using **VSMF**. Wu C. 2013. Towards linear-time incremental structure from motion. In Proc 2013 IEEE International Conference on 3D Vision-3DV, pp 127–134.

Computed using **PMVS**. Furukawa, Y. 2010. Accurate, dense, and robust Multiview stereopsis. IEEE transactions on pattern analysis and machine intelligence, 32(8):1362-1376.

Area Selection (From Satellite)



Mission Preparation

Survey (Grid)



Johns Dodge - Mimbres 0014 Test Area, Imagery: 2016 Esri - All rights reserved.

- Stats

Area: 18838 m²
Distance: 0.59 km
Distance between images: 50 m
Ground Resolution: 1.50 cm

Pictures: 9
No of Steps: 3
Footprint: 133.4 x 100.1 m
Dist between lines: 50.37 m

Flight Time (est): 2:02 Minutes
Photo every (est): 8.34 Seconds

Accept

Output Value of Mission Planner

The area of the mission path	18838 m ²
Distance	0.59 km
Distance between images	50 m
Ground Resolution	3.63cm
Pictures	9
Number of strips	3
Footprint	133.4x100.1 m
Distance between lines	53.37 m
Flight time	2.02m Minutes
Photo every (est)	8.34 seconds

FLYING DRONE

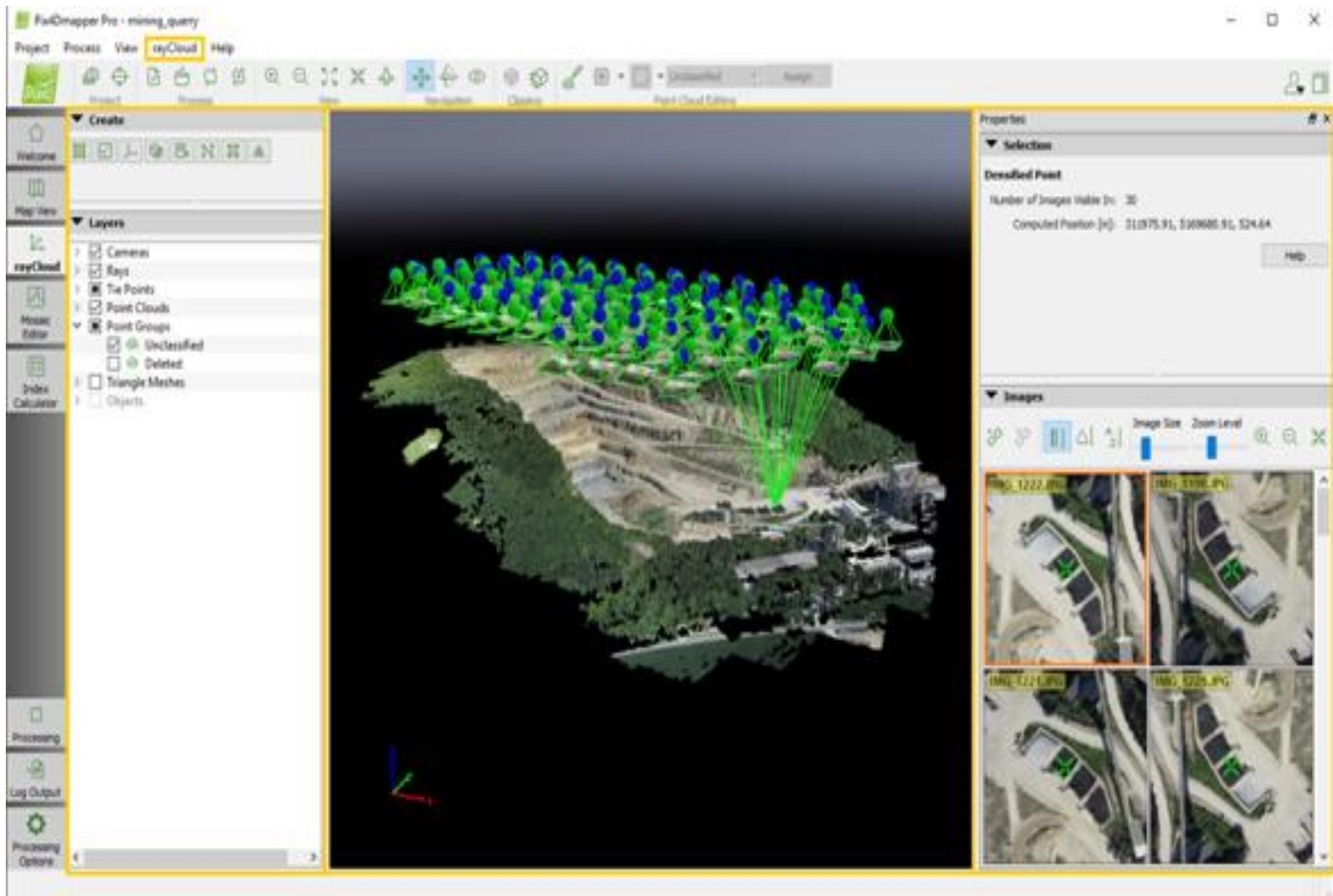


Collect Image From Drone Camera

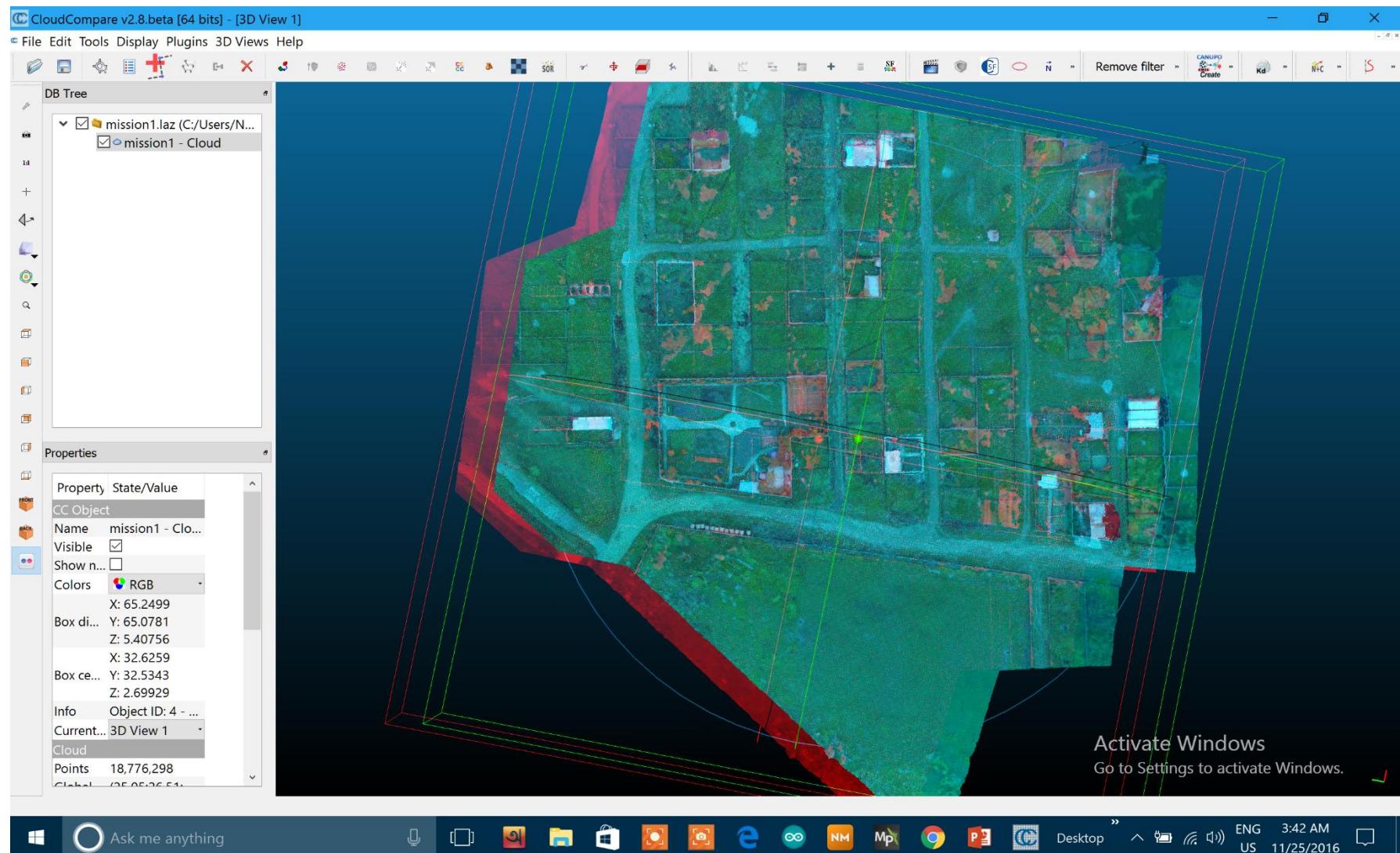


Collect GPS DATA LOG

Pix4Dmapper (Paid Software)



Cloud Compare (Open source)



GEO- Referencing Prove At Google Earth



Before 6 month



After 6 months , again we collected image at the same place.



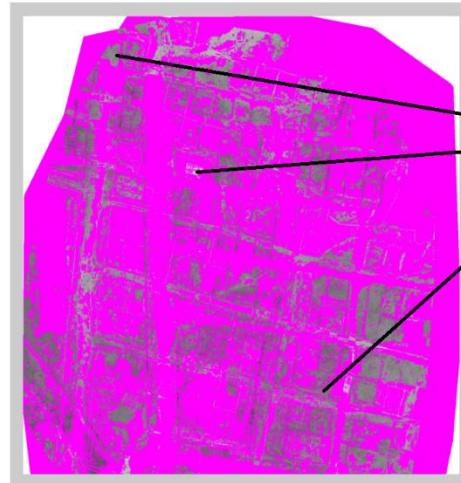
Primary Image Compare Result



Compare two images?

Drop two images on the boxes to the left. The box below will show a generated 'diff' image, pink areas show mismatch. This example best works with two very similar but slightly different images. Try for yourself!

Don't have any images to compare? [Use example images](#)



differents

[Ignore nothing](#) [Ignore less](#) [Ignore colors](#) [Ignore antialiasing](#)

[Use original size](#) [Scale to same size](#)

[Pink](#) [Yellow](#)

[Flat](#) [Movement](#) [Flat with diff intensity](#) [Movement with diff intensity](#)

Slide Compare



Area Selection For 3D Data Analysis

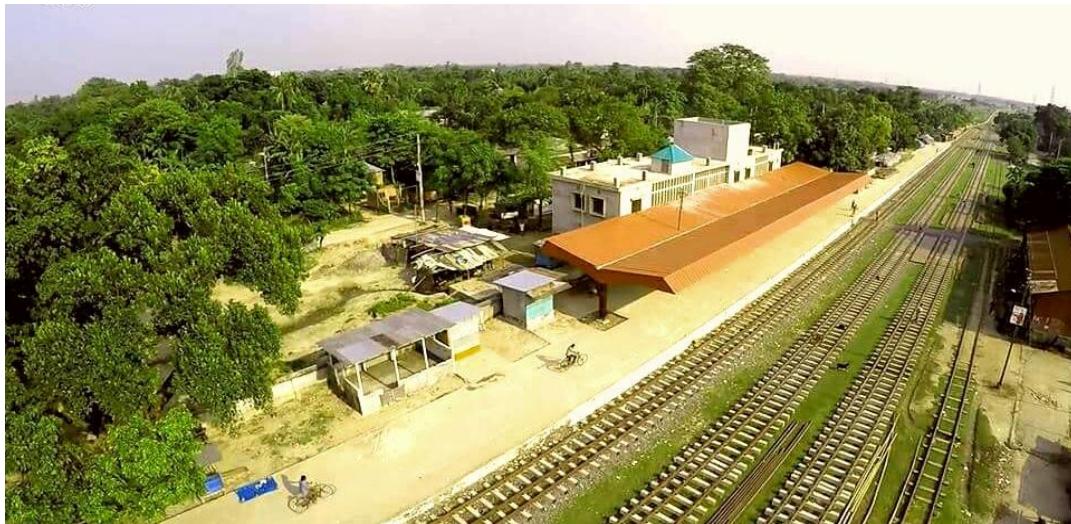


3D Video DATA





Our Project



Should
BE

Monitoring
Our Forest
Area