

Implementing Precision Forestry

A Practical Look at High Tech Tools Working Today



David Herries

Interpine – Resource and GIS Analyst, Director / General Manager

Fire and Emergency NZ – Rural Fire National Incident Management Team – Advanced Planning Team Leader



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Bringing innovation to the forest industry

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Last 10 per cent of Port Hills fire expected to take a month to extinguish



0:00

/

1:40







Tiwai Point

Print Date: 26/01/2018

Print Time: 6:21:36 AM

Thermal Survey 26 Jan 0500 hr



Comments:

Full burnt area has been surveyed by drone thermal sensor as of 0500 hrs.

Map can be downloaded to Avenza Maps (PDF Maps) app on smartphones by scanning the QR Code above.

Legend

Points

SymbolID

- Priority Hotspot
- Hotspot

Fire_Points

- <all other values>

Type

- Incident Control Point
- Other Point Types



Tiwai Point

Print Date: 26/01/2018

Print Time: 6:21:36 AM

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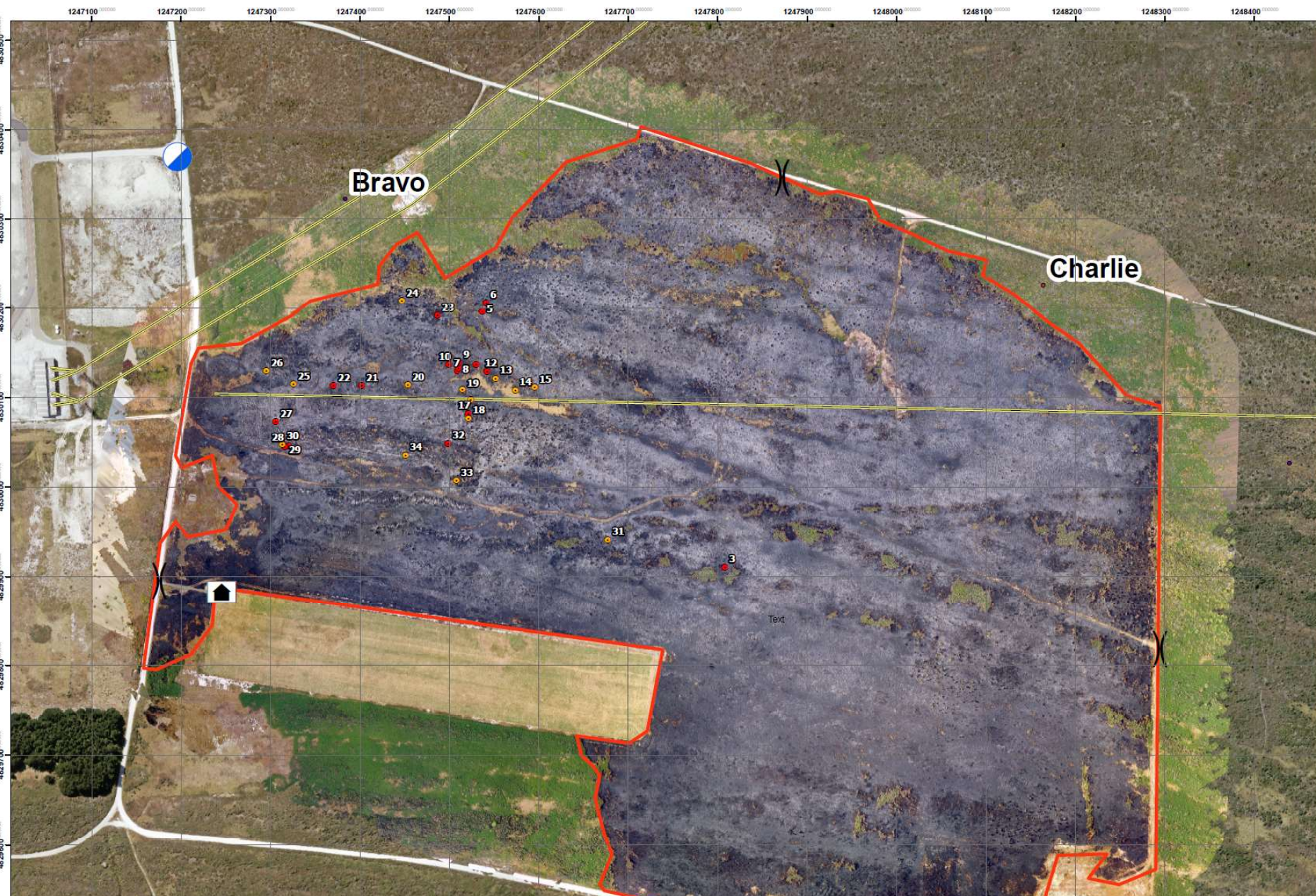
Fire_Points

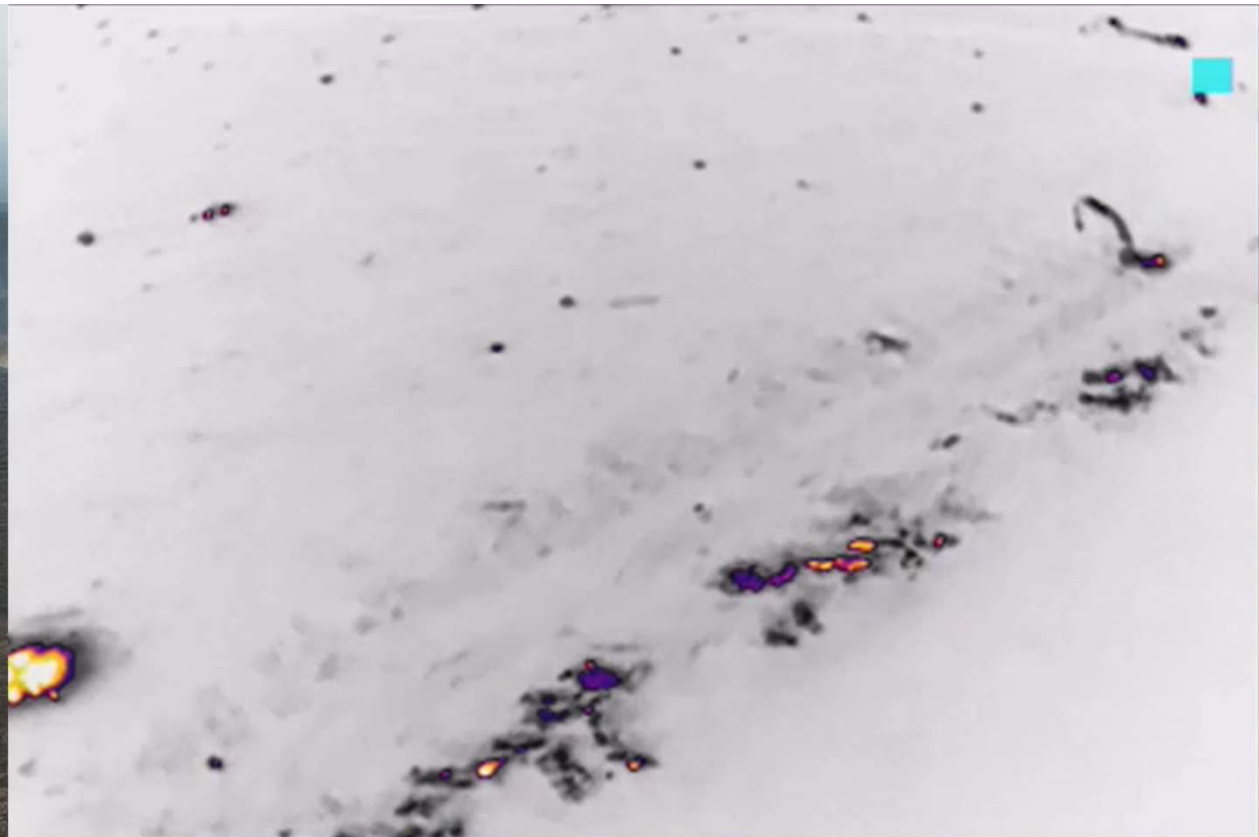
- <all other values>

Type

- Incident Control Point
- Other Point Types

\\





Mop up



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1.5 m/s

439 m



Pilot View



50m



38.533739, 176.301752



12 C

03:55

83%



81%



100%



17



ATL: 38m AGL: 50m



5,900 Views

Selwyn District Council

February 25 at 12:38pm · 🌐

👍 Like Page

Drone technology is providing vital information and support for firefighters in the Port Hills. In this clip operations manager Dave Herries explains how the drones are making a difference.



Tiwai Point

Print Date: 26/01/2018

Print Time: 6:21:36 AM

Thermal Survey
26 Jan 0500 hr



Full burnt area has been surveyed by drone thermal sensor as of 0500 hrs.

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Legend

Points

SymbolID

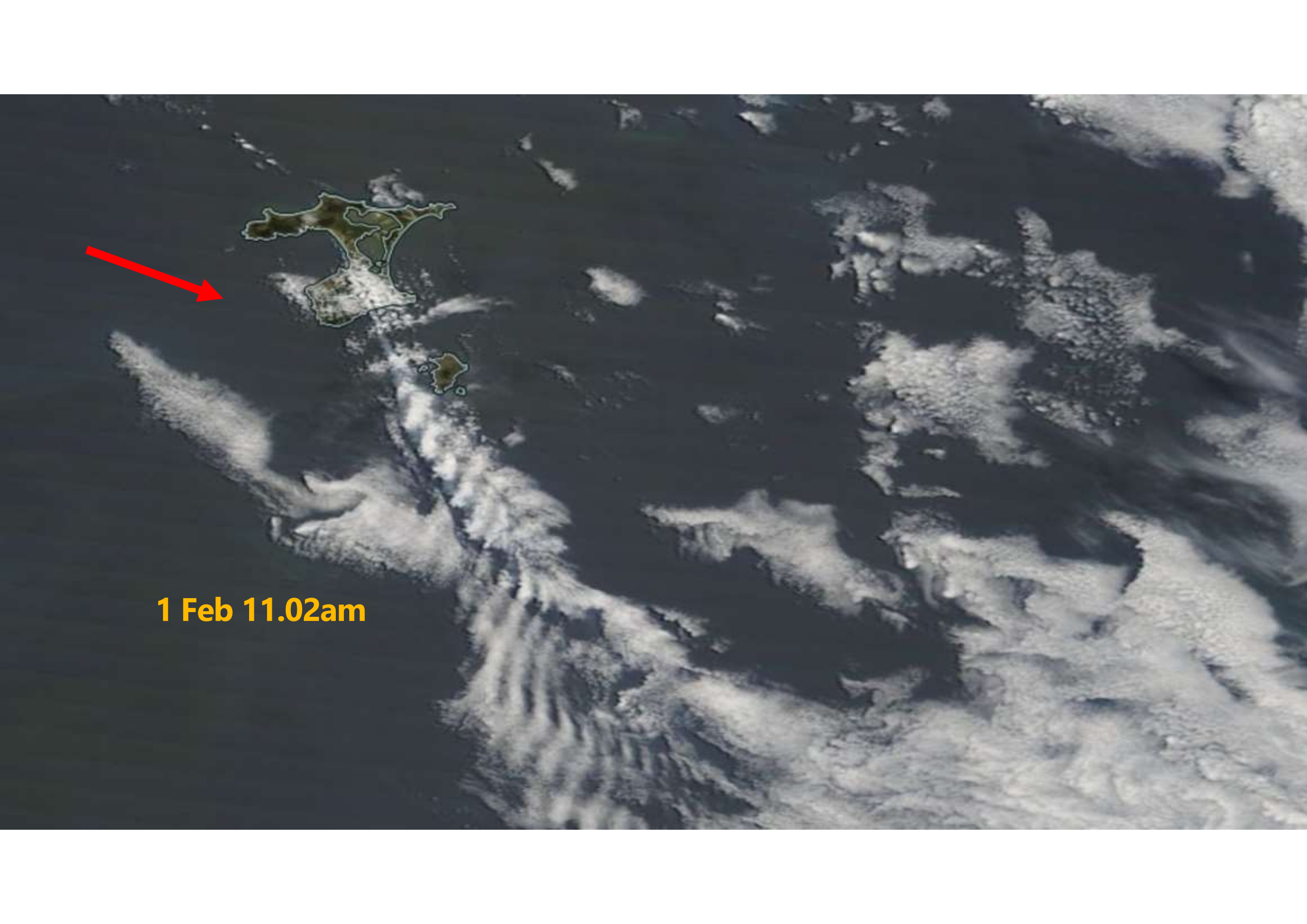
- Priority Hotspot
- Hotspot

Fire_Points

- <all other values>

Type

- Incident Control Point
- Other Point Types



1 Feb 11.02am

1 Feb 2.40pm

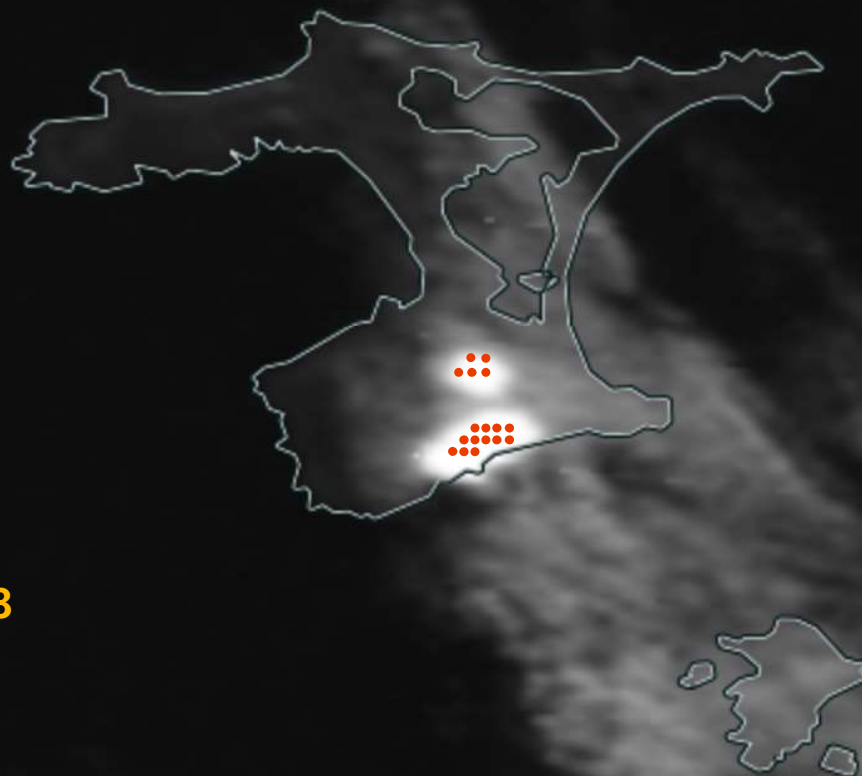


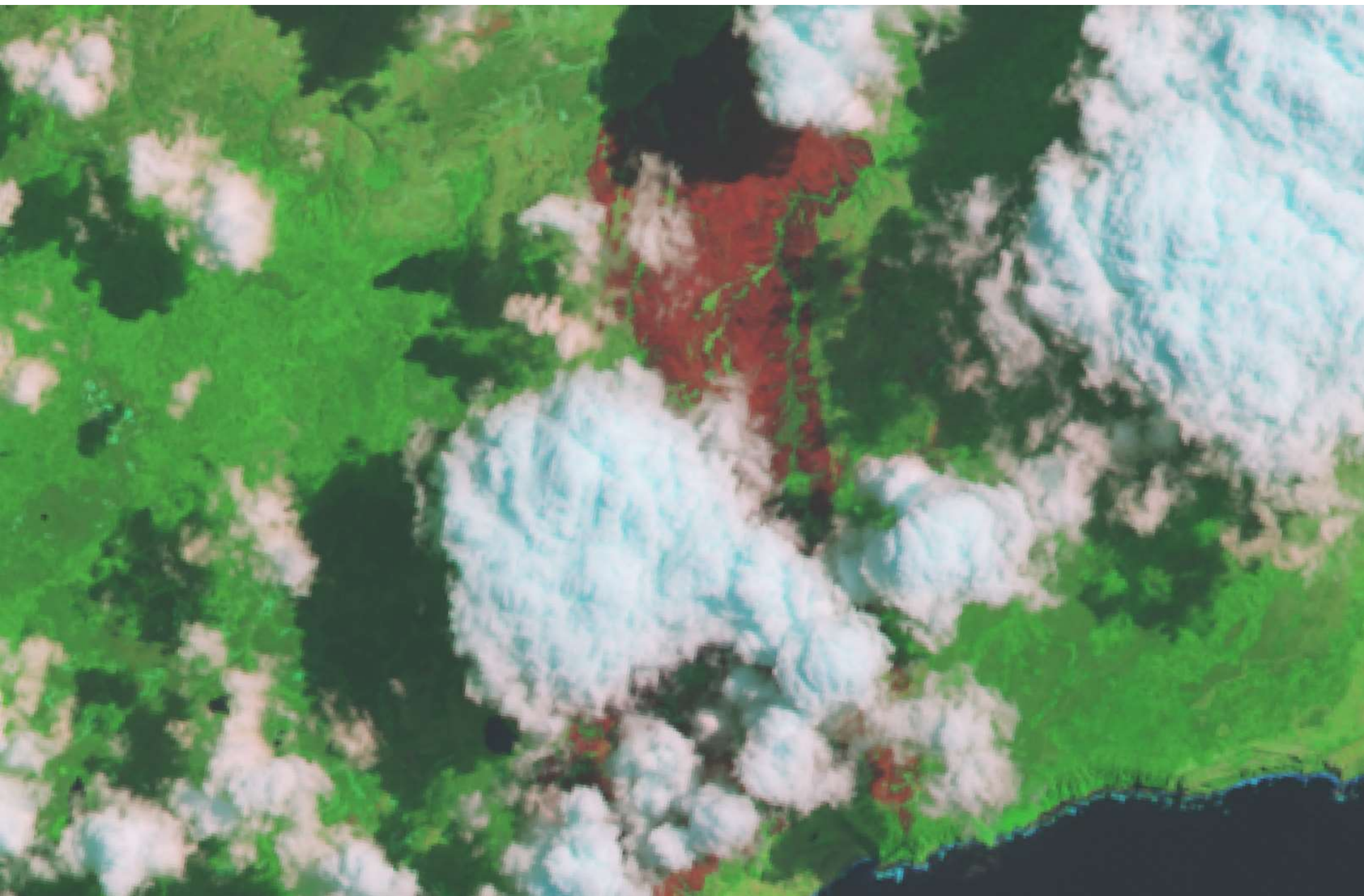


1 Feb 3.12pm

A satellite image showing a tropical storm system. A large, bright, curved band of clouds extends from a landmass in the upper left towards the bottom right. The landmass appears to be a group of islands, possibly in the Pacific Ocean. The background is dark blue, representing the ocean. The text "1 Feb 3.12pm" is overlaid in yellow on the left side of the image.

First Night of Fire
2.05am 2 Feb 2018





Makara Fire

Map Date: 04/02/2018
Map Produced: 0700 10/02/2018

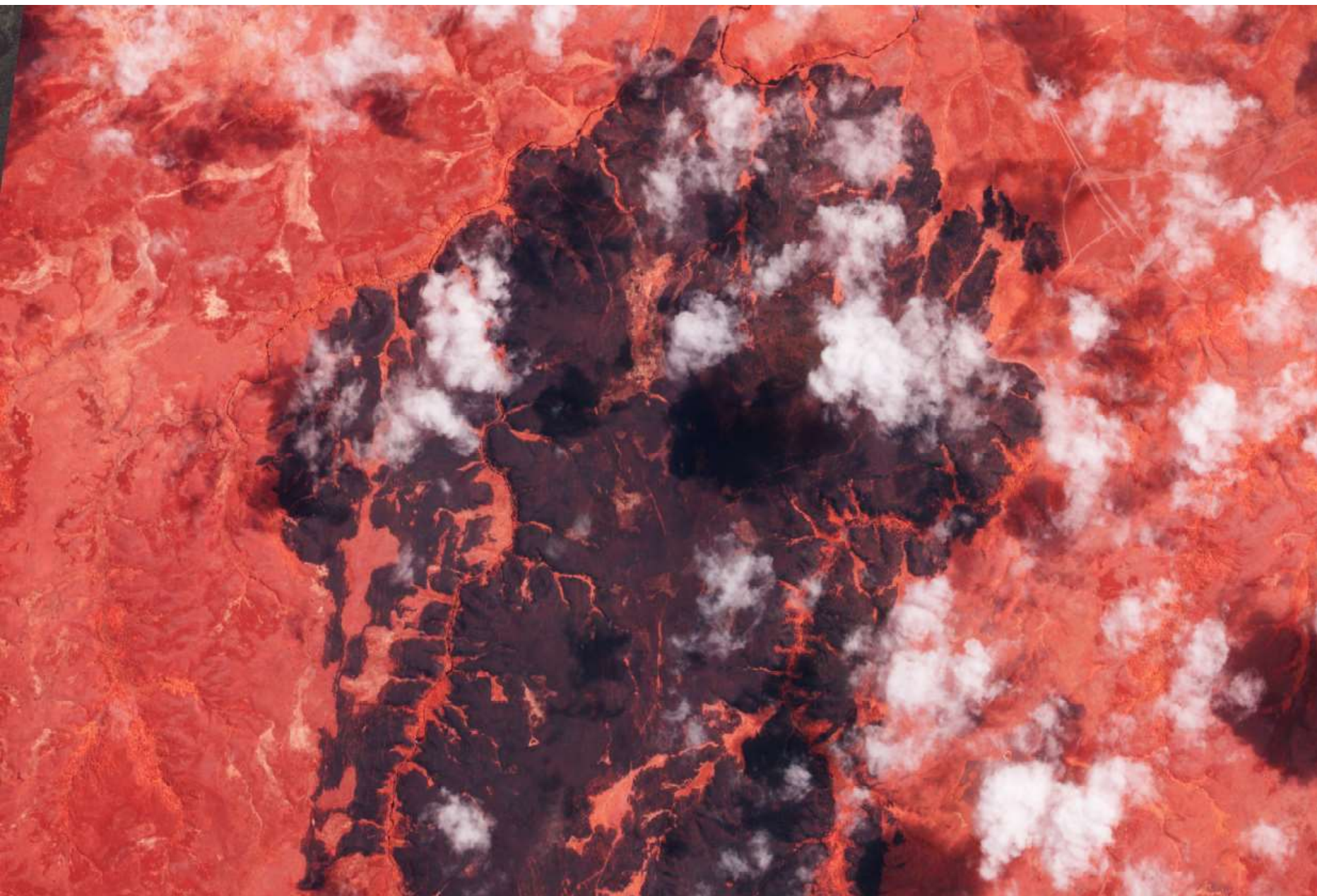
Aerial Satellite
Shortwave Infrared
4 Feb



1:30,000

1 cm = 300 meters

Page size: A2
Coordinate System: NZTM
Prepared by: Patrick de Jong



Makara Fire

Map Date: 06/02/2018
Map Produced: 0700 10/02/2018

Aerial Satellite NIR
North Extent
6 Feb 10.43am





Makara Fire_Chatham Islands - SIERRA

Chatham Islands, New Zealand



Fire View

Drone / UAV 360 Degree Forest View – Aerial Assessment



Tour by interpine



Burnt Hut - Heli 6



CHARLIE / DELTA



XRAY Southern



ALPHA Southern



SIERRA

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Tue 23/01/2018 5:06 PM

NASA FIRMS <noreply@modx.nascom.nasa.gov>

FIRMS Rapid Alert Id 17526, modis-c6 (Mark)

To Mark Forward



If there are problems with how this message is displayed, click here to view it in a web browser.



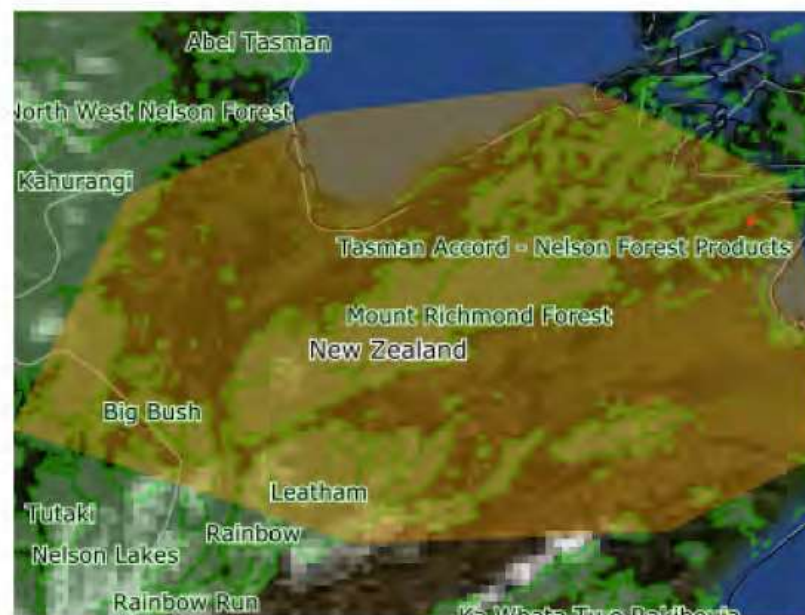
R_FirePoints_17526_180122230543_modis-c6.csv
560 bytes

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LAND VIEWER



Input Location or Scene ID



MY AOI UPLOAD AREA OF INTEREST



SELECT SATELLITE

Operative

Landsat 7
Archive: since 1999

Landsat 8
Archive: since 2013

MODIS MCD43A4
Archive: since 2013

Sentinel-2
Archive: since 2015

Inoperative

Landsat 4 (MSS)
Archive: 1982 - 1992

Landsat 4 (TM)
Archive: 1982 - 1993

Landsat 5 (MSS)
Archive: 1984 - 2013





Input Location or Scene ID



MY ACCOUNT

UPLOAD AREA OF INTEREST

Storm Damage Assessment

Subscribe to new scenes

Please select satellites from which you would like to receive notification about availability of new scenes in the future via email in your region of interest.

☐ Landsat 7

☒ Landsat 8

☒ Sentinel-2

CANCEL

SUBSCRIBE



Example - Storm Damage
38.12193°S 177.03034°E



Google

Terms of Service

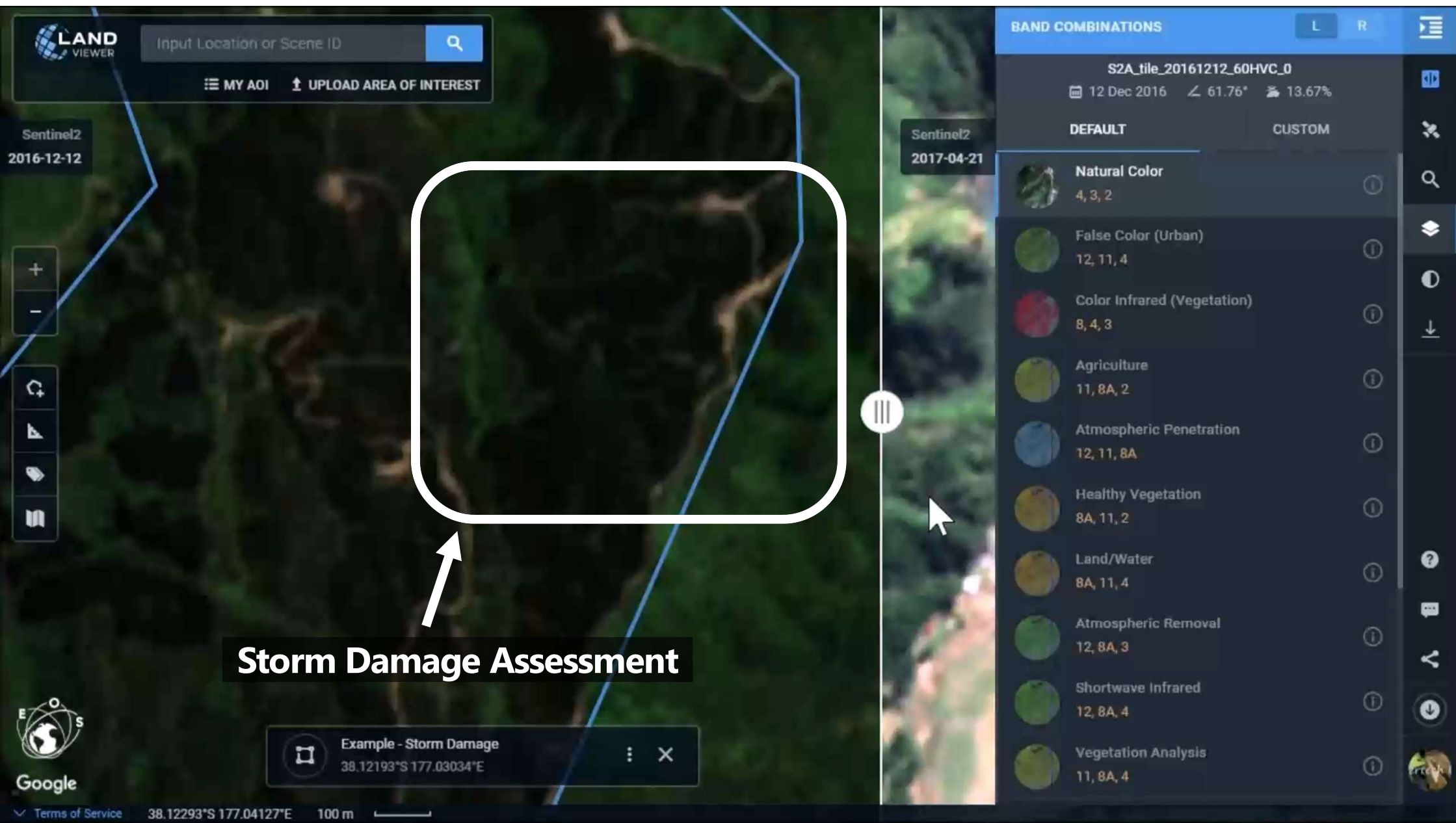
38.14725°S 176.98691°E

500 m



Storm Damage – Forest View

Drone / UAV 360 Degree Forest View – Aerial Assessment





Not Connected Range:

100%



--%



--%



--%



0

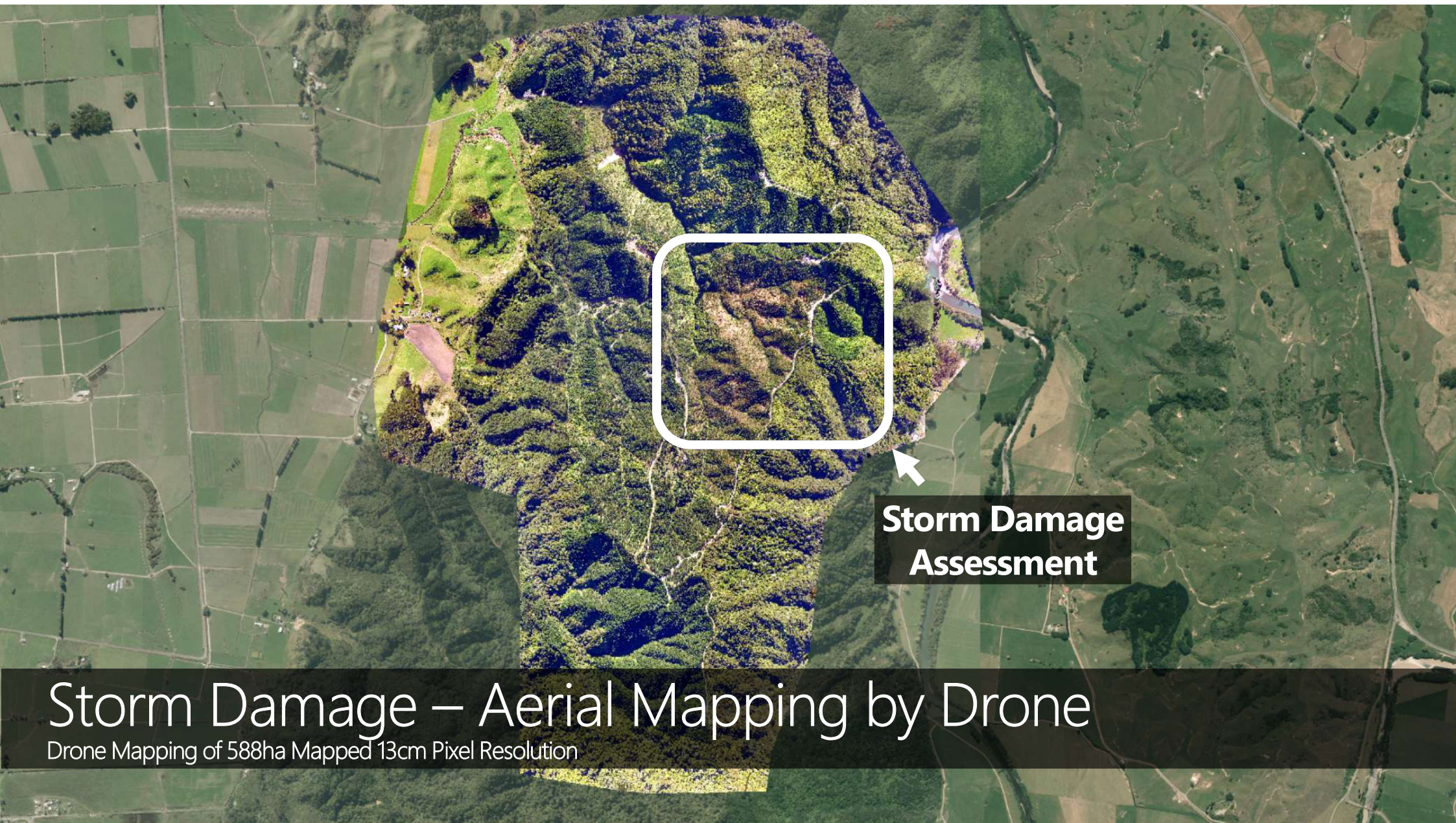


Flight Planning

Drone Operations



[Legal](#)



**Storm Damage
Assessment**

Storm Damage – Aerial Mapping by Drone

Drone Mapping of 588ha Mapped 13cm Pixel Resolution






Search for a location ×

📅 No date ranges defined Save search

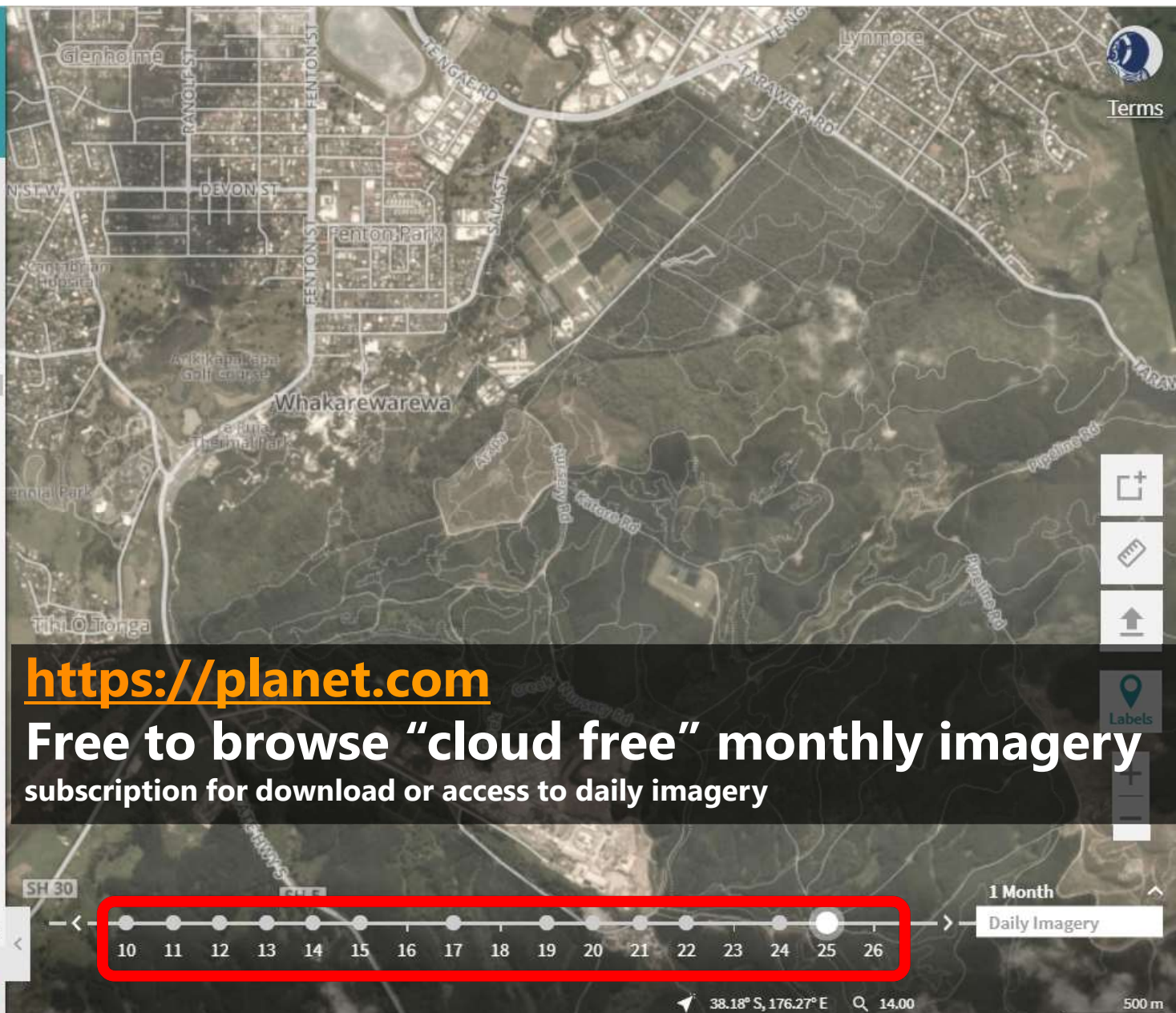
Daily Imagery - Aggregate of image captures ▼

☁️ Cloud cover 0 - 100 % 📷 Area coverage 0 - 100 % 📡 Source All sources All filters >

All (1,356) > Most recent ▼

-  Mar 26, 2018 12:27:09 PM GMT+13
PlanetScope Ortho Tile (3.125 m)
75 % area coverage 2 images
-  Mar 25, 2018 23:27:08 UTC
4-band PlanetScope Scene (3 m)
75 % area coverage 2 images
-  Mar 25, 2018 23:27:08 UTC
3-band PlanetScope Scene (3 m)
75 % area coverage 2 images
-  Mar 25, 2018 21:40:16 UTC
3-band PlanetScope Scene (3 m)
6 % area coverage 1 image
-  Mar 25, 2018 21:40:16 UTC
4-band PlanetScope Scene (3 m) 1 image

API { : } Compare Order items (2)



<https://planet.com>

Free to browse “cloud free” monthly imagery
subscription for download or access to daily imagery

1 Month ⬆
Daily Imagery ⬆

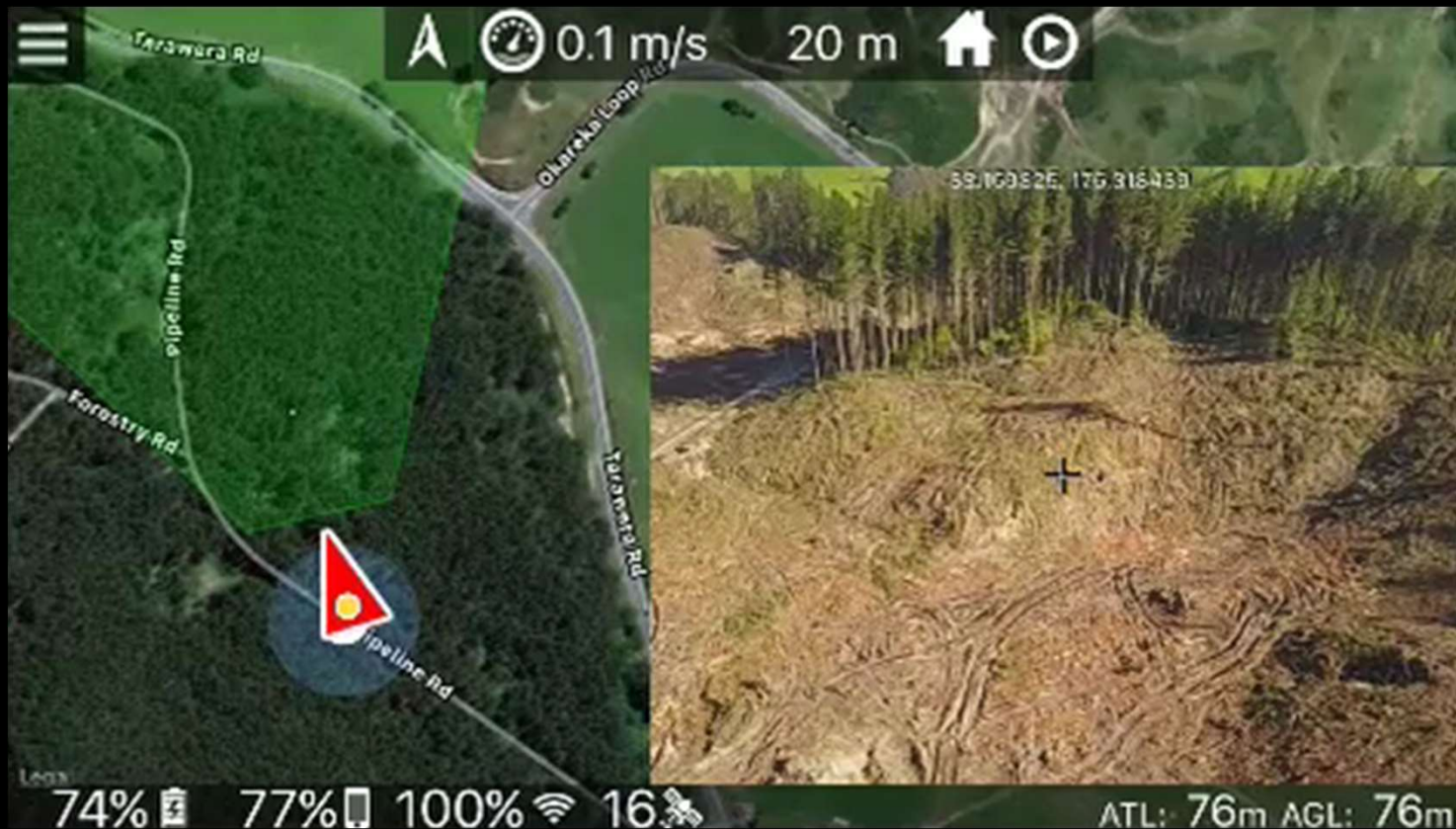
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

38.18° S, 176.27° E 🔍 14.00 500 m



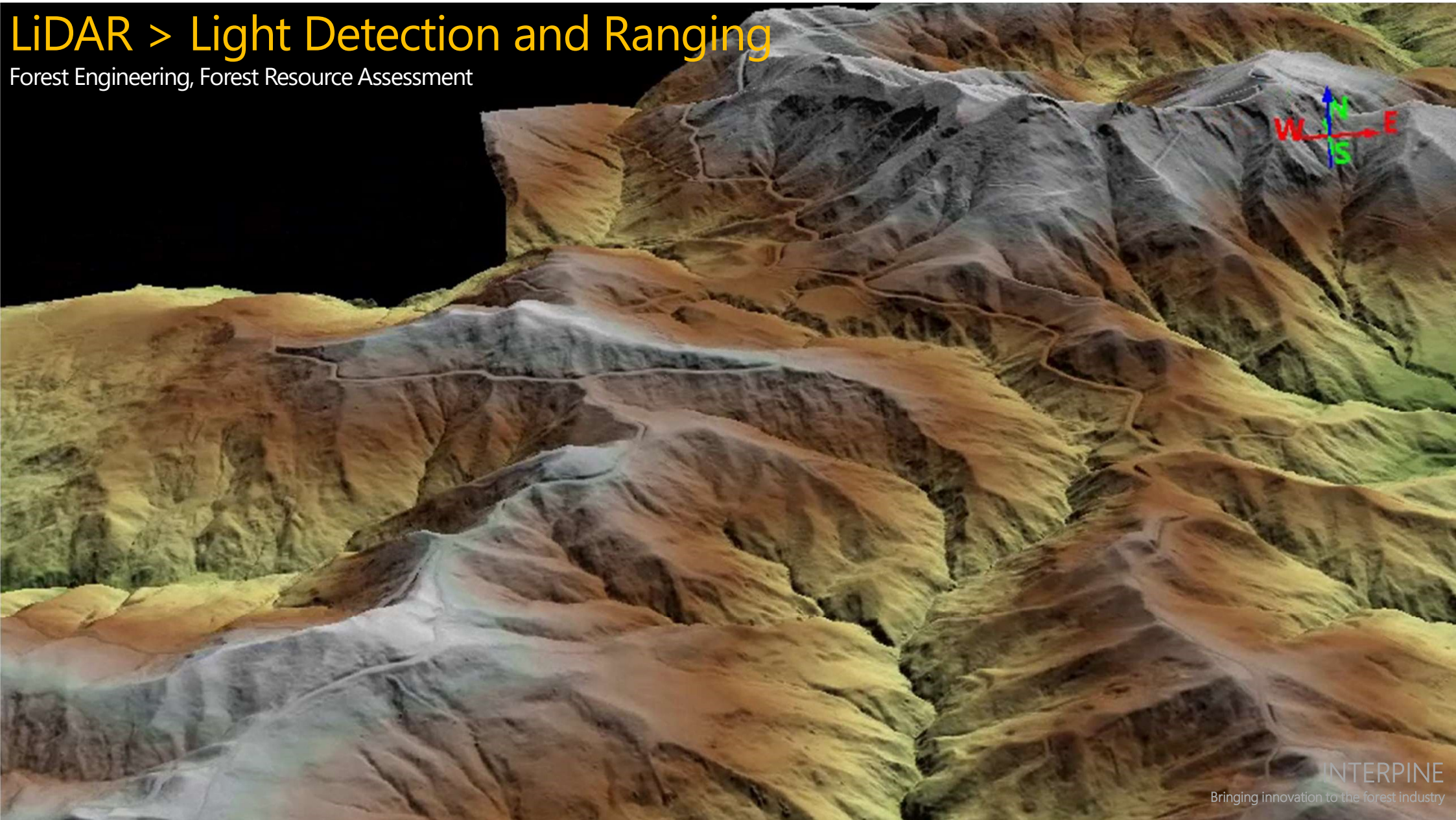


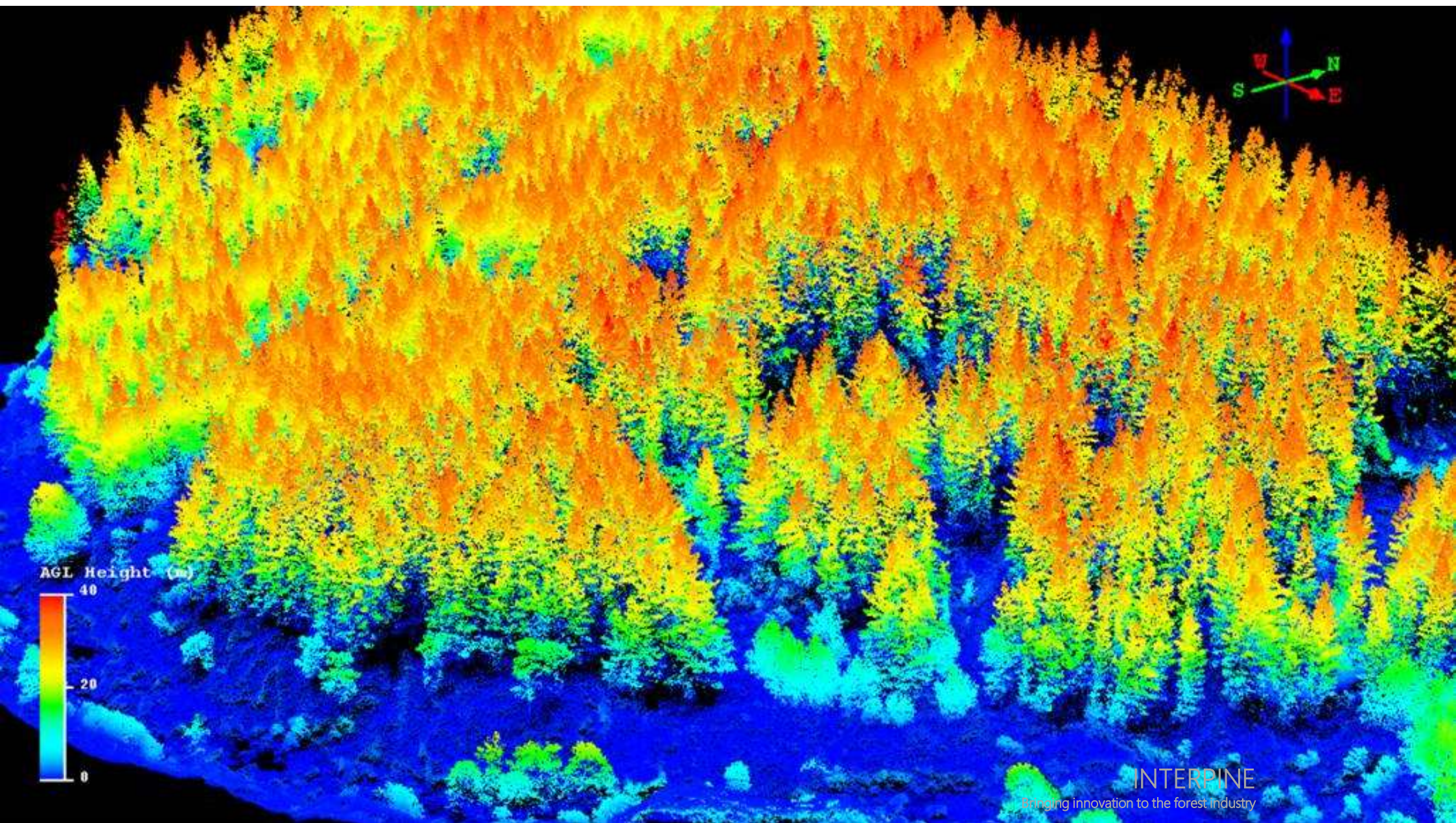
Harvest Area Markup > Live Full Motion Video Analysis

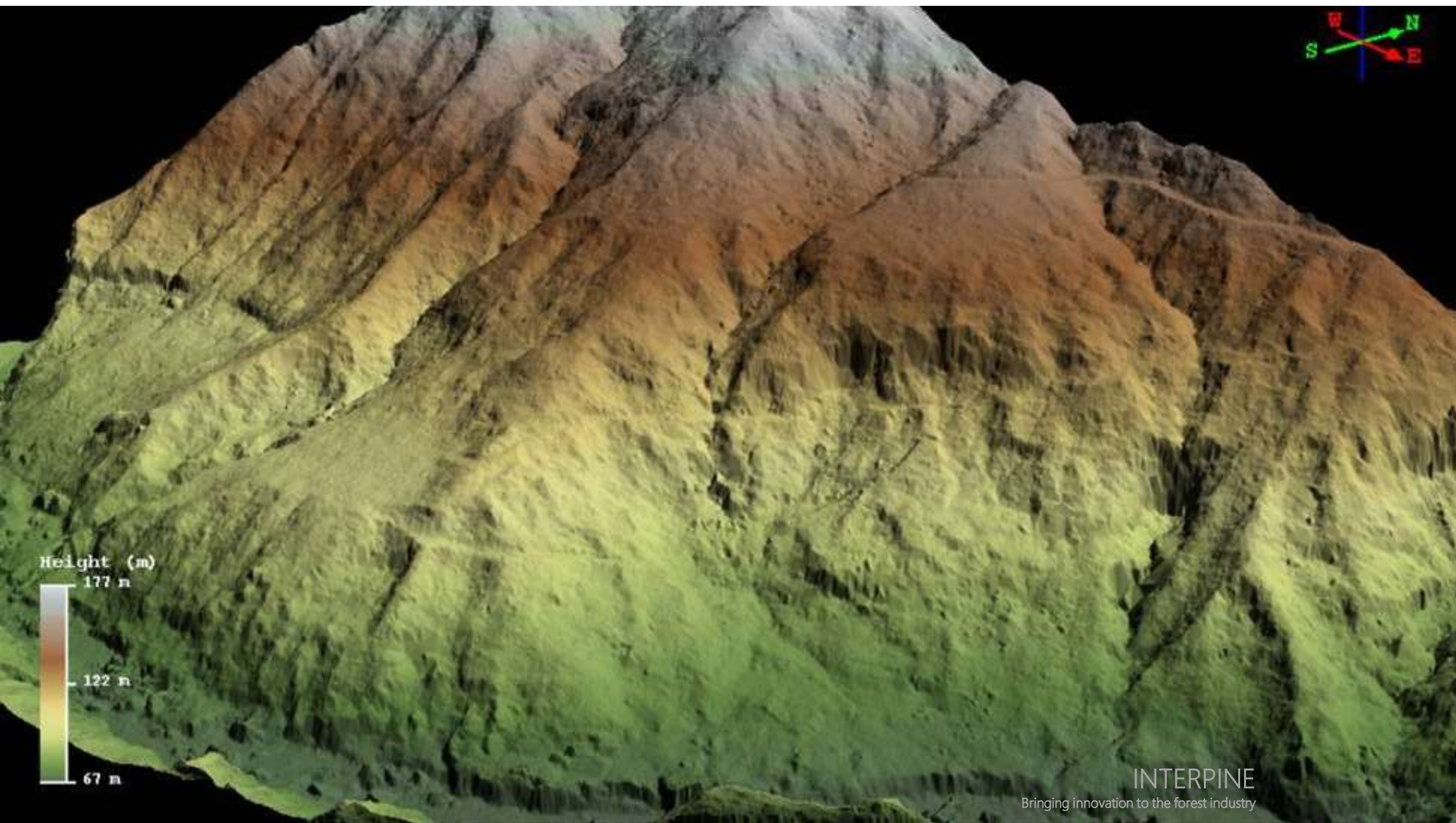


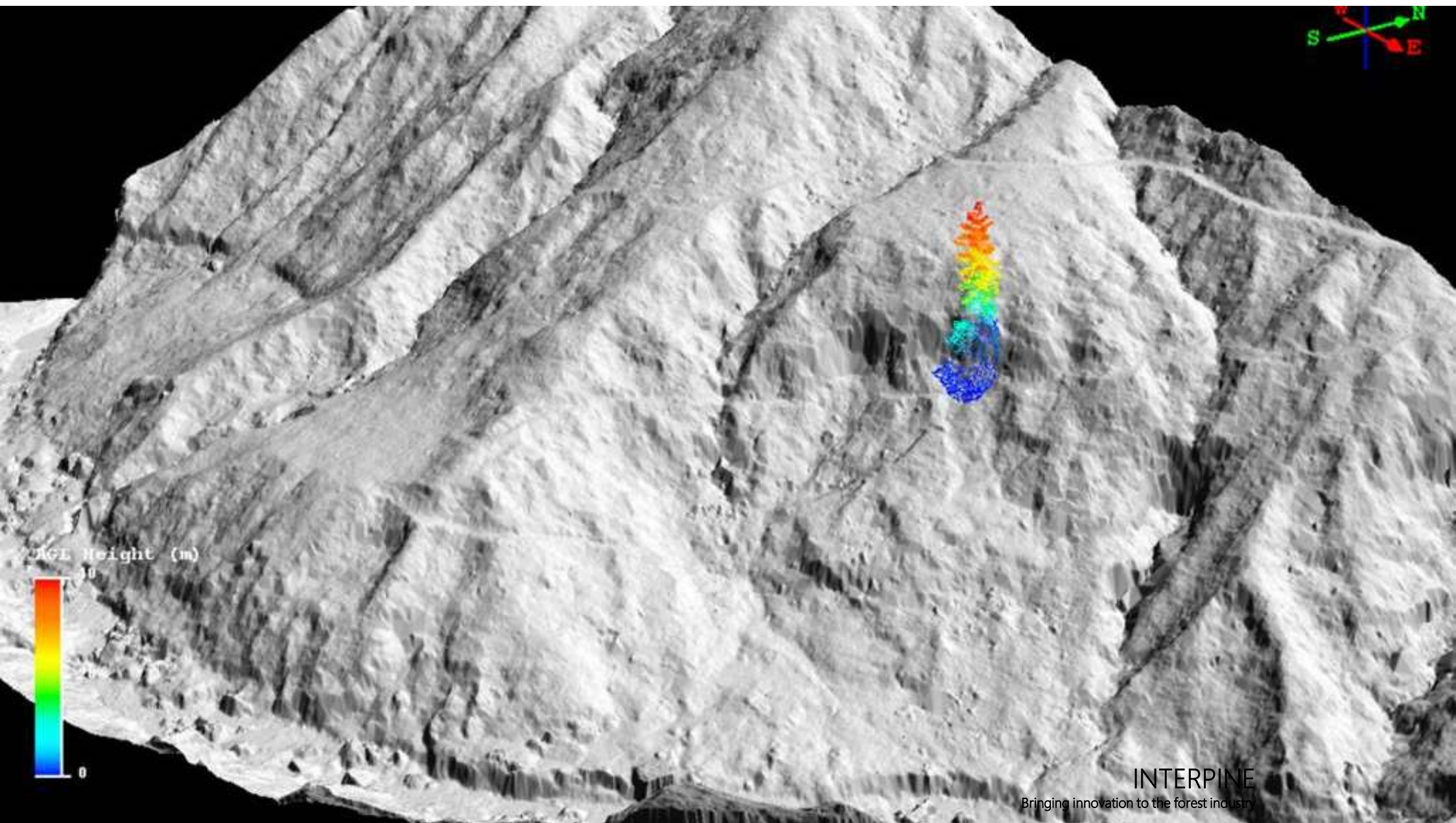
LiDAR > Light Detection and Ranging

Forest Engineering, Forest Resource Assessment

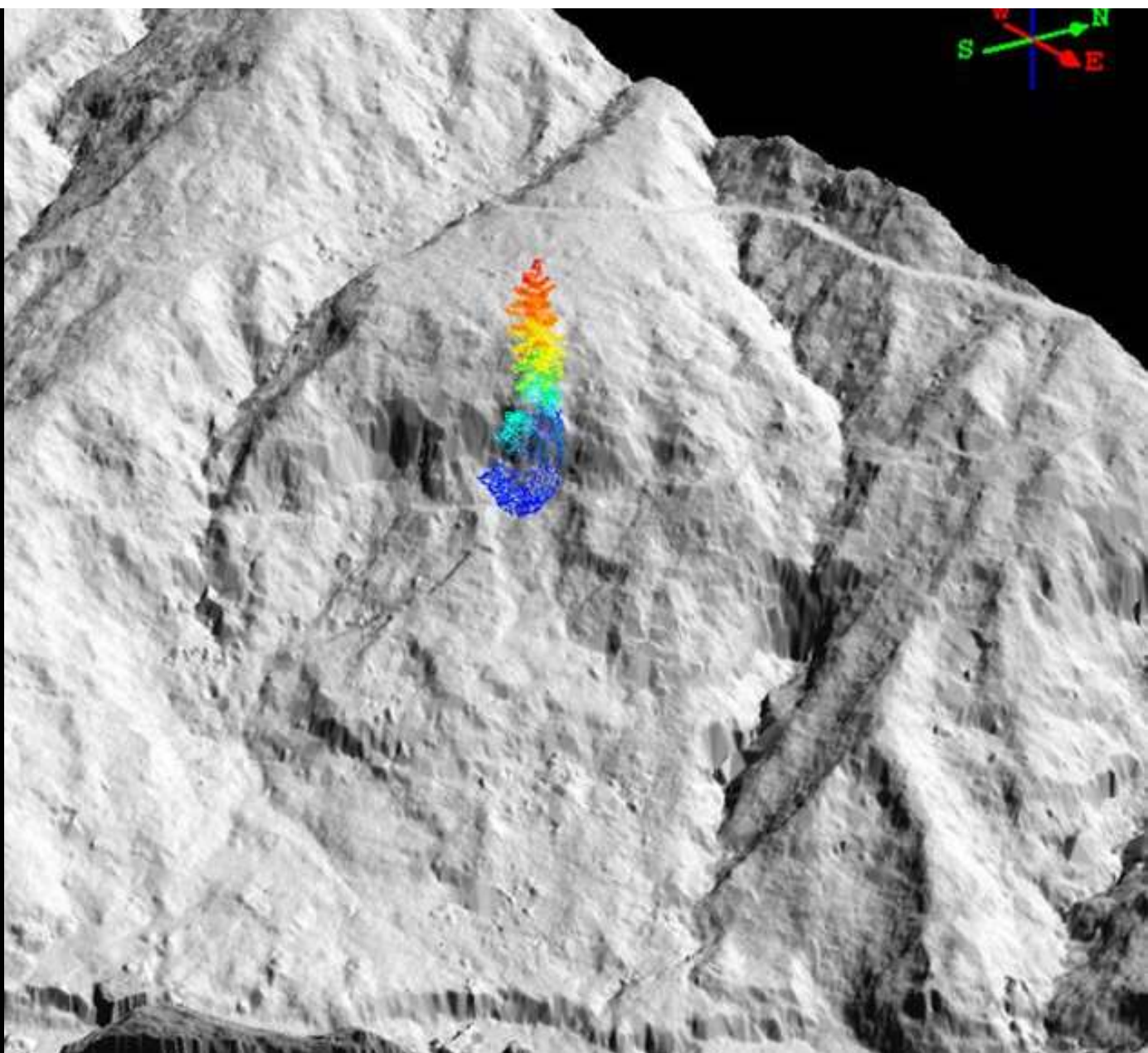
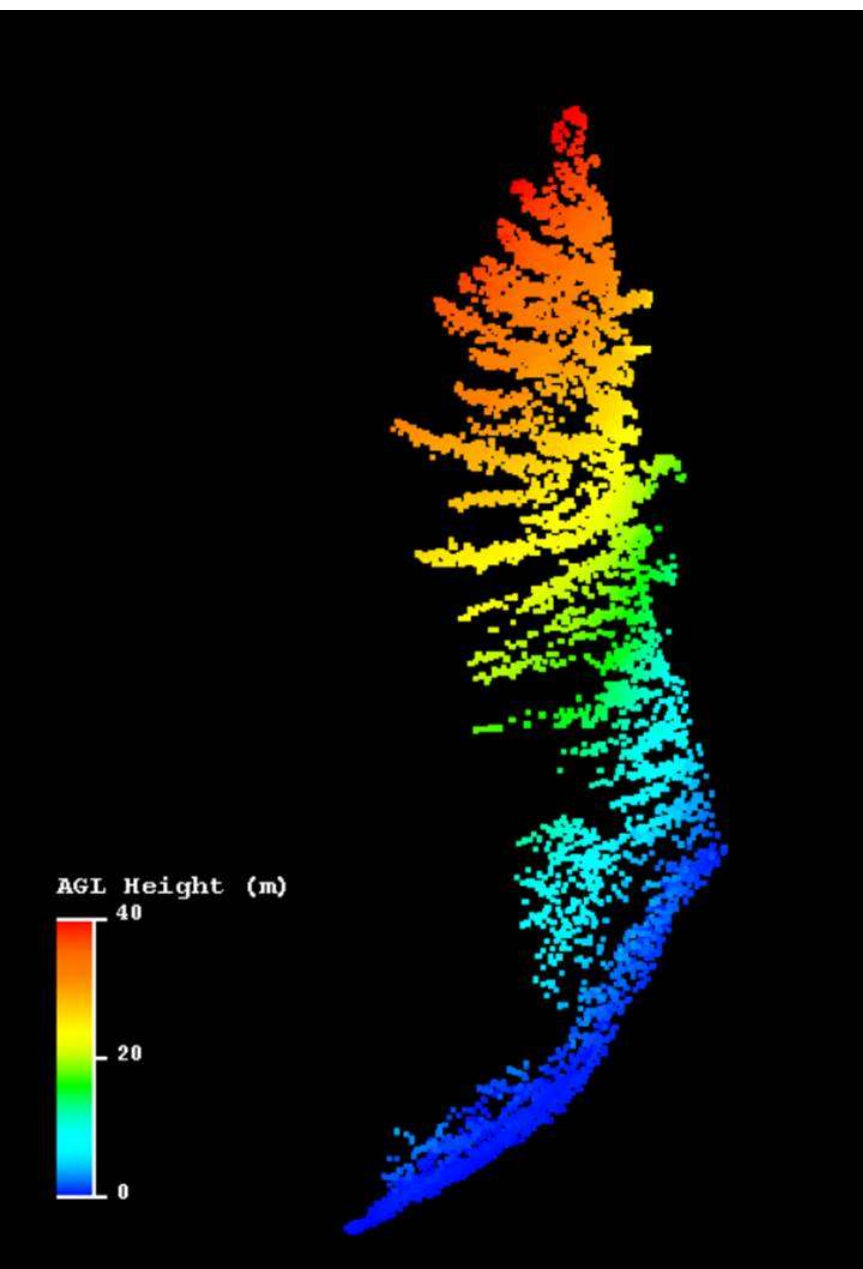


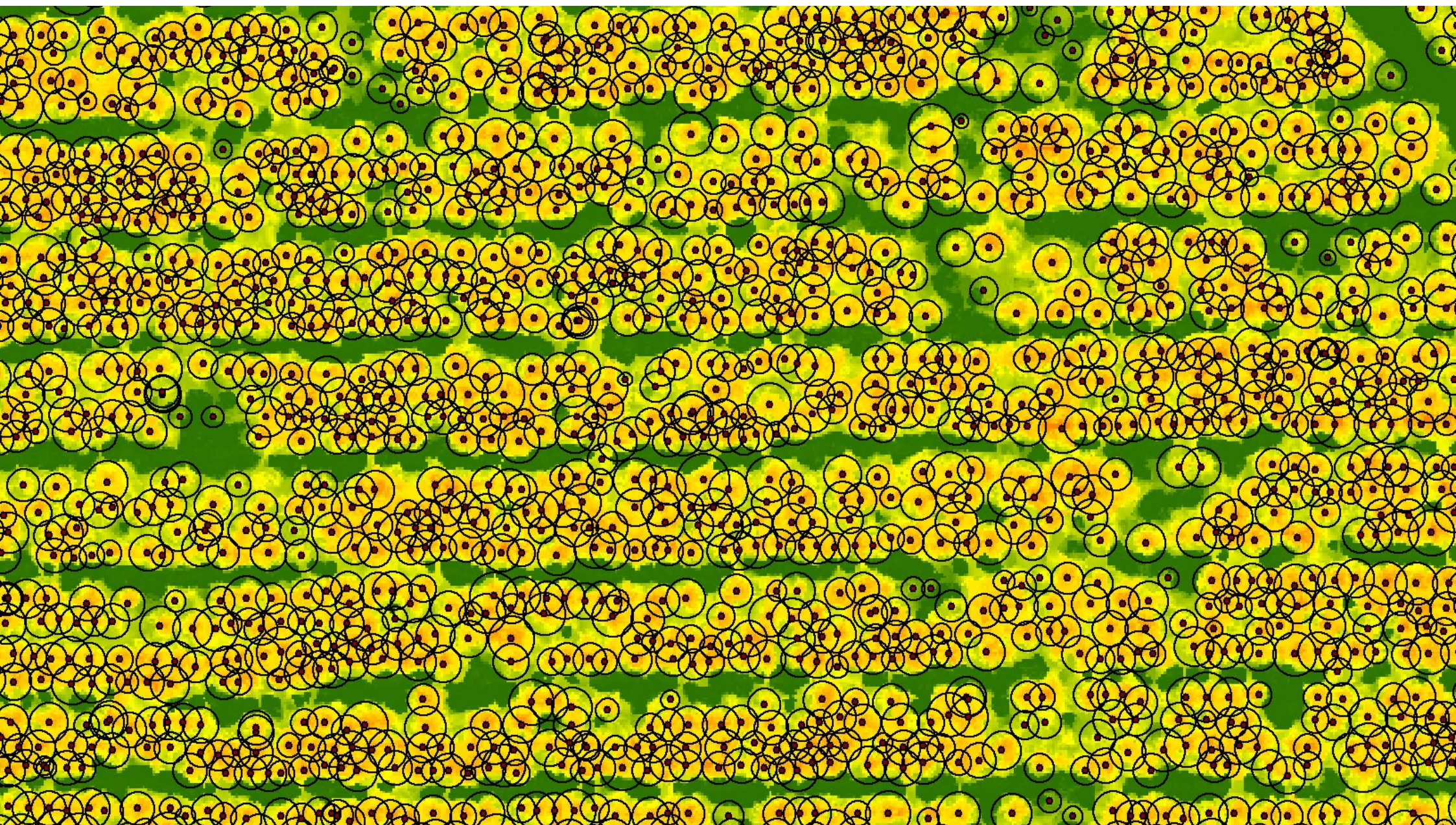






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LiDAR Why ?

“proved eerily correct”

“Convincing everyone of the benefits, both financial and operational is key, but once they have LiDAR – operationally and strategically they will wonder how they ever lived without it”

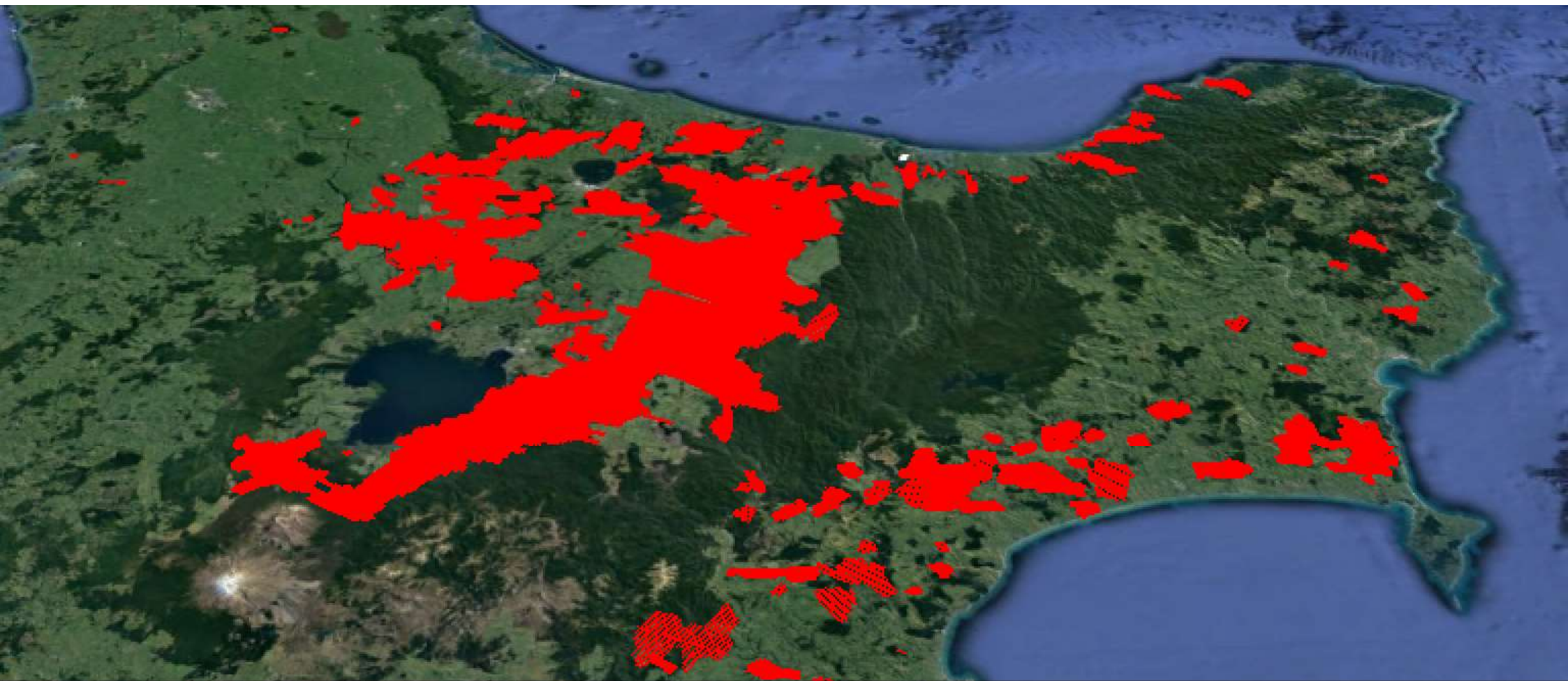
FCNSW – Mark McRostie

“predictions and realised volumes are highly consistent at the grade level, spatial patterns of grade recovery and volume were consistent with harvester data provided by Interpine’s STICKS”

OneFortyOne – Jan Rombouts

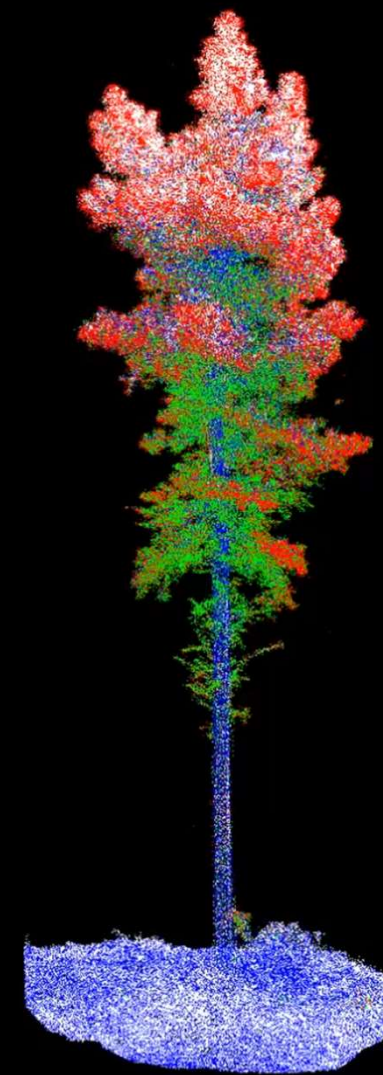
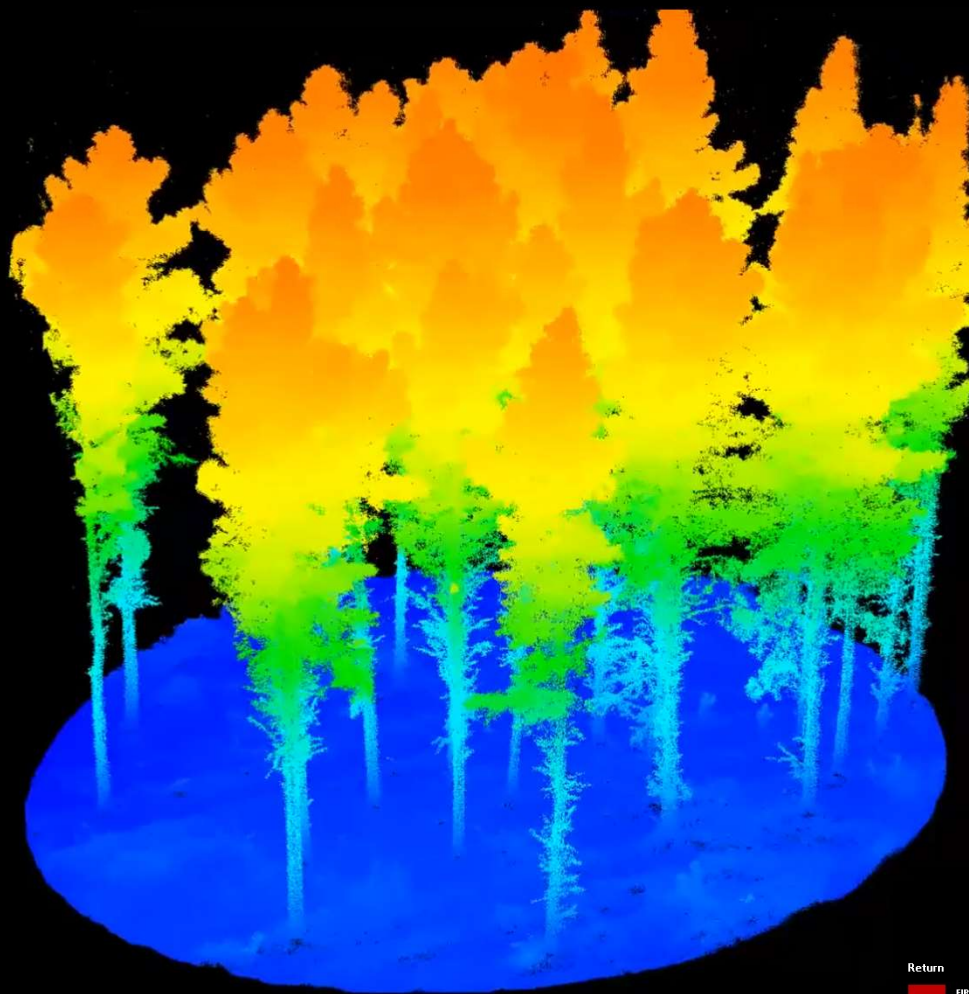
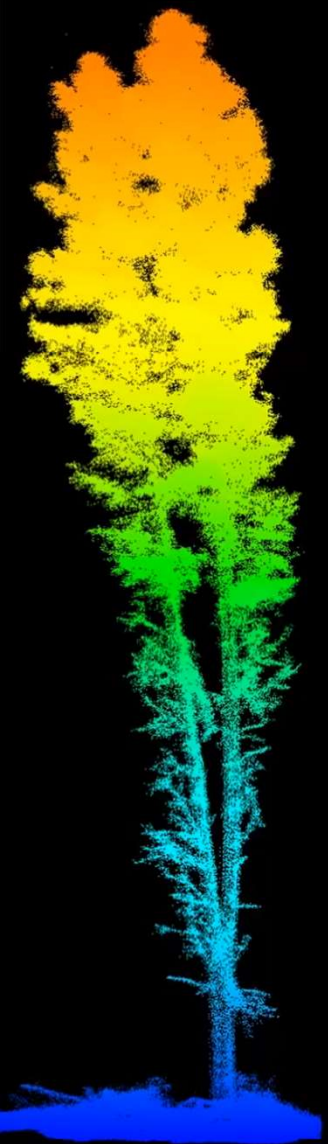
“provided a comprehensive description of the estate, generic yield tables have replaced with LiDAR and results feed into 5 year cutplan and harvesting, silvicultural prescriptions”

Timberlands Pacific – John Moore



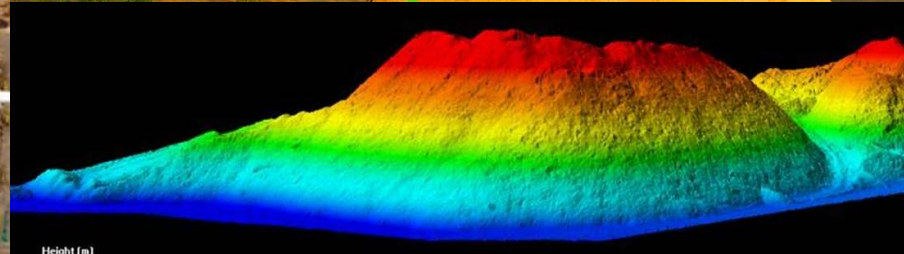
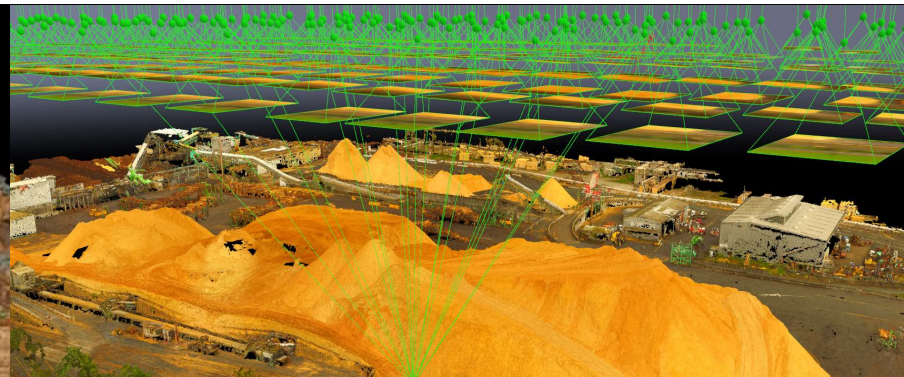
New Zealand 2017 Forestry Sector Initiative
561,000 ha Plantation Forest across 15 Parties

Ultra Dense Point Cloud Data for Forest Inventory



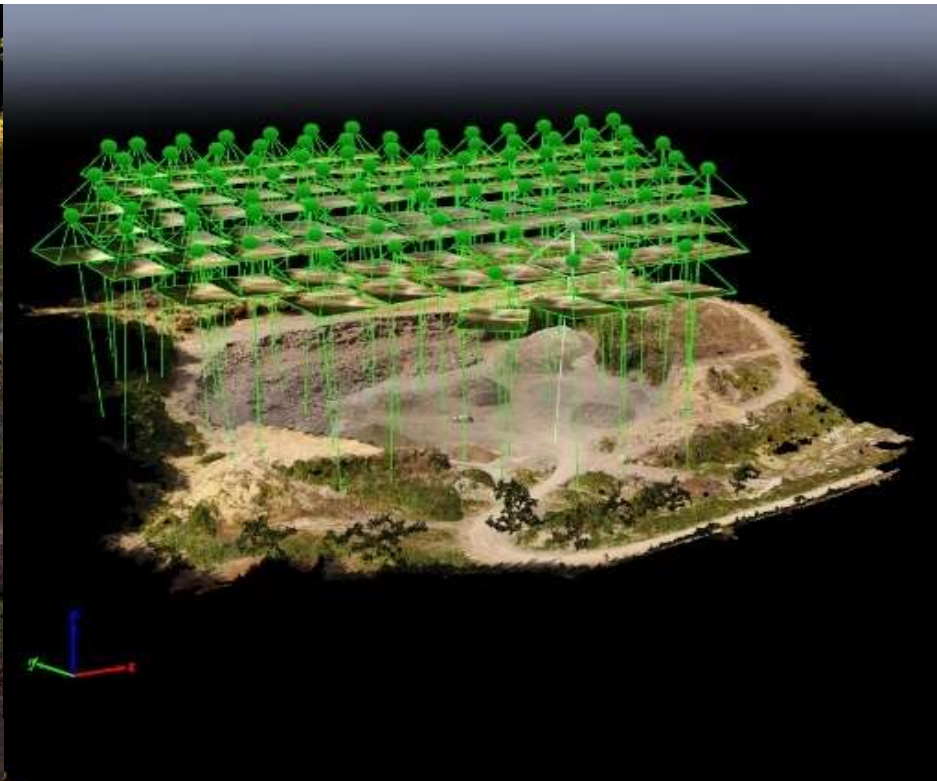
7,700 pulses per m², up to 11 returns per pulse

Return
FIRST
INTERMEDIATE
LAST
ONLY

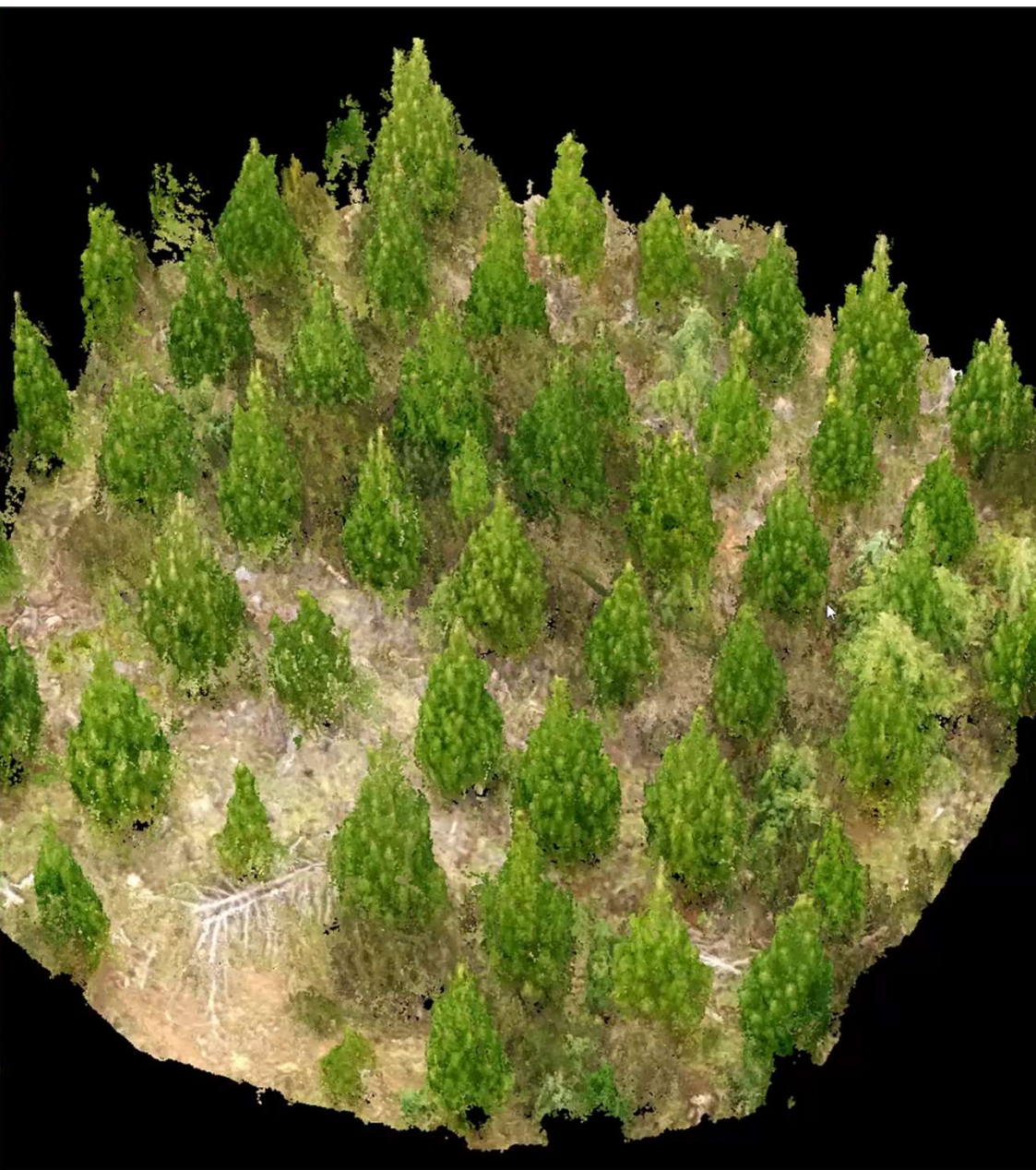


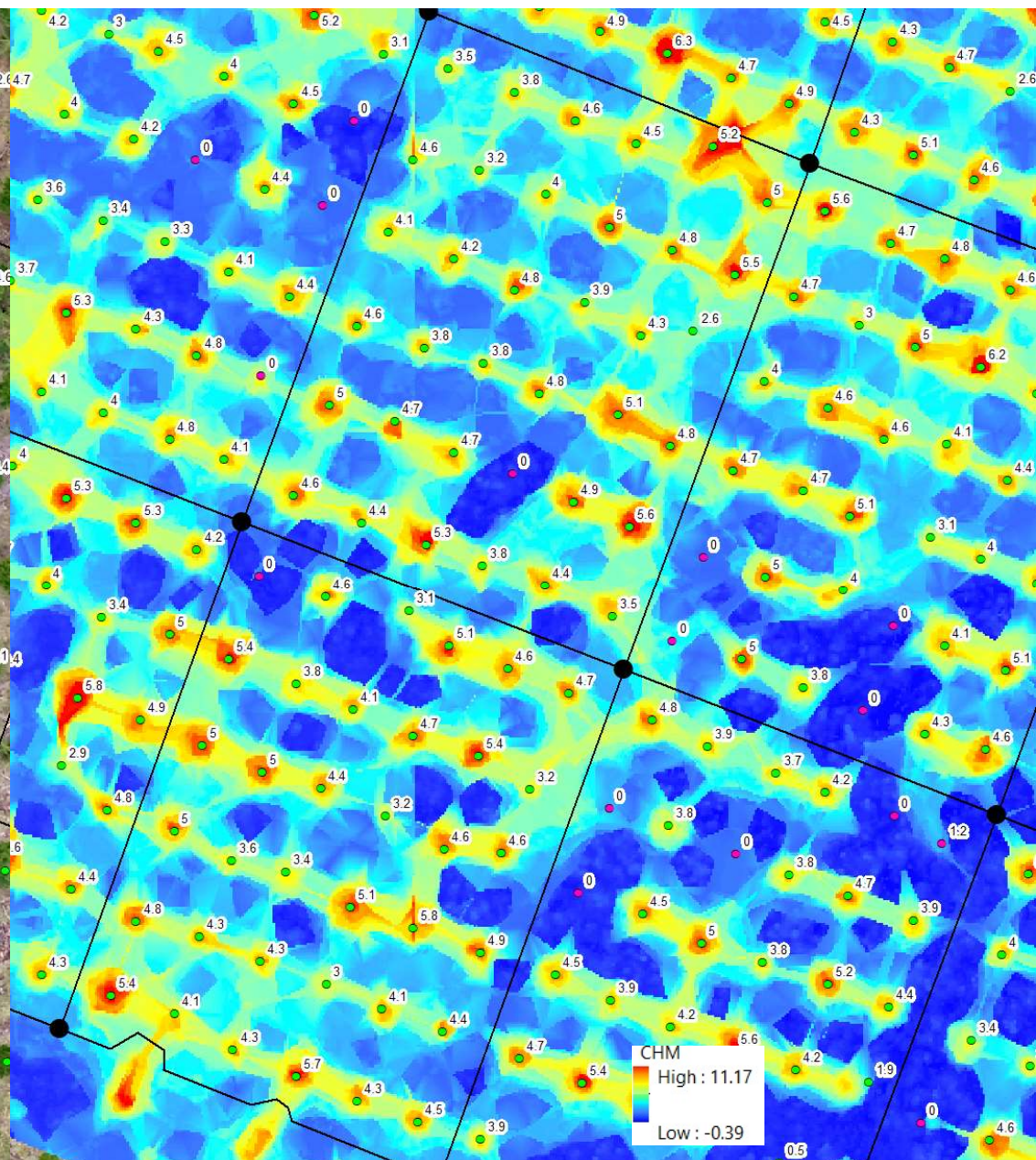
Height (m)

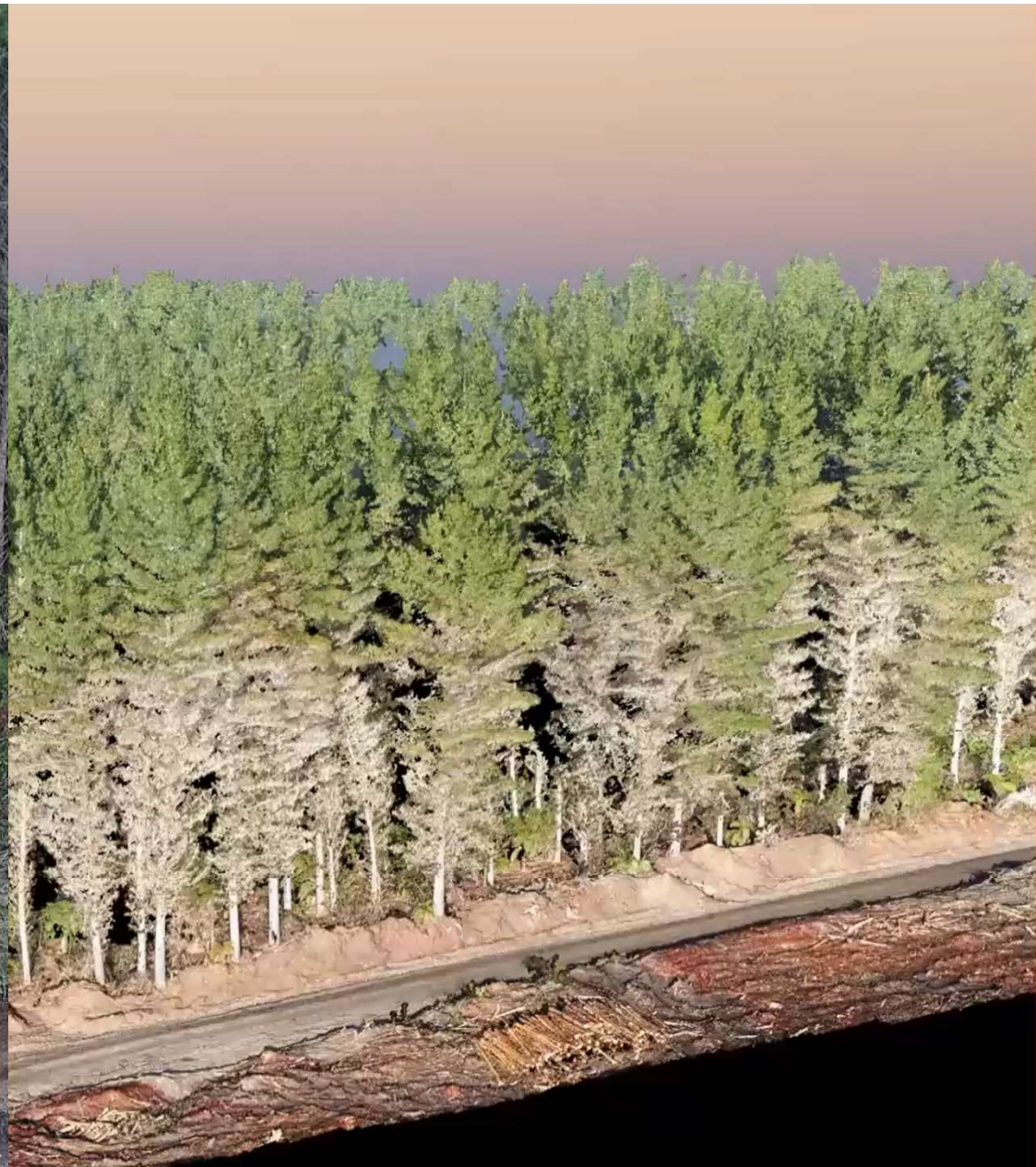




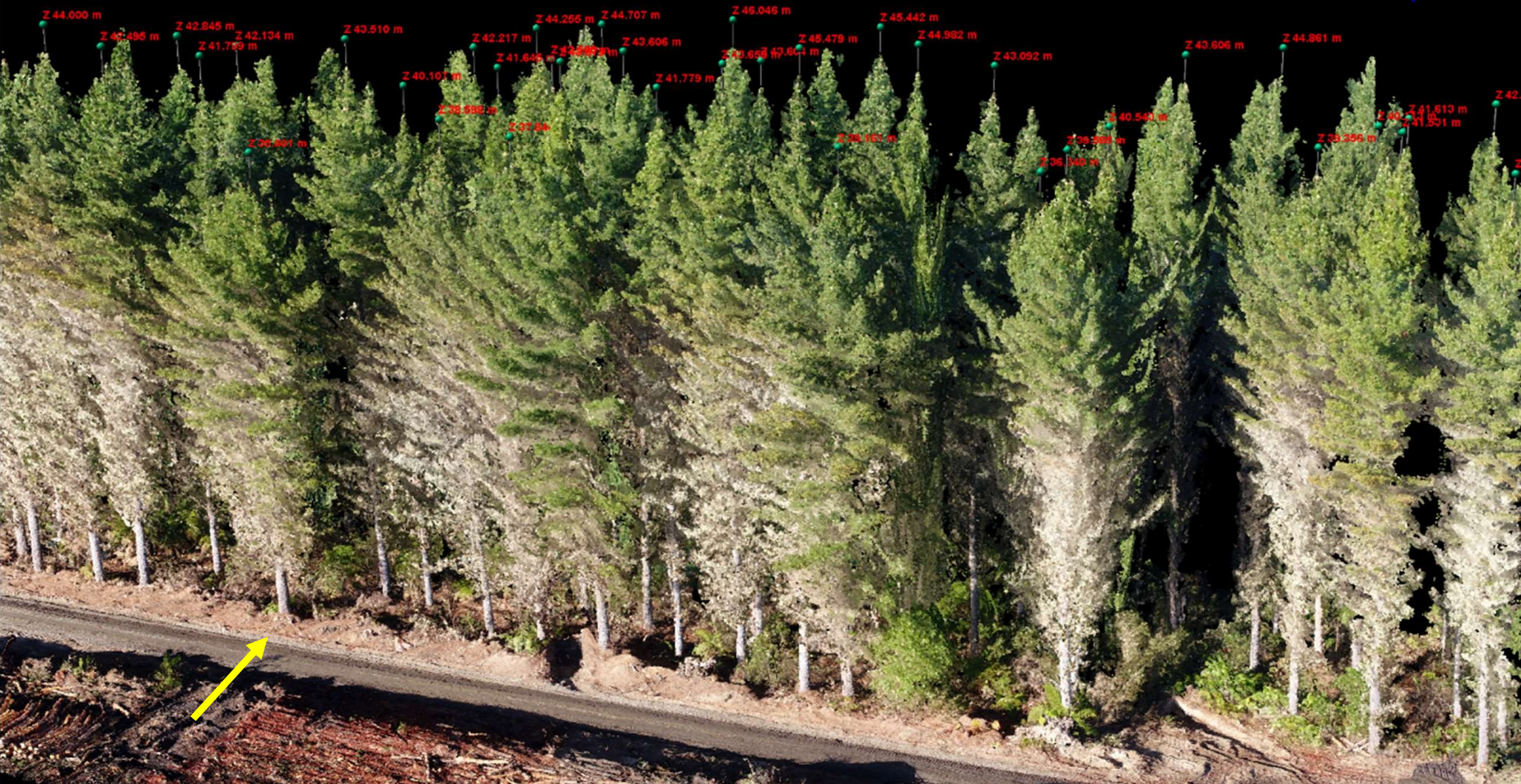
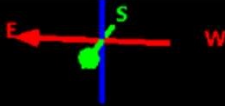








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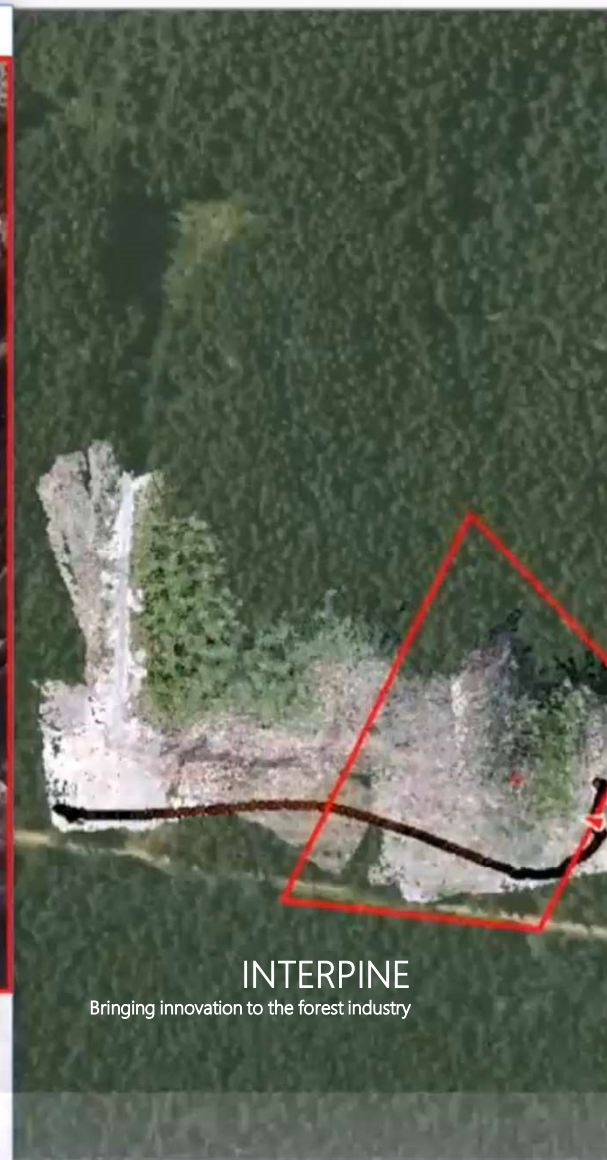
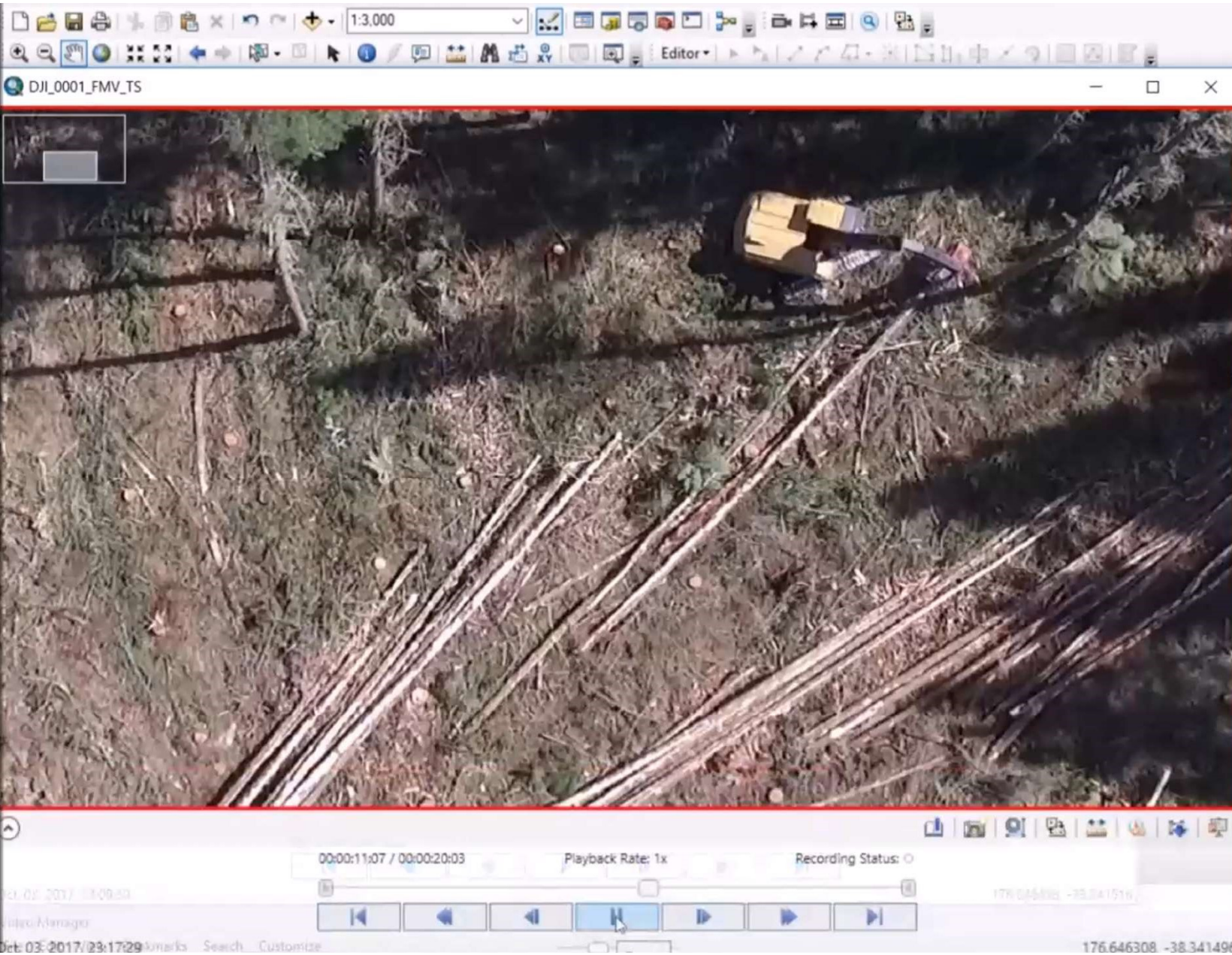


35.6m



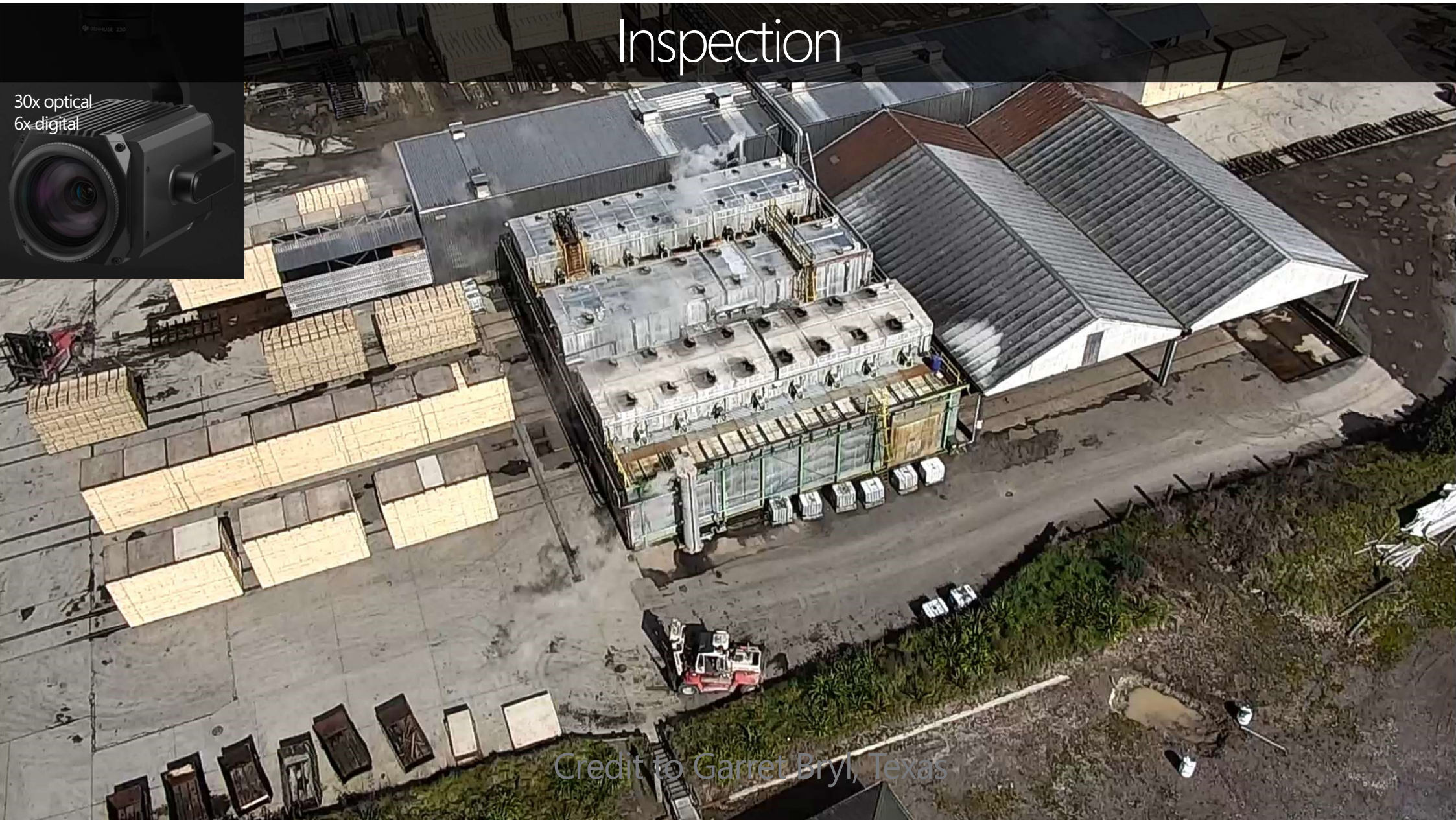
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Inspection

30x optical
6x digital



Credit to Garret Bryl, Texas

Inspection



Seedling Delivery and Synthetic Straw-line Layout

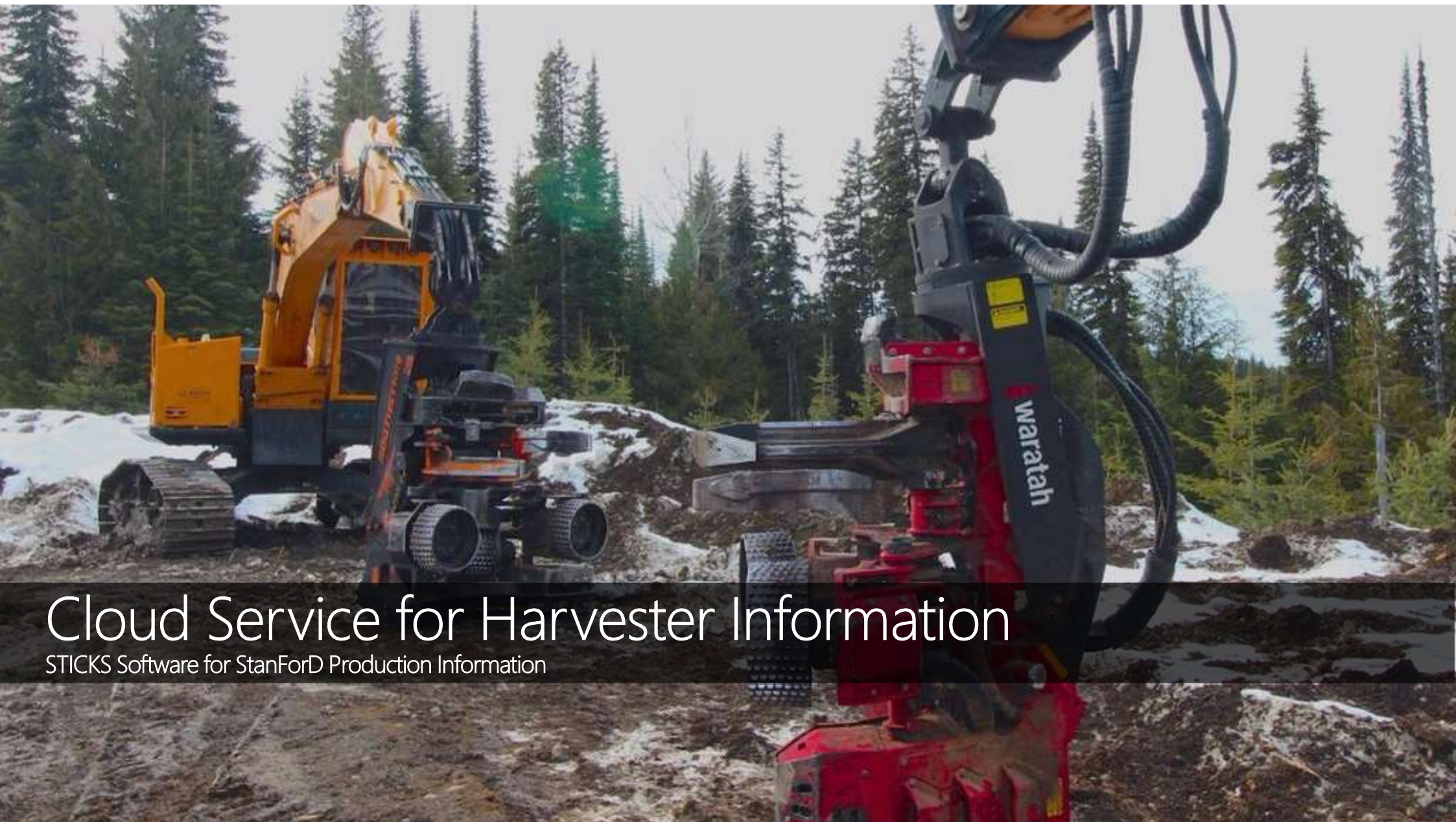






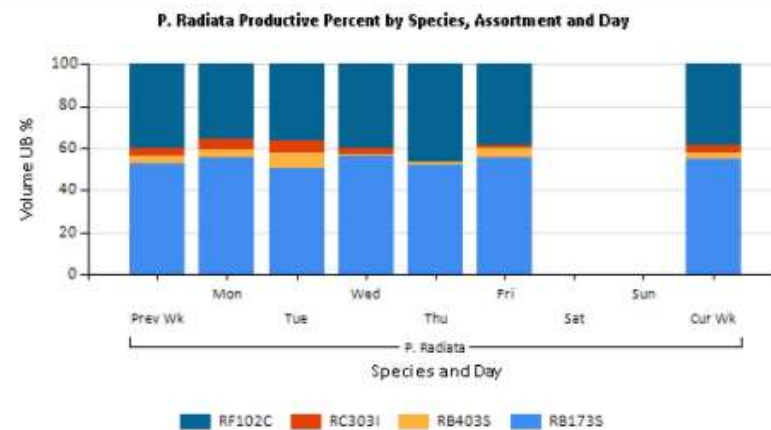
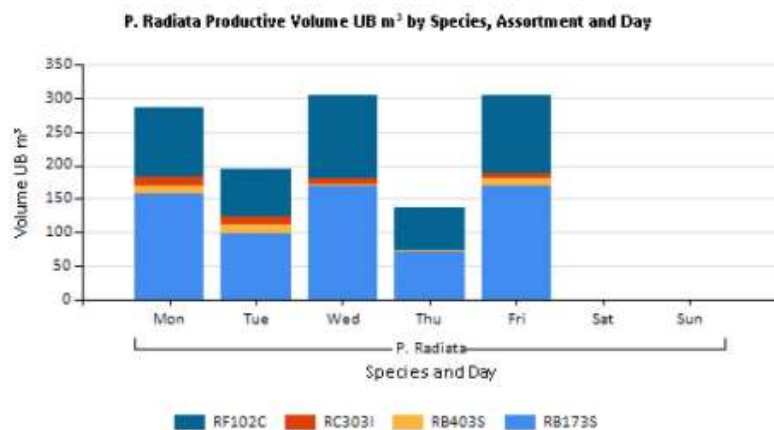
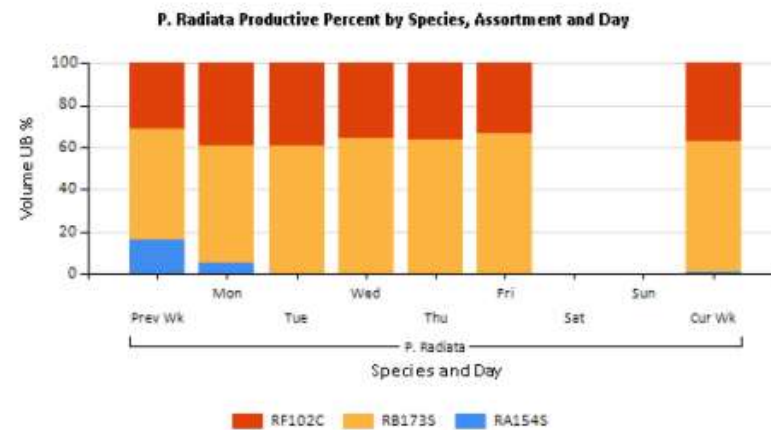
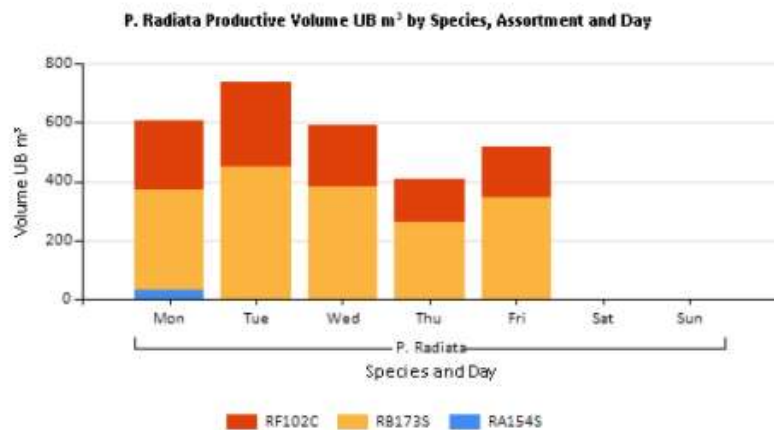






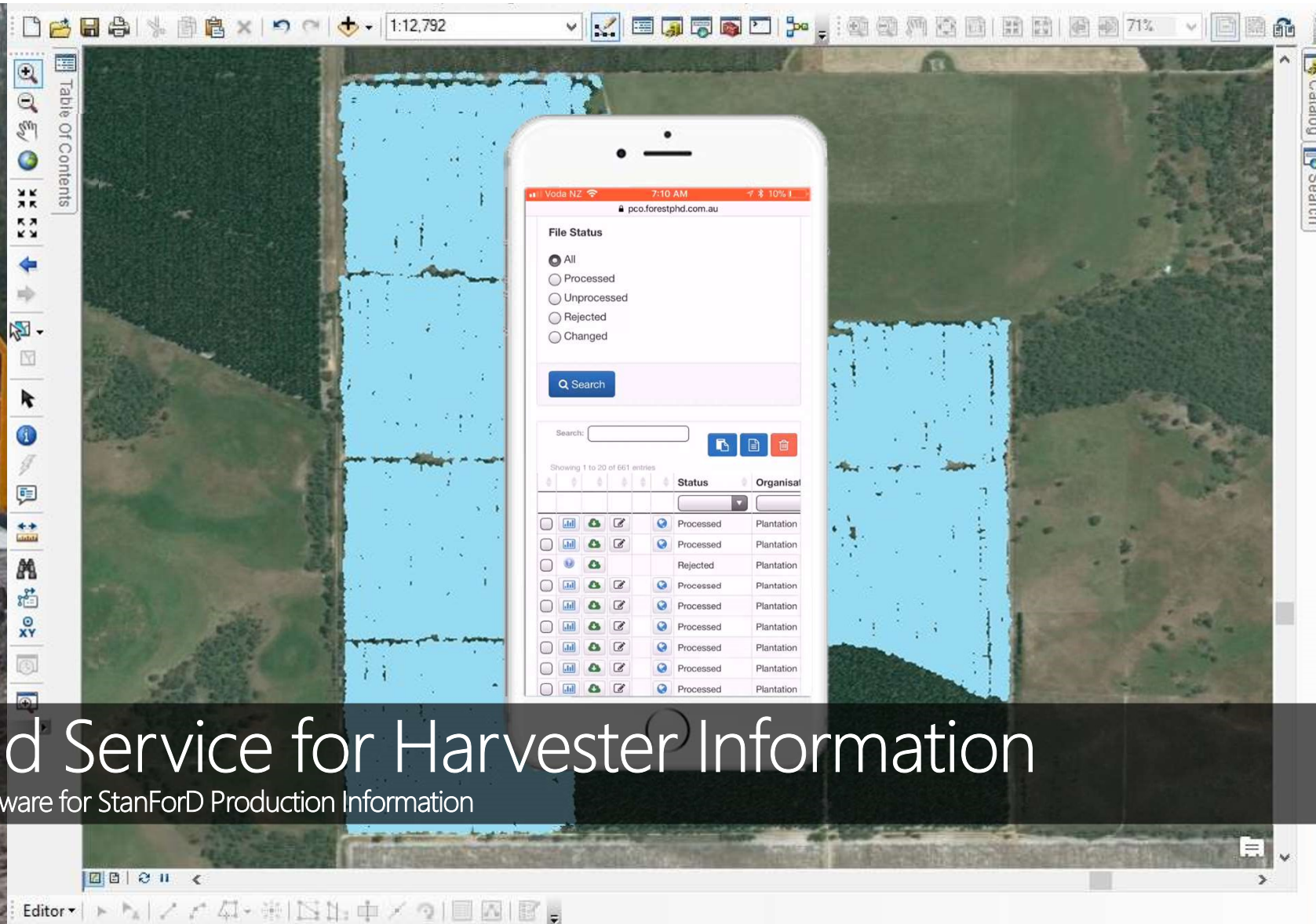
Cloud Service for Harvester Information

STICKS Software for StanForD Production Information



Cloud Service for Harvester Information

STICKS Software for StanForD Production Information



Cloud Service for Harvester Information

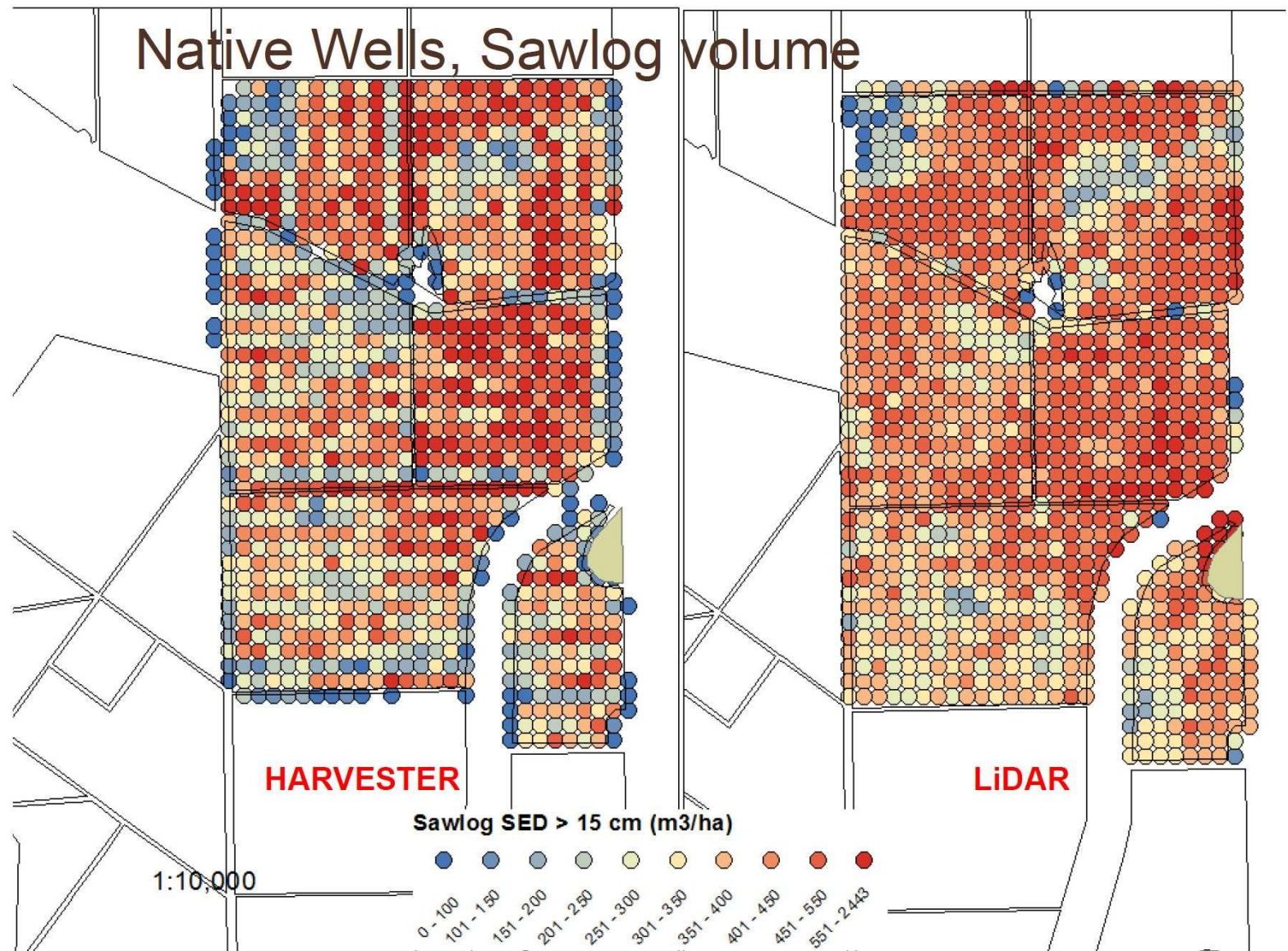
STICKS Software for StanForD Production Information

Cloud Service for Harvester Information

STICKS Software for
StanForD Production
Information

One Forty One Plantations
2016 ForestTech Presentation

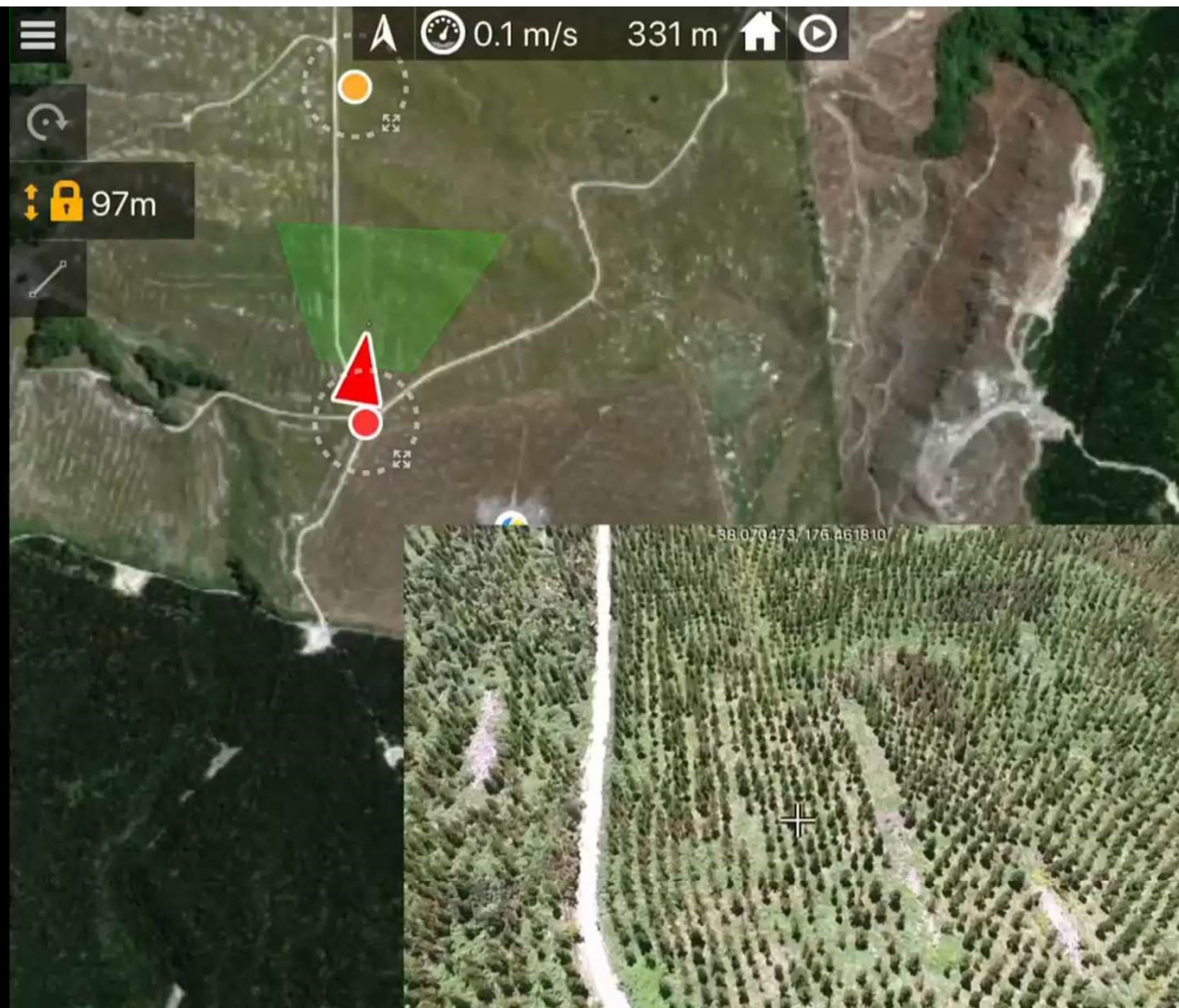
Jan Rombouts



Questions

*Shaping Today's Forests
with the Technology of Tomorrow*

*He rangahau tenei ra
he hangarau apopo*



Collaborative Research Partners



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www.interpine.co.nz

+64 7 350 3209

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