



Inspecting using Copernicus and UAV Data



Who are the users of the remote sensing data based on Copernicus Services?

Who are the users of the space based data acquired through UAV (“Drones”)?



**Are Copernicus Services used as a tool in environmental inspections?
How?**

**Are UAV (“Drones”) used as a tool in environmental inspections?
How?**

Is the data collected through these two technologies used as evidence in court?

Identify users of this data and their methodologies by seeking examples used in other public entities



Identify best practices, methods, legal applications and inner knowledge/capabilities to use these tools for environmental compliance

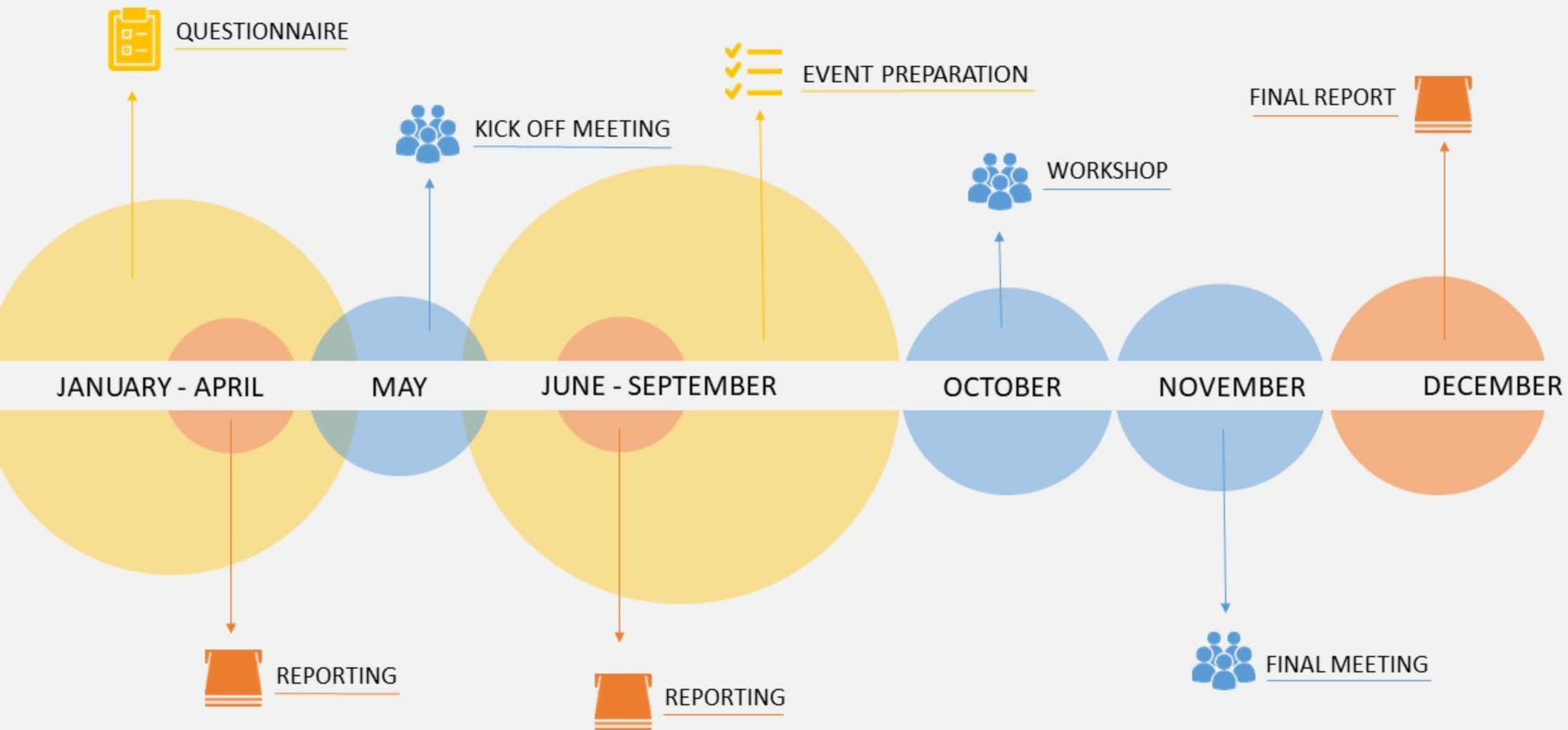
Widening the search at a european level by presenting a project to the IMPEL network

PROJECT OBJECTIVES

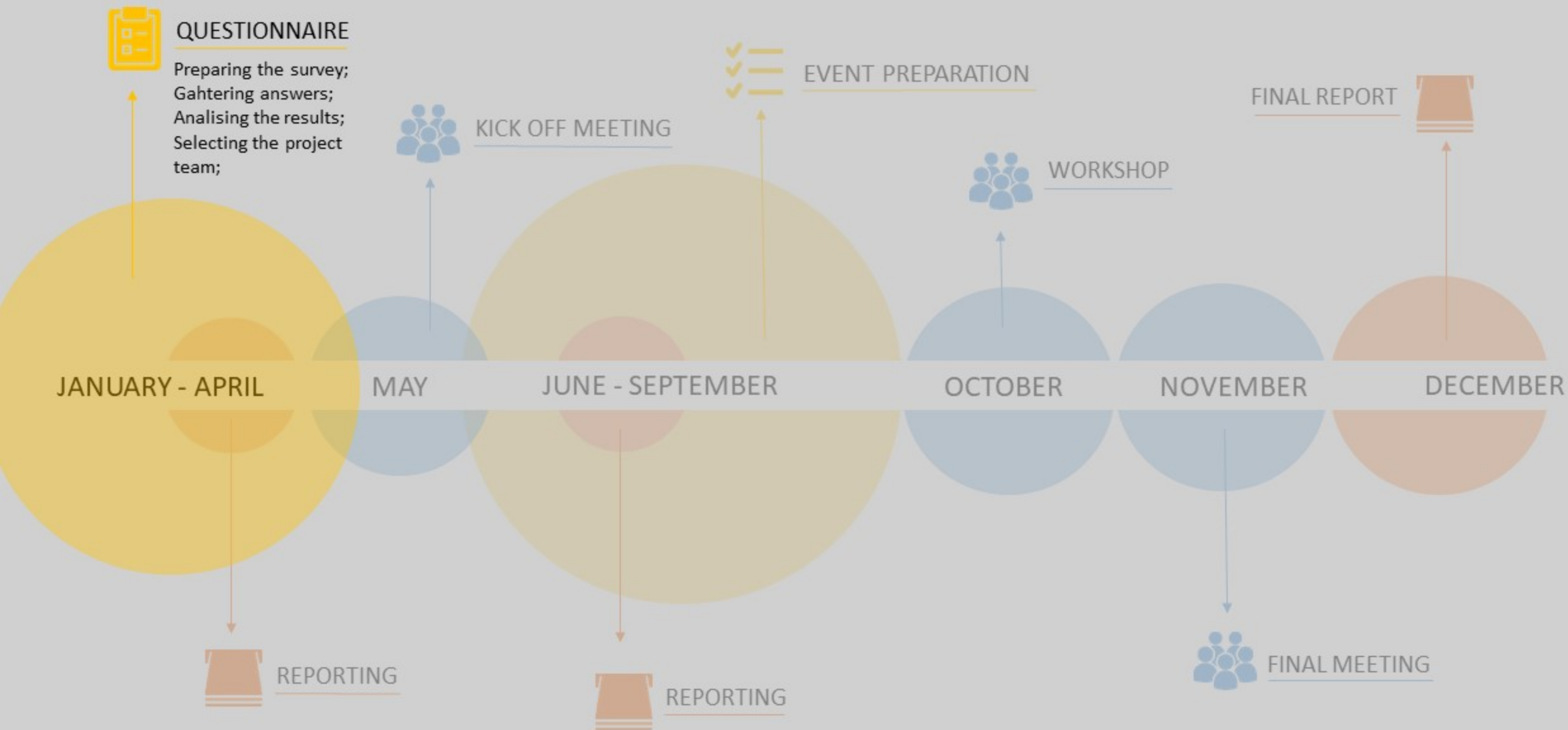
Evaluate the use of Copernicus services and UAV data as supporting tool to ensure compliance with environmental legislation:

- licensing,
 - monitoring,
 - inspection,
-
- Share information and good practices regarding the use of these technologies;
 - - Share methodologies and technical knowledge;
 - Increase the use of these technologies in the support and planning of inspections;
 - Identify the probative value of the use of these technology.

PROJECT TIMELINE



PROJECT TIMELINE



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Inspecting using Copernicus and UAV Data (iCUD)

*Required

Probatory value

Your entity experienced the use of :
evidences in court? *

☐ Yes

Inspecting using Copernicus and UAV Data (iCUD)

*Required

Satellite imagery use in the entity



Which is your entity experience... (Low/rarely - to - Very High/frequently) *

	Don't have experience	Low	Medium	High	Very high	Don't know / No answer
Acquiring satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Processing satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using Copernicus services information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your entity, are there any human resources with technical

Inspecting using Copernicus and UAV Data (iCUD)

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Inspecting using Copernicus and UAV Data (iCUD)

*Required

Data complementation

Do you use both technologies (Satellite and UAV)? *

Are you interested in using both technologies (as

Do you use these technologies as a support your
report - to - 5 Very high support) *

2 3 4 5
☐ ☐ ☐ ☐ Very high

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Google Forms.

Inspecting using Copernicus and UAV Data (iCUD)

Project expectations

Do you think the activity?

☐ Yes

☐ No

☐ Other: _____

Which field of a

☐ Environmental

☐ Land use man

☐ Definition of pr

☐ As probatory v

☐ Data managen

☐ Reporting

☐ Other: _____

How can IMPEL
these technolo

Your answer

QR Code of this

No

☐

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BACK

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Inspecting using Copernicus and UAV Data (iCUD)

*Required

Unmanned Aerial Vehicle (UAV) data



Which is your entity experience in: (Low/rarely - to - Very High/frequently) *

	Don't have experience	Low	Medium	High	Very high	Don't know / No answer
Acquiring UAV data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Processing UAV data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using UAV data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which UAV product(s) does your entity produce/use? *

☐ Don't use UAV products

☐ Aerial photograph (oblique)

☐ Aerial video

☐ 3D models

☐ Orthomosaics

☐ Digital Surface Models (DSM)

☐ Digital Terrain Models (DTM)

☐ Other: _____

There is interest in receive training concerning UAV data? *

Inspecting using Copernicus and UAV Data (iCUD)

*Required

Satellite imagery use in the entity



Which is your entity experience... (Low/rarely - to - Very High/frequently) *

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Acquiring satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Processing satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using Copernicus services information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your entity, are there any human resources with technical capability in the field of remote sensing? *

☐ Yes

☐ No

☐ Other: _____

In which fields are there higher necessities of improving knowledge?

☐ Satellite image acquisition

☐ Image interpretation / analysis

☐ Image processing

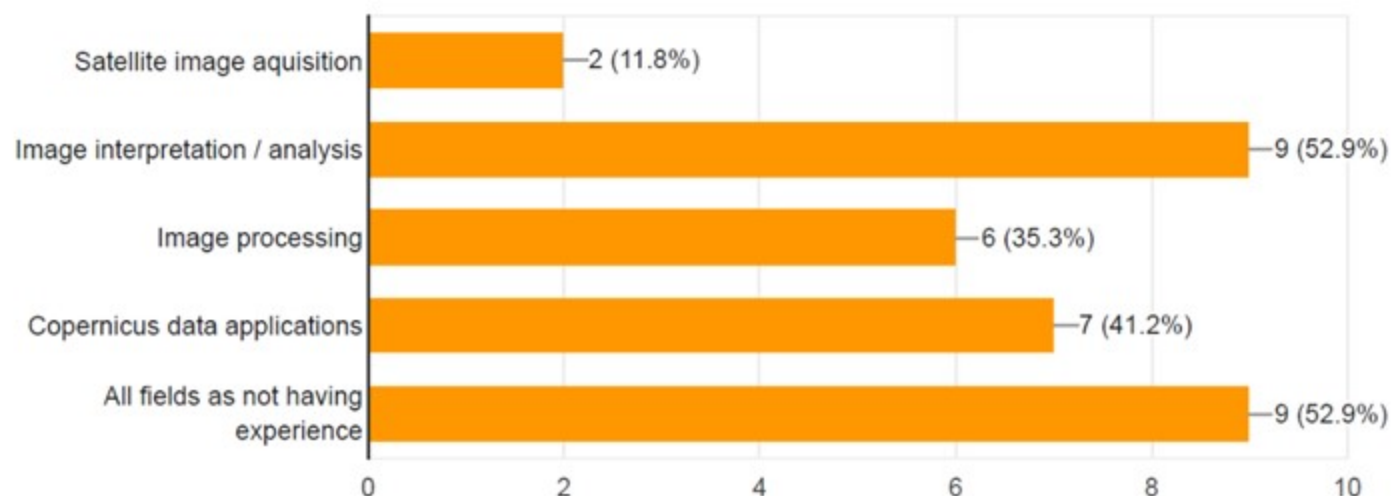
☐ Copernicus data applications

☐ All fields as not having experience

RESULTS

In which fields are there higher necessities of improving knowledge?

17 responses



Inspecting using Copernicus and UAV Data (iCUD)

*Required

Unmanned Aerial Vehicle (UAV) data



Which is your entity experience in: (Low/rarely - to - Very High/frequently) *

	Don't have experience	Low	Medium	High	Very high	Don't know / No answer
Acquiring UAV data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Processing UAV data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Which UAV product(s) does your entity produce/use? *

- ☐ Don't use UAV products
- ☐ Aerial photograph (oblique)
- ☐ Aerial video
- ☐ 3D models
- ☐ Orthomosaics
- ☐ Digital Surface Models (DSM)
- ☐ Digital Terrain Models (DTM)
- ☐ Other:

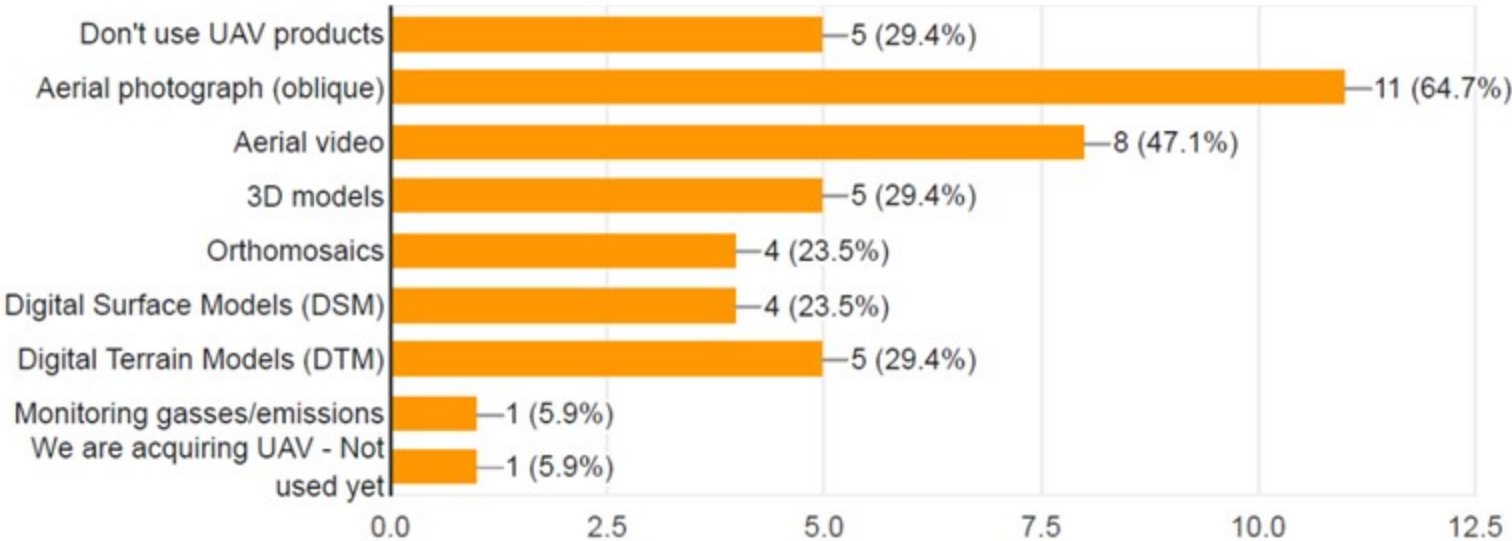
There is interest in receive training concerning UAV data? *

☐ Yes

RESULTS

Which UAV product(s) does your entity produce/use?

17 responses



Inspecting using Copernicus and UAV Data (iCUD)

*Required

Probatory value

Your entity experienced the use of Satellite products as evidences in court? *

- ☐ Yes
- ☐ No

Your entity experienced the use of UAV products as evidences in court? *

- ☐ Yes
- ☐ No

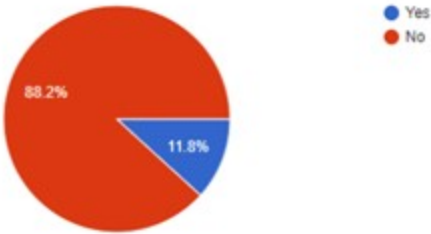
How do you consider the legislation in your country, concerning Satellite and UAV data use as evidences? *

	Complex	Simple	Restricted (mostly unusable)	Open (flexible)	In development (unconsolidated)	Don't know	No answer
Satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unnamed Aerial Vehicles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traditional methods (photographs, video)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

RESULTS

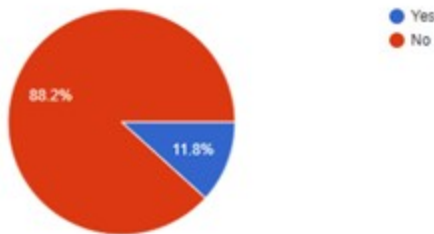
Your entity experienced the use of Satellite products as evidences in court?

17 responses

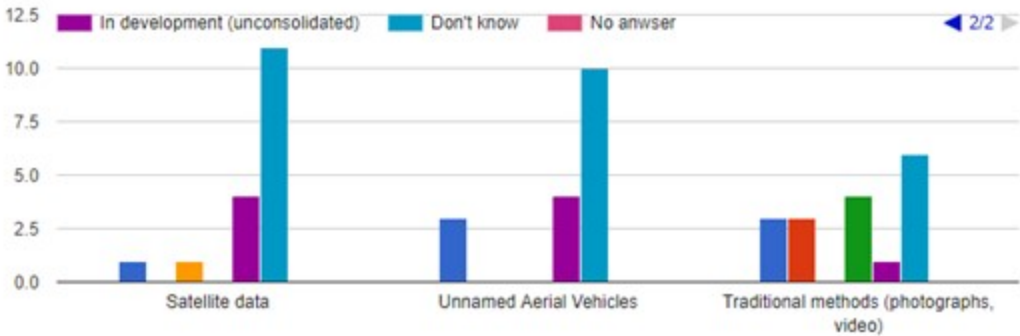


Your entity experienced the use of Satellite products as evidences in court?

17 responses



How do you consider the legislation in your country, concerning Satellite and UAV data use as evidences?



Inspecting using Copernicus and UAV Data (iCUD)

Project expectations

Do you think these technologies are relevant for your entity activity?

☐ Yes

☐ No

☐ Other: _____

Which field of activity could be more relevant?

☐ Environmental inspections

☐ Land use management

☐ Definition of priorities of intervention

☐ As probatory value support

☐ Data management

☐ Reporting

☐ Other: _____

How can IMPEL network better support the implementation of these technologies in your entity?

Your answer

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BACK

SUBMIT

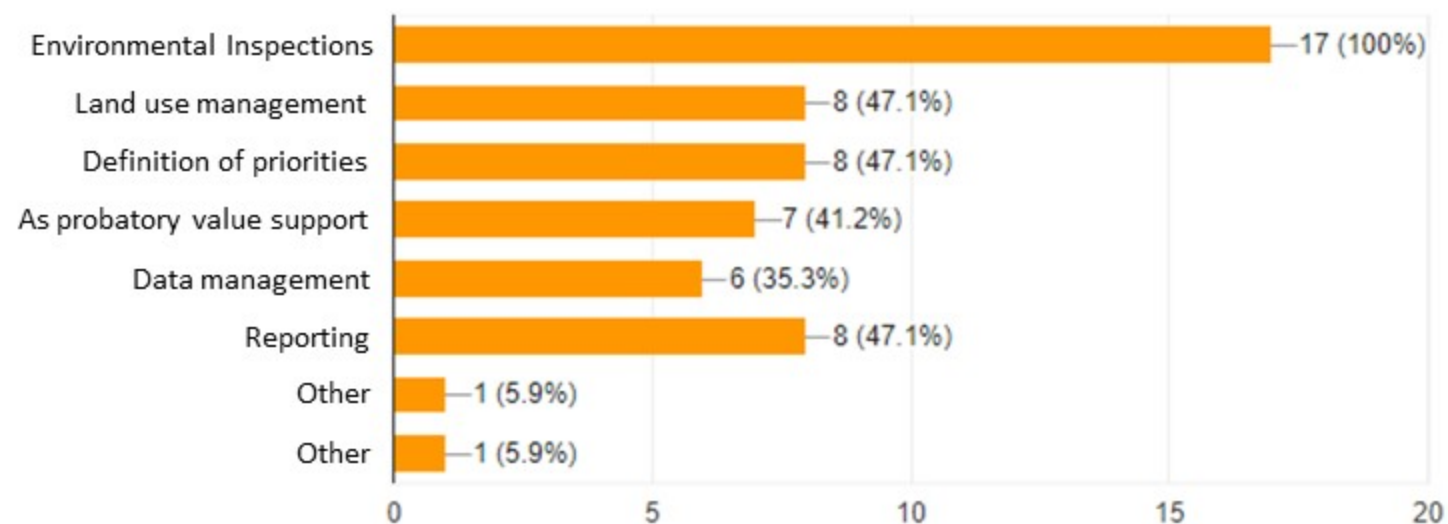
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RESULTS

Which field of activity could be more relevant?

17 responses



PROJECT TEAM



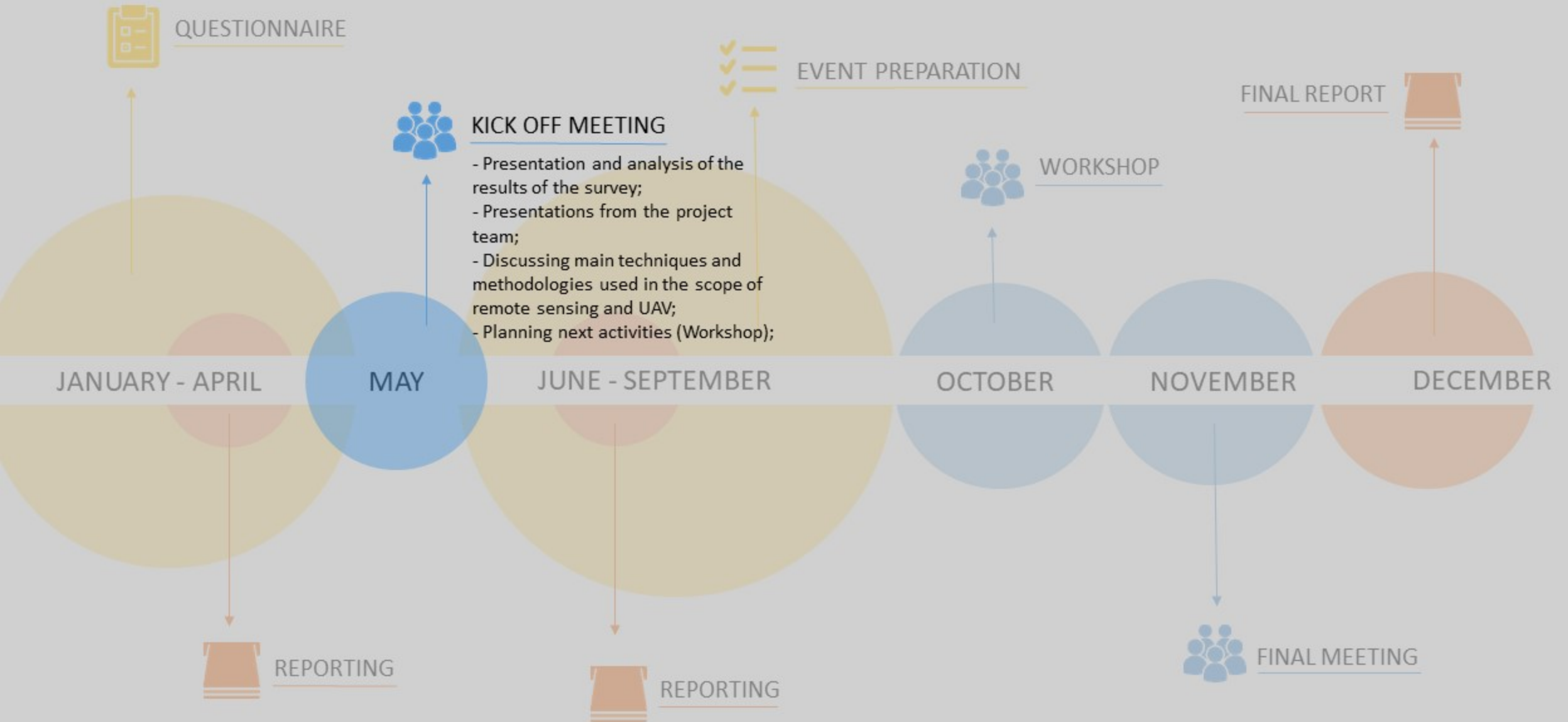
Inspectie Leefomgeving en Transport
Ministerie van Infrastructuur en Milieu

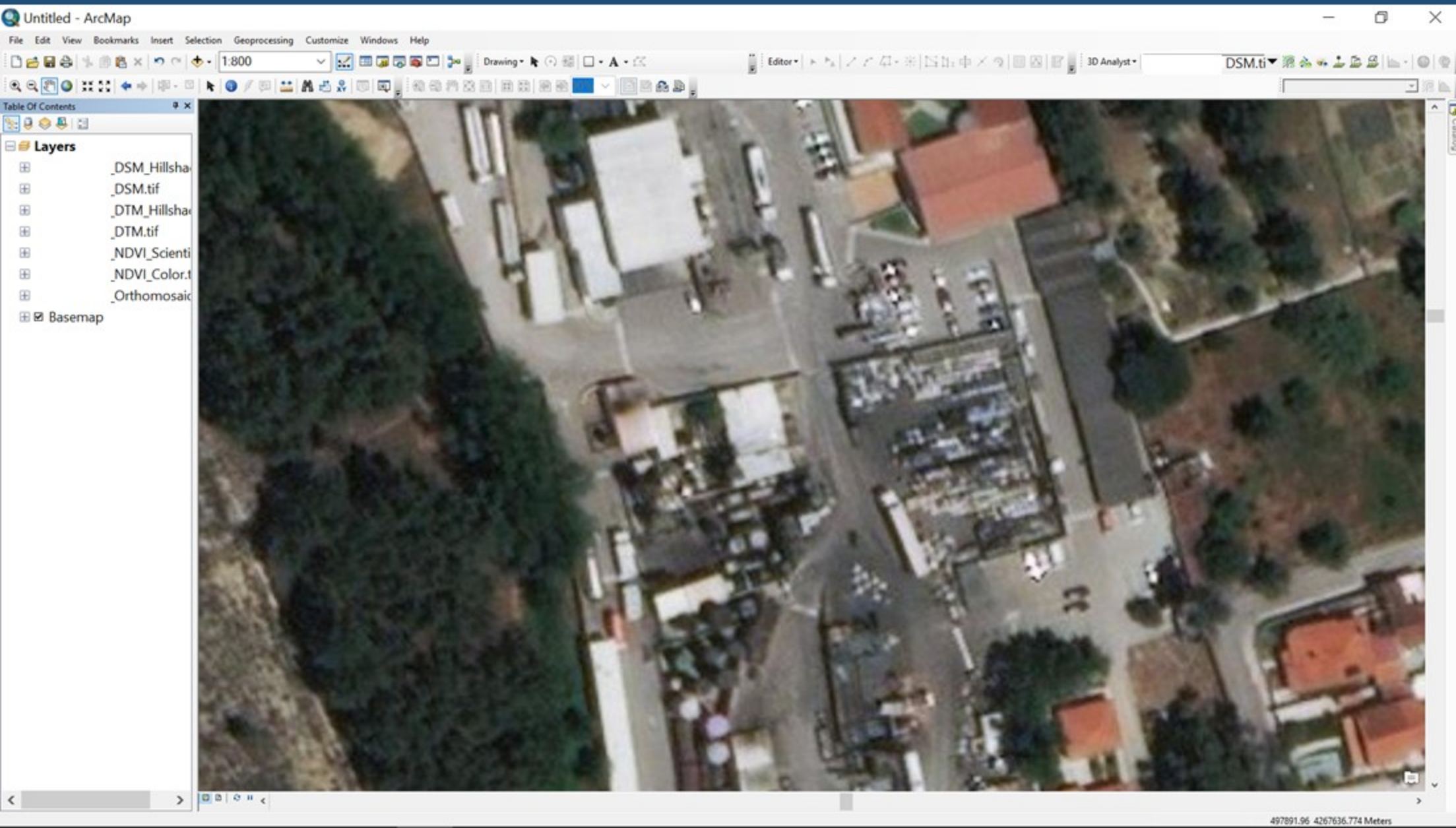


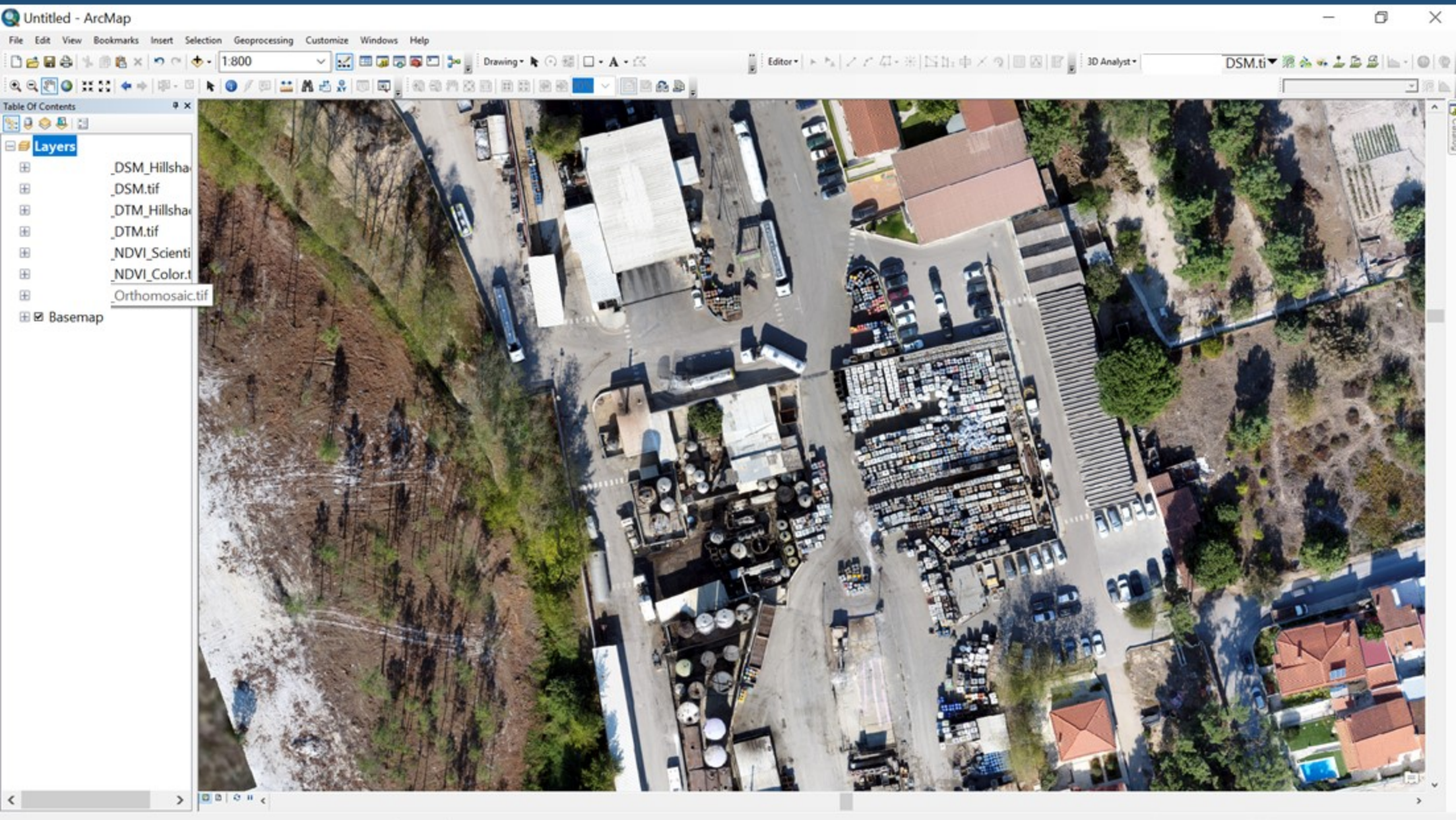
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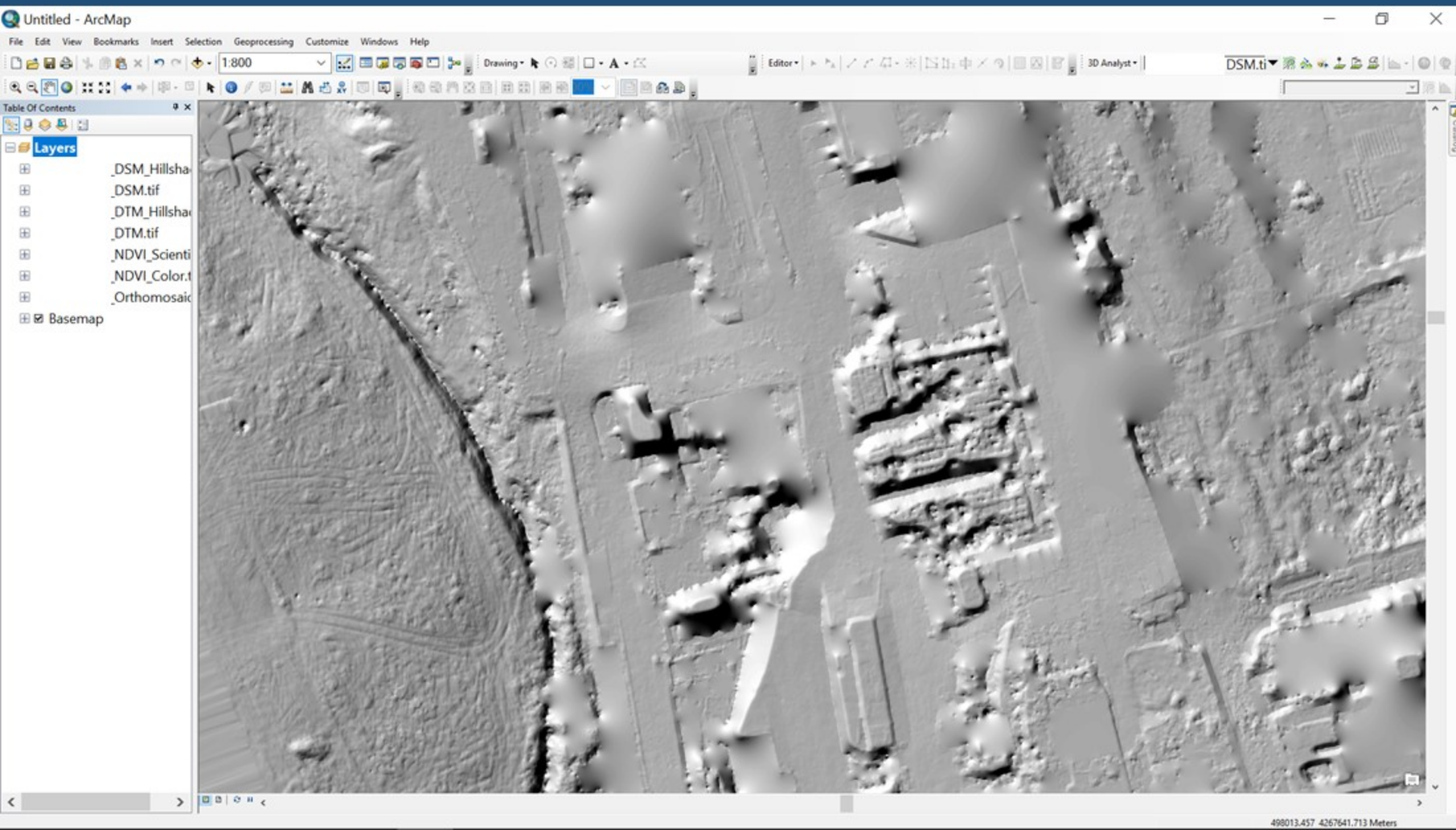


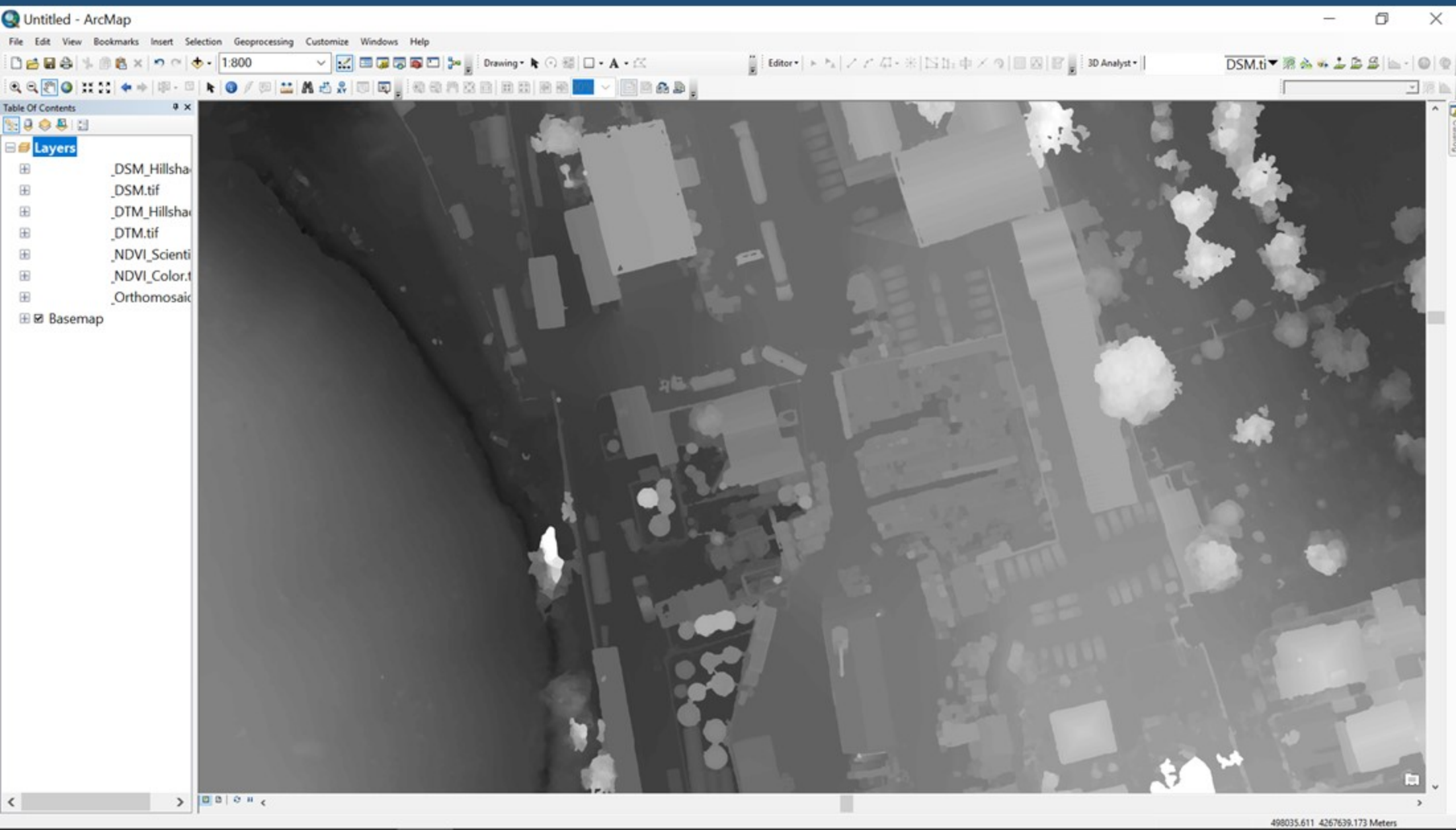
PROJECT TIMELINE





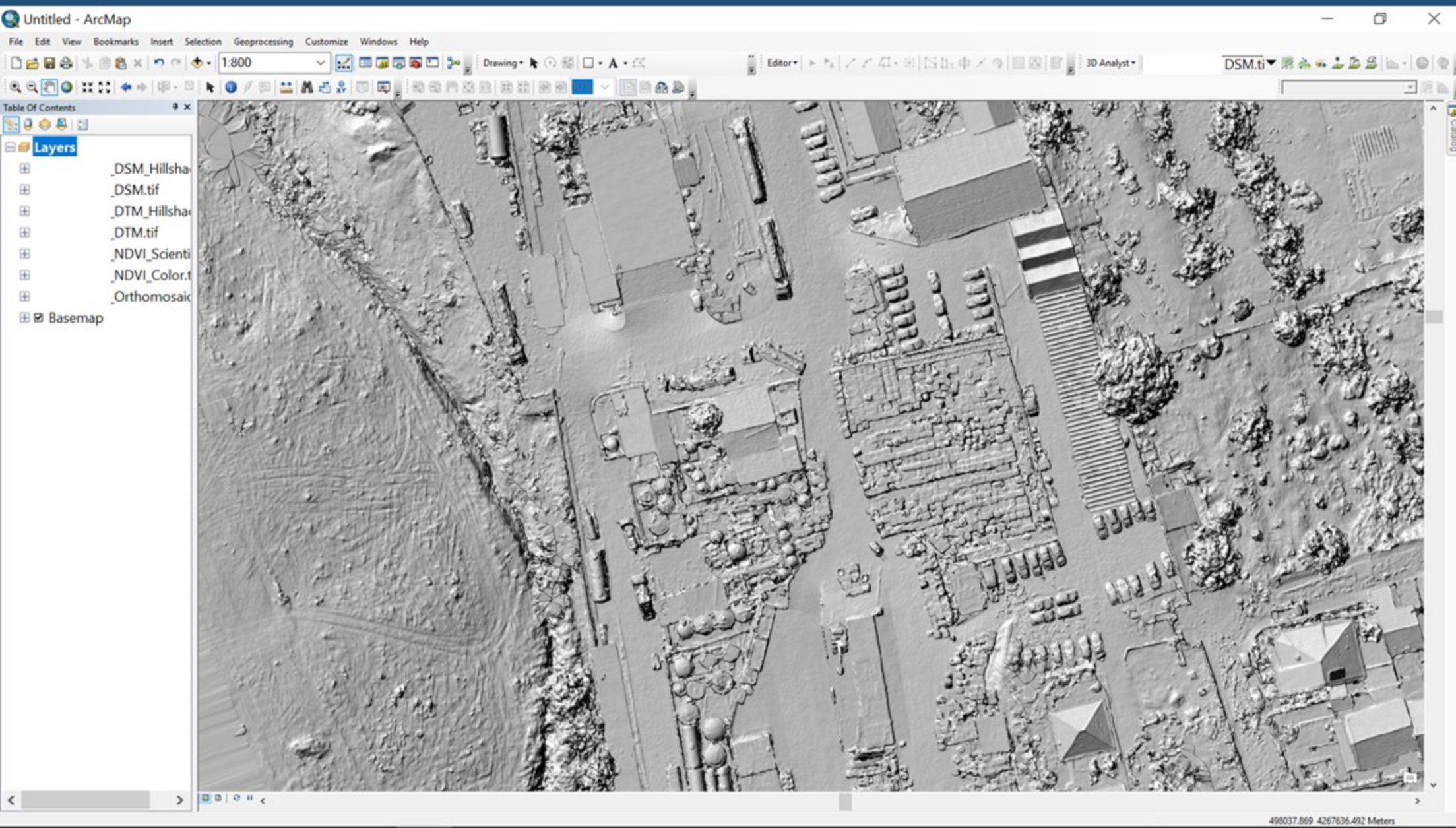






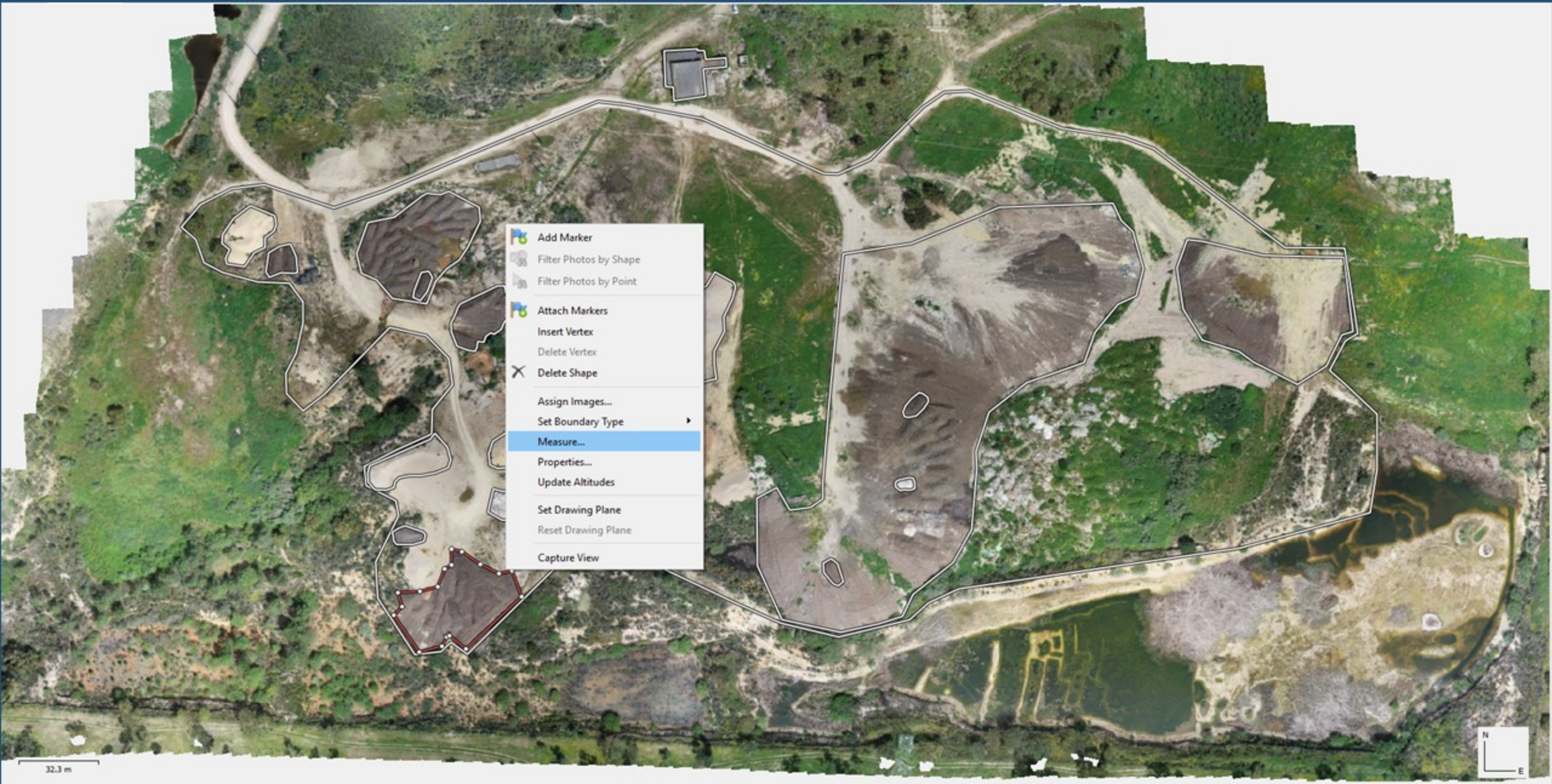
DSM - Digital Surface Model (hillshade)

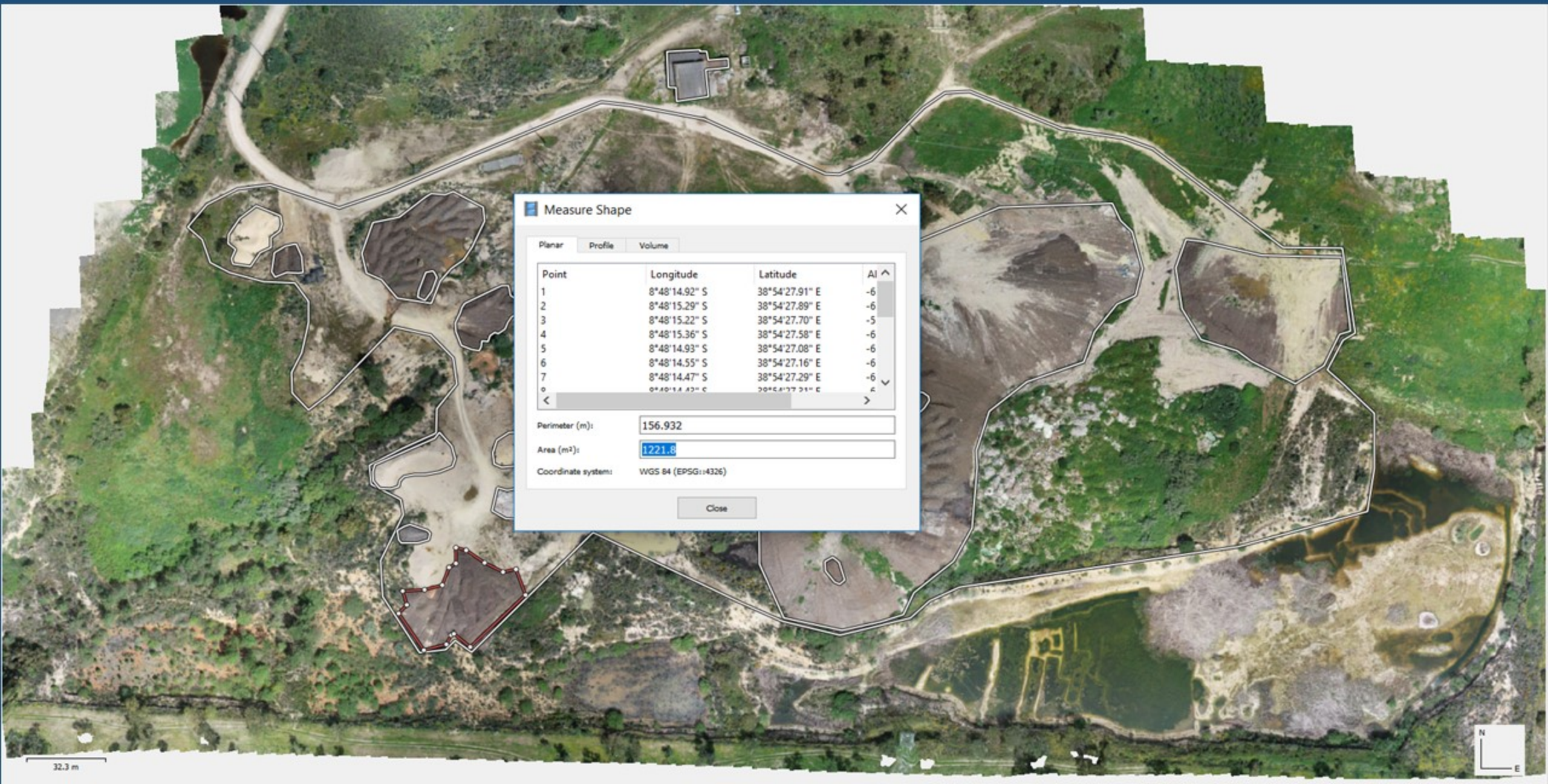
PRODUCTS (UAV)

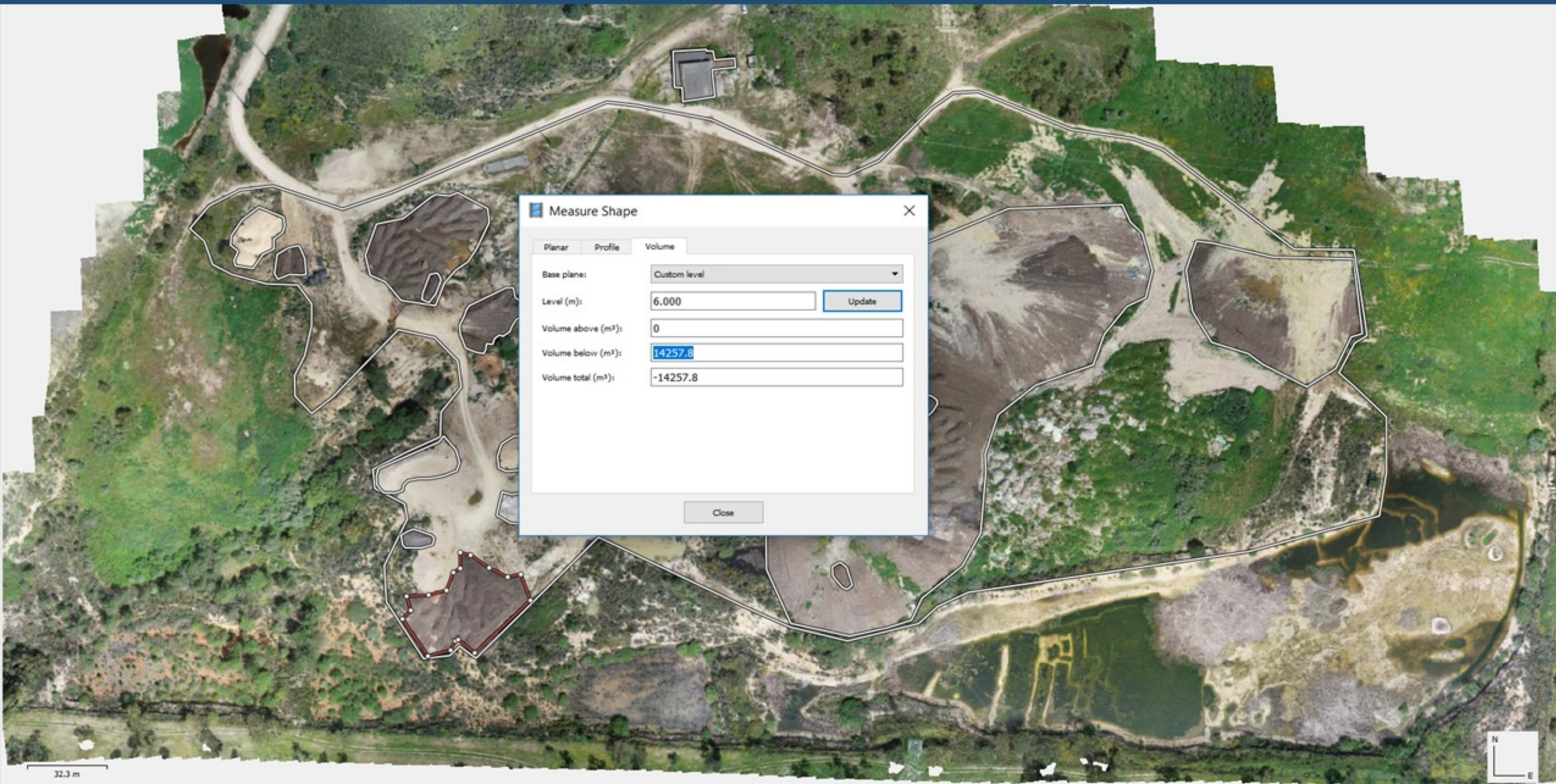












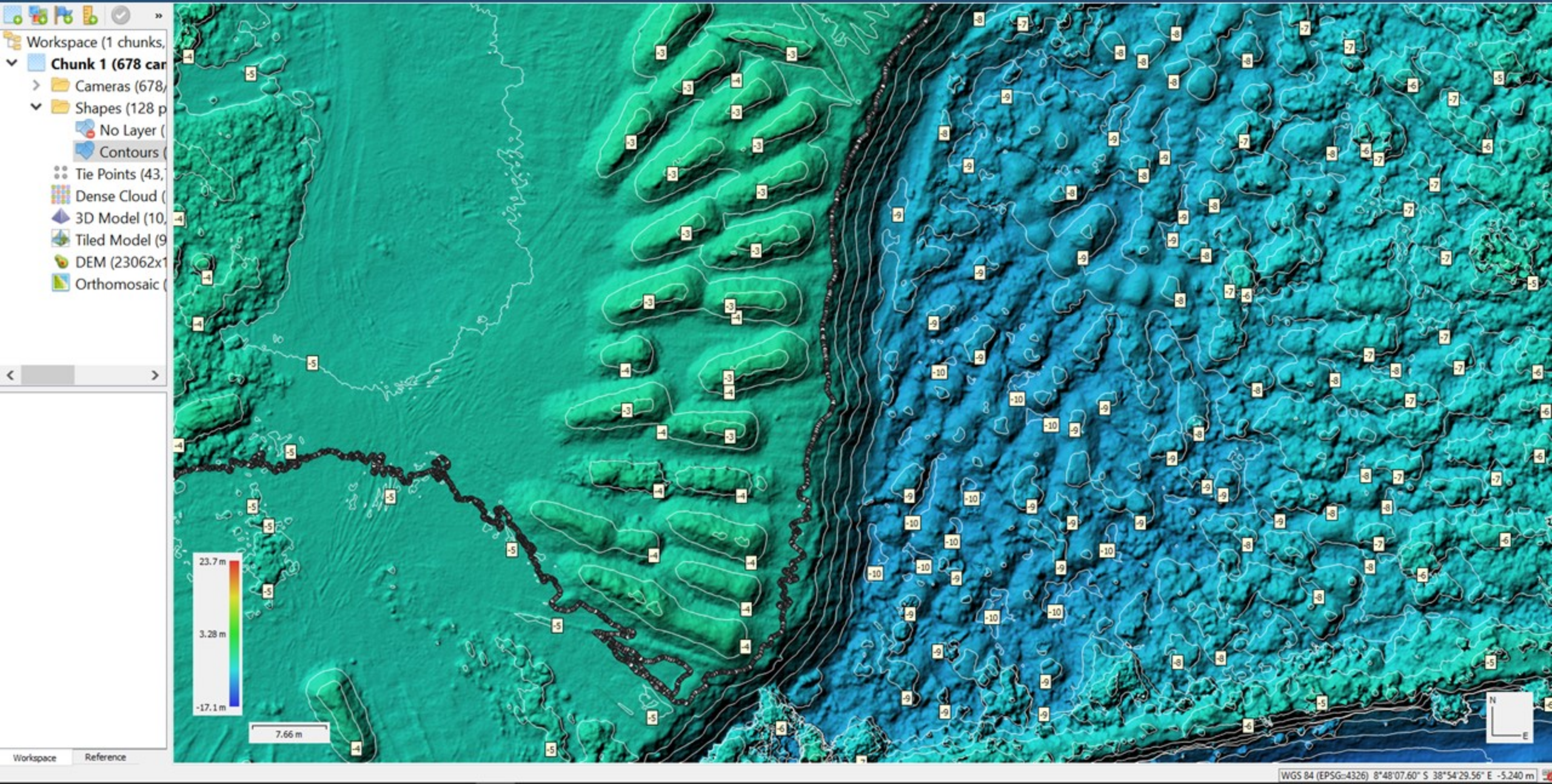
3D model: Landfill (contour lines: 1m)

PRODUCTS (UAV)



3D model: Landfill (contour lines: 1m)

PRODUCTS (UAV)



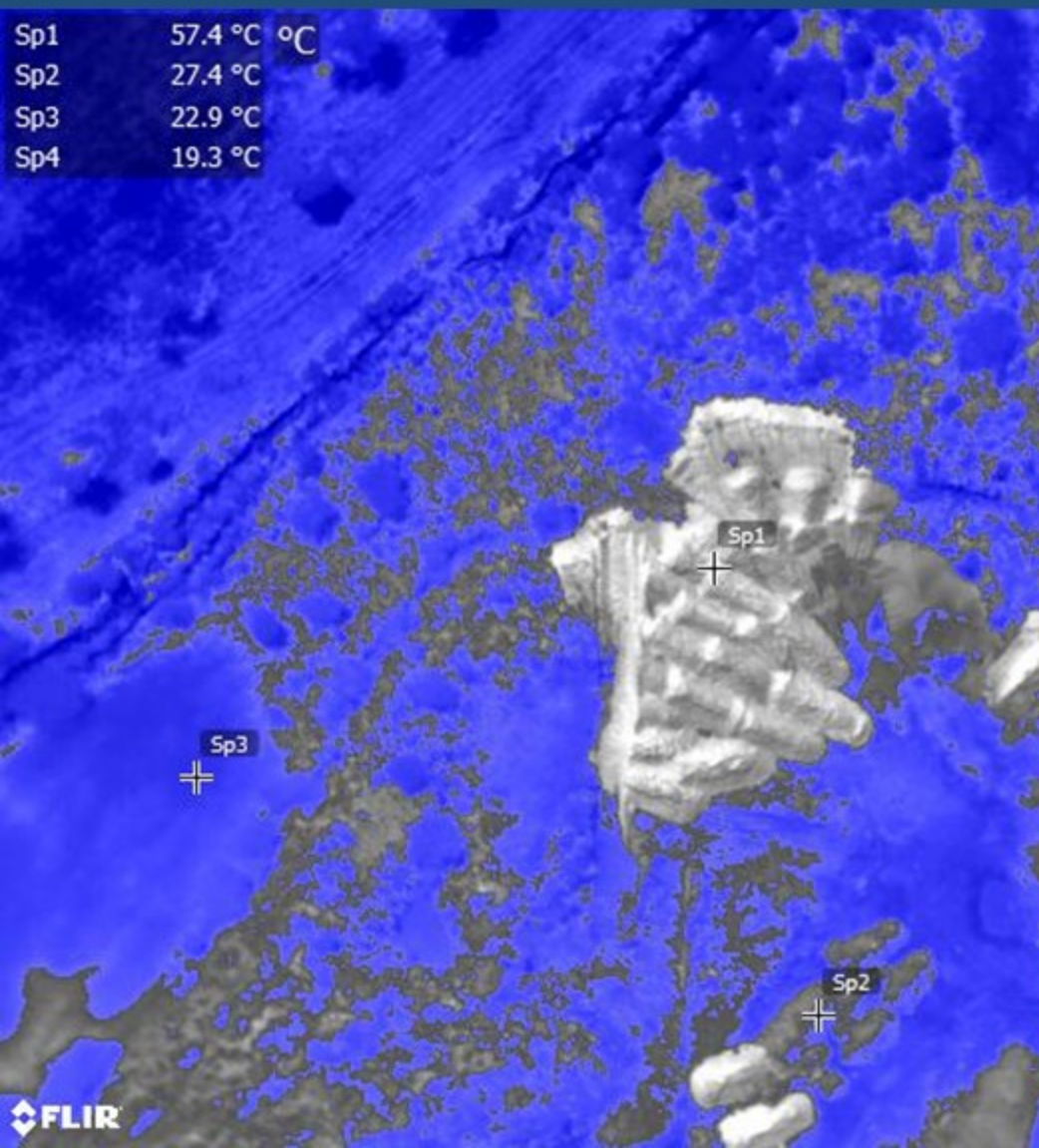
Sp1 57.4 °C °C
Sp2 27.4 °C
Sp3 22.9 °C
Sp4 19.3 °C



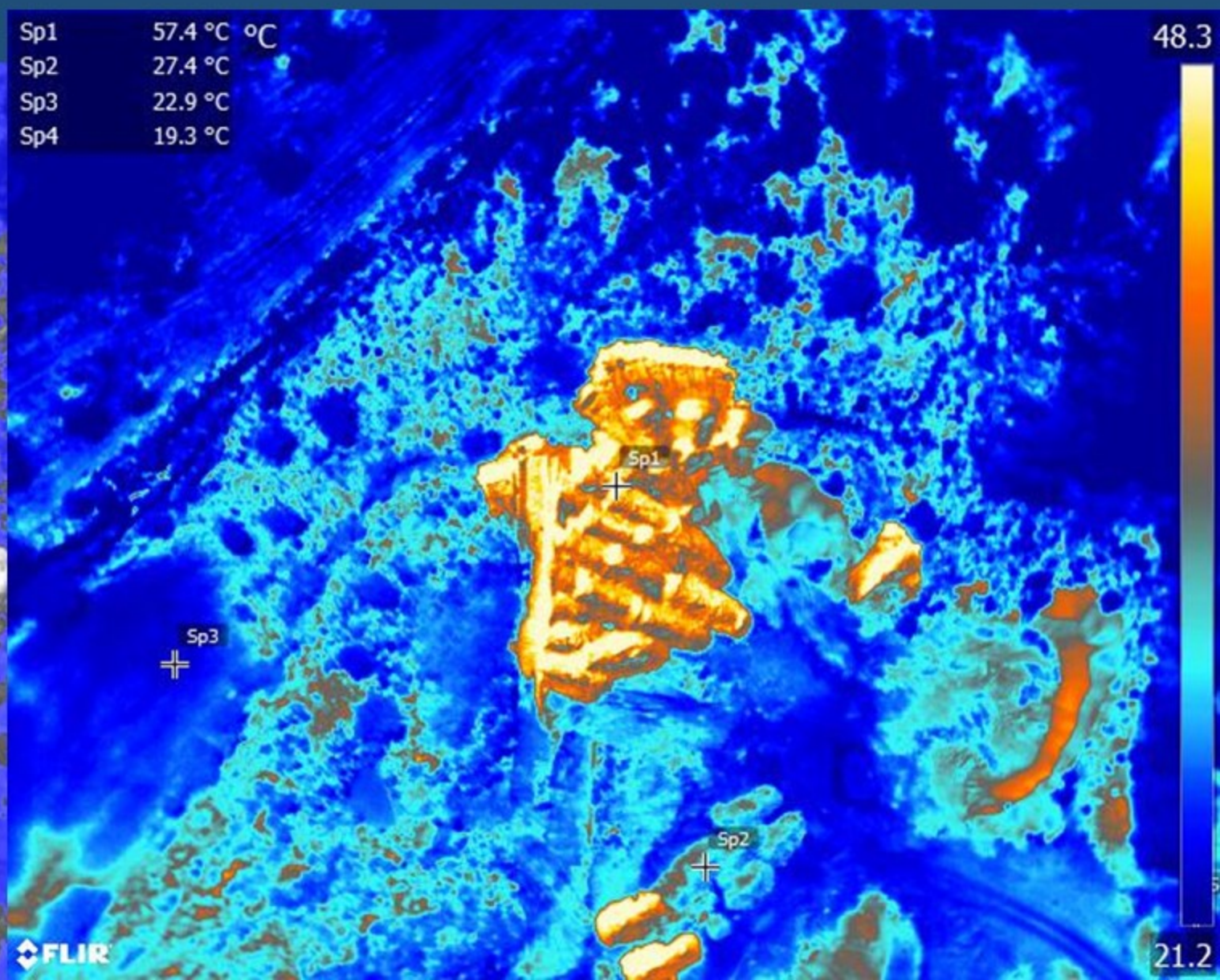
Sp1 57.4 °C °C
Sp2 27.4 °C
Sp3 22.9 °C
Sp4 19.3 °C



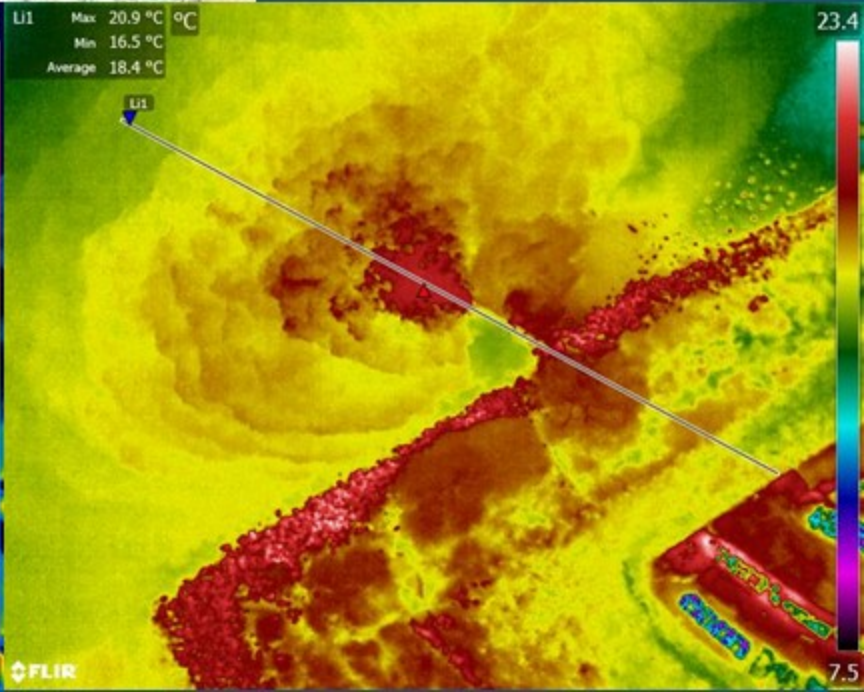
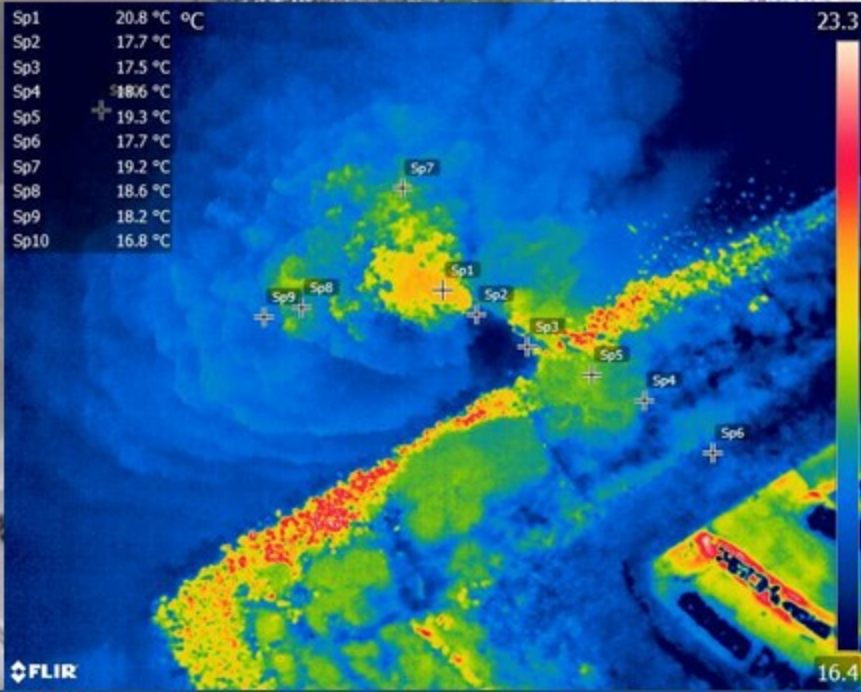
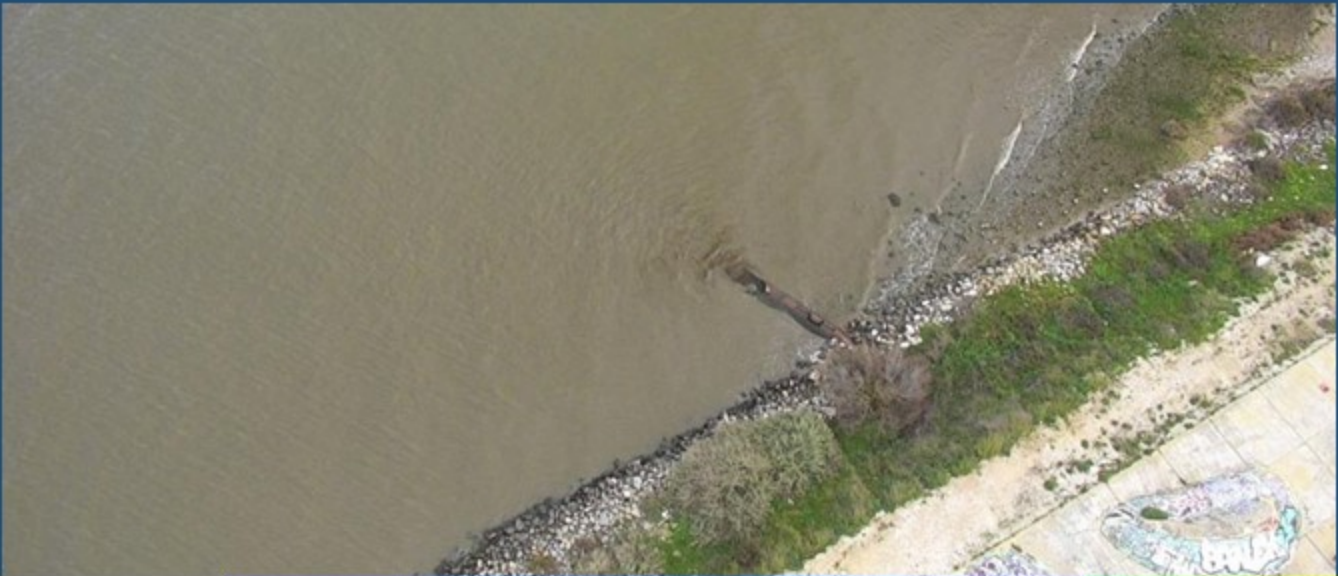
Sp1	57.4 °C	°C
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Sp3	22.9 °C	
Sp4	19.3 °C	



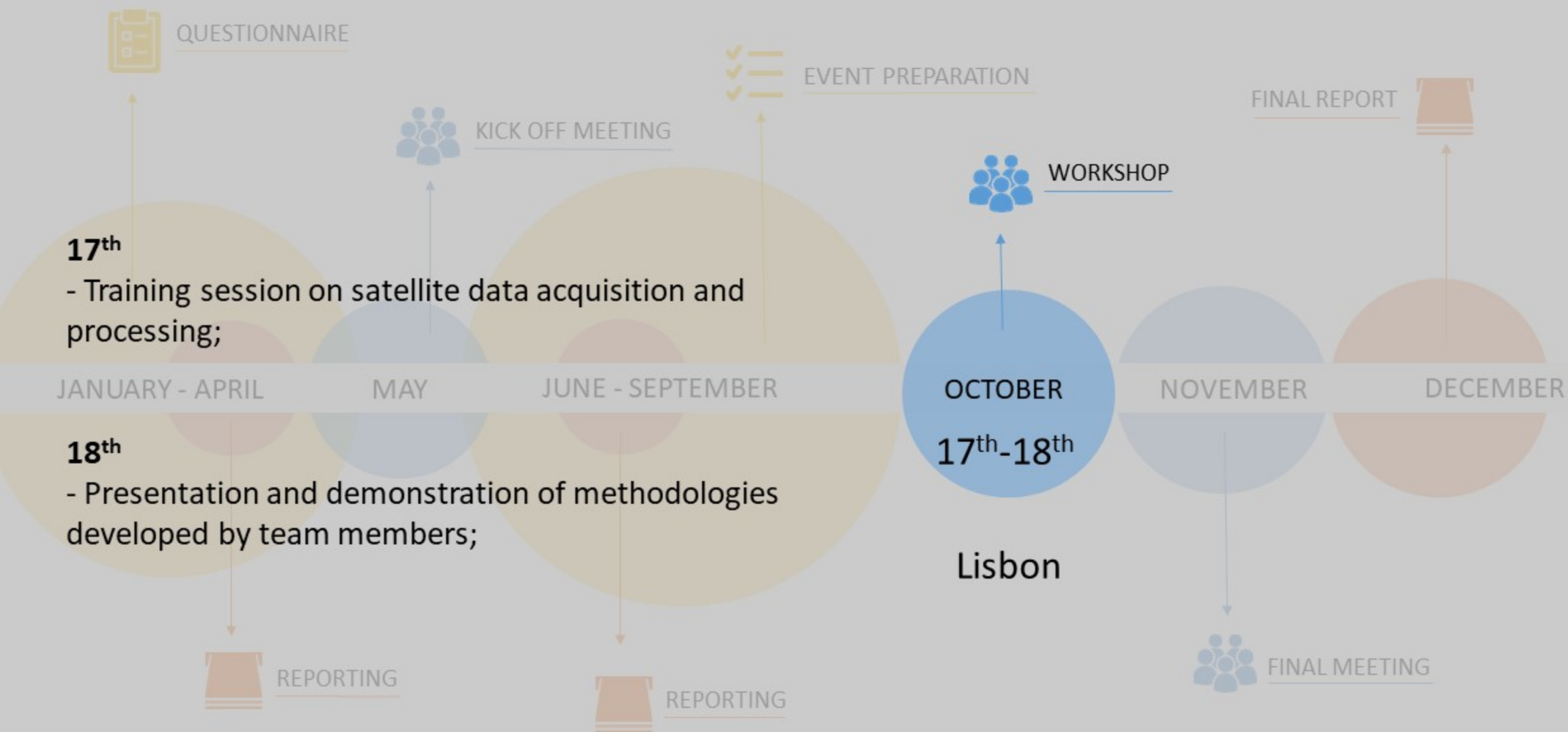
Sp1	57.4 °C	°C
Sp2	27.4 °C	
Sp3	22.9 °C	
Sp4	19.3 °C	



PRODUCTS (UAV)



PROJECT TIMELINE





Inspecting using Copernicus and UAV Data

Cláudia Morgado

Susana Silva

12 de Outubro de 2018

3ª Conferência da Rede Nacional IMPEL