

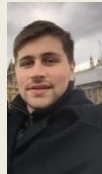
The sky is the limit?

HiView



# Profiel HiView

- Opgericht in 2012
- Kantoor in Wageningen, Netherland
- 5 stafleden,
- Wereldwijd network. Belangrijke partners: DFID (Nepal), ESA (UK), ICIMOD (Nepal), USAID (Mozambique), Farmers (NL), Rijkswaterstaat, Prov. Brabant (NL), Natuurmonumenten (NL), Waterboard Fryslan (NL), Eelerwoude (NL), Airinov (FR), Dadtco (Mozambique), SNV (Kenya), TU Delft (Kenya, Ghana)
- Specialisatie:
  - Vliegmissies: snel inzetbaar en op maat
  - Beeld interpretatie (expertise i.s.m. FutureWater en Borgman)
  - Business & capacity building in ontwikkelende landen



# Flying Sensors

- Flying Sensors
- UAVs/UASs > Unmanned Aerial Vehicles / Systems
- RPAs > Remotely Piloted Aircrafts
- Drones
- Certificaten
- ROC > RPA Operating Company
- RPA\_L > Pilot License
- BvI > Bewijs van Inschrijving (Luchtvaartregister)
- BvL > Bewijs van Luchtwaardigheid
- Vliegoperaties
- Remotely piloted
- Mission planning at GCS > Ground Control Station

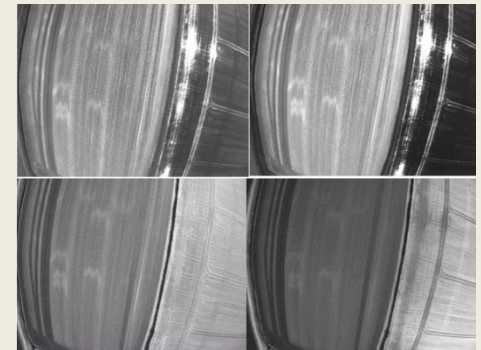


# Flying Sensors

- Typen
- Fixed wing
- Multicopter



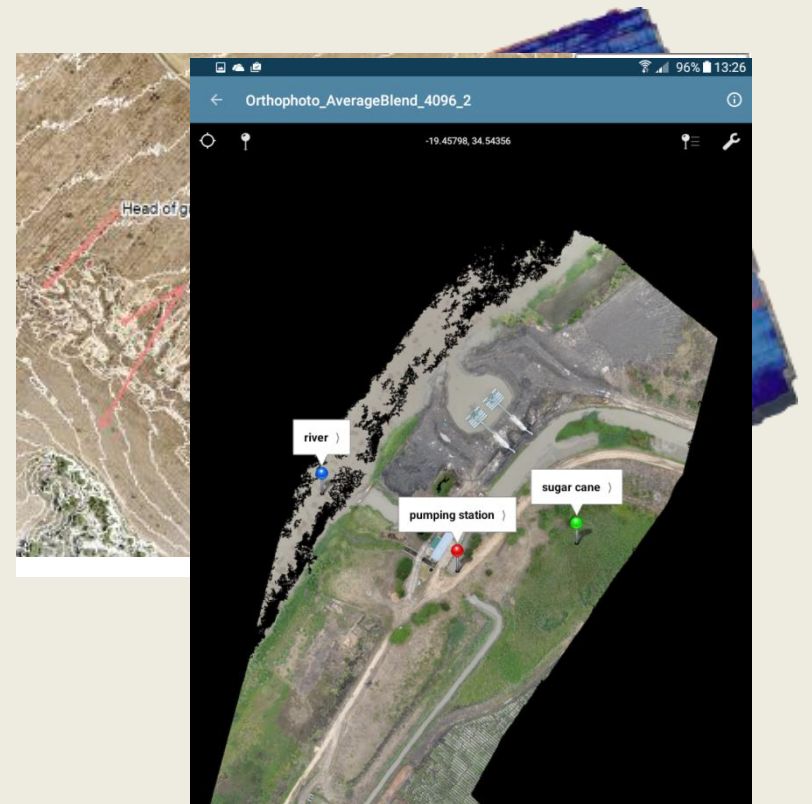
- Sensoren
- RGB cam > Visible spectre
- NIR cam > Near Infra-red (0,75  $\mu\text{m}$ - 1,4  $\mu\text{m}$ ); Red edge
- Multi-spec cam
- Hyper spec cam
- Thermal cam > Infra-red (up to 14  $\mu\text{m}$ )
- Multifunctional sensor: temp, air humidity, air pressure



# Flying Sensors **produkten**

- **Produkten**

- Stitches/Orthomosaics
- NDVI mapping > crop stress maps
- Tablet mapping, , kmz/kml
- Thermal mapping
- Vegetation classification mapping
- DEMs/DSMs
- Elevation mapping



# Flying Sensor Toepassingen

## *Operative services:*

- I. Agriculture
- II. Water management
- III. Nature conservation
- IV. Land management
- V. Flood management
- VI. Inspection and observation

## *In preparation:*

- VII. Surveillance
- VIII. Humanitarian transport

# Highlights

I. Dike monitoring Meijnerswijk

II. Dike monitoring Friesland

III. Nature reserves in Zeeland and Noord-Brabant

IV. Forest & heath in military drill area Leusderheide

V. Crop advisory in the Netherlands

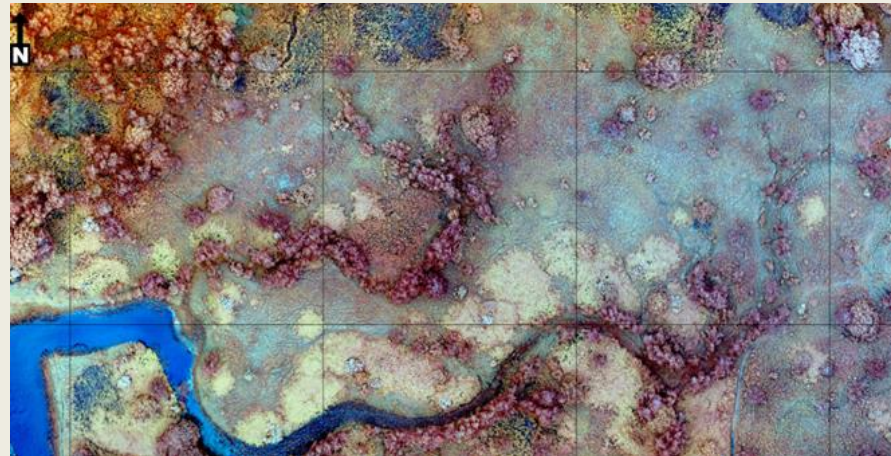
VI. Crop advisory in Africa

VII. Glacier monitoring in Nepal

# Highlight III Nature reserves

Vegetation monitoring for  
Natuurmonumenten

Nature reserve Middelplaten (Zeeland)  
& Distelse Gorzen (Noord-Brabant)



[back to highlights](#)



# Reserves Middelpaten en Distelse Gorzen



Studiegebied

Client:  
Natuurmonumenten

Locatie:  
Middelpaten



Studiegebied

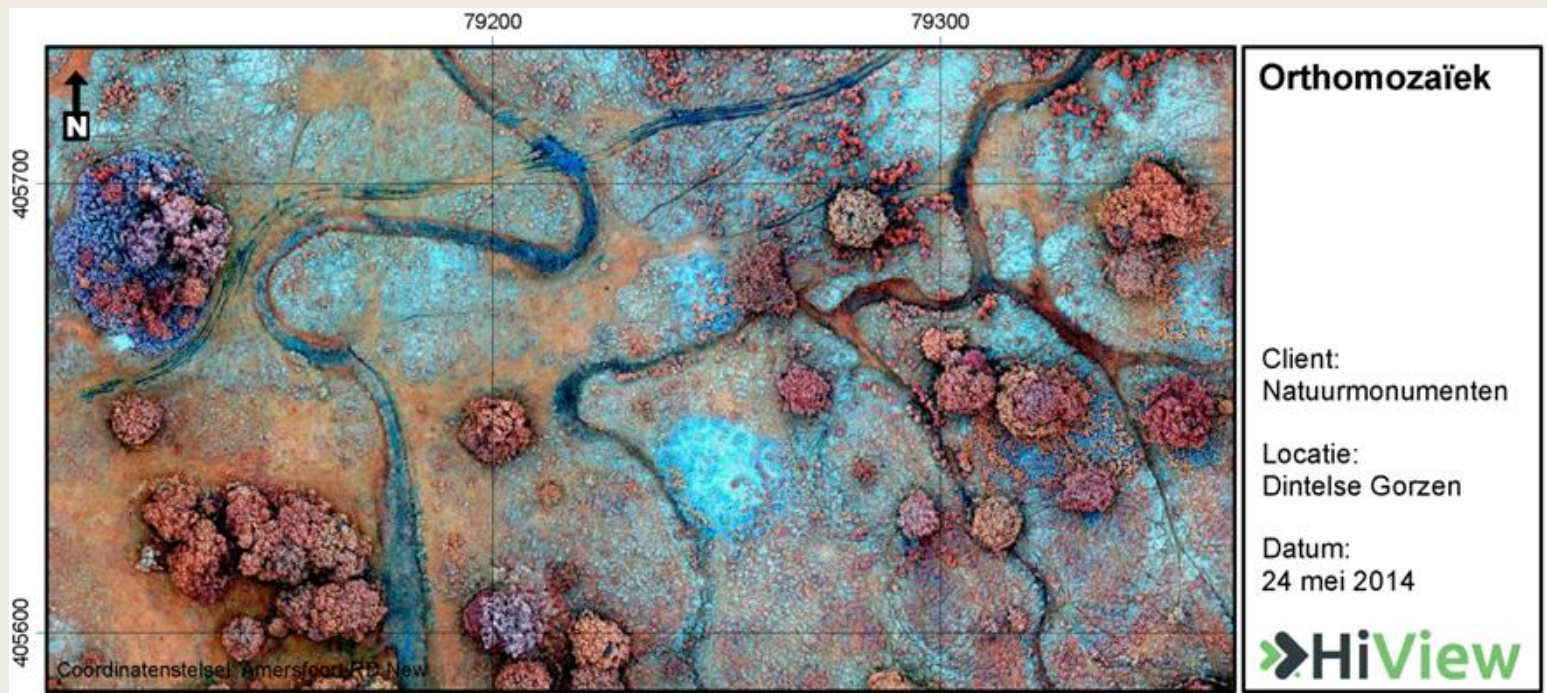
Client:  
Natuurmonumenten

Locatie:  
Middelpaten

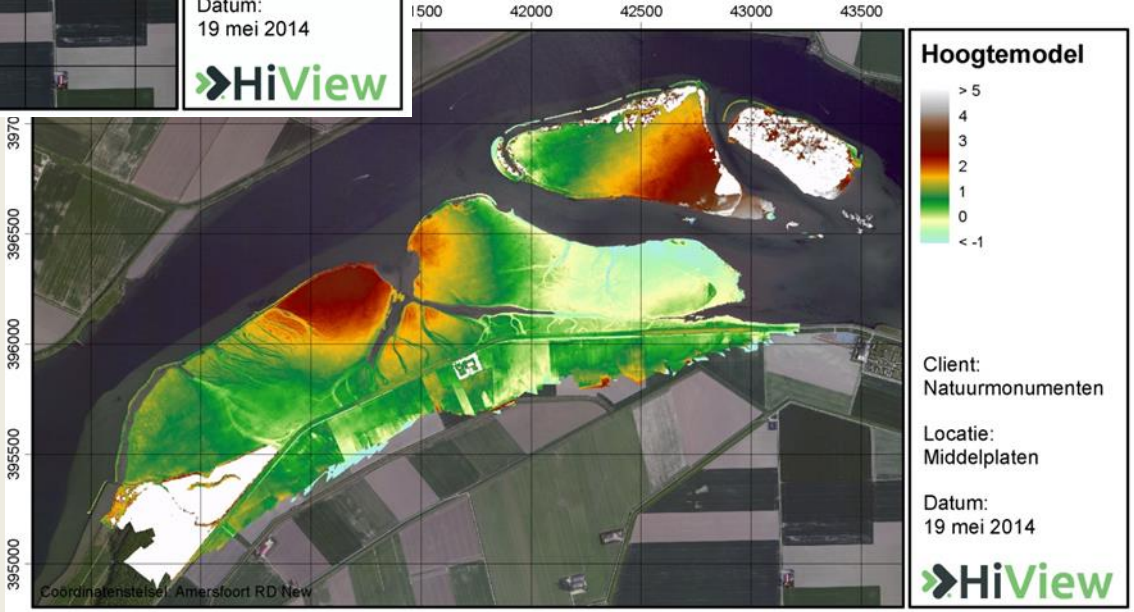
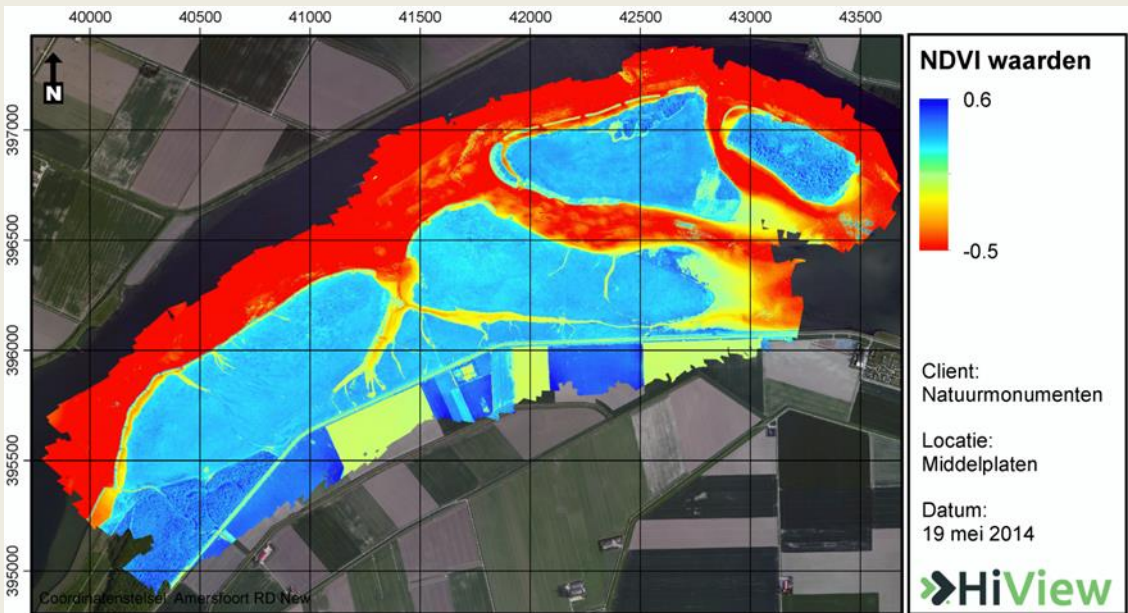
Datum:  
19 mei 2014



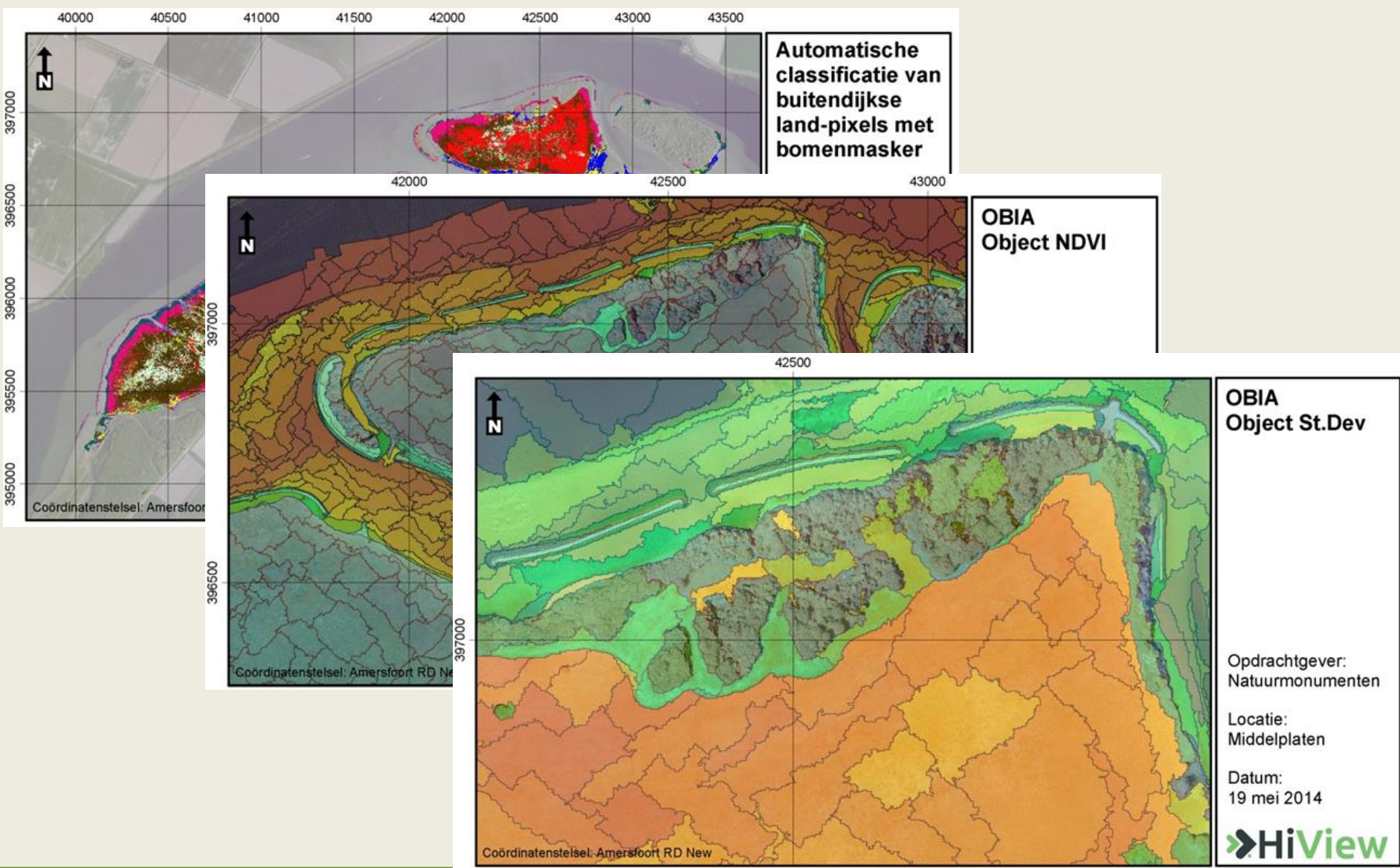
# Reserves Middelpaten en Distelse Gorzen



# Reserves Middelpaten en Distelse Gorzen



# Reserves Middelpaten en Distelse Gorzen



# Reserves Middelpaten en Distelse Gorzen

## Benefits

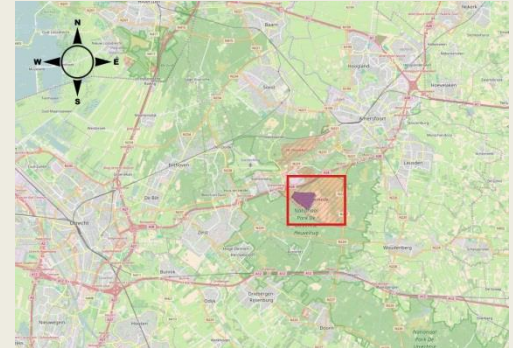
- Reduced costs
- Higher accuracy
- Inaccessible areas
- Cloudy weather

## Research

- Multiple bands
- Combine with DEM (surface roughness)
- Multi-temporal
- Classification algorithms

# Highlight IV Military drill area Leusderheide

Military drill area and nature reserve  
Leusderheide (pr.Utrecht)



## Monitoring forest and heath

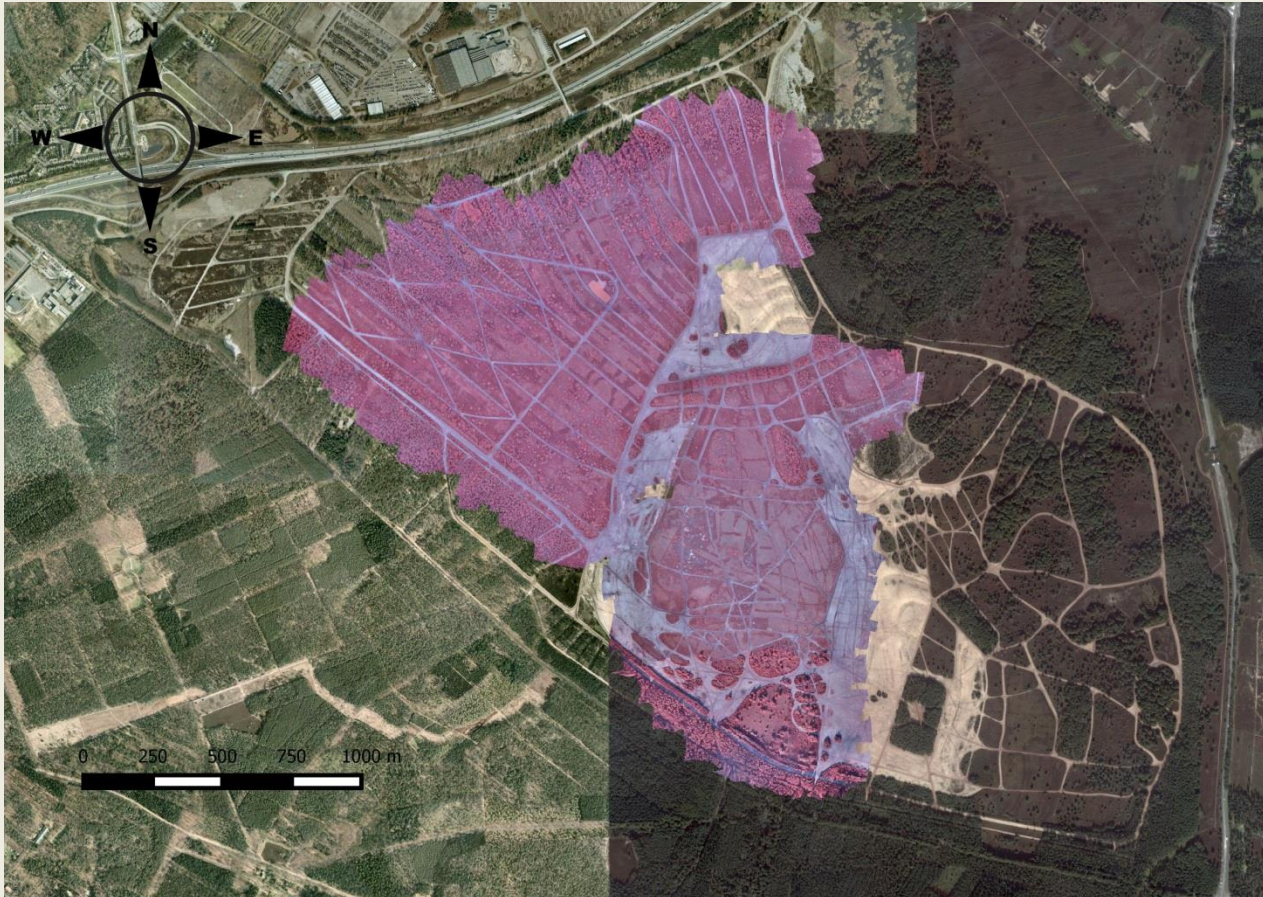
- Vegetation classification
- Assessment of biomass  
young vegetation



[back to highlights](#)

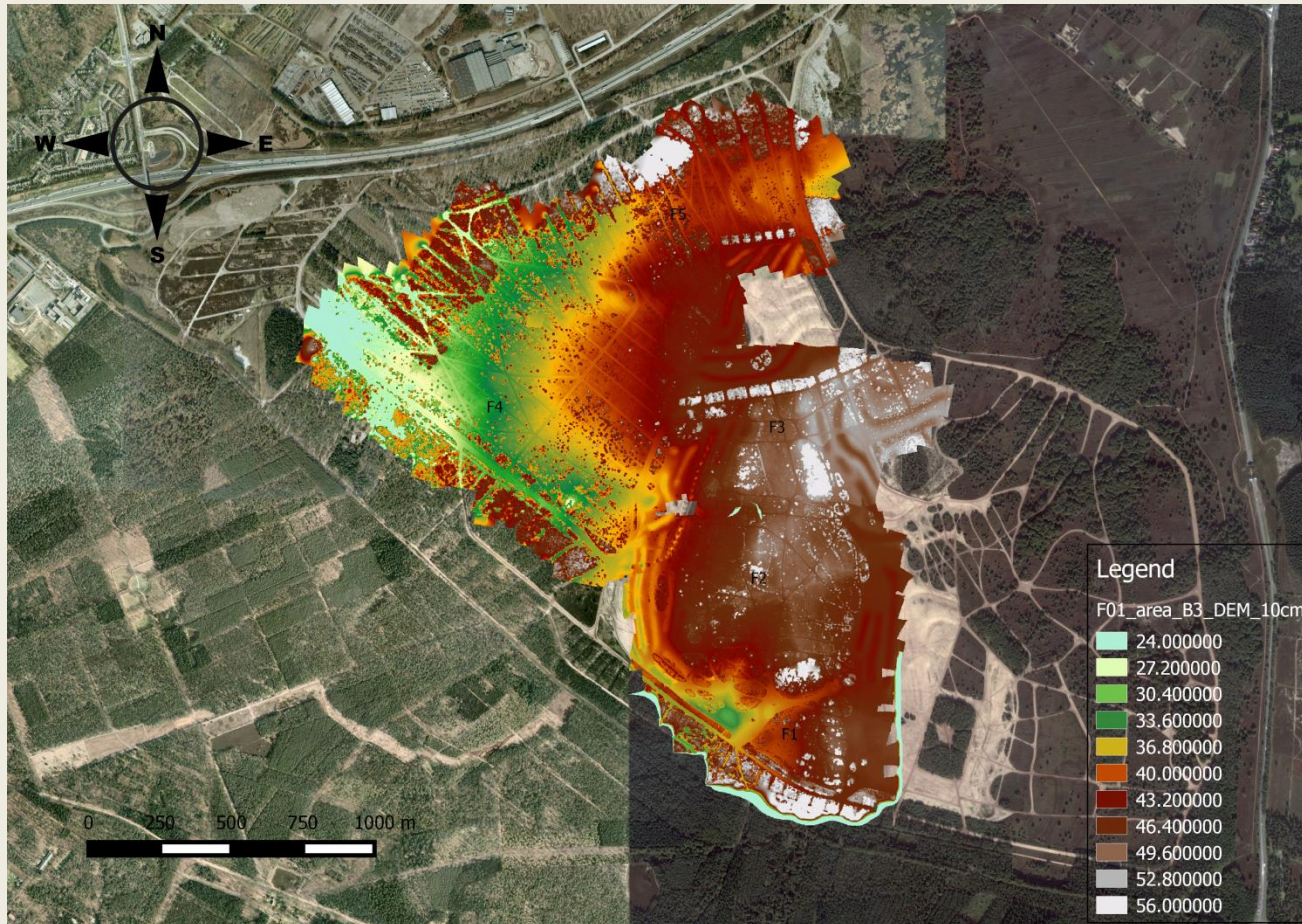
# Military drill area Leusderheide

## *Overview NIR*



# Military drill area Leusderheide

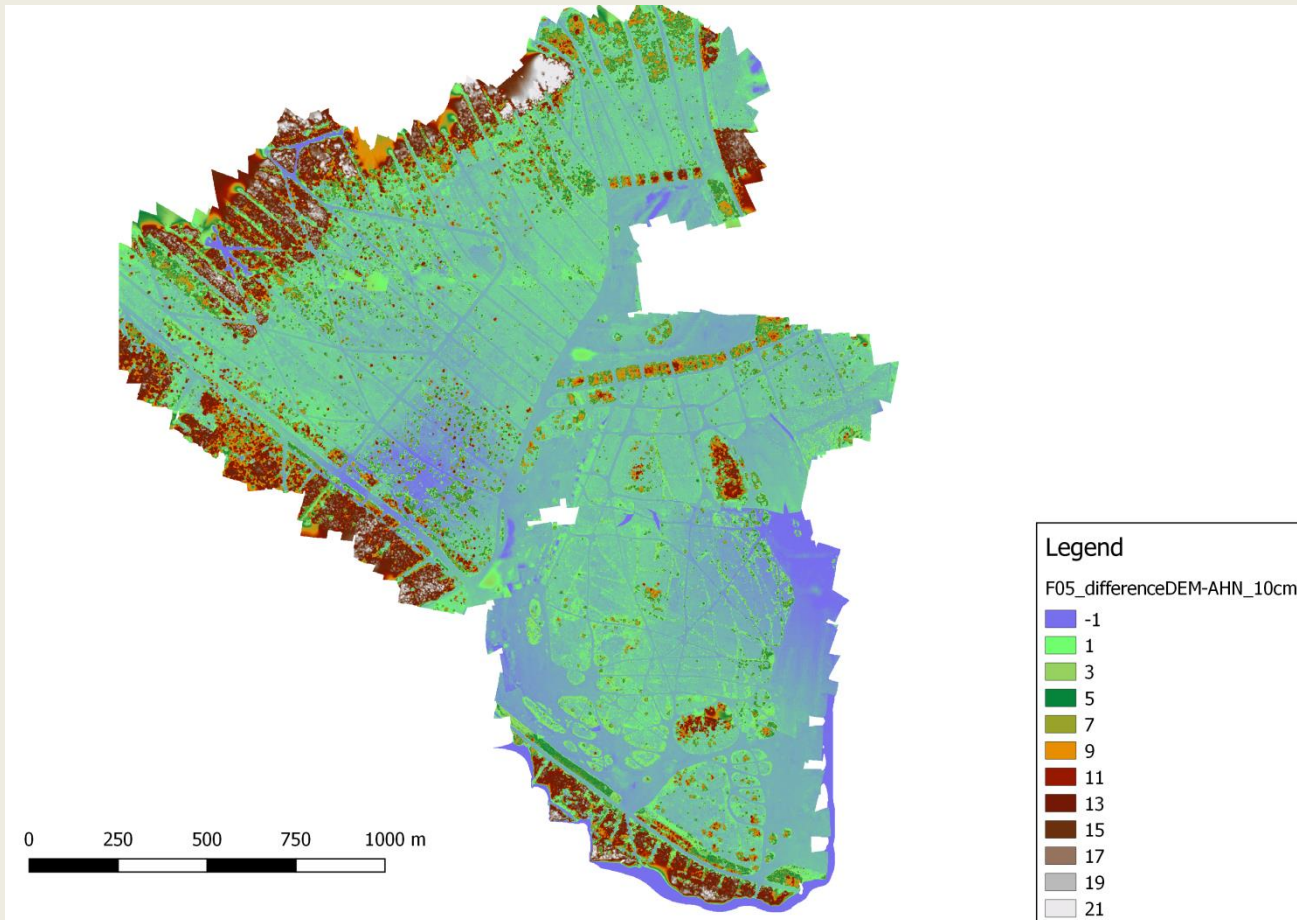
## Overview elevation





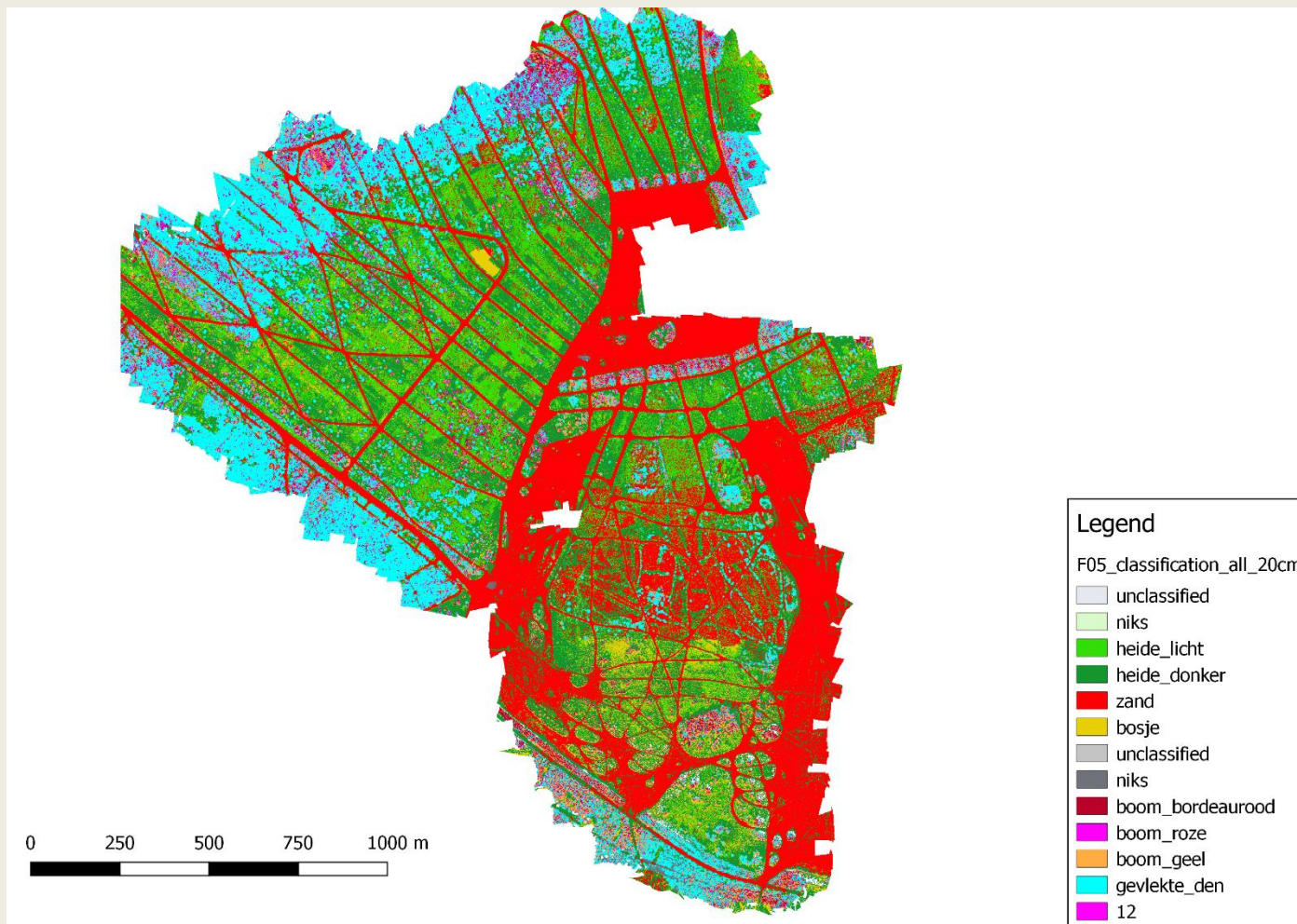
# Military drill area Leusderheide

## *Overview vegetation height*



# Military drill area Leusderheide

## Overview vegetation classification



# Flying Sensors:.....



To conclude....

# Flying Sensors: Future begins today

## Opportunities

- .Water management
- .Agriculture
- .Insurance
- .Science
- .Nature management
- .Infrastructure (civil and public)
- .....

## Threats

- .Legal, permits, security, privacy
- .From imagery to information
- .Unrealistic expectations

## Future

- .Case studies → operational
- .Flying Sensor technology → use of information

## Research

- .Sensor types (including air humidity, air pressure, temp)
- .Processing imagery
- .Combine with satellites and ground sensors: holistic approach
- .Geo-visualisation (3D/4D, AR, VR, analogue)

# Flying Sensors: The sky is not the limit

[www.hiview.nl](http://www.hiview.nl)

[www.borgmanbeheer.nl](http://www.borgmanbeheer.nl)

Dank u wel !