

Greening OTS checks using imagery

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Netherlands Geomatics and Earth Observation BV

20th MARS Conference: Let us face the new CAP
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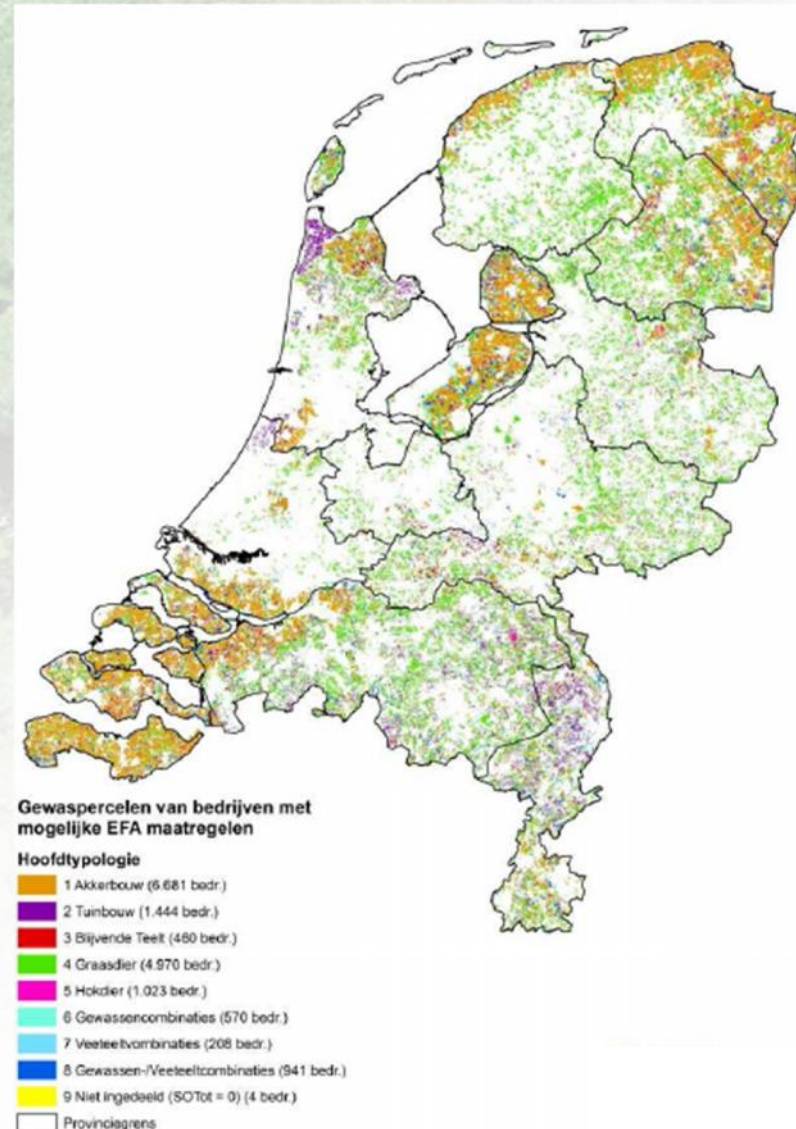
Greening in the Netherlands

Measure	For which farms	What to do?
Crop diversification	10-30 ha arable land	≥ 2 crops
	> 30 ha arable land (except > 75% grass lands)	≥ 3 crops
Permanent grass land	In Natura2000 areas National level < 5%, resowing of grass	No ploughing
Ecological Focus Areas	> 15 ha arable land	5% as EFA
Dutch Equivalent practices	Arable Farms	

Greening in the Netherlands

EFA on arable land:

- ~1.000.000 ha arable land,
- ~ 670.000 ha EFA-obligation,
- ~ 33.500 ha EFA (5%)
- The farms are in the orange areas



Greening in the Netherlands

Dutch choices for EFA:	Choice	Remark
a - Land lying fallow	no	
b - Terraces	no	
c - Landscape features - a - Hedges or wooded strips	no	in due time
c - Landscape features - b - Isolated trees	no	in due time
c - Landscape features - c - Trees in line	no	in due time
c - Landscape features - d - Trees in group and field copses	no	in due time
c - Landscape features - e - Field margins	YES	not maintained
c - Landscape features - f - Ponds	no	
c - Landscape features - g - Ditches	no	
c - Landscape features - h - Traditional stone walls	no	
d - Buffer strips	no	
e - Hectares of agro-forestry	no	
f - Strips of eligible hectares along forest edges - Strips without production	no	
g - Areas with short rotation coppice	YES	Willow trees - Salix spp.
h - Afforested areas	no	
i - Areas with catch crops or green cover	YES	mixture per parcel of 2 seeds, sowing before October 1, 10 weeks
j - Areas with nitrogen-fixing crops	YES	e.g. Alfalfa, Lupin, Faba bean

Greening in the Netherlands

Equivalent packages	Remark
Field margin package	<p>Maintained field margin, ditch, landscape element, catch crops, nitrogen-fixing crops</p> <p>Volledig 5% van de EA invullen door een akkerbouw-randenpakket. wegingsfactor</p> <p>Voorbeeld: Agrarisch ondernemer heeft 100 ha. 5% daarvan (5 ha) moet als EA worden ingericht.</p> <p>2 sloot Sloot van 1 ha (1 x 2 = 2 ha)</p> <p>1,5 akkerrand Beheerde akkerrand van 1 ha (1 x 1,5 = 1,5 ha)</p> <p>0,3 vanggewas Vanggewas van 5 ha (5 x 0,3 = 1,5 ha)</p> <p>minimaal 30% van 5 ha</p>
Skylark foundation	Field margins + ditch
Biodiversity + certificate	Field margins
	Collective application is possible

Available images

- Data from JRC: HR + VHR
- Landsat8 from March 2013
- Netherlands: yearly color infrared aerial imagery

Available images

Dutch National Satellite Data Portal

Satellite	Data	Bands/polarisatio*	Spatial Resolution	Temporal Resolution
Formosat-2	Panchromatic	Blue-NIR (1 band)	2 meter**	Every 9 days
Formosat-2	Multispectral	Blue, Green, Red, NIR	8 meter	Every 9 days
UK-DMC-2	Multispectral	Green, Red, NIR	22 meter	3 times a week
Deimos-1	Multispectral	Green, Red, NIR	22 meter	3 times a week
Radarsat-2	Radar	HH+HV polarisation	25 meter	Every 24 days
Radarsat-2	Radar	VV+VH polarisation	25 meter	Every 24 days

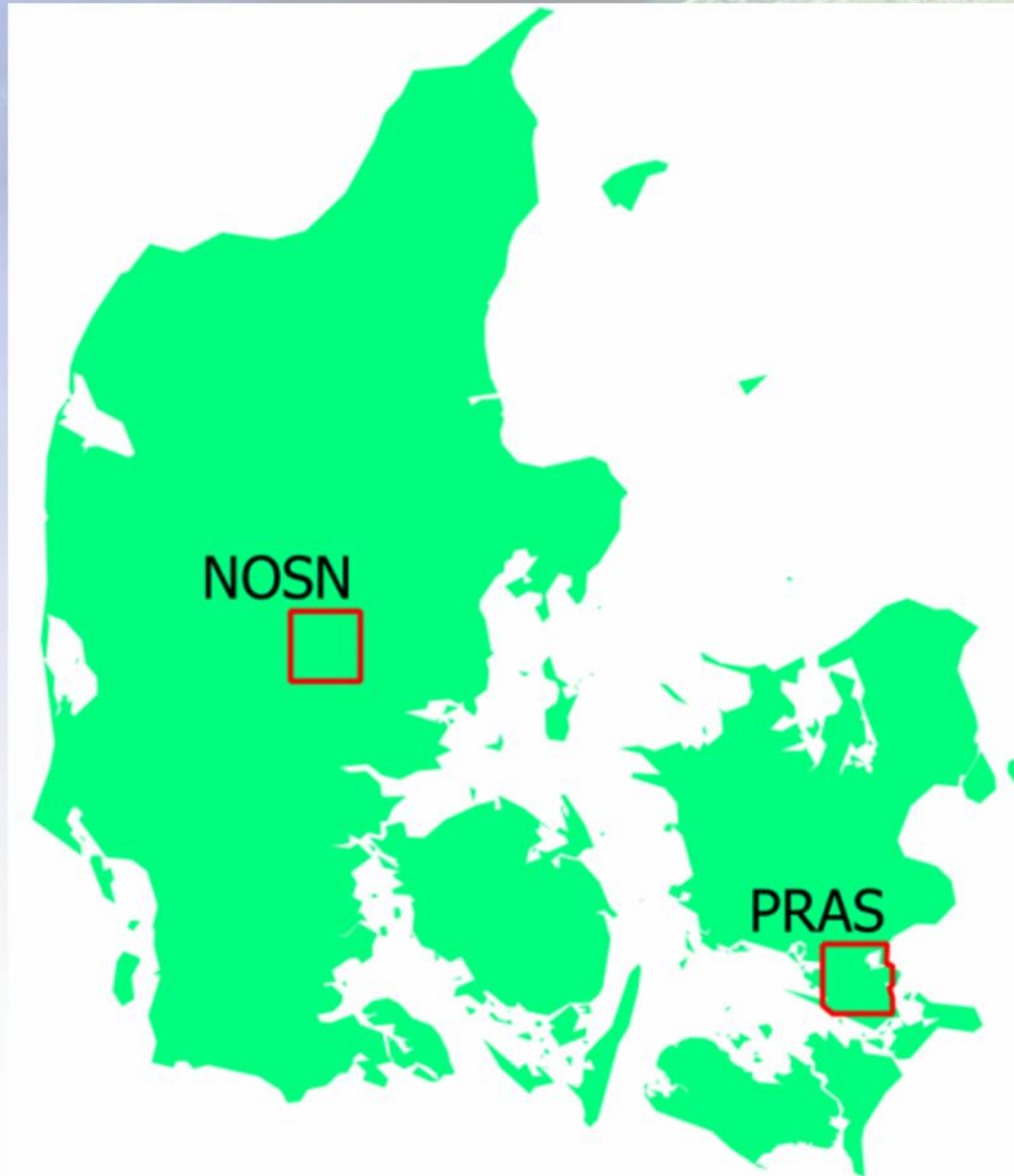


Get the industry ready for Sentinels satellites → Automated processing chain
 Images in data portal since 2012 until present from Radarsat, Formosat2, Spot6 and DMC
 Sentinel 1 delivers data since October 2014
 Sentinel 2 launch in April 2015 data expected in September 2015

Crop diversification

- Confidence on crop classification at parcel level
- A lot of satellite data available
- Automated method for crop classification
- Crop parcel information is available
- Contact NEO directly for information:
- Corne.vandersande@neo.nl

Crop diversification



Crops to be classified are:

- Spring barley
- Winter wheat
- Grass in rotation
- Maize, Winter rape
- Winter barley
- Rye
- Oats

Every zone has same crop calendar

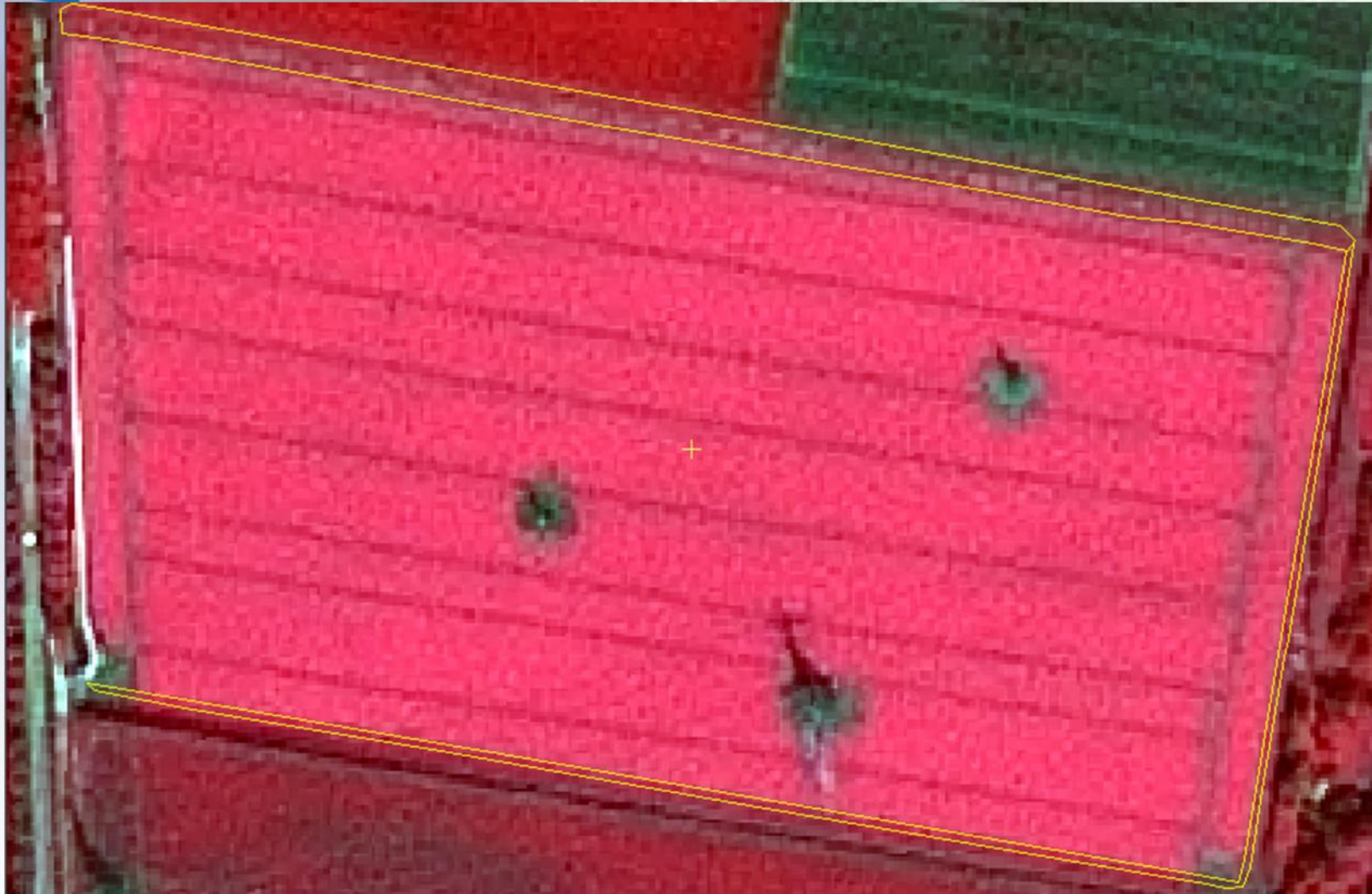
Difference between zones

Field margin and ditch



Farmer' application 2014 Grass & Herbs

Field margin and ditch



Spot6, 1.5 meter resolution, June 11, 2014

Field margin and ditch



Spot6, 1.5 meter resolution ,August 11, 2014

Ditch

Field margin and ditch



Spot6, 1.5 meter resolution , September 4, 2014

Field margins

Remote Sensing with 1.5 meter imagery makes identification of field margins and ditches possible

Trees

*Het Boomregister heeft informatie
over **alle bomen van Nederland**
Steeds beter en completer*



**Boom
register.nl**

Een initiatief van:



Open Data: First free version based on LiDAR data from the whole of the Netherlands (2007-2012)

Precise tree heights and crown area

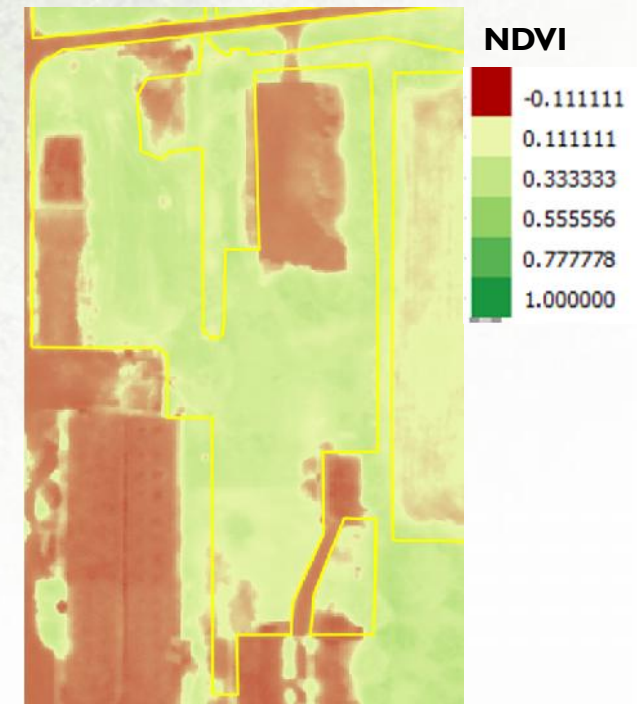
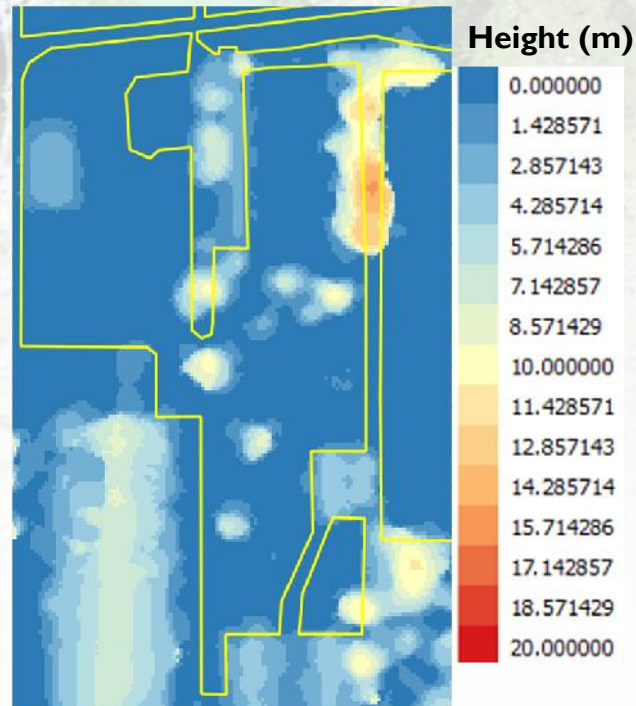
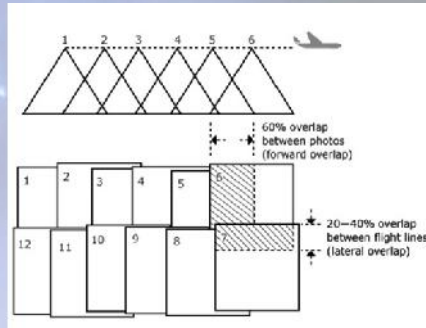
Cooperation: improving, enriching, completing and updating national tree database

Trees

Actualisation to 2013:

Height extraction from stereo color infrared aerial images

Classification of trees using height and NDVI



Trees



Trees

Treebasis



We acquire tree
as:
Point

Line

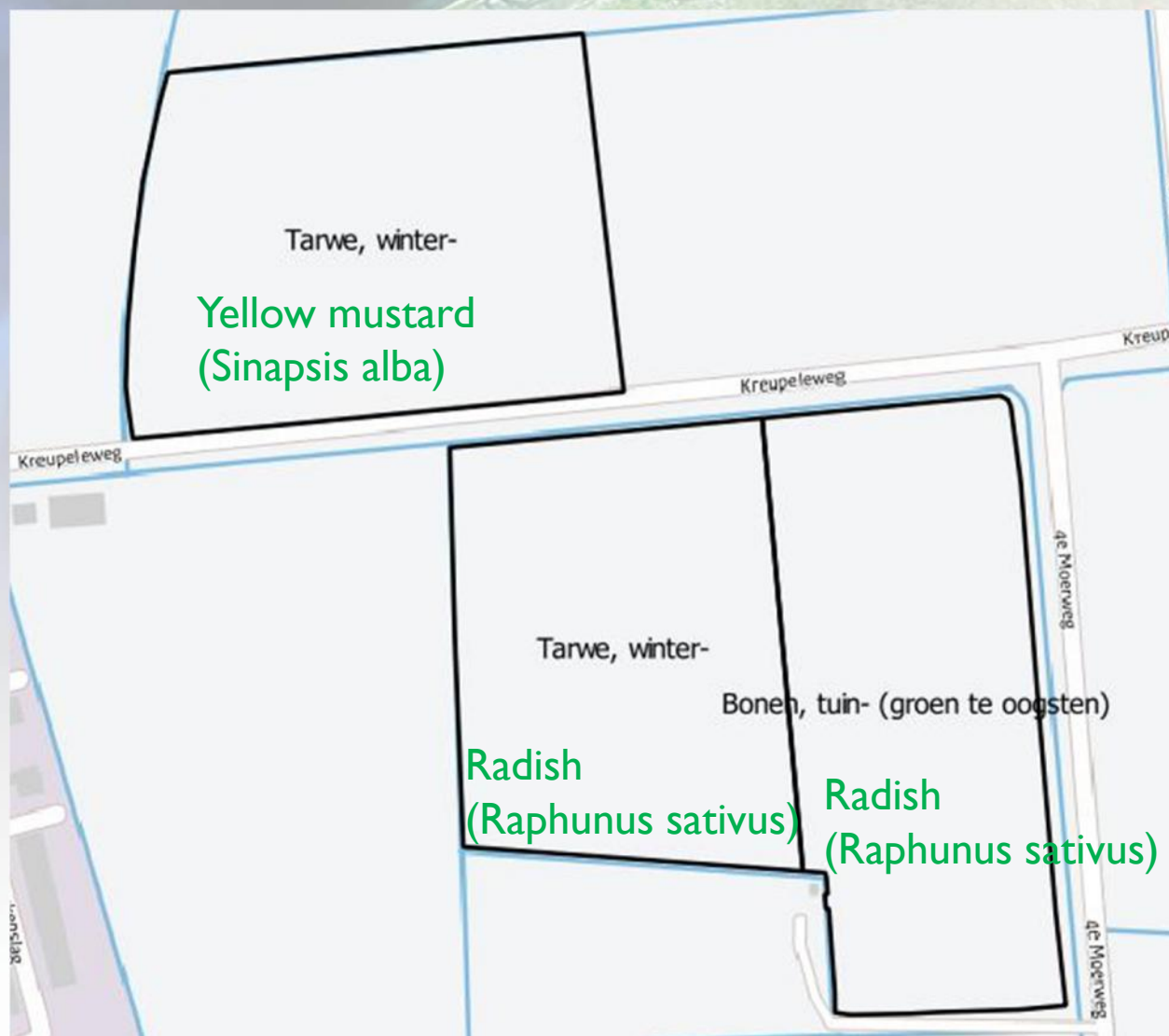
Polygon

Treecheck



Compare EFA database with actual image

Catch crops

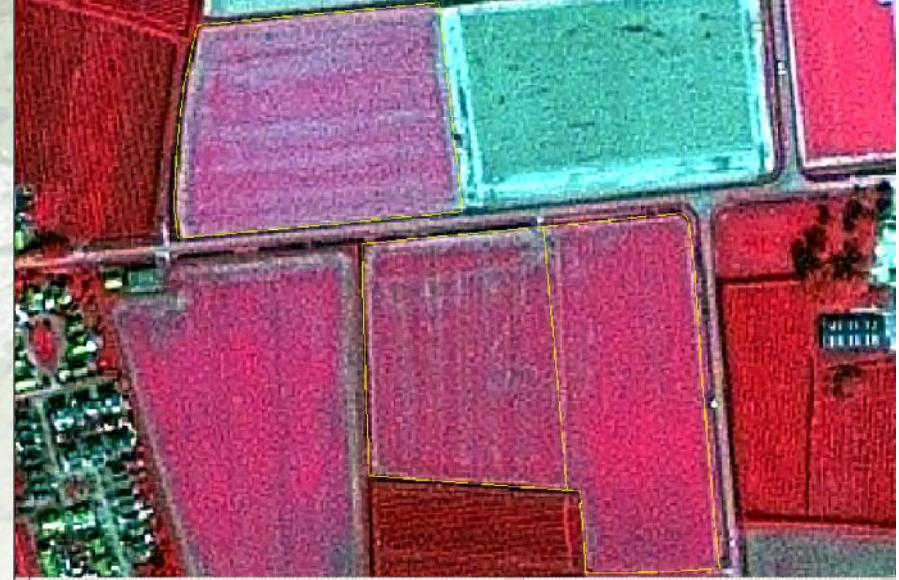


Catch crops



Spot6, 1.5 meter resolution ,August 11, 2014

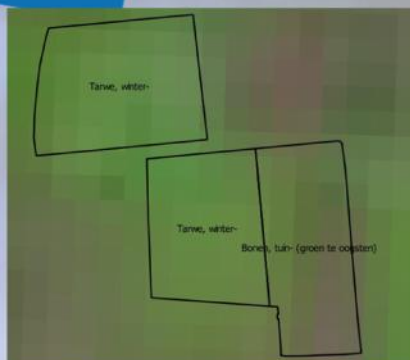
All 3 parcels have bare soil



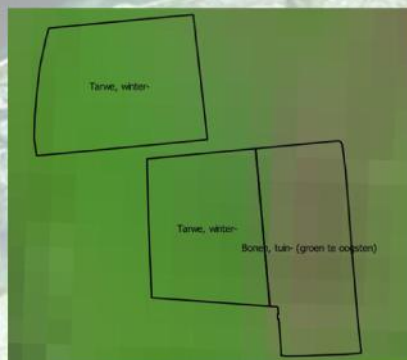
Spot6, 1.5 meter resolution , September 4, 2014

All 3 parcels have homogeneous coverage

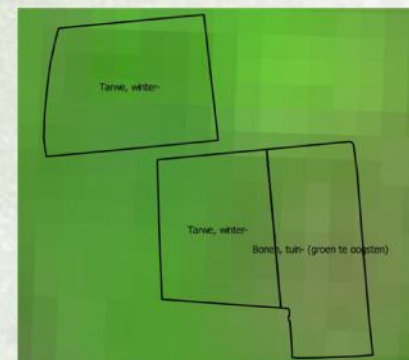
Catch crops



20140417



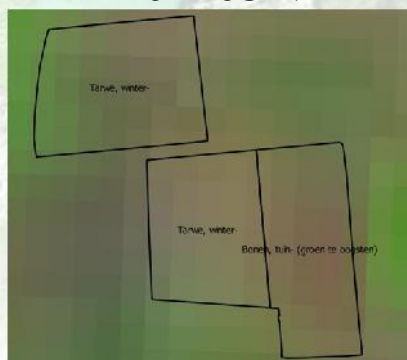
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20140722



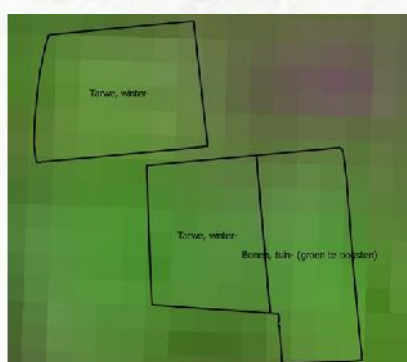
20140731



20140823



20140908



20140917



20141003

Catch crops



Yellow mustard

In the field on November 4, 2014: flowering catch crops

Presence of catch crops can be done with Remote Sensing, mixture is not possible

Conclusions

- Time serie data is available in VHR, HR
- Necessary to understand crop cycle
- Satellite data with SWIR is important
- Stereo aerial imagery can acquire landscape elements
- Remote Sensing reduces and steers field work to control the new CAP

Thank you

Visit us at the booth!

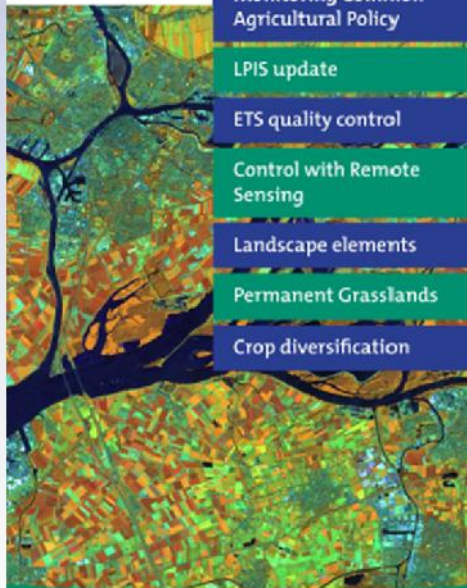
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Jeroen van de Voort

Holger Lipke

NEO
For earth observation

*Innovative tools
for monitoring rural
environment*

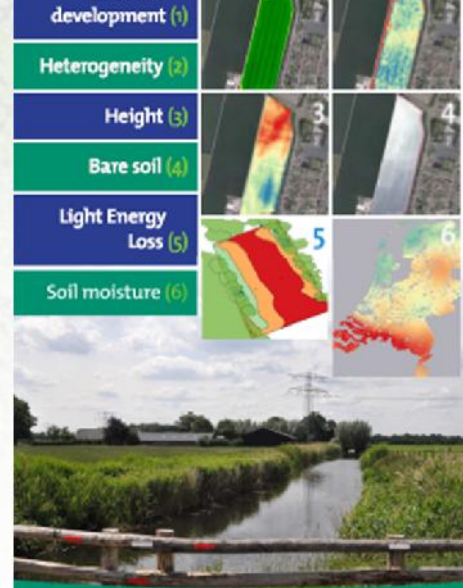


- Monitoring Common Agricultural Policy
- LPIS update
- ETS quality control
- Control with Remote Sensing
- Landscape elements
- Permanent Grasslands
- Crop diversification

Monitoring using SignalEyes ISO9001:2008
Timely data delivery via Neography Webservices

NEO
For earth observation

*Your partner in
crop parcel monitoring
for agribusiness*



- Biomass development (1)
- Heterogeneity (2)
- Height (3)
- Bare soil (4)
- Light Energy Loss (5)
- Soil moisture (6)

Monitoring using SignalEyes ISO9001:2008
Timely data delivery via Neography Webservices