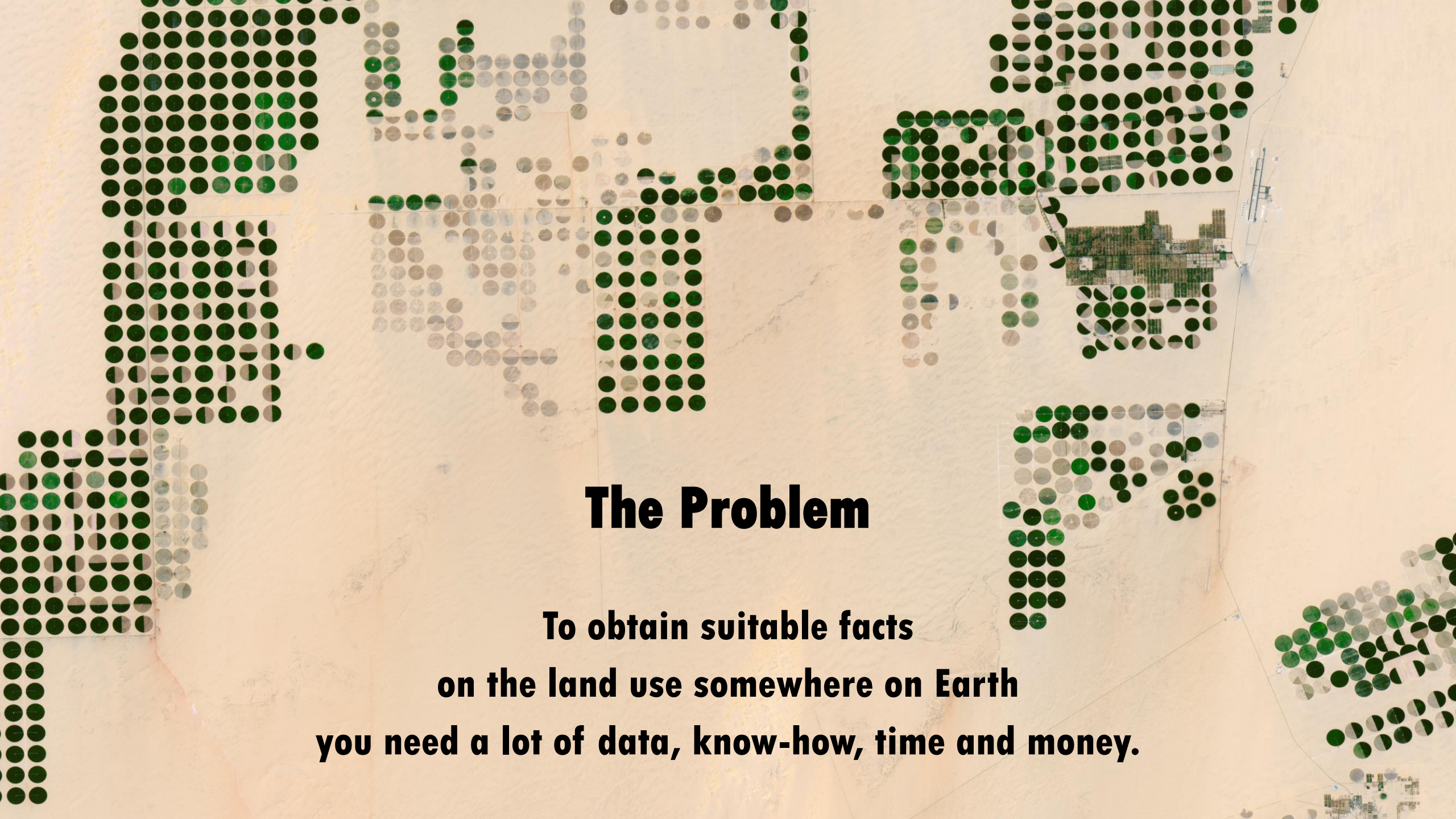
GREENSPIN

Earth Observation and Artificial Intelligence – Applications in Agriculture

Dr. Sebastian Fritsch

UNISPACE+50 Space and Industries Panel
June 18, 2018



The Problem

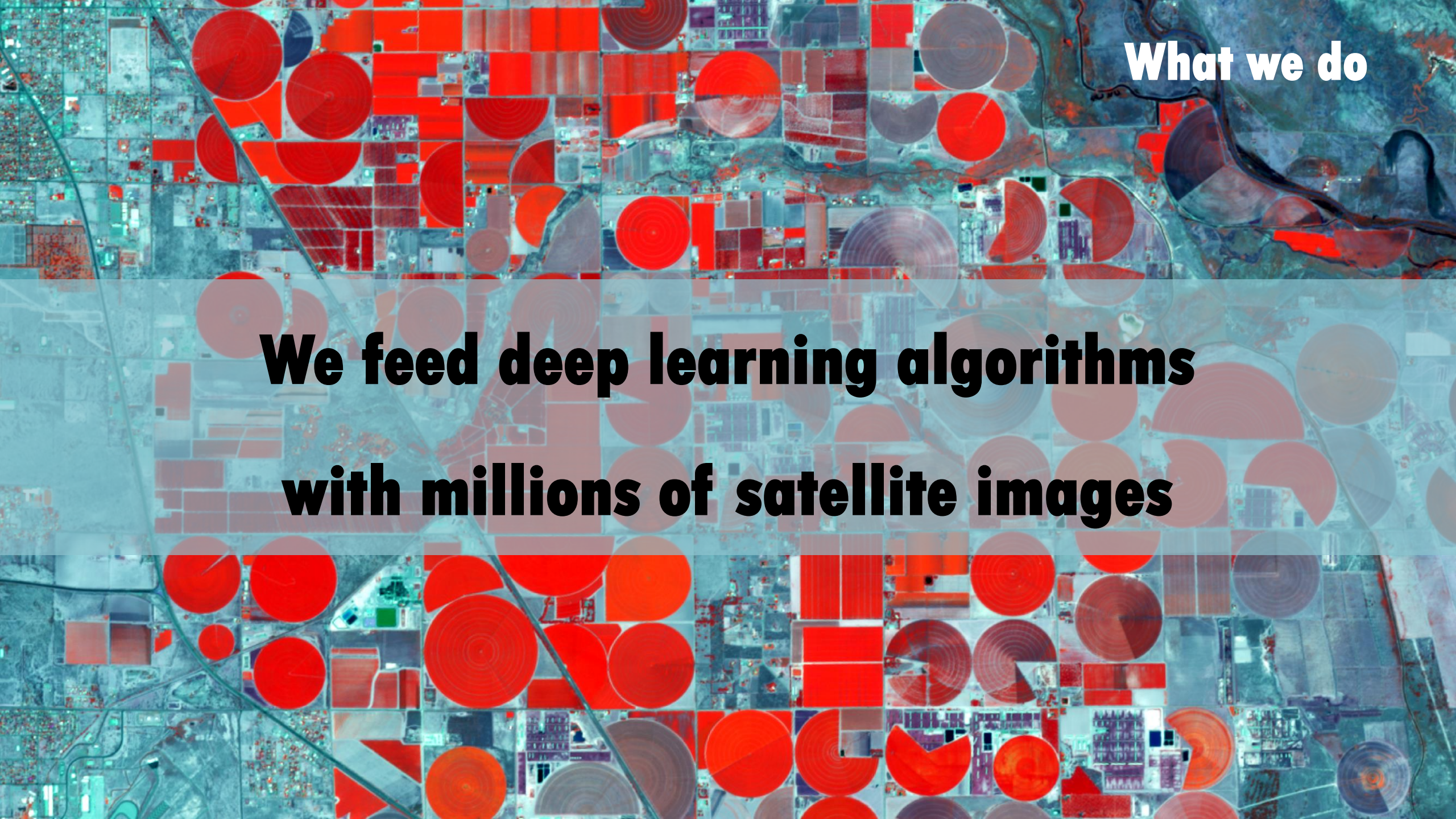
To obtain suitable facts

on the land use somewhere on Earth

you need a lot of data, know-how, time and money.

Our Solution

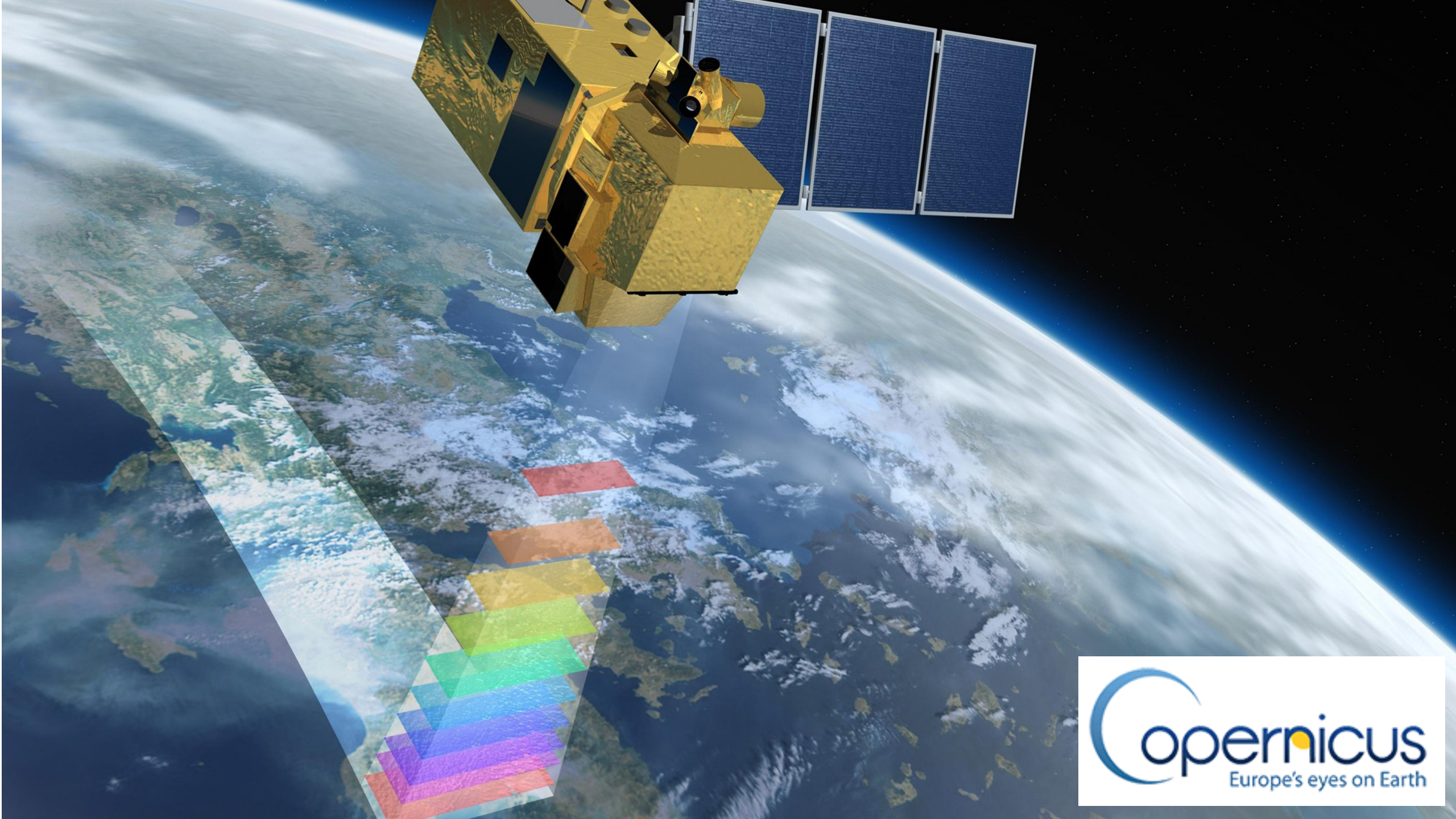
AILEO – an Artificial Intelligence Learning Earth Observation to automatically deliver facts on land use in near real-time.



What we do

We feed deep learning algorithms with millions of satellite images

Our purpose is to digitize and quantify the terrestrial environment of the Earth.


opernicus
Europe's eyes on Earth

Artificial intelligence and Earth Observation

GREENSPIN

2
ZERO
HUNGER

12
RESPONSIBLE
CONSUMPTION
AND PRODUCTION

13
CLIMATE
ACTION

Dog or cat?

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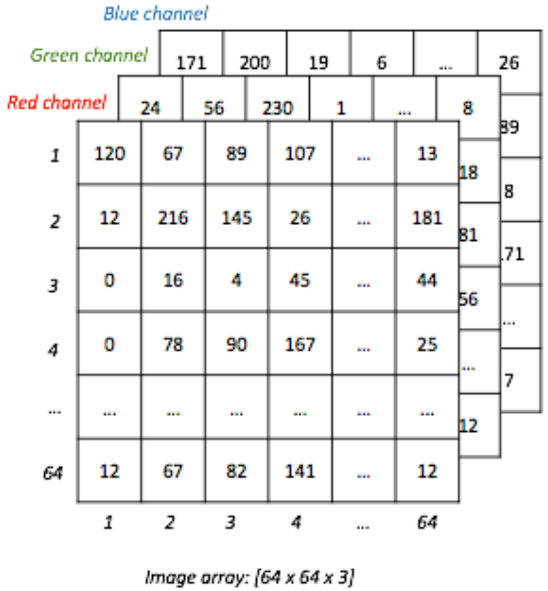

Image array: [64 x 64 x 3]

Field or no field?

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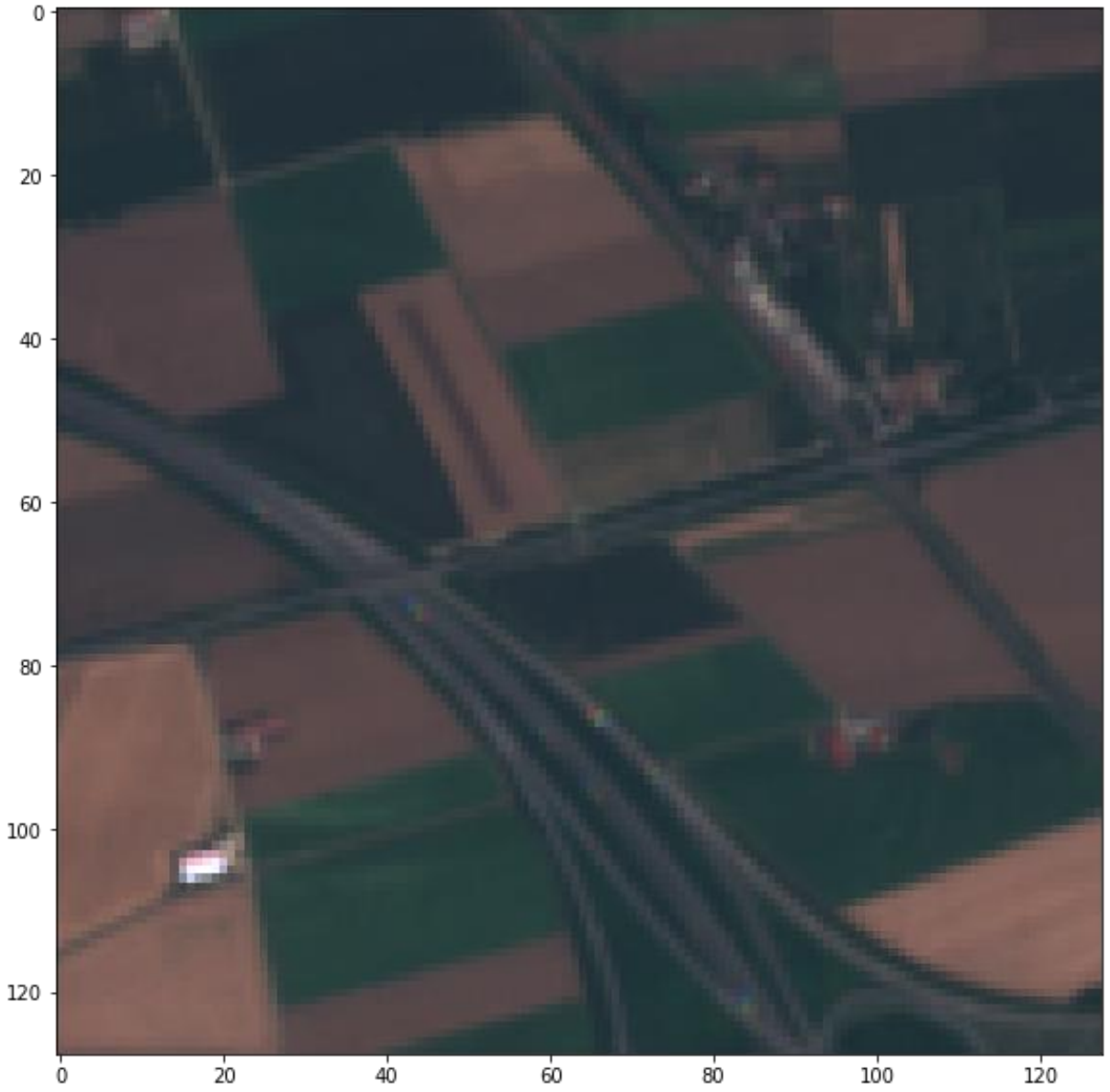

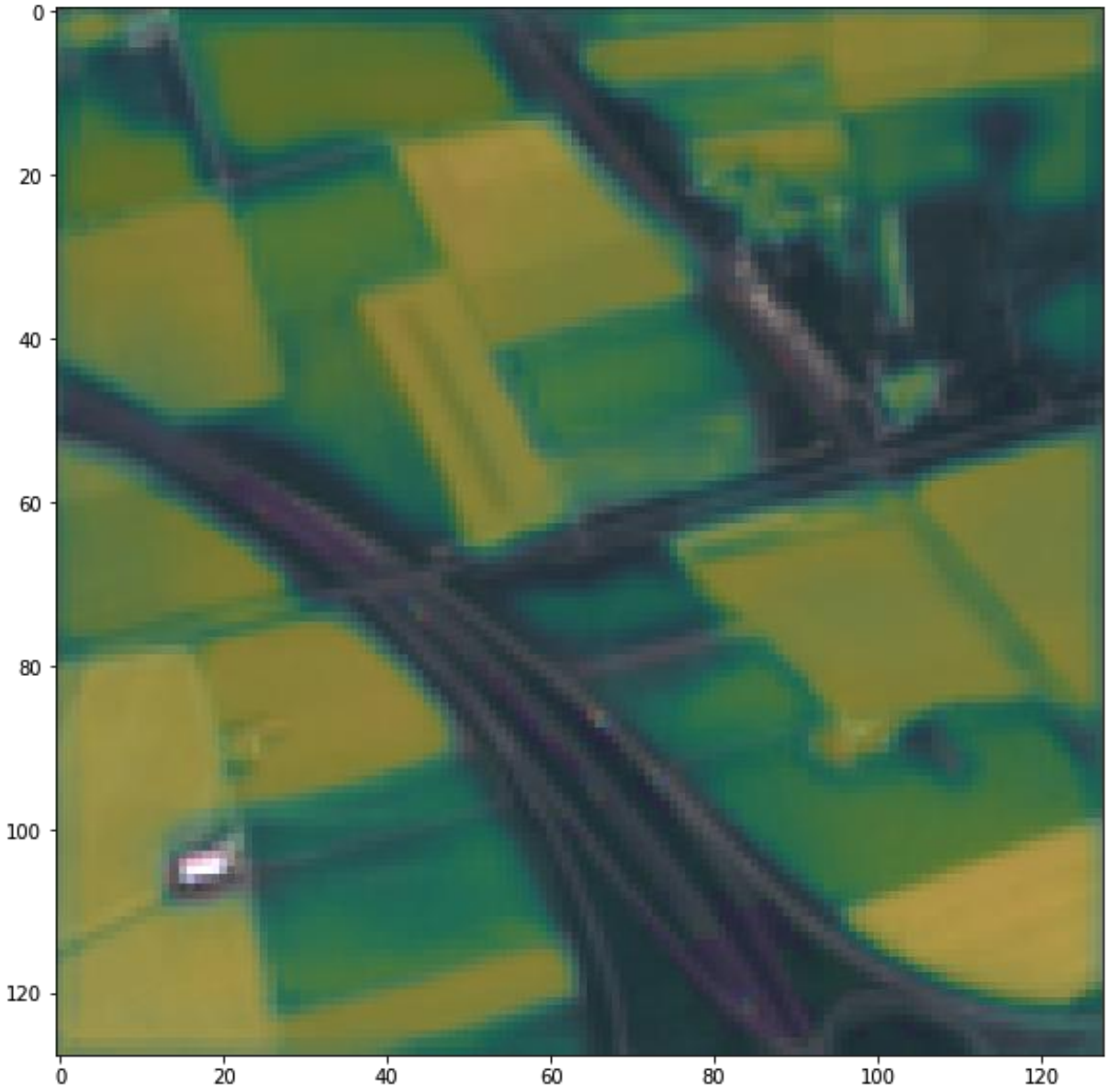

Which crop?

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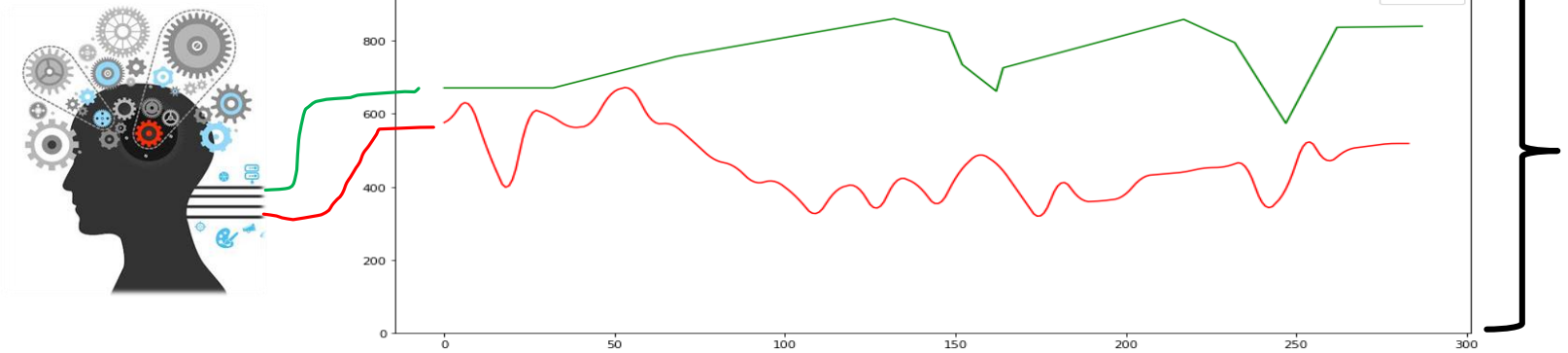
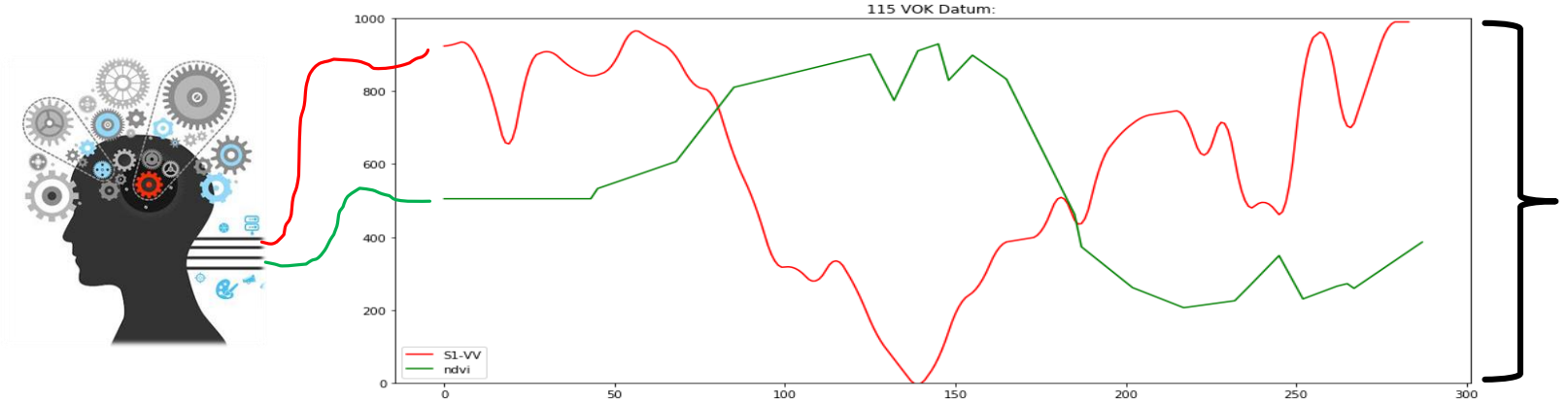
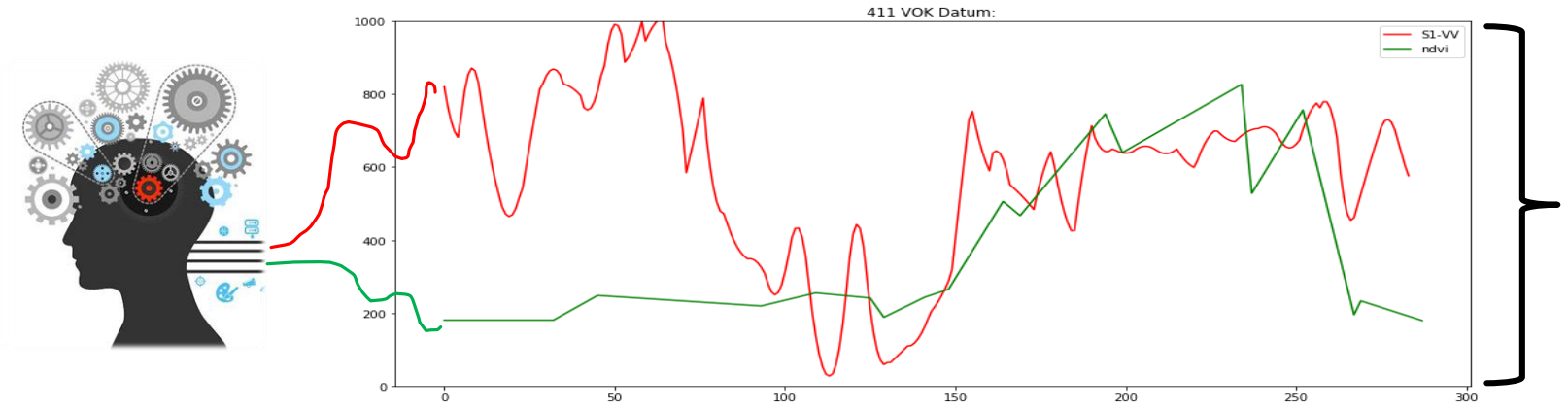


Grassland



Winter wheat



Corn

GREENSPIN

Feldsuche
2018-06-12 670061
L50
Werner-Kube-Straße
John-Schehr-Straße
Malte-Bruun-Straße
Herta-Lindner-Straße
Horst-Heilmann-Straße
Van-Beek-Straße
Magdeburger Chaussee
Bodestraße
B185N
Gewerbefläche Am Funkturm
200 m
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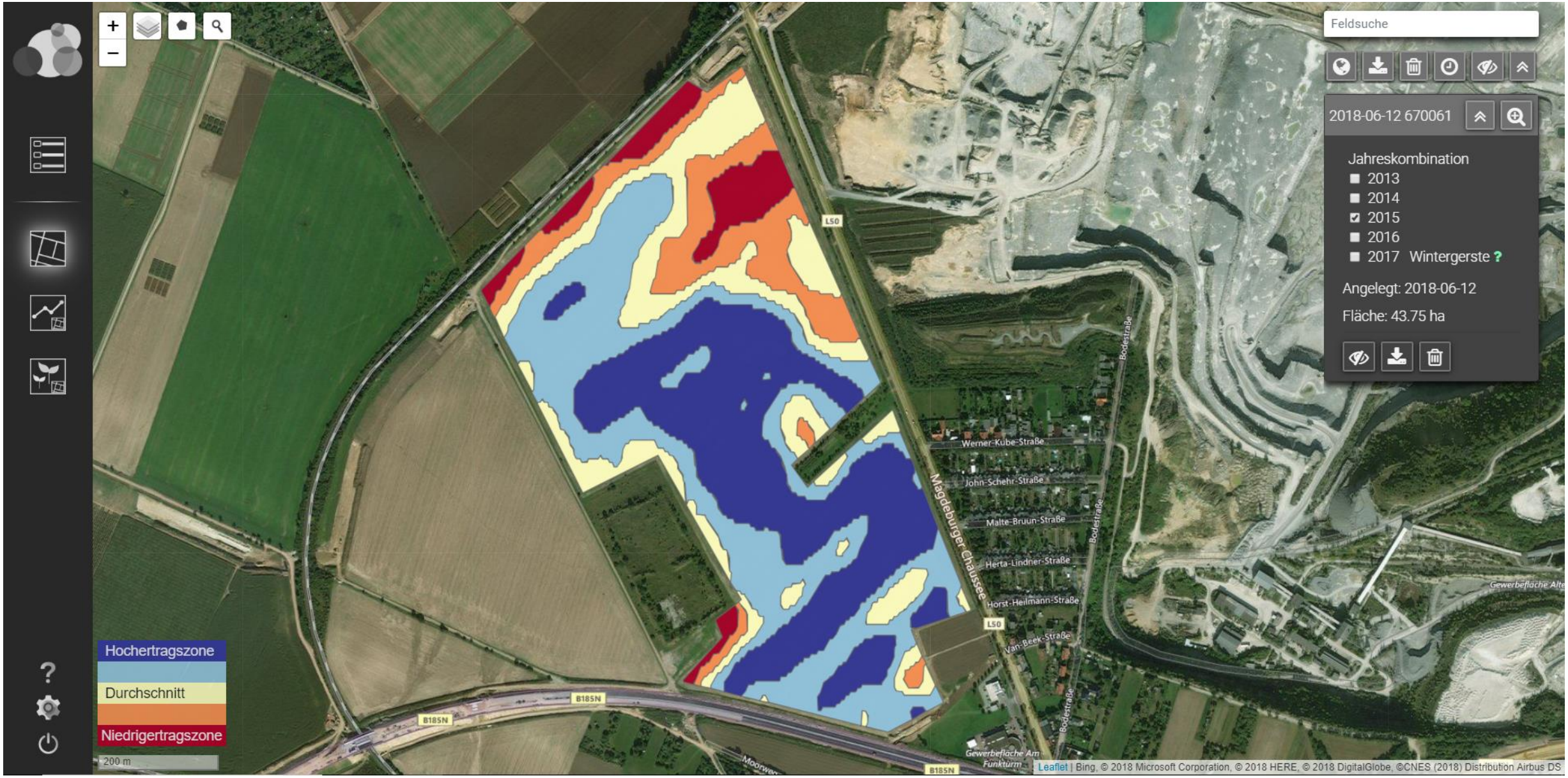
Feldsuche
2018-06-12 670061
Jahreskombination
2013
2014
2015
2016
2017 Wintergerste ?
Angelegt: 2018-06-12
Fläche: 43.75 ha
Hochertragszone
Durchschnitt
Niedrigertragszone
200 m
L50
B185N
Werner-Kube-Straße
John-Schehr-Straße
Malte-Bruun-Straße
Herta-Lindner-Straße
Horst-Heilmann-Straße
Van-Beek-Straße
Magdeburger Chaussee
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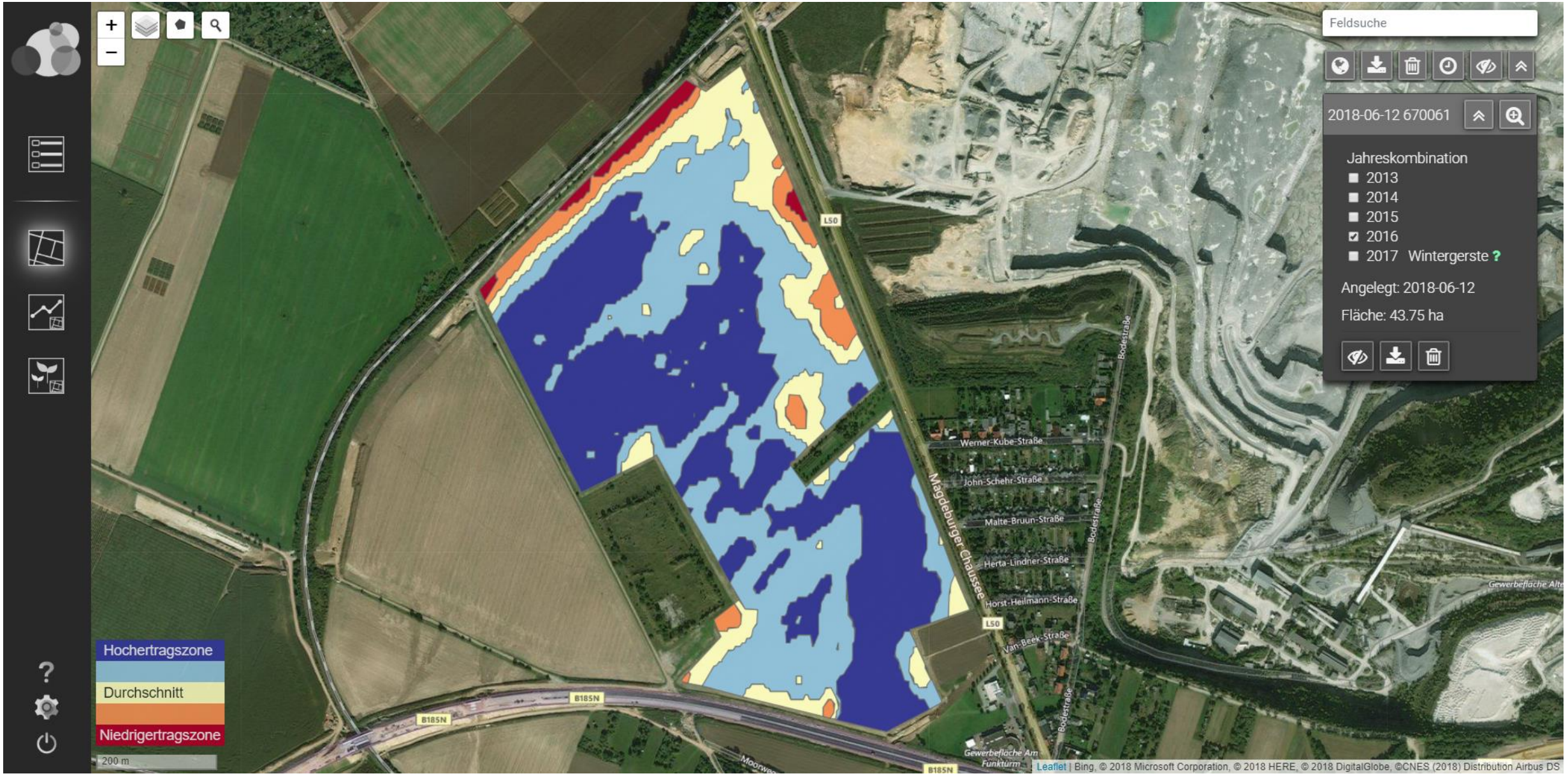
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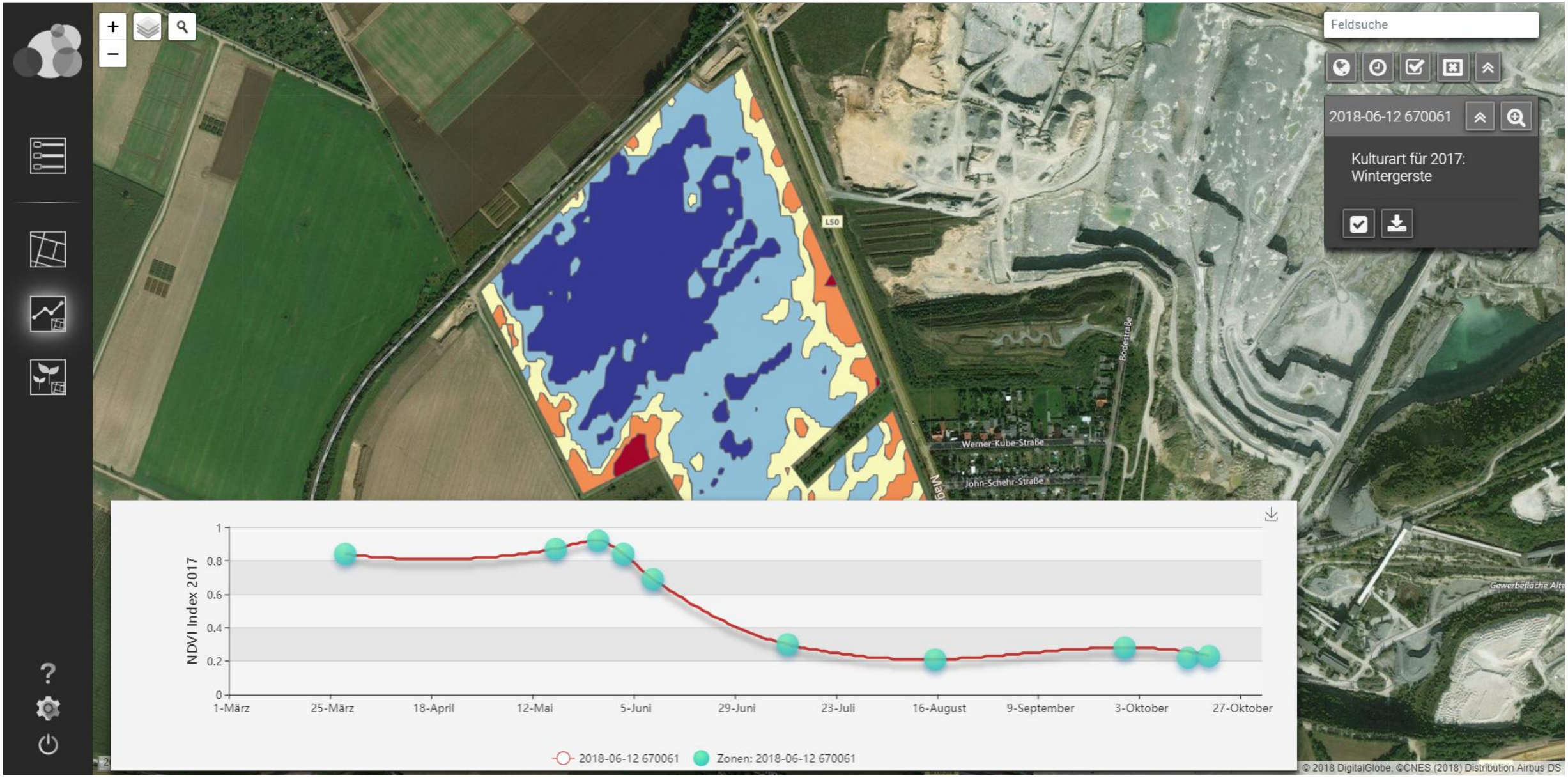
Feldsuche
2018-06-12 670061
Kulturart für 2017:
Wintergerste
NDVI Index 2017
1
0.8
0.6
0.4
0.2
0
1-März
25-März
18-April
12-Mai
5-Juni
29-Juni
23-Juli
16-August
9-September
3-Oktober
27-Oktober
2018-06-12 670061
Zonen: 2018-06-12 670061
Werner-Kube-Straße
John-Schehr-Straße
Bodestraße
L50
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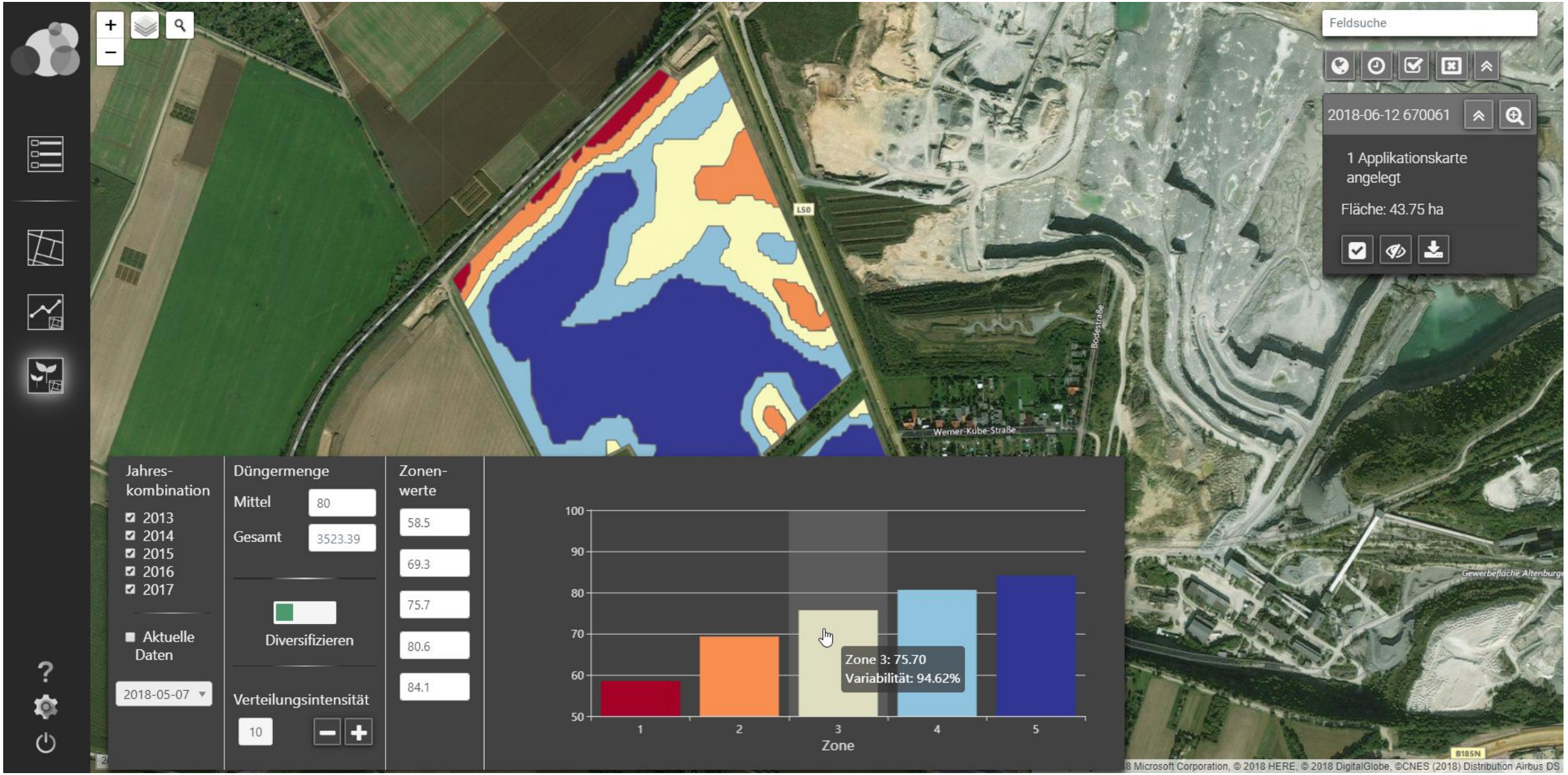
Feldsuche
2018-06-12 670061
1 Applikationskarte angelegt
Fläche: 43.75 ha
Jahres-kombination
2013
2014
2015
2016
2017
Aktuelle Daten
2018-05-07
Düngermenge
Mittel
80
Gesamt
3523.39
Diversifizieren
Verteilungsintensität
10
Zonen-werte
58.5
69.3
75.7
80.6
84.1
100
90
80
70
60
50
1
2
3
4
5
Zone
Zone 3: 75.70
Variabilität: 94.62%
Werner-Kube-Straße
Bodestraße
L50
B185N
Gewerbefläche Altenburg
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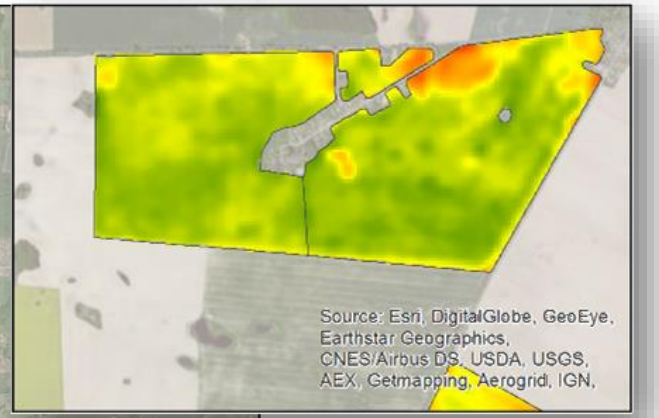
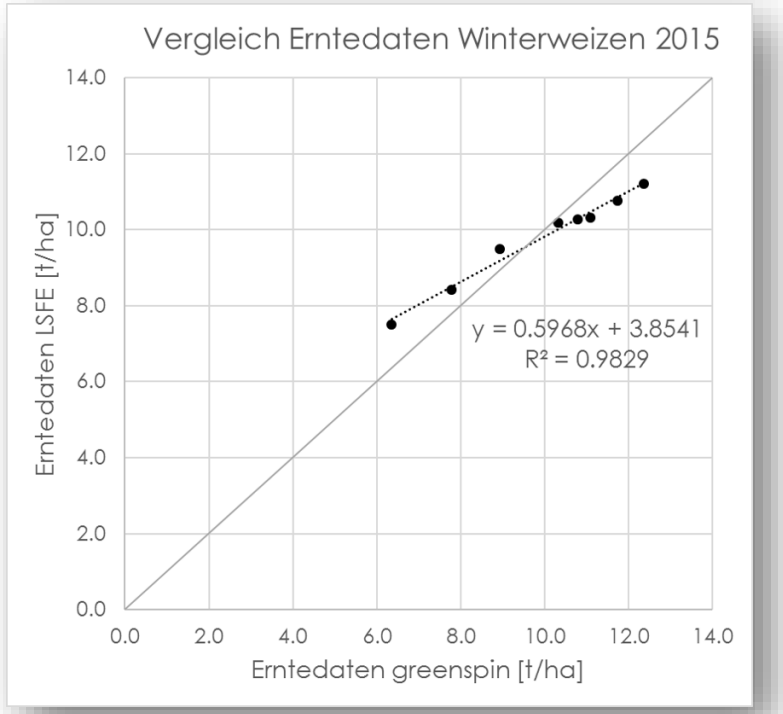
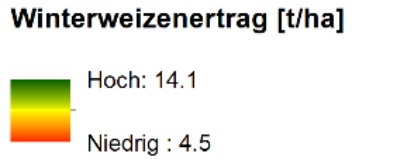
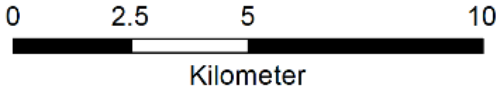
Variable-rate nitrogen fertilization in practice

Crop yield estimation









Optimization of the harvesting process

Geoprocessing

Central platform

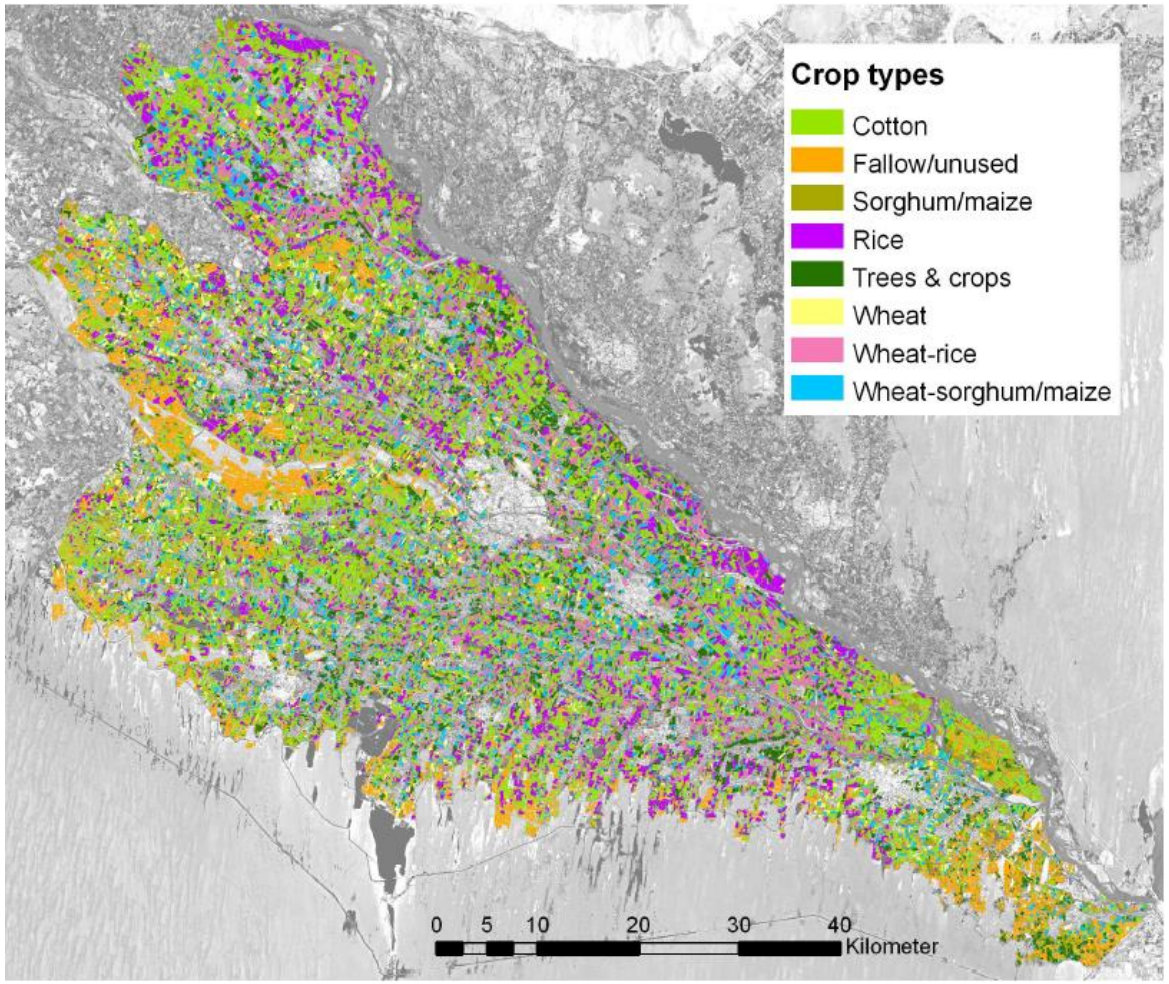
With support from

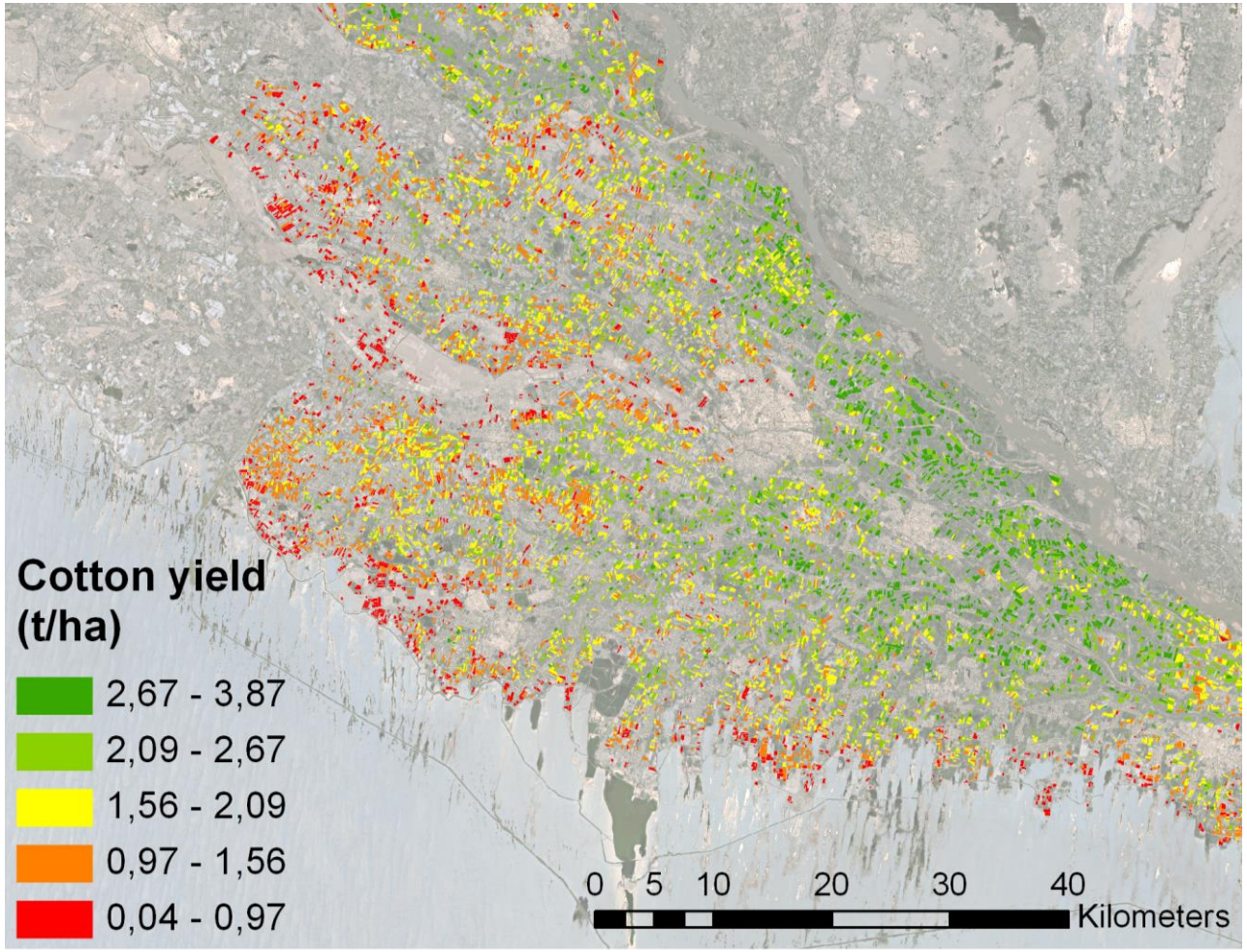
Federal Ministry of Food and Agriculture

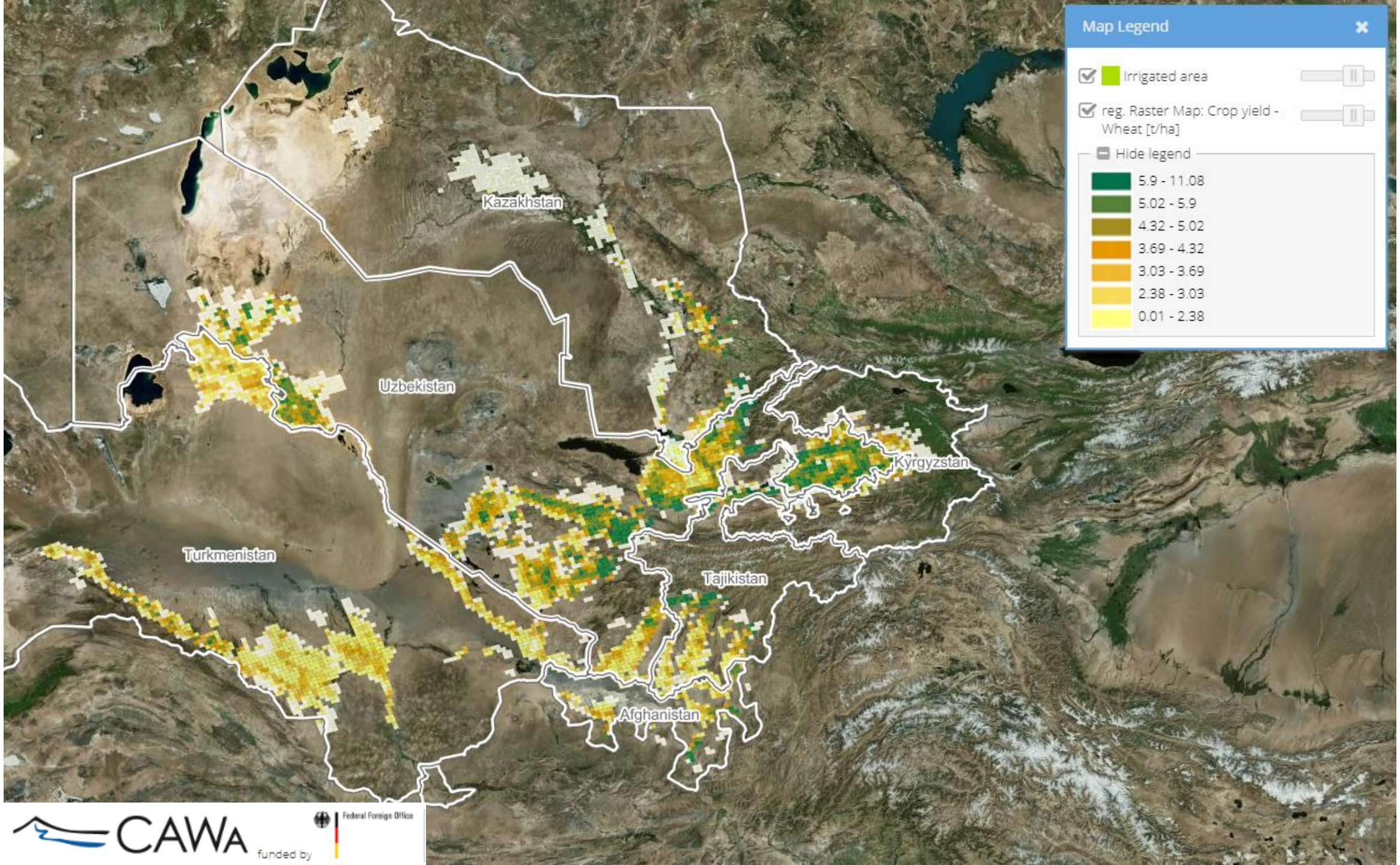
by decision of the German Bundestag

Federal Office for Agriculture and Food

ptble
Projektträger Bundesanstalt für Landwirtschaft und Ernährung


Crop types
Cotton
Fallow/unused
Sorghum/maize
Rice
Trees & crops
Wheat
Wheat-rice
Wheat-sorghum/maize
0 5 10 20 30 40
Kilometer


Cotton yield
(t/ha)
2,67 - 3,87
2,09 - 2,67
1,56 - 2,09
0,97 - 1,56
0,04 - 0,97
0 5 10 20 30 40
Kilometers



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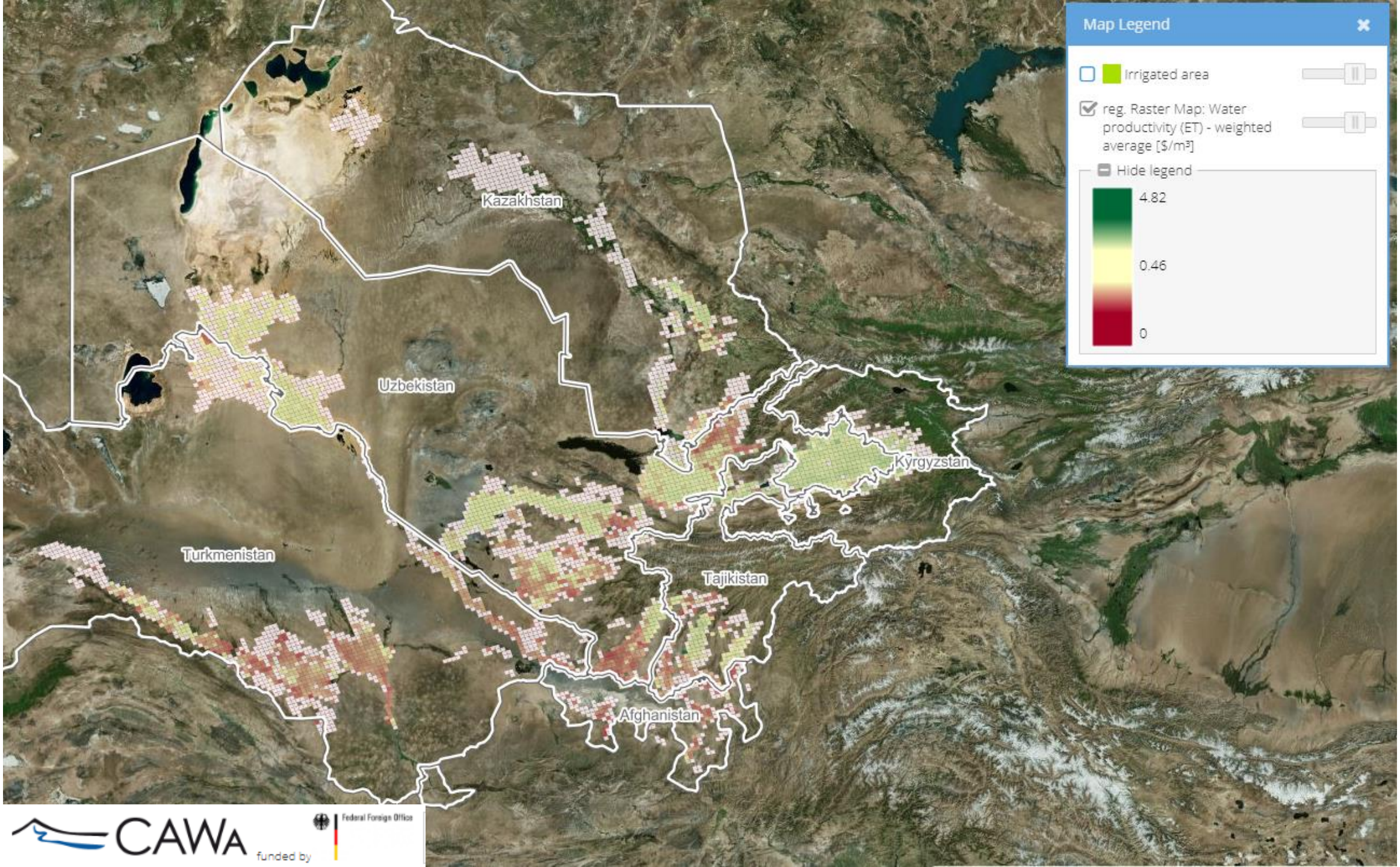

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Thank you very much for the attention!

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