food security tep

Results from the NOR / Food Security TEP activity

S1 Harvest Information Ukraine 2023

ID 3717ds

VISTA Remote Sensing in Geosciences GmbH

80333 Munich / GERMANY

© VISTA 2023

S1 Harvest Information Ukraine 2023

NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds

950.000 fields (> 4ha)
in the monitoring

In the mean:
80 S1 observations for each field

including
12day VV coherence
VV, VH backscatter and ratio

Monitoring period 2023:
1.3. to 30.11. = 275 days

© VISTA 2023

S1 Harvest Information Ukraine 2023

NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds

950.000 fields (> 4ha)
in the monitoring

In the mean:
80 S1 observations for each field,

including
12day VV coherence
VV, VH backscatter and ratio

Monitoring period 2023:
1.3. to 30.11. = 275 days

half a billion S1 related information features in the data storage

Weekly Update of Harvest Progress

Harvest detection based on coherence and backscatter dynamic dynamics derived from S1A 1- day orbits

Dedicated thresholds for main crop types (wheat/barley/rapeseed, maize and sunflower)

S1 Harvester

intersection of the information with the status of the crop information

- Maize
- Barley
- Wheat
- Sunflower
- Rapeseed

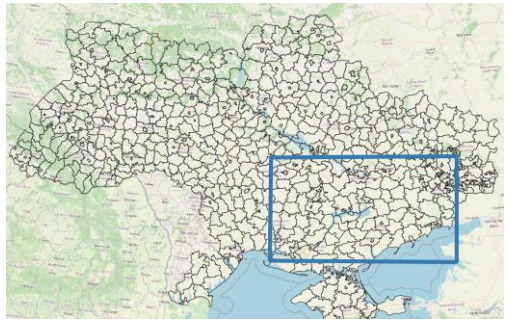
YPS methods

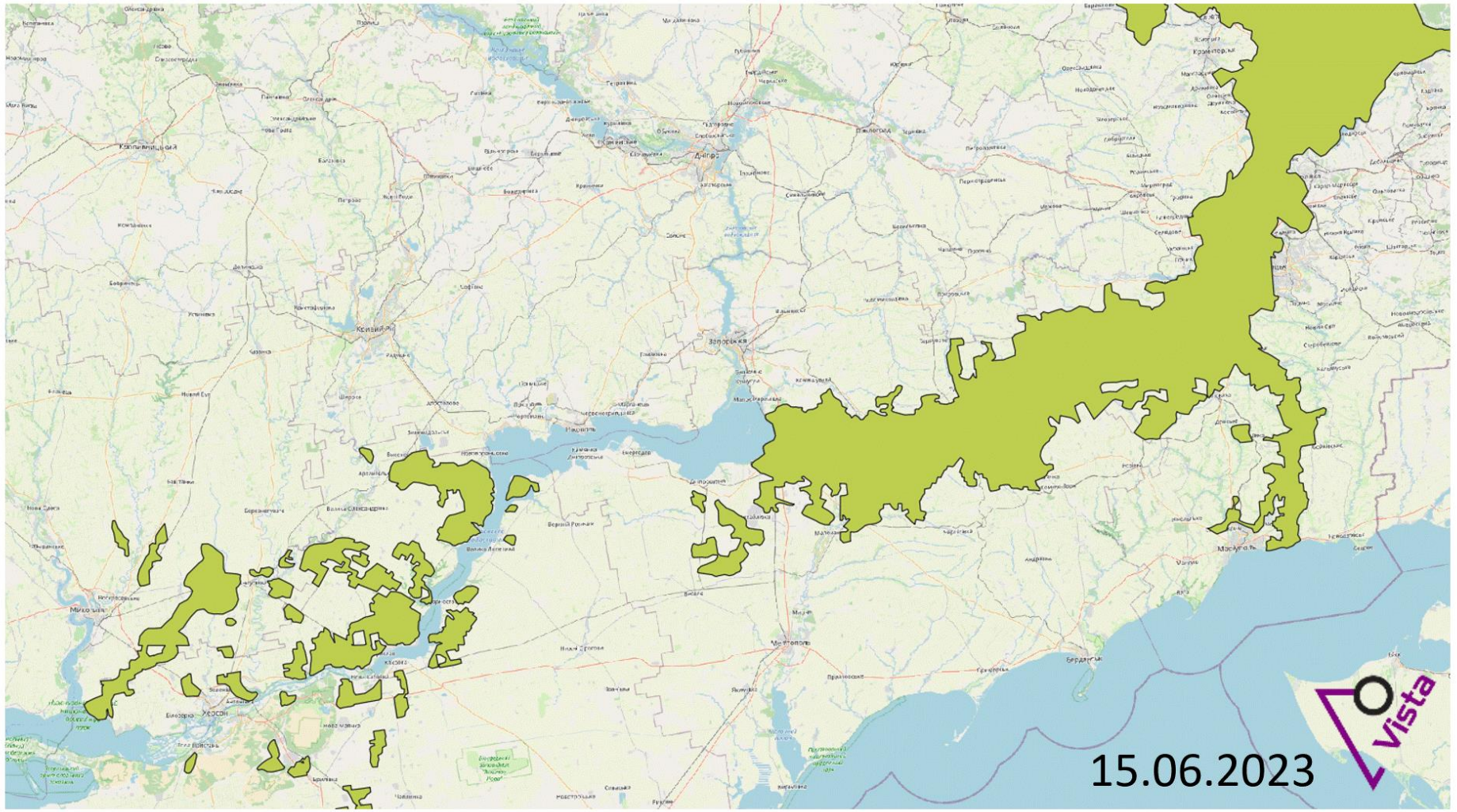
© VISTA 2023

S1 Harvest Information Ukraine 2023

NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds

Early dynamic example:





- *Harvest Detection*
- *War affected area*

© VISTA 2023

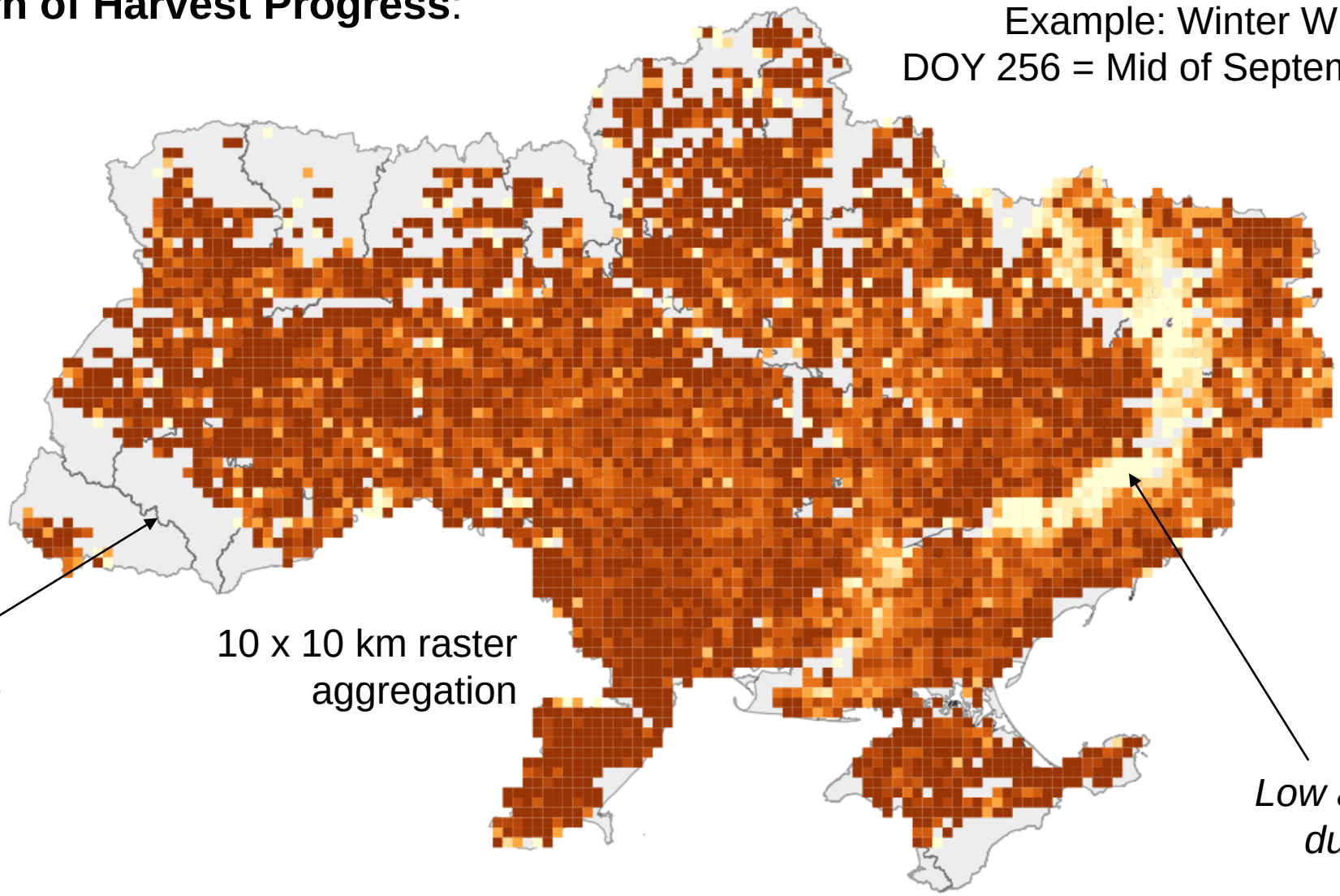
S1 Harvest Information Ukraine 2023

NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds

Spatial Pattern of Harvest Progress:

How much of the assumed fields of a crop have been harvested by the date?

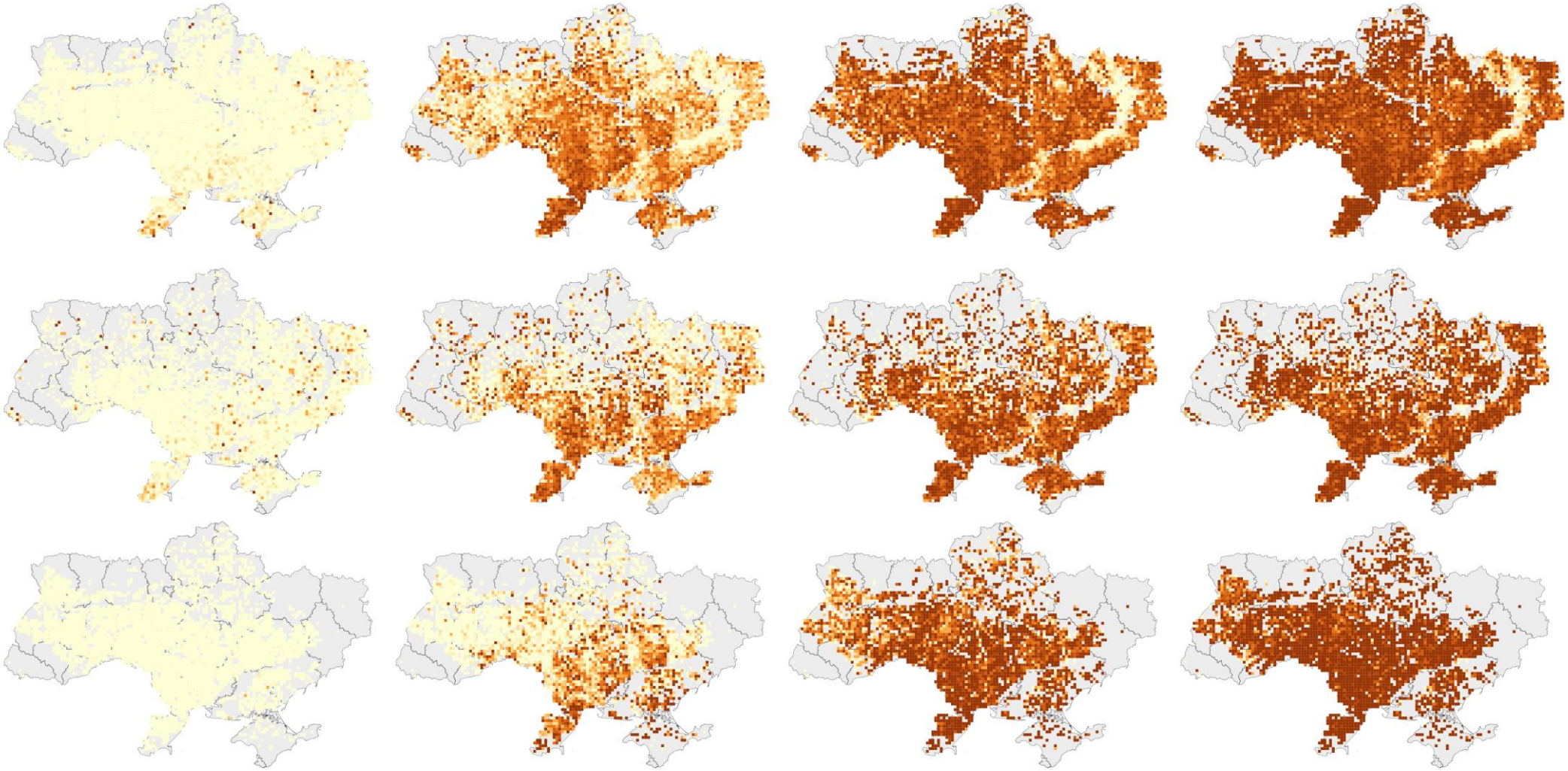
Example: Winter Wheat
DOY 256 = Mid of September



© VISTA 2023

S1 Harvest Information Ukraine 2023

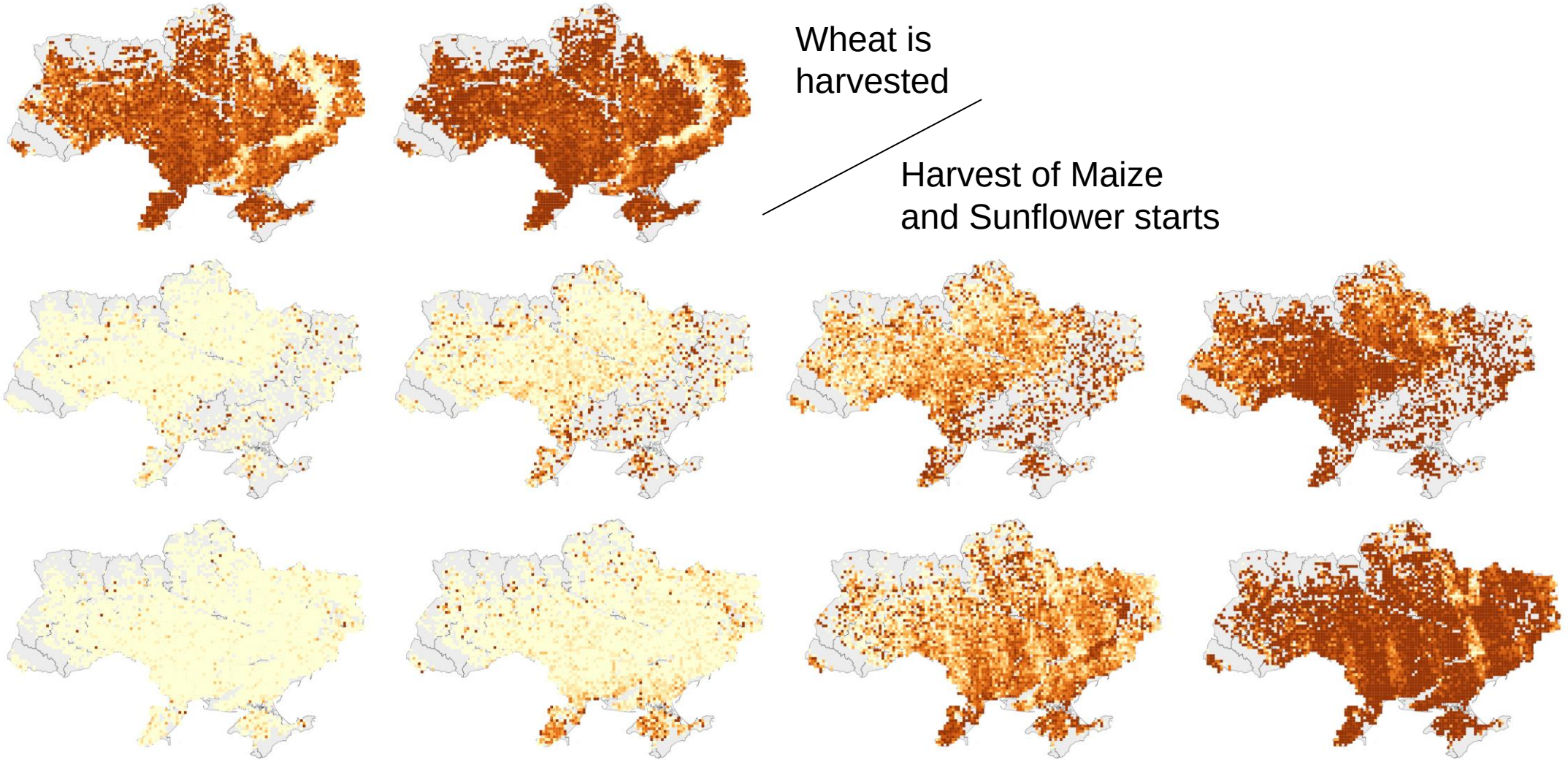
NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds



© VISTA 2023

S1 Harvest Information Ukraine 2023

NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds



© VISTA 2023

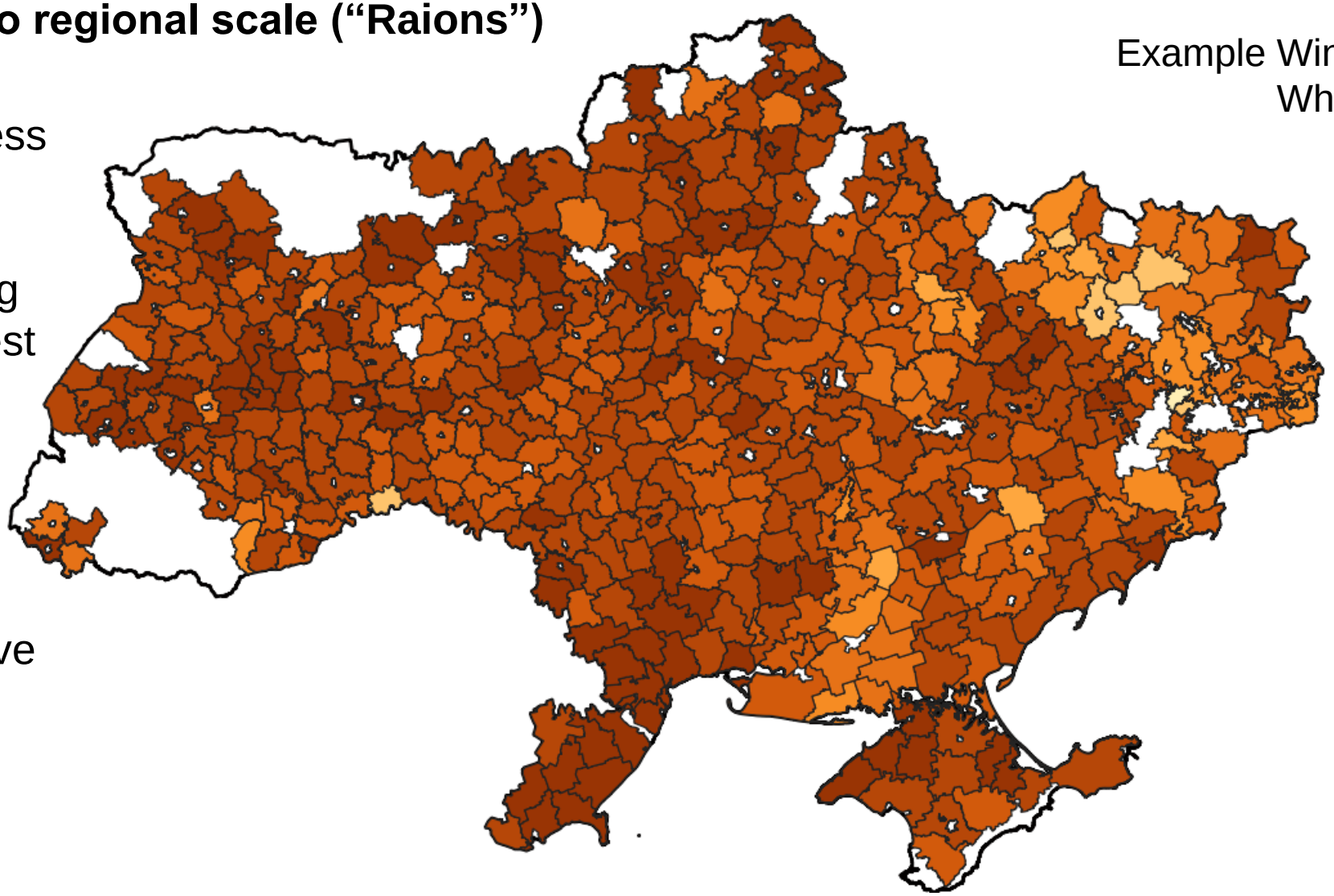
S1 Harvest Information Ukraine 2023

NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds

Aggregation to regional scale (“Raions”)

Harvest Progress Monitoring:

- ✓ Representing end of harvest season
- ✓ Reduced by war zones
- ✓ Reduced to only representative areas



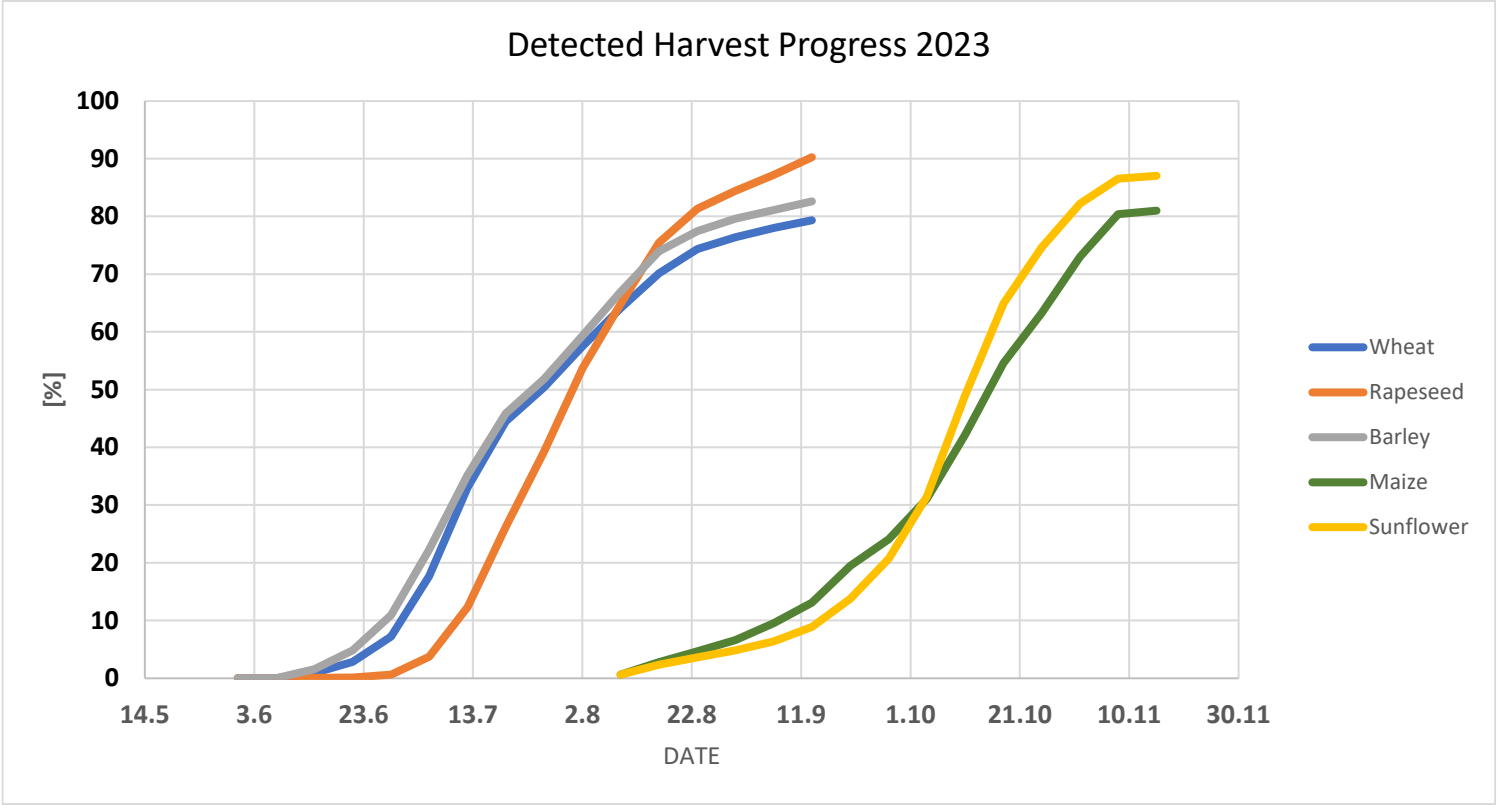
© VISTA 2023

S1 Harvest Information Ukraine 2023

NoR Sponsorship
“Harvest Monitoring
in Ukraine 2023”
ID 3717ds

S1 Harvest Progress by Crop Type 2023

Note:
Only 12day Coherence Data available



© VISTA 2023

S1 Harvest Information Ukraine 2023

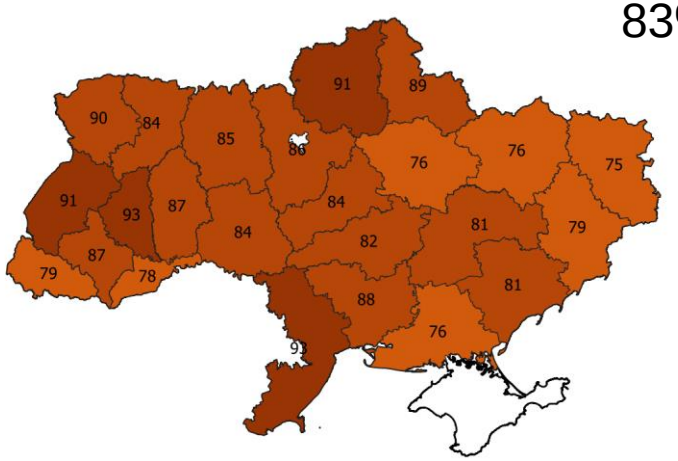
S1 Harvest Results at the end of the season:

Oblast Level

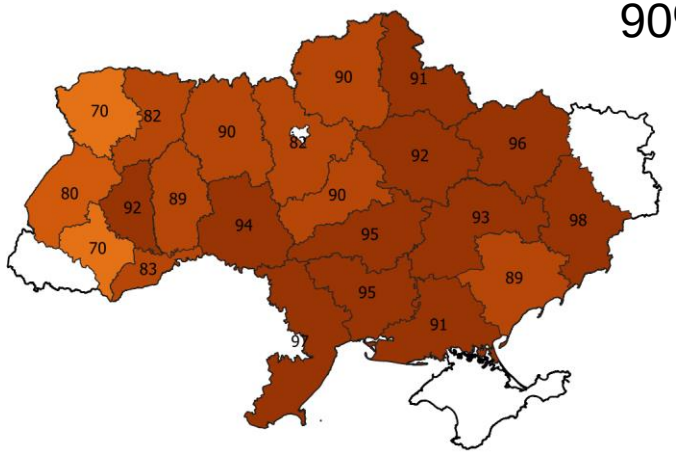
War Zones excluded

[Percentage of harvested fields]

Winter Wheat
83%

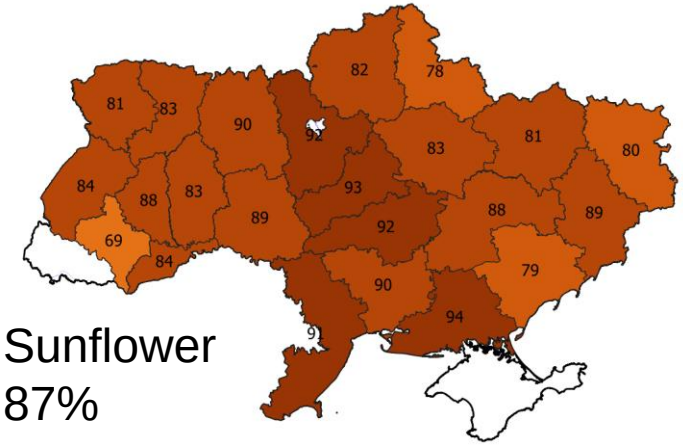


Rapeseed
90%



Grain Maize
81%

Sunflower
87%



Harvest Progress

- 0 – 10 %
- 11 – 20 %
- 21 – 30 %
- 31 – 40 %
- 41 – 50 %
- 51 – 60 %
- 61 – 70 %
- 71 – 80 %
- 81 – 90 %
- 91 – 100 %

© VISTA 2023