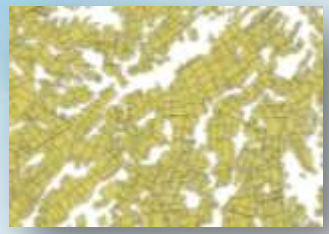

Land cover change as an indicator of land degradation neutrality in the United Nations program

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Indicators and metrics for achieving of Land Degradation Neutrality (LDN) (goal 15 task 15.3)

According to *United Nations Convention to Combat Desertification* the tasks on monitoring the following indicators are defined:

- **Land Cover (LC) change trends**;
- **Land Productivity trends** (land productivity dynamics);

Multiple level approach to defining indicators of LDN achieving

- **Tier 1** (default method): Global/regional earth observation, geospatial information and modeling;
- **Tier 2**: National statistics data and national earth observations;
- **Tier 3**: (most detailed method): Field surveys, assessments and ground measurements.

Sources of data

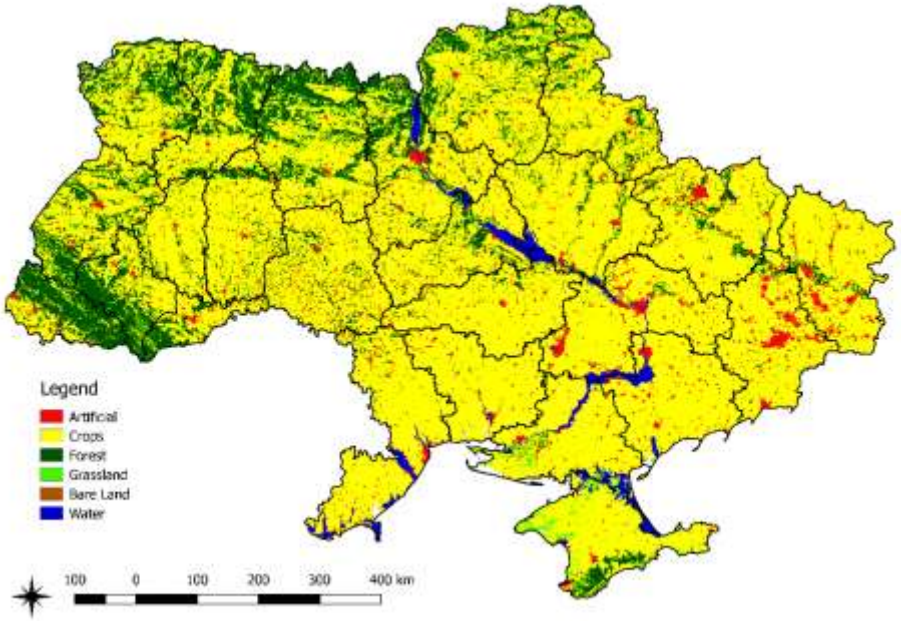
- **Global datasets (spatial resolution – 300 m), provided by CCD Secretariat**
  - Land cover maps for 2000 and 2010 based on satellite data;
  - Land use change maps for 10 years
- **National datasets, developed by Space Research Institute (SRI) of Ukraine within participation in international projects (spatial resolution – 30 м)**
  - Land cover maps for 1990, 2000 and 2010 based on satellite data;
  - Land use change maps for 10 years

Land Degradation Neutrality Target Setting Programme
Data description

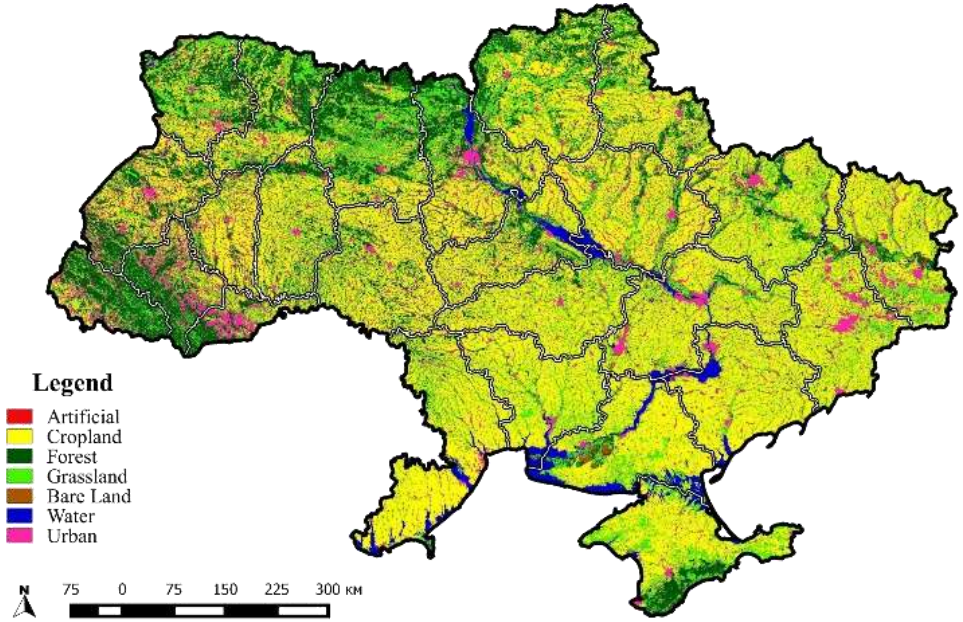
Products	ESA CCI-LC / SRI description
Land cover maps over territory of Ukraine for 2000 and 2010	1. Forests 2. Shrubs, grasslands and sparsely vegetated areas 3. Cropland 4. Wetlands and water bodies 5. Artificial areas 6. Bare land
Land Cover Change for the territory of Ukraine between 2000 and 2010	12 13 16

Land Cover map 2010

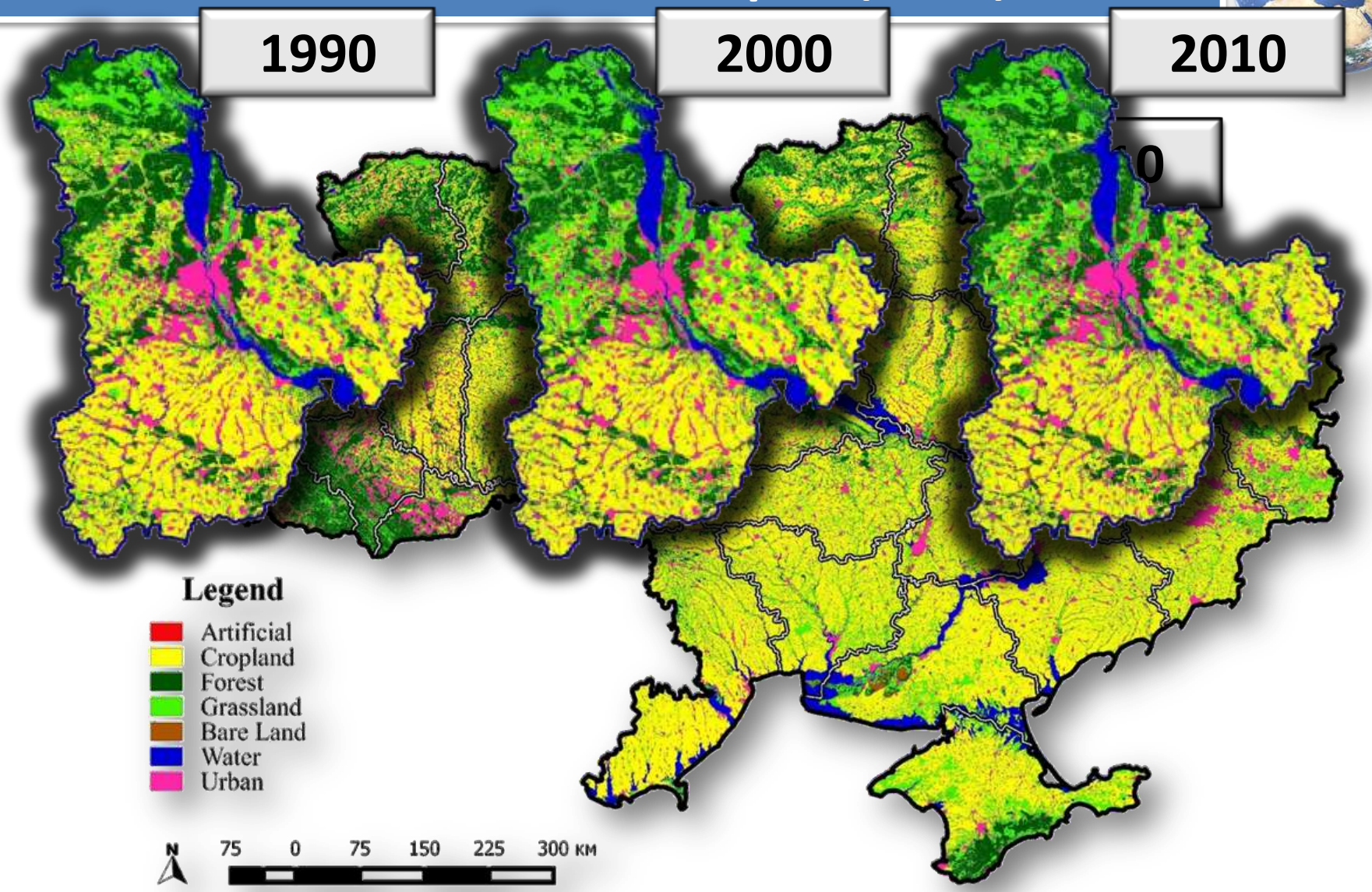
ESA CCI-LC



SRI



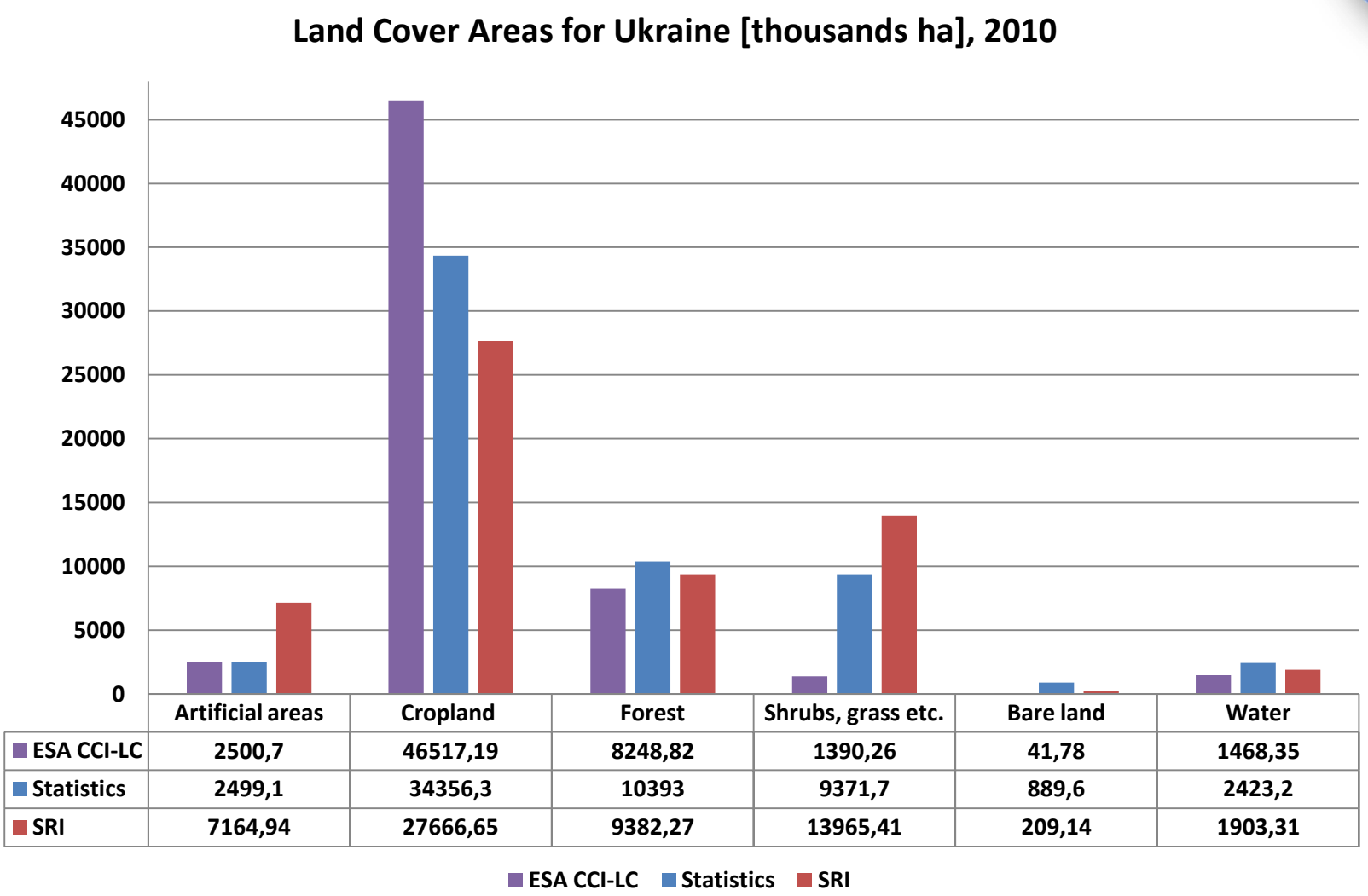
Land Cover Maps (SRI)



Land cover maps validation on independent data

Рік	Land Cover SRI 2010		Land Cover SRI 2000		Land Cover Dataset ESA CCI-LC-2010		Land Cover Dataset ESA CCI-LC-2000	
Class	PA, %	UA, %	PA, %	UA, %	PA, %	UA, %	PA, %	UA, %
Artificial areas	100	79.9	73.3	83.9	0	0	11,8	0,6
Cropland	97.5	98.5	97.1	98.6	98,9	76,7	98,9	79
Forest	97.2	97.4	98.8	98.4	84,9	95,6	86	97,1
Shrubs, grass etc.	90.7	85.4	90.5	84.6	4,9	40,7	7,6	43,5
Bare land	93.6	96.9	96.2	89.7	21,5	87,2	20,1	76,2
Water	99.5	99.8	99.5	99.9	96	99,6	96,4	99,8
Overall accuracy, %	97.5		97.7		85		87,3	

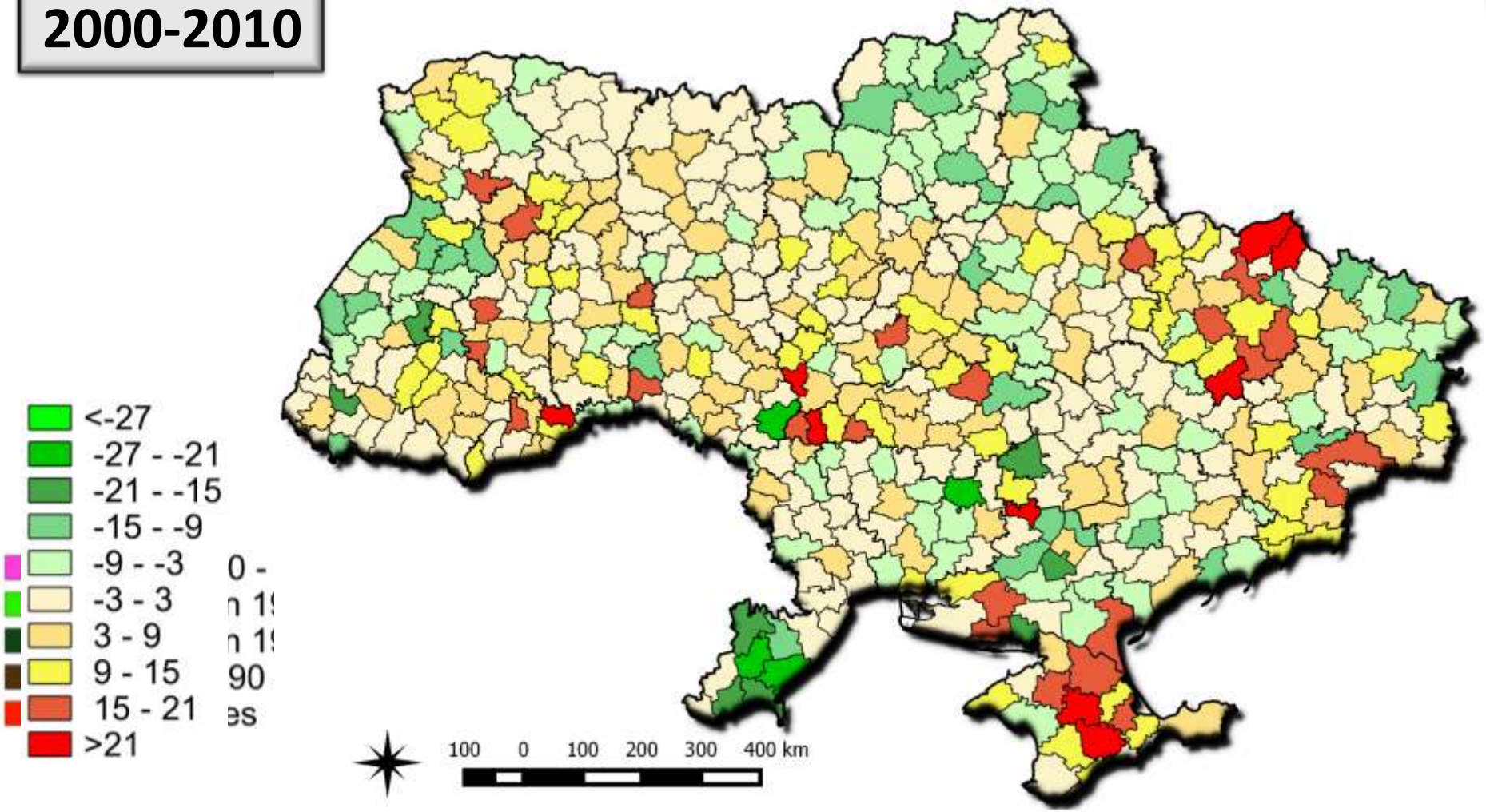
Land Cover areas for Ukraine, 2010



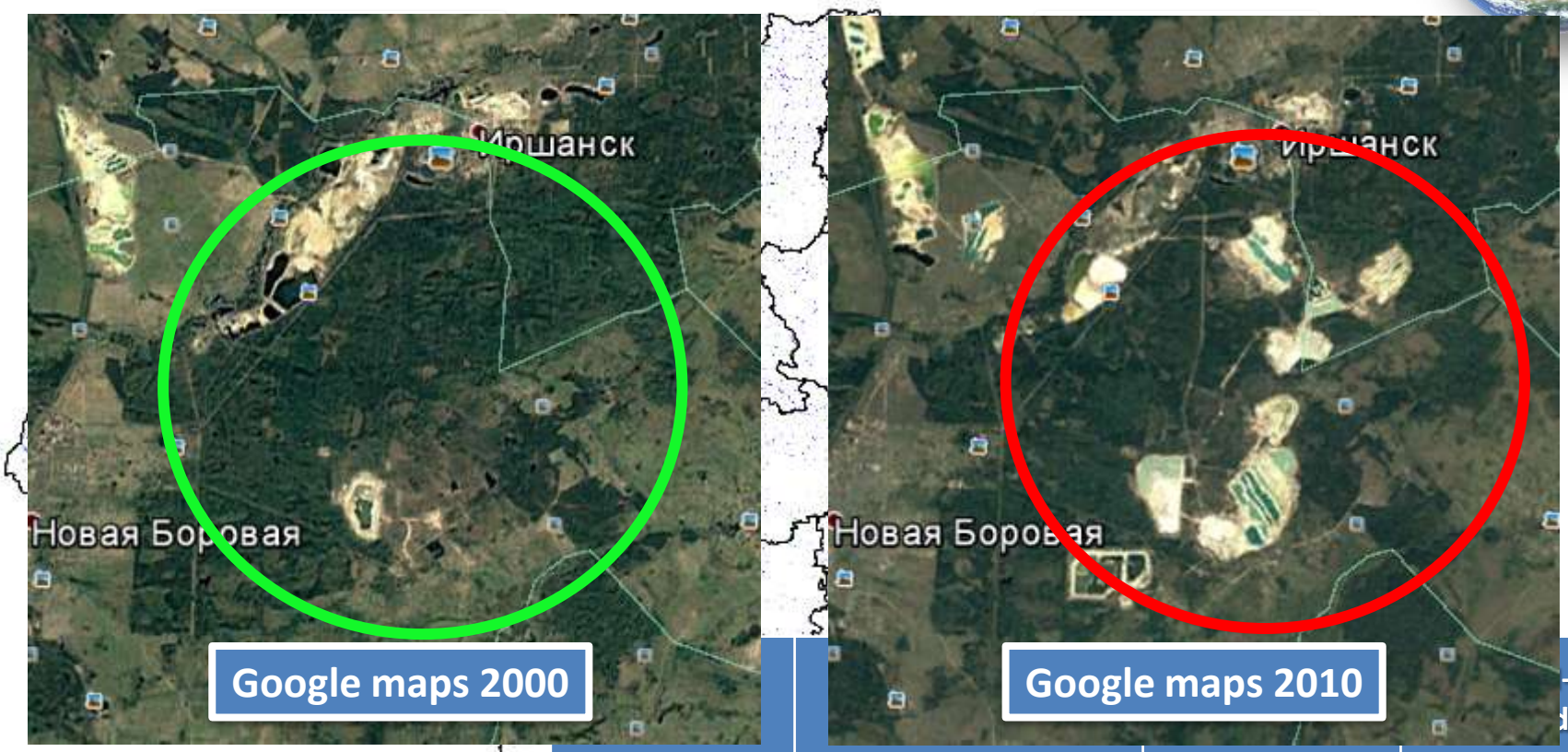
	Artificial areas	Cropland	Forest	Shrubs, grass etc.	Bare land	Water
ESA CCI-LC	2500,7	46517,19	8248,82	1390,26	41,78	1468,35
Statistics	2499,1	34356,3	10393	9371,7	889,6	2423,2
SRI	7164,94	27666,65	9382,27	13965,41	209,14	1903,31

Land Cover Change (SRI)

2000-2010



Land Cover Change(2000-2010)



12	Forest to grassland/ shrubland	222,02	8,15
13	Forest to cropland	17,001	22,93
16	Forest to bare land	7,76	0,74

Conclusions

- Global dataset on Land Cover **can be treated as correct** (with Overall Accuracy > 85%)
- There is some **inconsistencies** between **official statistics** and satellite monitoring results (regional maps with higher spatial resolution are more accurate compared to global one)
- In Ukraine we already have **informational technologies of satellite monitoring** and geospatial products validated on international level that allow possibility of monitoring of some indicators for ensuring Land Degradation Neutrality

Thank you for attention!