Amazon and GEO project
“Methodology for SDGs indicators assessment”

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Problem Statement

Assessment of SDG indicators:

- 2.4.1 “Proportion of agricultural area under productive and sustainable agriculture”;
- 11.3.1 “Ratio of land consumption rate to population growth rate”;
- 15.1.1 “Forest area as proportion of total land area”;
- 15.3.1 “Proportion of land that is degraded over total land area”

Workflows development for SDG assessment

Study area - over Ukraine, Argentina and India;

Activities (for Ukraine):

- Land cover mapping;
- Open Data Cube deployment

Planned activities (for Argentina and India):

- Workflow development and EV estimation;
- Capacity building and dissemination activities

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Proposed Solution

- Informational technology for SDGs indicators 15.3.1, 15.1.1, 2.4.1 and 11.3.1 assessment
- Implementation in the AWS cloud environment
- Usage of Open Data Cube technology and deep learning algorithms for data analysis and trends mining.
- The scaling of this technology for 3 countries: Ukraine, Argentina and India

**Workflow** for calculating SDG indicators 11.3.1, 15.1.1, 15.3.1 and 2.4.1 within cloud Data Cube technology
Project Status Update

✓ Sentinel-1 processing workflow was set-up in the AWS
✓ Sentinel-1 data was ingested into the Data Cube
✓ >30 TB of satellite data for Ukraine were processed
Project Status Update

✓ Sentinel-2 and Landsat-8 compositing procedure for specific time-series generation has been created

✓ The procedures classification of satellite data in the DataCube have been created

✓ The crop type and land cover classification map for Ukraine for 2020 has been obtained

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<th>PA</th>
<th>UA</th>
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<tr>
<td>Other lands</td>
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<td>Overall Accuracy</td>
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Project Status Update

✓ **Functional Urban Areas** vector layer has been created for Ukraine

✓ **Built-up area maps** for Ukraine was built for 2016 and 2020

✓ The indicator 11.3.1 is calculated based on the built-up area maps and FUA layer for 2016 & 2020 on the city and country scale

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Project Status Update

✓ Landsat-8, Sentinel-2 vegetation indices time series trend analysis workflow has been created in the Ukrainian Data Cube

✓ An agricultural land degradation map with a 30-meter spatial resolution for 2020 has been created in the Data Cube
Challenges and Roadblocks

- Sentinel-1 data ingestion in Data Cube
- Time series composites generation for land cover / crop type classification
- The need for usage of advanced technique of multiprocessing and clustering
- In-situ data collection during the lockdown periods
Next Steps and Expected Impact

Expect to get done by the end of 2021:

• Land cover classification technology in the Data Cube will be scalable
• Finalization workflows over the cloud on the satellite data of SDG indicators:
  - 2.4.1
  - 15.1.1
  - 15.3.1
  - 11.3.1

Expected impact:
The improvement of existing workflows for SDG indicators assessment by the use of high spatial resolution data and filling gaps between existing global products and national ones