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# **DGINS 2021**

Chances and challenges with Earth observation (EO) data for land cover statistics in Austria



## **Topics**



Chances

Challenges

Project "STATeo"

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### (some) Benefits of using EO data





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### Using EO at Statistics Austria



#### We are at:

Research & development

Experimental phase

Prototyping phase

Refinement phase

**Implementations** 

Maintenance & monitoring

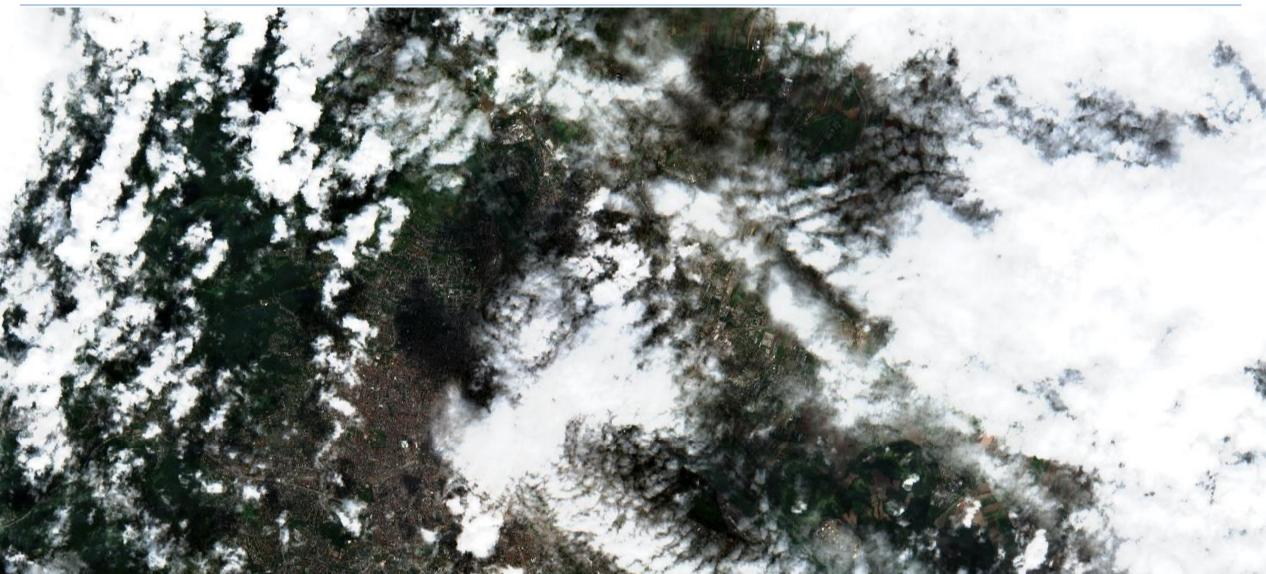
#### We aim to:

- Support primary statistics (e.g. land cover, crops) and SDGs
- Enable sophisticated
   phenological research
   (e.g. vegetation indices)
- Provide applications,reports and visualizations

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# (some) Challenges of using EO data





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# (some) Challenges of using EO data



Data Handling	Data Analysis & Methods	Data Integration
Large processing and storage capacities	Using sophisticated analysis-methods	Focusing on Stakeholder- needs
Data quality	Awareness of potentials and limitations	Data harmonization issues
Working with new data sources as a NSI	Balance between technical feasibility and practical usability	From results to official statistics

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## **Project goals**

→ "Earth Observation for Land Cover Statistics"





- Provide analysis-ready Sentinel data
  - cloud free Sentinel-2 time series
  - Sentinel-1 time series
- Produce spatially explicit land cover maps
  - Woodland
  - Grassland
  - Cropland
- Aiming for a higher granularity within the land cover classes for further use cases
  - crop-type mapping, forest types

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### Concepts





- Using free and timely data of the earth's surface within the statistical production process
- ESA's Sentinel-1 and Sentinel-2 suitable for agricultural and forestry applications as well as land cover classification
- Generation of spatially explicit land cover statistics
- Capturing land cover statistics in more detail (e.g. different forest types, field-level crop statistics, usage of grassland areas)
- Enable faster data dissemination in the future
- Reduce respondents burden
- Avoid depending exclusively on the quality of external data sources (lack of geospatial properties, data gaps,...)

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#### Use cases





National SDG Monitoring

e.g. Mountain Green Cover Index

#### Agricultural statistics

e.g. comparative analysis with other adm. data sources and data from surveys like the Farm Structure Survey & with the Agricultural and Forestry Register

Support national data generation for policy needs

e.g. evaluation of land cover statistics as possible data source for Agricultural Land Prices

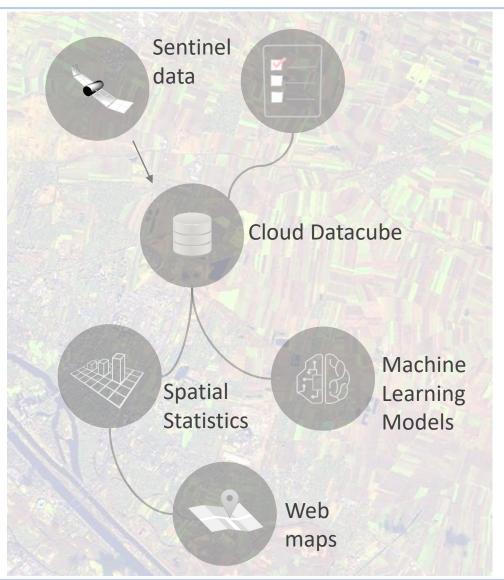
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### Methodology & Technology





- Requirement assessments
- Data preparation & Infrastructure
- Analytical process
  - Sampling & generation of test data
  - Machine learning
- Integration to statistical products and applications
- Dissemination and visualization



### Data production workflow









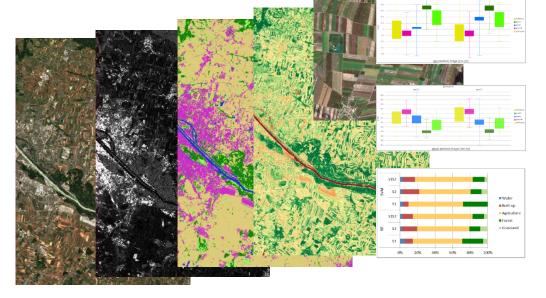
European Space Agency

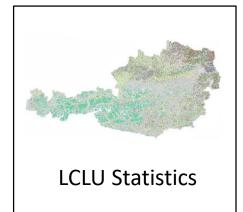


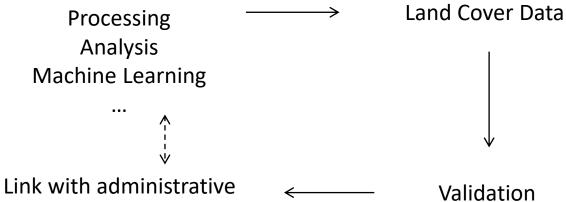




EO data sources





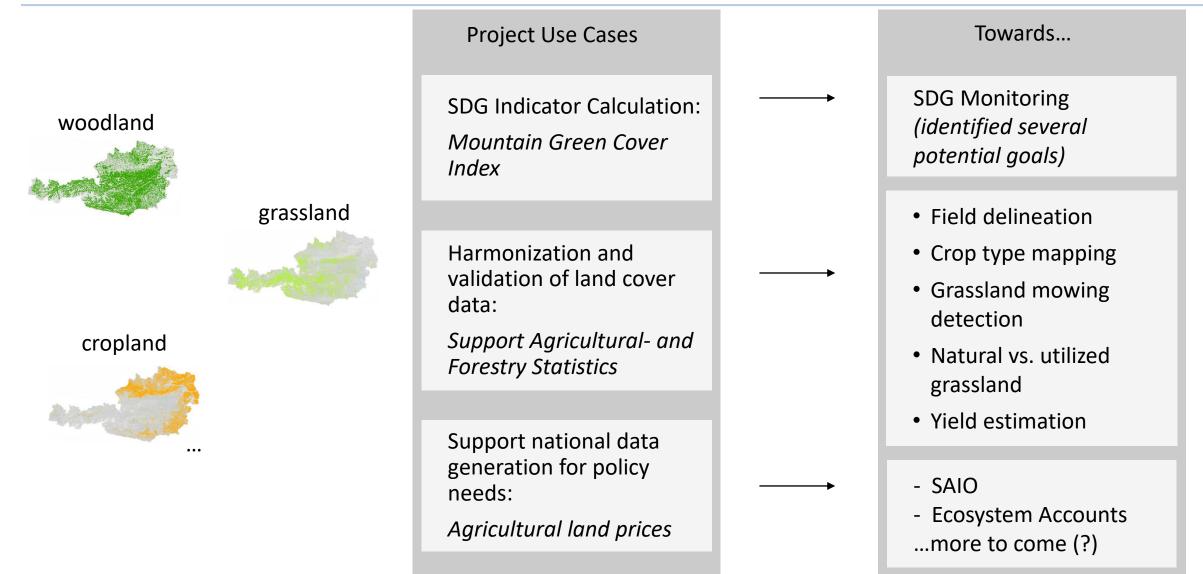


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data

### From results to use cases & beyond





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### Needs for working towards those goals:



Actively demonstrate validated solutions

International networking

Linkage to other data necessary for statistical applications → cooperation with other agencies and data owners

Detailed requirements of potential statistics, indicators & workflows which can be supported by EO

Capacity building (R&D, infrastructure, staff)

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