Earth Observation and Artificial Intelligence as Foundational Support

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Why EO and AI are Crucial for SDG Statistics

Bridge Data Gaps

Fill data gaps where traditional surveys are missing

Timeliness

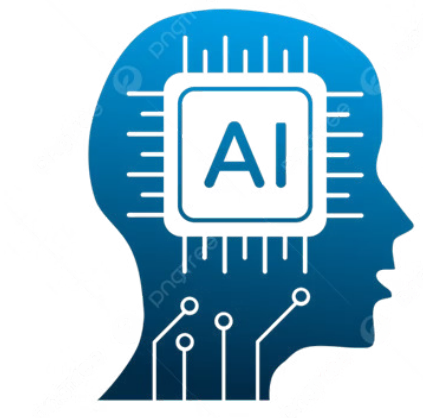
Improve the timeliness of statistical indicators

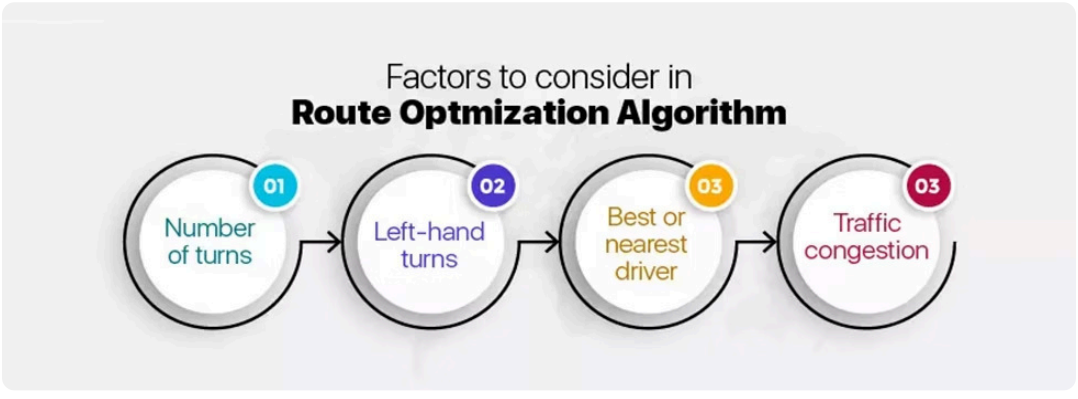
Disaggregation

Enable disaggregated statistics at the local level

Cost Efficiency

Increase economic efficiency for National Statistical Institutes





How EO and AI Work Together

Earth Observation

Consistent, scalable, and disaggregated monitoring of the territory

Artificial Intelligence

Automates analysis and extracts meaningful information from data

Practical Example

Sentinel-2 → land cover → crop type → yield estimation

Integration with Official Statistics

Agriculture

Estimating cultivated area and forecasting harvests to support SDG 2

Water Resources

Monitoring water quality and availability for SDG 6

Terrestrial Ecosystems

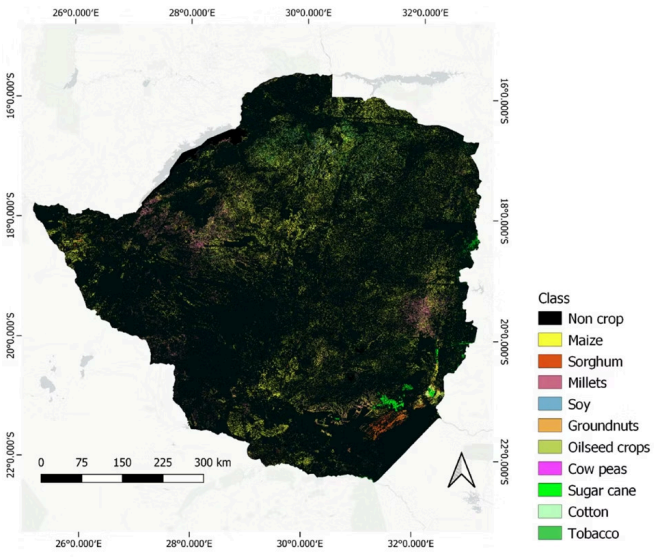
Monitoring deforestation and biodiversity for SDG 15

Key Benefits:

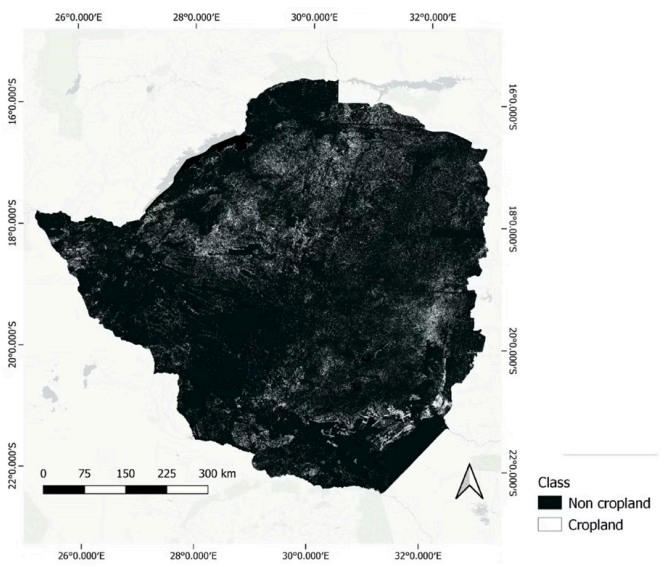
- Improved sampling design
- Field data quality control
- Direct linkage to SDG indicators

Use Case 1: Zimbabwe (SDG 2)

National Crop Type map



National Crop Mask



Results Achieved in 2024

95%

Accuracy

National crop mask with 95% accuracy

15%

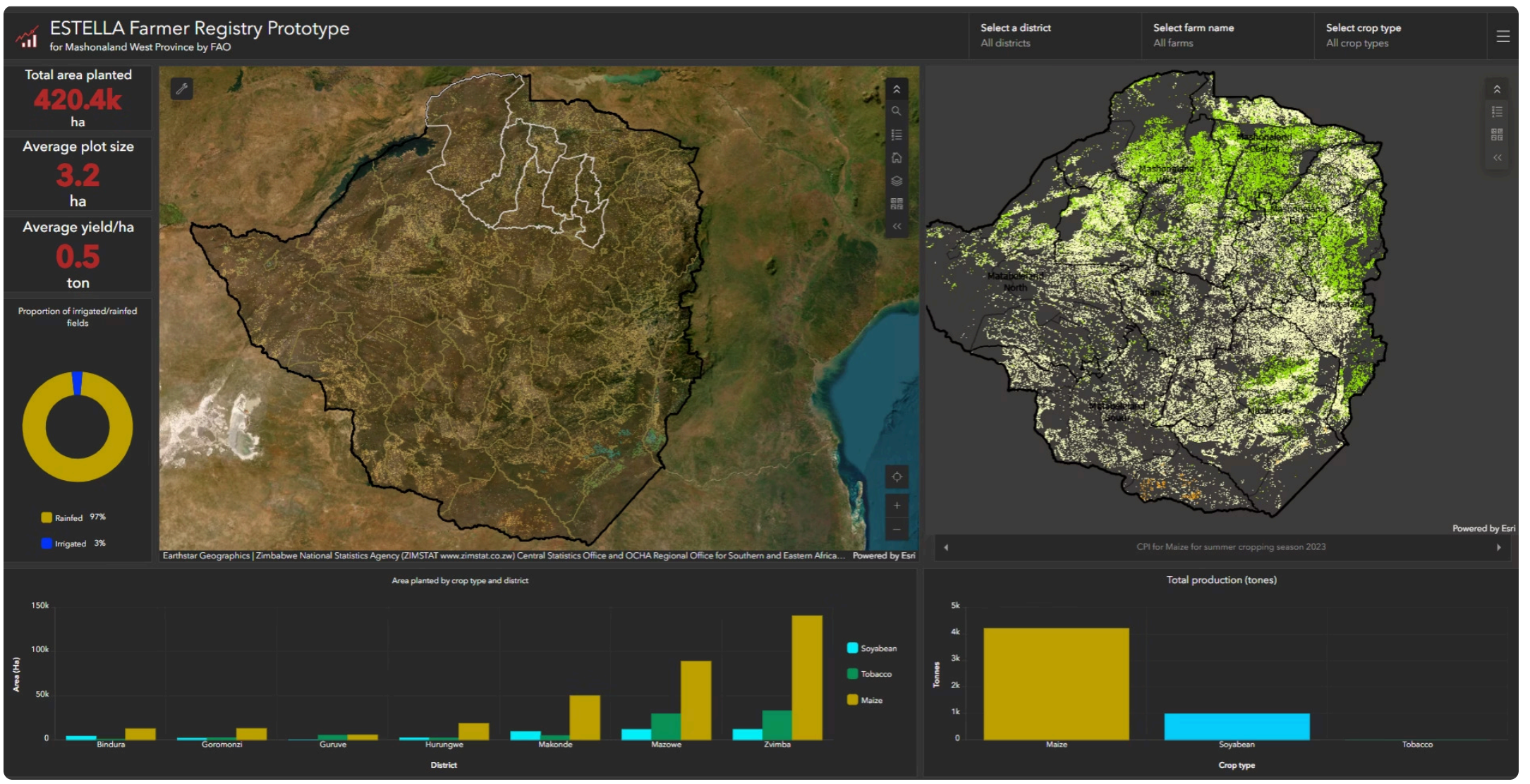
Error Reduction in Acreage estimation

Cultivated area estimates with 15% error reduction

Innovations Implemented:

- Detailed crop type maps
- Sub-district level disaggregation
- Integration with national statistical data

Digital Farmer Registry - the next level for EO integration



Use Case 2: Tajikistan (SDG 1 & 2)

1

Mask Accuracy

Cropland mask with **88% accuracy**:

- **89%** for cropland
- **87%** for non-cropland

2

Innovative Prototype

Development of a prototype for area frame sample surveys integrated with EO

3

Data Integration

Link between Earth Observation and national farmer registry

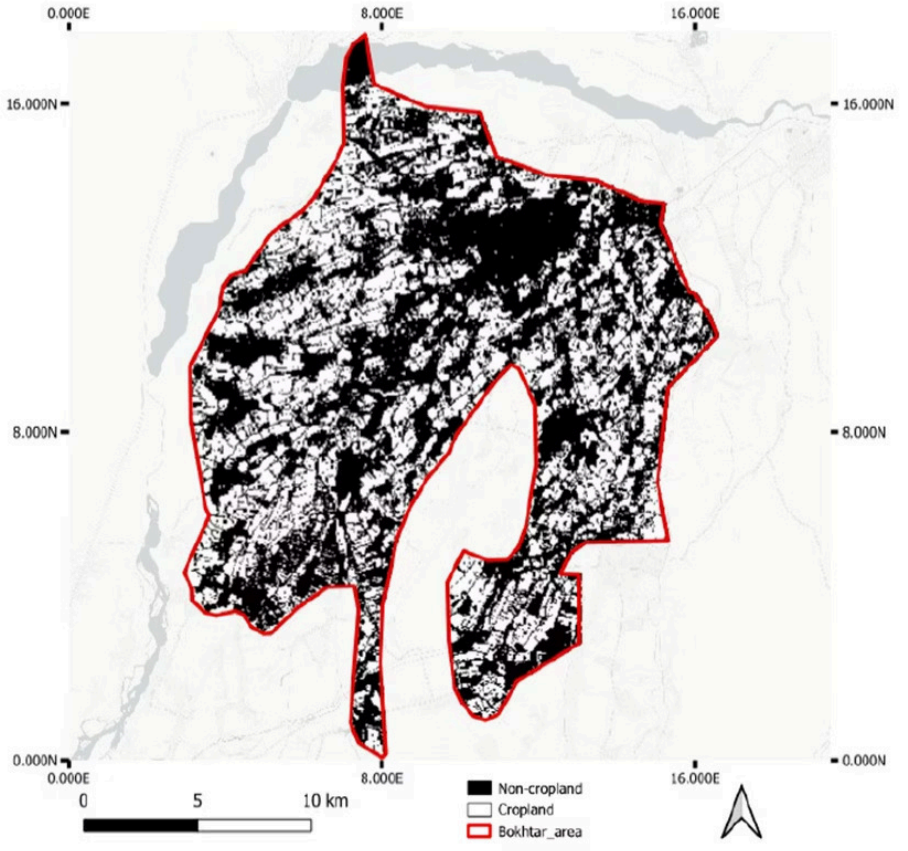
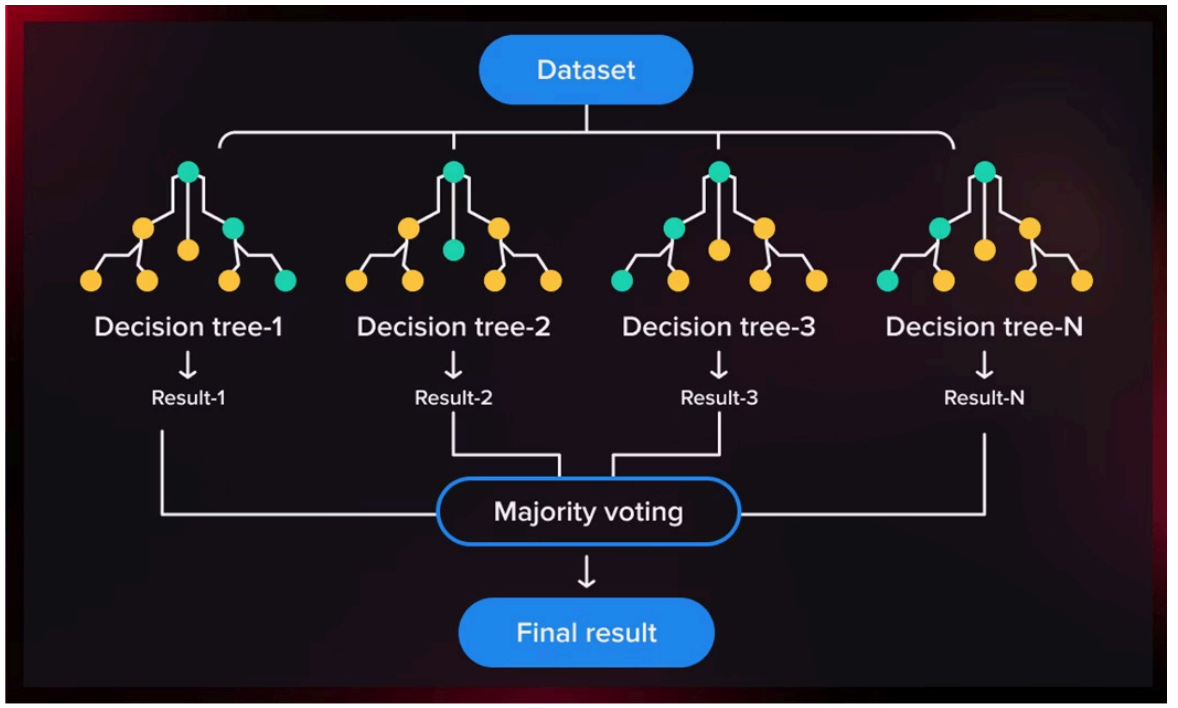


Figure 10-5. Cropland mask over Bokhtar area



Use Case 3: Peru (SDG 12 & EU Compliance)

Digital Farmer Identity

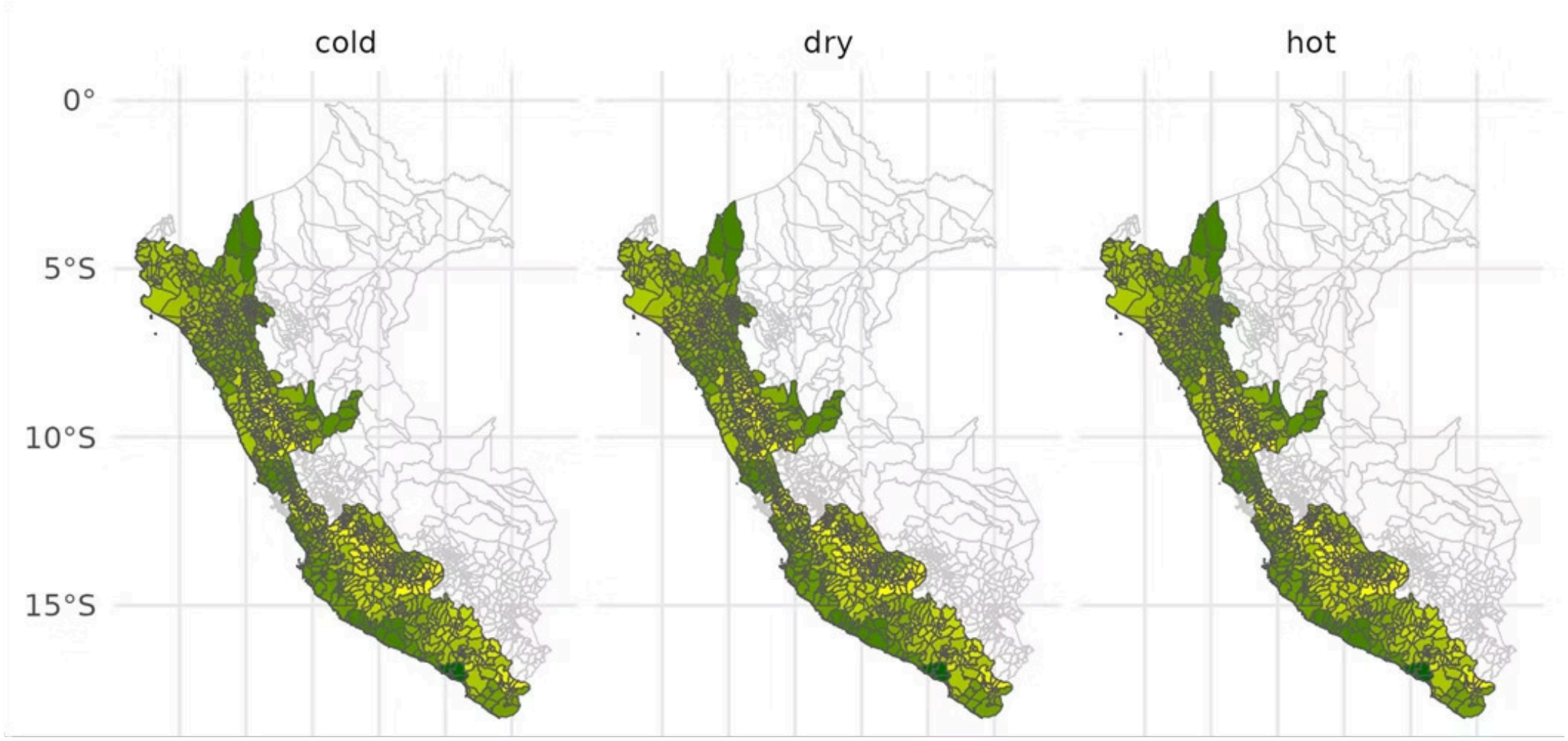
Innovative application linking digital farmer identity with Earth observation data (**crop yield**) to support sustainable supply chains.

2 Million Registered Farmers

Comprehensive database for national agricultural monitoring

Sustainable Supply Chains

Support for deforestation-free supply chains



Global EOStat Program (FAO)

24 Countries Supported

Global coverage with a focus on developing countries

Crop Mapping

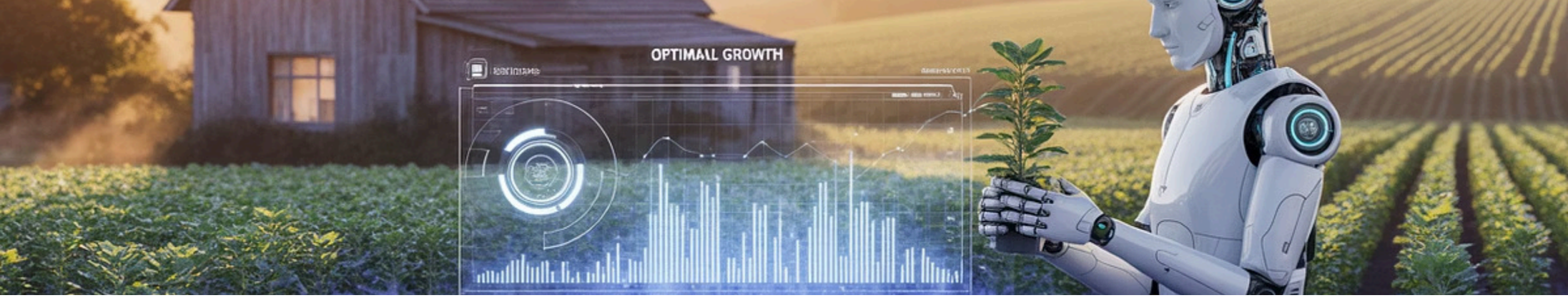
Applications for crop mapping and yield forecasting

Capacity Building

Dedicated webinars, training, and e-learning platforms

Disaster Monitoring

Early warning systems for extreme weather events



Vision for Scaling Up

Agricultural Digital Twin

Comprehensive digital representation of national agricultural systems

Digital Identity for Farmers

Unified system for identifying and tracking producers

Precision Services

Precision agriculture and insurance services based on EO data

Policy Relevance

Strengthening NSOs

Earth Observation and Artificial Intelligence strengthen the capacity of National Statistical Offices through innovative methodologies and cost-effective solutions.

Cost-Efficiency

Cost-effective statistical methods for countries with limited resources

National Ownership

Support for nationally-owned SDG monitoring

Key Messages

Bridge Data Gaps

EO and AI fill data gaps and significantly reduce operational costs for National Statistical Offices

Timely Statistics

Enable timely, granular, and reliable statistics for informed decision-making

Evidence-Based Policies

Support evidence-based policy formulation and accurate SDG reporting

Diqqətinizə görə təşəkkür edirəm

(Thank You)

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