30th Workshop on Space Technology for Socio-Economic Benefits: "Challenges and Capacity-building Opportunities for Emerging Space Nations"

Land Cover Land Use at Food and Agriculture Organization of the United Nations (FAO)

Matieu Henry
Technical Officer, a.i. Head of Geospatial Unit, Land and Water Division (NSL)- FAO

3. Panel "Needs of new space-faring nations or of non-space-faring nations to develop and obtain space-related knowledge and skills"
- Founded in 1945, FAO leads international efforts to defeat hunger and improve nutrition and food security.

- Article 1 of the convention - Functions of the Organization
- The Organization shall collect, analyse, interpret and disseminate information relating to nutrition, food and agriculture. In this Constitution, the term "agriculture" and its derivatives include fisheries, marine products, forestry and primary forestry products.

- FAO supports development plans, strategies and decision-making processes in member states through the transformation to MORE efficient, inclusive, resilient and sustainable agri-food systems for better production, better nutrition, a better environment, and a better life, leaving no one behind.

- FAO is the custodian UN agency for 21 SDG indicators and is a contributing agency for a further 5. In this capacity, FAO is supporting countries’ efforts in monitoring the 2030 Agenda.

https://www.fao.org/home/en
Programmes and activities relevant to earth observation

- Global Information and Early Warning System on Food and Agriculture (GIEWS)
- National Forest Monitoring (NFM)
- Remote sensing for water productivity (WAPOR)
- Globally Important Agricultural Heritage Systems (GIAHS)
- Modelling System for Agricultural Impacts of Climate Change (MOSAICC)
- Agricultural Stress Index System (ASIS)
- Global Land Cover Network (GLCN)
- Global Agro-Ecological Zones (GAEZ)
- Global information system on water resources and agricultural water management (AQUASTAT)
- Land cover legend registry (LCLR)
- The Hand-in-Hand (HIH) Initiative (HiHi).
- Emergency data Hub (DIEM).

Importance of land cover land use for SDGs

- Land resources play a vital role in tackling climate change, securing biodiversity and maintaining crucial ecosystem services, while ensuring resilient livelihoods and food security.

- Assessing land-cover and land-use is essential and critical and one of the fourteenth fundamental data theme under UN-GGIM.

- Contributes to all SDGs its cross-sectoral nature as well as other international goals and initiatives including UNFCCC, ISOTC211 AG13, UNFCCC, UNCCD, UNCEEA and others.

- It is an important baseline information in national reporting to international reporting, land suitability, assessment, monitoring of various sectors (agriculture, forestry, fishery, energy, emergency) and many others.

FAO’s presence – hq, regional, sub-regional and country offices

- FAO is providing technical support in > 130 countries among 195 Member Nations
- HQ is located in Rome, Italy.
- Consist of 5 regional offices, 11 sub-regional offices, 6 liaison offices and 7 partnership & liaisons offices.

An illustration of the diversity of space related involvement with regards to FAO presence

Source: Spaceflight - Wikipedia
SETTING COMMON RULES: FAO LAND COVER LEGEND REGISTRY

- It is an online library established and maintained by FAO for accessing existing land cover legend, legend class, datasets and related reference documents.

Link: An International Library for Land Cover Legends: The Land Cover Legend Registry, library, documentation
INSTITUTIONAL COLLABORATION

- Multiple institutions (13)
- Different sectors
- Diverse objectives
- Different programs/projects
- Different approaches
- National and international reporting
- National and local planning

REGIONAL PARTNERSHIPS
E.G. WEST AFRICA

- Regional & international organizations: ECOWAS, CILS, AGRYHMET, OSS, FAO, NASA SERVIR
- 17 countries: Benin, Burkina Faso, Cape Verde, Côte D'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo.
- Area: 8 million square kilometers.
- Ecological belts: region can be sub-divided based on climate and vegetation characteristics into 5 ecological belts including Guineo-Congolian, Guinean, Sudanian, Sahelian and Saharan belts


Diverse satellite imagery and sensors are used to assess and monitor natural resources and agriculture. Ex. of applications:

- **Land degradation in Angola**
- **Land cover in Uruguay**
- **Crop mapping in Libya**
- **Woodfuel in Bangladesh**

**Challenges:**

Compromise between temporal, spatial & spectral resolutions with available imagery (cost/size/cloud/etc.)
Conclusion

Need capacities to use standards for EO data interoperability, consistency, transparency and accuracy

To establish sustainable frameworks, plans and programs

To benefit from the diversity of satellite data and technologies

And provide data availability and accessibility in timely manner and collaboratively

For adoptable and adaptable solutions
Thank you!

Matieu.henry@fao.org