

GLOBAL LAND COVER NETWORK



GLCN

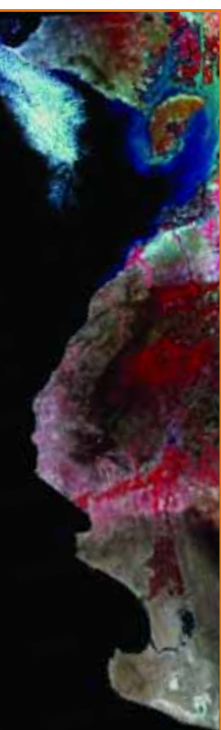
**INTERNATIONAL
PARTNERSHIP
FOR HARMONIZED
AND ACCESSIBLE
LAND COVER
DATA AND
INFORMATION**



INCREASE THE AVAILABILITY OF RELIABLE AND STANDARDIZED INFORMATION ON LAND COVER AND ITS CHANGES

LAND COVER

Land cover assessment and monitoring of its dynamics are essential requirements for the sustainable management of natural resources, environmental protection, food security and humanitarian programmes as well as core data for monitoring and modelling. Land cover data are therefore fundamental to fulfilling the mandates of many United Nations and international and national institutions and programmes. However, users of land cover data still lack access to sufficient reliable or comparable baseline land cover data.

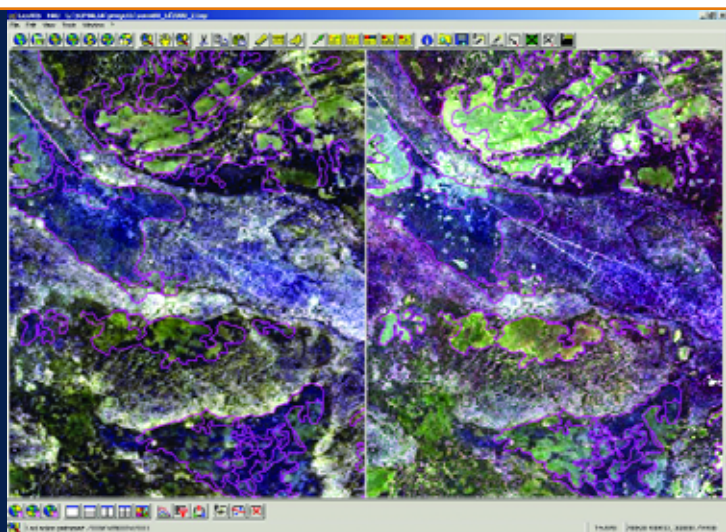


STAKEHOLDER REQUIREMENTS

Concerns and recommendations for coordinated, systematic and harmonized collection and assessment of data on land cover and environmental conditions, especially for monitoring purposes, have been raised by many national governments and international conventions and treaties. The United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro (1992), Agenda 21; the World Summit on Sustainable Development (WSSD) in Johannesburg, in 2002; the Convention on Biological Diversity (CBD); the Group on Earth Observations (GEO); United Nations Framework Convention on Climate Change (UNFCCC); the declarations of Artimino, Dakar and Quito are all examples of the broad stakeholder need for a harmonized land cover mapping effort.

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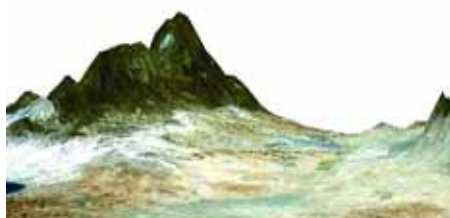
In 2004 the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Environment Programme (UNEP), with the financial and technical support of the Government of Italy (through the "Cooperazione Italiana") and the "Istituto Agronomico per l'Oltremare", created the Global Land Cover Network (GLCN) with the specific aim to answer the request of stakeholders. Specifically, the objectives of the initiative is to develop a global collaboration to develop a fully harmonized approach for the preparation of reliable and comparable land cover and land cover change data for use in local, national and international initiatives. In particular, GLCN is intended to support the stakeholder community in developing countries which have difficulty in producing and making accessible reliable, consistent and updated information.



Agriculture monitoring and change analysis

AFRICOVER

GLCN is based on the success of the Africover project which was established in response to a number of national requests for assistance in the development of reliable and georeferenced information on natural resources. These data are needed for: early warning; food security; agriculture; disaster



Free distribution of SRTM and other imagery and data



PROMOTE HARMONIZATION AND DISSEMINATION OF LAND COVER MAPPING METHODOLOGIES, PRODUCTS AND SERVICES

prevention and management; forest and rangeland monitoring; determining changes in environmental goods and services; watershed catchments management; statistics on natural resources; biodiversity studies, and climate change modelling.

A major achievement of the Africover initiative is the development of the Multipurpose Africover Database for the Environmental Resources (MADE) which can be accessed by all stakeholders and users. It is produced at a scale of 1:200,000 (and at 1:100,000 for small countries and specific areas) and contains digital georeferenced databases with geodetic homogeneous referential, toponyms, roads and hydrography data.

Africover has greatly reinforced national and subregional capacities for the establishment, update and use of land cover maps and spatial data bases. This has ensured an operational approach and the sustainability of the initiative.

TOPIC CENTRES AND REGIONAL ACTIVITIES

GLCN activities are supported by "Topic Centres" which are incubators of the GLCN methodology and have a number of functions which include: providing assistance to all land cover mapping and monitoring projects; advising on land cover mapping methodologies; acting as neutral international clearinghouses; developing regional products, and disseminating information on products and services, databases and meta-databases. These units also carry out activities of software and methodology development, research on the linkages between land cover and land use; development of socio-economic and biophysical indicators; assisting in modelling and applications, and the development of specific products requested by end users.

Activities are also supported through the development of regional and national networks of collaborating institutions and individuals with the assistance of regional

and national focal points. Many national and regional institutions also provide assistance to other stakeholders within their region in the form of training and data.

GLCN subprogrammes already include the Africover and the ASIACOVER initiatives and other networks are currently being developed including those for West Africa, Southern Africa, Central and Latin America as well as for the Middle East. During this process, GLCN assists and integrates with other initiatives to ensure that a broad and diverse community is fully engaged in the development, application and use of the output.

CAPACITY BUILDING AND OUTREACH

A key factor to the success and continuity of GLCN activities has been the importance given to training and the development of national capacity in the methodologies and applications required to undertake, maintain, archive and disseminate land cover data and information. This process has been achieved through regional and national training workshops and programmes and has allowed institutions and individuals to become self-sufficient and in turn provide support and training to other GLCN partners.

GLCN also develops a number of other products to support stakeholders, these include: newsletters, distance learning tools, forums, Web pages, databases, manuals, documents and brochures as well as presentations and seminars at the main international conferences and events.

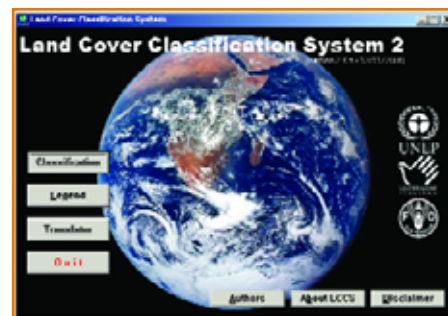


GLCN national and regional capacity building programmes

SOFTWARE AND APPLICATIONS

GLCN has developed a number of applications to facilitate mapping activities and ensure the harmonization and compatibility between local, national and regional products. The main applications include:

LCCS: The Land Cover Classification System (LCCS) is a scale independent method of classifying land cover. The approach supports all types of land cover monitoring and enables a comparison of land cover classes regardless of data source, sector or country.



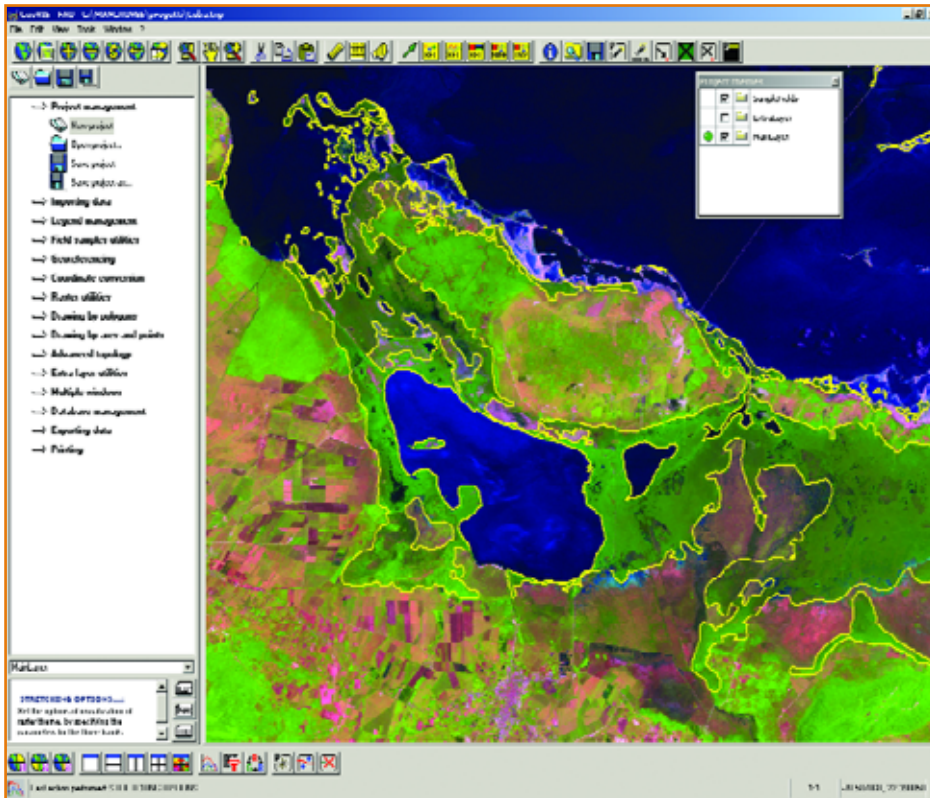
LCCS is a comprehensive, standardized a priori classification system designed to meet the requirement of all users, independent of the scale, method or detail of the mapping being undertaken. This classification system uses a set of independent diagnostic criteria that allow correlation with existing classifications and legends. LCCS is the classification system software where classes applicable to a specific area are identified.

LCCS is quickly being adopted at the national, regional and global level and is now undergoing the process to become a standard of the International Organization for Standardization (ISO).

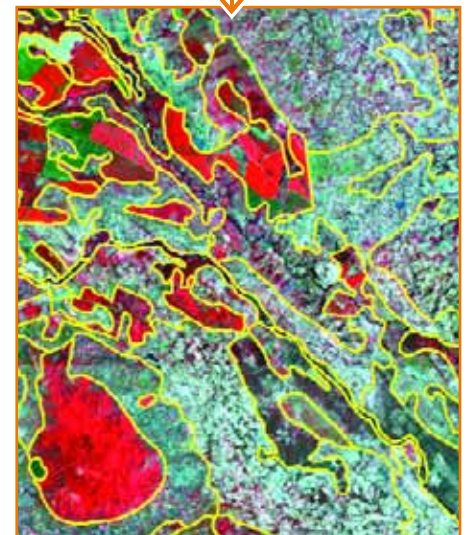
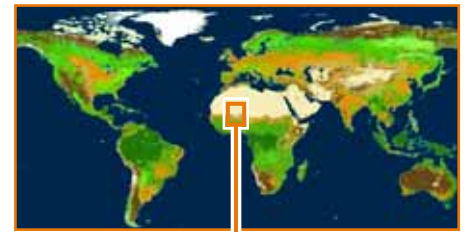


LCCS software interface

SUBSTANTIAL CONTRIBUTION TO SPATIAL DATA INFRASTRUCTURE (SDI) DEVELOPMENT AT THE NATIONAL, REGIONAL AND GLOBAL LEVELS



Geographical Vector Interpretation System



From global to local analysis

GeoVIS: The Geographical Vector Interpretation System is a GIS and vector-based software that provides an ergonomic environment for visual interpretation, easy-to-use topological functions and database functionalities.

The software is created and is developed from a vector-based digitization software. It makes the interpretation activity much simpler and reduces the GIS work needed to build the database. GeoVIS combines visual, semi-automatic and automatic interpretation and provides a live link with the legends saved in LCCS, which can be imported into GeoVIS and used by

the interpreter to code the polygons. GeoVIS is fully topological and its outputs can be exported to other applications (including ESRI software).

ADG: Advanced Database Gateway, a cross-cutting interrogation software, which allows the easy and fast recombination of the land cover polygons, not only by class name but also by classifiers. It allows end users to create their own classes using the set of existing classifiers by selectively recombining the database polygons.

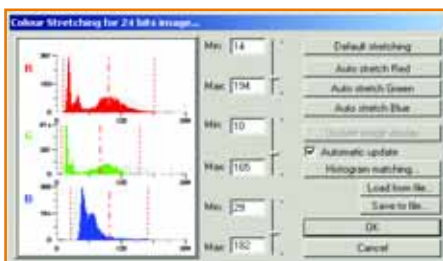
MAP: The Mapping Accuracy Programme is a statistical software that allows the automatic calculation of the thematic mapping accuracy using different methods and different expected levels of statistical confidence. The accuracy assessment methods used are both qualitative and quantitative. In this latter case, the assessment can be done by single point, by multiple points or by polygon area.

MAD&CAT: The Mapping Device and Change Analysis Tool is a new freeware mainly devoted to optimizing the production of vector polygon based maps. The software also includes a module for change assessment and analysis.

VEDAS: The Vegetation Dynamics Software is a specialized application to calculate the mean NDVI of polygons allowing land cover databases to be enriched with vegetation phenology data.

OTHER APPLICATIONS AND TOOLS:

The key to future GLCN activities is to assist users to develop and create the required derived land cover data and information products needed to achieve their objectives. This includes specially designed interactive Web-based databases, open source applications and environmental analysis systems. For ease of use, all new applications will be linked to the LCCS and GeoVIS systems.



GeoVIS interface

PROVIDE GUIDANCE AND SUPPORT TO INTERNATIONAL INITIATIVES AND OBLIGATIONS

AFRICA Sub-regional networks: Central Congo Basin, East Africa, North Africa, Sahel, Southern Africa, West Africa

AMERICAS Sub-regional networks: Caribbean, Central America, North America, South America

ARCTIC

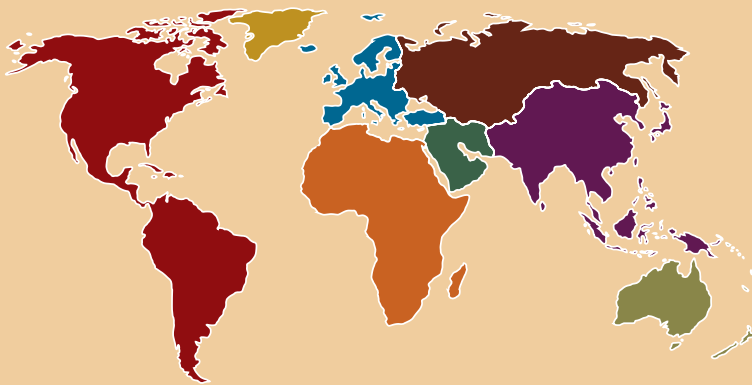
ASIA Sub-regional networks: Asian Archipelago, Central Asia, East Asia, South Asia, South East Asia

EUROPE

MIDDLE EAST

OCEANIA

RUSSIA AND NEWLY INDEPENDENT STATES

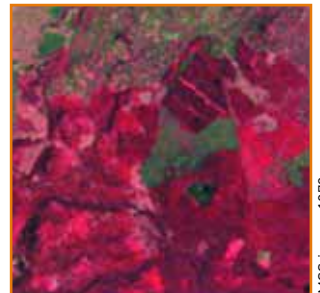


GLCN ACTIVITIES ARE IMPLEMENTED THROUGH NATIONAL AND REGIONAL NETWORKS OF COLLABORATING INSTITUTIONS WHICH ARE SUPPORTED BY REGIONAL HUBS/INCUBATORS

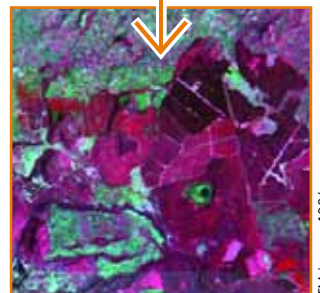
GLCN ACTIVITIES

GLCN objectives are achieved through the following activities:

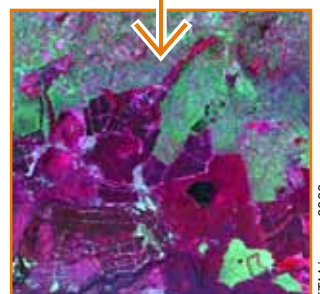
- Harmonization of land cover definitions and classification systems.
- Standardization of global land cover baseline datasets.
- Provision of database structure and maintenance guidelines.
- Supply of, and access to, methodology and software.
- Creation of a global land cover meta-database.
- Awareness, training and capacity building at the local, national and regional scale.
- Provision of advisory services on land cover classification, mapping and monitoring.
- Function as an international, politically neutral and not-for-profit clearinghouse for land cover information at global and regional levels.
- International portal for information, products and services dissemination.
- Development of institutional technical networks and promotion of national and regional collaboration.
- Development of effective communication links among relevant organizations, including donors.



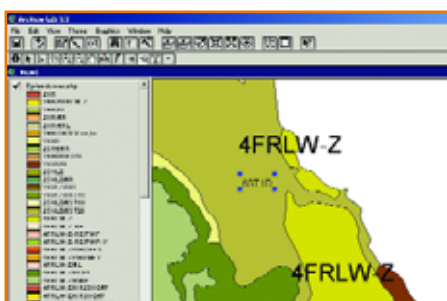
MSS image 1973



TM image 1986



ETM image 2000



Environmental Analysis

Land cover change analysis



GET INVOLVED

GLCN encourages you to become involved in its initiatives and be part of its collaborative networks. Please feel free to contact us for additional details.

GLCN SECRETARIAT

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