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Photo credit Gregoire Dubois, JRC, Selous park boundary Tanzania

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

SDG Goal 15

① 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

② 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

③ 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

④ 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

⑤ 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

SDG Goal 15

⑥ 15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed

⑦ 15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

⑧ 15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species

⑨ 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

- 15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems
- 15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation
- 15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

Coverage of protected areas broken down by ecosystem type, including total area of forests in protected areas (thousands of hectares)

Forest area as a percentage of total land area

Coverage of protected areas

Area of land/soils under sustainable managemen

Trends in land degradation

A growing demand for global land cover information

① Earth system energy, water and material transport studies

② General Circulation Models

③ Biological process models

④ Land surface process models

⑤ MEA negotiations (UNFCCC, CBD, UNCCD, RAMSAR...)

⑥ MEA monitoring, reporting, verification

⑦ SDG goal setting and progress indicators

⑧ Official Development Assistance programmes

⑨ Humanitarian and disaster reduction and relief operations

⑩ ...

Extract GLC2000 Africa
Mayaux et al. JRC

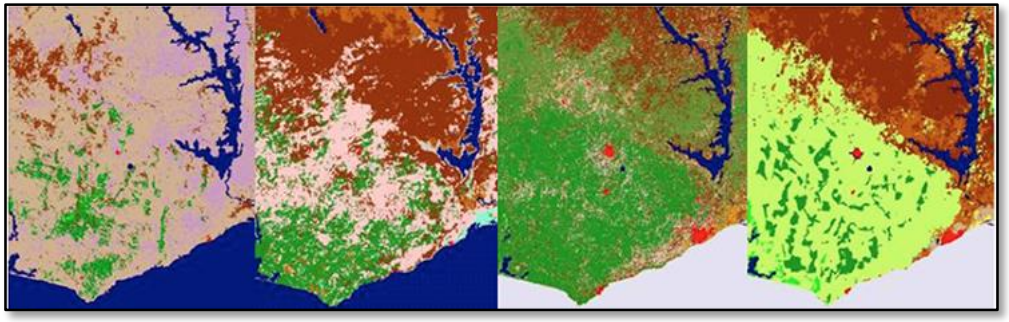
… and therefore new constraints, new products

① Legally binding contexts increase requirements for full accountability, and accurate (documented) products

② Reliable on-demand product availability and delivery

③ A growing list of global land cover products; thematic maps for inventory and area estimates; biophysical products and direct parameterisation for use in models; measurement and monitoring of cover change; targeted classes (e.g. deforestation) for compliance verification

④ A growing range of time demands – seasonal, annual, decadal and spatial resolutions



L to R: UMD, IGBP, MODIS, GLC2000

The oldest Ptolemaic world map (c.a. 150), redrawn around 1300

http://en.wikipedia.org/wiki/User%3APortolanero / Wikimedia Commons

Land Surface Processes condition Earth's climate system

Land cover change is the key driver of global biodiversity loss

Land take is increasing; in the EU over 1,000 km² / year of soil are lost

Land grabbing is spreading; Eurasia, Africa, Caribbean and Latin America all affected

Land is degrading; around 14% of the global land surface is affected

Land Uses are competing; for food, fuel, fiber/ carbon sink/ protected areas

Land is non-renewable; 100 years to form 1-2 cm of soil in temperate climates

Global Land Resource monitoring is a scientific, economic, strategic and moral imperative

44% of the world's food production systems and 50% of world livestock are vulnerable to land degradation

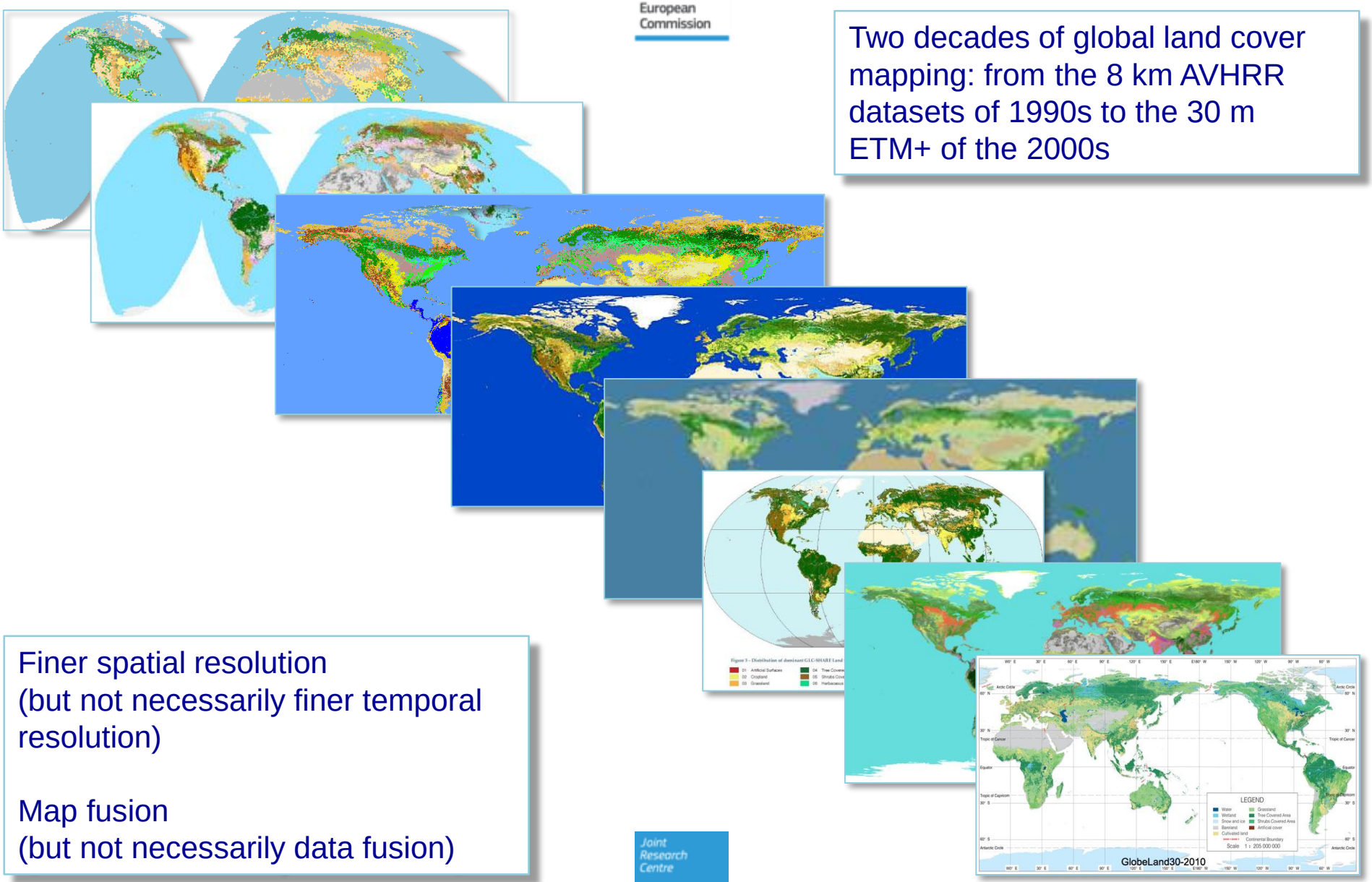
50% of the global soil carbon pool is in the northern circumpolar region - the largest single terrestrial carbon pool (1672 Pg)

99% of the world's calories come from the land

95% of the people are concentrated on 10% of the land

European Commission

Two decades of global land cover mapping: from the 8 km AVHRR datasets of 1990s to the 30 m ETM+ of the 2000s



Finer spatial resolution
(but not necessarily finer temporal resolution)

Map fusion
(but not necessarily data fusion)

Joint Research Centre

Summary

① Progress is evident: Finer spatial resolution, improved accuracies, more detailed legends...

② But, one map won't serve all users; this restricts use to specific modelling communities, compromises regional and national relevance, limits value for resource management, limits flexibility as a source of reference data for MEAs – can we identify converging user requirements though?

③ We still need to invest in fusing data from multiple sensors

④ We still need product and processing standards

⑤ Ensure data and products are available and accessible

⑥ Establish operational infrastructures with identified functions