Soil information and education for a sustainable management: the Soil Atlas of Africa

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General Context

• Soil is a fundamental component for supporting life
• Soil regulates the climate
• Soil is a provider of raw materials
• Soil is an important habitat and a large pool of biodiversity
• Soil is a fundamental component of our landscape and cultural heritage

Once degraded, soil resources are not renewed easily

Richness of African soil resources need to be protected
A number of threats are affecting the functioning of African soils
What are the aims of the Atlas?

• To raise the awareness of the general publics, policymakers and other scientists to the importance of soil in Africa

• To educate

• The EU Thematic Strategy for Soil Protection and development/Aid
• Joint publication by JRC, AUC, ASSS, FAO, ISRIC and scientists from both Africa and Europe

JRC - Arwyn Jones, Olivier Dewitte, Luca Montanarella
AUC - Almami Dampha
ISRIC - Otto Spaargaren
FAO East Africa - Lamourdia Thiombiano

Africa Soil Science Society – Robert Zougmoré (Secretary General)
North Africa - Tahar Gallali (University of Tunis)
West/Central Africa – Martin Yemefack (Cameroon & President of ASSS)
Southern Africa – Pieter Le Roux (University Free State, Bloemfontein, SA)
East Africa - Method Kilasara (Sokoine University of Agriculture)

Copenhagen University - Henrik Breuning Madsen
Ghent University – Eric Van Ranst

World Soil Survey Archive and Catalogue – Robert Jones (Cranfield)
IRD Montpellier – Michel Brossard
WRB – Erika Micheli
• Introduction

• Soils of Africa

• Soil Maps at regional and continental scale

• Derived maps at continental scale with descriptive text (e.g. vulnerability to desertification, soil nutrient status, carbon stocks and sequestration potential, irrigable areas and water resources)

• Case studies (e.g. soil erosion)

• Sources of soil information for Africa, including national contacts and institutions
The Database

- Harmonized World Soil Database (HWSD) (1 km x 1 km) (Web)
  (Land Use Change and Agriculture Program of IIASA (LUC), FAO, ISRIC European Soil Bureau Network)

- SOTWIS (regional SOTER databases) and Digital Soil Map of the World (DSMW)

- Dominant soil types

  World Reference Base for soil resources (WRB) classification system

- Soil keynote properties: texture, pH, organic carbon, water storage capacity

- Topsoil and subsoil properties
Regional maps - 1

Regional overviews:

Economic Regions

MS – 1:11M

CEMAC – 1:6 M
Regional maps - 2

IGAD – 1:8.5M

1:4M
Regional maps - 3

SADC – 1:8.5M

1:4M
Key soil properties

- WC
- Clay
- Ph
- OC
- Soil Erodibility Factor
Case study

Soil erosion in Morocco

• Revised Universal Soil Loss Equation (RUSLE)

\[ A = R \cdot K \cdot L \cdot S \cdot C \]

Where:

- **A**: Mean (annual) soil loss
- **R**: Rainfall erosivity factor
- **K**: Soil erodibility factor
- **L**: Slope factor
- **S**: Slope length factor
- **C**: Cover management factor

• Soil erodibility Factor (**K**) from the database
The Atlas

A book of 174 A3 pages (Portrait)

Mix of text, maps, pictures and diagrams

Easily readable

Final publication scheduled for 2011

Version française

Opens to A2

Landscape spreads

SOIL ATLAS OF AFRICA

Follows European and Circumpolar models

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SOIL ATLAS OF AFRICA
Making Soil Data Accessible


• Atlas (PDF)

• Database

Web: http://eusoils.jrc.ec.europa.eu/

• Digital soil map of Africa

Ongoing project
New maps will be georeferenced

• Soil Profile Analytical Database for Africa (SPADA)

Currently contains over 600 detailed profile descriptions (constantly expanding)

Web: online by the end of 2009
Planosols
(from Latin planos, meaning flat)

Planosols are a group of soils that have a plane or nearly plane surface, with a uniform texture throughout the profile. They are characterized by a uniform texture throughout the profile, with a uniform texture throughout the profile. They are associated with a lack of significant horizon development, and a uniform depth of the A horizon. Planosols are found in areas with a uniform climate, and in areas with a uniform landscape.

Soils having an abrupt textural change within 100 cm from the soil surface, associated with risering properties (waterlogging) above or below that boundary.

A truck driving over a temporary road on a terrace of the Volta river in Ghana creates huge dust clouds. This is due to the lack of cohesion between the particles in the soil.

November 2010

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Stimulating and supporting the exchange of soil information for Africa

- Based on the successful model of European Soil Bureau Network
- Network of leading African soil scientists and soil survey institutions
- Initial concept is to identify at least one node per country
- Provide the EU with policy relevant information on soil in Africa
- Act as national catalysts
- Foster collaboration
Your contribution is welcomed

• Additional mapping information

• Case study

• Illustrations, photographs