

## **Mapping the unknown? The Extent of Sustainable Land Management**

Godert van Lynden; ISRIC – World Soil Information, Wageningen, The Netherlands; [godert.vanlynden@wur.nl](mailto:godert.vanlynden@wur.nl)

*Extended Abstract for the 14<sup>th</sup> ISCO Conference, Marrakech, 14-19 May 2006*

### **Résumé**

Les investissements globaux dans la conservation des sols et des eaux (CSE) ont été énormes dans le siècle passé, pourtant une vue d'ensemble de leur ampleur et l'efficacité manque. L'information sur des expériences antérieures est dispersée et donc à peine bénéficiant de nouvelles activités de SWC. Bien que des cartes de dégradation des sols existent au niveau national ou régional - la seule vue d'ensemble globale demeure jusqu'ici la carte de GLASOD d'ISRIC et UNEP de 1991 - pourtant des cartes sur l'ampleur de la CSE ou la gestion durable de terre semblent presque totalement absentes. Il est étonnant que les décideurs et les organisations d'implémentation ne peuvent pas avoir une bonne vue d'ensemble spatiale de leurs et d'autres activités sur ce terrain. Le programme de WOCAT offre une méthodologie double pour tracer l'étendue spatiale de la gestion de terre durable. L'une est concerné de produire une carte mondiale avec des cas intéressants de CSE, l'autre vise la couverture spatiale intégrale de tous les polygones de carte pour une région choisi (pays, province etc.). Les deux méthodes sont échelle-indépendantes mais la méthode de la carte mondiale est évidemment plus appropriée aux plus petites échelles.

### **Introduction**

Global investments in soil and water conservation (SWC) have been huge in the past century, yet a clear overview of their extent and effectiveness is lacking. Information on past experiences is scattered and therefore hardly benefiting new SWC activities. Since 1992 the World Overview of Conservation Approaches and Technologies ( [WOCAT](#) ) programme is filling in this gap by using a standardised methodology to document and evaluate case studies of SWC worldwide and assess their spatial extent. SWC in this context should be interpreted broadly synonymously with sustainable land management (SLM). An Overview Book (“Where the land is greener”) will be launched in May 2006, presenting about 40 case studies from around the world (see paper by Liniger et al. this conference).

While maps of soil and land degradation exist at national or regional level – the only global overview so far remains the [GLASOD](#) map by ISRIC and UNEP from 1991 - yet maps on the extent of soil and water conservation or sustainable land management seems to be almost completely lacking. It is amazing that policy makers and implementing institutions do not and cannot have a good spatial overview of their and others' past and ongoing activities.

### **Materials and Methods**

After the GLASOD map was published in 1990, Prof. Hans Hurni of the Centre for Development and Environment of the Institute of Geography of the University of Bern proposed the development of a similar world map showing what was being done about degradation. This idea further evolved into what is now the World Overview of Conservation Approaches and Technologies, but the mapping idea gradually lost ground to documentation and evaluation of case studies of SWC, which resulted in the current database with ± 175

Technologies and 120 Approaches. But new requests for spatial data (e.g. from National Geographic Magazine, the LADA project) refreshed the idea for a SWC map.

WOCAT has developed a two-fold methodology to map the extent of sustainable land management at global and national or more detailed level.

a) "QM"

The first module is a mapping methodology already used (but rather sparsely) for several years by WOCAT and based on participatory expert assessment (Questionnaire Mapping: QM), similar to the GLASOD method. Experts fill in spatial information on land use, degradation and SWC for individual polygons on a basemap at regional, national or sub-national level. The polygons can be defined according to bio-physical criteria (e.g. physiography) or administrative boundaries (provinces, districts, etc.) or any other relevant criteria. A special interactive Map Viewer was developed linking the map data in the Access database to Map Objects light software creating a GIS-like environment but accessible to non-GIS users and providing some preset map options as well as an open query system (see fig. 1).

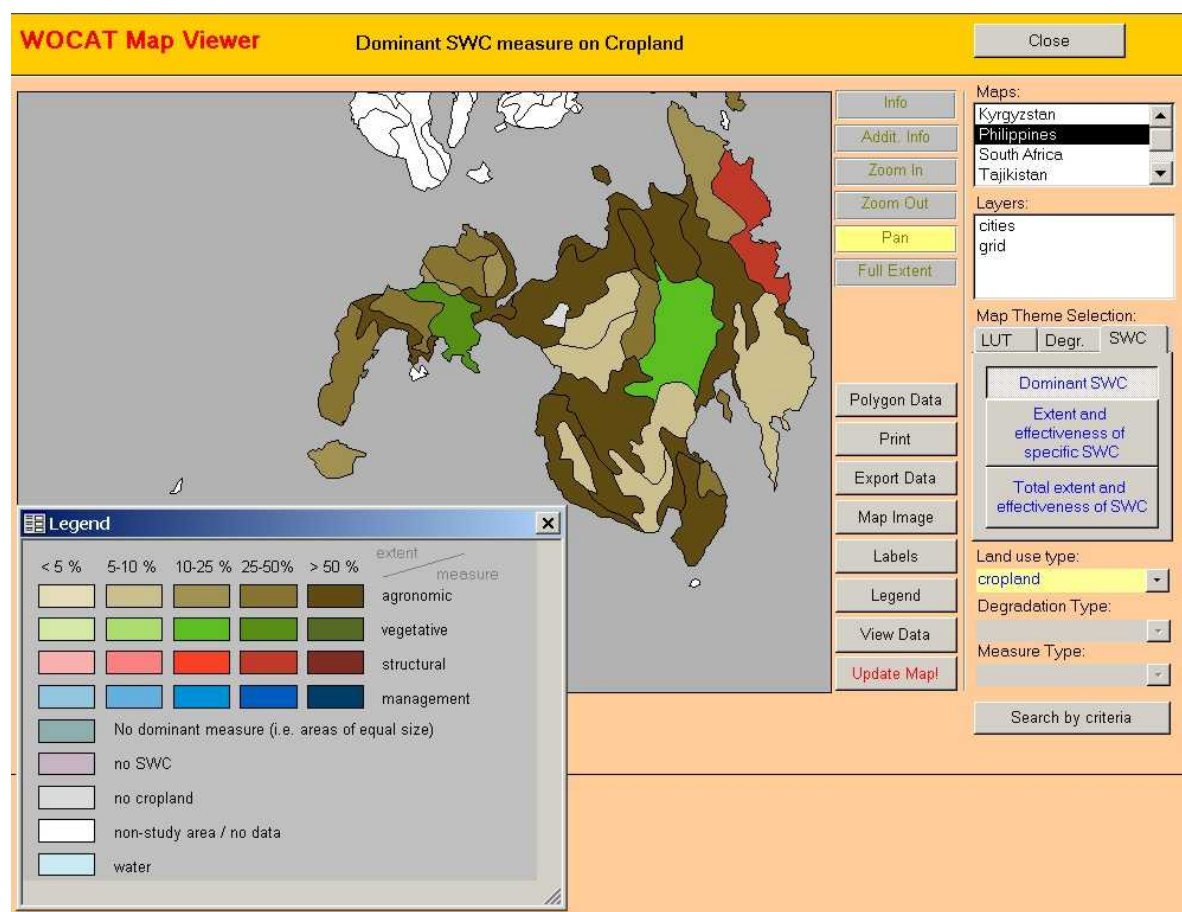


Figure 1: Example of WOCAT Map Viewer for Mindanao (Philippines)

Although very attractive in its simplicity the system did not prove bug-free and did not gain major attention, though this might also have been due to the wrong target groups being addressed (field experts with more interest in local data rather than planners or donors requiring an overview of investments made).

The WOCAT team from South Africa offered to revise and improve the map database and viewer. The first phase involved creating an application to replace the Map Objects Lite components in the MS Access application with that of ArcReader components, but still have the database in MS Access. Subsequently a decision was made to develop a VB/VB.Net stand-alone application of which a first Beta version was demonstrated at the WOCAT Annual Workshop and Steering Meeting in Belgrade, September 2005. The software application using ArcIMS and ArcReader was recently completed and this will be an expansion to enhance the mapping component in the current WOCAT application.

Further objectives include the development of an additional QM functionality including data management, access control and editing, loading of new data procedures, language modules, central update procedures and procedures to create empty QM Viewers. Also, a link with the Technology Database from within the QM Map viewer will be developed.

#### b) World Map

The second module that was developed more recently aims towards developing a small scale World map with symbols depicting interesting efforts in SWC including their area coverage, and showing land use, degradation and conservation type. Each of the main SWC types will be illustrated by photos and a brief description. The map will be updated regularly to show the progress of data collection and SWC achievements. National SWC specialists are asked – at meetings, through mailings and on the WOCAT Website to provide geographical information on important SWC technologies in their country, but so far the results in the past three years have been modest and it is clear that the objective will never be reached when fully relying on voluntary inputs.

The South Africa WOCAT team has created an online viewer for the WOCAT world map. A sample of the layout with the symbols, colour and size of the dots as well as information currently available for 13 countries can be viewed at <http://www.agis.agric.za/agisweb/wocat>

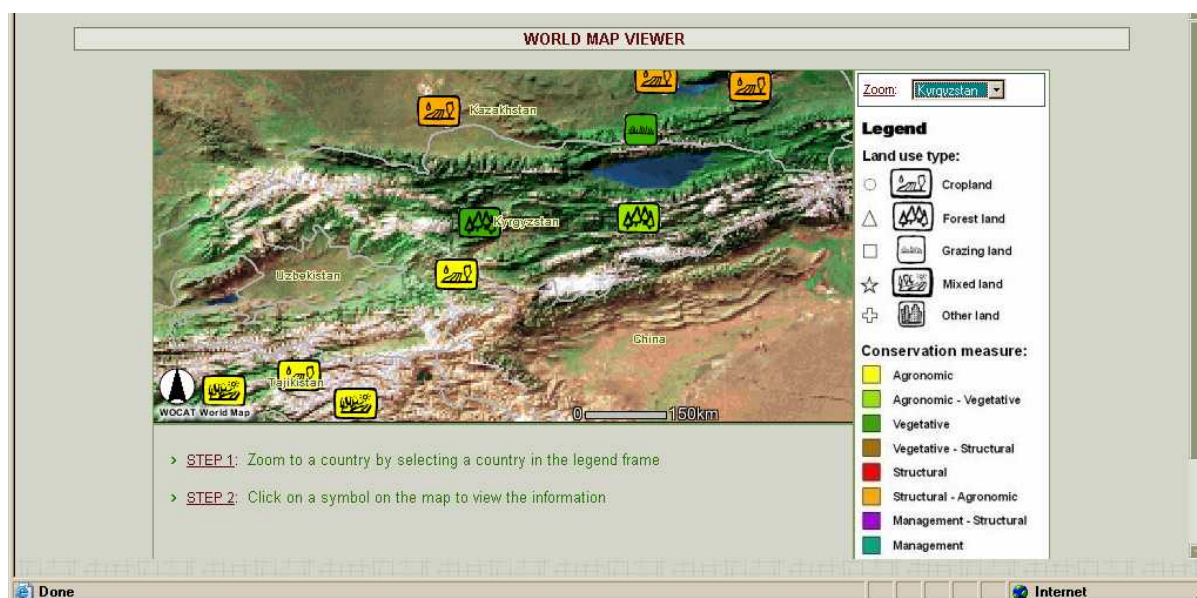


Figure 2 Example of WOCAT World Map for Central Asia

under “WOCAT” - “WOCAT dynamic maps” – “World map” (See figure 2).

There is also an online administration system with password protection for each country. After registration the data as well as the geographical location of the dots can be edited. The contributors will be able to add and edit cases for their country on-line. Clickable links will provide access to more detailed information in the WOCAT database where present. The map will be available through the Internet through ARC-IMS and ArcReader.

For Europe a pilot study will be launched in the UK to assess the extent of Conservation Agriculture in the context of the [SOWAP](#) and [ProTerra](#) projects using the WOCAT World Map method. If this pilot study is successful it will be applied in other European countries.

### **Discussion and conclusions**

The revised methodology alone will not be a guarantee for success of the WOCAT Mapping activities. The following problems need to be solved:

Apparent lack of interest or lack of awareness among intended target groups will be countered by raising awareness among policy makers and planners through providing appealing examples

Appropriate and reliable data are not always available. This is only partly a problem for the World Map, which does not require full area coverage but only geo-referenced cases, to which new ones can always be added. QM however requires full spatial data coverage for the area to be mapped. The data needed can be obtained through expert opinion (e.g. in workshops) and additionally through Remote Sensing and field surveys.

No core funding is available for the data collection and analysis. Although case studies on technologies and approaches have been collected in various countries without financial support from WOCAT, this was because contributors realised the benefits they might gain from the documentation and evaluation. This stresses the importance of the first bullet point above, but especially in the case of the World Map the benefits to the contributors maybe less directly visible and therefore a concerted action may be required. To this end a project proposal has been submitted to the Year of Planet Earth.

### **Literature**