

# Dissemination of information related to grazing resources in the Sahel

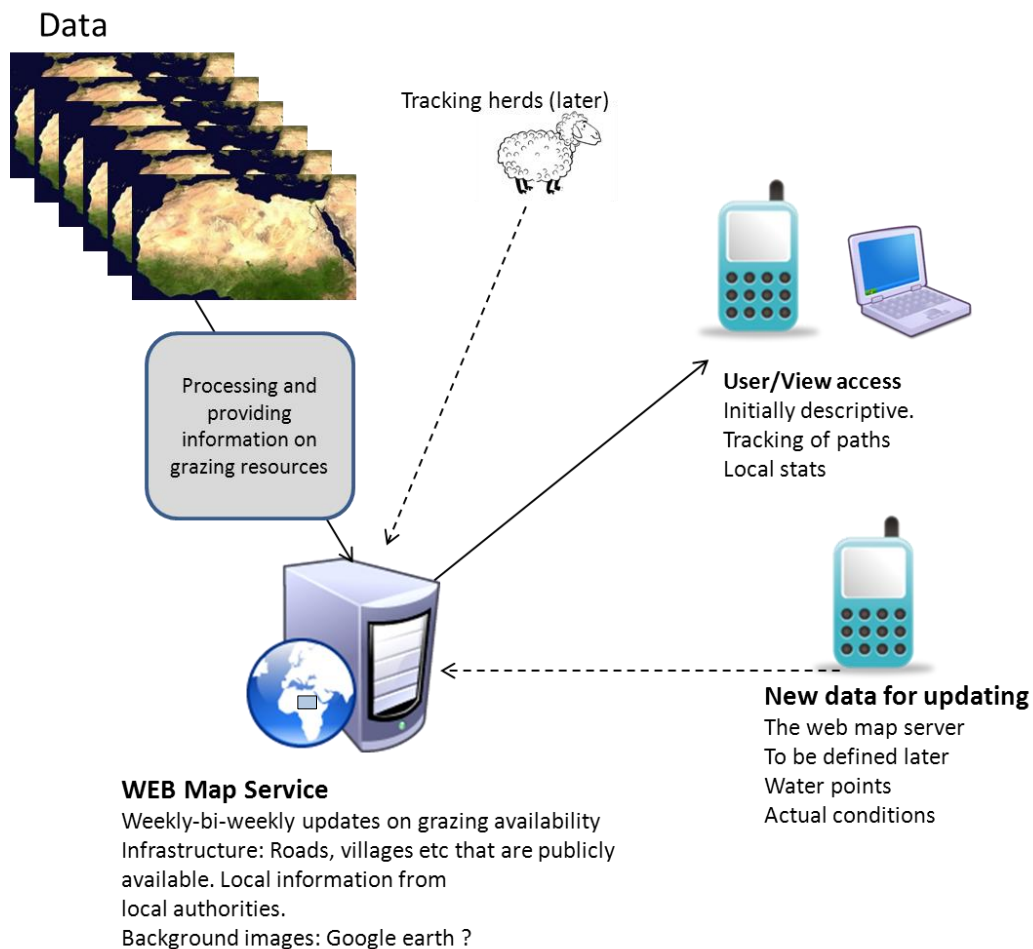
Jonas Ardö, 12 April 2013

Draft

## Introduction

Grasslands and grazing are important in the Sahel region as it provide essential proteins in the form of milk and meat. About 40% of the area of Africa is dedicated to pastoralism, a majority of this in semi-arid areas as grassland and savannas.

Information is needed for sustainable use and management of these large areas. Department of Physical Geography and Ecosystem Science (INES, Lund) and Agricultural Research Corporation (ARC, El Obeid, Sudan) have a long standing cooperation regarding remote sensing for assessment of grazing and vegetation resources in the Sahel region. This cooperation is the background to the outline for a web map service providing information grazing as outlined below.



**Figure 1.** Basic concept on information flow from remote sensing data to grazing information to be accessible from computers and smart phones. Dashed lines illustrate features to be included later on.

Components (responsible partner):

1. **Data:** Remote sensing data, either already processed available data products (SPOT DM; MOD17 NPP etc) and or data processed by Ardö et al from MODIS or other sources (SENTINEL-2 data further on), for high resolution can potentially LANDSAT-8 data be used (Ardö).
2. **Web MAP Service:** Making information provided from 1 available as some kind of web map service (Applied Geomatics Sweden, Mitch Selenader) including relevant background information (i.e. public domain data bases on roads (open street map?), populated places/villages, rivers, water bodies, boundaries) as well as imagery (Google Earth or equivalent). Including spatial information from local authorities regarding suggested routes etc  
Functionality should include basics as display/zoom/roam. Turning overlays on and off. Centering around your position if you use a smartphone with GPS. Data on cropping areas and other areas where grazing is prohibited.

Information in addition to view layers could include summing of grazing resources over spatial areas such as how much grazing can we expect within x km radius from this point.

3. **User/View access:** Information from the web map service must be possible to access from computers as well as mobile device.
4. **New data for updating:** Crowd sourcing of relevant information using mobiles (water point etc) from users of the system.
5. **Tracking herds:** Potentially introduced in a second phase. Technology available (ARC). *Abdelrahman! I will try to get a GPS sender for you and you can see if we can get some herd to carry it so we can track it.*

We will start with 1-3, 4-5 will come later.

### Technical issues

As I don't know much of this, Applied Geomatics Sweden, Mitch Selenader will have to suggest and discuss technical solutions. I prefer as open solutions as possible and the use of open source software to avoid dependence on specific (commercial) software packages and platforms. As there are a lot of tools already available we should use the as far as possible. Preferably run on a

PC.

We currently have access to ENVI/IDL, ARCGIS; PCI GEOMATICA, IDRISI at the department and will probably use ENVI/IDL for processing of data.

### **Test Case**

I suggest we start with building a test case for Kordofan, a region in Sudan. I will produce some raster data with net primary production of the vegetation etc.

### **Budget**

There is some funding available but I have to check the details in the contract.

### **Examples**

<http://www.blm.gov/ras/>