

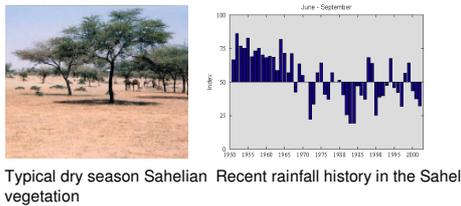
Tools for management and Sustainable Use of Natural vegetation in West Africa (SUN)

Keith R. McCloy & Anne Mette Lykke, University of Aarhus



Background

The climate in the Sahel is driven primarily by mid-Atlantic sea surface temperatures and by the land cover in the Sahel itself. A sharp downturn in annual rainfall started to occur in the late 1960's. As a consequence there has been a steady deterioration in vegetation conditions in the Sahelian zone since the mid 1970's. That land cover has been shown to be one of the two main drivers for rainfall in the Sahel indicates that good management of the vegetation can influence rainfall, and thus the state of the



Project Goals

SUN will develop new, practical management tools and concrete management actions for improved sustainable use of natural vegetation by combining scientific vegetation data, remote sensing, and socio-economic data with local people knowledge and needs.

The Goal of the Remote Sensing Component of the Project

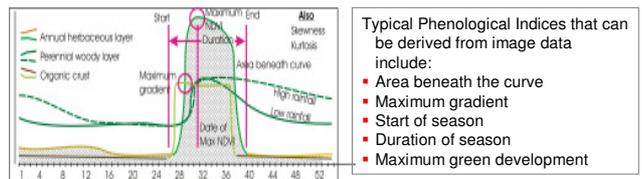
The goal of the Remote Sensing component of this project is to assist in identifying areas that are both vulnerable to further deterioration and those areas that would be most amenable to

Major Task

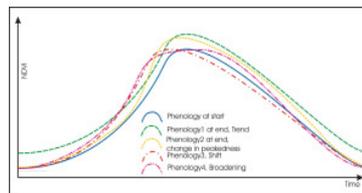
To document vegetation conditions and changes in those conditions; use this data with vegetation and other data so as to identify and map vulnerable areas.

Each major plant association has its own unique annual phenological characteristics. As the mix of these major plant associations changes in an area, so the phenology of the area will also change. Image data will be used to measure the phenological characteristics at the start and the end of the time period, as well as determining the changes in phenology that occurred over the time period.

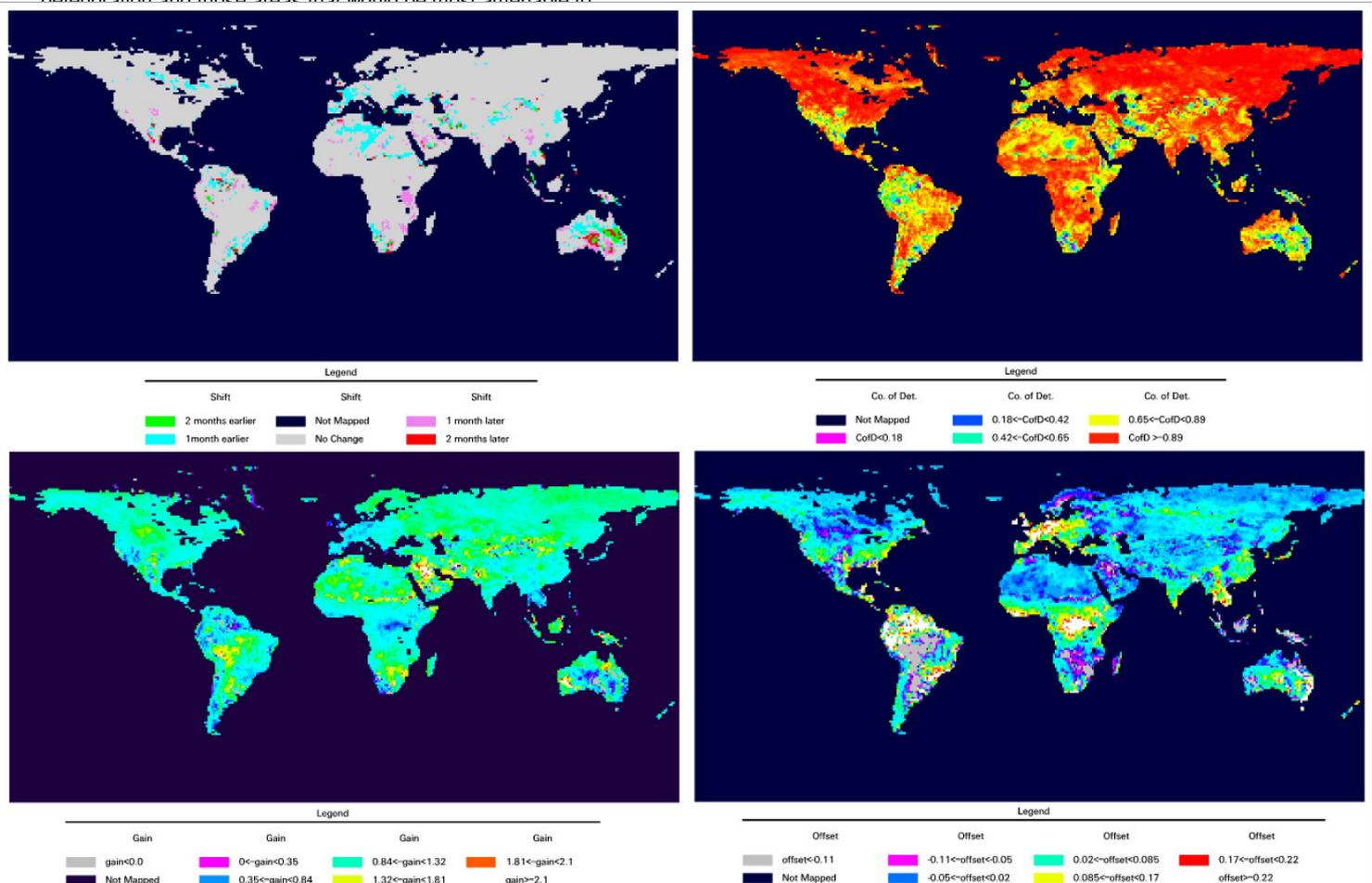
Phenological Indices as are linked to the major Plant Functional Groups



Phenological Change Indices as are linked to the changes taking place within and between these groups



- Changes in phenology can be measured by a combination of four indices:
- A change in peakedness of the growing season
 - A general year long change or trend
 - A change in the duration of the growing season, and
 - A change in the time of the peak of the growing season



Global mapping of the four Phenological Change Indices for the period 1981 to 2000. These four indices are a change in (i) the date of peak greenness (Shift); (ii) the duration of the season (C. of Det.); (iii) the height of the peak greenness (Gain) and (iv) the average greenness of the vegetation (Trend).