



Analysis of changes in plant phenology using time series image data

K. R. McCloy (1)

(1) University of Aarhus, Denmark

There have been an extensive body of work that has analysed trends in either NDVI or estimates of plant parameters based on the NDVI data, using one or more of the existing long term global temporal datasets derived from AVHRR data. However the reality is that vegetation phenology can change in a variety of ways and not just as a trend over time; indeed many of these other ways that vegetation phenology can change will show up as a trend if that is all that one is looking for. For example, the vegetation phenology can change in four quite distinct ways;-

1. A shift in the time of the peak of the season,
2. A broadening of the peak as can occur with global warming in areas where vegetation growth is temperature constrained,
3. An increase in the peak growth where peak growth is moisture constrained, and
4. A general increase throughout the year or a trend.

In addition to this body of work, various authors have also shown that various phenological indices can be useful in mapping the major plant associations when these associations can be discriminated based on their phenological characteristics.

A tool has been developed to derive four phenological change indices from a temporal data set, where these indices are related to the four factors listed in the first paragraph above. The paper will describe this development and discuss current work to evaluate the usefulness of these indices, when linked to standard phenological indices that are

indicative of cover conditions, to understand the nature of the changes that are taking place in the Sahel and in Europe.