Getting started with TIMESAT

Summary
Multiple options exist to ==extract phenological information from satellite image time series.== In this course, we use TIMESAT. TIMESAT is a relatively user-friendly tool developed by Lund University and Malmö University in Sweden. For this course, you are required to install and work with TIMESAT. While relevant information for successfully installing the software can be found on the [TIMESAT website](), this document is intended to help you getting started. To verify if your installation was successful, we ask you to submit some screenshots.

1. Downloading
The TIMESAT authors require you to register and check the software distribution policy. Once you registered via the link on [this page](), you can login and download the software TIMESAT 3.3 that we will use in this course. Here you have different options. Possibly you have already installed [Matlab]() previously; if so, you can go ahead and install "*TIMESAT version 3.3 for Windows and Linux users with Matlab installed*". Alternatively you can download a standalone version, either for Windows and Linux.

2. Installing
The user manual ([TIMESAT 3.3 Software Manual]()) is your main friend in getting started. Reading page 5 to 67 will teach you all that you need to know about the software and also describes the methods that are implemented. For now, please read at least Sections 1.1, and the (short) Chapter 7. Following the instructions in Chapter 7 should give you a working TIMESAT software on your computer, including some standard test data sets.

3. Starting to work with TIMESAT
Follow the steps in Section 9.2 of the TIMESAT manual. Make sure to set the TIMESAT working directory correctly as indicated to *timesat33\run* . If all works fine, you should be getting the following TIMESAT menu on your screen:
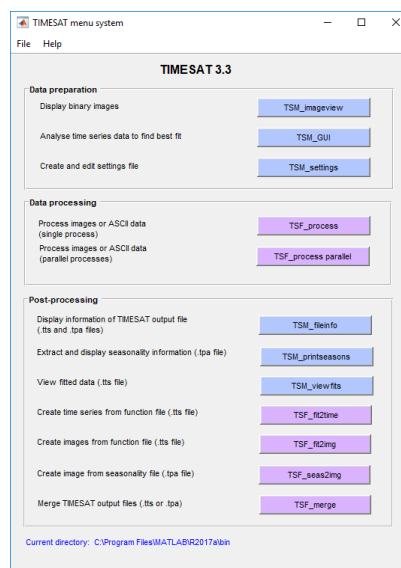
Please work through pages 48 to 51 of the TIMESAT manual. This should get you acquainted with displaying point and image data with TIMESAT. Sample data that are provided with the TIMESAT installation are used for this purpose, and this allows you to check if everything works as expected.

Assignment

- (Related to Section 9.3 of the manual): Display the NDVI image of West Africa from 1-10 January 1999 (*wa_nd99011.img*). These data are included with the TIMESAT installation. Scale the image between 100 (minimum) and 200 (maximum) and display with the color scale "gray". Make a screenshot of this map and paste it in a Word-document.

- (Related to Section 9.4 of the manual): Open the TIMESAT Graphical User Interface (TSM_GUI) and load the point data series contained in *\data\single\MODIS_NDVI_Sweden.txt* . Plot the second series by clicking "**Plot next series**": on top you should now read "Row: 2 Column: 1". Fit a double logistic model to the data. Do not change any other parameters now. Make a screenshot of the resulting temporal graph, and paste it in the same Word-document. Based on this, also create the *seasonality.txt* file as described in Section 9.4. This output will be stored in the TIMESAT working directory (*timesat33\run*).

- Feel free to start experimenting further with these data and the other sample data sets. The most important thing for now is to verify that you could properly install the TIMESAT file software.

Save the following output (for comparison with model answers)

- a Word-document in which you paste the screenshots indicated in the above assignment, showing that you effectively managed to 1) display an NDVI image in a desired colour scheme, 2) display a pixel's vegetation index time series. This allows your teachers to verify that you successfully installed TIMESAT and can load sample data into the software.
- The *seasonality.txt* file.