1. Introduction

    This tutorial contains instructions on how to convert LSA SAF (LandSAF) data from Hdf5 to geotif format, open the converted files in QGIS software, and extract information on given (lat, lon) locations.

2. On window explorer create a new folder tree:

C:/Pretoria
           /scripts
           /H5_Data_PROD (where PROD is LST, FVC, FAPAR,…)
           /Out_Data_PROD (where PROD is LST, FVC, FAPAR,…)
Ex:
C:/Pretoria/H5_Data_LST
C:/Pretoria/H5_Data_FVC
C:/Pretoria/H5_Data_FAPAR
…
And

E:\Pretoria\Out_Data_LST
E:\Pretoria\Out_Data_FVC
E:\Pretoria\Out_Data_FAPAR
…

Copy the files import_data_reproj_*.py and paste it to C:/Pretoria/scripts

Copy the LSA SAF HDF5 files you have (for instance through download from the LSA SAF website) to folder C:/Pretoria/H5_Data_PROD (where PROD can LST, FVC, FAPAR,… according to the product you are working with).

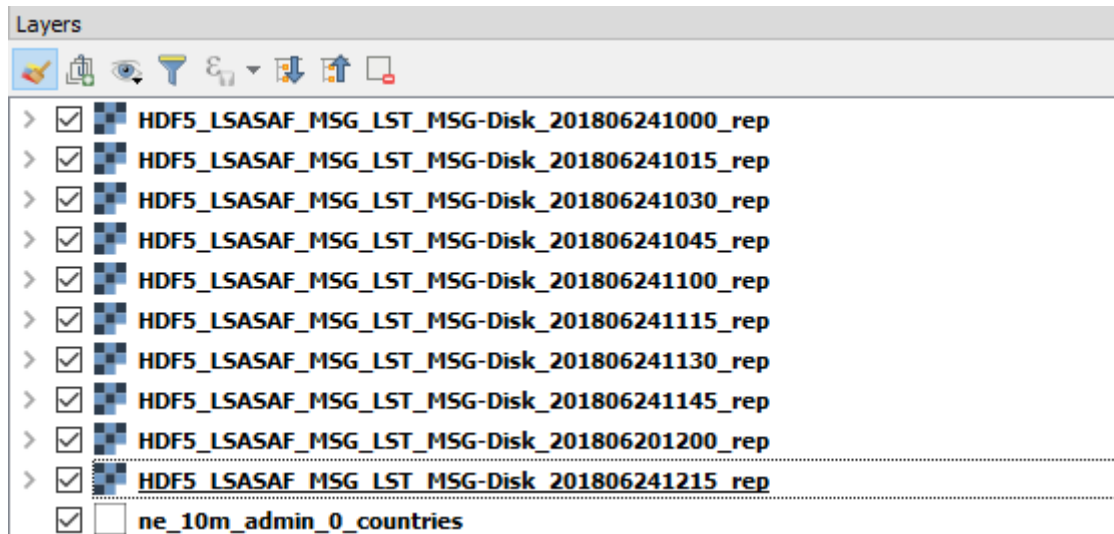3. On QGIS select the keys ctl+Alt+P to open the python console

4. Convert the LSA SAF hdf5 files to geotiff format
    Go to folder C:/Pretoria/scripts, click on the script import_data_reproj_PROD.py (where PROD is one of the following: LST, FVC, FAPAR) and drag it to QGIS python console. This will make the script to run, converting all LSA SAF hdf5 files within the Data folder to geotiff format, and reprojecting.

5. Open the LSASAF files converted to geotiff in Qgis

    Go to the folder containing the converted geotiff files (C:/Pretoria/Out_Data_Prod), click on the files you want to open in Qgis, which filenames with "_rep" (can be one or any number) and drag it to Qgis.

6. In QGIS, in the Layers window, drag the names of the files assuring that the dates are ordered from the oldest (at the top) to the most recente (at the bottom), like illustrated in the following figure:

Layers

- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241000_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241015_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241030_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241045_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241100_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241115_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241130_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241145_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806201200_rep
- ☑ HDF5_LSASAF_MSG_LST_MSG-Disk_201806241215_rep
- ☑ ne_10m_admin_0_countries

7. Extract data for given lat, lon point coordinates

   Produce a csv file with the following format:

   Name, lat, lon
   Example:

 | Nome | y | x |
   |-------|-----------|-----------|
   | Lx | 38.722252 | -9.139337 |
   | Pt | 41.157944 | -8.629105 |
   | Evora | 38.571431 | -7.913502 |
   | Paris | 48.856614 | 2.352222 |

8. On Qgis top menu select **Layer->Add Layer->Add Delimited Text layer**

   On the window Dialog box that pops up (Data Source Manager|Delimited texto), select the options as in the figure bellow:
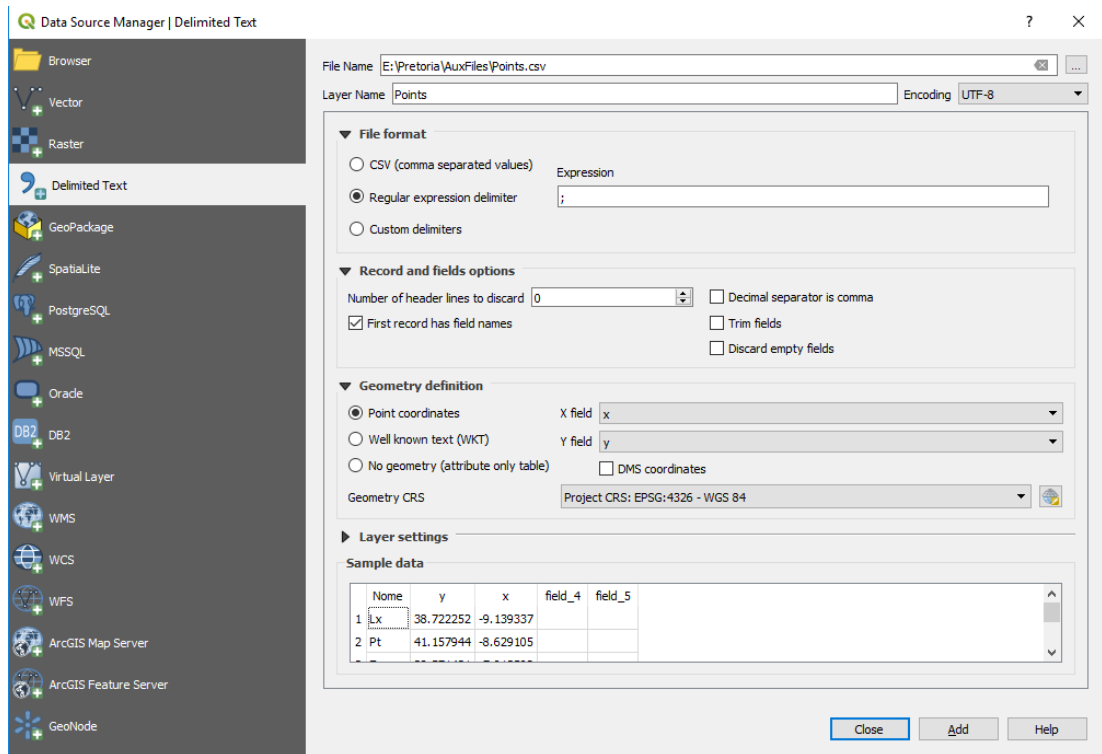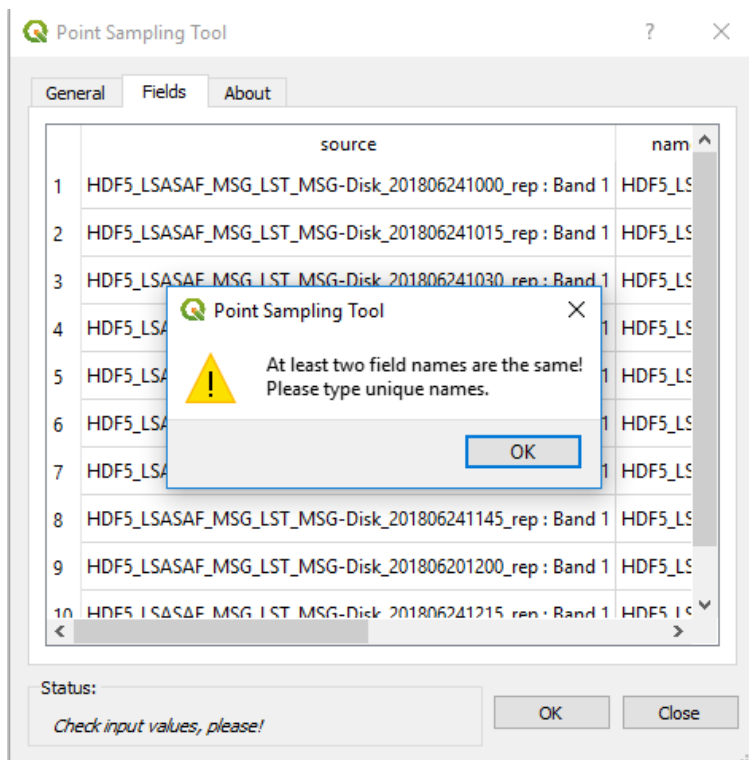
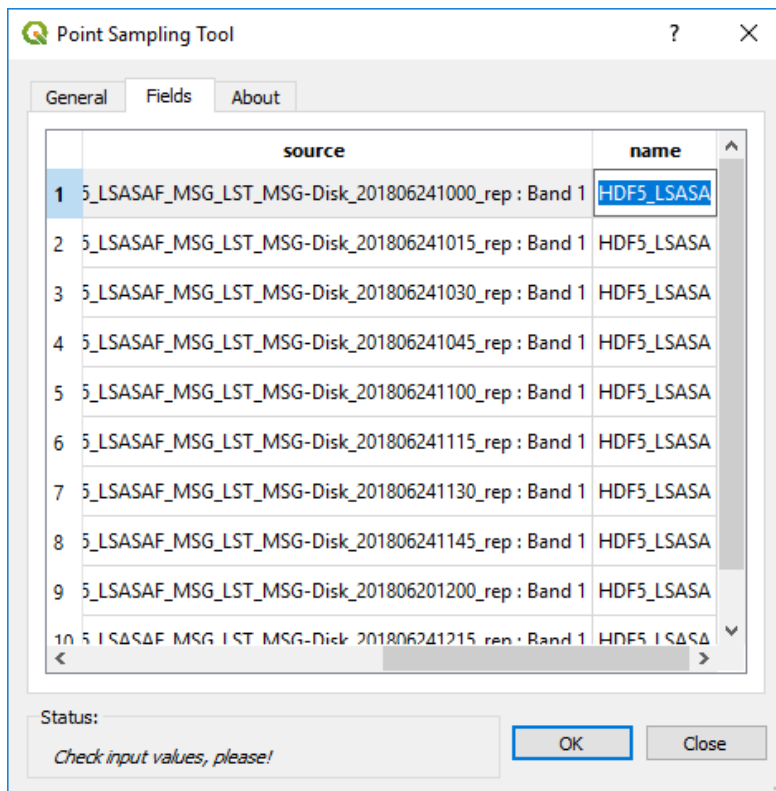**9.** On QGIS top menu Select **Plugins->Analyses->Point Sampling Tool**

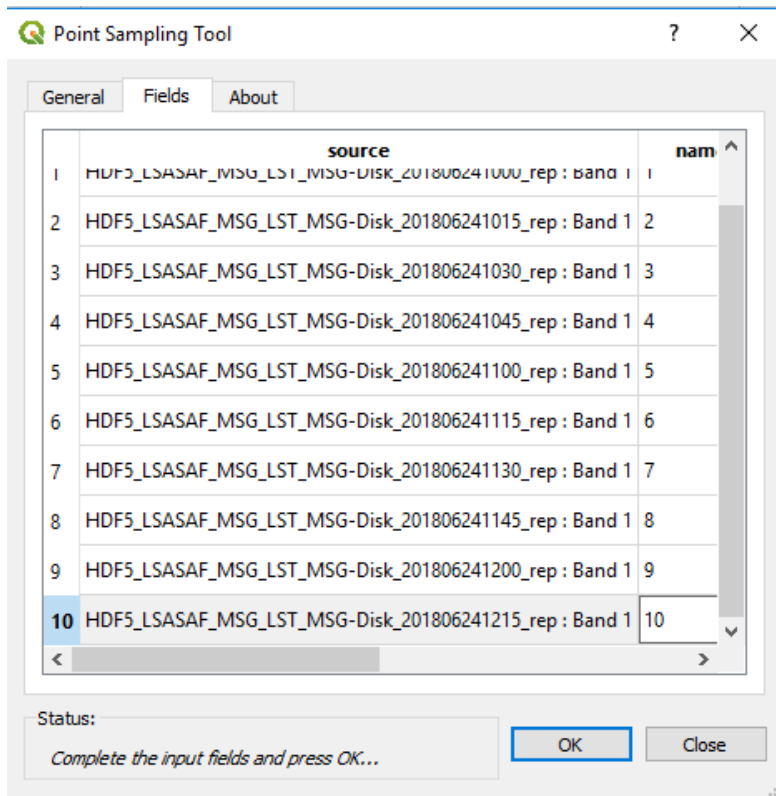In the dialog box that is opened, select the options as in the figure:
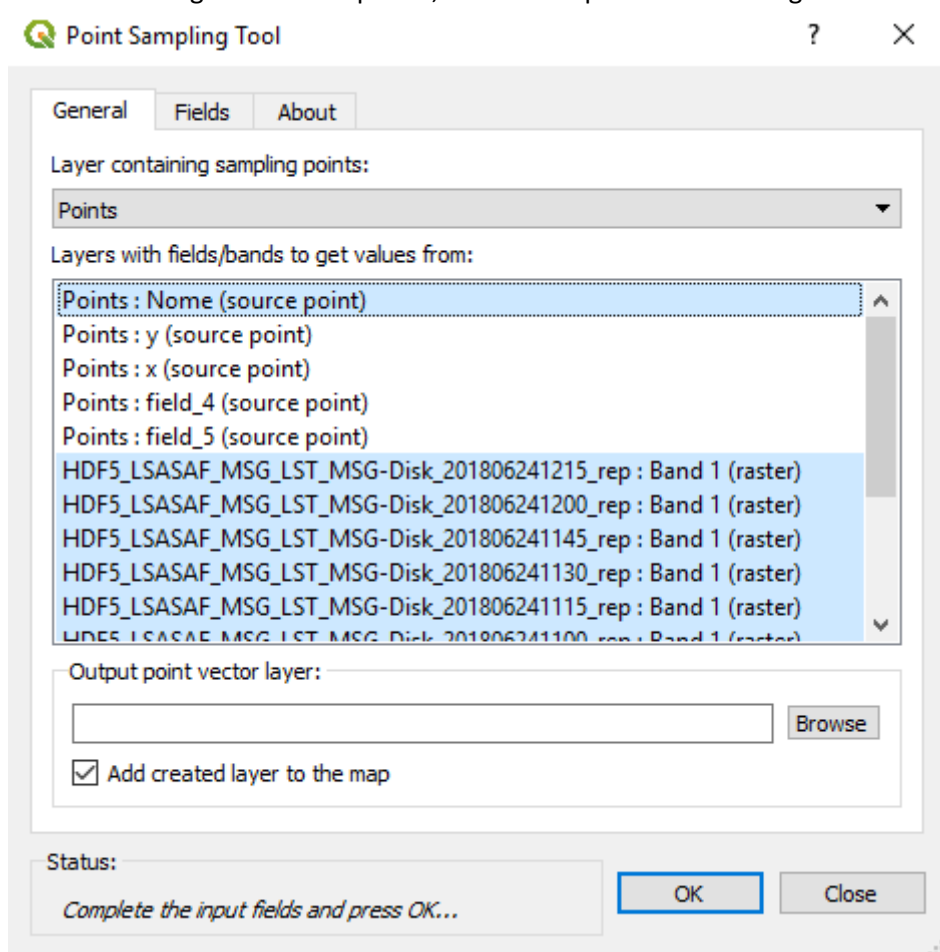
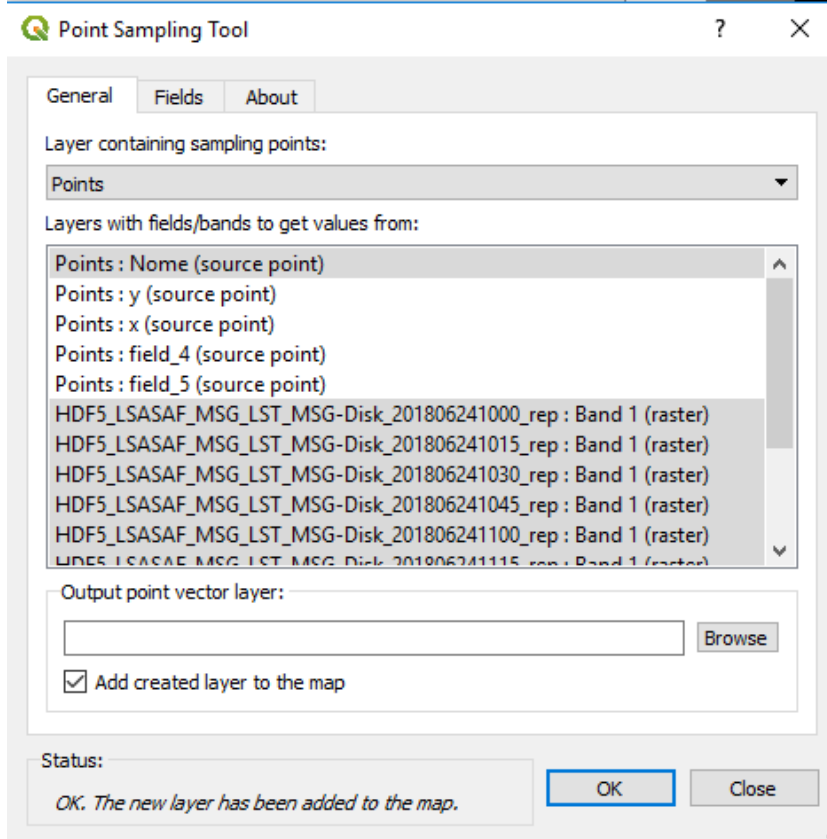When you click in the Ok button the following message is shown:

So you need to click in the **OK** button and then double-click in the name of each datafile and change it (for instance 1,2,3,…):
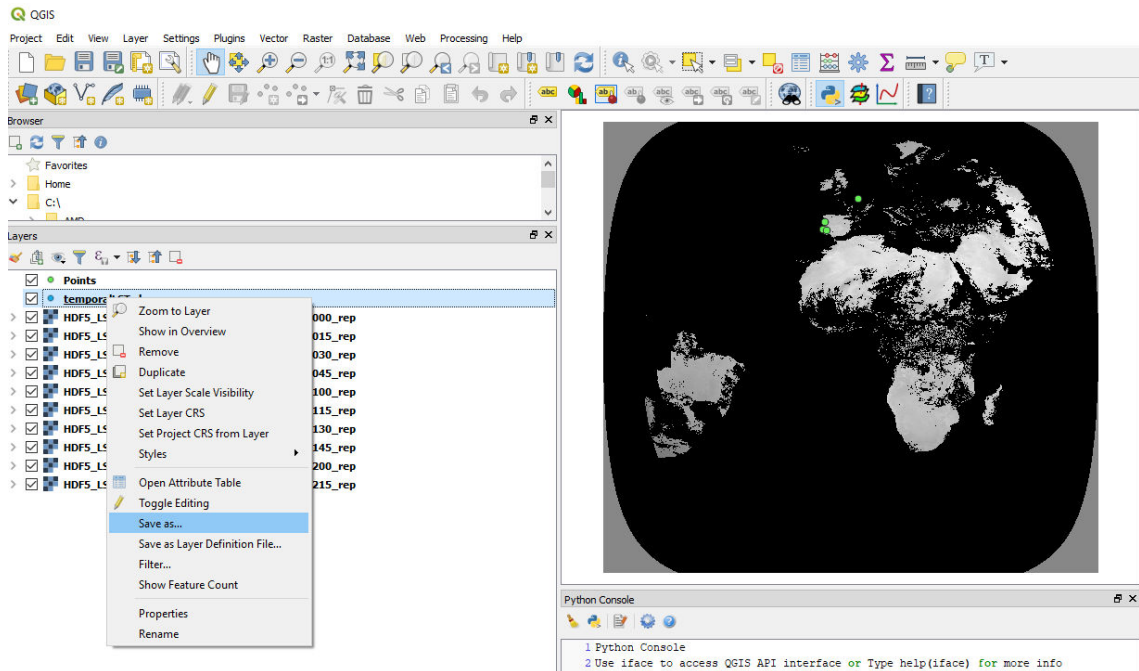
Finally select an output filename (and the directory where to save it) with extension
.shp you need and click **Ok.** You should get the message
Status: OK. The new layer has been added to the map:

10. Go to the Qgis layers window and click on the name of the created layer with the right button of you mouse and select **Save as…like in next figure:**

A **Save Vector Layer** window will pop up, and you will be able to save the .sh file as a CSV (be sure to select the directory where you are saving the file):
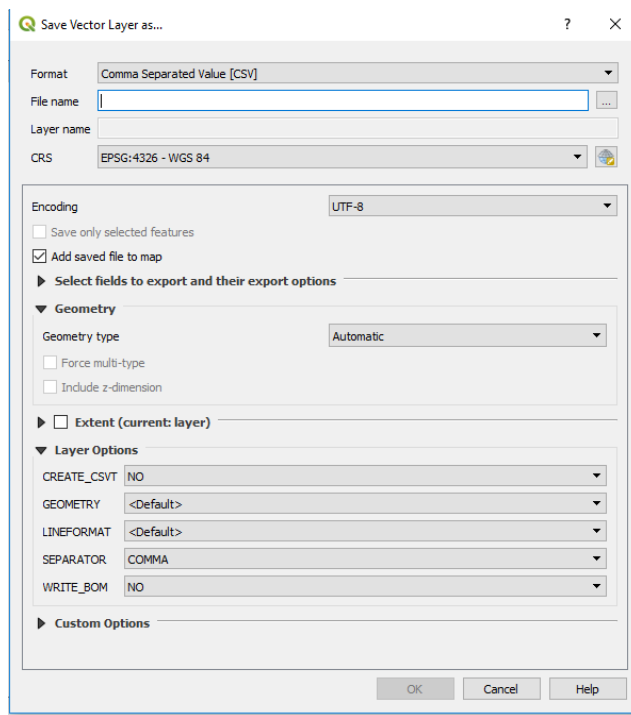
11. Open an excel spreadsheet. Go to **Data ->Obtain External Data-> From Text**. Select the previously saved .csv file. Open the file as comma separated fileds. You can now work with the data in excel to make some temporal plots, such as in the following example: