



PolSAR Practice Session: Instructions

Dr. Dipankar Mandal

Aim of the practice session:

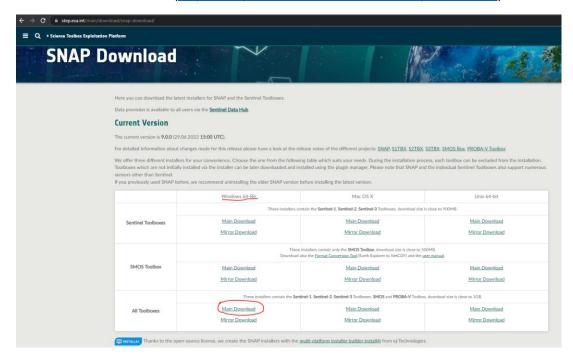
- Dual-pol SAR data processing in SNAP and Anaconda python environment.
- Implementation of crop biophysical parameter estimation and mapping algorithms in SNAP (with snappy)
- Dual-pol descriptors for target characterization and mapping.

Note: Although demonstrations will be on Windows system, Linux or Mac systems can be equally used to run several algorithms in SNAP.

A. Software installation:

1. Installing SNAP:

First download SNAP 9.0.0 (https://step.esa.int/main/download/snap-download/)



First install SNAP (no python path configuration is required at this time) downloaded from ESA repository. We used SNAP 64 bit version for Windows Operation system. General SNAP installation directory is C:\Program Files\snap







2. Installing Anaconda

Download Anaconda 3 from

https://repo.anaconda.com/archive/Anaconda3-2022.05-Windows-x86 64.exe

Install Anaconda3 in C:\Anaconda3 directory.

Don't install Anaconda in default directory

It should be 64 bit and Python3.6 supported.

3. Configuring SNAP with Anaconda python environment

Setup development environment for SNAP

- i. Open Anaconda Command prompt with Administrator
- ii. Add Community package management system

conda config --prepend channels conda-forge

iii. Create a new anaconda environment. We are using Python 3.6 for this example.

```
conda create -n snappy36 python=3.6
conda activate snappy36
```

where snappy36 is the name of the environment, and the python version is 3.6. Thenwe activate the environment by using its name snappy36. This will create a new environment inside the Anaconda directory as C: \Anaconda3\envs\snappy36

iv. Next, cd into the SNAP installation directory. Then run the following command.

```
>> cd C:\Program Files\snap\bin
>> snappy-conf C:\Anaconda3\envs\snappy36\python.exe
C:\Anaconda3\envs\snappy36\Lib
```

Here C:\Anaconda3\envs\snappy36\python.exe is the virtual environment python executable, and C:\Anaconda3\envs\snappy36\Lib is the directory where snappy will be installed.

v. Installing additional packages in the current Anaconda snappy36 environment. It may include numpy, scikit-learn which are commonly used in model developments and image processing. (Must have opened Anaconda cmd with adminprivileges)







```
>> conda activate snappy36
>> conda install numpy
>> conda install scikit-learn
>> conda install -c conda-forge matplotlib
```

- vi. Now close Anaconda command prompt.
- vii. Now, we are ready to do the development with snappy. To confirm that everything is working correctly,

First open Anaconda cmd (no Admin privileges are required)

```
>> conda activate snappy36
>> cd to snappy directory
(C:\Anaconda3\envs\snappy36\Lib\snappy)
>> python
>> import snappy
```

Resources:

- https://senbox.atlassian.net/wiki/spaces/SNAP/pages/19300362/How+to+use+the+ SNAP+API+from+Python
- SNAP Anaconda Installation or configure: https://thegeoict.com/blog/2019/08/21/setup-development-environment-for-snap/

B. Data download:

Download all datasets from the shared drive link. (Approximately 300 Mb volume)

https://tubcloud.tu-berlin.de/s/MXR9kCXR2t3nrRQ?path=%2FPolSAR%2FPractice%20Session%2FData

C. Codes:

Download all codes from the shared drive link.

https://tubcloud.tu-berlin.de/s/MXR9kCXR2t3nrRQ?path=%2FPolSAR%2FPractice%20Session%2FCodes OR

https://github.com/mrslabiitb/GRSS-IADF-School2022

