

multitempfilter

A multi-temporal SAR backscatter speckle filter

Usage

Required packages are included in the supplied environment filter.yml

Input parameters

dir: input data sets directory

filelist: array of input data sets file names

data sets are co-registered equal geometry float32 detected (ENVI 4 data type)

wavdir: directory for wavelet data representation

outfileroot: root filename of the filtered data sets

dp: number of pixel in the input data set

dl: number of lines in the input data set

skipdwt: switch set to 1 to skip the wavelet transform step

skiplmean: set to one to skip noise estimation step

Input data sets

Data sets are a time-series of co-registered, equal viewing geometry (same orbit and frame), ground range detected backscatter (amplitude or intensity). Format: float32 (ENVI 4 data type)

Output data sets

The N filtered time series (float32) will be stored in directory dir with file names:

outfilerootX_filt with X=1..N

Sample call

Tandem-X Congo: time-series of 3 HH intensity sets

```
filelist = 'congo1_MASTER_MONOSTATIC_HH_pwr_rsp',  
'congo2HH_congo2_MASTER_MONOSTATIC_HH_pwr_rsp',  
'congo1_MASTER_MONOSTATIC_HV_pwr_rsp'
```

```
dir = 'O:/pythonTest/tandemCongo'
```

```
wavdir = 'O:/pythonTest/tandemCongo/wav2'
outfile='congo'
dp = 4192
dl=4387
skipdwt=0
skiplmean=0
multitempfilterV2(dir, filelist, wavdir, outfile, dp, dl, 0, 0)
```

Tandem-X Sungai: time series with 7 HH intensity sets

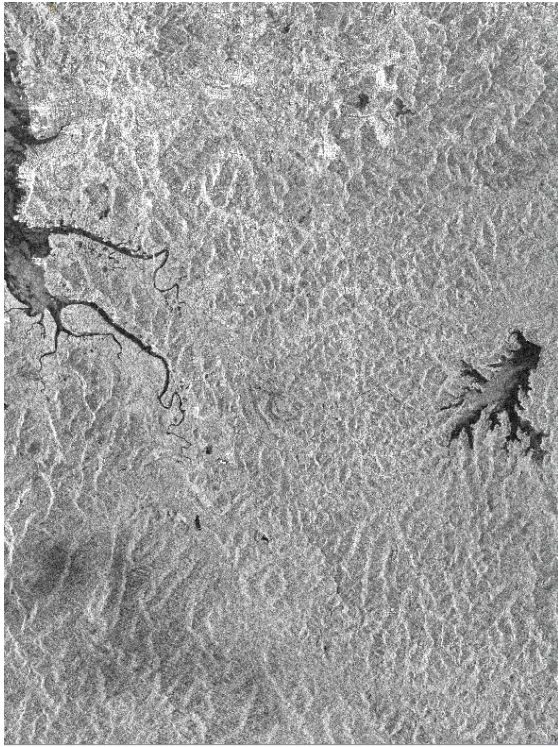
```
dir='//BEETHOVEN/datasets/Tandem-X/SungaiWain/slantCoreg'
filelist='set1_ml_HH_pwr', 'set2_ml_HH_pwr_rsp', 'set3_ml_HH_pwr_rsp', 'set4_ml_HH_pwr_rsp',
'set5_ml_HH_pwr_rsp', 'set6_ml_HH_pwr_rsp', 'set7_ml_HH_pwr_rsp'
wavdir='O:/TanDEM-X/sungai/multitempPwr'
outfile='sungaiHHpwr'
dp=6944
dl=13680
multitempfilterV2(dir, filelist, wavdir, outfile, dp, dl, 0, 0)
```

Test cases

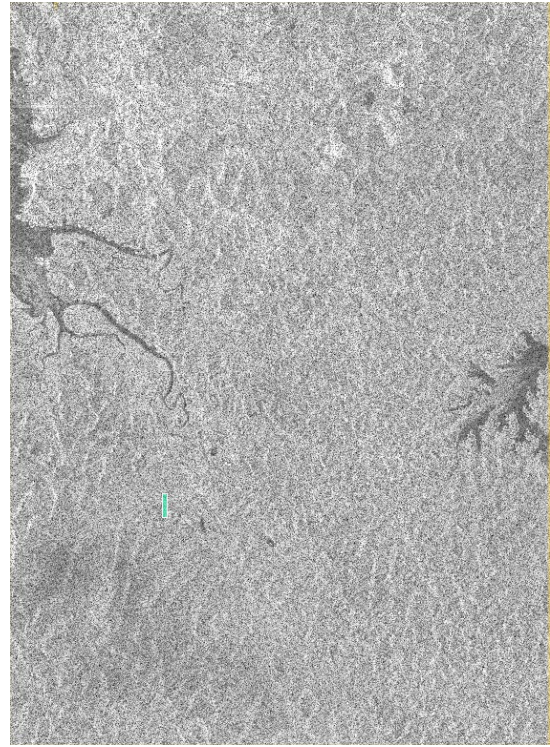
The code was tested using

- 1) A time series of 7 ground range detected sets (HH, intensity) of Tandem-X data supplied by DLR through a research project (AO VEGE6702). The data set was acquired over the Sunga-Wain protected forest in East Kalimantan.

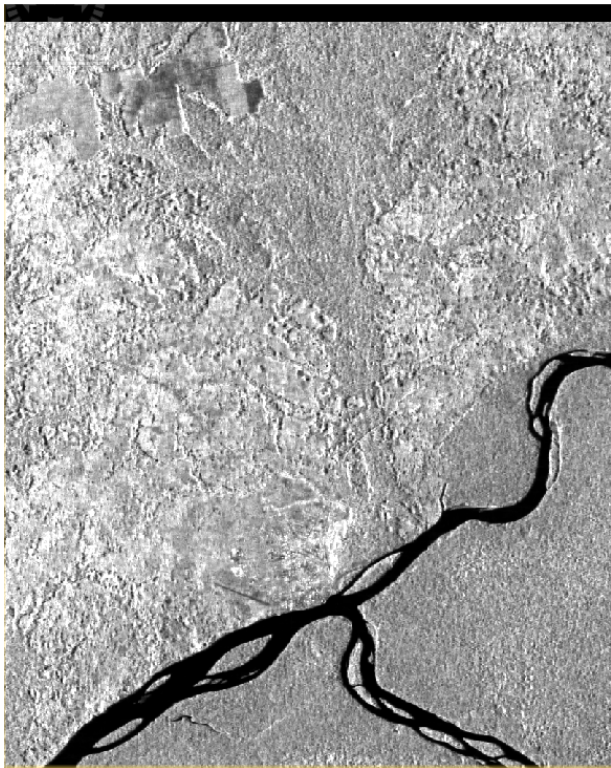
Examples



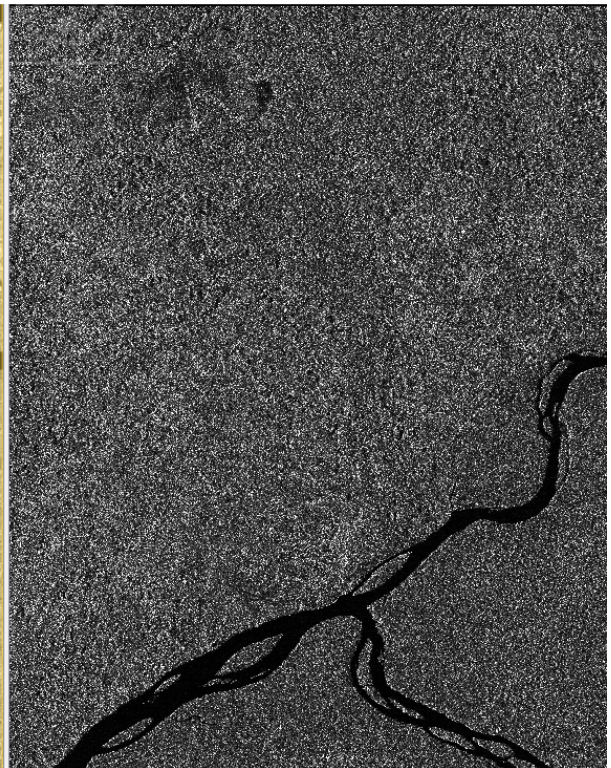
Filtered set



Original SungaiWain HH intensity set



Filtered Congo HH intensity set



Original set