

Forest SAR & Coherence

(Practical Session 1)

Erxue Chen Lei Zhao

Chinese Academy of forestry

Forest cover (change) mapping using ALOS PALSAR mosaics

Mikhail Urbazaev

Christian Thiel

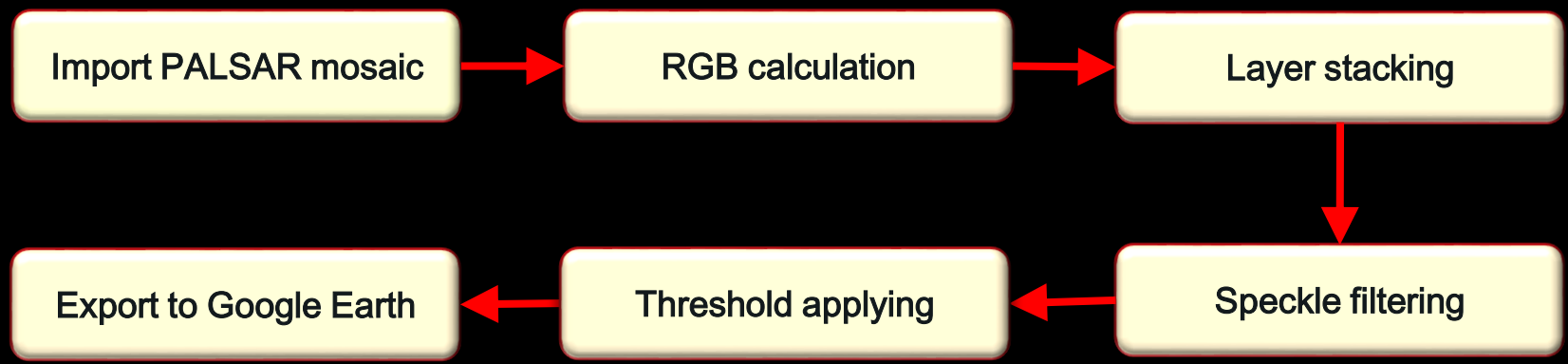
Christiane Schullius

Robert Eckardt

Friedrich-Schiller-University Jena Department
for Earth Observation
Jena, Germany



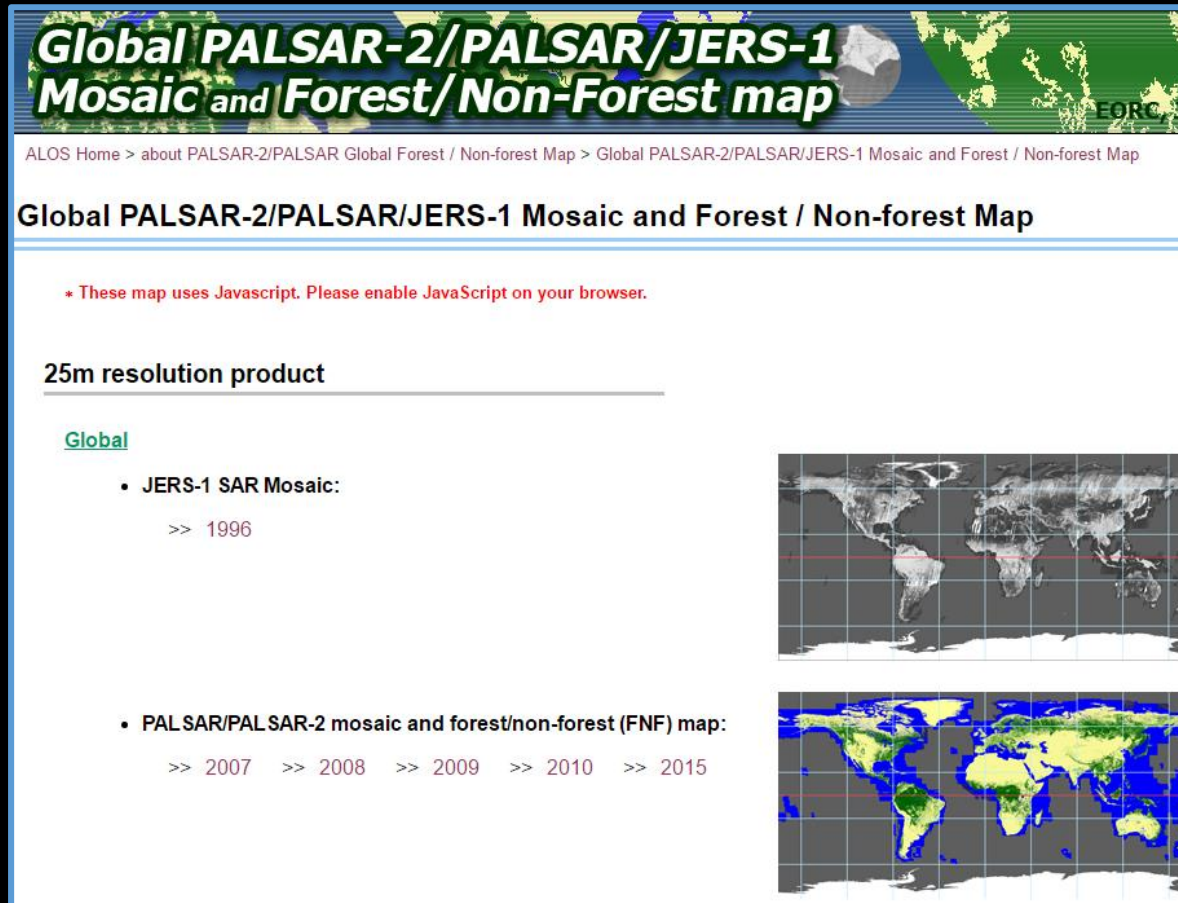
- **Import ALOS PALSAR mosaics in SNAP**
- **Processing of PALSAR mosaics (layer stacking, RGB, speckle filter)**
- **Forest mapping for $t1$ and $t2$ based on backscatter threshold**
- **Forest cover change mapping**



ALOS PALSAR and ALOS-2 PALSAR-2 L-band SAR backscatter mosaics

Free and open access (25m)

Registration: http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/data/index.htm



Global PALSAR-2/PALSAR/JERS-1 Mosaic and Forest/Non-Forest map

ALOS Home > about PALSAR-2/PALSAR Global Forest / Non-forest Map > Global PALSAR-2/PALSAR/JERS-1 Mosaic and Forest / Non-forest Map

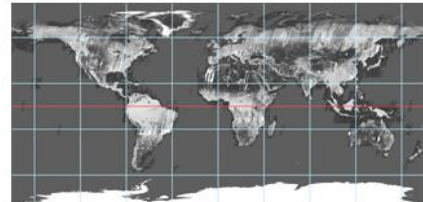
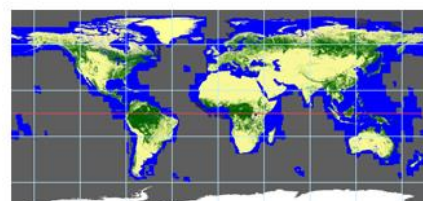
Global PALSAR-2/PALSAR/JERS-1 Mosaic and Forest / Non-forest Map

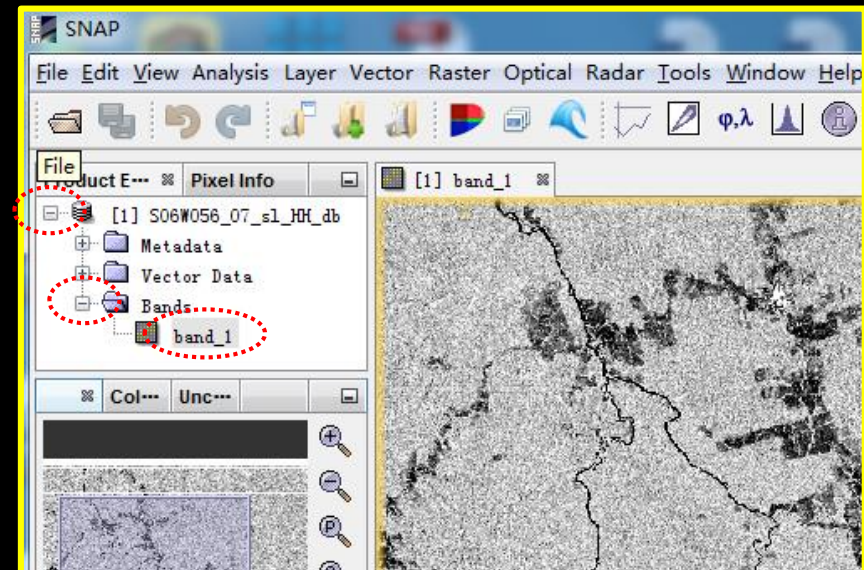
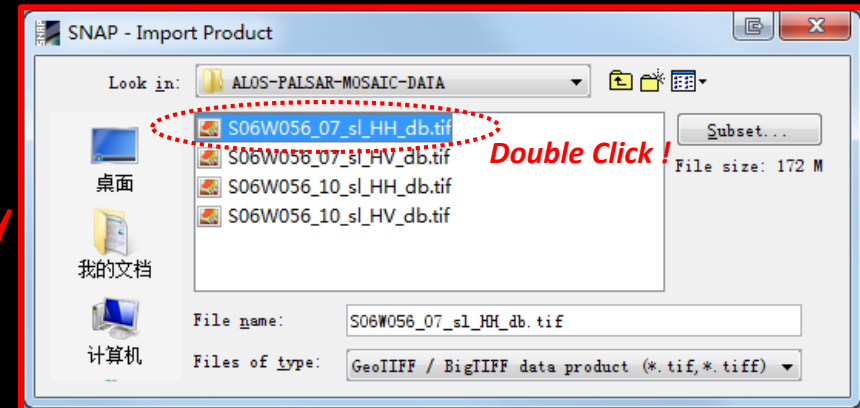
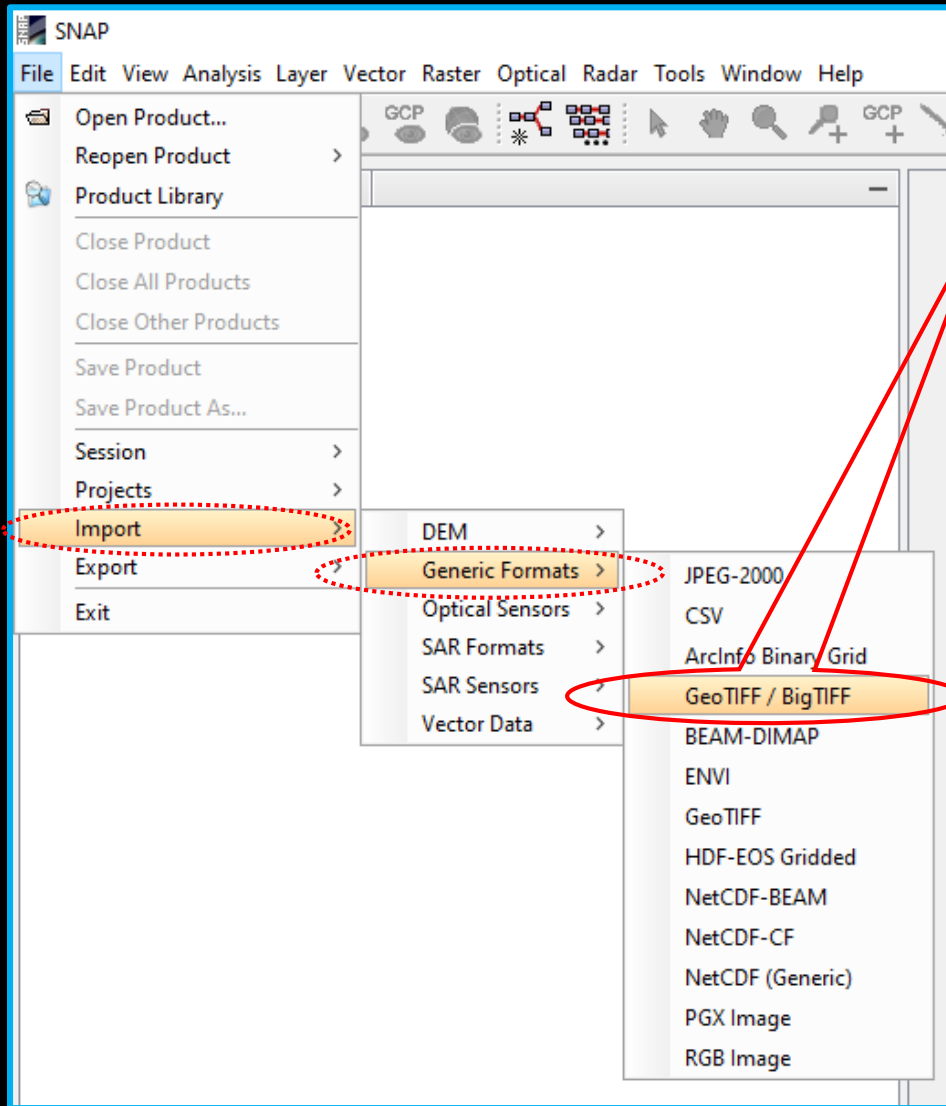
* These map uses Javascript. Please enable JavaScript on your browser.

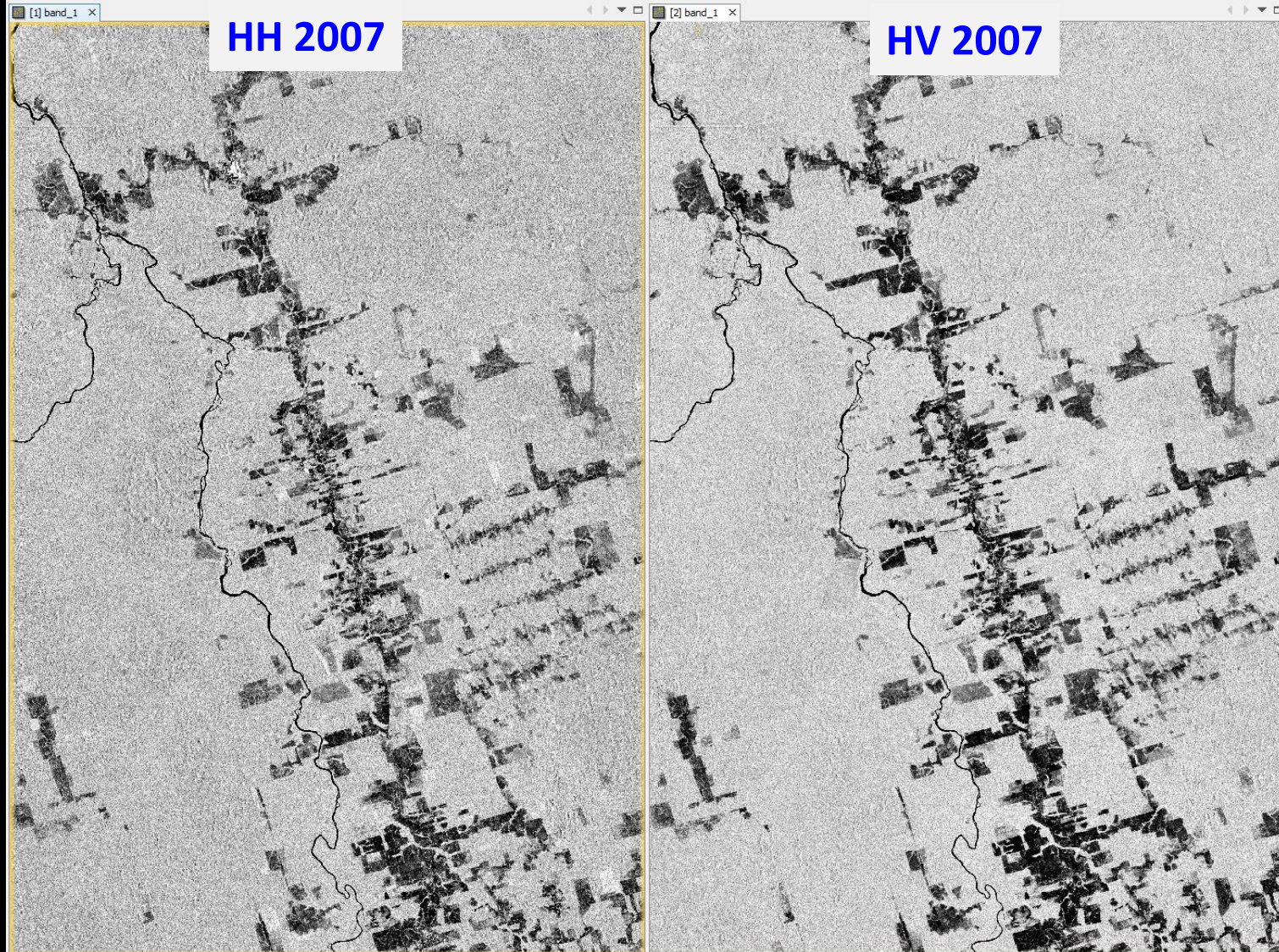
25m resolution product

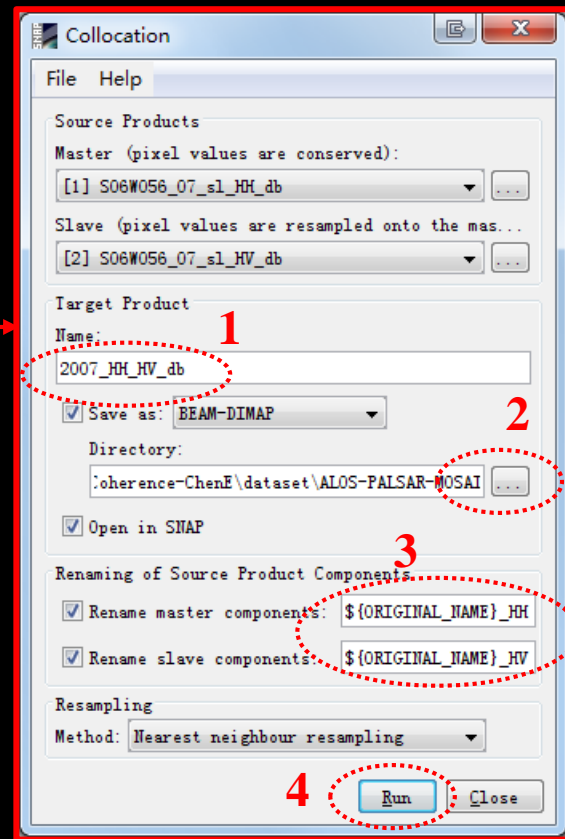
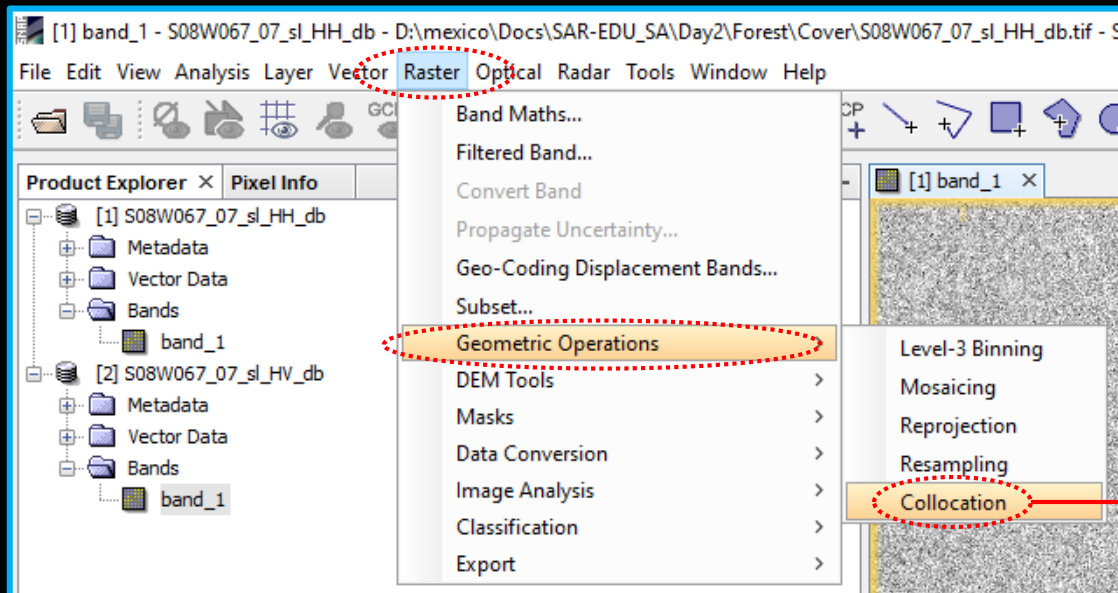
Global

- JERS-1 SAR Mosaic:
 - >> 1996
- PALSAR/PALSAR-2 mosaic and forest/non-forest (FNF) map:
 - >> 2007 >> 2008 >> 2009 >> 2010 >> 2015

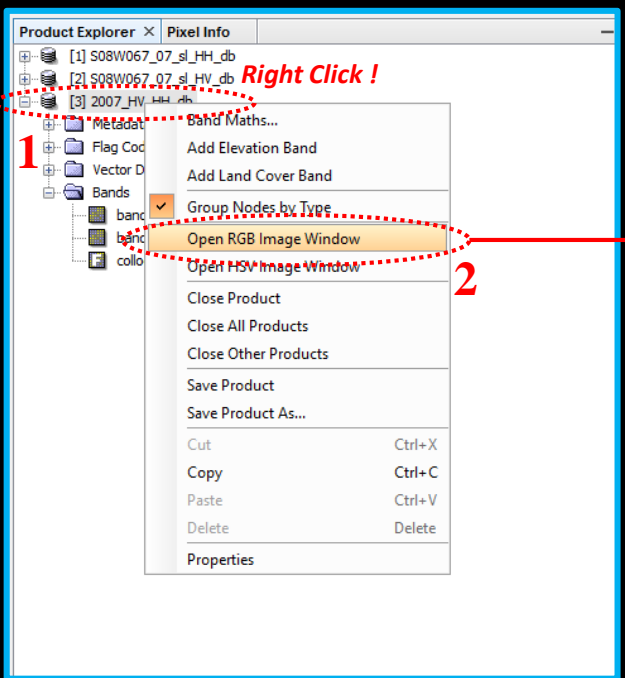






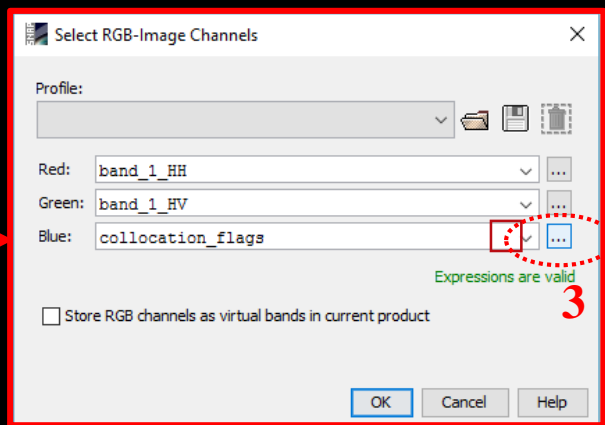
1. Fill in the output file name.
2. Select the output path.
3. Modify the suffix of the band name.
4. Run.

RGB composite

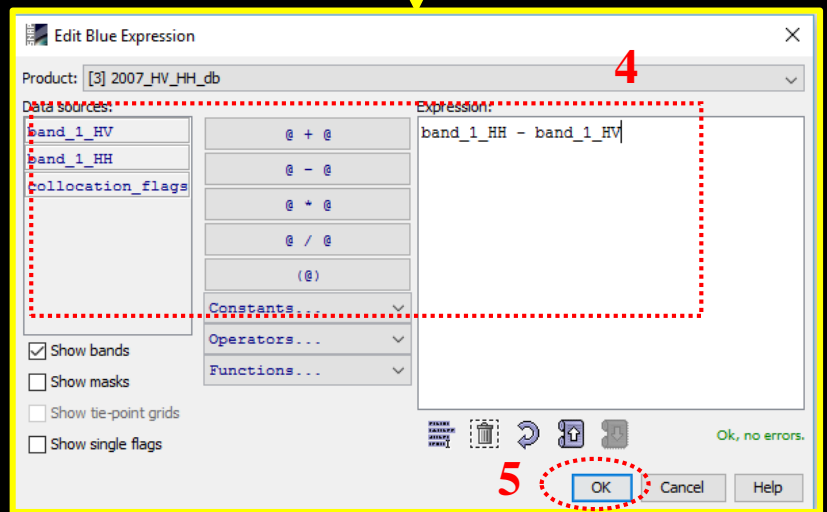


1 Right Click !

2

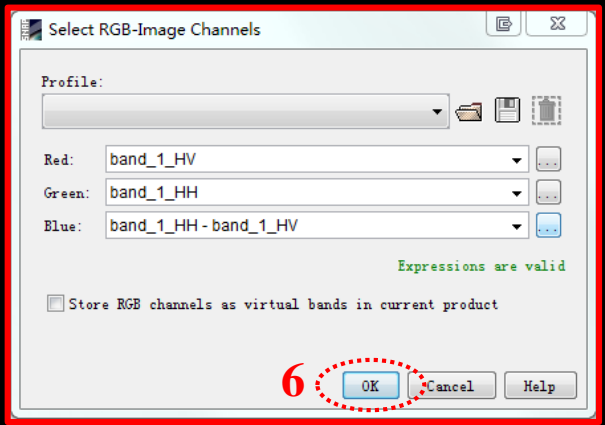


3



4

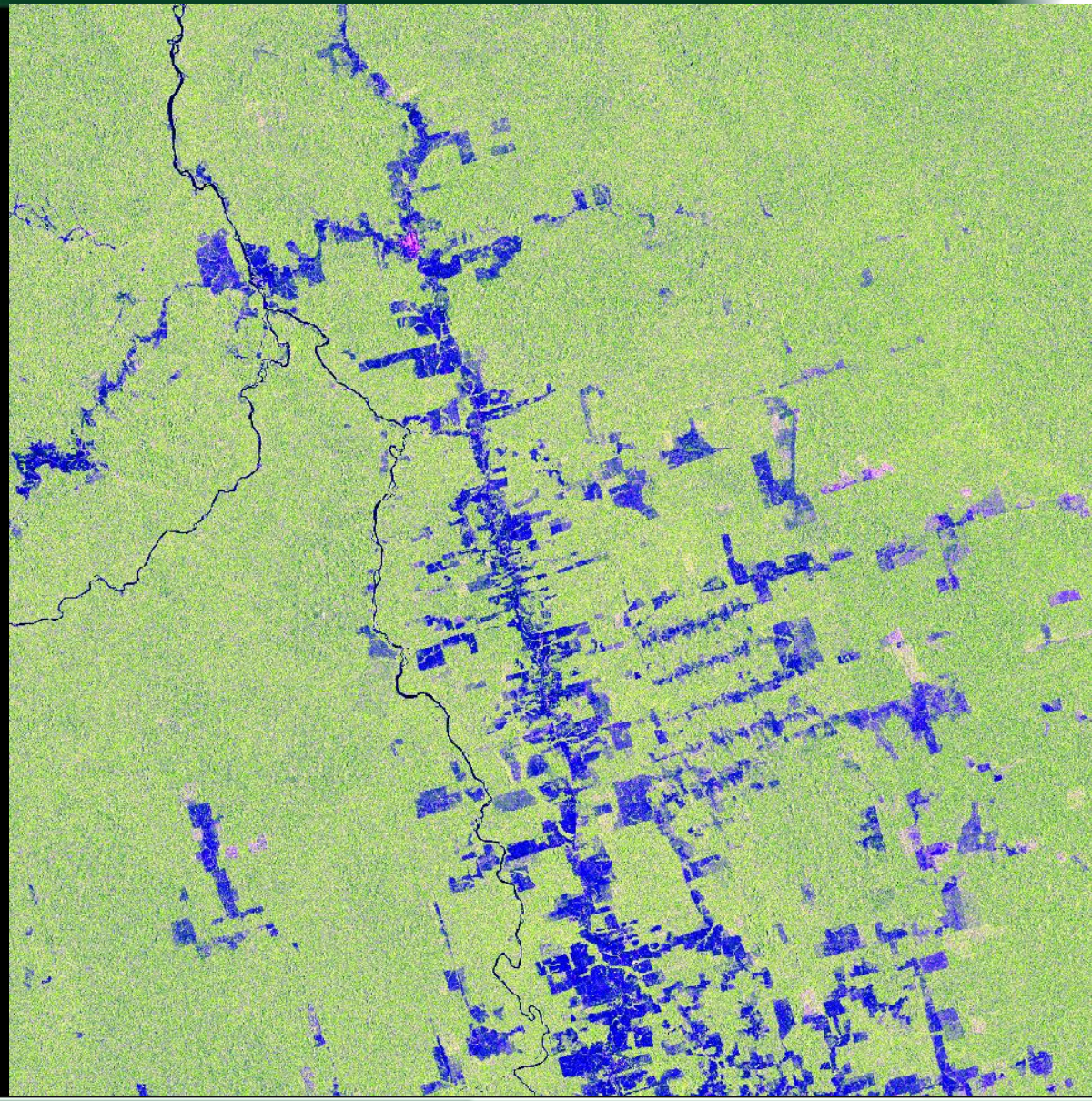
5

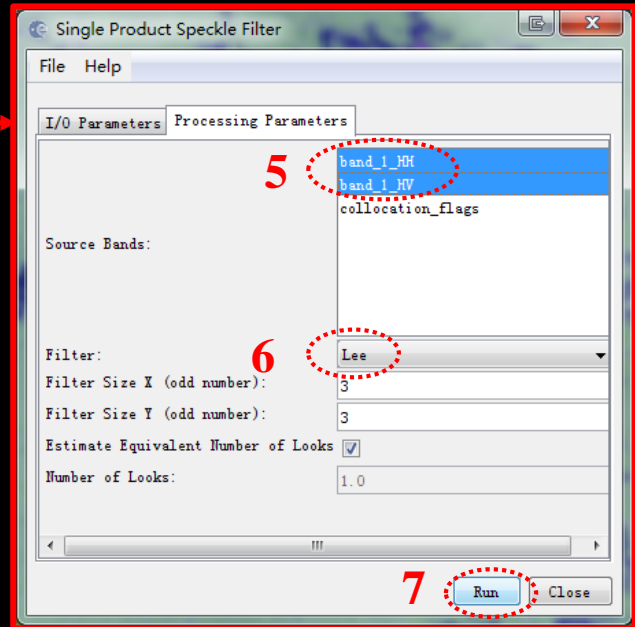
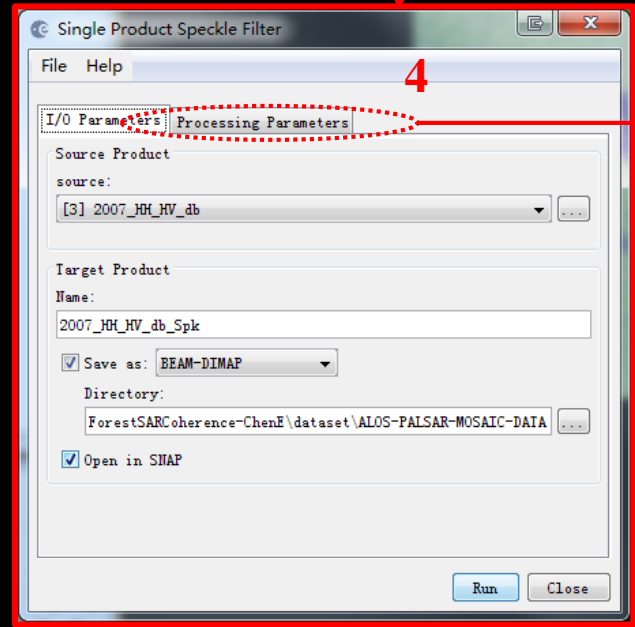
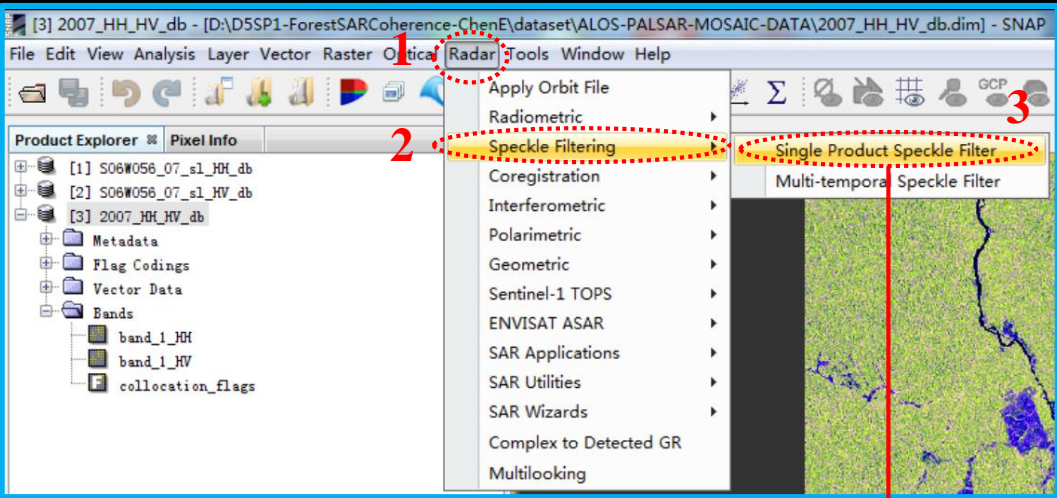


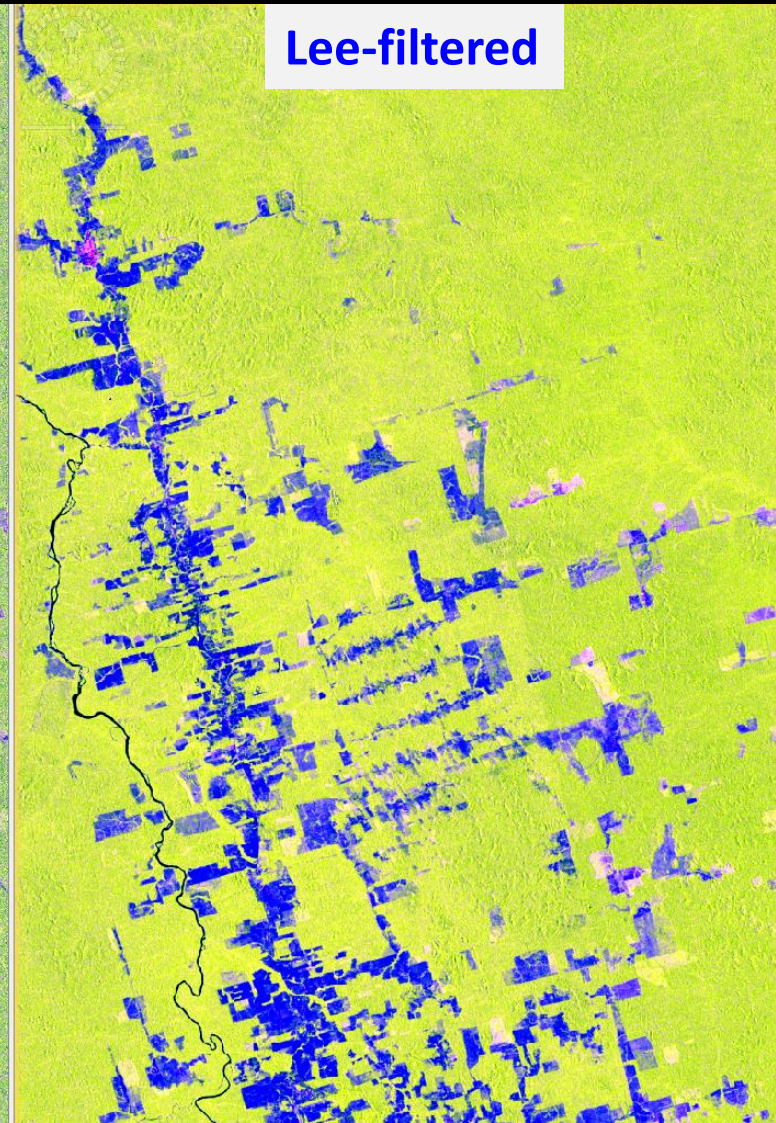
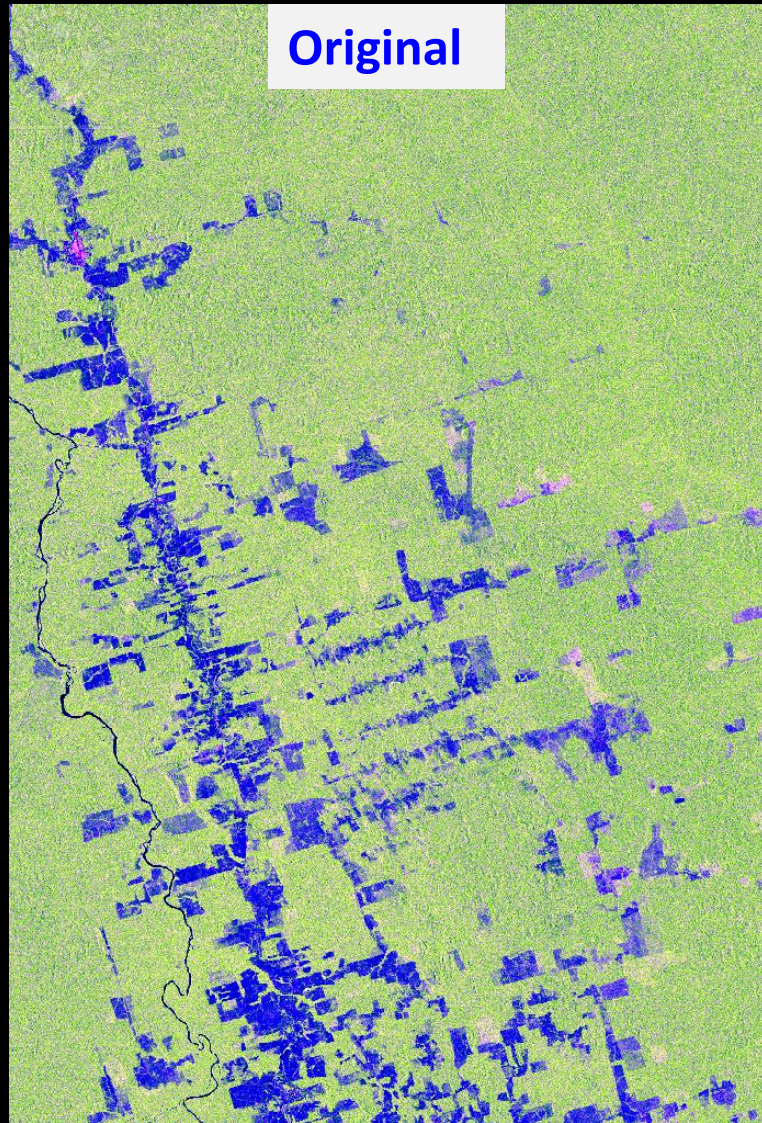
6

R: HH
G: HV
B: HH-HV

Histogram
Stretch 95%







Forest mapping

[4] RGB - 2007_HH_HV_db_Spk 1 D:\D5SP1-ForestSARCoherence-ChenE\dataset\ALC

File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Band Maths... (highlighted)

Product Explorer

- [1] S06W056_07_sl_HH_db
- [2] S06W056_07_sl_HV_db
- [3] 2007_HH_HV_db
 - Metadata
 - Flag Codings
 - Vector Data
 - Bands
 - band_1_HH
 - band_1_HV
 - collocation_flags
- [4] 2007_HH_HV_db_Spk
 - Metadata
 - Flag Codings

Band Maths

Target product: [3] 2007_HH_HV_db

Name: new_band_1

Description:

Unit:

Spectral wavelength: 0.0

Virtual (save expression only, don't store data)

Replace NaN and infinity results by NaN

Generate associated uncertainty band

Band maths expression:

Load... Save... Edit Expression... (highlighted)

OK Cancel Help

Band Maths

Target product: [3] 2007_HH_HV_db

Name: new_band_1

Description:

Unit:

Spectral wavelength: 0.0

Virtual (save expression only, don't store data)

Replace NaN and infinity results by NaN

Generate associated uncertainty band

Band maths expression: if band_1_HV < -15 then 0 else 1

Load... Save... Edit Expression...

OK (highlighted) Cancel Help

Band Maths Expression Editor

Product: [3] 2007_HH_HV_db

Data sources:

- band_1_HH
- band_1_HV
- collocation_flags

Expression: if band_1_HV < -15 then 0 else 1

Show bands

Show masks

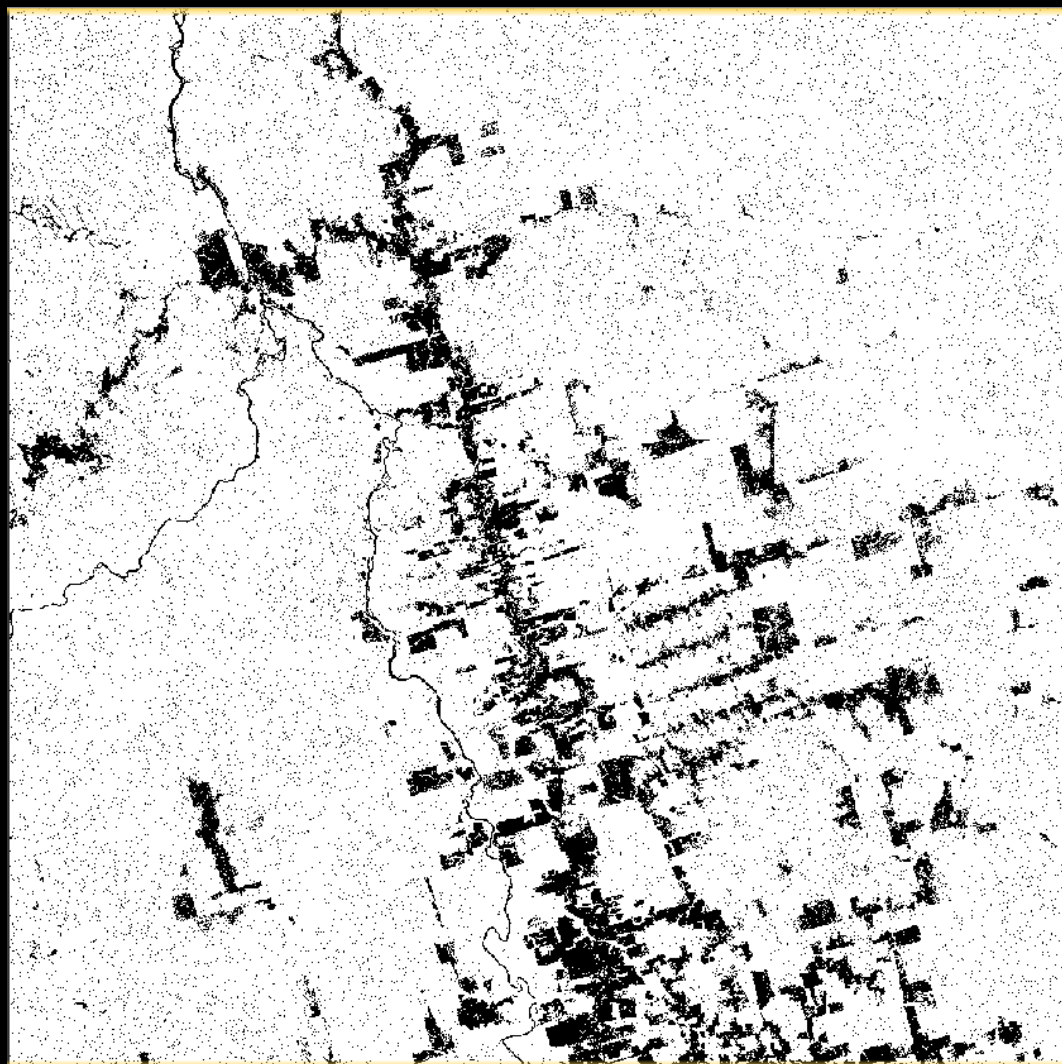
Show tie-point grids

Show single flags

Constants... Operators... Functions...

OK (highlighted) Cancel Help

Forest mapping result based on Original data

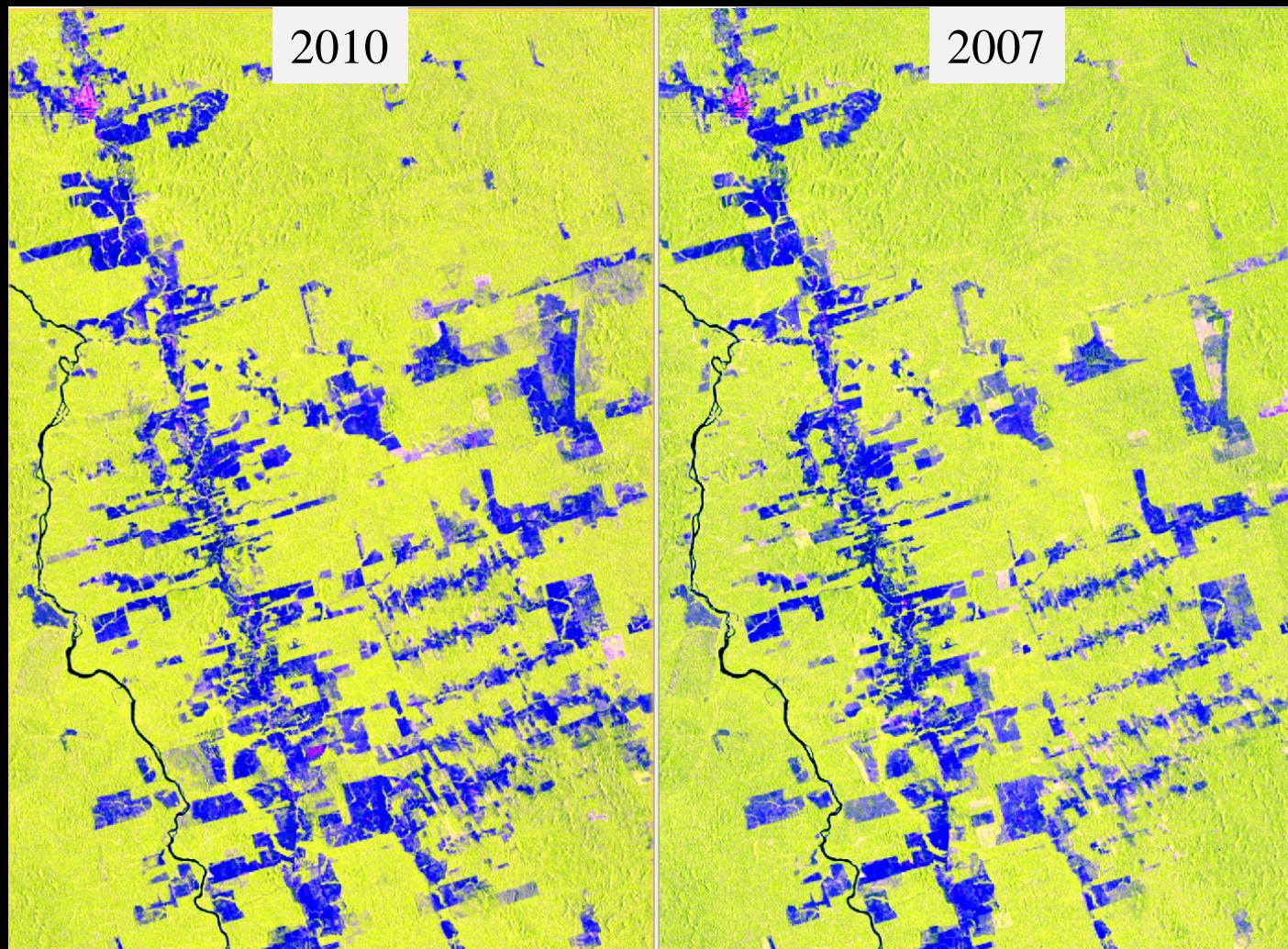


Do it yourself:
Repeat the steps for the Lee-filtered data.

Forest mapping



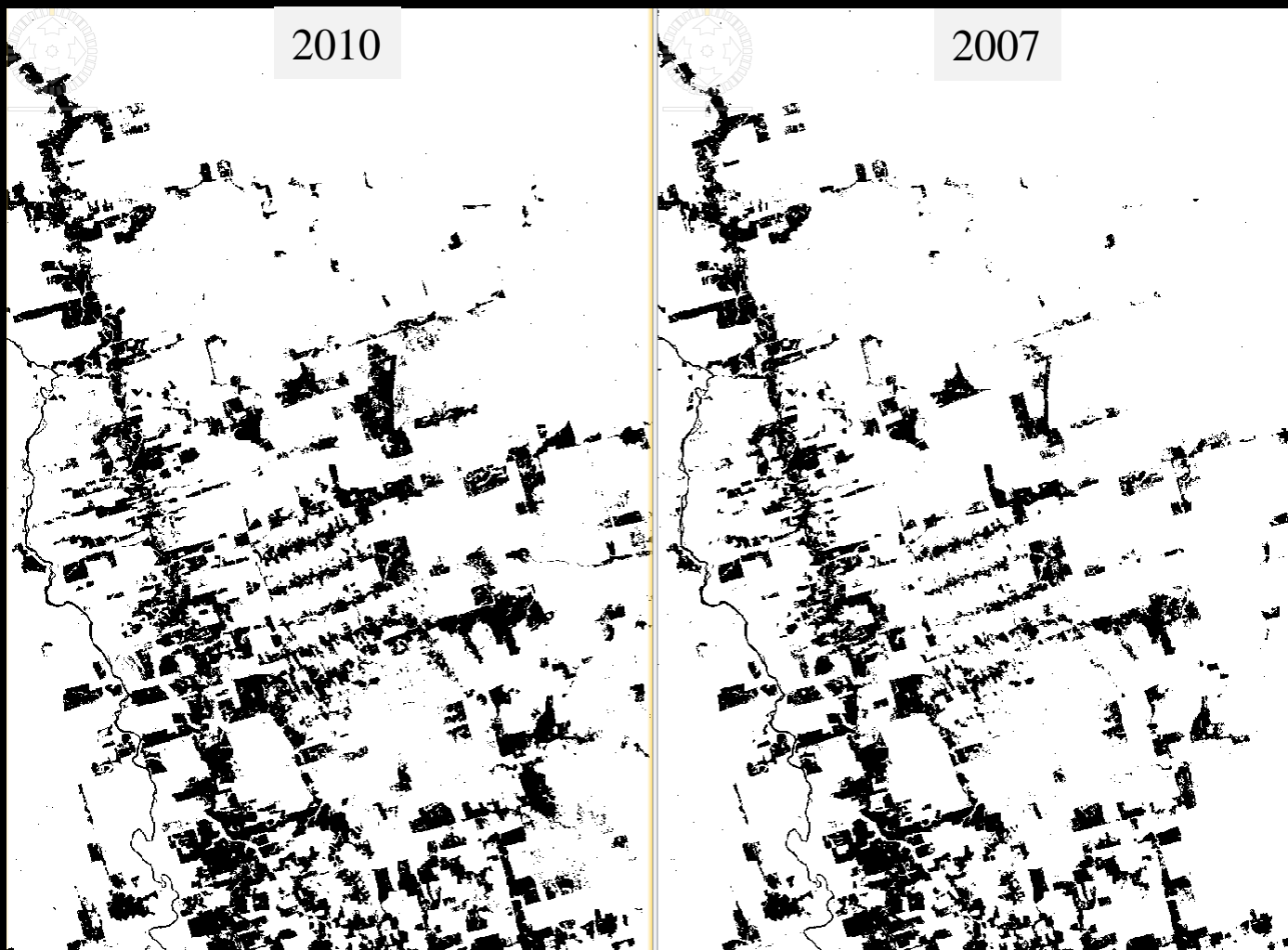
Do it yourself: Repeat the steps for the ALOS PALSAR backscatter from 2010

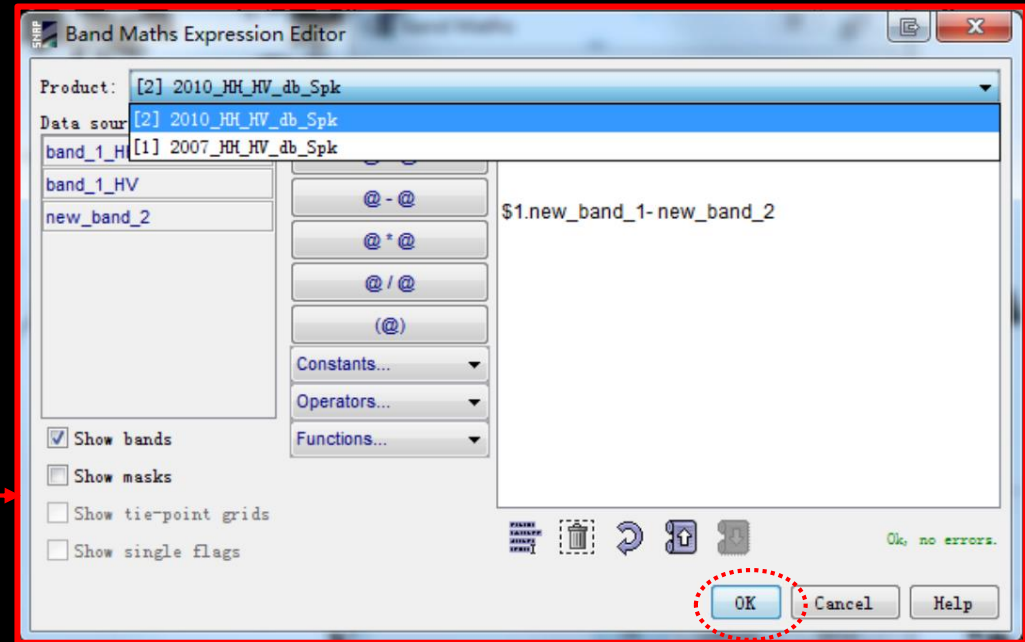
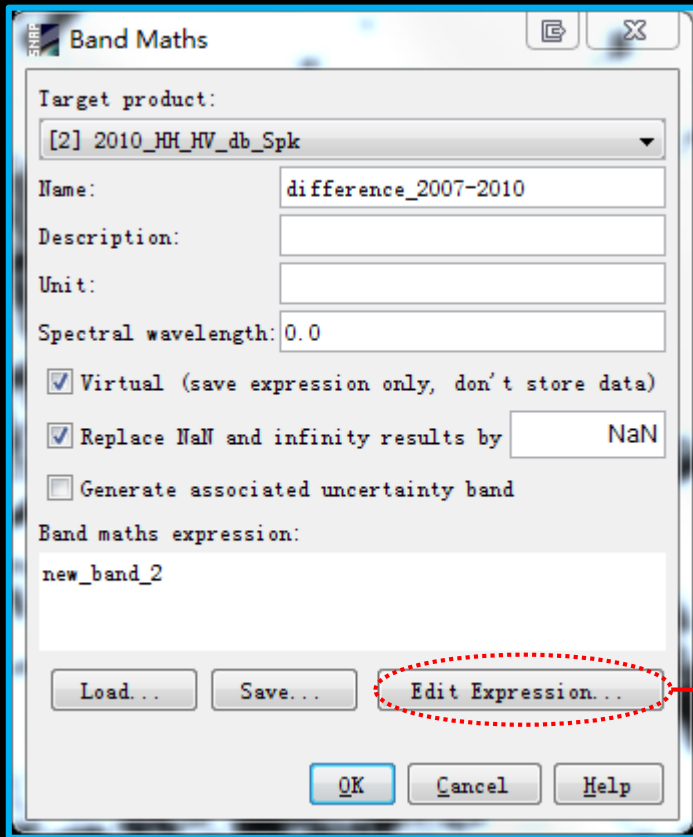


R: HH
G: HV
B: HH-HV

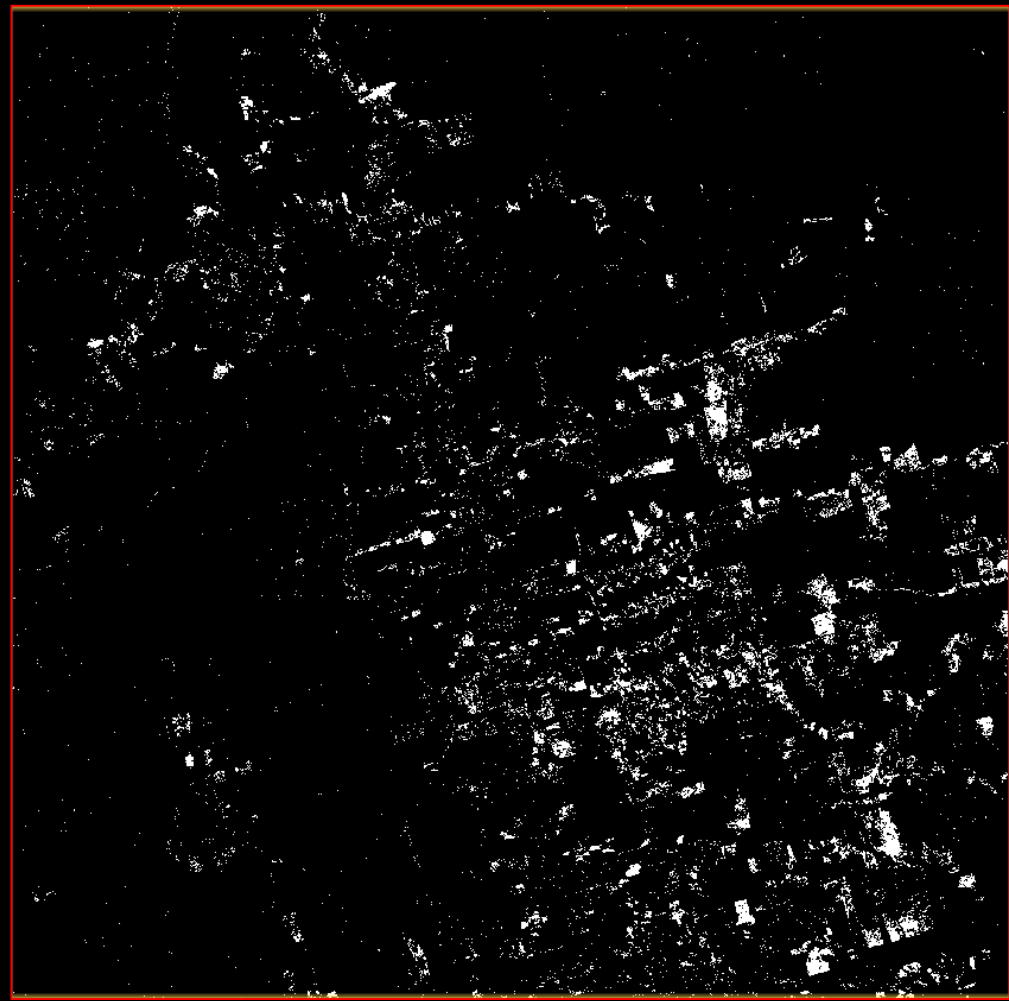
Histogram
Stretch 95%

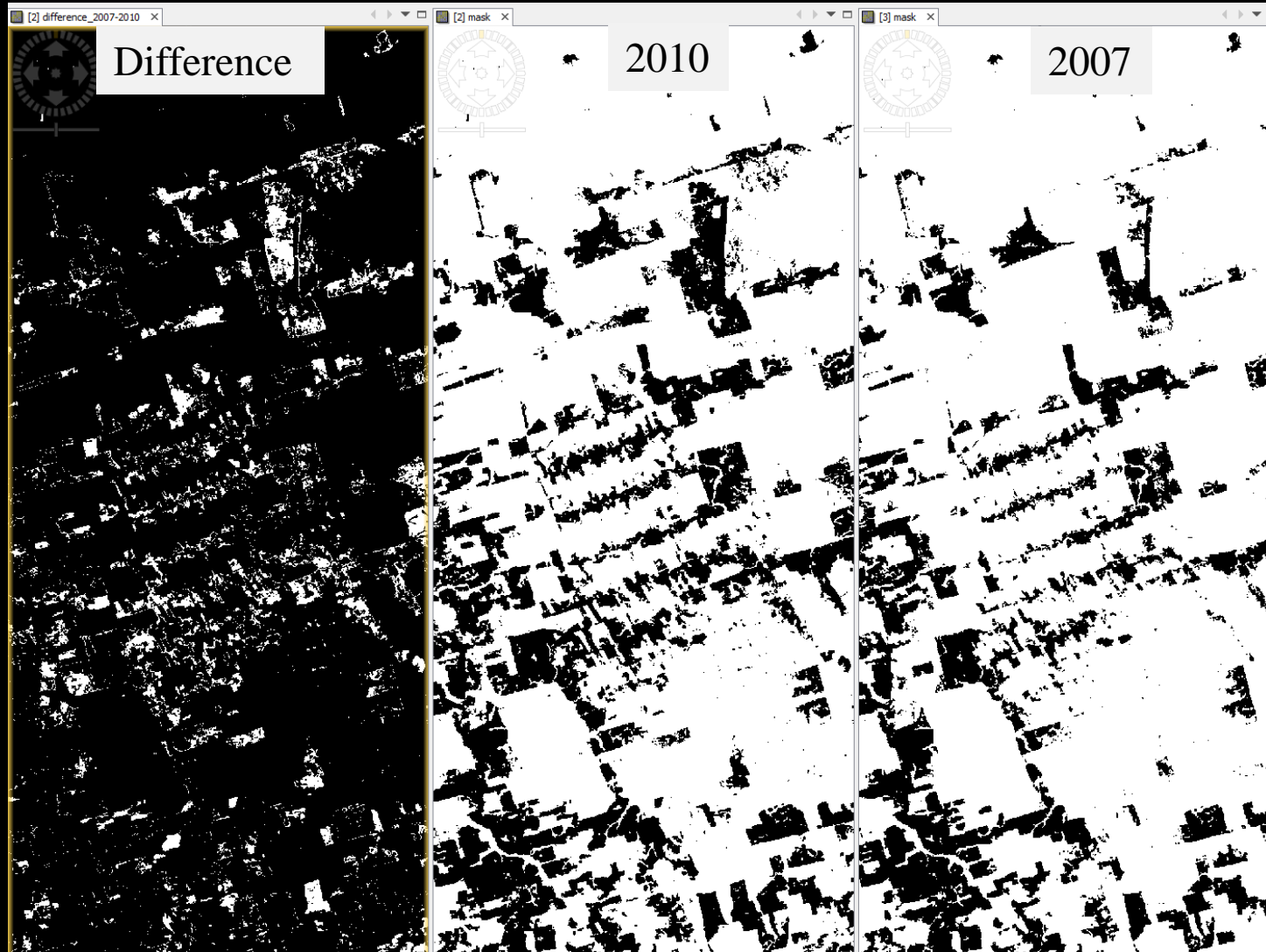
Do it yourself: Repeat the steps for the ALOS PALSAR backscatter from 2010

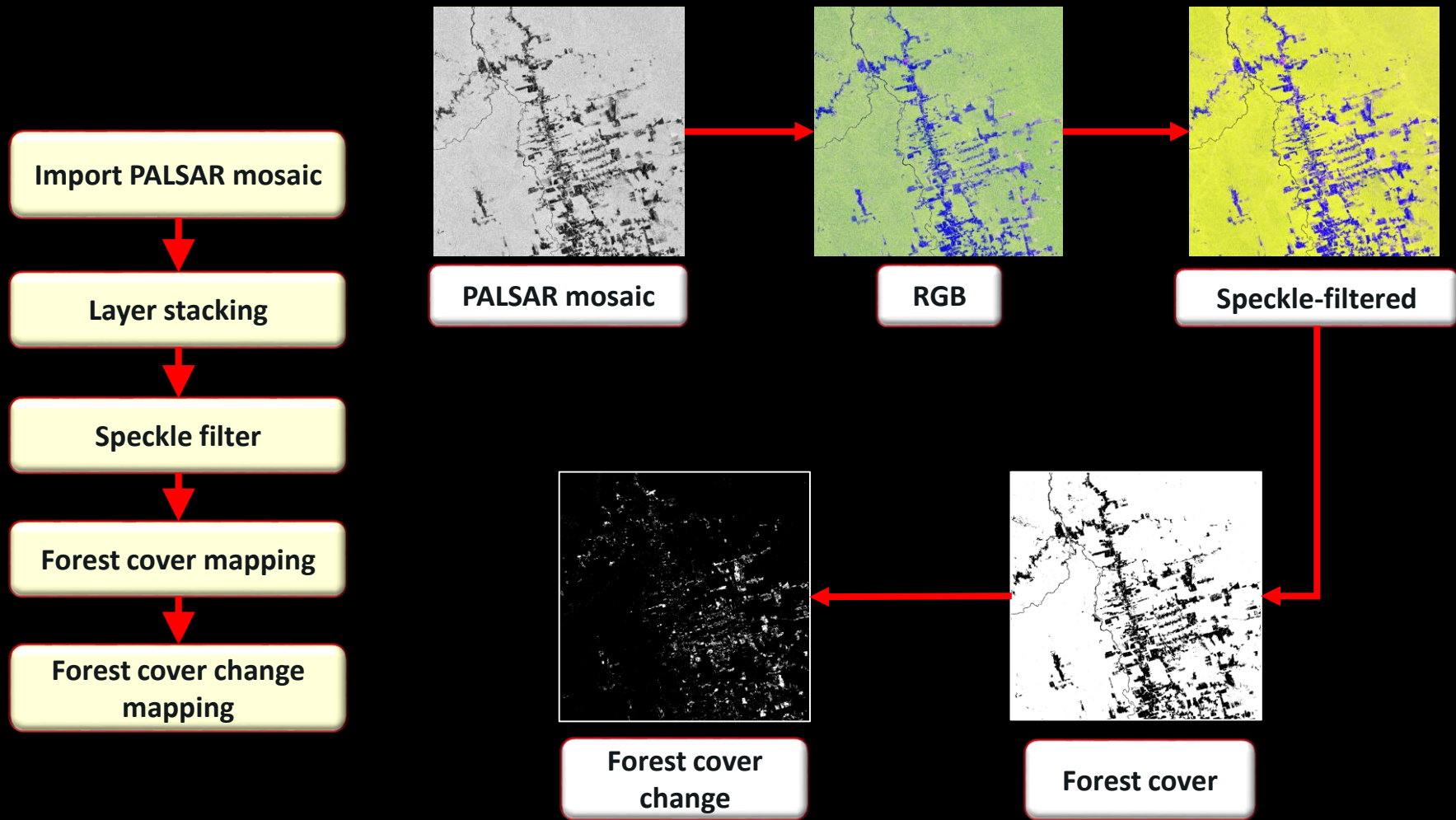




Forest cover change mapping result:







SAR-EDU – SAR Remote Sensing Educational Initiative

<https://saredu.dlr.de/>

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Federal Ministry
of Economics
and Technology

on the basis of a decision
by the German Bundestag