Satellite Applications

# Practical Session:
# 4 Exercise – GPT (Graph processing Tool)

Andrea Minchella **(andrea.minchella@sa.catapult.org.uk)**

21-22/01/2016 – “ESA SNAP-Sentinel-1 Training Course”
Satellite Applications Catapult - Electron Building, Harwell, Oxfordshire

Innovate UK
Technology Strategy Board

CATAPULT

# GPT (Graph processing Tool)

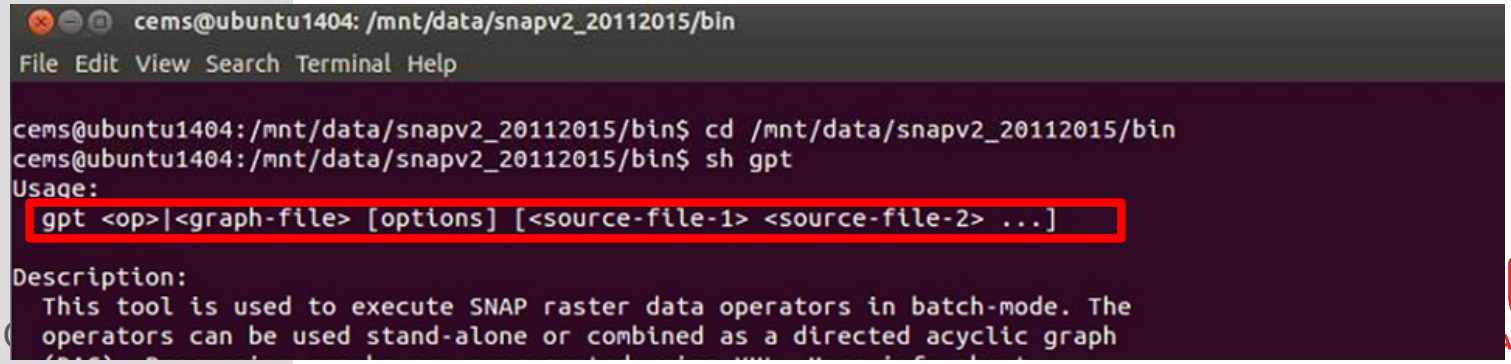
GPT (Graph processing Tool) is used to execute SNAP raster data operators in batch-mode

- Operators can be used as standing alone
- Operators combined as a (direct acyclic) **processing graph**, represented using **XML**

GPT engine located in: ./snap_directory_installation/bin

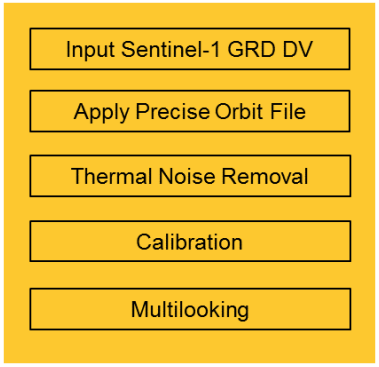
e.g.: /mnt/data/snapv2_20112015/bin

How to launch the gpt engine : /mnt/data/snapv2_20112015/bin/gpt.sh



# Processing graph

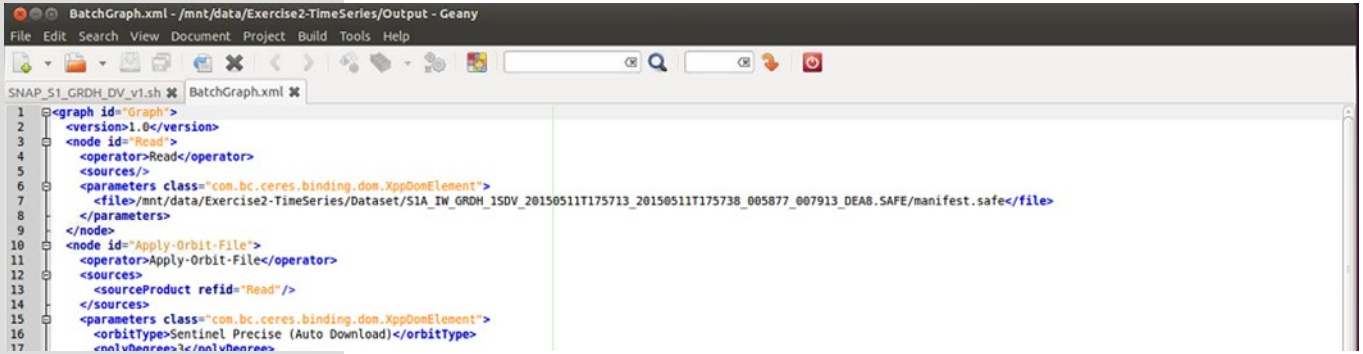
In Exercise 2, we have created a processing graph by using the Graph builder "batchgraph.xml" implementing this processing




- Open "batchgraph.xml" located in the folder

  /mnt/data/Exercise2-TimeSeries/Output

  with a text editor:




To execute the batchgraph.xml (change the line 71 file output name)

*/mnt/data/snapv2_20112015/bin/gpt* /mnt/data/Exercise2-TimeSeries/Output/*batchgraph.xml*

# Processing graph

The graph "batchgraph.xml" contains "static" parameters (input name, output name, operators parameters)

Variables → Dynamic parameters

- Open "batchgraph.xml" located in the folder below with a text editor:
  */mnt/data/Exercise2-TimeSeries/Output*

*Replace*

**line 7**

*<file>/mnt/data/Exercise2-TimeSeries/Dataset/S1A_IW_GRDH_1SDV_20150511T175713_20150511T175738_005877_007913_DEA8.SAFE/manifest.safe</file>*

*with:*

*<file>$input1</file>*

# Processing graph

**Line 59 and 60**

*<nRgLooks>3</nRgLooks>*
*<nAzLooks>3</nAzLooks>*

with

*<nRgLooks>$input2</nRgLooks>*
*<nAzLooks>$input3</nAzLooks>*

**Line 71**

*<file>/mnt/data/Exercise2-TimeSeries/Output/S1A_IW_GRDH_TEST.dim</file>*

with

*<file>$target1</file>*

# Processing graph

Save the “batchgraph.xml” with another name “batchgraph_modified.xml”

To execute the batchgraph_modified.xml

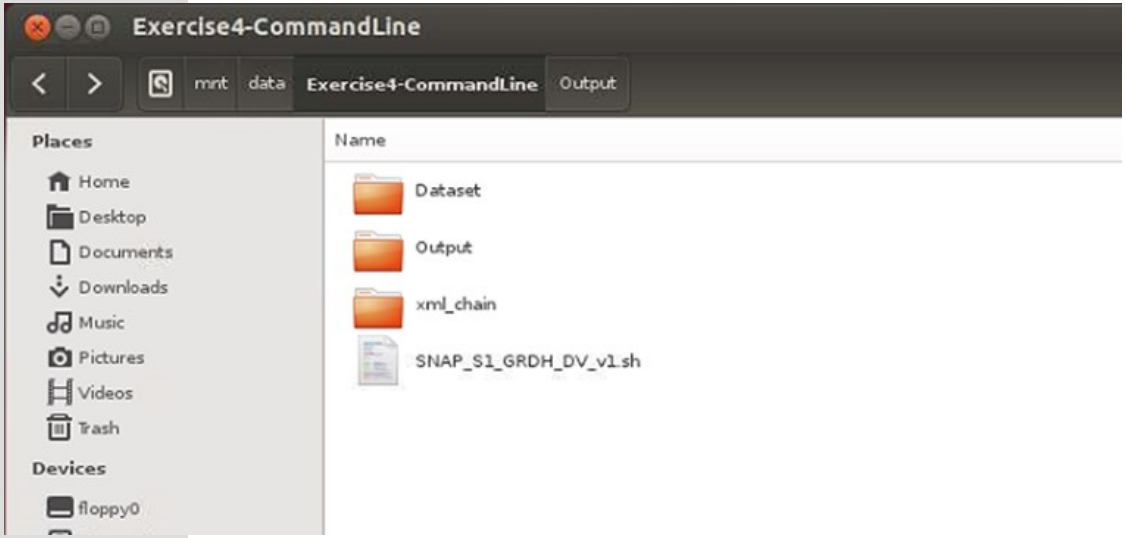
```
/mnt/data/snapv2_20112015/bin/gpt  /mnt/data/Exercise4-CommandLine/BatchGraph_modified.xml\

 -Pinput1="/mnt/data/Exercise2-
TimeSeries/Dataset/S1A_IW_GRDH_1SDV_20150511T175713_20150511T175738_005877_007913_DEA8.
SAFE/manifest.safe" -Pinput2="5" -Pinput3="5"\

 -Ptarget1="/mnt/data/Exercise4-CommandLine/Output/S1A_IW_GRDH_newproc.dim"
```

# Bash Linux script

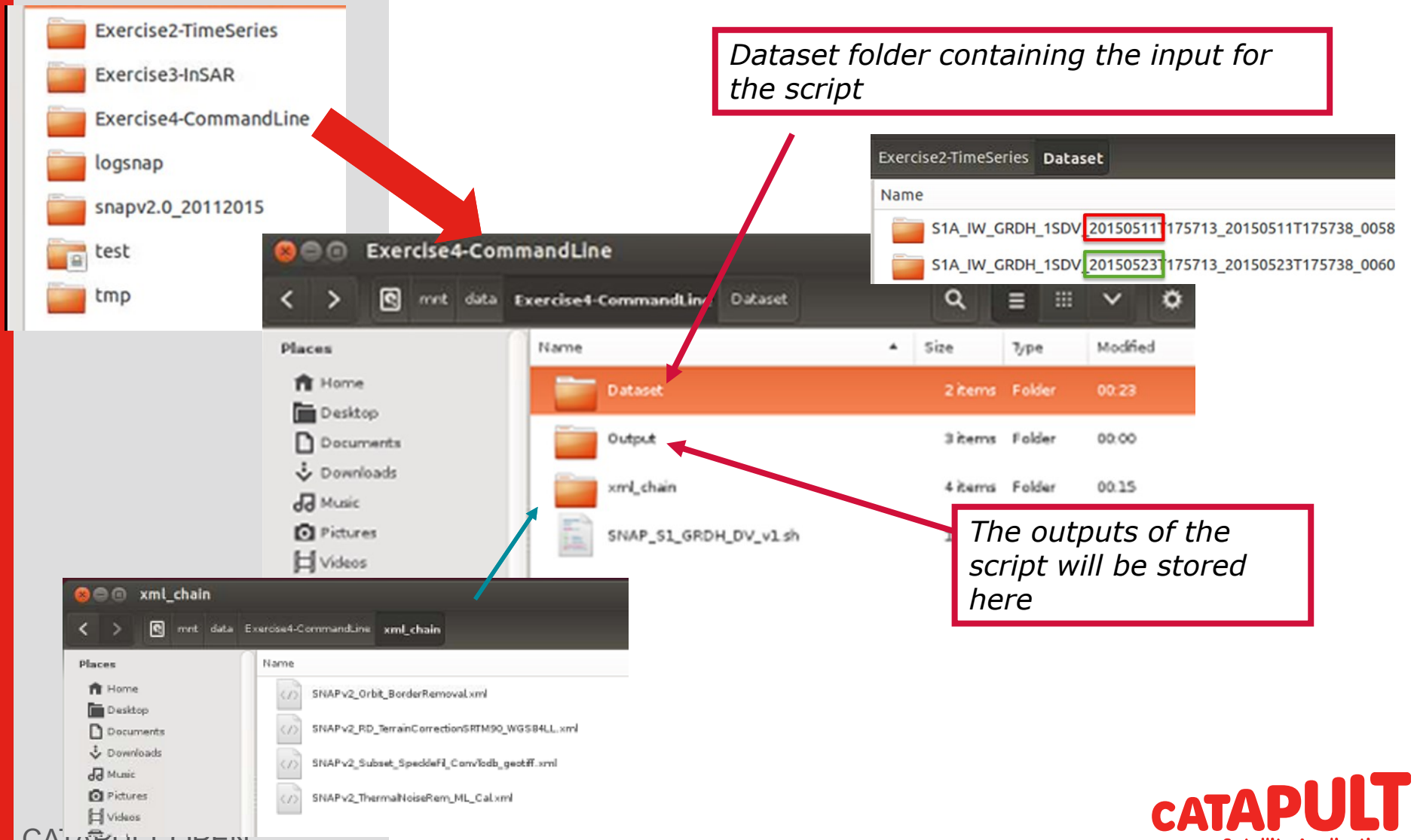
/mnt/data/Exercise4-CommandLine/

Linux bash script: SNAP_S1_GRDH_DV_v1.sh

Variables → Dynamic parameters



# Bash Linux script

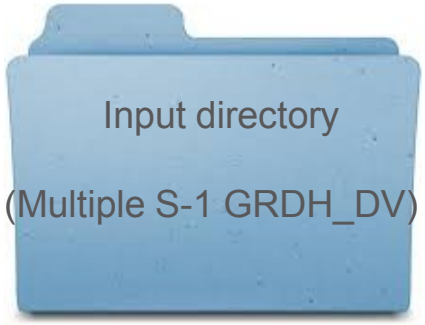





CATAPULT
Satellite Applications

# Bash Linux script

The script implements a processing from single Sentinel-1 IW GRDH SDV (VV-VH) to get a calibrated (respect to Ellipsoid), Orthorectified, despeckled Sigma0 VV and VH, Gamma0 VV and VH images by using a SRTM 90 DEM.




For each SENTINEL-1 GRDH DUAL_POL product in

Processing applied:

1- APPLY Precise Orbit and GRD REMOVE THERMAL NOISE (VV and VH)

2- Removal of thermal noise, MULTILOOKING (optional), CALIBRATION

→ OUTPUT: Multilooked Sigma0,Gamma0,Beta0 (VV and VH)

3- Range Doppler Terrain Correction with STRM90

→ OUTPUT: Sigma0 VV and VH, Gamma0 VV and VH (Inc.AngleFromEllipsoid, ProjectedLocalInc.Angle)

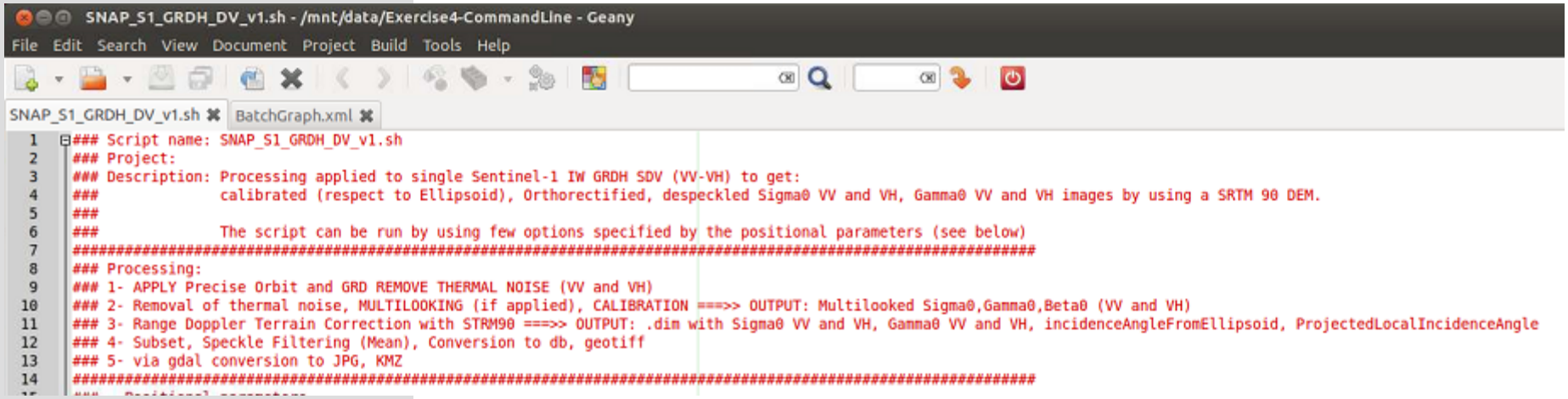
4- Subset (optional), Speckle Filtering (Mean), Conversion to db, geotiff (format)

5- via gdal conversion to JPG, KMZ

# Bash Linux script

- Open “SNAP_S1_GRDH_DV_v1.sh” located in the below folder with a text editor:

  /mnt/data/Exercise4-CommandLine/




To execute the script:

sh /mnt/data/Exercise4-CommandLine/SNAP_S1_GRDH_DV_v1.sh 0 5 1



CATAPULT Satellite Applications

# Any Question?