

# REDD+ for the Guiana Shield

Technical and Regional Platform for the  
Development of REDD+ in the Guiana Shield

## ALOS2 Level 2.1 Geotiff processing

**Objective** : This tutorial is designed to explain how to process specific ALOS2 data at level 2.1 (Orthorectified) in geotiff format.

We will use Qgis and Sentinel ToolBox (it works also with Nest where Graphical User Interface is very similar).

### 1) Qgis – Create virtual layer stacking

Now you just need to make layer stacking of HH and HV polarisation (create vrt file).

Click here to see the video

[QgisALOS2LayerStacking.mp4](#) or [YouTube](#)

### 2) Qgis – Export to tiff (save as)

In Qgis we will export the previously created vrt file to tiff.

**Optional:** If you want to *clip the data* on the display are, contrary to the video where you export all the layer extent, **click** on **Map view extent**.

Click here to see the video

[QgisRasterExport.mp4](#) or [YouTube](#)

### 3) Create Project in Sentinel Toolbox

It's important to create Sentinel Toolbox project in order to better manage the input and output data.

Click here to see the video

[S1ToolBobCreateProject.mp4](#) or [YouTube](#)

### 4) Import

You need now to import your radar data

Click here to see the video

[S1ToolBoxImportRaster.mp4](#) or [YouTube](#)

### 5) Convert to intensity

In order to apply the Lee Speckle filtering it's better to previously convert Original Amplitude data to intensity?

Click here to see the video

[S1ToolBoxConvertALOS2ToPseudoIntensity.mp4](#) or [YouTube](#)

### 6) Speckle filtering

In order to reduce the speckle we will apply **the** Lee Speckle filtering with a window size equal to 5 and an equivalent number of look of 2.

Click here to see the video

[S1ToolBoxLeeSpeckleFiltering.mp4](#) or [YouTube](#)

## 7) Generate derivate indices

We use band math tools to produce derivate different indices from intensities channels (Ihh and Ihv):

- hh in logarithmic scale decibel:  $\log_{10}(I_{hh})$
- hv in logarithmic scale decibel:  $\log_{10}(I_{hv})$
- hv in logarithmic scale decibel - hh in decibel

We will use this kind of expression (in addition we need to specify no data affect the value used for NaN: -9999 to inconsistent data )

- $hhdB = I_{hh} == 0 ? -9999 : \log_{10}(I_{hh})$
- $hvdB = I_{hv} == 0 ? -9999 : \log_{10}(I_{hv})$
- Difference =  $I_{hh} == 0 ? -9999 : hvdB - hhdB$

Click here to see the video

[S1ToolBoxIntensity2HHdBHVdBDiff.mp4](#) or [YouTube](#)

## 8) Export in geotif

At last, in order to used the processed data in any other common software such as Qgis or Orfeo Toolbox for example, we need to export the NEST data in more common format such as Geotiff or Envi.

Click here to see the video

[S1ToolBoxExportRaster.mp4](#) or [YouTube](#)