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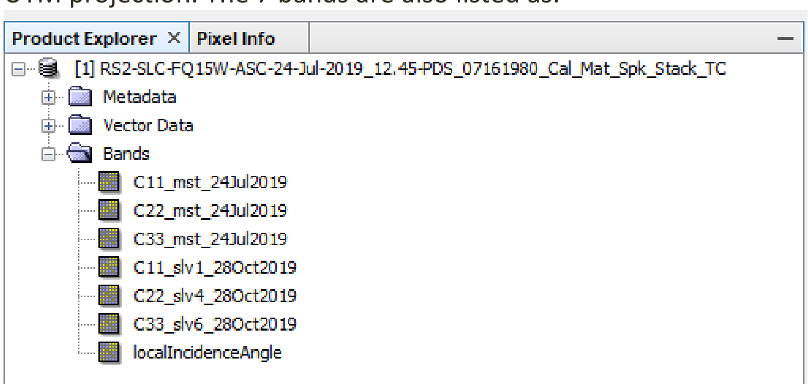
Extract backscatter intensities by Sampling Points from Multi-date RADARSAT-2 in QGIS

We use QGIS Desktop environment, Stacked terrain corrected RADARSAT-2 products, and in-situ sampling points (.shp vector file) files for processing.

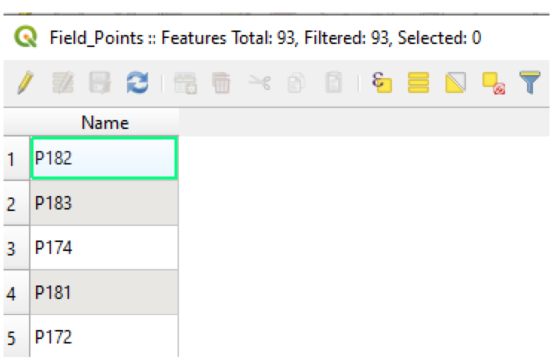
User Guide:

1. Download QGIS extraction model (BackscatterIntensity_Data_Ex33.model3) from Github repository, and modify as per user requirement.

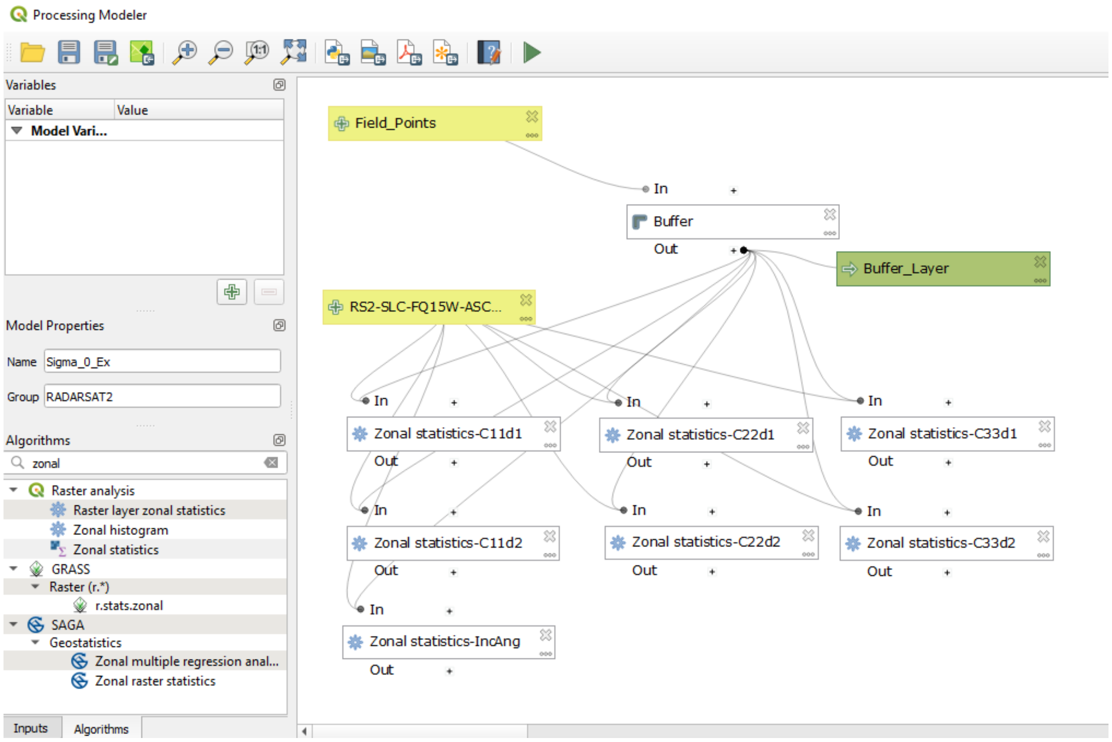
2. Load RADARSAT-2 terrain corrected coregistered stack product (RS2-SLC-FQ15W-ASC-24-Jul-2019_12.tif) in QGIS. Also note it has resolution of 10m x10m, and in UTM projection. The 7 bands are also listed as:



3. Also load the in-situ data vector file (.shp) in QGIS. Please note the sampling point name and attribute column. For example, our field data is Field_Points.shp and has attribute 'Name' where points are stored with a specific notation e.g. P182. Alos, this vector file has UTM projection.



4. Load the QGIS model using Processing>Graphical Modeler; And load the given model. We set a radius of 15m while creating a buffer, which resemblance of 3x3 window at the sampling location.



Run this model and it will create a file 'Buffer_Layer' as table. Export this layer as .csv file. This file tabulate extracted backscatter intensities as one to one map with 'Name' attribute.

Buffer_Layer :: Features Total: 93, Filtered: 93, Selected: 0

	Name	C33_28Octcount	C33_28Octsum	C33_28Octmean	C11_24Julcount	C11_24Julmean	C11_24Julstdev	C22_28Octcount	C22_28Octsum	C22_28
1	P181	9	2.388198599219...	0.265355399913...	9	0.023850575296...	0.004499068429...	9	0.584768440574...	0.0649
2	P182	9	2.288338214159...	0.254259801573...	9	0.012460497518...	0.003488113725...	9	0.403542194515...	0.0448
3	P173	9	0.463010549545...	0.051445616616...	9	0.099594322343...	0.018305324713...	9	0.364005982875...	0.0404
4	P174	9	0.854019843041...	0.094891093671...	9	0.070365559309...	0.011380896612...	9	0.512072555720...	0.0568
5	P171	9	0.408122338354...	0.045346926483...	9	0.098304112752...	0.005413064082...	9	0.324537228792...	0.0360
6	P172	9	0.747016698122...	0.083001855346...	9	0.065516728079...	0.015039430777...	9	0.415359605103...	0.0461
7	P163	9	0.685048256069...	0.076116472896...	9	0.081744125733...	0.025039539233...	9	0.619224186986...	0.0688
8	P164	9	1.969075515866...	0.218786168429...	9	0.054589813368...	0.011981515169...	9	0.724226281046...	0.0804
9	P202	9	1.177276194095...	0.130808466010...	9	0.008548640128...	0.002264957970...	9	0.383358240127...	0.0425
10	P203	9	0.794083386659...	0.088231487406...	9	0.020000677038...	0.012076728144...	9	0.410095248371...	0.0455
11	P194	9	0.778743259608...	0.086527028845...	9	0.017725074456...	0.006323856419...	9	0.410711035132...	0.0456
12	P201	9	1.612276837229...	0.179141870803...	9	0.018639803657...	0.012760624549...	9	0.928689464926...	0.1031
13	P192	9	0.420580487698...	0.046731165299...	9	0.010401779061...	0.001018094499...	9	0.368210975080...	0.0409

Look for the *mean columns, which are average over a 3x3 window around the sampling points.