FBD analysis

A typical analysis proceeds as follows. This assumes that 2 time separated FBD files have already been pre-processed (converted to multi-look intensity (mli), co-registered , and multi-channel filtered). We designate the known extent of forest in 2007 over the footprint as PF07 – the appropriate forest mask relating to the earlier FBD image needs to be used in its place.

Run the script read_P443_F7180.m or similar to open the necessary files. This file is an example only and will have to be edited for locations & files as needed.

Run the script texure_analysis.m. This will run R1_compare.m and texture_map.m to generate R1, and textures T1 and T2.

Running the routine showthresh(R1, PF07) will make a map of R1 over the region PF07.

Running sums = fuse_scores(PF07, R1, T2) will give the 2-way sum-fusion values over the region PF07. The texture T1 could be included to give a 3-way sum but we did not find it gave useful improvements in retrieval.

Running the routine showthresh(sums, PF07) will then make a map of sums over the region PF07.

Inclusion of ScanSAR

If ScanSAR data is to be combined, the temporal standard deviation, SD, for the appropriate FBD footprint should be prepared.

Running sums = fuse_scores(PF07, R1, T2, SD) will give the best 3-way sum fusion values over the region PF07.

Running the routine showthresh(sums, PF07) will then make a map of sums over the region PF07.

Running [COEFF, SCORE, latent, A] = pca(PF07, R1, T2, SD) ; will give the principle components in the 3-d array A for the region PF07. Rescale A(:,:,1) to get the first principle component in the range 0-1, e.g.:

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PCA1 = rescale01(A(:,:,1));
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This is a weighted sum of R1, T2 and SD and we found it to be better than equi-summed data fusion method for the inclusion of SD.

Running the routine showthresh(PCA1, PF07) will then make a map of PCA1 over the region PF07.

Use res= pdf_roc(sums, DF, UF, 1000) ; to generate PDF's and ROC curves for sums when the deforested region DF and undisturbed forest regions for the *later* image are known. For the PCA1 results use pdf_roc(PCA1, DF, UF, 1000) ; The routine asks for a header name e.g. "F1-R1"and will output the array "res" as a textfile "F1-R1-roc.txt" containing the coordinate, Pfa and Pd values as columns which can be exported to Excel.