ATTACHMENT 16 - MORAP TREE SIGNATURE ANALYSIS

Aurora and Granby Cedar and Sycamore Signature Analysis

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Sycamore Signatures

Aurora

A spectral signature was taken from the Archer imagery using GPS locations for A5, A6, and A9 (see slide 1). These signatures were used as targets to run Spectral Angle Mapper (SAM) target detection, which finds pixels with similar spectral signatures. Those that are similar to the initial target have a smaller angle, as the angle increases the pixel becomes more dissimilar to the target. We used our best judgment to subjectively determine what the appropriate cut-off angle is before pixels become very different from target.

When the target detection of all three signatures is compared, A5 and A6 appear to be more similar to one another, while A9 is quite different from both of them (see slides 2-4). It's hard to say which signatures are depicting sycamore best. All signatures could be detecting sycamore, but different aspects of the tree. Field verification is required to determine which signature best detects sycamore trees.

The signature for A5 was used to process all of the image segments for the Aurora study area (see slide 6). It is evident that all areas detected within the Aurora study area are deciduous forest, but it is not possible to determine whether or not these tress are sycamore. Again, field verification is required to determine if indeed sycamores are being detected or if deciduous trees in general are being detected.

Cedar Signatures

Aurora

The A10 signature was used to run target detection for cedar on the Aurora study area (see slide 8). Some cedar was detected, however most of the areas detected were grass, shrubs, or shadows. This signature is not ideal for detecting cedars. This is directly attributed to the location of the signature. What is still lacking are precise locations of targets and how they match the imagery.

Granby

Signatures were created for sample locations G2, 6, 8, 16-18, and 19e and applied to the entire Granby study area (see slides 11-41). All signatures had the same problems as the Aurora cedar above.

However, the best signature in this group was G8. It also detected grass and shrubs, but did appear to detect a fair amount of cedars.

Because the imagery is not able to be precision rectified, the GPS location of the target and the imagery will never match exactly. Thus it would possibly be more productive and accurate if persons more familiar with the study area and sampling process were available to assist in determining where the signature should be placed. This does not appear to be a good method of detecting contaminated trees.