**Objectives:** Our goal is to leverage high spatial resolution satellite imagery to assess changes in tall shrub cover and aboveground biomass in sites across the Arctic and Canadian northwest territories. We aim to compare the performance of CANAPI with other methods to evaluate the accuracy of estimating changes in tall shrub cover.

**Methods:**

- **Remote Sensing Data:** We used WorldView-1 (WV1), WorldView-2 (WV2), and QuickBird imagery from July 2003 and 2014.
- **Object Detection:** We used the CANAPI algorithm, which was developed using Pan, Normalized Difference Vegetation Index (NDVI), and Normalized Difference Woody Index (NDWI) to identify shrub crowns.
- **Accuracy Assessment:** We compared the results of the CANAPI algorithm to ground truth data collected by field observations.

**Results:**

- **Accuracy:** The accuracy of the CANAPI algorithm was assessed using a confusion matrix, which showed high accuracy in detecting shrubs.
- **Change Detection:** We detected changes in tall shrub cover using time-series analysis of the satellite imagery.

**Conclusions:** The CANAPI algorithm is a promising tool for mapping tall shrub canopies in Arctic tundra, providing valuable information for ecological monitoring and conservation efforts.

---

**Table 1:**

<table>
<thead>
<tr>
<th>Image</th>
<th>Height (m)</th>
<th>Area (ha)</th>
<th>Change (2003-2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WV1</td>
<td>0.10-1.00</td>
<td>0.05-0.50</td>
<td>15%</td>
</tr>
<tr>
<td>WV2</td>
<td>0.20-2.00</td>
<td>0.10-1.00</td>
<td>8%</td>
</tr>
<tr>
<td>QB2</td>
<td>0.30-3.00</td>
<td>0.15-1.50</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Figure 1:**

- **Selection of Image Areas:** We selected image areas for each year using a geolocation tool.

**Figure 2:**

- **Imagery:** We used WorldView-2 imagery to detect tall shrubs.
- **Detection:** We applied the CANAPI algorithm to the imagery to detect shrub crowns.

**Figure 3:**

- **Best Tall Shrub Detections:** We identified the best tall shrub detections using a subjective approach.

**Figure 4:**

- **Height Distribution:** We extracted height data from the CANAPI detections to assess change in height.

**References:**