Many cities are developing policies to promote greenery as a measure to reduce their greenhouse gas emissions. However, the potential to directly remove CO₂ from the atmosphere by urban vegetation is still poorly supported by scientific evidence.

Current assessments consider only the carbon accumulated by trees and usually neglect the contribution from soil respiration and the emissions associated with greenery management. Studies in mid-latitude cities suggest that the carbon uptake by urban vegetation is small compared to the magnitude of the anthropogenic emissions.

The usually evergreen vegetation in (sub)tropical cities may have the potential for a larger carbon sequestration. To investigate this, the CO₂ flux data from two sites in Singapore and Mexico City were analyzed (Velasco et al., 2013; 2014). Results suggest that (sub)tropical vegetation may act as either an emission source or sink depending on the species and characteristics of the trees and the amount of pervious surfaces for soil respiration.

Although there are many environmental and social benefits to urban greenery, current research points to a limited role as an effective measure to enhance carbon sequestration.

**Key Points**

A complete assessment needs to consider both the carbon accumulated by trees and the soil respiration, as well as the emissions associated with greenery management.

**Table**

<table>
<thead>
<tr>
<th>Location</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Climate (Köppen classification)</th>
<th>Temperature (°C) min. – mean – max.</th>
<th>Annual rainfall (mm)</th>
<th>Population density (inhabitants km²)</th>
<th>Surface covered by buildings, roads &amp; sidewalks</th>
<th>Albedo</th>
<th>Number of trees (trees km²)</th>
<th>Tree height (m)</th>
<th>Fraction of large trees (DBH ≥ 20 cm)</th>
<th>Species</th>
<th>CO₂ (carbon) storage (Mg km⁻²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escandón, Mexico City</td>
<td>21° 02′ 12.14′ N</td>
<td>104° 40′ 01.61′ W</td>
<td>Subtropical highland (Cwb)</td>
<td>10 – 16 – 24</td>
<td>820</td>
<td>8038</td>
<td>57.7%, 37.3%</td>
<td>0.112 ± 0.007</td>
<td>5276</td>
<td>0.4</td>
<td>0.6%</td>
<td>60%</td>
<td>97.2% woody trees</td>
</tr>
<tr>
<td>Telok Kurau, Singapore</td>
<td>1° 19′ 50.85′ N</td>
<td>103° 54′ 52.00′ E</td>
<td>Tropical rainforest (Af)</td>
<td>25 – 27 – 32</td>
<td>2340</td>
<td>7491</td>
<td>2.4% yuccas</td>
<td>0.158 ± 0.008</td>
<td>5856</td>
<td>0.4</td>
<td>0.6%</td>
<td>2.4% yuccas</td>
<td>6337 (1727)</td>
</tr>
</tbody>
</table>

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