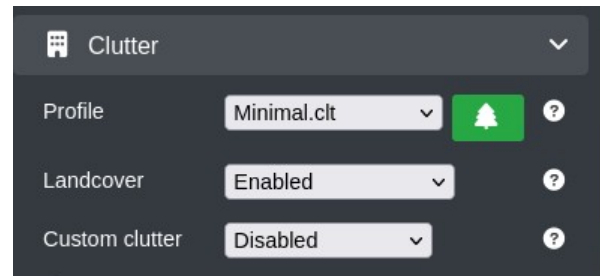# CloudRF

Clutter

Quick reference

Clutter describes obstacles above the ground which impede a signal's path. These include trees and buildings.
In the CloudRF API, **System Landcover** refers to global 10m ESA data eg. Forests / Grassland and **Custom Clutter** refers to precision 2m clutter like bricks / concrete which you can define.

Step 1: Prepare a local profile

- Open the clutter sub menu and click the tree button to open the clutter manager

- Choose a profile closet to your environment eg. Temperate.clt

- Adjust values to match your environment. If the average tree height is 8m then this would be 8 (m) for the top box. Tree and building densities vary greatly by seasons and construction so use the table below to pick sensible values. **Be conservative if you are unsure.**

- Use 0.0 for the dB/m values to ignore a landcover type completely eg. Water

- Set the custom clutter values to match. This can be ignored if you are not using custom clutter.

Material	Soft	Average	Dense
Forest	0.1 dB/m	0.2 dB/m	0.3 dB/m
Timber house	0.2 dB/m	0.3 dB/m	0.4 dB/m
Brick house	0.4 dB/m	0.6 dB/m	0.8 dB/m
Concrete building	0.8 dB/m	1.0 dB/m	2.0 dB/m

Approximate attenuation values based on 1GHz. These will vary by wavelength and should be calibrated with measurements where possible.

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Step 2: Using a profile

- Save your template with a new name eg. Poland.clt

- Select the profile from the list and ensure landcover is set to "Enabled"

- Landcover will now be used in your planning with all the tools.

- To add 3D buildings to the landcover, choose the "Enabled +Buildings" option. If buildings are available they will be used.
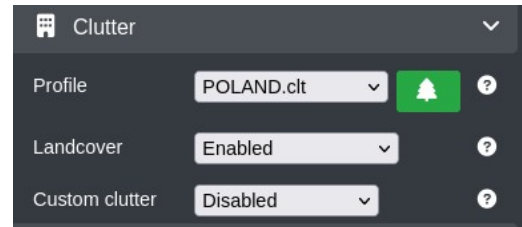
Step 3: Adding custom clutter

- Click the polygon draw button at the bottom of the screen to open the clutter dialog.

- Ensure you are using the right clutter profile before you start drawing.

- Select the material you want to define eg. "Brick" from the Type select box

- Left click upon the map to draw an item, right click to finish

- Alternatively, upload a KML or GeoJSON file describing polygons

- Click the upload button to save the clutter to your account.

- A successful upload will notify you how many items were saved. **Duplicates will be ignored.**
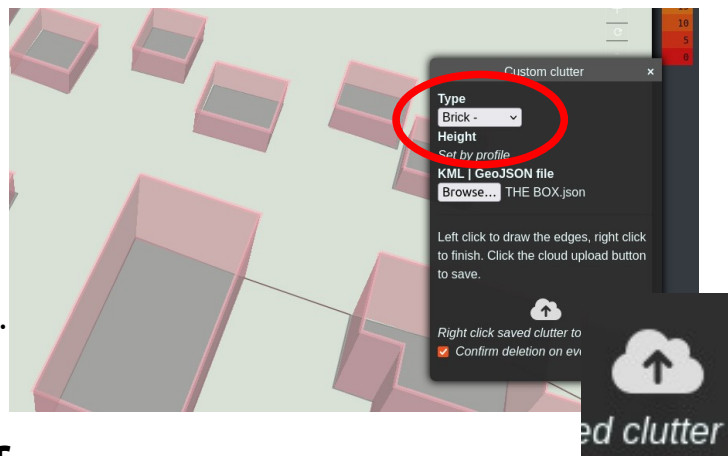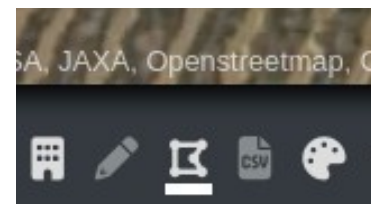
Step 4: Using custom clutter

In the clutter menu, enable Custom clutter with "**Enabled on DTM**".

The path profile tool will show you visually if there is clutter above the surface model.
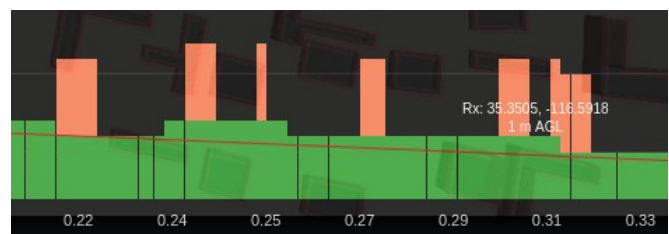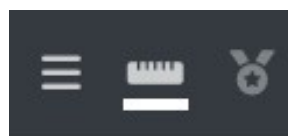
Only choose "Enabled on DSM" if you are sure your surface model data does not contain the obstacle(s) otherwise the obstacle height(s) may be double-booked.

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