The Flux Footprint Prediction Online Tool

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Flux Footprint Estimates – Why?
• Describe area of influence to EC measurements
• Support optimal placement of supplemental instruments / sensors
• Improve flux time series interpretation
• Representativeness: composition of probed land cover
• Upscale from plot measurement to local/regional scale

Output of Online FFP: Graphics
• Bing or Google map with footprint climatology
• Footprint matrix to overlay with your own map
• Land classification map (unsupervised, kmeans, based on RGB map) with footprint climatology

Output of Online FFP: Statistics
• Footprint-weighted contribution of each land cover class to measured flux (summary table)

<table>
<thead>
<tr>
<th>Area</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
<th>Class 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>0.927</td>
<td>0.073</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20%</td>
<td>0.717</td>
<td>0.283</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30%</td>
<td>0.687</td>
<td>0.313</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>40%</td>
<td>0.679</td>
<td>0.321</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50%</td>
<td>0.648</td>
<td>0.352</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>60%</td>
<td>0.619</td>
<td>0.378</td>
<td>0</td>
<td>0.003</td>
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<tr>
<td>70%</td>
<td>0.592</td>
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<tr>
<td>80%</td>
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<tr>
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<td>0.441</td>
<td>0.003</td>
<td>0.018</td>
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<tr>
<td>Domain</td>
<td>0.526</td>
<td>0.438</td>
<td>0.004</td>
<td>0.03</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Reference: Kljun, N., P. Calanca, M.W. Rotach, H.P. Schmid, 2015: Geosci. Model Dev. 8, 3695-3713

Flux Footprint Prediction FFP
Valid for
• Convective to stable conditions
• Measurement heights from close to ground to high up in planetary boundary layer

Input for Online FFP
Go to http://footprint.kljun.net → Online FFP 2D and upload data of selected time series. Select e.g. years, growing seasons, months, weeks, daytime only. Input of:
• Tower coordinates and measurement height
• Surface characteristics (d and z₀)
• Turbulence characteristics (L, u*, v, w)

Coming Soon
Land classification using Sentinel 2 imagery
• Additional spectral information available
• Image selection based on date of input data series

Take Home Message
• Online tool 2D flux footprint parameterisation FFP
• Simple, fast, valid for most atmospheric conditions
• Provides information for optimised sensor location
• Supports interpretation of measurements

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