An urban surface parametrization scheme and derivation of its input parameters

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An Urban Parametrization Scheme

- size of urban areas growing
- resolution of weather and climate models increasing
- *but*: computation cost too high to incorporate every single building
  ⇒ simplified model required
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Parametrization Scheme by Martilli et al. (2002):

\[ B \quad \text{building width} \]

\[ W \quad \text{street width} \]

\[ D \quad \text{canyon length} \]

\[ h \quad \text{height with probability } \gamma(h) \]

\[ z_i \quad \text{height of level } i \]
Input Parameters

\[ \Rightarrow \]

\[ h \]

\[ W \]

\[ D \]

\[ B \]

\[ z_{i+1} \]

\[ z_i \]

\[ i \]

\[ z_{j+1} \]

\[ z_j \]

\[ j \]
Input Parameters

\[ B \leftarrow h \]

\[ D \]

\[ W \]

\[ z_{i+1} \]

\[ i \]

\[ z_i \]

\[ j \]

\[ z_{j+1} \]

Building Width [m]

- Color scale from 2 to 22.
- Map of building widths across different latitudes and longitudes.

Legend:
- Green: 2
- Yellow: 4 to 6
- Orange: 8 to 10
- Red: 12 to 22