Input data:

1. $T = \{t_1, \dots, t_7\}$ — Set of trees.
2. $Y(t) = \{y_{t1}, \dots, y_{tn_t}\}$ — Set of years for which the measurements for the tree t are available, $t \in T$
3. $Y = \bigcup_{t \in T} Y(t)$ — Set of all years for which the measurements are available.
4. $T(y) = \{t_{y1}, \dots, t_{ym_y}\}$ — Set of trees for which the measurements for the year y are availvable, $y \in Y$

$$\left(T \equiv \bigcup_{y \in Y} T(y) \right)$$

5. $e^{raw} = e^{raw}(t, y) = \{e_1^{raw}, \dots, e_\varepsilon^{raw}\}$ — Raw tracheid data where:

$$e_k^{raw} = e_k^{raw}(t, y) \in \{d_k^{raw}, c_k^{raw}\}$$

$d_k^{raw} = d_k^{raw}(t, y)$ — Diameter of the k^{th} cell in a raw tracheid

$c_k^{raw} = c_k^{raw}(t, y)$ — Cell wall thickness of the k^{th} cell in a raw tracheid

$$k = \overline{1, \varepsilon}, t \in T, y \in Y(t)$$

6. N — Number of cells for tracheid normalization.

Normalization procedure description:

For each e^{raw} an intermediate sequence is constructed:

$$e^* = \{\underbrace{e_1^{raw}, \dots, e_1^{raw}}_{\dot{N}}, \underbrace{e_2^{raw}, \dots, e_2^{raw}}_{\dot{N}}, \dots, \underbrace{e_\varepsilon^{raw}, \dots, e_\varepsilon^{raw}}_{\dot{N}}\}$$

And tracheid data $e = \{e_1, \dots, e_N\}$ normalized to N cells are obtained:

$$e_i = \frac{1}{\varepsilon} \sum_{j=\varepsilon \cdot (i-1)+1}^{\varepsilon \cdot i} e_j^*, i = \overline{1, N}$$

Using this procedure the following was obtained:

$d = \{d_1, \dots, d_N\}$ — data on the tracheid cell diameters normalized to N cells

$c = \{c_1, \dots, c_N\}$ — data on the tracheid cell wall thicknesses normalized to N cells

Normalized tracheid description:

$R(t, y) = d \cup c = \{d_1, \dots, d_N, c_1, \dots, c_N\}$ — Tracheid normalized to N cells. Where:

$d_i = d_i(t, y)$ — Diameter of the i^{th} cell in a normalized tracheid

$c_i = c_i(t, y)$ — Cell wall thickness of the i^{th} cell in a normalized tracheid

$$i = \overline{1, N}, t \in T, y \in Y(t)$$

Description of the methods for forming objects for clustering:

Method A:

$$R^A(y) = \frac{1}{|T(y)|} \sum_{t \in T(y)} R(t,y), y \in Y$$

$$R^A_{mean} = \frac{1}{\sum_{t \in T} |Y(t)|} \sum_{t \in T} \sum_{y \in Y(t)} R(t,y)$$

$$O_A(y) = \frac{R^A(y)}{R^A_{mean}}, y \in Y$$

$O_A(y)$ — object for the year y obtained by *Method A*

Method B:

$$R^B(t) = \frac{1}{|Y(t)|} \sum_{y \in Y(t)} R(t,y), t \in T$$

$$o_B(t,y) = \frac{R(t,y)}{R^B(t)}, t \in T, y \in Y(t)$$

$$O_B(y) = \frac{1}{|T(y)|} \sum_{t \in T(y)} o_B(t,y), y \in Y$$

$O_B(y)$ — object for the year y obtained by *Method B*