### Table S1 – List of the ISMN observation networks (Dorigo et al., 2021) used in the study.

<table>
<thead>
<tr>
<th>Network</th>
<th>No.</th>
<th>Data availability</th>
<th>Country</th>
<th>Climate</th>
<th>Land Cover</th>
<th>Scale</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>XMS-CAT</td>
<td>16</td>
<td>from 2016 to 2023</td>
<td>E Spain</td>
<td>Cf, Cs</td>
<td>Forest and shrubland</td>
<td>Regional</td>
<td>TDR</td>
</tr>
<tr>
<td>WSSN</td>
<td>8</td>
<td>from 2011 to 2016</td>
<td>W UK</td>
<td>Cf</td>
<td>Pasture and woodlands</td>
<td>Local</td>
<td>TDR</td>
</tr>
<tr>
<td>VAS</td>
<td>3</td>
<td>from 2010 to 2012</td>
<td>E Spain</td>
<td>B</td>
<td>Croplands and shrubland</td>
<td>Local</td>
<td>TDR</td>
</tr>
<tr>
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<td>Italy</td>
<td>Cs</td>
<td>Croplands, irrigation</td>
<td>Local</td>
<td>TDR</td>
</tr>
<tr>
<td>UDC_SMOIS</td>
<td>11</td>
<td>from 2007 to 2011</td>
<td>S Germany</td>
<td>Dfb</td>
<td>Croplands and forest</td>
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<td>TDR</td>
</tr>
<tr>
<td>TWENTE</td>
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<td>from 2008 to 2021</td>
<td>E Netherlands</td>
<td>C</td>
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<td>Regional</td>
<td>FDR</td>
</tr>
<tr>
<td>TERENO</td>
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<td>from 2009 to 2023</td>
<td>W Germany</td>
<td>C, CDb</td>
<td>Croplands</td>
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<td>TDR</td>
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<tr>
<td>SMOSSMANIA</td>
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<td>S France</td>
<td>C, Cs</td>
<td>Forest</td>
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<td>TDR</td>
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<td>Forest, pasture and croplands</td>
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<td>FDR</td>
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<td>Local</td>
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<tr>
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</tbody>
</table>