Table S1: Location, vegetation type and period of measurements of ground surface temperature loggers used for the validation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Latitude** | **Longitude** | **Elevation (m)** | **Vegetation type** | **Start Year** | **End Year** | **No. Years** |
| 62.543 | 6.303 | 92 | Forest | 2005 | 2008 | 3 |
| 62.575 | 6.317 | 796 | Non-vegetated | 2005 | 2006 | 1 |
| 62.297 | 9.338 | 1505 | Non-vegetated | 2001 | 2007 | 6 |
| 62.296 | 9.354 | 1467 | Non-vegetated | 2001 | 2004 | 3 |
| 62.264 | 9.467 | 1094 | Non-vegetated | 2002 | 2007 | 5 |
| 62.247 | 9.499 | 1039 | Non-vegetated | 2002 | 2007 | 5 |
| 61.522 | 12.504 | 541 | Forest | 2005 | 2008 | 3 |
| 61.542 | 12.439 | 1022 | Non-vegetated | 2005 | 2008 | 3 |
| 60.593 | 7.526 | 1210 | Non-vegetated | 2006 | 2007 | 1 |
| 60.651 | 7.493 | 1559 | Non-vegetated | 2006 | 2007 | 1 |
| 60.632 | 7.496 | 1431 | Non-vegetated | 2006 | 2007 | 1 |
| 60.647 | 7.489 | 1508 | Non-vegetated | 2006 | 2007 | 1 |
| 60.948 | 8.152 | 1220 | Non-vegetated | 2005 | 2007 | 2 |
| 62.429 | 11.274 | 1538 | Non-vegetated | 2004 | 2007 | 3 |
| 62.480 | 11.293 | 676 | Forest | 2006 | 2008 | 2 |
| 62.447 | 11.261 | 1251 | Non-vegetated | 2006 | 2008 | 2 |
| 61.721 | 8.401 | 1065 | Non-vegetated | 2004 | 2007 | 3 |
| 61.707 | 8.403 | 1307 | Non-vegetated | 1999 | 2007 | 8 |
| 61.702 | 8.395 | 1391 | Non-vegetated | 1999 | 2002 | 3 |
| 61.702 | 8.394 | 1410 | Non-vegetated | 1999 | 2002 | 3 |
| 61.701 | 8.393 | 1430 | Non-vegetated | 1999 | 2002 | 3 |
| 61.701 | 8.393 | 1447 | Non-vegetated | 1999 | 2008 | 9 |
| 61.699 | 8.391 | 1480 | Non-vegetated | 1999 | 2001 | 2 |
| 61.699 | 8.390 | 1492 | Non-vegetated | 1999 | 2000 | 1 |
| 61.685 | 8.376 | 1767 | Non-vegetated | 2004 | 2007 | 3 |
| 61.678 | 8.369 | 1893 | Non-vegetated | 1999 | 2004 | 5 |
| 61.677 | 8.369 | 1893 | Non-vegetated | 1999 | 2007 | 8 |
| 61.678 | 8.369 | 1893 | Non-vegetated | 1999 | 2004 | 5 |
| 61.649 | 9.012 | 855 | Forest | 2005 | 2008 | 3 |
| 61.401 | 8.831 | 1525 | Non-vegetated | 2005 | 2007 | 2 |
| 61.555 | 8.193 | 1522 | Non-vegetated | 2005 | 2007 | 2 |
| 61.556 | 8.207 | 1389 | Non-vegetated | 2005 | 2007 | 2 |
| 61.552 | 8.182 | 1460 | Non-vegetated | 2006 | 2007 | 1 |
| 61.547 | 8.163 | 1354 | Non-vegetated | 2006 | 2007 | 1 |
| 61.532 | 8.230 | 1448 | Non-vegetated | 2006 | 2007 | 1 |
| 61.538 | 8.180 | 1696 | Non-vegetated | 2006 | 2007 | 1 |
| 62.099 | 8.931 | 607 | Forest | 2005 | 2008 | 3 |
| 62.027 | 8.925 | 1573 | Non-vegetated | 2004 | 2008 | 4 |
| 59.989 | 10.670 | 528 | Forest | 2003 | 2006 | 3 |
| 59.980 | 10.683 | 443 | Forest | 2004 | 2008 | 4 |
| 59.980 | 10.684 | 435 | Forest | 2004 | 2008 | 4 |
| 60.232 | 10.428 | 196 | Forest | 2006 | 2008 | 2 |
| 61.934 | 11.548 | 805 | Non-vegetated | 2002 | 2003 | 1 |
| 61.931 | 11.543 | 868 | Non-vegetated | 2002 | 2006 | 4 |
| 61.930 | 11.542 | 918 | Non-vegetated | 2002 | 2006 | 4 |
| 61.927 | 11.540 | 1010 | Non-vegetated | 2002 | 2006 | 4 |
| 61.925 | 11.538 | 1109 | Non-vegetated | 2002 | 2006 | 4 |
| 61.922 | 11.507 | 987 | Non-vegetated | 2002 | 2006 | 4 |
| 61.926 | 11.511 | 1051 | Non-vegetated | 2002 | 2006 | 4 |
| 61.919 | 11.536 | 1211 | Non-vegetated | 2002 | 2006 | 4 |
| 61.929 | 11.527 | 1043 | Non-vegetated | 2002 | 2003 | 1 |
| 61.929 | 11.527 | 1043 | Non-vegetated | 2002 | 2006 | 4 |
| 61.902 | 11.500 | 1069 | Non-vegetated | 2004 | 2005 | 1 |
| 61.892 | 11.504 | 1078 | Non-vegetated | 2004 | 2005 | 1 |
| 61.926 | 11.535 | 1071 | Non-vegetated | 2004 | 2005 | 1 |
| 61.926 | 11.535 | 1071 | Non-vegetated | 2004 | 2005 | 1 |
| 61.908 | 11.537 | 1418 | Non-vegetated | 2004 | 2005 | 1 |
| 61.908 | 11.537 | 1418 | Non-vegetated | 2004 | 2007 | 3 |
| 61.929 | 11.527 | 1043 | Non-vegetated | 2005 | 2007 | 2 |
| 62.134 | 12.020 | 906 | Shrubs | 2002 | 2006 | 4 |
| 62.135 | 12.055 | 1196 | Non-vegetated | 2002 | 2006 | 4 |
| 62.140 | 12.060 | 1316 | Non-vegetated | 2002 | 2003 | 1 |
| 62.137 | 12.053 | 1207 | Non-vegetated | 2002 | 2006 | 4 |
| 62.138 | 12.051 | 1192 | Non-vegetated | 2002 | 2006 | 4 |
| 62.137 | 12.030 | 1052 | Non-vegetated | 2002 | 2006 | 4 |
| 62.140 | 12.060 | 1316 | Non-vegetated | 2004 | 2007 | 3 |
| 62.141 | 12.061 | 1335 | Non-vegetated | 2005 | 2007 | 2 |
| 69.942 | 24.862 | 508 | Non-vegetated | 2003 | 2005 | 2 |
| 69.937 | 24.854 | 614 | Non-vegetated | 2003 | 2005 | 2 |
| 69.913 | 24.775 | 1002 | Non-vegetated | 2003 | 2005 | 2 |
| 69.910 | 24.770 | 1034 | Non-vegetated | 2003 | 2005 | 2 |
| 69.909 | 24.771 | 982 | Non-vegetated | 2003 | 2005 | 2 |
| 69.933 | 24.789 | 471 | Non-vegetated | 2004 | 2005 | 1 |
| 69.933 | 24.792 | 428 | Non-vegetated | 2004 | 2005 | 1 |
| 70.075 | 20.431 | 839 | Non-vegetated | 2003 | 2006 | 3 |
| 70.063 | 20.451 | 476 | Non-vegetated | 2003 | 2005 | 2 |
| 69.831 | 21.279 | 895 | Non-vegetated | 2002 | 2008 | 6 |
| 69.838 | 21.273 | 700 | Non-vegetated | 2002 | 2007 | 5 |
| 69.843 | 21.259 | 500 | Non-vegetated | 2002 | 2007 | 5 |
| 69.563 | 20.433 | 861 | Non-vegetated | 2002 | 2007 | 5 |
| 69.576 | 20.437 | 685 | Non-vegetated | 2002 | 2005 | 3 |
| 69.583 | 20.435 | 500 | Non-vegetated | 2002 | 2005 | 3 |
| 69.457 | 20.882 | 966 | Non-vegetated | 2006 | 2007 | 1 |
| 69.354 | 21.211 | 786 | Non-vegetated | 2004 | 2007 | 3 |
| 69.267 | 22.481 | 739 | Non-vegetated | 2003 | 2010 | 7 |
| 69.008 | 23.235 | 355 | Forest | 2003 | 2010 | 7 |
| 69.980 | 27.269 | 130 | Forest | 2003 | 2009 | 6 |
| 70.542 | 29.322 | 502 | Non-vegetated | 2002 | 2009 | 7 |
| 70.541 | 29.342 | 480 | Non-vegetated | 2002 | 2009 | 7 |
| 70.538 | 29.363 | 415 | Non-vegetated | 2002 | 2009 | 7 |
| 70.537 | 29.380 | 355 | Non-vegetated | 2002 | 2009 | 7 |
| 70.400 | 28.200 | 10 | Shrubs | 2008 | 2010 | 2 |
| 70.126 | 28.593 | 50 | Mire | 2008 | 2010 | 2 |
| 69.376 | 24.496 | 284 | Non-vegetated | 2008 | 2010 | 2 |
| 69.370 | 24.082 | 469 | Non-vegetated | 2008 | 2010 | 2 |
| 69.377 | 24.082 | 408 | Non-vegetated | 2008 | 2010 | 2 |
| 68.996 | 23.035 | 308 | Shrubs | 2008 | 2010 | 2 |
| 68.755 | 23.538 | 380 | Shrubs | 2008 | 2010 | 2 |
| 69.580 | 23.535 | 380 | Shrubs | 2008 | 2010 | 2 |
| 68.749 | 19.485 | 1713 | Non-vegetated | 2008 | 2010 | 2 |
| 69.292 | 18.133 | 1011 | Non-vegetated | 2007 | 2011 | 4 |
| 69.638 | 22.229 | 923 | Non-vegetated | 2007 | 2010 | 3 |
| 61.676 | 8.365 | 1861 | Non-vegetated | 2008 | 2010 | 2 |
| 61.684 | 8.372 | 1771 | Non-vegetated | 2008 | 2010 | 2 |
| 61.700 | 8.385 | 1559 | Non-vegetated | 2008 | 2010 | 2 |
| 61.698 | 8.401 | 1561 | Non-vegetated | 2008 | 2010 | 2 |
| 61.707 | 8.403 | 1314 | Non-vegetated | 2008 | 2010 | 2 |
| 61.701 | 8.393 | 1450 | Non-vegetated | 2008 | 2010 | 2 |
| 62.174 | 10.702 | 1630 | Non-vegetated | 2008 | 2009 | 1 |
| 62.170 | 10.703 | 1589 | Non-vegetated | 2008 | 2010 | 2 |
| 62.151 | 10.715 | 1290 | Shrubs | 2008 | 2010 | 2 |
| 61.903 | 9.275 | 1490 | Non-vegetated | 2008 | 2010 | 2 |
| 61.898 | 9.282 | 1664 | Non-vegetated | 2008 | 2010 | 2 |
| 69.291 | 18.130 | 990 | Non-vegetated | 2007 | 2009 | 2 |
| 69.249 | 20.445 | 766 | Non-vegetated | 2007 | 2009 | 2 |
| 69.642 | 22.194 | 761 | Non-vegetated | 2007 | 2010 | 3 |
| 69.681 | 22.126 | 570 | Non-vegetated | 2007 | 2010 | 3 |
| 62.149 | 9.378 | 1047 | Non-vegetated | 2005 | 2006 | 1 |
| 69.308 | 25.341 | 450 | Shrubs | 2008 | 2011 | 3 |
| 69.306 | 25.340 | 495 | Shrubs | 2008 | 2010 | 2 |
| 69.304 | 25.338 | 548 | Shrubs | 2008 | 2011 | 3 |
| 69.299 | 25.330 | 540 | Shrubs | 2008 | 2011 | 3 |
| 69.296 | 25.326 | 497 | Shrubs | 2008 | 2011 | 3 |
| 69.294 | 25.318 | 445 | Shrubs | 2008 | 2011 | 3 |
| 69.290 | 18.131 | 990 | Non-vegetated | 2007 | 2011 | 4 |
| 69.292 | 18.129 | 967 | Non-vegetated | 2007 | 2011 | 4 |
| 60.700 | 10.868 | 264 | Forest | 1994 | 2004 | 10 |
| 67.284 | 14.451 | 33 | Non-vegetated | 1994 | 2004 | 10 |