

Table S1. Information of ASTER data used in this study. Granule ID denote a unique number for individual ASTER data. Longitude and latitude are of the image center. Lakes delineated and chosen are number of lakes delineated in individual image, and of lakes selected for the subsequent analysis.

| Granule ID | Acquisition date | Longitude | Latitude | Lakes delineated | Lakes chosen |
|-------------------------------|------------------|-----------|----------|------------------|--------------|
| ASTL1A0010100537270106220578 | 10-Oct-2000 | 82.080 | 30.346 | 109 | 49 |
| ASTL1A0010280525060107090597 | 28-Oct-2000 | 85.150 | 28.691 | 31 | 20 |
| ASTL1A0011010500260107130629 | 1-Nov-2000 | 88.953 | 27.932 | 111 | 90 |
| ASTL1A0011010500350107130630 | 1-Nov-2000 | 88.824 | 27.399 | 39 | 39 |
| ASTL1A0011090549040303210003 | 9-Nov-2000 | 79.536 | 30.816 | 32 | 15 |
| ASTL1A0011150512410107210279 | 15-Nov-2000 | 86.292 | 28.424 | 150 | 64 |
| ASTL1A0011240506260304060647 | 24-Nov-2000 | 87.363 | 27.938 | 42 | 23 |
| ASTL1A0012150524110108090592 | 15-Dec-2000 | 84.099 | 28.848 | 12 | 10 |
| ASTL1A0101200458520109050995 | 20-Jan-2001 | 90.164 | 28.312 | 42 | 29 |
| ASTL1A0102280504350312150720 | 28-Feb-2001 | 88.536 | 28.324 | 4 | 3 |
| ASTL1A0104240509320401260651 | 24-Apr-2001 | 86.973 | 28.327 | 21 | 15 |
| ASTL1A0109200523360110070380 | 20-Sep-2001 | 81.669 | 30.075 | 71 | 34 |
| ASTL1A0110110541060110240508 | 11-Oct-2001 | 78.267 | 32.108 | 7 | 4 |
| ASTL1A0110130529100110260960 | 13-Oct-2001 | 80.567 | 30.565 | 53 | 15 |
| ASTL1A0110180547090110290202 | 18-Oct-2001 | 78.185 | 31.892 | 4 | 2 |
| ASTL1A0110240510470111080504 | 24-Oct-2001 | 85.401 | 28.331 | 61 | 20 |
| ASTL1A0110290528170111110879 | 29-Oct-2001 | 81.388 | 30.448 | 47 | 29 |
| ASTL1A0110290528250111110880 | 29-Oct-2001 | 81.249 | 29.916 | 22 | 11 |
| ASTL1A0110310516020111120765 | 31-Oct-2001 | 83.148 | 29.533 | 18 | 8 |
| ASTL1A0110310516110111120766 | 31-Oct-2001 | 83.017 | 29.000 | 19 | 10 |
| ASTL1A0111110457430112140260 | 11-Nov-2001 | 87.726 | 27.888 | 125 | 81 |
| ASTL1A0111200451120111300272 | 20-Nov-2001 | 90.080 | 28.325 | 51 | 26 |
| ASTL1A0111200451210111300273 | 20-Nov-2001 | 89.945 | 27.792 | 41 | 26 |
| ASTL1A0111210533440112050016 | 21-Nov-2001 | 78.840 | 31.140 | 5 | 4 |
| ASTL1A0112050545390112190343 | 5-Dec-2001 | 78.060 | 31.358 | 4 | 4 |
| ASTL1A0112060450520112200330 | 6-Dec-2001 | 90.740 | 28.227 | 59 | 32 |
| ASTL1A0112070533200112220027 | 7-Dec-2001 | 78.808 | 31.145 | 5 | 2 |
| ASTL1A0112130456420112270108 | 13-Dec-2001 | 88.420 | 27.789 | 76 | 47 |
| ASTL1A0112240437230202210703 | 24-Dec-2001 | 94.192 | 29.278 | 60 | 57 |
| ASTL1A0112240437320202210704 | 24-Dec-2001 | 94.052 | 28.747 | 3 | 3 |
| ASTL1A0202010442550202181006 | 1-Feb-2002 | 91.735 | 28.860 | 7 | 6 |
| ASTL1A0202220500520203061537 | 22-Feb-2002 | 86.066 | 29.006 | 2 | 2 |
| ASTL1A0210030554310210250580 | 3-Oct-2002 | 75.830 | 33.992 | 14 | 6 |
| ASTL1A0210250518430211070774 | 25-Oct-2002 | 83.385 | 29.277 | 32 | 21 |
| ASTL1A0210250518520211070775 | 25-Oct-2002 | 83.244 | 28.745 | 13 | 11 |
| ASTL1A0210280548280211110724 | 28-Oct-2002 | 77.211 | 33.464 | 1 | 0 |
| ASTL1A0210280548370211110725 | 28-Oct-2002 | 77.058 | 32.934 | 6 | 5 |
| ASTL1A0210280548450211110726 | 28-Oct-2002 | 76.906 | 32.404 | 2 | 2 |
| ASTL1A0210310441570211140203 | 31-Oct-2002 | 90.959 | 28.419 | 15 | 5 |
| ASTL1A0212090448280212220388 | 9-Dec-2002 | 89.683 | 28.381 | 25 | 15 |
| ASTL1A0212090448370212220389 | 9-Dec-2002 | 89.550 | 27.849 | 39 | 25 |
| ASTL1A02122805184703011140466 | 28-Dec-2002 | 82.656 | 29.385 | 3 | 3 |
| ASTL1A0301200524400302060835 | 20-Jan-2003 | 80.911 | 29.965 | 11 | 6 |
| ASTL1A0301280435270303170324 | 28-Jan-2003 | 93.653 | 29.358 | 2 | 2 |
| ASTL1A0301280435360303170325 | 28-Jan-2003 | 93.515 | 28.826 | 1 | 1 |
| ASTL1A0302040441560302280957 | 4-Feb-2003 | 92.347 | 28.218 | 5 | 4 |
| ASTL1A0309260517080310070441 | 26-Sep-2003 | 83.125 | 29.868 | 20 | 11 |

Cont.

| Granule ID | Acquisition date | Longitude | Latitude | Lakes delineated | Lakes chosen |
|------------------------------|------------------|-----------|----------|------------------|--------------|
| ASTL1A0310010535200310120325 | 1-Oct-2003 | 78.649 | 31.501 | 20 | 15 |
| ASTL1A0310010535290310120326 | 1-Oct-2003 | 78.507 | 30.970 | 13 | 8 |
| ASTL1A0310080541190310210182 | 8-Oct-2003 | 77.752 | 32.510 | 6 | 1 |
| ASTL1A0310080541280310210183 | 8-Oct-2003 | 77.605 | 31.980 | 16 | 14 |
| ASTL1A0310100529250310220539 | 10-Oct-2003 | 79.307 | 31.076 | 44 | 33 |
| ASTL1A0310100529340310220540 | 10-Oct-2003 | 79.171 | 30.544 | 10 | 10 |
| ASTL1A0310180440470310300358 | 18-Oct-2003 | 91.700 | 28.314 | 16 | 13 |
| ASTL1A0310300505290311130572 | 30-Oct-2003 | 85.540 | 28.311 | 79 | 37 |
| ASTL1A0310310547060311140750 | 31-Oct-2003 | 76.291 | 34.155 | 3 | 2 |
| ASTL1A0310310547150311140751 | 31-Oct-2003 | 76.143 | 33.625 | 6 | 3 |
| ASTL1A0311020535320311160280 | 2-Nov-2003 | 78.276 | 31.555 | 4 | 2 |
| ASTL1A0311120435040311240932 | 12-Nov-2003 | 92.090 | 28.477 | 4 | 0 |
| ASTL1A0311220512300312020311 | 22-Nov-2003 | 84.890 | 28.177 | 3 | 0 |
| ASTL1A0403020530120403190260 | 2-Mar-2004 | 79.826 | 30.450 | 4 | 2 |
| ASTL1A0403180529480404040366 | 18-Mar-2004 | 80.010 | 30.976 | 2 | 0 |
| ASTL1A0403180529570404040367 | 18-Mar-2004 | 79.870 | 30.444 | 4 | 3 |
| ASTL1A0409080540470409190506 | 8-Sep-2004 | 77.301 | 32.576 | 32 | 17 |
| ASTL1A0409170534350409280459 | 17-Sep-2004 | 77.709 | 32.736 | 18 | 7 |
| ASTL1A0410160504350410280200 | 16-Oct-2004 | 85.425 | 28.327 | 48 | 22 |
| ASTL1A0410250458150411040497 | 25-Oct-2004 | 86.627 | 28.376 | 61 | 28 |
| ASTL1A0410280528220411070153 | 28-Oct-2004 | 79.964 | 30.982 | 11 | 5 |
| ASTL1A0411020545540411110369 | 2-Nov-2004 | 75.596 | 34.806 | 13 | 12 |
| ASTL1A0411020546020411110370 | 2-Nov-2004 | 75.451 | 34.274 | 15 | 6 |
| ASTL1A0412030504190412140490 | 3-Dec-2004 | 84.837 | 28.411 | 2 | 1 |
| ASTL1A0412260510530501090794 | 26-Dec-2004 | 84.670 | 28.210 | 1 | 0 |
| ASTL1A0412280458410501110212 | 28-Dec-2004 | 85.841 | 27.935 | 6 | 5 |
| ASTL1A0508280528420508310149 | 28-Aug-2005 | 79.846 | 31.000 | 31 | 7 |
| ASTL1A0508300516280509020157 | 30-Aug-2005 | 82.254 | 30.545 | 28 | 11 |
| ASTL1A0508300516370509020158 | 30-Aug-2005 | 82.118 | 30.013 | 56 | 38 |
| ASTL1A0508300516460509020159 | 30-Aug-2005 | 81.984 | 29.480 | 2 | 1 |
| ASTL1A0509260458220509280522 | 26-Sep-2005 | 85.992 | 28.465 | 65 | 31 |
| ASTL1A0510290540340511070136 | 29-Oct-2005 | 77.287 | 32.579 | 11 | 5 |
| ASTL1A0510290540430511070137 | 29-Oct-2005 | 77.143 | 32.047 | 14 | 11 |
| ASTL1A0511040504420511070290 | 4-Nov-2005 | 84.704 | 28.430 | 3 | 1 |
| ASTL1A0511070534260511100072 | 7-Nov-2005 | 77.677 | 32.740 | 7 | 5 |
| ASTL1A0511130458410511190111 | 13-Nov-2005 | 86.806 | 27.799 | 114 | 53 |
| ASTL1A0512010446080512030561 | 1-Dec-2005 | 91.071 | 28.177 | 31 | 23 |
| ASTL1A0512060504480512090573 | 6-Dec-2005 | 86.290 | 27.647 | 22 | 8 |
| ASTL1A0512080452250512110289 | 8-Dec-2005 | 89.388 | 27.646 | 28 | 22 |
| ASTL1A0602120439480602140585 | 12-Feb-2006 | 90.917 | 27.874 | 18 | 10 |
| ASTL1A0609250522560609280451 | 25-Sep-2006 | 81.111 | 30.488 | 13 | 7 |
| ASTL1A0610040516390610070151 | 4-Oct-2006 | 81.943 | 30.588 | 45 | 14 |
| ASTL1A0610070546280610100197 | 7-Oct-2006 | 76.709 | 34.094 | 5 | 4 |
| ASTL1A0610070546370610100198 | 7-Oct-2006 | 76.559 | 33.563 | 19 | 13 |
| ASTL1A0610070546460610100199 | 7-Oct-2006 | 76.410 | 33.033 | 26 | 14 |
| ASTL1A0610110522440610140050 | 11-Oct-2006 | 80.417 | 30.585 | 63 | 23 |
| ASTL1A0611010540540611040102 | 1-Nov-2006 | 78.377 | 31.862 | 3 | 2 |
| ASTL1A0612060433520612090228 | 6-Dec-2006 | 93.083 | 28.889 | 1 | 1 |
| ASTL1A0612060434000612090229 | 6-Dec-2006 | 92.949 | 28.356 | 16 | 14 |
| ASTL1A0612060434090612090230 | 6-Dec-2006 | 92.815 | 27.824 | 2 | 0 |
| ASTL1A0612200446470612250006 | 20-Dec-2006 | 89.863 | 27.804 | 27 | 22 |

Cont.

| Granule ID | Acquisition date | Longitude | Latitude | Lakes delineated | Lakes chosen |
|------------------------------|------------------|-----------|----------|------------------|--------------|
| ASTL1A0701190459340701220148 | 19-Jan-2007 | 86.541 | 27.837 | 77 | 20 |
| ASTL1A0711010511160805220766 | 1-Nov-2007 | 84.838 | 28.738 | 16 | 7 |
| ASTL1A0711140440360806080161 | 14-Nov-2007 | 91.608 | 27.775 | 41 | 34 |
| ASTL1A0711170511150711200123 | 17-Nov-2007 | 85.227 | 28.679 | 17 | 6 |
| ASTL1A0711170511230806110845 | 17-Nov-2007 | 85.085 | 28.147 | 2 | 1 |
| ASTL1A0711190459120806130457 | 19-Nov-2007 | 88.023 | 27.618 | 57 | 30 |
| ASTL1A0711220529250806160344 | 22-Nov-2007 | 78.822 | 30.592 | 3 | 3 |
| ASTL1A0711230434320806170414 | 23-Nov-2007 | 92.069 | 27.929 | 15 | 9 |
| ASTL1A0711240517220806180334 | 24-Nov-2007 | 81.642 | 29.528 | 5 | 4 |
| ASTL1A0711250421450806190206 | 25-Nov-2007 | 95.546 | 29.528 | 12 | 9 |
| ASTL1A0711270546590806240134 | 27-Nov-2007 | 75.140 | 34.317 | 28 | 19 |
| ASTL1A0712160440570807210302 | 16-Dec-2007 | 91.203 | 27.834 | 15 | 12 |
| ASTL1A0712180428090807230328 | 18-Dec-2007 | 95.051 | 29.380 | 5 | 5 |
| ASTL1A0712210459220807270456 | 21-Dec-2007 | 87.411 | 28.263 | 55 | 32 |
| ASTL1A0712210459310807270457 | 21-Dec-2007 | 87.274 | 27.731 | 4 | 1 |
| ASTL1A0712250434490807300315 | 25-Dec-2007 | 92.386 | 27.885 | 51 | 45 |
| ASTL1A0712260517390808010700 | 26-Dec-2007 | 83.772 | 29.218 | 49 | 41 |
| ASTL1A0712260517480808010701 | 26-Dec-2007 | 83.629 | 28.687 | 3 | 1 |
| ASTL1A0712300453230808040198 | 30-Dec-2007 | 88.104 | 27.835 | 102 | 52 |
| ASTL1A0801010440530808080518 | 1-Jan-2008 | 90.608 | 28.468 | 19 | 12 |
| ASTL1A0801010441020808080519 | 1-Jan-2008 | 90.478 | 27.935 | 230 | 163 |
| ASTL1A0801040511390808100699 | 4-Jan-2008 | 84.452 | 28.796 | 5 | 4 |
| ASTL1A0801040511480808100700 | 4-Jan-2008 | 84.314 | 28.264 | 3 | 2 |
| ASTL1A0801060459270808120304 | 6-Jan-2008 | 87.049 | 28.316 | 18 | 5 |
| ASTL1A0801060459360808120305 | 6-Jan-2008 | 86.914 | 27.784 | 94 | 43 |
| ASTL1A0801130505390808190795 | 13-Jan-2008 | 86.213 | 28.211 | 78 | 43 |
| ASTL1A0802070459270903010607 | 7-Feb-2008 | 86.705 | 28.365 | 34 | 13 |
| ASTL1A0802070459350802110337 | 7-Feb-2008 | 86.572 | 27.833 | 57 | 22 |
| ASTL1A0802230459310903220613 | 23-Feb-2008 | 86.586 | 27.831 | 46 | 15 |
| ASTL1A0802250446510903250589 | 25-Feb-2008 | 90.301 | 28.844 | 6 | 6 |
| ASTL1A0802280517350803020053 | 25-Feb-2008 | 82.369 | 29.426 | 2 | 0 |
| ASTL1A0803010505210803040131 | 1-Mar-2008 | 85.326 | 28.893 | 15 | 10 |
| ASTL1A0810120547270810140884 | 12-Oct-2008 | 75.857 | 34.218 | 21 | 14 |
| ASTL1A0810120547360810140885 | 12-Oct-2008 | 75.712 | 33.687 | 19 | 11 |
| ASTL1A0811040553280811070628 | 4-Nov-2008 | 75.907 | 33.980 | 5 | 1 |
| ASTL1A0812060554020812090093 | 6-Dec-2008 | 75.702 | 33.458 | 6 | 3 |
| ASTL1A0901200524300901230115 | 20-Jan-2009 | 82.350 | 29.752 | 42 | 26 |
| ASTL1A0909260517310909290150 | 26-Sep-2009 | 82.832 | 29.911 | 135 | 44 |
| ASTL1A0910310547260911030057 | 31-Oct-2009 | 76.854 | 33.519 | 2 | 2 |
| ASTL1A0910310547350911030058 | 31-Oct-2009 | 76.703 | 32.989 | 6 | 3 |
| ASTL1A1011030547141011100111 | 3-Nov-2010 | 76.559 | 32.458 | 4 | 4 |
| ASTL1A1011100553021011140326 | 10-Nov-2010 | 75.081 | 34.106 | 20 | 16 |
| Total | 140 scenes | | | 4037 | 2276 |