Table 1. Channel-averaged fitting of coefficients of asymmetry factor for ice clouds

B16	B15	B14	B13	B12	B11	B10	B09	B08	**IR Channels**
1.04641E-12	1.01872E-12	9.89440E-13	7.05996E-13	9.59853E-13	1.46392E-12	1.60833E-12	1.63219E-12	1.32115E-12	$\bar{a}_{ice_1}$
-7.53221E-10	-7.43025E-10	-6.84873E-10	-4.55824E-10	-5.28852E-10	-9.48054E-10	-1.07575E-09	-1.15795E-09	-9.33160E-10	$\bar{a}_{ice_2}$
2.09367E-07	2.11246E-07	1.84676E-07	1.12892E-07	1.04048E-07	2.48076E-07	2.87177E-07	3.27750E-07	2.61735E-07	$\bar{a}_{ice_3}$
-2.83992E-05	-2.99597E-05	-2.50430E-05	-1.39370E-05	-1.00020E-05	-3.61195E-05	-4.05088E-05	-4.77374E-05	-3.75426E-05	$\bar{a}_{ice_4}$
2.02654E-03	2.33790E-03	1.93049E-03	1.02002E-03	8.49869E-04	3.45212E-03	3.40582E-03	3.85165E-03	2.96940E-03	$\bar{a}_{ice_5}$
8.60810E-01	8.39373E-01	8.74870E-01	9.37036E-01	9.15012E-01	7.79621E-01	8.21595E-01	8.01444E-01	8.57202E-01	$\bar{a}_{ice_6}$
7.54781E-01	1.71696E+00	1.43577E+00	5.73466E-01	2.73323E-01	2.55549E+00	1.32368E+00	1.47112E+00	9.72498E-01	$\bar{a}_{ice_7}$
-3.11059E+01	-4.21304E+01	-3.53037E+01	-2.08190E+01	-1.09261E+01	-3.58837E+01	-1.97166E+01	-2.22979E+01	-1.76734E+01	$\bar{a}_{ice_8}$
2.35755E+02	3.05355E+02	2.45062E+02	1.37788E+02	5.88466E+01	2.30347E+02	1.29584E+02	1.52880E+02	1.28605E+02	$\bar{a}_{ice_9}$
-8.68742E+02	-1.09893E+03	-8.60467E+02	-4.77455E+02	-1.85787E+02	-7.92252E+02	-4.65328E+02	-5.57497E+02	-4.85335E+02	$\bar{a}_{ice_10}$
1.24357E+03	1.55089E+03	1.19788E+03	6.66783E+02	2.51492E+02	1.09560E+03	6.66166E+02	8.02190E+02	7.11551E+02	$\bar{a}_{ice_11}$

Table 2. Channel-averaged fitting coefficients of extinction coefficients (μm^{-1}) for ice clouds

B16	B15	B14	B13	B12	B11	B10	B09	B08	**IR Channels**
1.69101E-13	2.09161E-13	2.31459E-13	1.96561E-13	5.29159E-13	6.47389E-13	3.23001E-13	2.37297E-13	1.50706E-13	$\overline{b}_{ice_1}$
-1.28761E-10	-1.56796E-10	-1.69788E-10	-1.42103E-10	-4.09054E-10	-4.93607E-10	-2.41782E-10	-1.76393E-10	-1.10708E-10	$\overline{b}_{ice_2}$
4.00797E-08	4.78210E-08	5.05686E-08	4.12542E-08	1.30900E-07	1.54051E-07	7.35928E-08	5.31781E-08	3.27363E-08	$\overline{b}_{ice_3}$
-6.58669E-06	-7.64469E-06	-7.87065E-06	-6.18955E-06	-2.26142E-05	-2.54392E-05	-1.17151E-05	-8.34532E-06	-4.96417E-06	$\overline{b}_{ice_4}$
6.19794E-04	6.90578E-04	6.84573E-04	5.25063E-04	2.31471E-03	2.40551E-03	1.04458E-03	7.26789E-04	4.05041E-04	$\overline{b}_{ice_5}$
-3.43268E-02	-3.59012E-02	-3.31198E-02	-2.83211E-02	-1.44876E-01	-1.32102E-01	-5.16344E-02	-3.43330E-02	-1.66730E-02	$\overline{b}_{ice_6}$
4.11207E+00	4.08853E+00	3.93000E+00	4.31091E+00	8.39221E+00	7.03201E+00	4.27091E+00	3.69306E+00	3.23072E+00	$\overline{b}_{ice_7}$
-6.68982E+00	-1.26040E+01	-2.47629E+01	-5.13898E+01	-9.03118E+01	-4.34969E+01	4.23284E+00	1.04118E+01	1.59324E+01	$\overline{b}_{ice_8}$
-7.72334E+01	-1.18525E+01	1.00799E+02	3.23940E+02	4.83645E+02	5.97915E+01	-2.42944E+02	-2.60637E+02	-2.74396E+02	$\overline{b}_{ice_9}$
4.24349E+02	1.72996E+02	-2.37130E+02	-1.05250E+03	-1.33166E+03	2.85411E+02	1.16593E+03	1.16003E+03	1.14100E+03	$\overline{b}_{ice_10}$
-6.62544E+02	-3.16794E+02	2.40542E+02	1.37393E+03	1.49776E+03	-7.86996E+02	-1.78406E+03	-1.71602E+03	-1.63061E+03	$\overline{b}_{ice_11}$

Table 3. Channel-averaged fitting coefficients of single-scattering albedo (1-ω) for ice clouds

B16	B15	B14	B13	B12	B11	B10	B09	B08	**IR Channels**
-5.43160E-13	-5.08720E-13	-8.24863E-13	-1.78944E-13	3.23679E-12	3.93822E-12	2.42101E-12	1.74944E-12	1.08834E-12	$\overline{c}_{ice_1}$
3.92590E-10	3.76845E-10	5.55772E-10	9.48017E-11	-2.48784E-09	-2.83889E-09	-1.74742E-09	-1.25688E-09	-7.47445E-10	$\overline{c}_{ice_2}$
-1.18280E-07	-1.18150E-07	-1.55519E-07	-1.11014E-08	7.89282E-07	8.28262E-07	5.04345E-07	3.58548E-07	1.99122E-07	$\overline{c}_{ice_3}$
1.94251E-05	2.04058E-05	2.41931E-05	-2.07041E-06	-1.32746E-04	-1.25800E-04	-7.35829E-05	-5.08634E-05	-2.52795E-05	$\overline{c}_{ice_4}$
-1.86323E-03	-2.03600E-03	-2.26103E-03	5.61163E-04	1.23230E-02	1.04270E-02	5.45608E-03	3.50100E-03	1.36704E-03	$\overline{c}_{ice_5}$
5.74207E-01	5.82993E-01	5.93649E-01	4.60423E-01	-6.45061E-02	7.82262E-02	3.42941E-01	4.16571E-01	5.00096E-01	$\overline{c}_{ice_6}$
-1.00511E+00	-8.86004E-01	-1.54829E-01	5.36993E-01	5.58442E+00	1.29621E+00	-2.57183E+00	-3.20284E+00	-3.62000E+00	$\overline{c}_{ice_7}$
1.85263E+01	2.69506E+01	2.67092E+01	2.19335E+01	-6.42348E+01	-1.92693E+01	1.54114E+01	1.97919E+01	2.05643E+01	$\overline{c}_{ice_8}$
-1.09042E+02	-1.99817E+02	-2.26670E+02	-1.87410E+02	4.92554E+02	1.93373E+02	-5.67204E-01	-2.12286E+01	-1.26840E+01	$\overline{c}_{ice_9}$
3.44875E+02	7.15953E+02	8.46057E+02	6.77635E+02	-1.85911E+03	-8.24110E+02	-2.34651E+02	-1.76155E+02	-2.30057E+02	$\overline{c}_{ice_10}$
-4.52151E+02	-1.00431E+03	-1.20159E+03	-9.35455E+02	2.70166E+03	1.28202E+03	5.42510E+02	4.69348E+02	5.61066E+02	$\overline{c}_{ice_11}$

Table 4. Channel-averaged fitting of coefficients of asymmetry factor for water clouds

B16	B15	B14	B13	B12	B11	B10	B09	B08	**IR Channels**
4.42458E-11	2.97548E-11	2.35054E-12	-1.81959E-10	-1.17735E-09	-1.56488E-09	2.06803E-09	3.09031E-09	1.93862E-09	$\bar{a}_{wat_1}$
-1.02251E-08	-6.83868E-09	1.06634E-10	4.95171E-08	2.80897E-07	3.24528E-07	-5.43516E-07	-7.67180E-07	-4.54814E-07	$\bar{a}_{wat_2}$
9.61203E-07	6.39646E-07	-6.26569E-08	-5.39016E-06	-2.68921E-05	-2.53464E-05	5.93989E-05	7.88078E-05	4.35585E-05	$\bar{a}_{wat_3}$
-4.68985E-05	-3.10840E-05	3.46896E-06	2.92754E-04	1.29984E-03	8.58890E-04	-3.48105E-03	-4.32084E-03	-2.18406E-03	$\bar{a}_{wat_4}$
1.22960E-03	8.10628E-04	7.01409E-05	-7.91461E-03	-3.24537E-02	-7.36774E-03	1.17056E-01	1.35430E-01	6.07490E-02	$\bar{a}_{wat_5}$
9.47377E-01	9.65475E-01	9.78503E-01	1.07995E+00	1.37291E+00	7.48837E-01	-1.24132E+00	-1.41415E+00	7.31884E-02	$\bar{a}_{wat_6}$
-4.29793E-01	-4.13195E-01	-2.54333E-01	-1.01580E+00	-3.27460E+00	3.76738E+00	2.12029E+01	2.14717E+01	5.87560E+00	$\bar{a}_{wat_7}$
-4.12153E+00	-3.56592E+00	-4.04109E+00	1.00619E-01	1.10116E+01	-3.12617E+01	-1.19043E+02	-1.14012E+02	-2.31302E+01	$\bar{a}_{wat_8}$
4.78110E+00	3.72818E+00	8.13131E+00	-2.24507E+00	-3.13033E+01	1.10361E+02	3.65679E+02	3.34905E+02	4.33325E+01	$\bar{a}_{wat_9}$
3.98447E+00	2.74122E+00	-1.01938E+01	3.79309E+00	4.59431E+01	-1.95122E+02	-5.86014E+02	-5.17626E+02	-3.69547E+01	$\bar{a}_{wat_10}$
-6.38838E+00	-3.79043E+00	7.28568E+00	-1.27511E+00	-2.70115E+01	1.34227E+02	3.76252E+02	3.23101E+02	8.52613E+00	$\bar{a}_{wat_11}$

Table 5. Channel-averaged fitting coefficients of extinction coefficients (μm^{-1}) for water clouds

B16	B15	B14	B13	B12	B11	B10	B09	B08	**IR Channels**
-5.20593E-11	-1.18486E-10	-3.60309E-10	-1.19502E-09	-1.29873E-09	1.63221E-09	3.15273E-09	2.42684E-09	6.42482E-10	$\overline{b}_{wat_1}$
1.04649E-08	2.73506E-08	8.89766E-08	2.85636E-07	2.79087E-07	-4.27523E-07	-7.45487E-07	-5.61822E-07	-1.39877E-07	$\overline{b}_{wat_2}$
-7.57871E-07	-2.55560E-06	-9.10351E-06	-2.79531E-05	-2.33440E-05	4.69122E-05	7.25821E-05	5.31767E-05	1.20583E-05	$\overline{b}_{wat_3}$
1.83343E-05	1.22403E-04	4.97021E-04	1.43502E-03	9.22441E-04	-2.80024E-03	-3.76411E-03	-2.65147E-03	-5.13046E-04	$\overline{b}_{wat_4}$
5.07188E-04	-3.03726E-03	-1.53884E-02	-4.07703E-02	-1.46101E-02	9.87009E-02	1.12336E-01	7.46637E-02	1.03803E-02	$\overline{b}_{wat_5}$
-4.35111E-02	2.74231E-02	2.56337E-01	6.03530E-01	-9.40927E-02	-2.08215E+00	-1.94249E+00	-1.17443E+00	-4.28807E-02	$\overline{b}_{wat_6}$
2.72204E+00	1.96276E+00	-9.85354E-02	-1.86263E+00	7.68436E+00	2.68699E+01	2.00695E+01	1.08525E+01	-4.37493E-01	$\overline{b}_{wat_7}$
-1.06143E+01	-8.60550E+00	-1.75445E+00	6.33049E-01	-6.04217E+01	-1.56105E+02	-8.12185E+01	-2.02521E+01	3.83661E+01	$\overline{b}_{wat_8}$
2.46150E+01	2.21878E+01	8.65326E+00	1.50368E+01	2.18246E+02	4.80344E+02	1.54628E+02	-5.35600E+01	-2.06050E+02	$\overline{b}_{wat_9}$
-3.20142E+01	-3.14876E+01	-1.68857E+01	-4.13979E+01	-3.81775E+02	-7.56517E+02	-1.22795E+02	2.28496E+02	4.23453E+02	$\overline{b}_{wat_10}$
1.77214E+01	1.86542E+01	1.21060E+01	3.40062E+01	2.58518E+02	4.76159E+02	1.87129E+01	-2.12446E+02	-3.09969E+02	$\overline{b}_{wat_11}$

Table 6. Channel-averaged fitting coefficients of single-scattering albedo (1-ω) for water clouds

B16	B15	B14	B13	B12	B11	B10	B09	B08	**IR Channels**
7.84041E-11	7.78951E-11	2.21989E-11	1.40492E-10	2.41524E-09	4.55400E-09	1.24995E-09	-3.11188E-10	-1.74620E-09	$\overline{c}_{wat_1}$
-1.89080E-08	-2.10292E-08	-1.99371E-08	-8.60094E-08	-6.43770E-07	-1.08121E-06	-2.42922E-07	1.25205E-07	4.42054E-07	$\overline{c}_{wat_2}$
1.84936E-06	2.38095E-06	4.03643E-06	1.53336E-05	7.10540E-05	1.04833E-04	1.67922E-05	-1.88272E-05	-4.68278E-05	$\overline{c}_{wat_3}$
-9.18069E-05	-1.45043E-04	-3.66573E-04	-1.26697E-03	-4.16058E-03	-5.31305E-03	-3.74857E-04	1.44967E-03	2.70077E-03	$\overline{c}_{wat_4}$
2.21043E-03	4.96133E-03	1.71066E-02	5.38453E-02	1.36092E-01	1.48046E-01	-1.08010E-02	-6.39579E-02	-9.24221E-02	$\overline{c}_{wat_5}$
4.43423E-01	3.78154E-01	9.39868E-02	-6.16306E-01	-1.85767E+00	-1.63613E+00	1.27629E+00	2.14939E+00	2.37654E+00	$\overline{c}_{wat_6}$
1.47392E+00	2.43650E+00	4.53784E+00	8.80662E+00	1.79294E+01	1.21010E+01	-1.68999E+01	-2.43620E+01	-2.16444E+01	$\overline{c}_{wat_7}$
3.36601E-01	-4.70610E+00	-1.48833E+01	-3.79519E+01	-8.67300E+01	-4.51663E+01	1.14574E+02	1.50056E+02	1.16705E+02	$\overline{c}_{wat_8}$
-1.12303E+01	2.93447E+00	3.30056E+01	1.09045E+02	2.56918E+02	1.02036E+02	-3.95286E+02	-4.91009E+02	-3.43333E+02	$\overline{c}_{wat_9}$
2.59620E+01	4.79727E+00	-4.29170E+01	-1.71328E+02	-4.03560E+02	-1.20843E+02	6.82135E+02	8.17758E+02	5.26934E+02	$\overline{c}_{wat_10}$
-1.95441E+01	-6.56743E+00	2.40794E+01	1.09396E+02	2.55791E+02	5.77009E+01	-4.60039E+02	-5.38145E+02	-3.26125E+02	$\overline{c}_{wat_11}$