**Supplemental material**

Seasonal and interannual variations in the propagation of photosynthetically available radiation through the Arctic atmosphere

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**Table S1.** Values used as input for the radiative transfer simulations

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Region** | **Period** | **Median values (interquartile range)** | | | | | | |
| **Cloud fraction** | **Cloud optical thickness** | **Cloud top height (km)** | **Albedo** | **Water vapor (cm)** | **Ozone (Dobson units)** | **Aerosol optical depth** |
| Permanent ocean | Spring | 0.93 (0.79, 0.98) | 13.05 (8.71, 18.56) | 1.72 (1.21, 2.44) | 0.08 (0.08, 0.08) | 1.00 (0.86, 1.18) | 394.95 (360.30, 430.90) | 0.11 (0.08, 0.16) |
| Late spring | 0.94 (0.80, 0.98) | 12.51 (8.74, 17.61) | 1.69 (1.18, 2.51) | 0.08 (0.08, 0.08) | 1.13 (0.99, 1.30) | 377.65 (347.20, 407.90) | 0.10 (0.07, 0.14) |
| Early summer | 0.93 (0.77, 0.98) | 13.77 (9.21, 19.63) | 1.84 (1.19, 3.01) | 0.08 (0.08, 0.08) | 1.35 (1.15, 1.68) | 347.10 (320.20, 374.95) | 0.10 (0.07, 0.14) |
| Summer | 0.93 (0.76, 0.98) | 13.78 (9.28, 19.50) | 2.14 (1.31, 3.32) | 0.08 (0.08, 0.08) | 1.50 (1.27, 1.82) | 334.95 (311.35, 362.45) | 0.10 (0.07, 0.15) |
| Transient ice | Spring | 0.87 (0.65, 0.97) | 14.53 (9.03, 22.34) | 1.55 (1.02, 2.33) | 0.10 (0.08, 0.21) | 0.78 (0.66, 0.95) | 387.95 (356.10, 420.01) | 0.12 (0.09, 0.17) |
| Late spring | 0.85 (0.61, 0.96) | 11.56 (6.99, 18.33) | 1.68 (0.97, 2.71) | 0.10 (0.08, 0.17) | 0.98 (0.84, 1.18) | 359.40 (332.75, 391.50) | 0.10 (0.07, 0.14) |
| Early summer | 0.82 (0.54, 0.96) | 11.37 (6.32, 18.72) | 1.81 (0.92, 3.13) | 0.09 (0.08, 0.14) | 1.22 (1.02, 1.53) | 333.85 (312.35, 358.20) | 0.09 (0.06, 0.14) |
| Summer | 0.83 (0.58, 0.96) | 11.73 (6.49, 19.36) | 2.12 (1.02, 3.55) | 0.08 (0.08, 0.11) | 1.34 (1.12, 1.64) | 324.30 (304.85, 346.20) | 0.09 (0.06, 0.15) |
| Permanent ice | Spring | 0.56 (0.33, 0.77) | 18.97 (11.10, 31.09) | 1.47 (0.94, 2.20) | 0.72 (0.49, 0.82) | 0.62 (0.54, 0.73) | 394.45 (363.00, 427.25) | 0.16 (0.12, 0.21) |
| Late spring | 0.62 (0.41, 0.80) | 16.73 (8.86, 27.29) | 1.97 (1.14, 3.12) | 0.52 (0.35, 0.69) | 0.90 (0.76, 1.09) | 360.90 (337.45, 389.82) | 0.12 (0.08, 0.17) |
| Early summer | 0.56 (0.34, 0.78) | 14.25 (7.30, 24.60) | 2.10 (1.08, 3.41) | 0.38 (0.29, 0.46) | 1.14 (0.96, 1.42) | 336.50 (316.60, 363.71) | 0.09 (0.06, 0.14) |
| Summer | 0.57 (0.34, 0.79) | 14.45 (7.40, 25.43) | 2.17 (1.18, 3.53) | 0.30 (0.23, 0.37) | 1.25 (1.06, 1.49) | 328.60 (309.60, 351.30) | 0.08 (0.06, 0.14) |