

Supplementary material

Supplementary Table 1 – Different relations of k with the wind speed at 10 m (U_{10}) and lake surface area (SA). Validity ranges of U_{10} were based on the data range used to construct each model. For comparison, gas transfer velocities were computed from the multi-year ice-free mean wind speed on the Stordalen Mire and normalized to a Schmidt number of 600 (CO_2 at 20 °C).

Model	Method	Lake surface area (km^2)	U_{10} validity range (m s^{-1})	k_{600} at $U_{10}=4.3$ m s^{-1} (cm h^{-1})	Reference
$k_{600} = 0.77 \times U_{10}^{1.02} + 0.62$	FC	0.01–0.17	1–9	4.0	This work
$k_{600} = 0.45 \times U_{10}^{1.6}$	Tracers	0.13–500	1–8	4.6	MacIntyre et al., 1995
$k_{600} = 0.215 \times U_{10}^{1.7} + 2.07$	SF ₆	0.15	0–9	4.6	Cole and Caraco, 1998
$k_{600} = 4.33 \times U_{10} - 13.3$	SF ₆	0.13	1–5.5	5.3	Crusius and Wanninkhof, 2003
$k_{600} = 0.228 \times U_{10}^{2.2} + 0.168$	SF ₆	0.13	1–5.5	5.8	Crusius and Wanninkhof, 2003
$k_{600} = 0.78 \times U_{10} + 1.31$	FC	0.06	0–5	4.7	Soumis et al., 2008
$k_{600} = 1.48 \times U_{10} + 1.48 \times U_{10} \times \log_{10}(\text{SA}) + 2.51$	FC	0.01–0.15	1–6.5	5.5–7.5	Vachon and Prairie, 2013

References

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