Correction to "A systematic analysis of eight decades of incipient motion studies, with special reference to gravel-bedded rivers" by John M. Buffington and David R. Montgomery

In the paper "A systematic analysis of eight decades of incipient motion studies, with special reference to gravel-bedded rivers" by John M. Buffington and David R. Montgomery (*Water Resources Research*, *33*(8), 1993–2029, 1997), the symbol for channel slope (S) was incorrectly typeset as a subscript in the equation in the footnote keyed to ‡, Table 1a. The correct equation is

$$h_c = \tau_c^*(\rho_s - \rho) D_{50}/\rho S$$

The authors also would like to point out that their data compilation does not include dimensionless shear stress values that are averages of multiple data sets (e.g., *Meyer-Peter and Müller*'s [1948] $\tau_{c_{r50m}}^* = 0.047$ and *Andrew*'s [1983] $\tau_{c_{q50ss}}^* = 0.083$), as there is no unique critical boundary Reynolds number (Re_c^*) for these values because they combine a range of median grain sizes and boundary roughness conditions. For example, the *Meyer-Peter and Müller* [1948] Shields parameter of 0.047 is based on mixture median grain sizes of 0.4–28.7 mm, corresponding with Re_c^* values ranging from approximately 5 to 3300, effectively spanning the range of boundary Reynolds numbers reported for most Shields curves. Consequently, their Shields parameter of 0.047 can be thought of as an average of an entire Shields curve. In this example, Re_c^* values were estimated as described in the footnote keyed to †, Table 1a, with $\nu = 1.3 \times 10^{-6}$ m²/s, $D_{50m} = 0.4$–28.7 mm, $\tau_{c_{r50m}}^* = 0.047$, and $\rho_s = 2680$ kg/m³ [*Meyer-Peter and Müller*, 1948].

References

Andrews, E. D., Entrainment of gravel from naturally sorted riverbed material, *Geol. Soc. Am. Bull.*, *94*, 1225–1231, 1983.

Meyer-Peter, E., and R. Müller, Formulas for bed-load transport, in *Proceedings of the 2nd Meeting of the International Association for Hydraulic Structures Research*, pp. 39–64, Inter. Assoc. for Hydraul. Res., Delft, Netherlands, 1948.

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