Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2020-360-RC1, 2020

Hydrology and Earth System Sciences
Discussions
Open Access
EGU

Interactive comment on "Variations of surface roughness on inhomogeneous underlying surface at Nagqu Area over the Tibetan Plateau" *by* Maoshan Li et al.

Anonymous Referee #1

Received and published: 29 September 2020

The manuscript presents a study on estimating surface roughness length from remote sensing data which is tested with calculated roughness length from field observation data. It appears to be converted from a thesis chapter, premature for journal submission. The list of references does not follow an order. The authors should have spent more time in making the manuscript ready. In addition to this formatting and writing problem, I have more concern on the science aspect of the manuscript. (1) The assumption of this study is that the roughness length varies with time when surface vegetation cover is changing. For the same reason, would zero-plane displacement be varying too? Why is it taken as a constant value 0.03 m ? (L180). (2) Please provide a reference for the von Karman constant (0.35). Hogstrom (1985 and 1996) suggests

Printer-friendly version

Discussion paper

a value of 0.40. (3) Please provide an equation showing how u* us calculated. It is certainly not a directly measurable variable. (4) About the Massman model, I could not find exact equations in wither Massman 1997 or 1999. However, I see you 2.6 is somewhat close to Massman 1999 Eq. 5. The relationship in Massman Eq. 5 C1-C2*... while yours is C1 + C2*... Something looks inconsistent. (5) About acf, it is not clear to me why this correction factor is applied to the vegetation height calculated from 2.10? How is it relevant? If Sun 2016 use acf due to the use of ASTER DEM. This is not used in your study, what is the reason to apply such a correction factor? (6) You cannot present an equation without telling the source or showing how the equation is derived. Please include a reference to, for example, 2.13. (7) Values of hmax and hmin are required to estimate Zom. Are the hmax and hmin values estimated based on the three observation stations representative to the whole area where you produce maps of roughness length? (8) There are empirical equations for estimation of roughness lengths and zero plane displacement based on vegetation height. It would be good to test how the empirical relationships compare to equation 2.8 and 2.9.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2020-360, 2020.

Printer-friendly version

Discussion paper