

Interactive comment on “Observations of the effect of emergent vegetation on sediment resuspension under unidirectional currents and waves” by R. O. Tinoco and G. Coco

Anonymous Referee #2

Received and published: 15 December 2013

General comments: The authors present laboratory measurements of the effects of emergent vegetation under conditions with currents and waves. Although the presented results are interesting, the manuscript lacks a thorough link between the velocity profile to bed shear stress, to erosion, to suspension. The common mechanisms do not hold under the governing conditions because the shape of the velocity profile is no longer logarithmic. The connection between measured data and physics needs to be improved. Unfortunately the experiments show artefacts such as lateral waves of the water surface and reflection of waves at the end of the flume.

More detailed comments (not in order of importance): - Abstract needs to be improved and extended. Start with second sentence. - p603 lines 20-25: add references, also
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the scarce ones - p604-606: long list of equations is included without informing the reader about relevance, physical meaning, and ranges of application of the equations. In the presented equations the velocity profile is assumed to be logarithmic, which is not the case under the governing conditions. The theory presented here is not used and not compared to data. - p605 line 9: the word 'critical' is missing - p605 line 10: equation not valid here - p605 line 11: not Kolmogorov but Von Karman - p607 lines 9-17: do previous studies cover only 'currents' (not waves)? If so, please stress you are the first to cover the interaction between vegetation and waves. - p609 lines 8-13: what about the wave reflections (p 610, line 26)? what is done to prevent these reflections? - p609 lines 16-19: describe the bedforms, explain scour and bedforms - p610 lines 10-20: what is the source of it? - p612 line 5: x velocities are not damped due to mass conservation - p612 lines 22-23: what is 'fully developed' here? - please include velocity profiles - conclusion section: too superficial. Discuss the effects of dissipation and turbulence, as well as the effect of turbulence on suspension. - p615 lines 1-2: boundary layer and bed shear stress change as well - figure 5: at which elevation have these velocities been measured? - figure 6: $k^{(1/2)}/U$ should be more or less constant for $n = 0$. Caption: delete "increase in" - figure 7 seems to be dominated by artefacts - figure 8: discuss damping, energy loss

Interactive comment on Earth Surf. Dynam. Discuss., 1, 601, 2013.