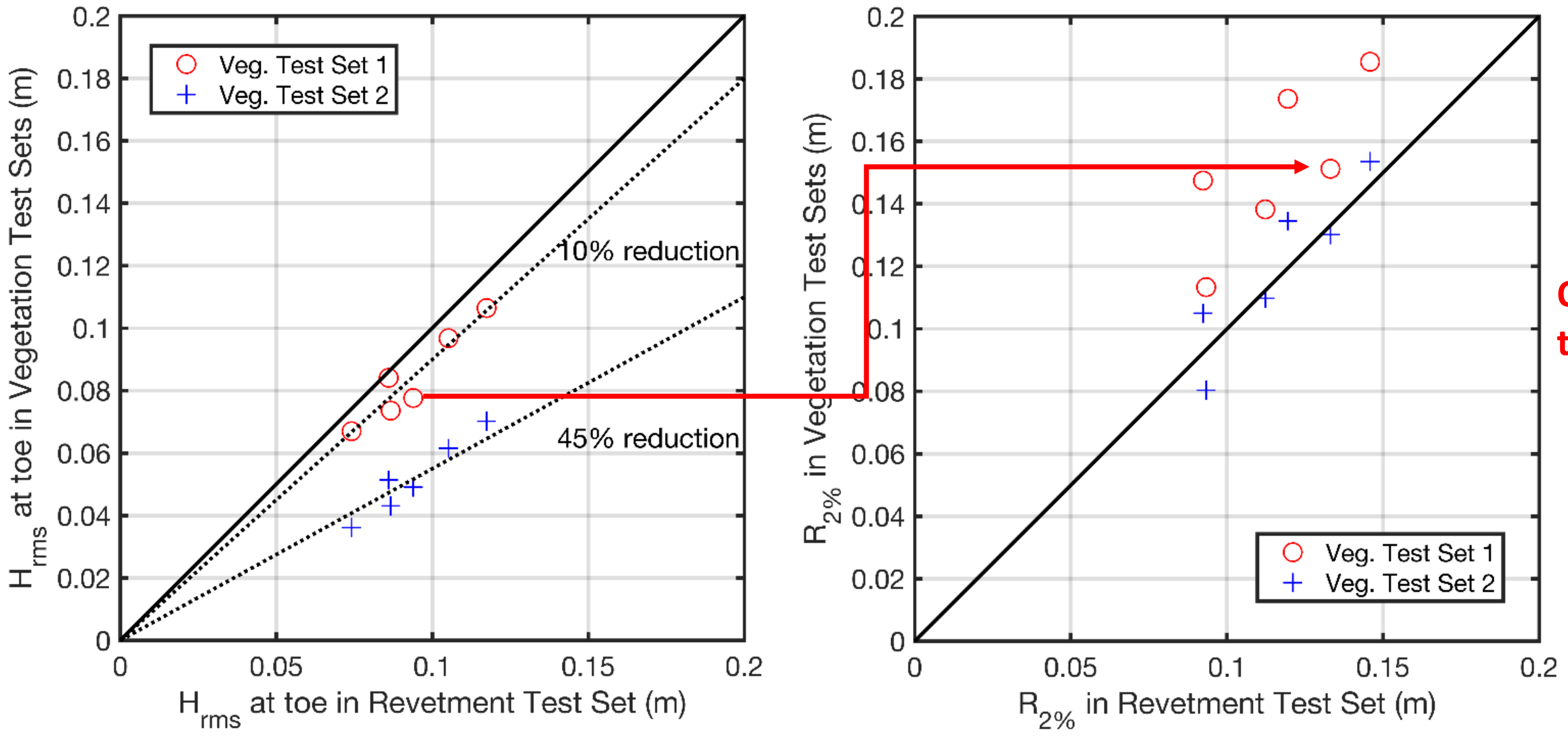
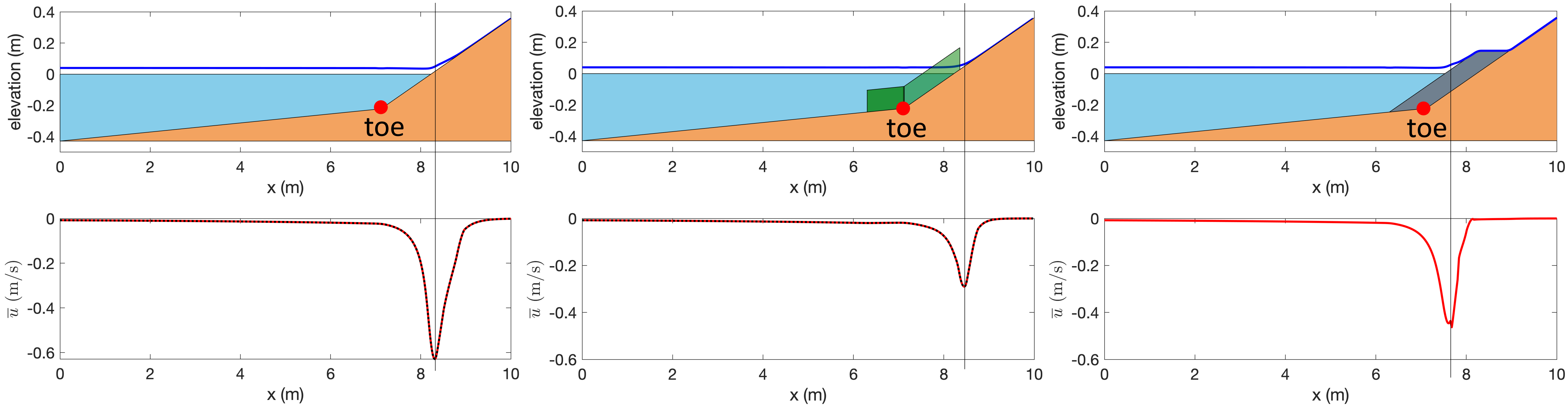
CSHORE Results

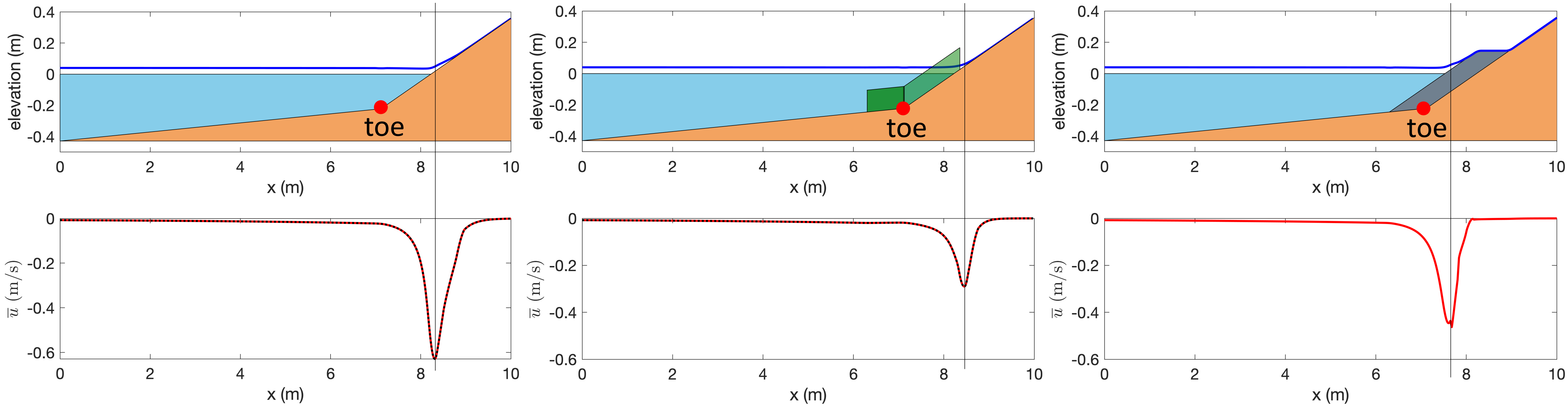


Q: Why does smaller H_{rms} at the toe lead to larger $R_{2\%}$?

Understand CSHORE Results



Understand CSHORE Results



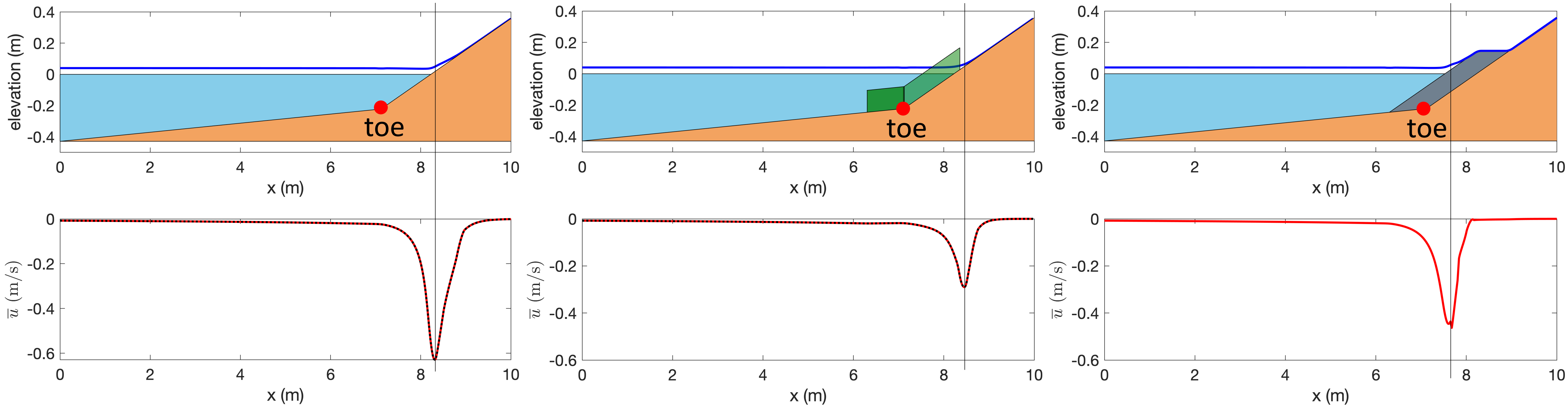
- $\bar{u}$ is the time-averaged depth-averaged horizontal velocity.
- With revetment:
  - $\bar{u}$ is corrected by the time-averaged horizontal discharge velocity in the permeable layer, $\overline{u_p}$.

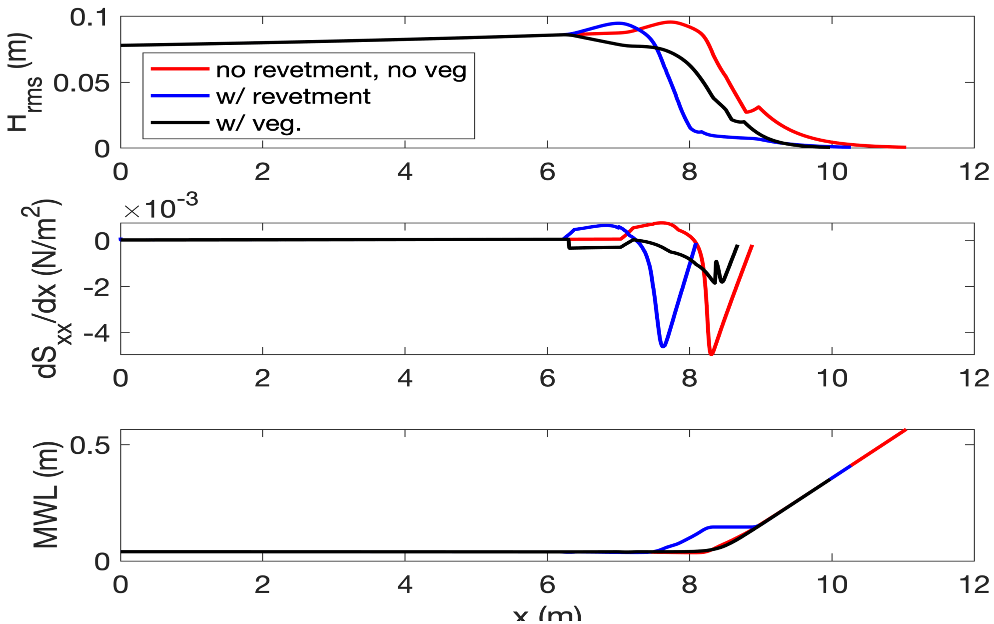
$$g\frac{d\eta}{dx}+\overline{U_p}\left[\alpha_p+\sqrt{\frac{2}{\pi}}\left(\beta_2+\beta_1\sigma_p\right)\left(1+\cos^2\theta\right)\right]=0$$

  - $\bar{u}$ is used to calculate D_p, which is energy dissipation rate inside the permeable layer.
  - D_p affects H_{rms}, which further affects S_{xx} and $\frac{dS_{xx}}{dx}$, and eventually, affects $\bar{\eta}$.

$$\frac{d}{dx}\left(S_{xx}+\rho\frac{Q_x^2}{\bar{h}}\right)=-\rho g\bar{h}\frac{d\bar{\eta}}{dx}-\tau_{bx}+\tau_{sx}$$

Understand CSHORE Results





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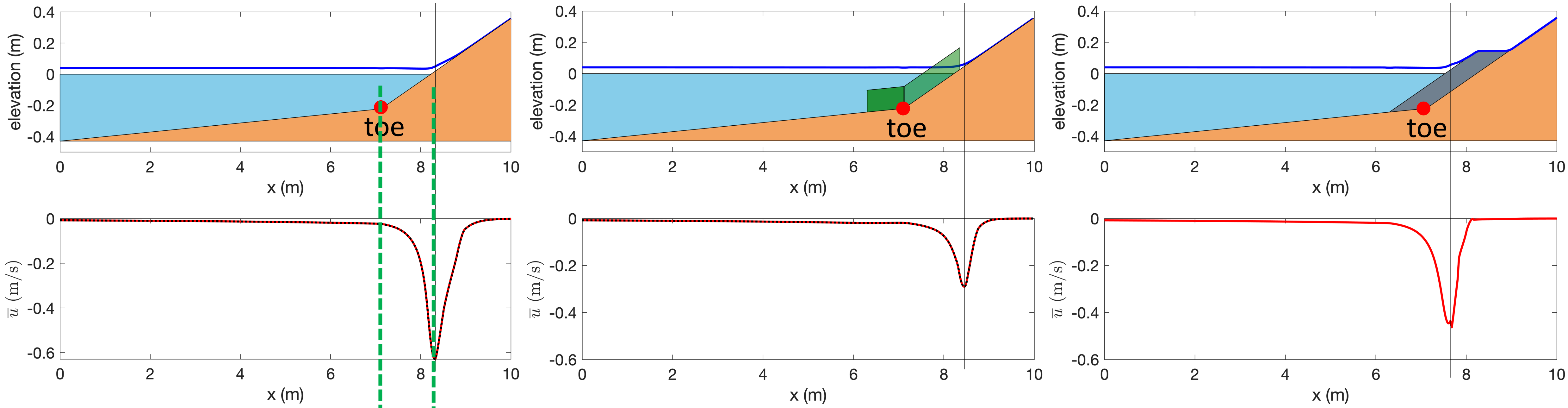

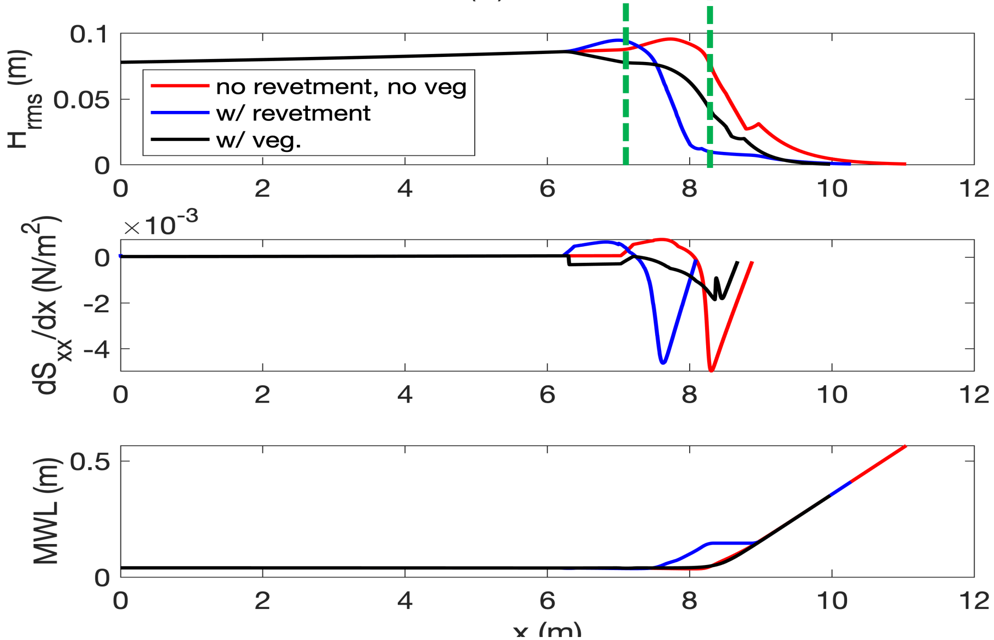

A: The time-averaged depth-averaged velocity inside of vegetation is not modified as in revetment.

Although H_{rms} at the toe has:

$$H_{rms,\,revetment} > H_{rms,no\ protection} > H_{rms,veg}$$

shortly after 1 m, the relationship of H_{rms} in the three scenario becomes:

$$H_{rms,no\ protection} > H_{rms,veg} > H_{rms,revetment}$$

Therefore, we have $R_{2\%,no\ protection} > R_{2\%,veg} > R_{2\%,revetment}$