Post-failure dynamics of rainfall induced landslide in Oltrepò Pavese

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Il progetto ANDROMEDA: nuovi metodi di previsione di frane superficiali e alluvioni

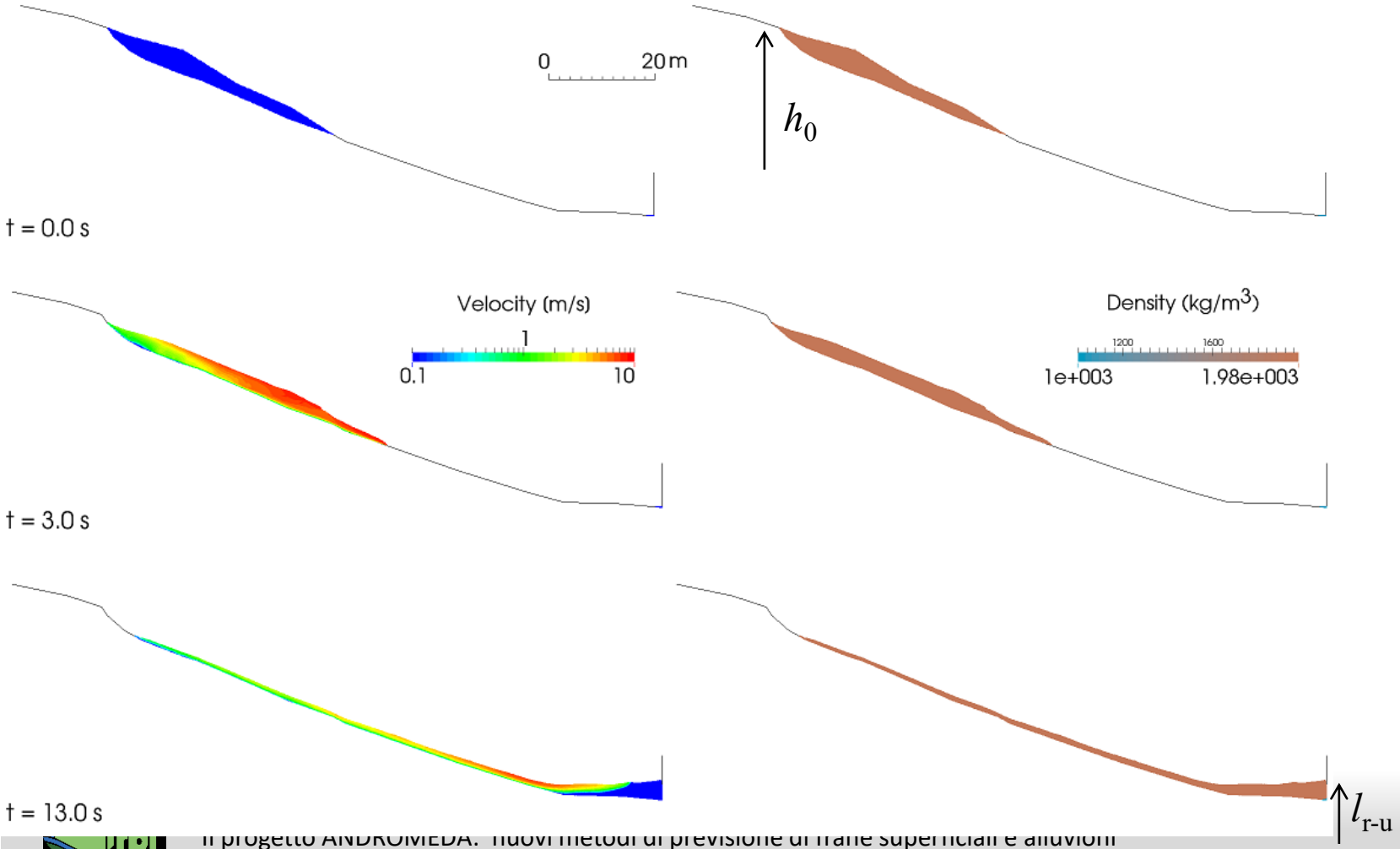
2D Recoaro landslide

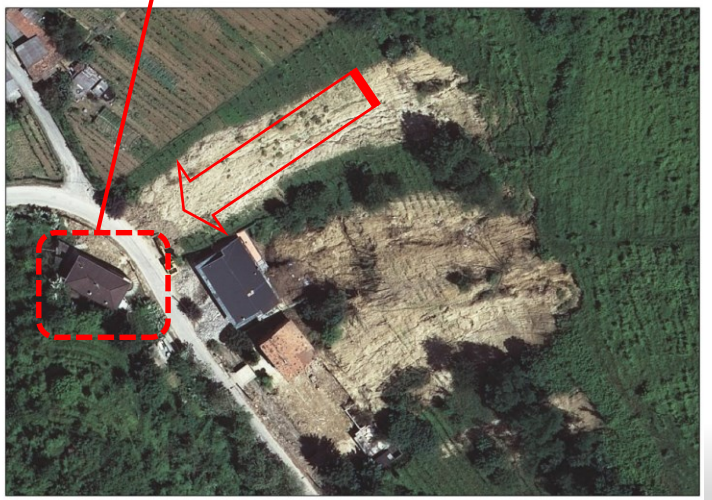
Shallow rainfall induced fast landslide with narrow width is simulated following 2D approach with SPHERA v.9.0.0 (RSE SpA).

The final landslide profile is compared with survey data for model validation.

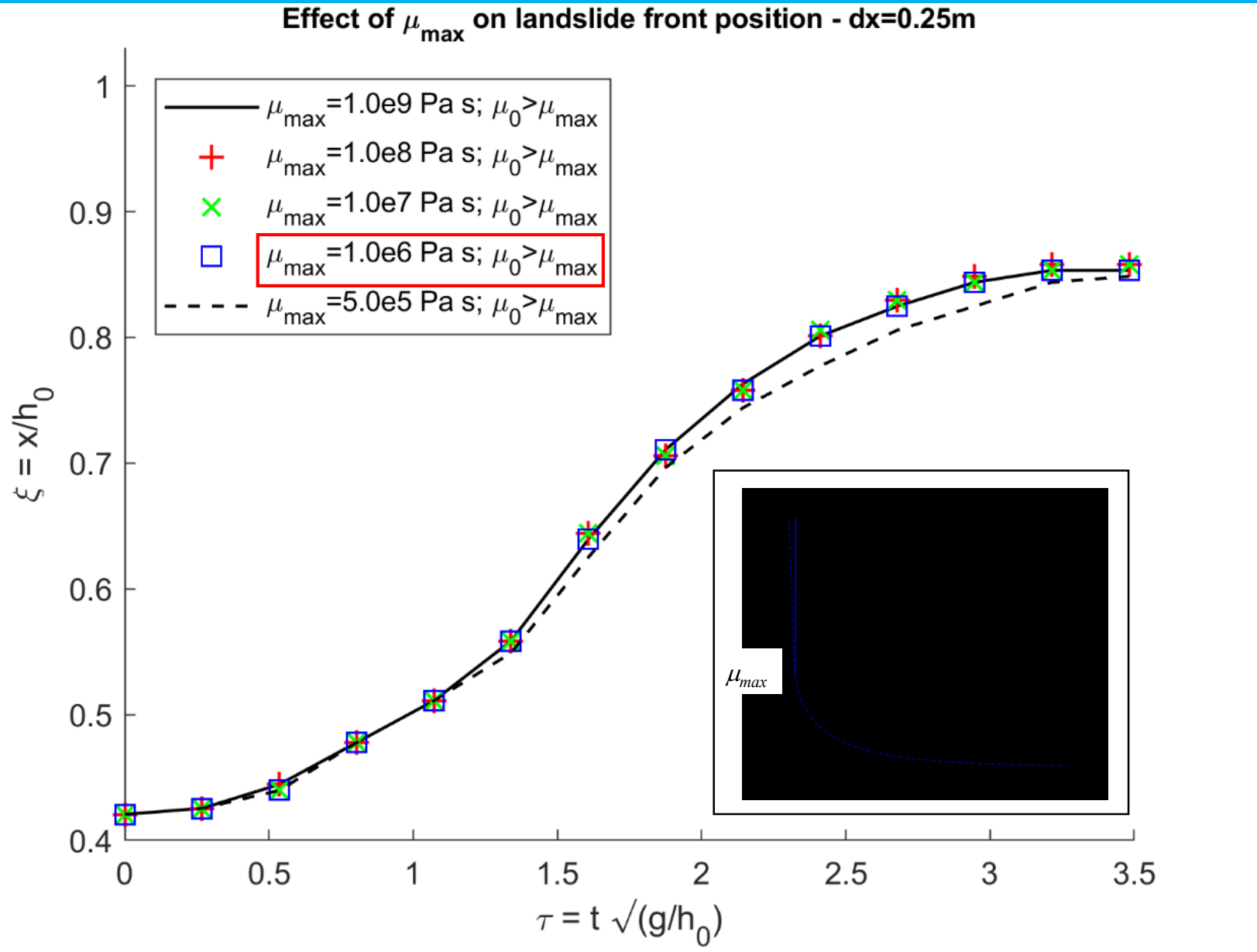
Influence of mechanical parameters on the landslide front velocity and impact force on the downstream wall.

2D SPH simulation of Recoaro landslide

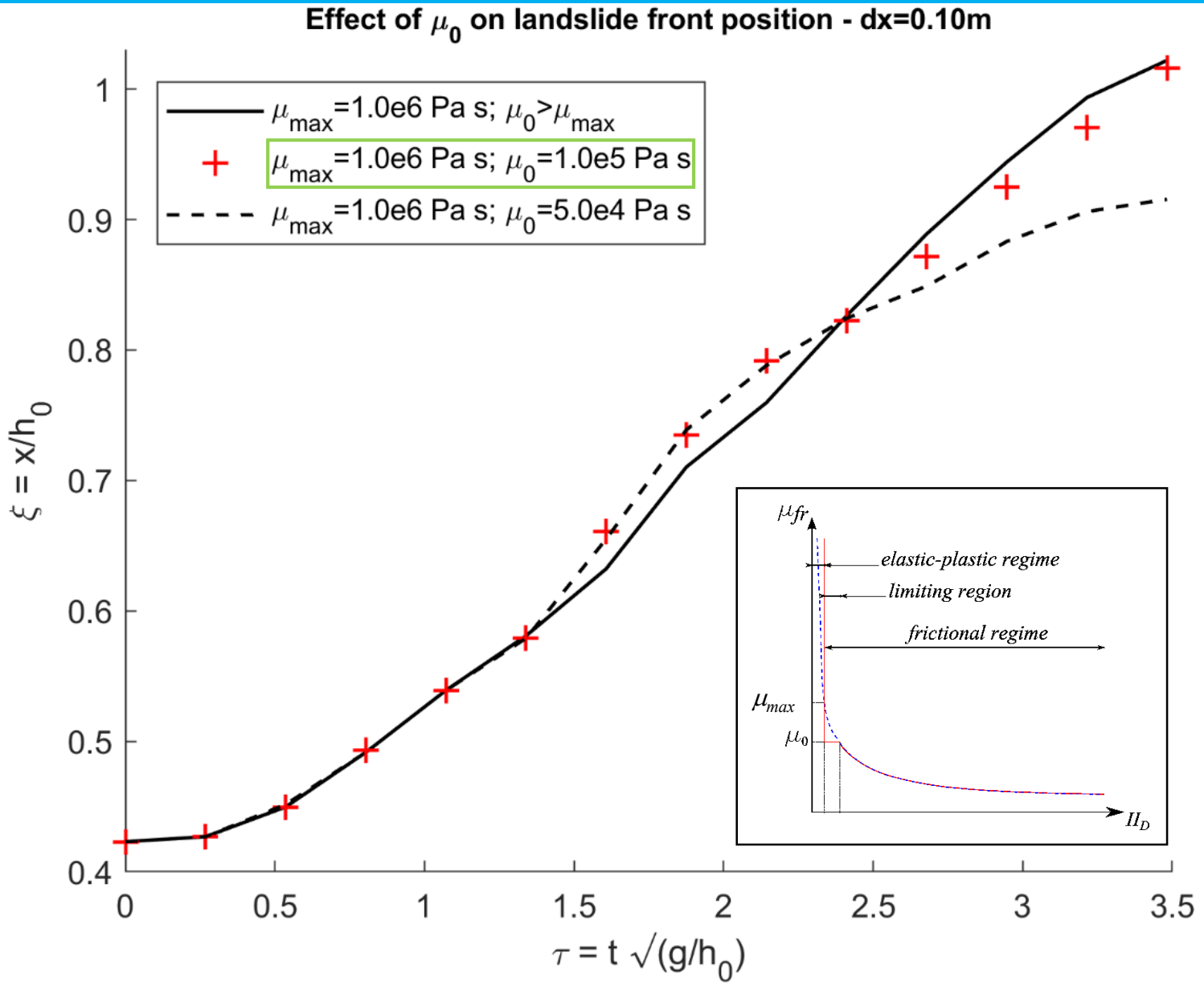




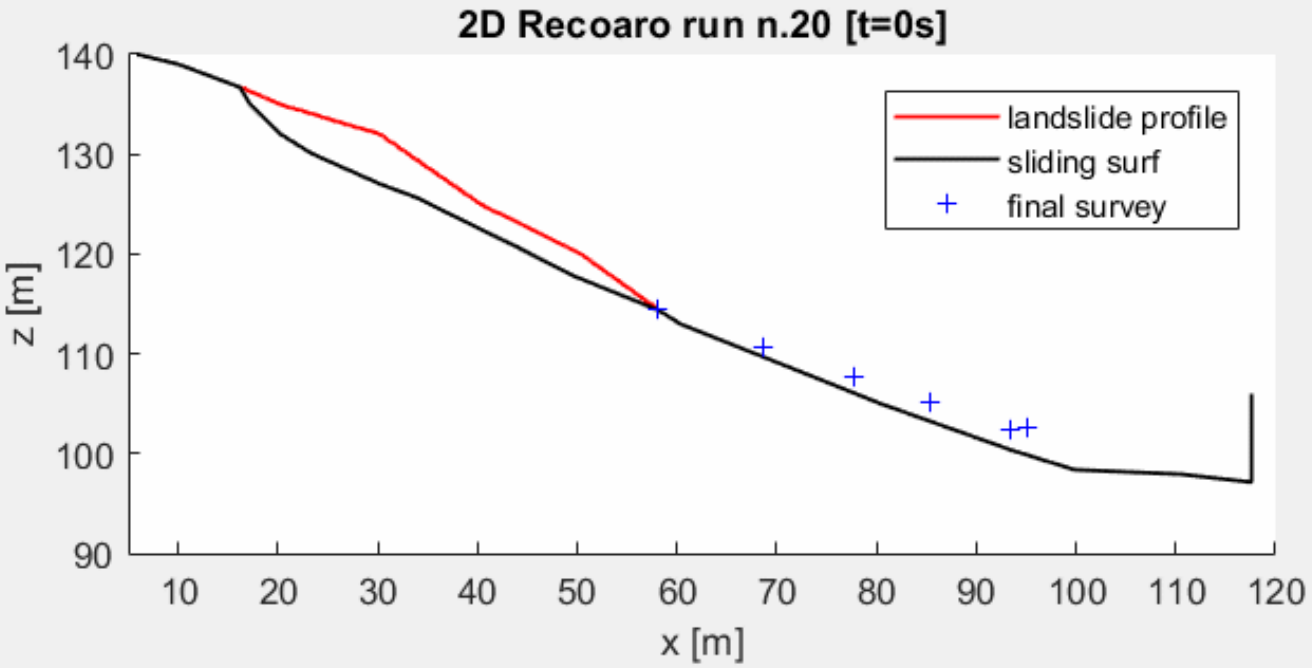
Convergence of maximum landslide viscosity μ_{max}



Convergence of limiting viscosity μ_0

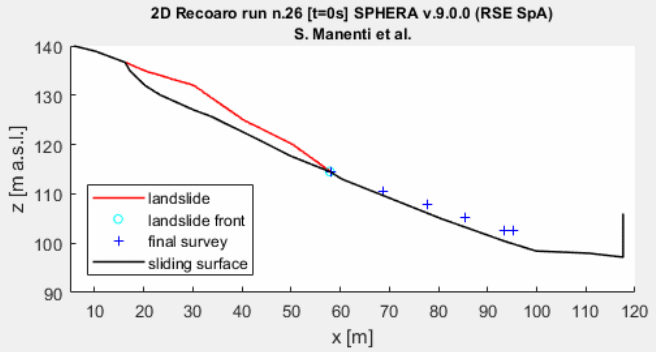


Model validation

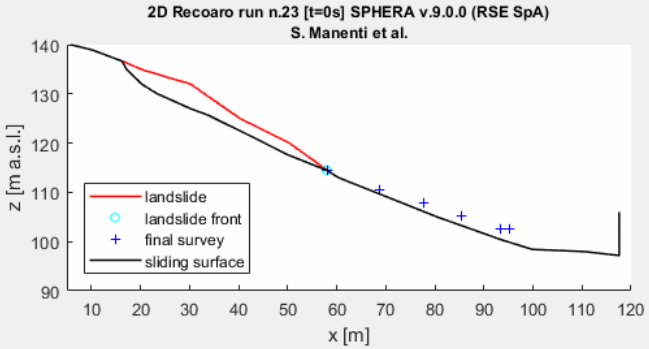


Influence of mechanical parameters

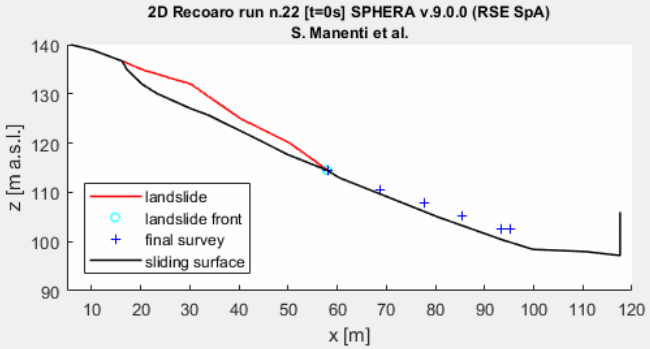
Reference run



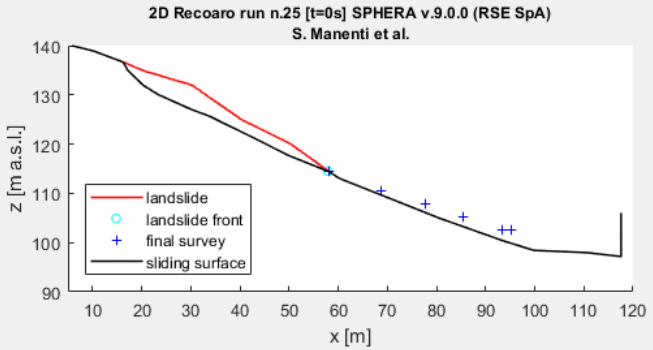
ρ =2650mg/m^3 e =0.42 ϕ =24°



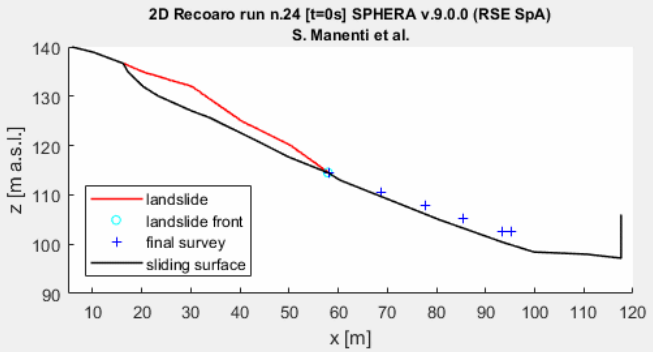
ρ =2650mg/m^3 e =0.42 ϕ =28°



ρ =2650mg/m^3 e =0.42 ϕ =20°

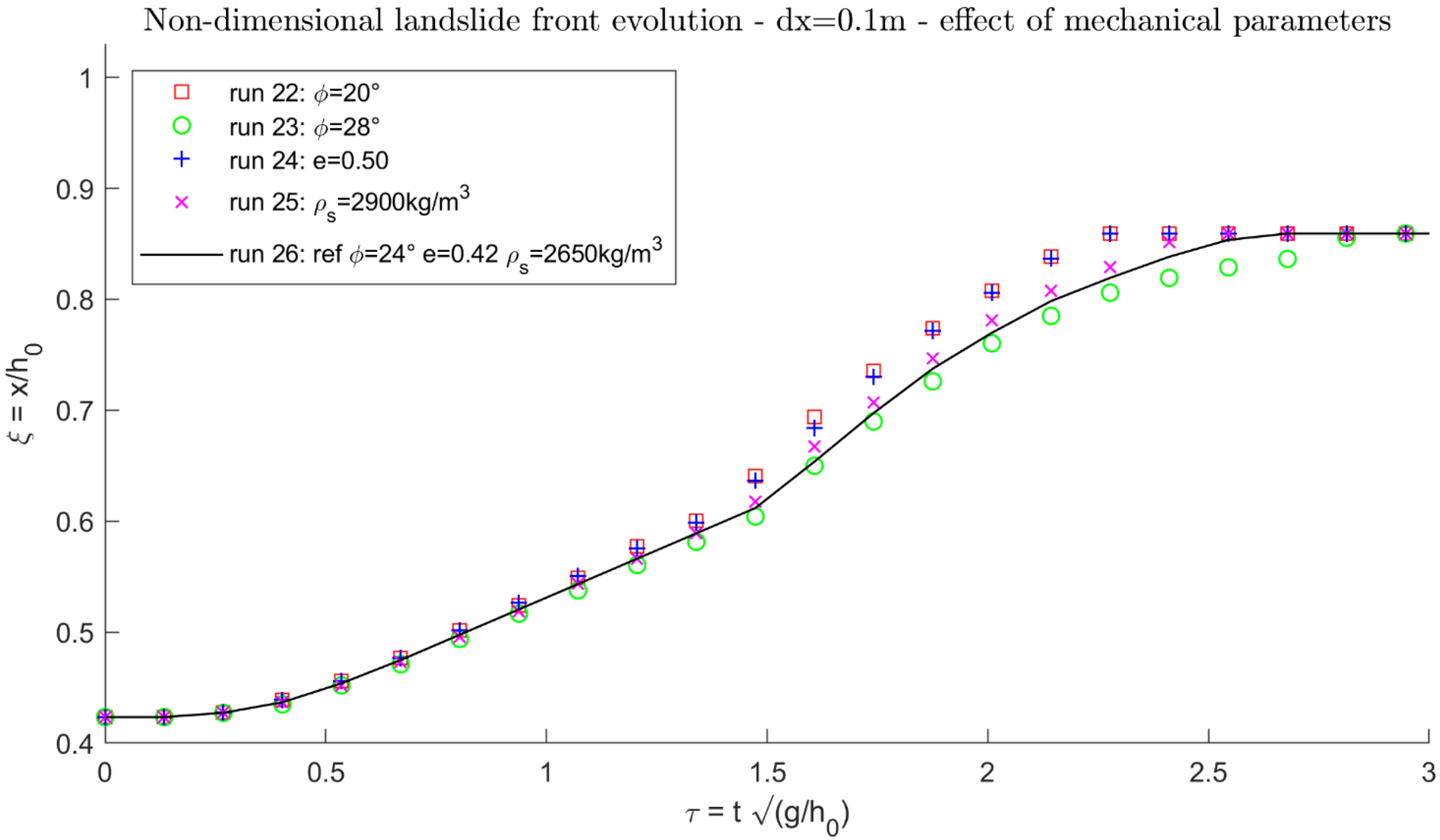


ρ =2900mg/m^3 e =0.42 ϕ =24°

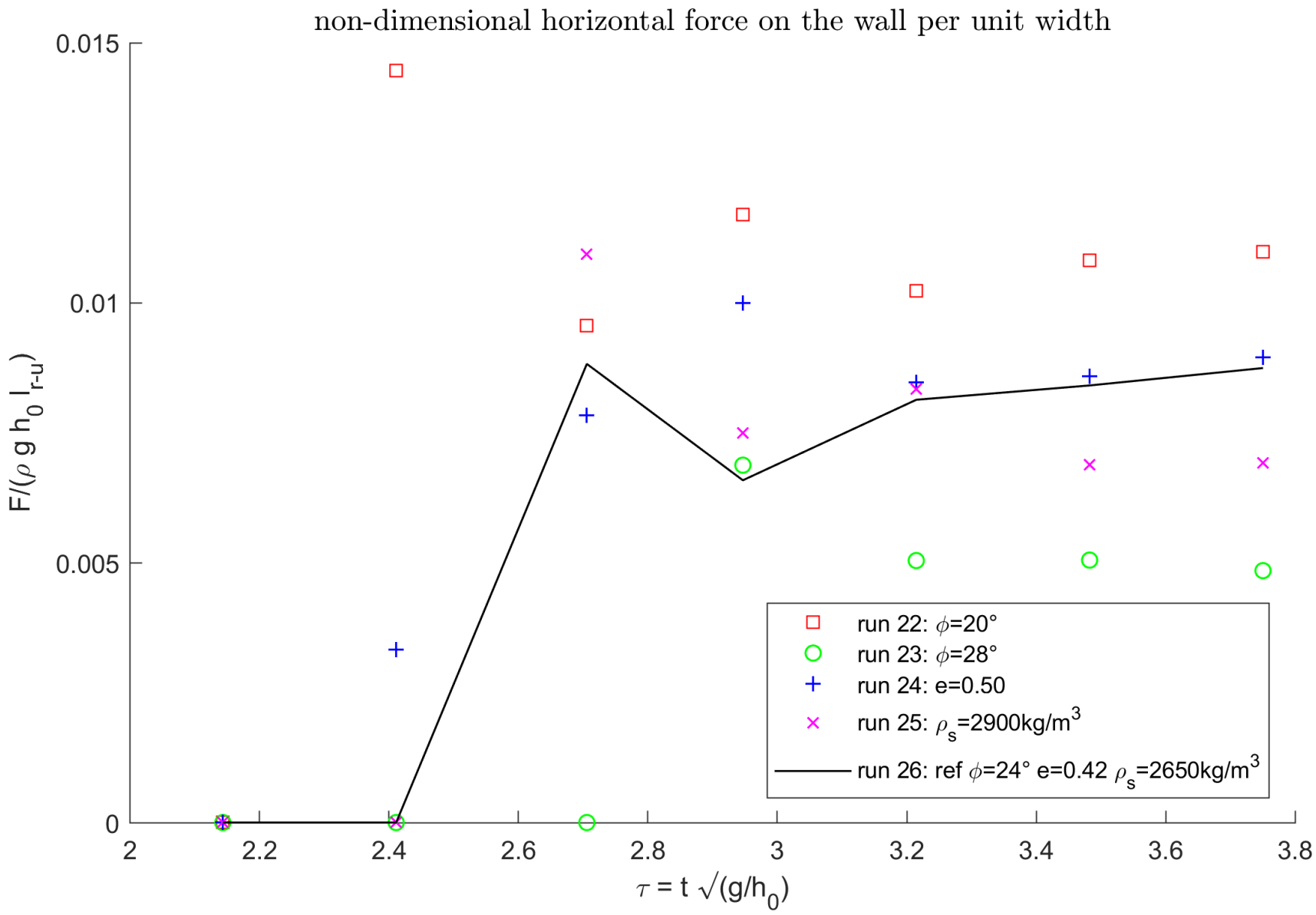


ρ =2650mg/m^3 e =0.50 ϕ =24°

Influence of mechanical parameters on landslide front celerity



Impact force on the downstream wall



References

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