Linking soil hydraulic properties with soil erosion estimations

Saturated hydraulic conductivity Ks can be used to describe water movement under saturated conditions in the soils. It differentiates the amount of water infiltrating into the soil and the amount of water flowing over the surface as runoff. Soils with small values of hydraulic conductivity have low infiltration rates and during intense rains, water run-off will lead to consequent soil losses and surface transport of colloids, nutrients, and microbes, which can then cause problems of eutrophication and pollution of downstream areas (Dexter et al., 2004).

Objectives:

1. To locate the hotspots with low saturated hydraulic conductivity and high soil erosion
2. To combine saturated hydraulic conductivity (Gupta et al, 2021) and soil erosion (Pasquale et al., 2017) spatial maps to modify risk classes

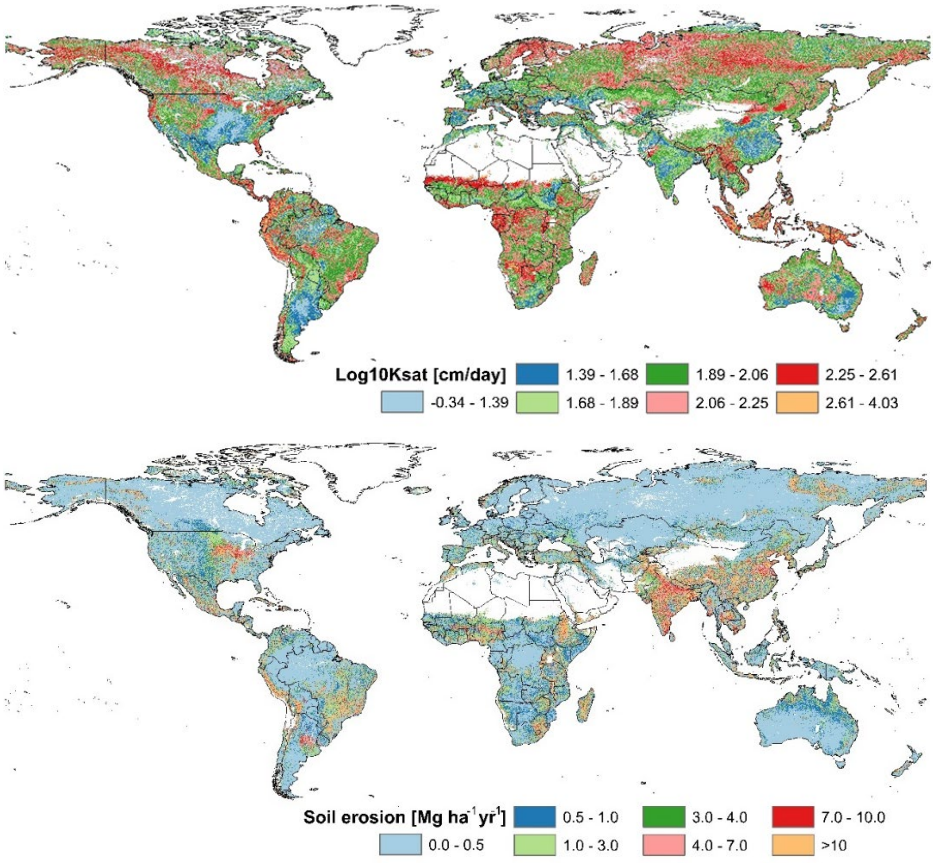

Figure1: Spatial global distribution of a) saturated hydraulic conductivity (Ksat) and b) annual soil erosion.

References:

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3. Gupta, S., Lehmann, P., Bonetti, S., Papritz, A., & Or, D. (2021). Global Prediction of Soil Saturated Hydraulic Conductivity Using Random Forest in a Covariate-Based GeoTransfer Function (CoGTF) Framework. Journal of Advances in Modeling Earth Systems, 13(4), e2020MS002242.