

WEDNESDAY, 15:00-15:30

Title: Quantifying the role of bedrock lithology in water movement at different scales

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The wide variety of geological materials on Earth and the irregularity of its distribution patterns are some evidences of the heterogeneity and complexity of our planet. Bedrock lithology plays an important role inside this heterogeneity. It conditions the land topography, which controls the overland water movement at landscape scale, and it also determines the particle size distribution (PSD) of soils at pedon scale, which influences the infiltration processes. This work aims to quantify the land topography and the PSD of soils developed on igneous and metamorphic rocks in different regions of Spain to establish quantitative differences between lithologies. The data sources used are the National Geological Map of Spain, scale 1:50000, the 5 meters resolution LiDAR-generated Digital Terrain Model (LiDAR-DTM) of the studied area and an exhaustive set of field data collected by the authors for previous works which includes more than a thousand of described soil profiles and their corresponding analytical data. The land topography has been quantified using the fractal dimension of the drainage network and the soil particle size distribution has been measured using the entropy dimension. The results show quantitative differences between the studied lithologies, suggesting the suitability of the adopted framework. Much further work has been projected to generalize these findings.