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Determination of saturated and unsaturated hydraulic conductivities and water retention curves of weathered granite

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Shallow unconfined aquifers developed in saprolite originating from the weathering of the bedrock play a major role in hydrology and solute transport in headwater catchments. Understanding water flow in these aquifers requires to know their saturated as well as unsaturated properties. This study aims at measuring the unsaturated and saturated hydraulic conductivities and water retention curves of weathered granite from core samples. Weathered granite was sampled in the Kerbernez research headwater catchment from 2 m soil pit excavated in unsaturated zone (4 to 6 m thickness). Wind evaporation method was used to determine water retention curve and hydraulic conductivities curve. The Mualem-Van Genuchten model was used to represent retention curves and hydraulic conductivities curves. Saturated hydraulic conductivities range from 8.65 10-2 m/s to 5.82 10-5 m/s. The other parameters of Mualem-Van Genuchten model were close to those of sand clayey soil.