[JJ] Evening Poster | H (Human Geosciences) | H-TT Technology & Techniques

[H-TT19]New Developments in Shallow Geophysics

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The session of shallow geophysics calls many research contributions on geophysical exploration techniques for the near surface. Our target depth is strictly restricted in the depth zone from 5 cm to 30 m (or from 2 in to 100 ft) below the surface of the ground. It may be the closest unknown territory for human society and advanced societies cannot have controlled yet to avoid disasters caused by dynamics in the shallow near surface. Peoples require techniques to manage levee, landslide and earth constructions also knowledge to control groundwater, liquefaction and soil pollution. The near surface has many geotechnical, environmental and hydrogeologic problems.

Major survey techniques are surface wave method, electric exploration, ground-penetrating radar and land streamer, but any methods will be discussed if your target is located in the specified depths. This session welcomes to discuss laboratory tests and rock physics for unconsolidated porous media in the vadose zone. Also, we will welcome not only cutting-edge technologies but also classic theory, if the knowledge is useful for human living.

[HTT19-P11]Surveying the shallow structure of paved roads using multi-channel ground-penetrating radar

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Multi-channel ground-penetrating radar (GPR) can recently acquire a lot of data under paved roads with high density. Intervals between faces of antennas and roads require frequently some clearances to keep high scanning speed. However, the clearance makes strong multiple reflections on acquired radar records. We acquired multi-channel GPR records with GNSS measurements on a round test pavement in PWRI using GPR equipment designed with a ground coupled type. Acquired multi-channel records have little noise from multiple reflections and boundaries of underground road constructions are clearly classified. Different offsets of distance between transmitters and receivers are included in the multi-channel records and RMS velocities down to target boundaries can be estimated. NMO correction was applied for all GPR data using the estimated propagation velocities. Reflection events from boundaries of road formation are clearly identified in a depth slice section.