Streaming potential associated with partially saturated flow

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Dependency of the streaming potential coefficient on the water-phase saturation is a key parameter in the generation of streaming potential involving partially saturated fluid flow. In case that the magnitude of the streaming potential coefficient (C) of an unsaturated zone is negligible compared to that of the underlying saturated zone, there appears a self-potential anomaly on the ground surface having the shape reflecting the relief of groundwater table. However, the self-potential anomaly becomes smaller with weaker dependency of C upon the water-phase saturation.

The streaming potential coefficient for water/gas two-phase flow is also a very important parameter in the generation of streaming potential associated with CO2 injection into a saline aquifer. Results of numerical simulation by using the so called EKP-postprocessor and sensitivity analysis of the effects of water-phase saturation dependency of C will be reported.