13th Annual Meeting
31 May - 4 June 2021

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Contribution ID: **499**   Type: **Poster (+) Presentation**

Transport analysis in deformable porous media through integral transforms

Tuesday, 1 June 2021 19:00 (1 hour)

Geomechanical deformation can alter the flow field which impacts solute mass fluxes. Despite its importance, the effects of the coupling between geomechanical deformation and the flow field on solute transport behavior are not fully known. In this work, we study the impact of this coupling on the solute concentration distribution. The concentration field is semi-analytically derived by making use of the Generalized Integral Transform Technique. We apply the semi-analytical solution to two uniaxial consolidation problems, the classical Terzaghi's problem with a constant load and the case of periodic loading of a porous deformable layer. Our results indicate that geomechanical parameters, such as the Skempton's coefficient and the soil compressibility, can affect the peak concentration as well as the spatial moments of solute plume. In case of periodic loading, we show that the frequency of loading also plays a key role in regulating the temporal dynamics of the concentration field.

Time Block Preference

Time Block C (18:00-21:00 CET)

References

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Session Classification: Poster +