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Type: Oral Presentation

Modelling Transverse Anomalous Solute Transport in Highly Heterogeneous Porous Media

Tuesday, 31 May 2022 12:15 (15 minutes)

We study the intermittent transverse dynamics of solute transport through highly heterogeneous porous media. Considering a Lagrangian framework focused on the equidistant analysis of the particles motion, we identify two fundamental mechanisms that determine large-scale particle motion, namely, the relaxation towards a (non-zero) average transverse particle position and the short-scale correlated behavior of the transverse particles motion. Based on these mechanisms, we derive a theory that jointly predicts anomalous transverse and longitudinal dispersion in terms of Eulerian velocity distribution, key statistics of the system heterogeneity, and two additional parameters related to the particles relaxation process with a clear physical meaning.

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Country

Spain

References

Time Block Preference

Time Block B (14:00-17:00 CET)

Participation

Online

Primary authors: DELL'OCA, Aronne (politecnico di milano); Prof. DENTZ, Marco (IDAEA-CSIC)

Presenter: DELL'OCA, Aronne (politecnico di milano)

Session Classification: MS08

Track Classification: (MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media