

Abstract Submitted  
for the DFD19 Meeting of  
The American Physical Society

**Some effects of cross-bedding on tracer dispersion in porous formations** NEERAJA BHAMIDIPATI, ANDREW WOODS, University of Cambridge — The sequential deposition of sediment in fluvial settings often leads to structures known as cross-bedding, in which the geological strata are aligned at an angle to the horizontal and consist of alternating interbedded layers of fine and coarse sediment. This leads to anisotropy in the permeability, which tends to be substantially higher in the along-bed direction. Over time, many such layers build up leading to highly heterogeneous permeable rocks. Many such formations have relatively high permeability and can be ideal candidates for carbon sequestration or may be involved in the subsurface hydrological system, and so there is considerable interest in the flow patterns which arise through such formations. We present a series of numerical calculations of the spreading of a pulse of tracer through such formations, based on the pattern of such heterogeneity from a number of rock outcrops. We analyse these calculations and develop some low order models of the controls on the dispersion and spreading of a cloud of tracer as it moves downstream. Our models have relevance for interpretation of tracer tests for groundwater flows and also in interpreting patterns of flow during carbon sequestration.

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Date submitted: 01 Aug 2019

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