**A strategy for optimising well placement by combining historical well data with a geological model of a porous rock** A.J. EVANS, BP Institute, University of Cambridge, C.P. CAULFIELD, BP Institute & DAMTP, University of Cambridge, ANDREW W. WOODS, BP Institute, University of Cambridge — Flow in porous media is subject to large uncertainties due to sparsity of available data and heterogeneity of reservoir properties over a range of length scales. We investigate the reduction in uncertainty which can be achieved through inversion of flux data between a point source and a point sink. A Monte Carlo simulation with stochastically generated permeabilities conditioned by flux data is used to estimate flux statistics for relocated wells. We demonstrate how the correlation length scale of the permeability influences the reduction in uncertainty for new well positions. Uncertainty is seen to be reduced for well positions within a region around the original well sites. This region scales with the permeability correlation length. Finally we show that a linearised method for flux estimation shows good agreement to fully non-linear simulations with a considerable reduction in computation time.

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