

Integrating Structural Uncertainty into Reservoir Simulation

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The geometry of faults can have a large impact on the simulated flow performance of a reservoir. Minor changes in the modelled throws can have a large influence in heterogeneous permeability systems (the majority of reservoir systems), even in high net-to-gross systems. Fault throws are uncertain to a degree due to the seismic imaging and geocellular modelling limitations, as well as the presence of distributed strain around main slip surfaces within fault zones. All of these factors combine to mean that simulation models tend to over-estimate the throw on faults. By varying the throw on faults, both enhanced and reduced connectivities, varying water breakthrough times and different sweep efficiencies are all evident. In this contribution we present a technique that allows the routine incorporation of structural geometric uncertainty analysis in the reservoir evaluation process. This approach allows for a time efficient incorporation of uncertainties that we know can have a significant influence on the reservoir evaluation.