Weijermars Research Group
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Our emphasis is on the development of accurate and fast models and tools for practical use in field development decisions. The overall objective is to improve well performance. Examples are:
- Streamline models and time-of-flight contours to improve production forecasting.
- Fast, grid-less flow models to pinpoint the drained rock volume of multistage fracture treated wells.
- Impact of natural fractures on well performance and drained rock volume.
- Interaction of parent and child wells via fracture hits.
- Optimization of fracture spacing, well spacing, and drilling schedules.
- Coupling of fracture propagation models and flow path models to the multistage fractured well.

A second focus area is geomechanical modeling of the elastic response during field operations to aid drilling and completion design and decisions. Examples are:
- Wellbore stability in horizontal shale wells, accounting for transverse anisotropy.
- Real-time translation of elastic compliances from acoustic logs to the wellbore stability model using appropriate failure criteria.
- Fast, meshless models of fracture propagation and interaction with rock heterogeneities and natural fractures.

A third focus area combines improvements in well and field development performance with external business drivers that may affect investment decisions about new business opportunities (M&A). Examples are:
- Oil and gas price forecast models
- Fiscal models and evaluation of fiscal take in overseas oil and gas contracts
- Reporting of oil and gas reserves under uncertainty

Weblink to research program: https://weijermars.engr.tamu.edu/