

RM24

Assimilation of Dynamic Data: Are We Doing it Right?

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SUMMARY

In this talk, I will review the history matching problem for petroleum reservoirs, emphasizing progress and limitations, beginning with a discussion of the purpose of history matching. Because the data are typically quite limited, I will emphasize the ability to quantify uncertainty in reservoir predictions and the importance of the choice of model parameterization on the ability to match data and to assess uncertainty. Particular problems associated with updating of complex reservoir models will be identified. Although the focus of the talk will not be on methodology, I will discuss the consequences of various choices of methodology on parameterization and the limitations of various methodologies.

Finally, the Norne Full-Field case will be used to illustrate many of the history matching concepts discussed earlier. This field is highly faulted, contains vertical flow barriers of unknown continuity, has multiple initial oil-water contacts and gas-oil contacts. Water and gas have both been injected at various times. Production data, including RFT and phase production and injection rates have been measured in a relatively large number of horizontal and vertical wells and 3D seismic surveys have been repeated periodically. Identifying model parameters with sufficient flexibility to match all of the data is a challenge.

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