

Assessing Alaskan Gas Hydrates — How to Handle Probabilistic Dependencies

Kaufman, Gordon M.¹; Schuenemeyer, Jack² (1) Sloan School of Management, MIT, Cambridge, MA. (2) Southwest Statistical Consulting, Cortez, CO.

How to elicit expert judgment about probabilistic dependencies among distinct but geologically related petroleum units in a basin is a long standing question. Assessments are often based on the assumption of probabilistic independence among assessment units while others assume total fractile dependency. In most cases the most appropriate set of assumptions lies in between these extremes. However, capturing dependencies by specification of all pairwise correlations among a large set of assessment units is often difficult.

We describe a framework--hierarchical modeling--for probabilistic assessment of Alaskan North Slope gas hydrates that takes into account dependencies among assessment units without burdening experts with assessment overload and that guarantees logical coherence of assessments.