

**AAPG International Conference
Barcelona, Spain
September 21-24, 2003**

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Using plays and petroleum systems in exploration

Geologists struggle with realistic estimates of risk and uncertainty, particularly with respect to charge, reservoir development and cap-rock potential that can rarely be evaluated directly by geophysical means. This has led to unbalanced evaluations and a tendency to dedicate more attention to prospect identification than to understanding the hydrocarbon habitat of an area or of families of prospects. In the past, geologists paid a great deal of attention to habitat and play studies and I believe that it is time to reinstate such work as fundamental to exploration strategies. The play is, however, a general concept, used informally and variably. In contrast, the concept of the petroleum system encapsulates a rigorous application of hydrocarbon habitat study, providing a charge-related framework within which the stratigraphic and structural characters of plays can be placed. By examining the relationship between petroleum systems and phases of tecto-stratigraphic evolution of in the North Sea and Southeast Asia, I shall examine the advantages of the concept, and suggest how it can be modified to reach more widely-applicable conclusions. I shall also suggest how moreconsistent play definition, in relation to petroleum systems and basin evolution, allows correlations and comparisons between basins with similar geological histories can be used for predictive purposes.