

# Technological Developments Leading to the Petroleum System and Basin Modeling: Implications for Shale Plays

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## Abstract

Petroleum geoscience as an independent field both in academia and industry emerged in the 1910s in response to an increased global demand for oil in the wake of World War I and the rise of the automobile industry. Since then, petroleum geoscience has witnessed major technological breakthroughs as well as market booms and busts. This paper chronicles the critical developments in the past 100 hundred years that eventually led to the establishment of the petroleum system and basin modeling. These include, subsurface mapping of structural and stratigraphic traps, sequence stratigraphy, formation evaluation by well logging, seismic imaging, and geochemical and maturity characterization of source rocks. This historical perspective on the assessment of the so-called conventional petroleum plays is also significant for appraisal of oil and gas production from shale prospects based on petroleum system analyses. Such analyses provide a more sophisticated view from the widely practiced engineering treatment of shale simply as a rock to frac.