

North Atlantic Extension and Break-Up: Challenges, Controversies and Implications

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Abstract

The rift systems bordering the North Atlantic house some of the world's most prolific petroleum systems. Additionally, the region has been a testing ground for rift and continental margin models since the advent of plate tectonics. It contains abandoned and truncated rifts, hyperextended basins, magmatic and magma-poor continental margins and transform margins, many of which have become the global "type areas" for study. In this presentation, a career's experience in North Atlantic exploration will be harnessed to present a proposed sequential structural evolution for the region, on the way examining important concepts including:

- Reactivation of old structures through time, from the "Wilson Cycle" to the smaller scale.
- Fast and slow break-up, magmatic and magma-poor margins – how are they related?
- Hyperextended basins – formation, characteristics and hydrocarbon implications.
- The role of transform margins in North Atlantic development and petroleum geology.

These topics are all areas of uncertainty despite a huge body of research and significant exploration activity. The key controversies will be framed, recent ideas reviewed, answers suggested, and lively debate encouraged!