

## **Extension of Hydrocarbon Potential of Mixed Turbidite-Contourite Systems into Asia Pacific**

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### **Introduction**

In deep water settings drift (or coast parallel bottom currents) and turbidite (or gravity) processes are common along continental margins. The interaction of these processes can build large mixed / hybrid (turbiditic-contouritic) depositional systems. These have only been recently recognized and associated with some of the major discoveries at a global scale.

Key examples of prolific discoveries associated with hybrid turbidite-contourite systems, include the Rovuma Basin offshore Mozambique (Mamba Complex 85 Tcf) (Palermo et al., 2014), the Jubilee Field offshore Ghana (Cronin, B. HGS/PESBG Africa 2019) and the deep water confined channel Barra complex (3 BbbOIIP) in the Sergipe Basin, Brazil. This study focuses on recognizing and evaluating mixed systems on seismic data, including examples from SE Asia.

### **Seismic identification of mixed turbiditic-contouritic depositional systems**

The identification of hybrid systems relies on the recognition of a series of diagnostic criteria derived from the integration of available understanding of these mixed systems (Sansom P., 2018).

For hydrocarbon potential evaluation, a full petroleum system elements analysis should be performed in which probable source rocks, reservoir and traps are identified. Potential source rocks are identified using a systematic frontier basin methodology which includes plate tectonic reconstruction, palaeographic setting, seismic character, any well and outcrop data available and source rock characterization (Eastwell et al, 2018), based on criteria published in 2011 (Loseth et al., 2011). To de-risk reservoir presence and quality, both depositional system features and seismic character are considered. The trapping mechanism is usually provided by the associated characteristics of the hybrid system.

### **Conclusions**

Mixed/Hybrid turbiditic-contouritic systems are just beginning to be understood and recognized in major discoveries at a global scale. Modern 3D seismic is proving to be an essential tool in identifying these systems and performing a hydrocarbon potential evaluation. The huge potential already proven offshore Mozambique, Ghana and Sergipe indicates that this depositional system should be a main target in deep water exploration. Examples from SE Asia indicate that the potential extends into this region, implying that this system should be considered as a viable highly prospective future target.

### **References**

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