The authors in this poster presentation give an update to their previous papers (Roberts et al. (2013 to 2016[1]) on the petroleum geology and oil and gas potential of the Morondava Basin, Offshore Madagascar. This work is based on the BGP/TGS MAD-13 2D seismic survey (Figure 1). We examine new pertinent ideas from other parties (e.g., annotated references [2] to [6] below) regarding the geological history and nature of the Davie Ridge, Mozambique Channel, West Somali Basin and Morondava Basin and, in this context, review and illustrate the different plays (e.g., Figures 2, 3, and 4), and play fairways (Table 1), in the offshore Morondava Basin - before concluding that this could well be a future petroleum producing province of some note..

Selected References


Bassias, Y., T. Christoffersen, and G. Roberts, 2015, The crustal nature of the Southern Mozambique Channel between Madagascar and Mozambique (i.e., the Central Mozambique Channel Basin) and observations concerning its petroleum potential: PESGB/HGS 2015 Africa Conference, Poster session, September 2015. {8 Page Expanded Abstract available from the authors}


Bassias, Y, 2016b, Was the Mozambique Channel once scattered with islands?: GeoExPro, v.13/3.


Roberts, G.F, T. Christoffersen, and J. Xu, 2017, Morondava Basin, Offshore Madagascar – Its oil and gas prospects, play fairways and the Golden Zone. Poster presentation, PESGB/HGS 2017 Africa Conference, London. Aug 31 - Sept 1 2017. {17-page version available from the authors, including references from other workers from BGP and TGS; also a fuller version of the presentation tied to this article is available from the authors on request}.


Acknowledgements

BGP and TGS: JV partners and licensors of the Morondava (MAD-13) 2D Multi-Client seismic survey.
Figure 1a. Satellite Gravity Map showing survey area (10-km grid of seismic lines) and main geological domains (KG = Kerimbas Graben, DR = Davie Ridge, MB = Morondava Basin outlined over survey area, CP = Coastal Platform). C-1 = Chesterfield 1 well, H-1 = Heloise 1 well.

Figure 1b. MAD-13 Seismic grid and location of adjacent Blocks (GP=Grand Prix, BP=Belo Profond, JdN=Juan de Nova (Fr).

Figure 1c. Omnis 2015 Concession map with survey area outlined in red; open blocks in yellow (approx.2000 sq km each).

Figure 1d. Isometric view showing survey and bathymetry.

Figure 1e. Satellite Gravity Map (modified from Tyrrell 2014 and courtesy of TGS).
Figure 2. Stratigraphic Column – base source Omnis. Our study area is represented by events on the LHS of the column.
Figure 3. Composite line (PSTM) 220km wide from West-East/South-North/West-East showing the location of some of the major plays. Plays are numbered as per Table 1 column 1. Turonian volcanic level indicated by white Vs.
Figure 4. PSTM section illustrating rotated fault blocks (Play fairway 4) on the Coastal Platform. The blocks are expected to be of Karoo age with syn rift Jurassic sediments. Image courtesy of TGS. Section width ~ 40 km.
Table 1. Play fairway table (MAD-13 study area; Roberts et al., 2017).

<table>
<thead>
<tr>
<th>Play Fairways</th>
<th>Location</th>
<th>Location</th>
<th>Location</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KG</td>
<td>DR</td>
<td>MB</td>
<td>CP</td>
</tr>
<tr>
<td>1: Tertiary Clastics</td>
<td>Post Rift 2</td>
<td>Basin &amp; Slope floor fans and fluvial channels</td>
<td>Yes (onlap)</td>
<td>Yes</td>
</tr>
<tr>
<td>2A: Late Cret Clastics</td>
<td>Post Rift 1</td>
<td>Basin &amp; Slope floor fans, onlap, drapeover</td>
<td>Yes</td>
<td>Yes (onlap)</td>
</tr>
<tr>
<td>2B: Late Cret Reefs</td>
<td>Isolated Carbonate Reefs (MB); Platform Margin Reefs (CP)</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>2C: Late Cret Structural</td>
<td>Toe thusts and horsts</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3A: Late Jur/E-M Cret Clastics</td>
<td>Syn Rift</td>
<td>Clastics in the (newly named) Morondava Graben - Ref 5 fig ?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>3B: Late Jur/E-M Cret Structural</td>
<td>Toe thusts (in KG) and horsts</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>4: Karoo Rift</td>
<td>Rift</td>
<td>Horsts, Grabens and Rotated Fault Blocks</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>5: Other possible fairways:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) Tertiary (Biogenic ? or Thermogenic ?)</td>
<td>Patch reefs or Cold Water Coral Mounds or ?</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) Karoo and Older ? (speculative)</td>
<td>Within weathered/fractured DR - sourced from Late Cret onlap?</td>
<td>?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Key: KG = Kerimbas Graben, DR = Davie Ridge, MB = Morondava Basin, CP = Coastal Platform*