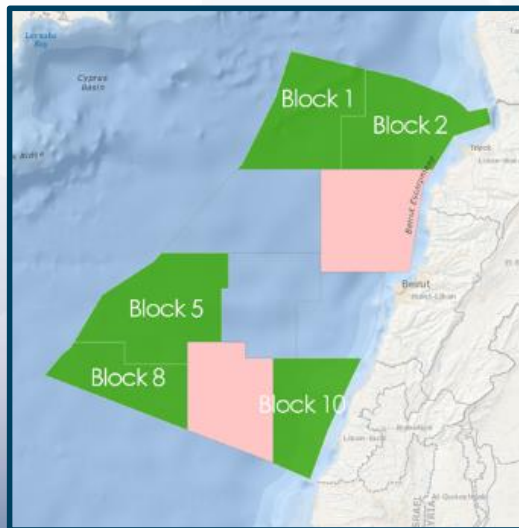


# Lebanon 2<sup>nd</sup> Round



# South Levant Discoveries > Biogenic Gas

## Tanin

2011 Gas Discovery,  
130ft net pay  
Lower Miocene 'Tamar' sands.  
Reserves: Mean 1.1 TCF

## Aphrodite

2011 Gas Discovery  
310ft net pay  
Miocene sands  
Reserves: Mean 7 TCF

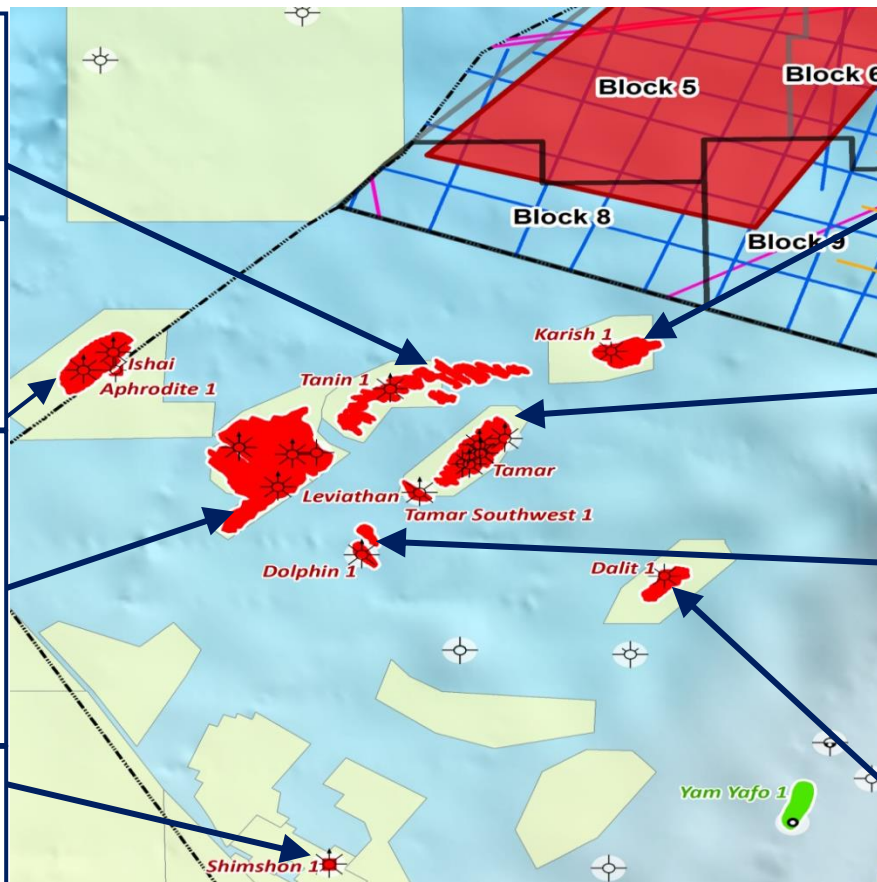
## Leviathan

2010 Gas Discovery  
220ft net pay  
Lower Miocene sands  
Reserves: Mean 17 TCF.

**\*Reported deeper  
thermogenic  
gas zone at 21,000ft**

## Shimsom

2012 Gas Discovery  
Reserves: Mean 1 TCF.



**Q: Where is the thermogenic light oil in Karesh coming from?**

## Karesh

2013 Gas Discovery  
180ft net Lower Miocene sands  
Reserves mean 2-3 TCF  
**\* Producing thermogenic light oil**

## Tamar

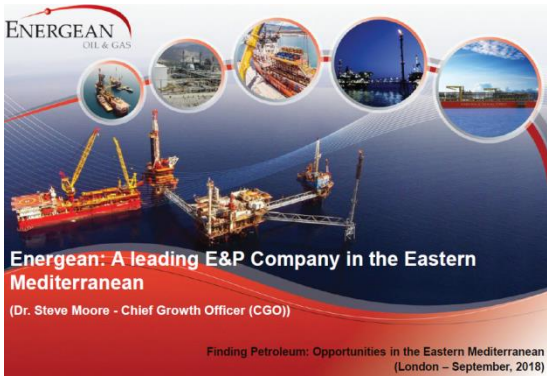
2009 Gas Discovery **2012 onstream.** 460ft net Mid- Lower Miocene sands  
Reserves Mean 9 TCF

## Dolphin

2011 Gas discovery  
'Tamar' sands  
Reserves: Mean ca 0.5 TCF

## Dalit

2009 Gas Discovery  
Lower Miocene Sands  
Reserves: Mean 0.5 TCF

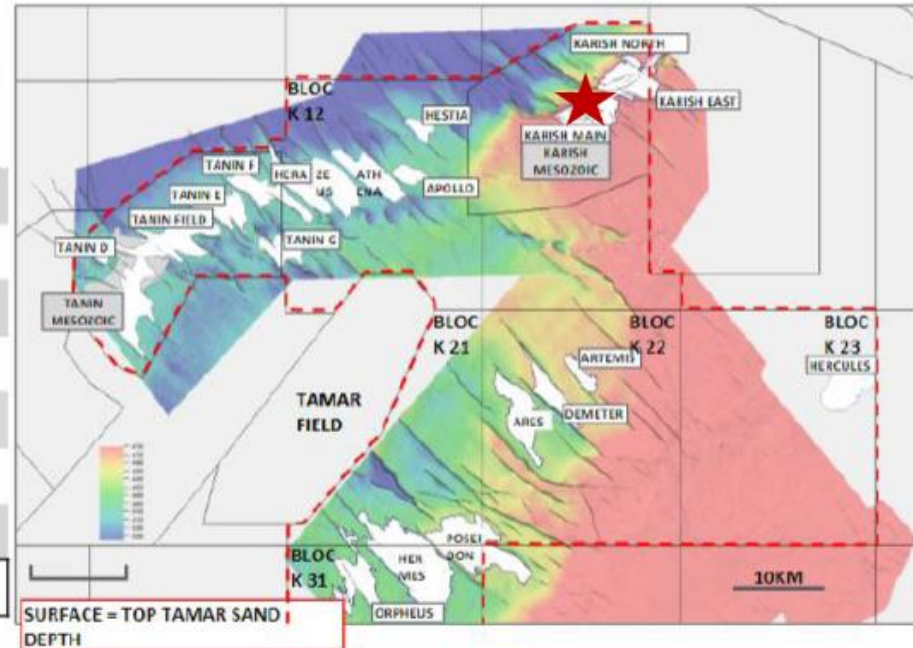


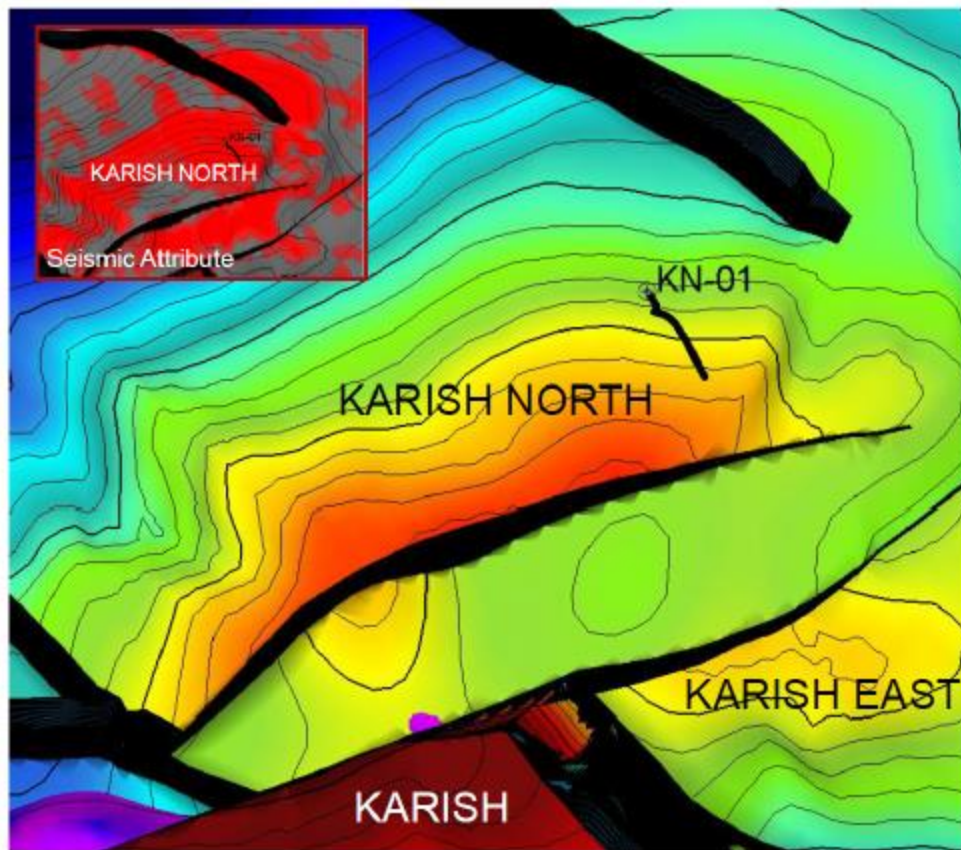
# Kerish and Tanin Resource Estimates

## resource volumes

	Liquids (mmbbl)	Gas (Tcf)	Geological Chance of Success (%)
<b>Karish</b>	39	2.5	70
<b>Tanin</b>	40	0.4	74
<b>Block 12</b>	5.7	1.2	75
<b>Block 22</b>	0.5	2.5	58
<b>Blocks 21/22/31</b>	3.0	0.6	57
<b>Block 21/31</b>	6.7	1.4	57
<b>Block 23</b>	4.4	0.9	37
<b>Total</b>	<b>101.0</b>	<b>7.5</b>	

## Prospect locations





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#### To date

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- GIIP estimated at 1 Tcf (28 Bcm) - 1.5 Tcf (42 Bcm)
- Hydrocarbon column up to 249 meters
- High quality reservoir in the B and C sands
- Completed on 30<sup>th</sup> April 2019
  - 45 days total drilling
  - On budget & schedule

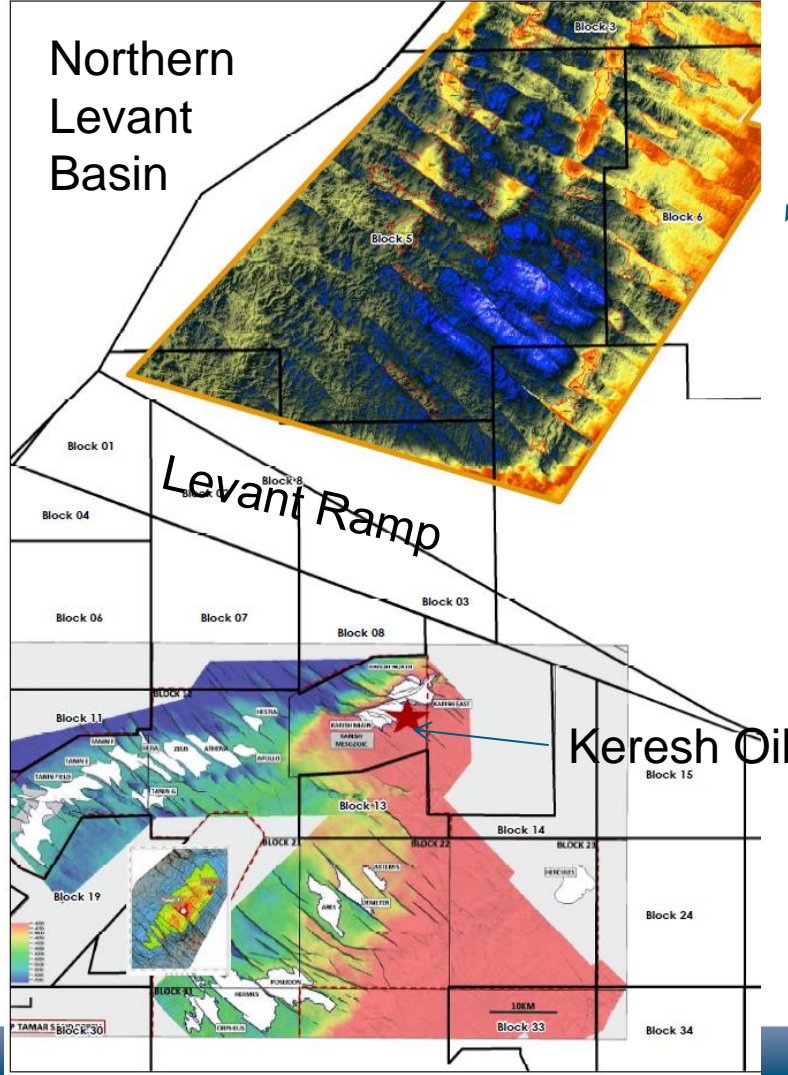
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#### Looking forward

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- Continue batch drilling Karish Main development wells, starting with KM-02
- Analysis to determine liquids content
- Commercialisation via tie-back to the Energean Power FPSO





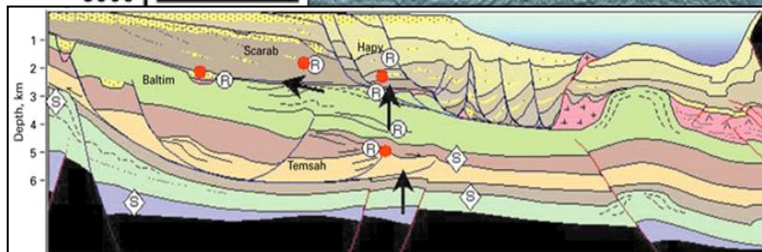
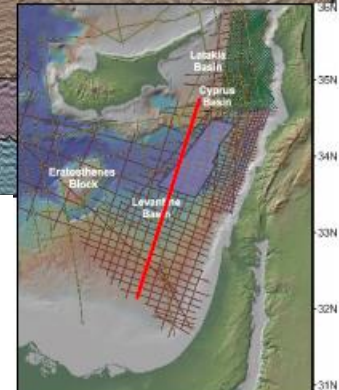
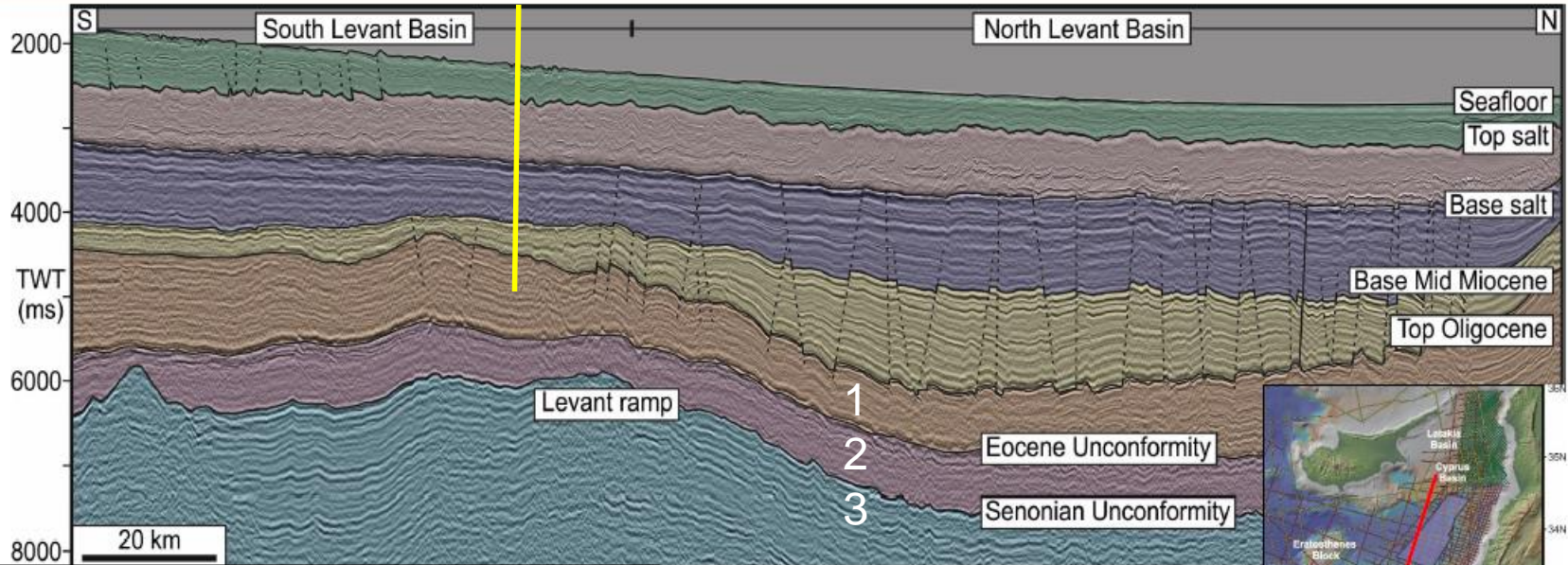
NNE-SSW Folds

WNW-ESE Blind planar faults

Note same faults effecting South Levant: Tamar, Leviathan, Tanin, Karesh folds cut by planar fault systems

Very similar traps, but as we shall see the reservoir is thicker in North Levant basin – which is the kitchen for the thermogenic oil

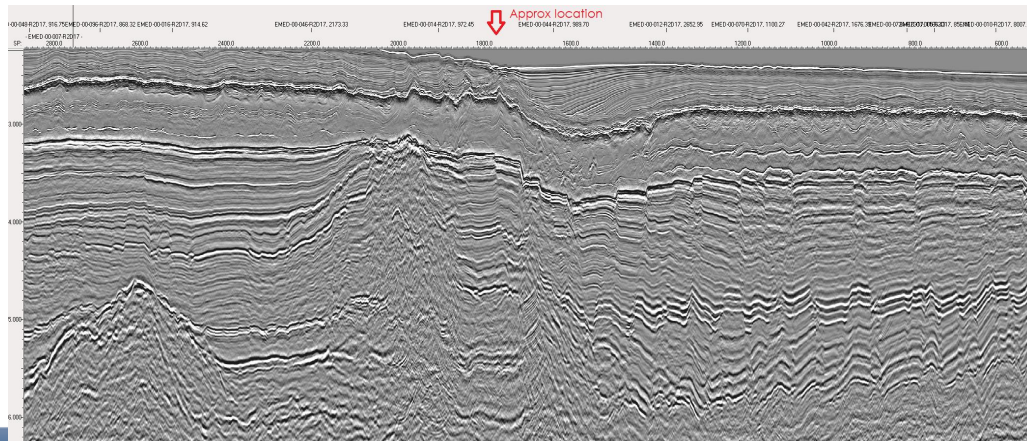
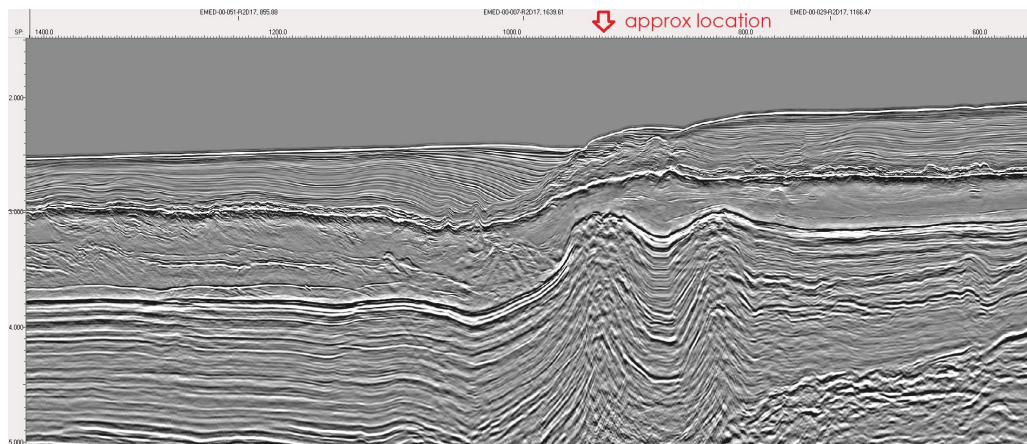
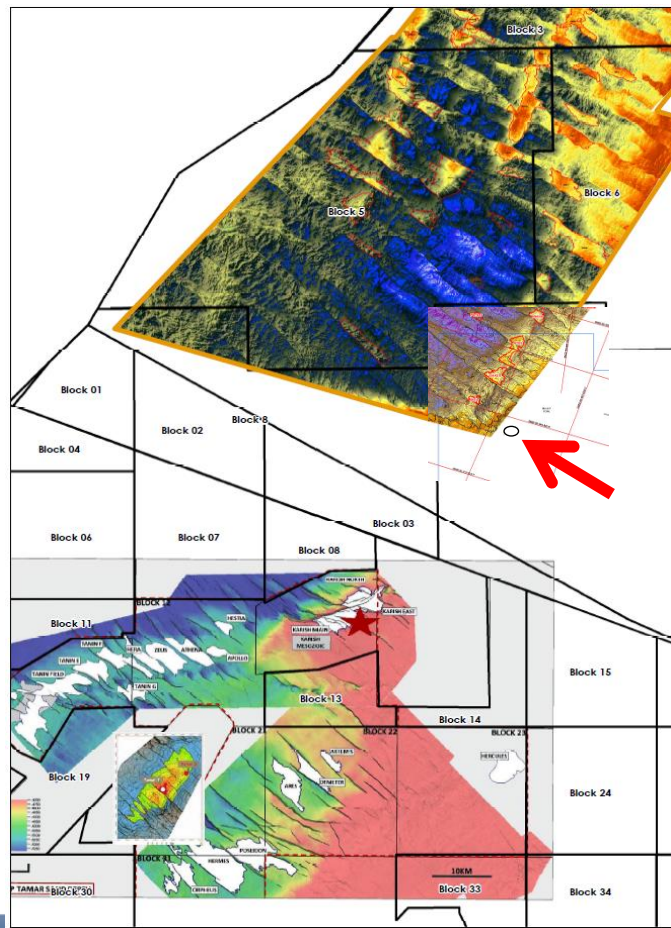
# Stratigraphy of the Levant Basin



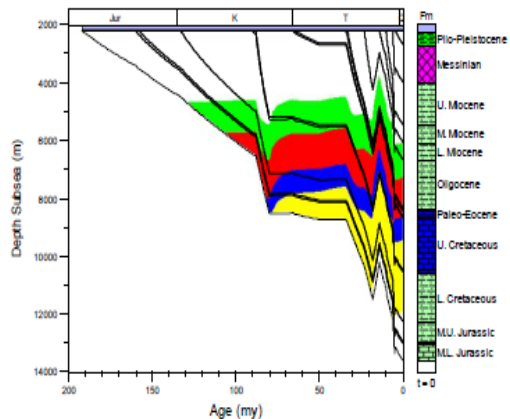
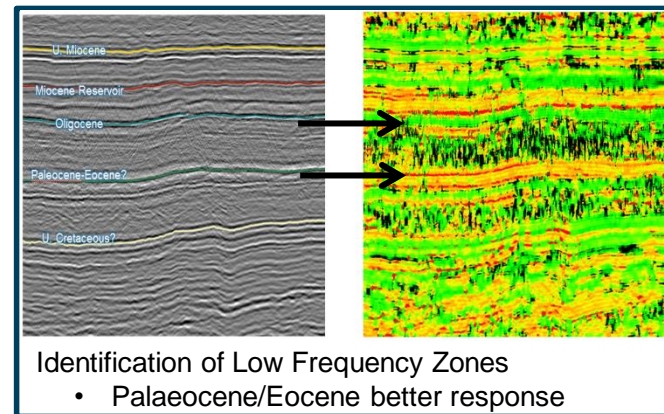
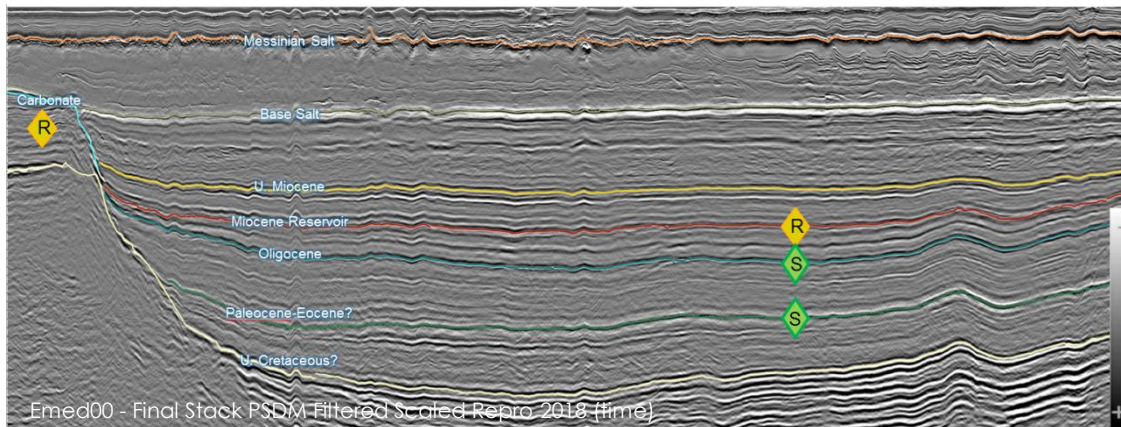
1. Oligocene
2. Paleocene – Eocene
3. Cenomanian-Turonian
4. Jurassic



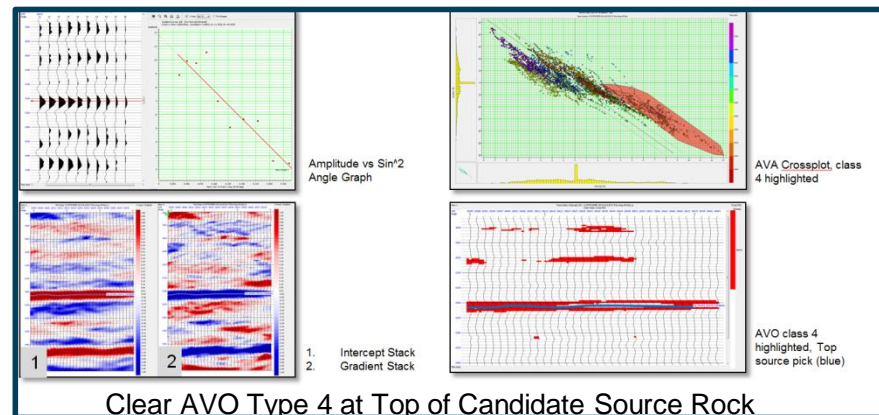
# Structures North and South Levant Basin



# Offshore Lebanon Source Rock Characterization

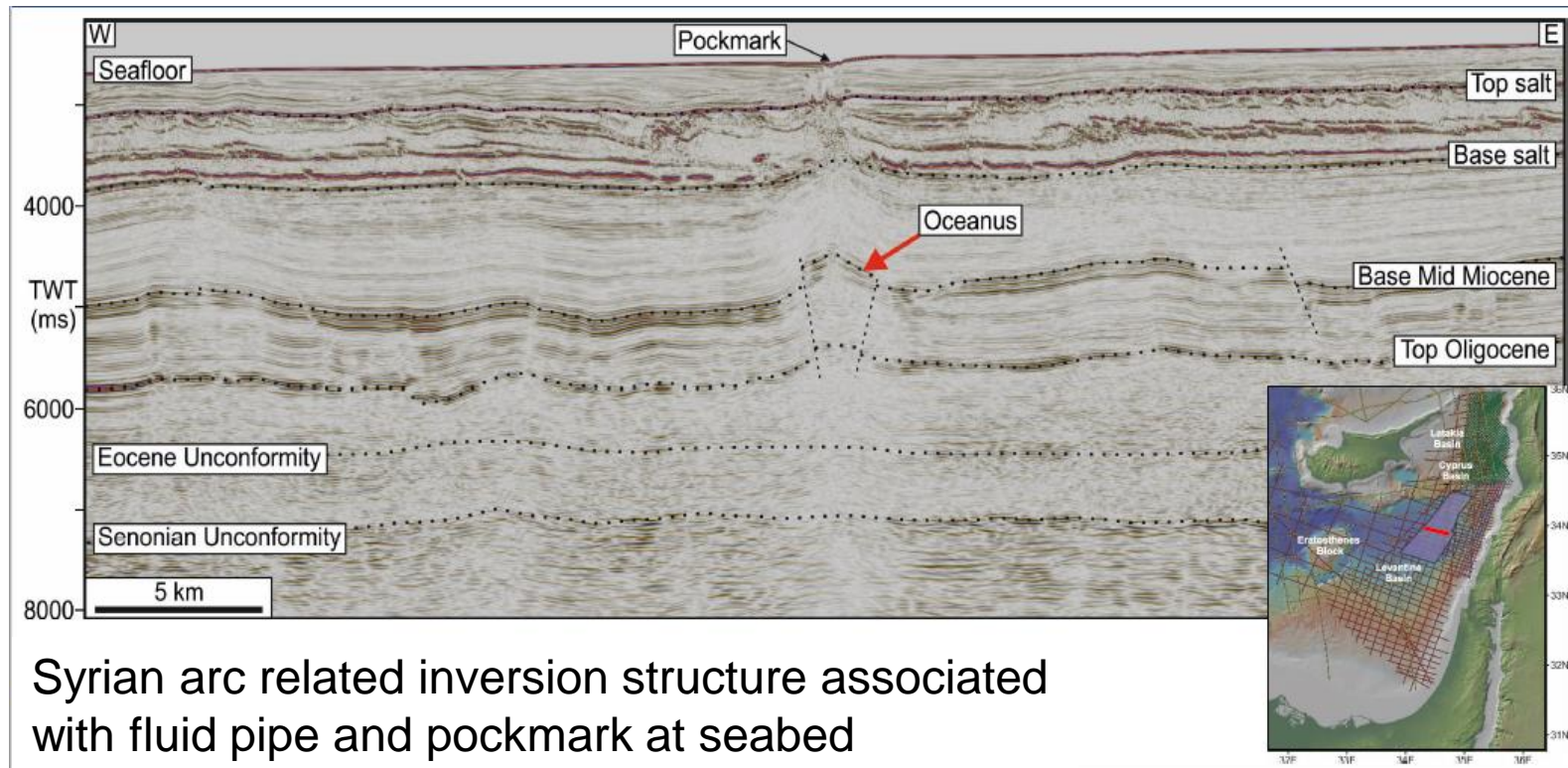


Paleocene/  
Eocene  
candidate source  
rock: **Criteria  
met for good  
quality source  
rock met**



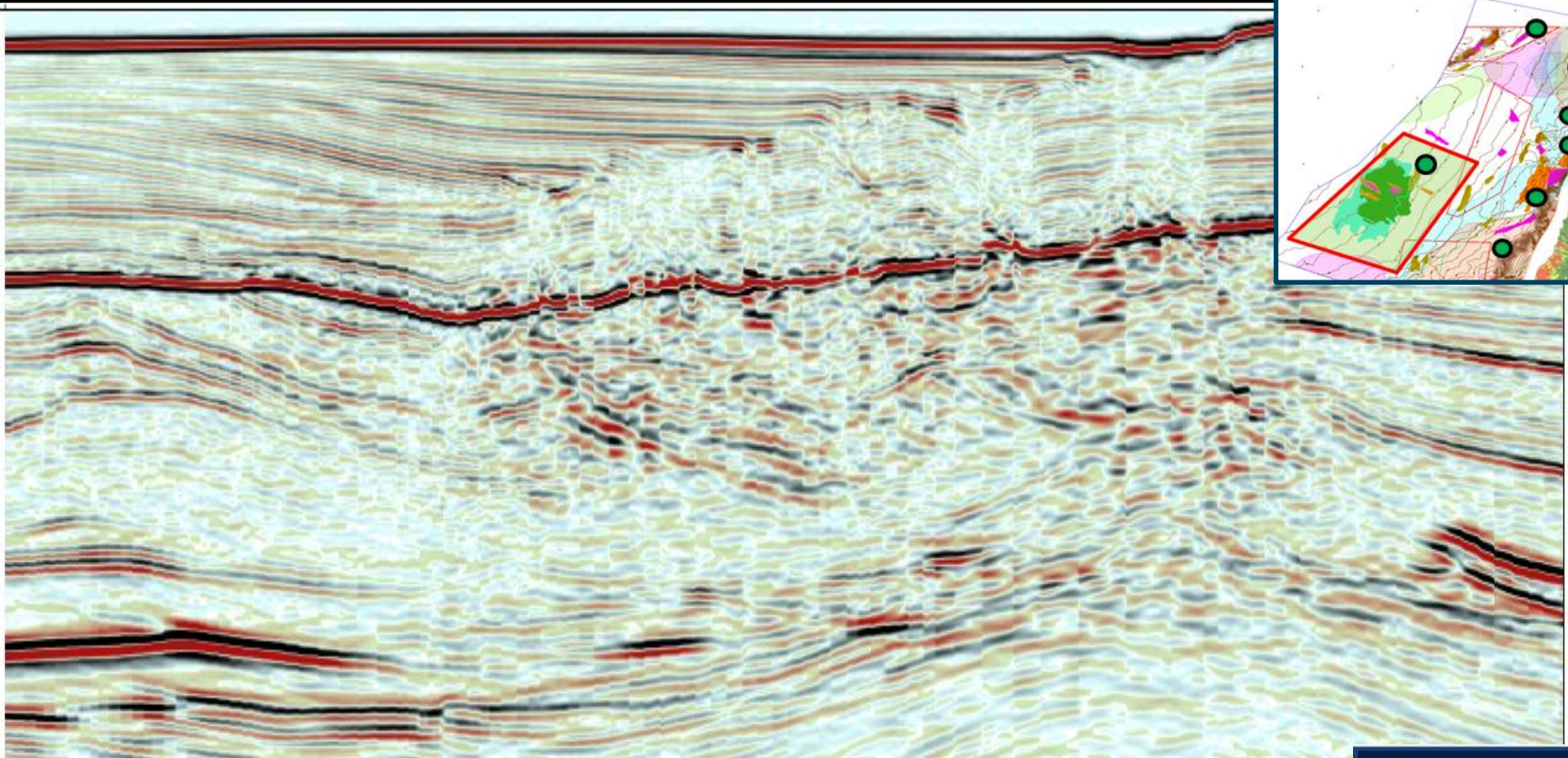
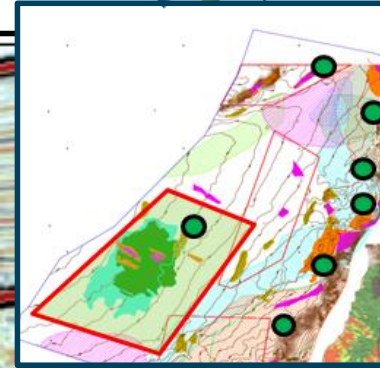


# Hydrocarbon Indications – Fluid Pipes



Syrian arc related inversion structure associated with fluid pipe and pockmark at seabed

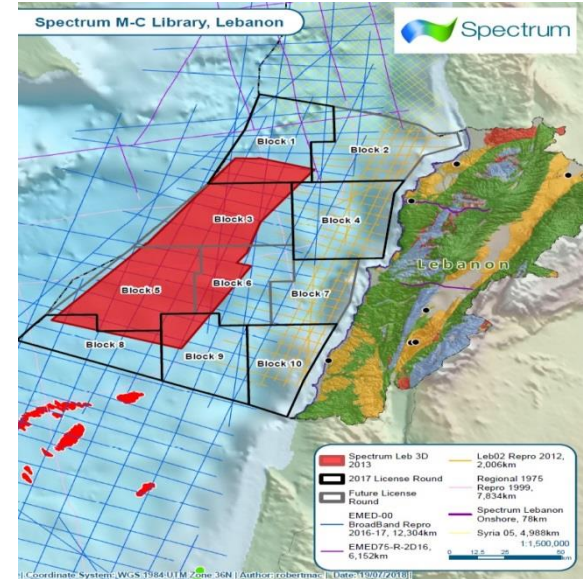
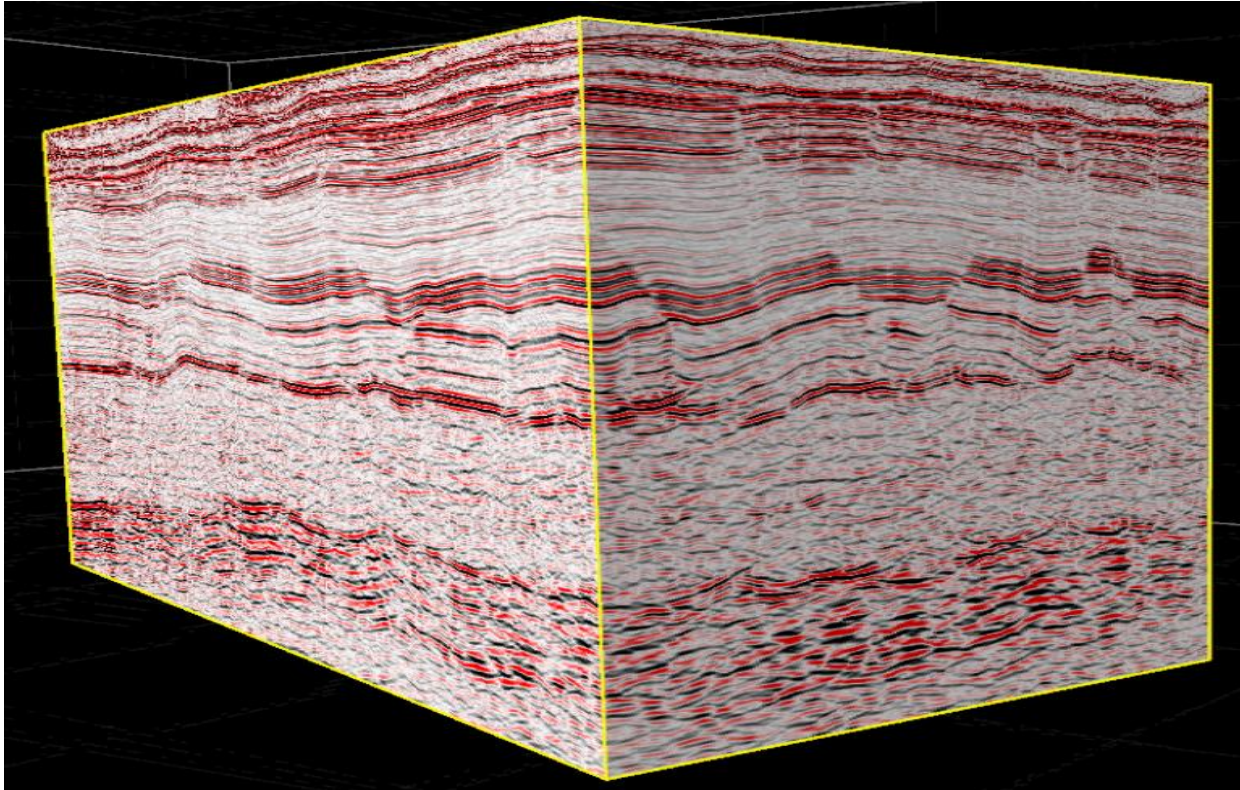
# Multi episode focused Fluid Escape



HC Indications

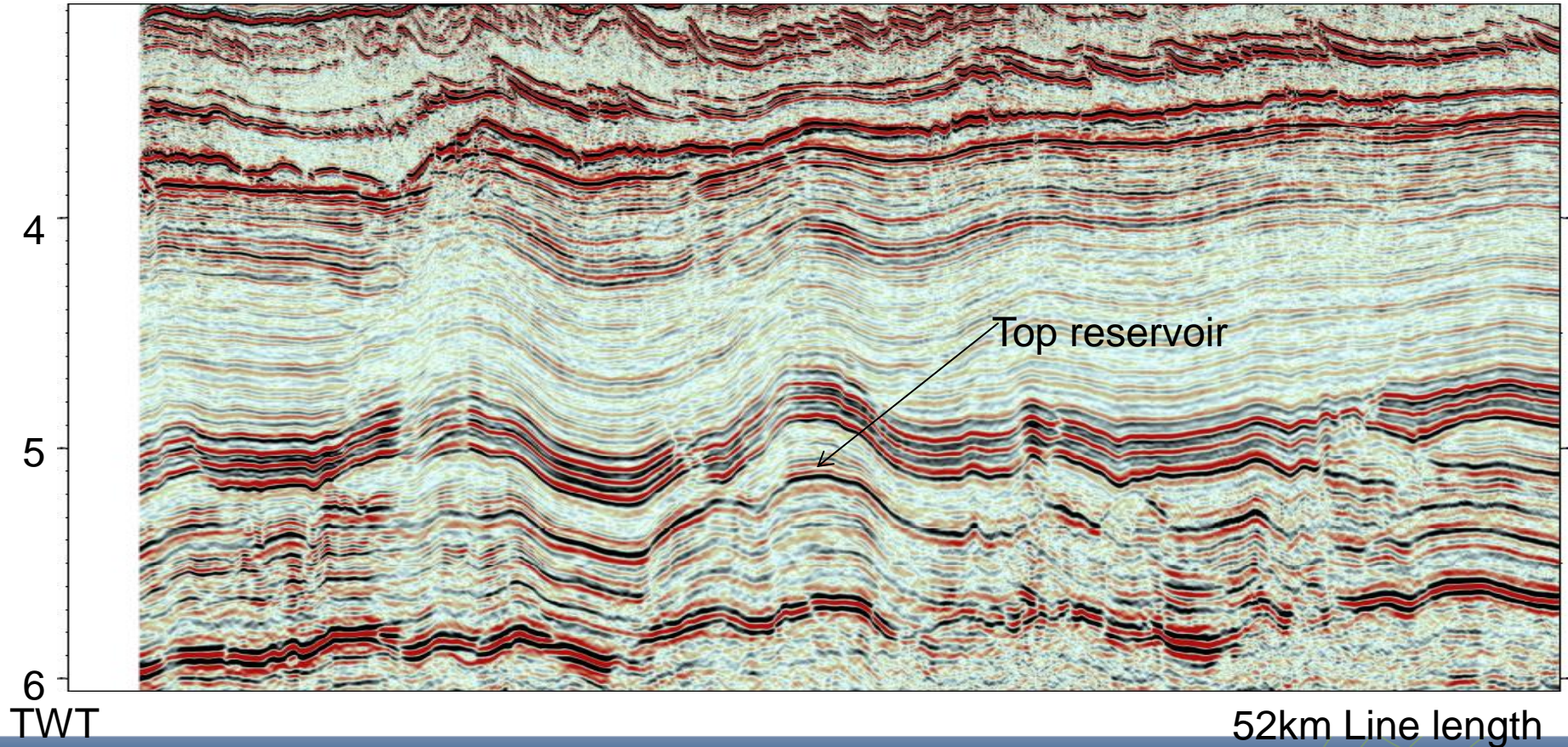


# Lebanon 3D Blocks 5



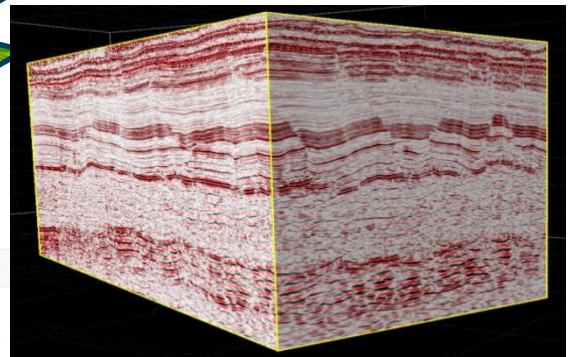
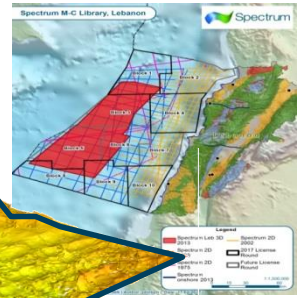
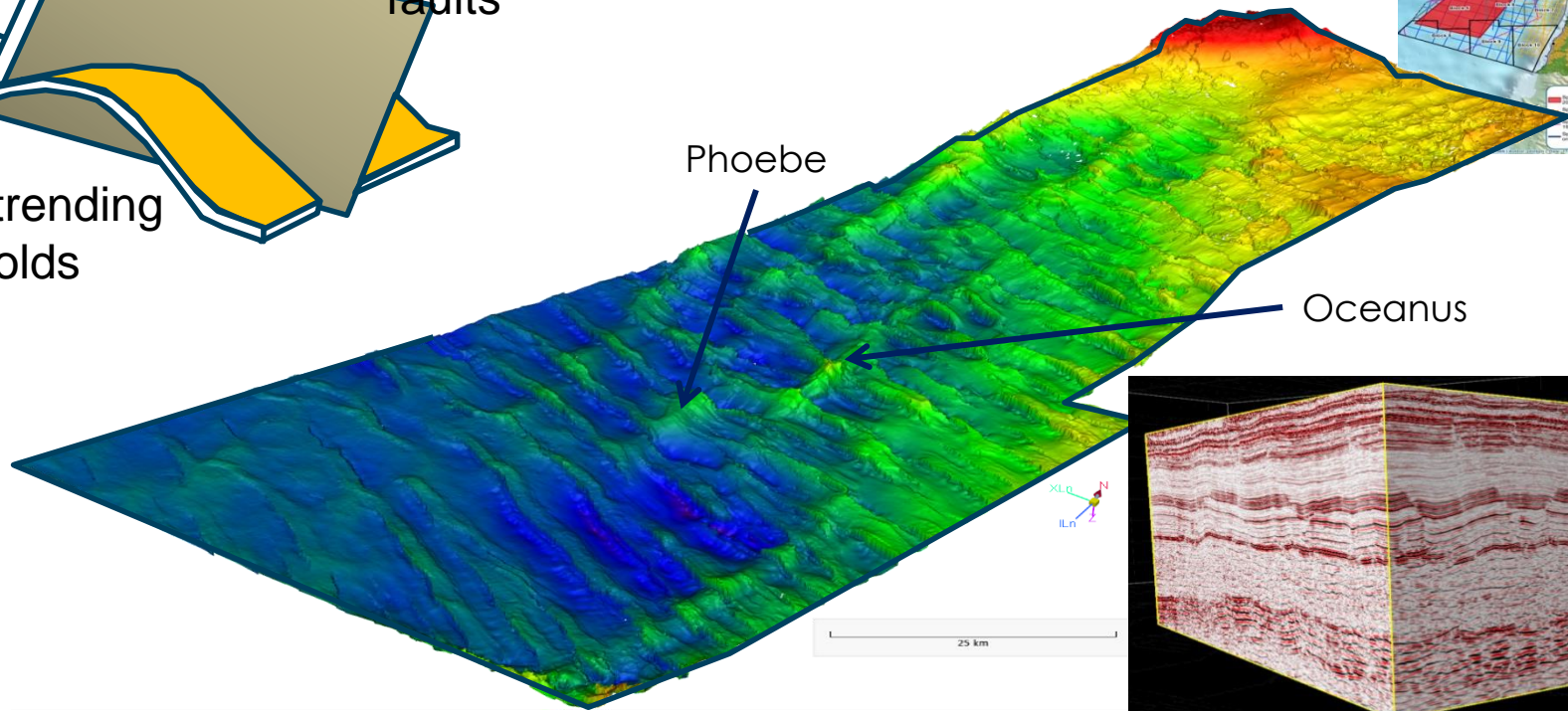
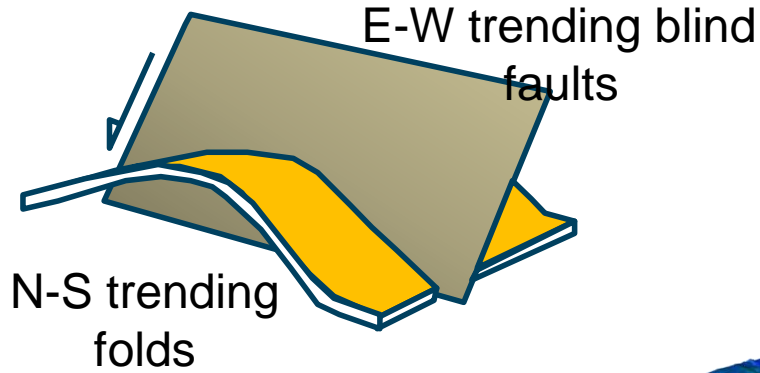


# West-East Line Leb 3D: Structure



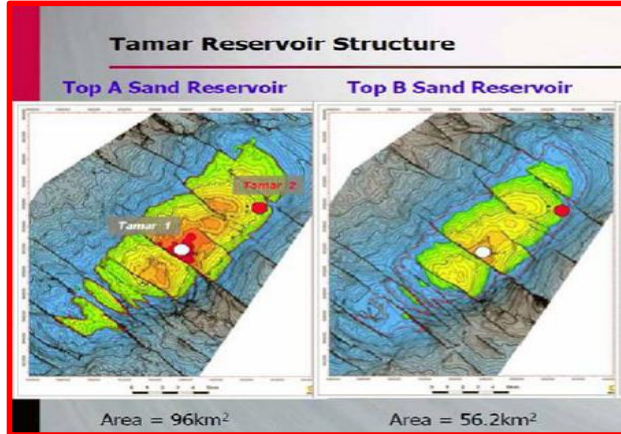
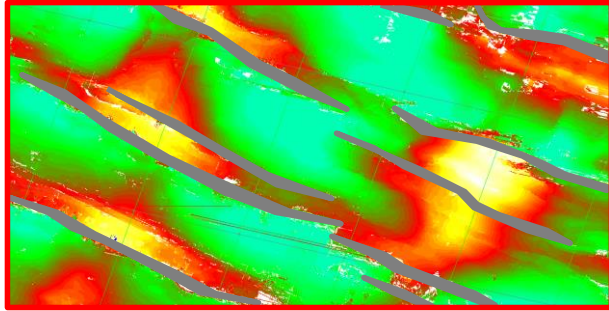


# Lower Miocene Structures Map from 3D



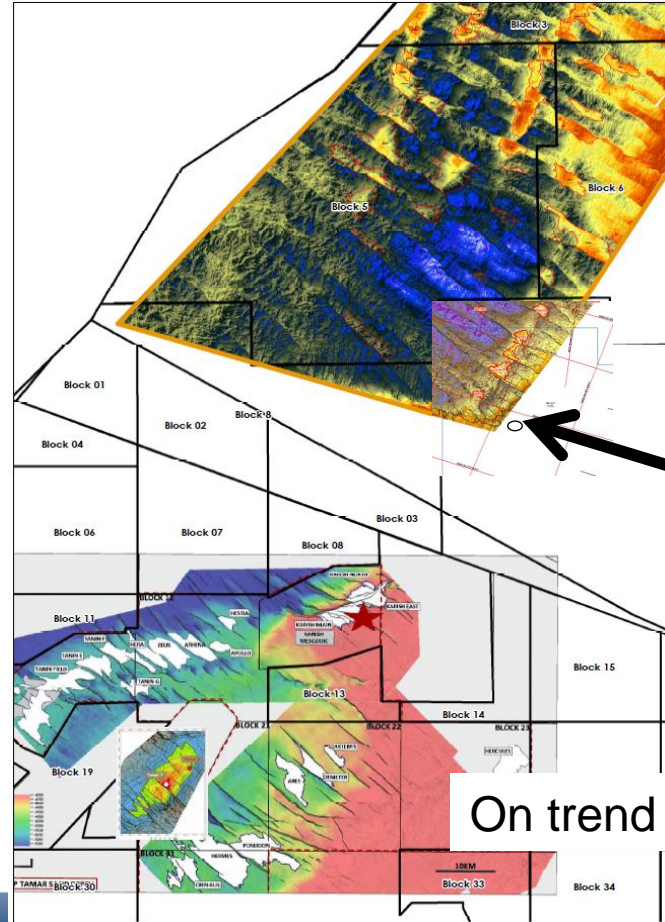
Trap

# Structures North and South Levant Basin



Ref: Noble Website

15km



IHS reported  
Well Location  
Total Drilling  
2019/20

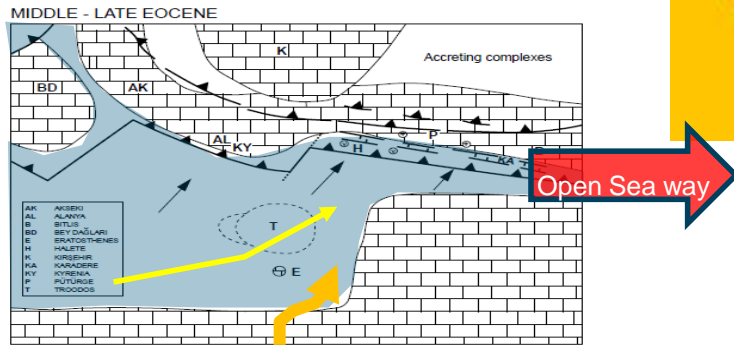
On trend with Kerish



# Paleo - Reconstruction

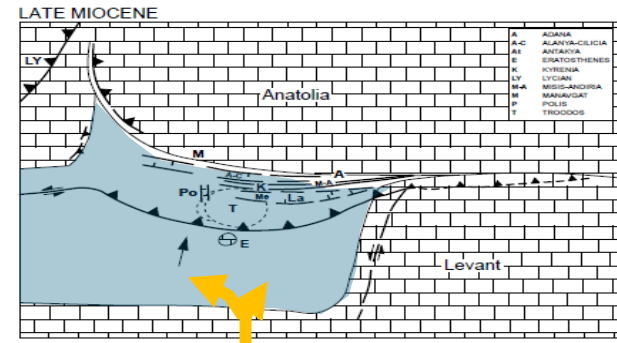
Cretaceous: Tethys open to east

Nile River Drains into “Niger”  
Delta Mediterranean carbonate  
platform rimmed

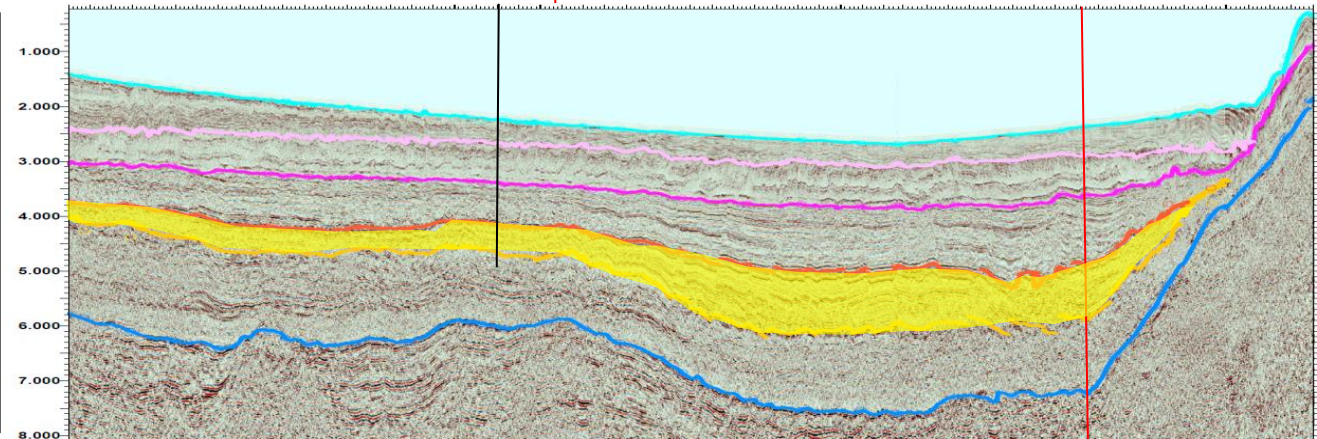
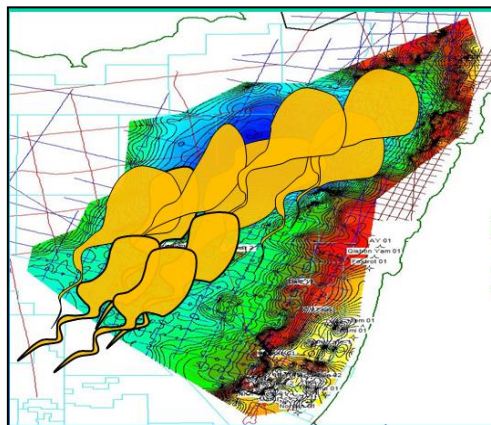
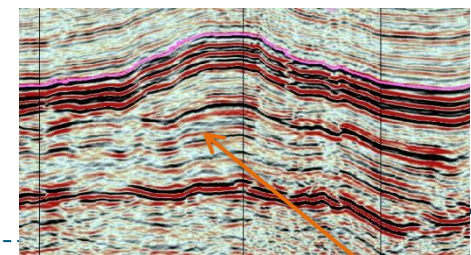
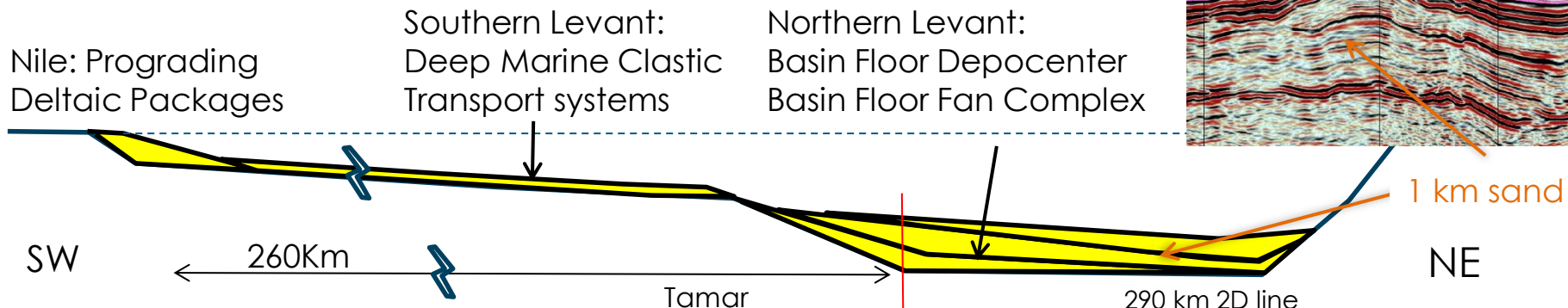


Eocene Restricted  
Nile Delta Establishing

Late Miocene  
Closed

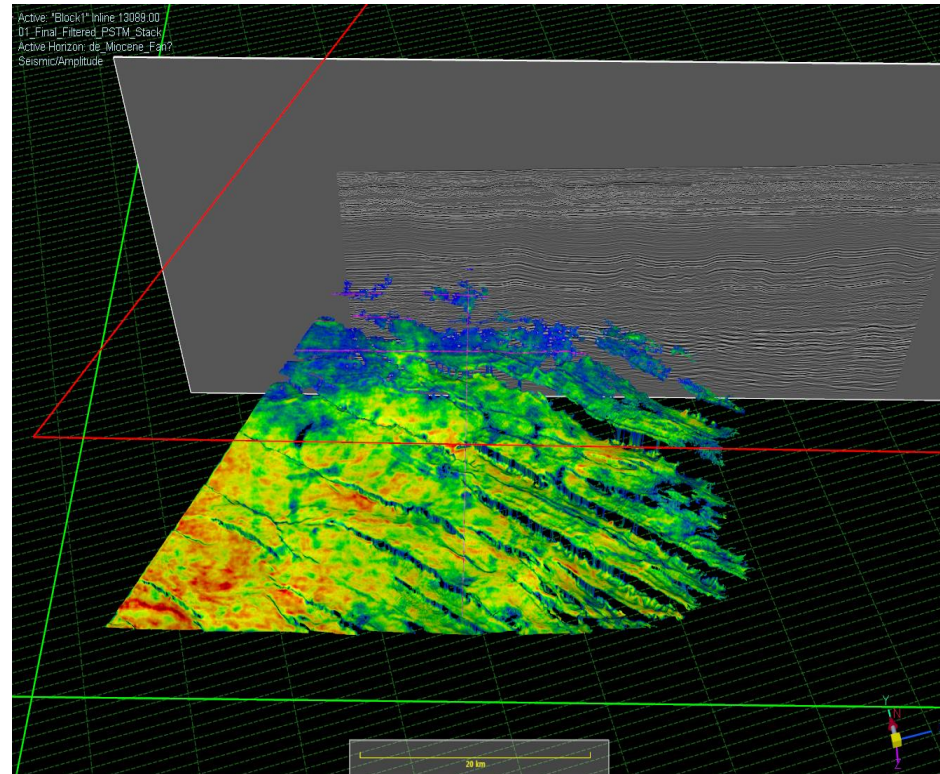
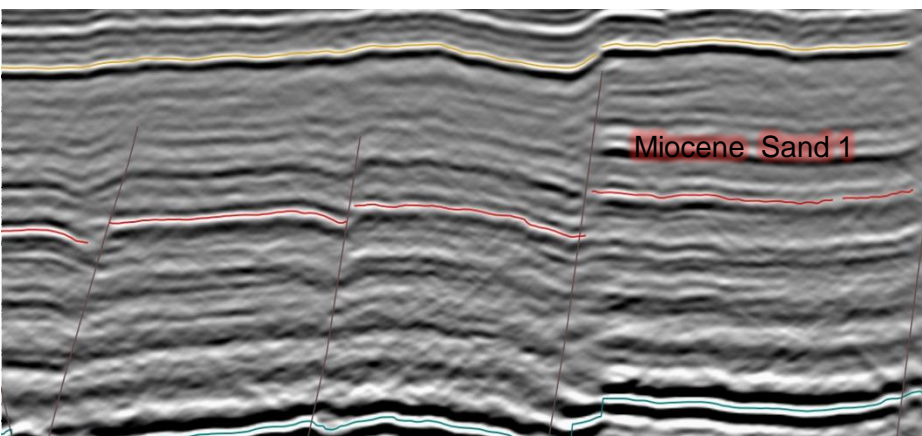
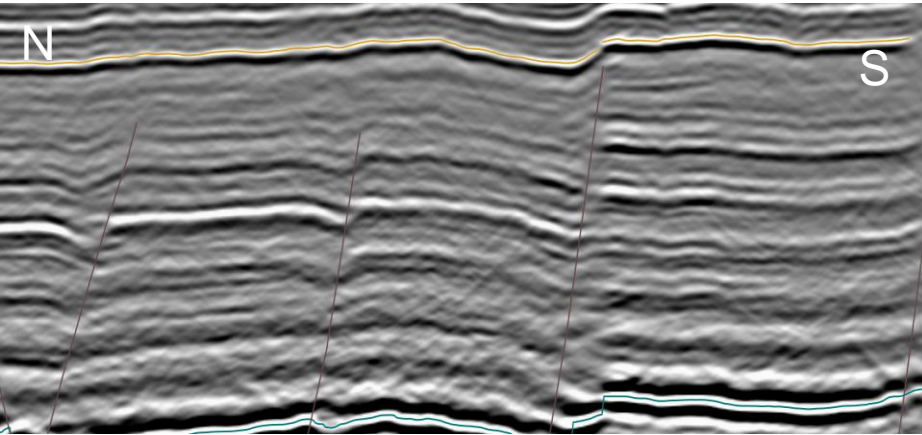


# Early Miocene Reservoir Provenance

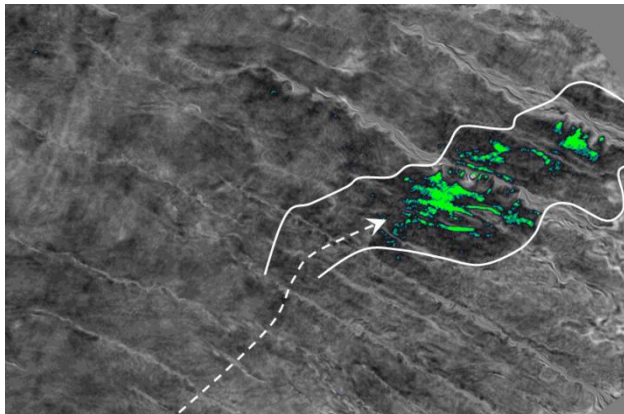
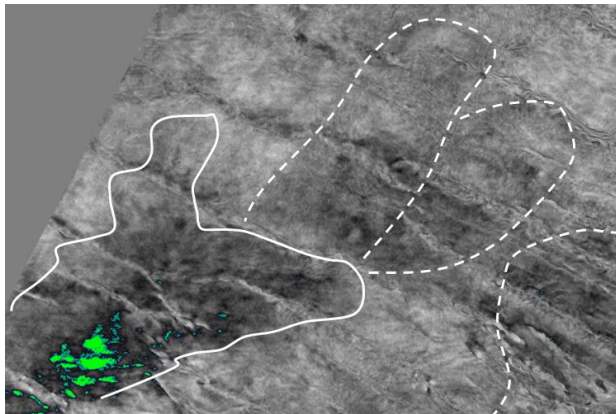
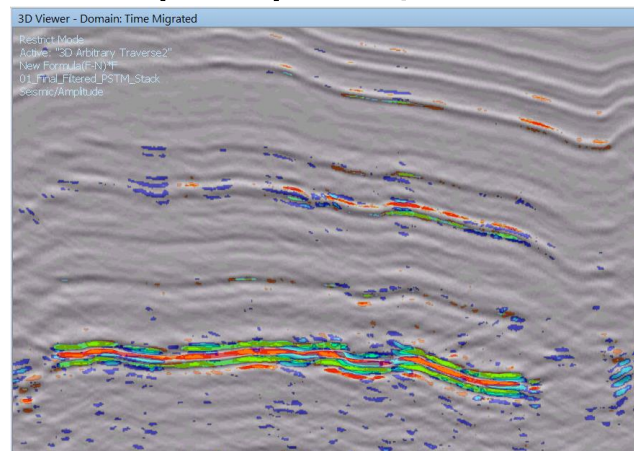
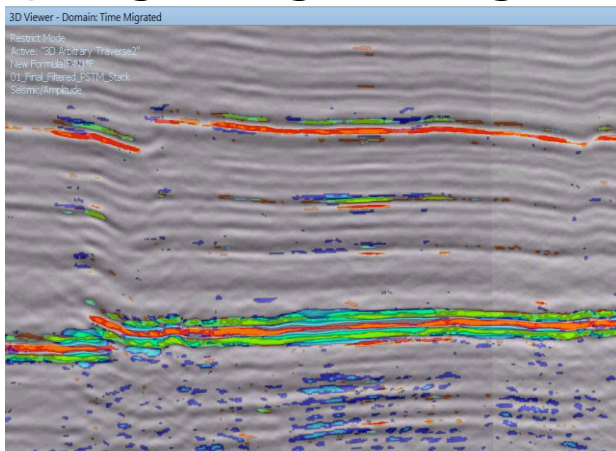




# Miocene Fans

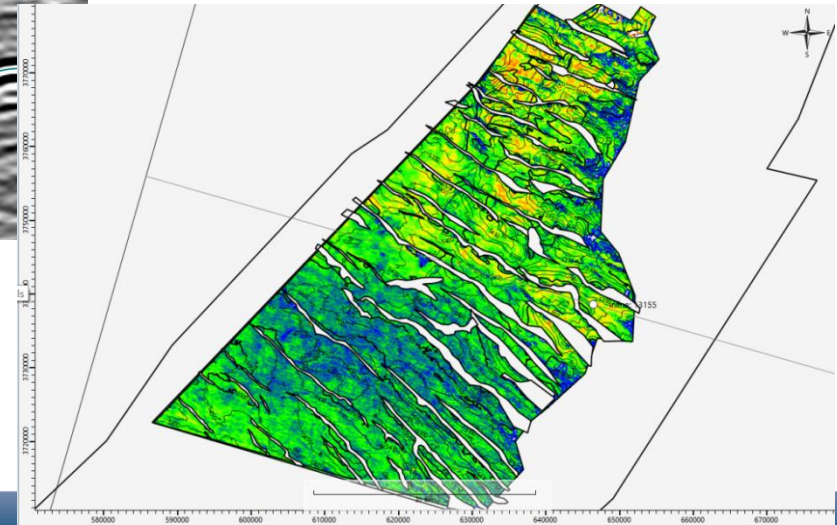
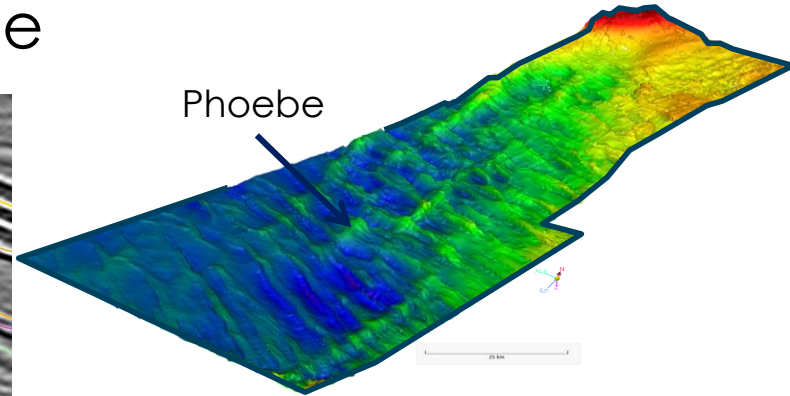
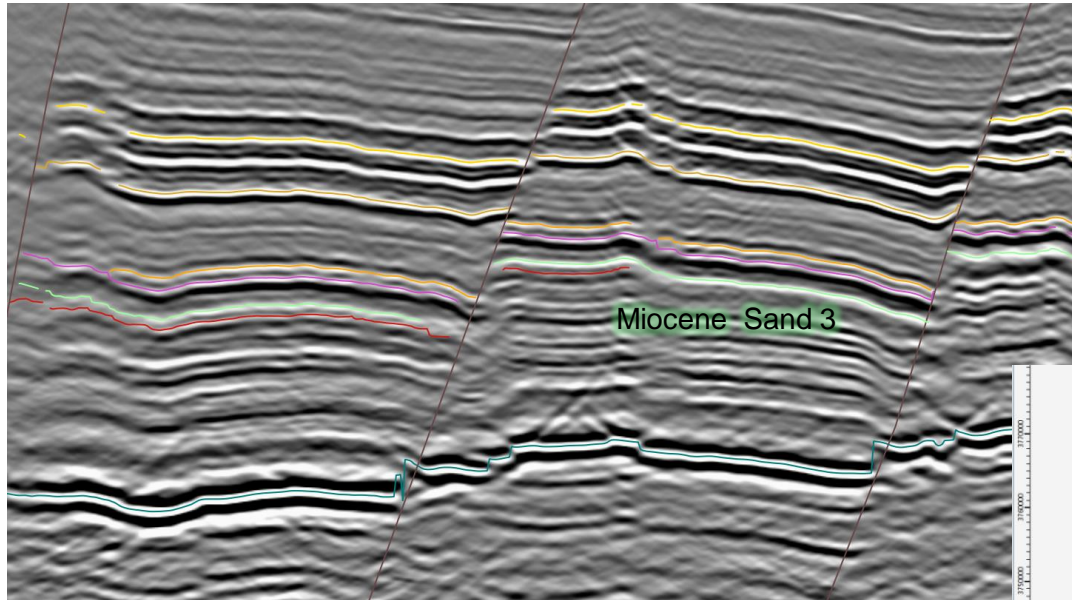


# Mapping Prograding sand fans in (F-N)\*F space.

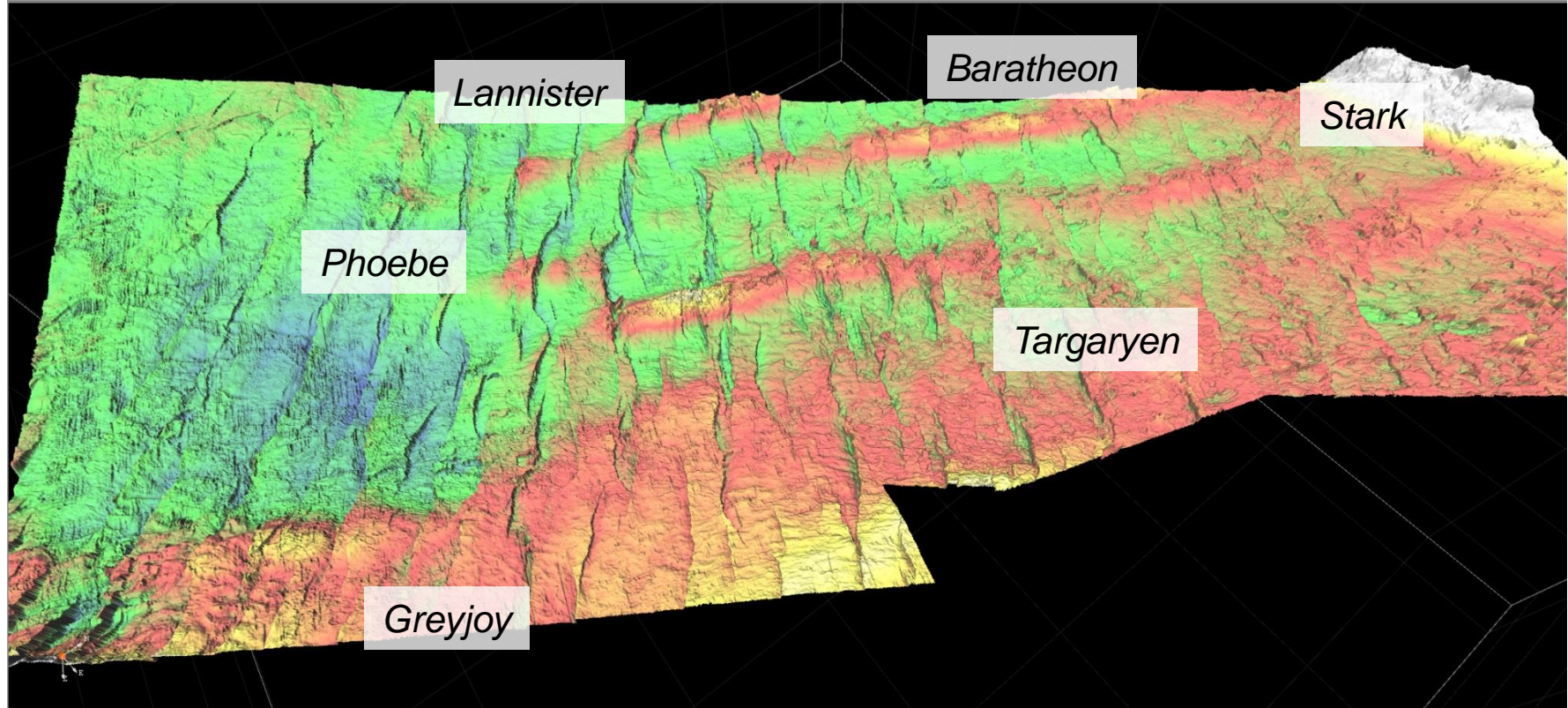




# Miococene Fans and Sand Province

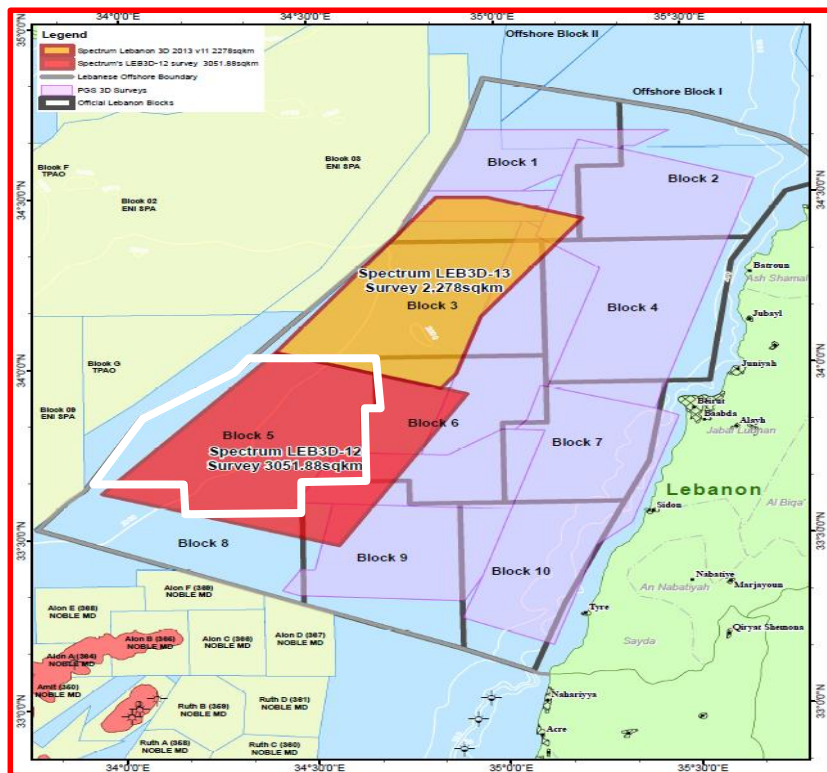


# Base Messinian Evaporites depth





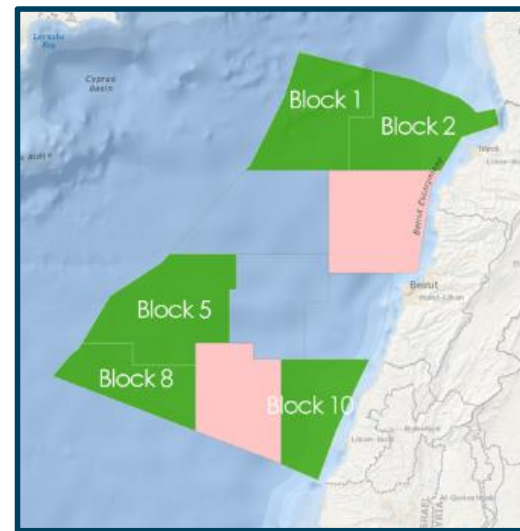
# Block 5 : Resource Potential



- 1) 25 + structures Lower Miocene  
30-50 TCF or **5 to 8.3 BBOE**
- 2) 2 large low relief structures Upper Miocene Level (three plays)  
8 -15 TCF or **1.3 to 2.5 BBOE** potential resources

Round 2 Ongoing:  
Bids to be received by Jan 2020.

# Block 5, 8, 10, 1 and 2 in the 2019 second Lebanese License round



EVERYTHING STARTS WITH A  
VISION

