



SPE Workshop: Adaptive Approach in Integrated Reservoir Modelling and Simulation in the Age of Digitalisation

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Static/Dynamic Reservoir Properties from 3D Seismic Volumes using new Technology

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Innovative Reservoir Petrophysical Modelling Pty Ltd



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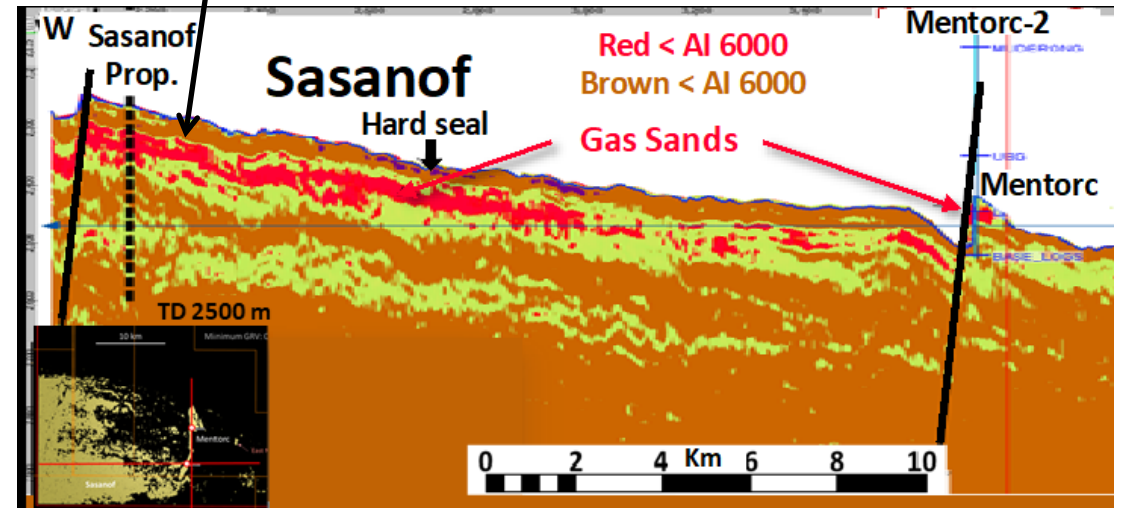
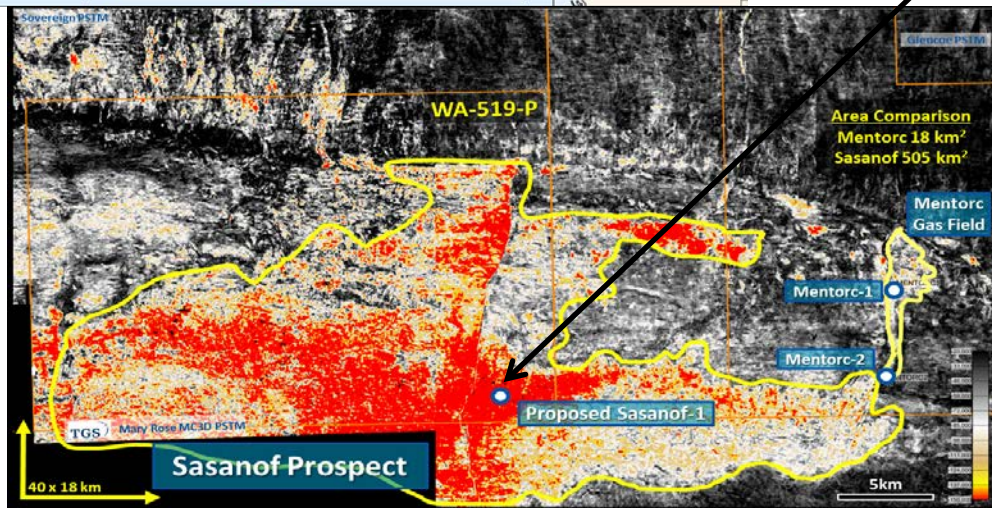
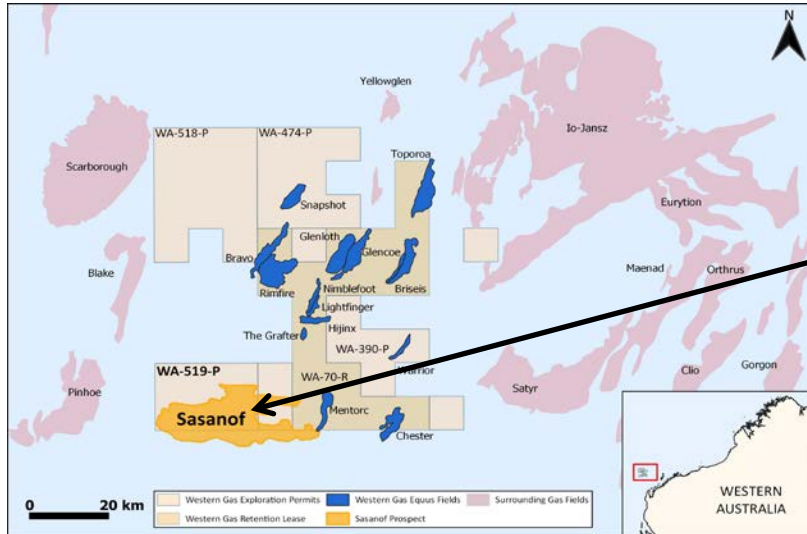
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1. Why iRPM? – Benefits!

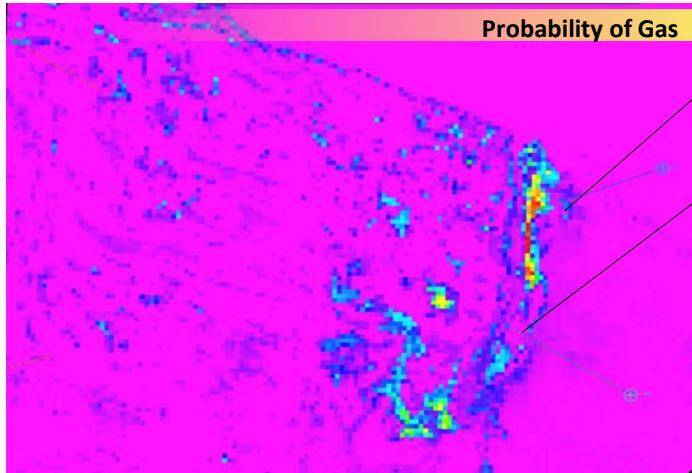
- Subsurface Reservoir Analysis and Prediction Technology
- Saving \$100's millions appraisal program. Faster, cheaper, and more accurate! 2-4 weeks rather than 2-5 years!
- Calibrated to at least one well! No cognitive conceptual biasing!
- Petrophysical relationships from Dens, Vp, Vs!
- Vclay, Phit/Phie, ResQual, Perm, In-place and Producible volumes!
- Any 3D grid size – 200m x 200m x 4ms to 25m x 25m x 0.5m sampling!
- No stochastic probability distribution based upon AVERAGES!

2. Blind Test Sasanof Field – North West Shelf

1. Determine if Sasanof prospect is gas filled.
2. Perform Seismic Inversion
3. Predict well result from log data
4. Apply to Seismic Domain (2022).
5. Sasanof-1 well predicted to be water
6. Sasanof-1 well result available 2024!



2. Blind Test Sasanof Field – North West Shelf

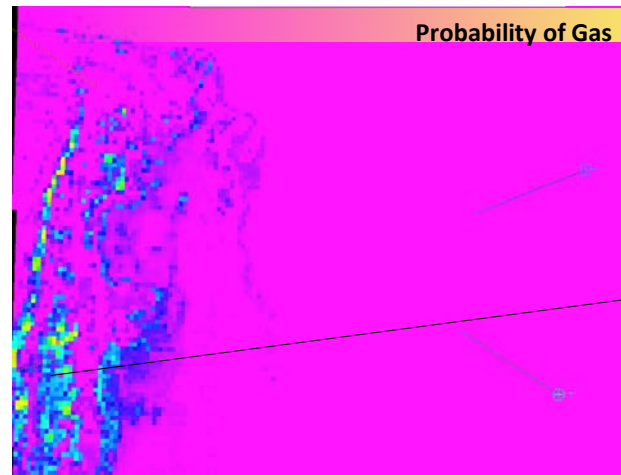
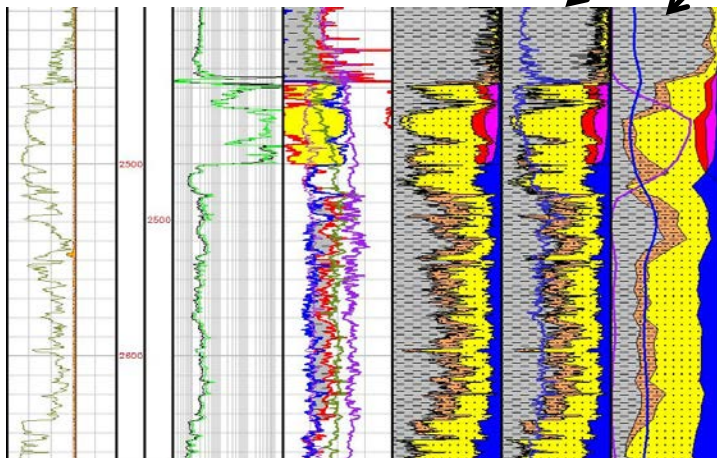


Mentorc-1

Mentorc-2

1. Determine if Sasanof prospect is gas filled.
2. Perform Seismic Inversion
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Mentorc-1



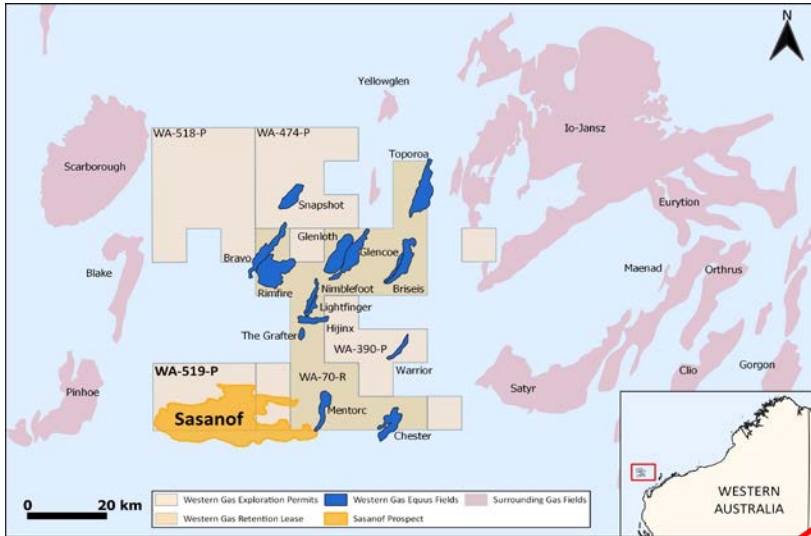
Sasanof-1

Sasanof-1

Seismic Inv:

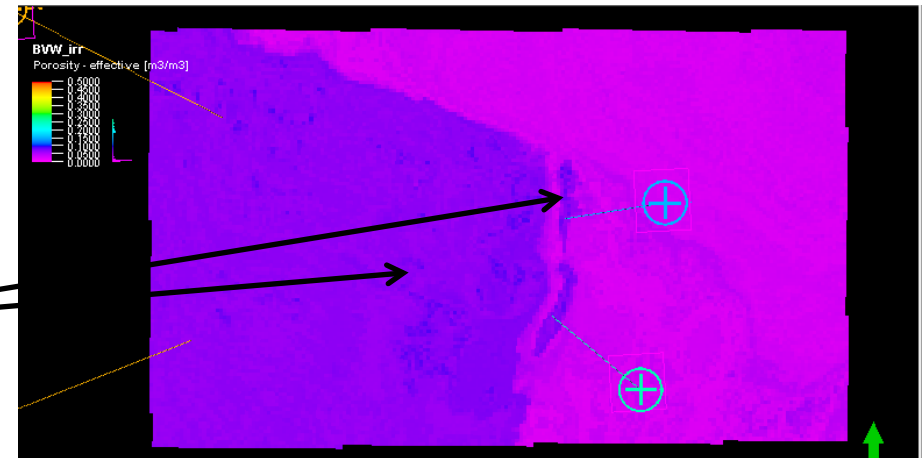
Pimp,
VpVs,
Dens

2. Blind Test Sasanof Field – North West



1. Determine if Sasanof is gas filled.
2. Perform Seismic
3. Predict well log data
4. Apply to domain (2022).
5. Sasanof well result available 2024!

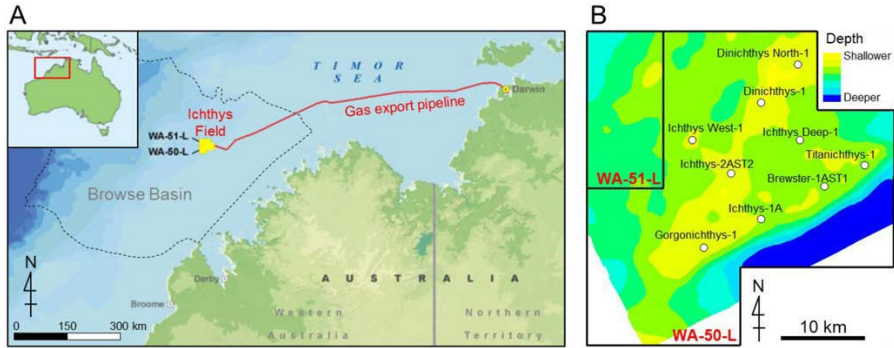
Never drill a water well again!



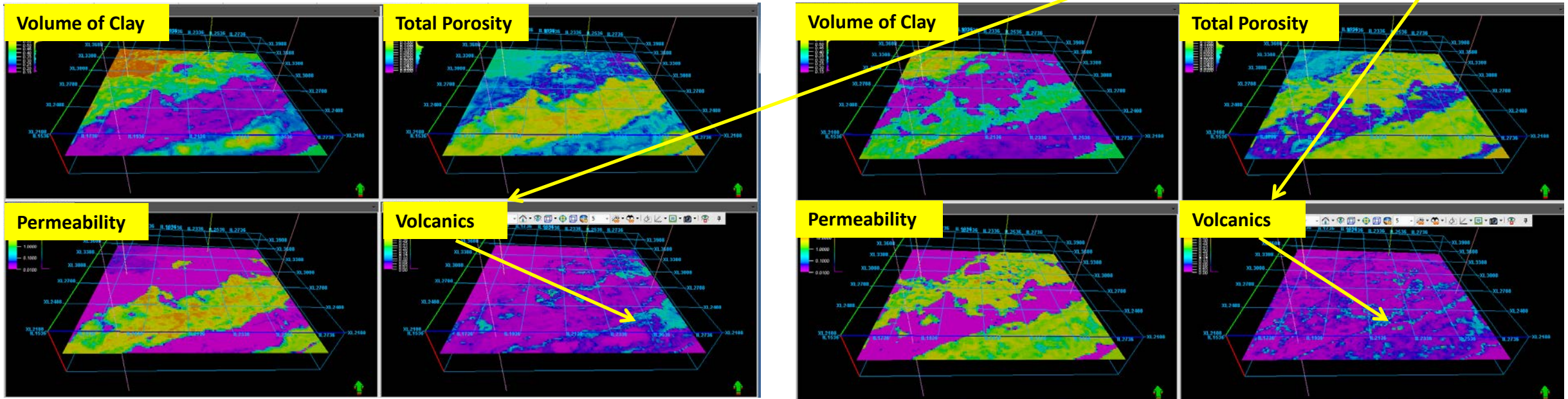
Free Water

Irreducible Water

3. Volcanics in Ichthys Field – no Rt/Rxo!



1. Determine the Volcanics in Brewster/Plover
2. Perform Seismic Inversion, predict well result from log data, apply to Seismic Domain.
3. Identify Volcanics in Brewster and Plover



Brewster Formation Map

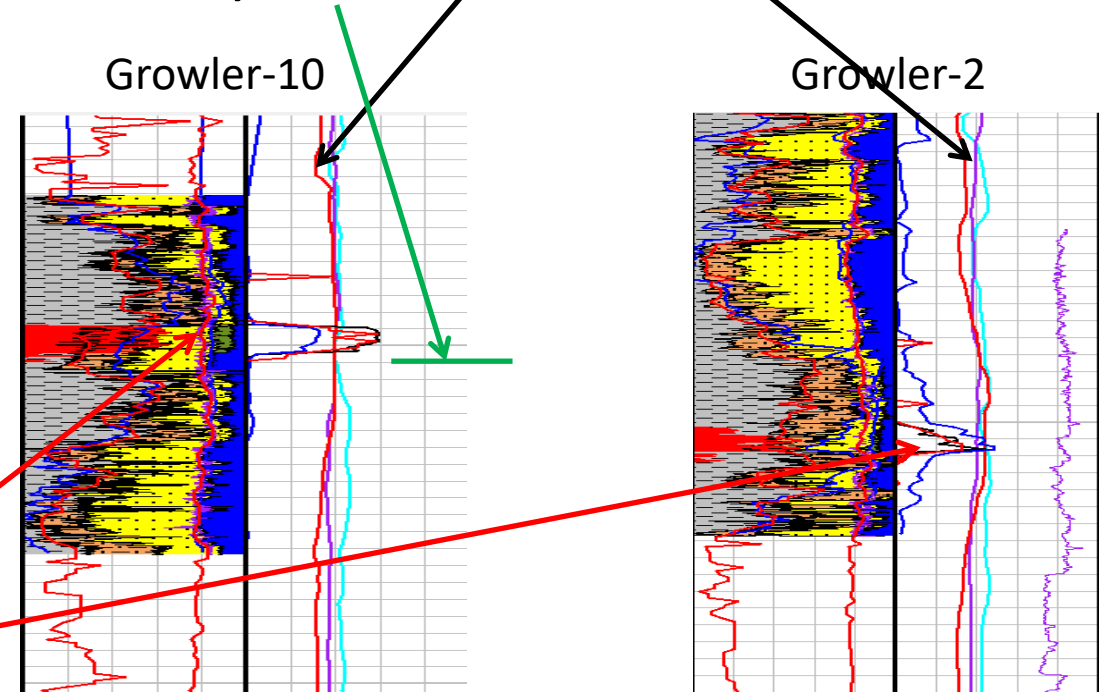
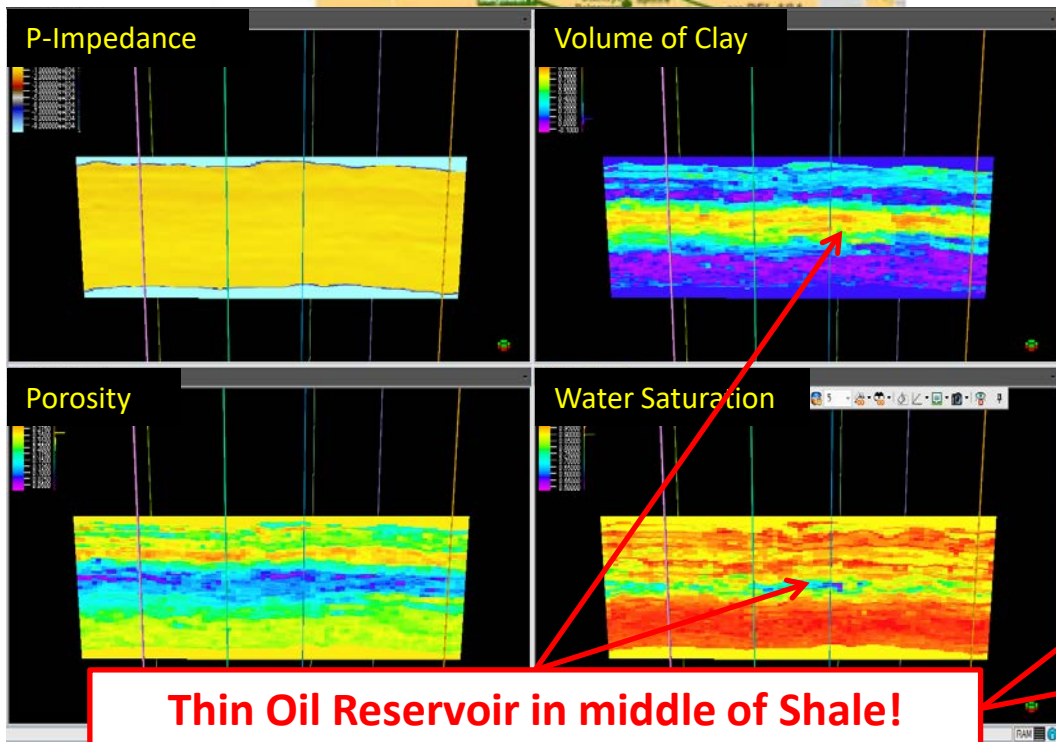
200m x 200m x 4ms grid

Plover Formation Map

4. Cooper Basin - Thin Oil Reservoir, Growler field



1. Determine the Thin Bedded Oil Reservoir.
2. Perform Seismic Inversion, predict well result from log data, apply to Seismic Domain.
3. Identify OWC in the middle of the Shale zone



5. Validation – blind test a new or existing well

1. Predict the next well to be drilled or blind test an existing well.
2. This will validate the iRPM Technology and provide confidence that it works! If the blind test is accurate then ...
3. Perform 3D Reservoir study and provide the static and dynamic properties of the field.

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Aust. Patent Appl. No. 2023901304
Int. Patent Appl. No.
PCT/AU2024/050426

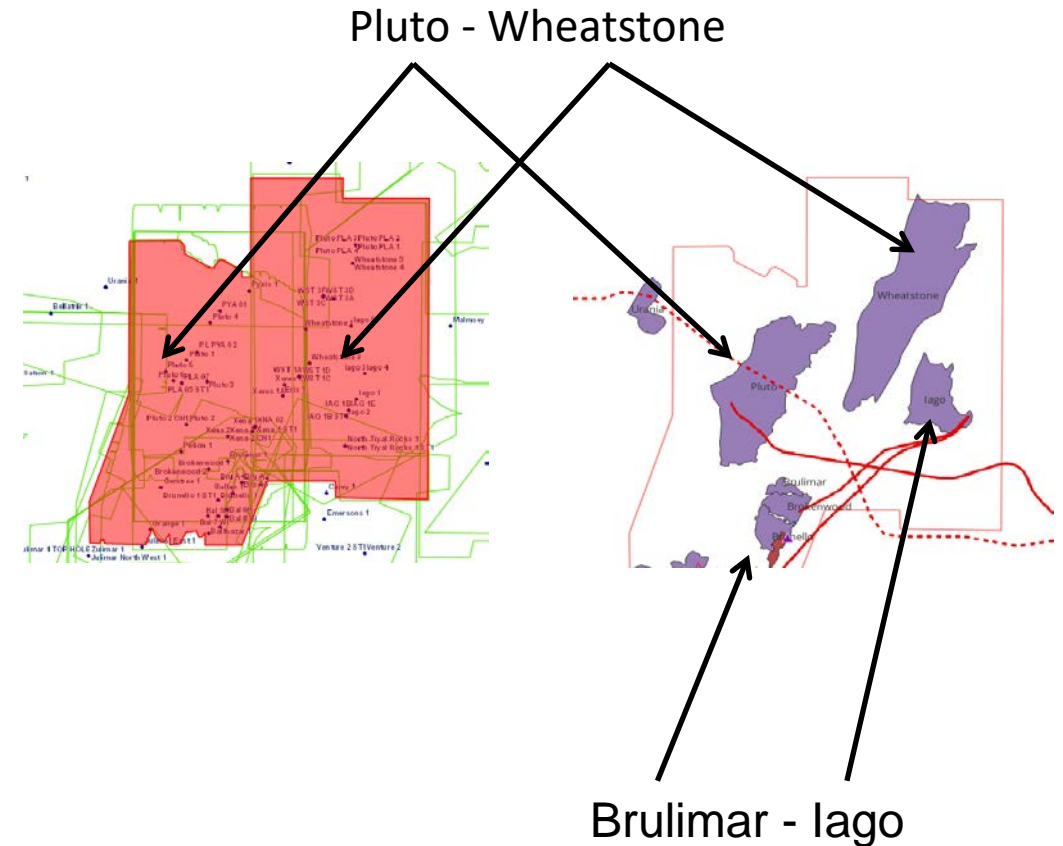
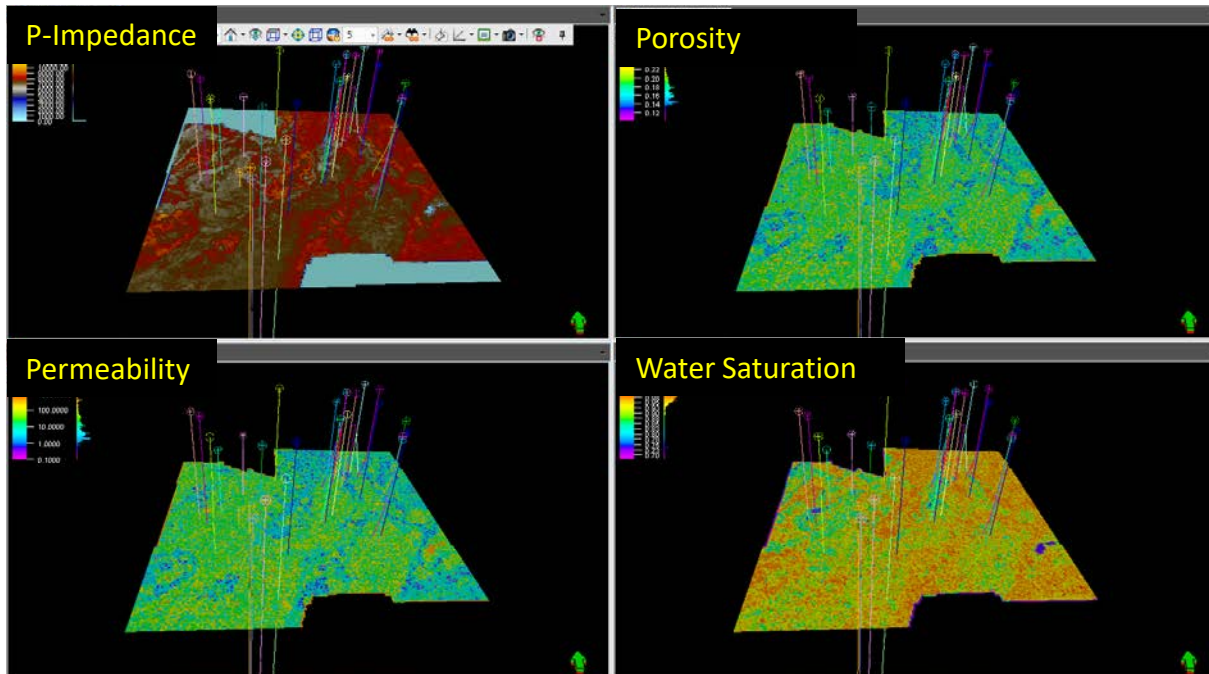




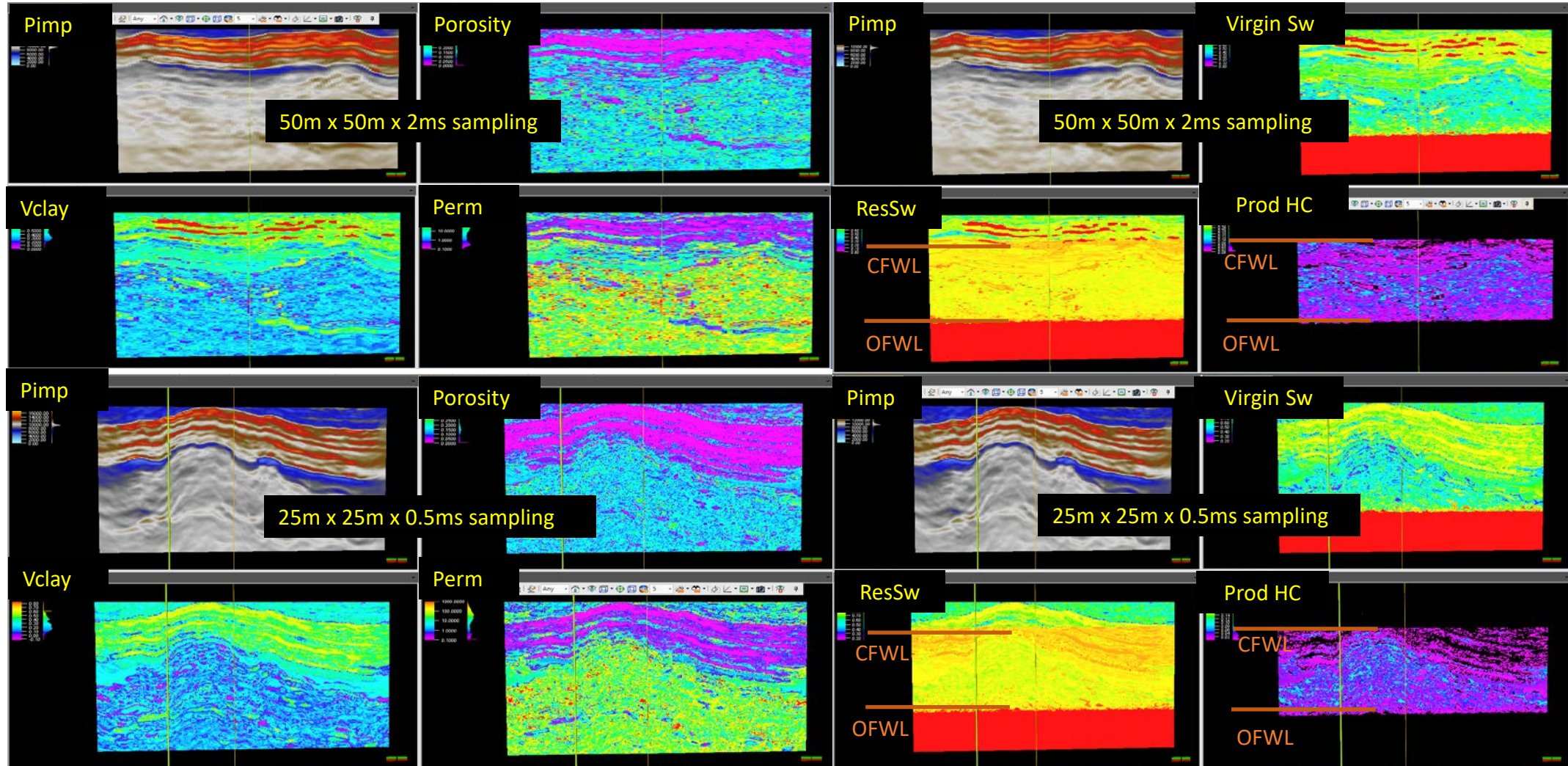
6. Backup

7. Pluto/Wheatstone – Production Unitization?

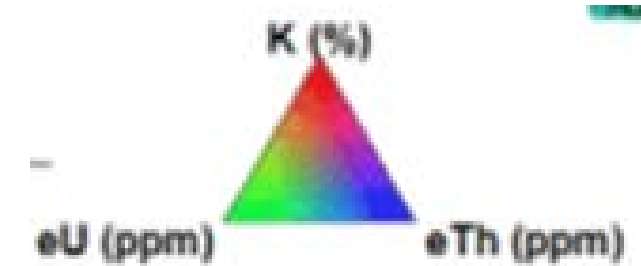
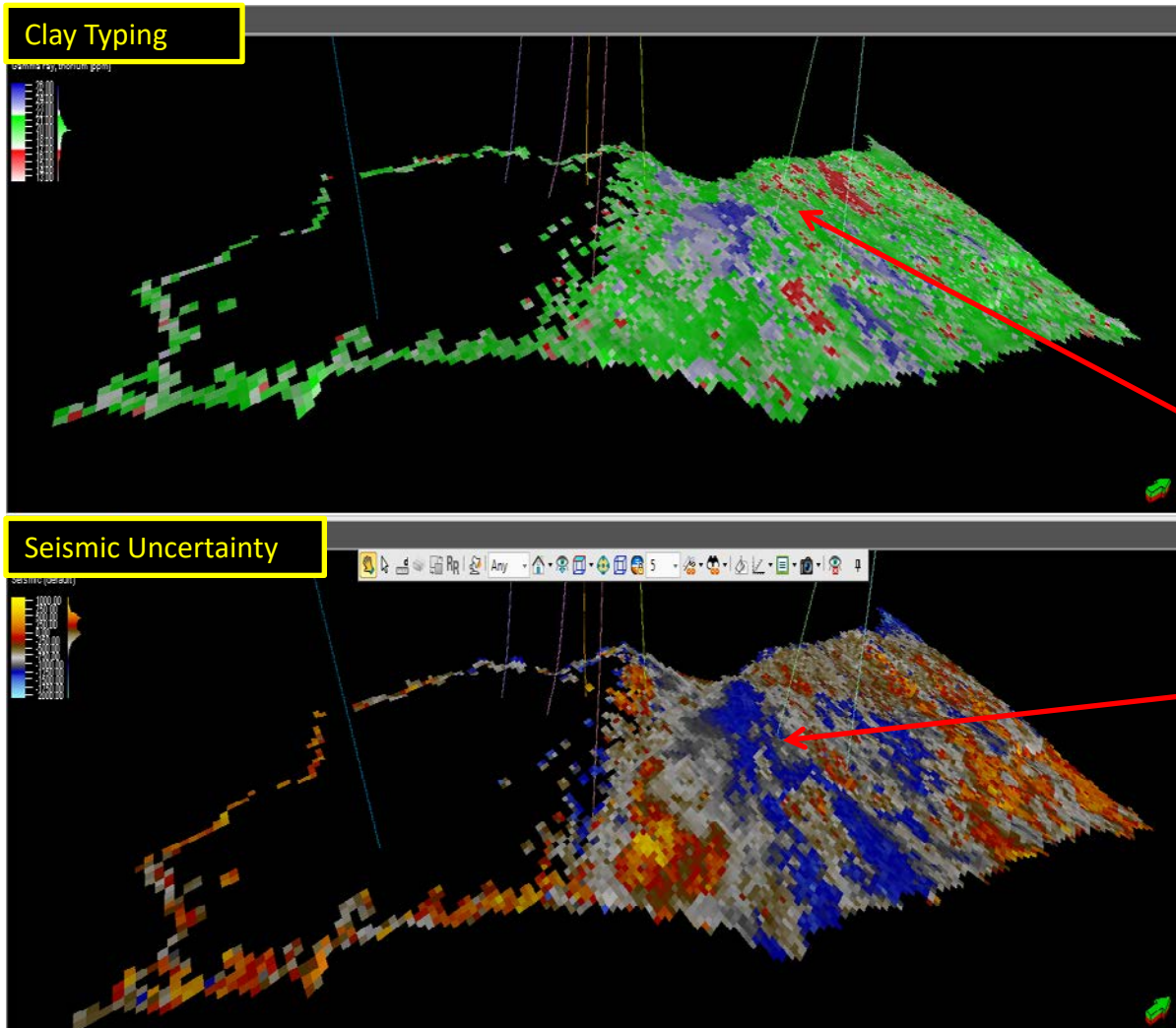
Pluto/Wheatstone Production Study:
 Pluto 2012 production vs
 Wheatstone 2017 production



8. Volve Field - North Sea



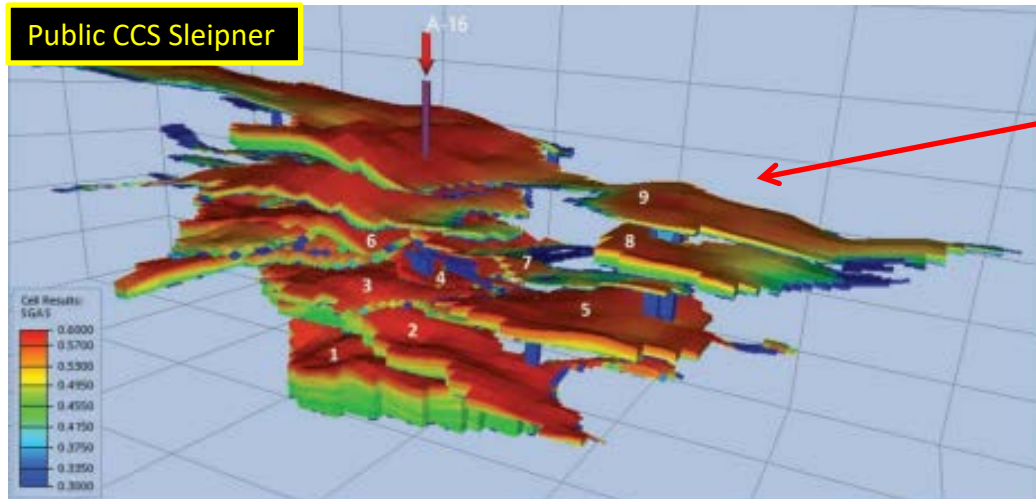
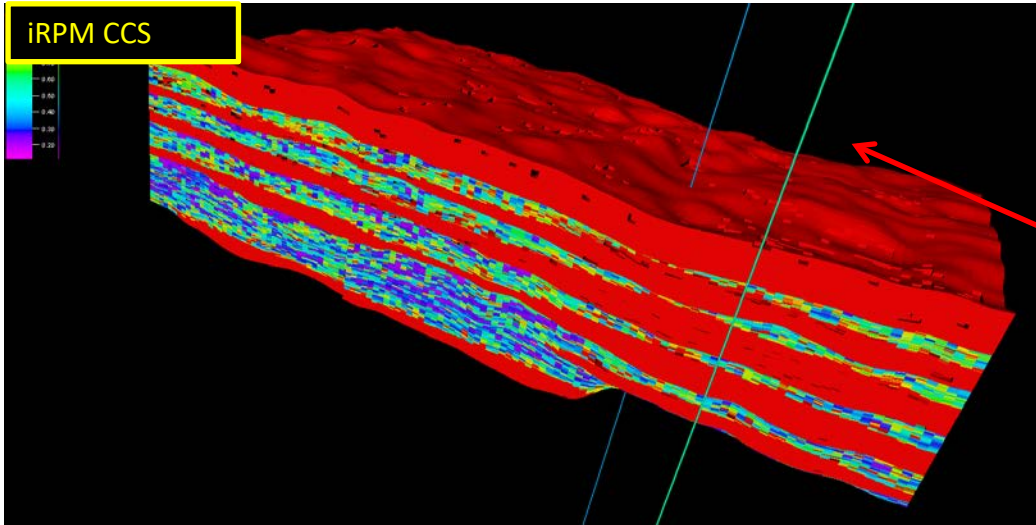
9. Clay typing and Seismic uncertainty determination



Future Enhancements/Technology:

1. Clay typing in 3D using **Uranium**, **Thorium** and **Potassium** properties
2. Quantifying 3D Seismic uncertainty

10. CCS - Sleipner



Future Enhancements/Technology:

1. iRPM Sleipner CCS Injection flume
2. Sleipner CCS Injection flume