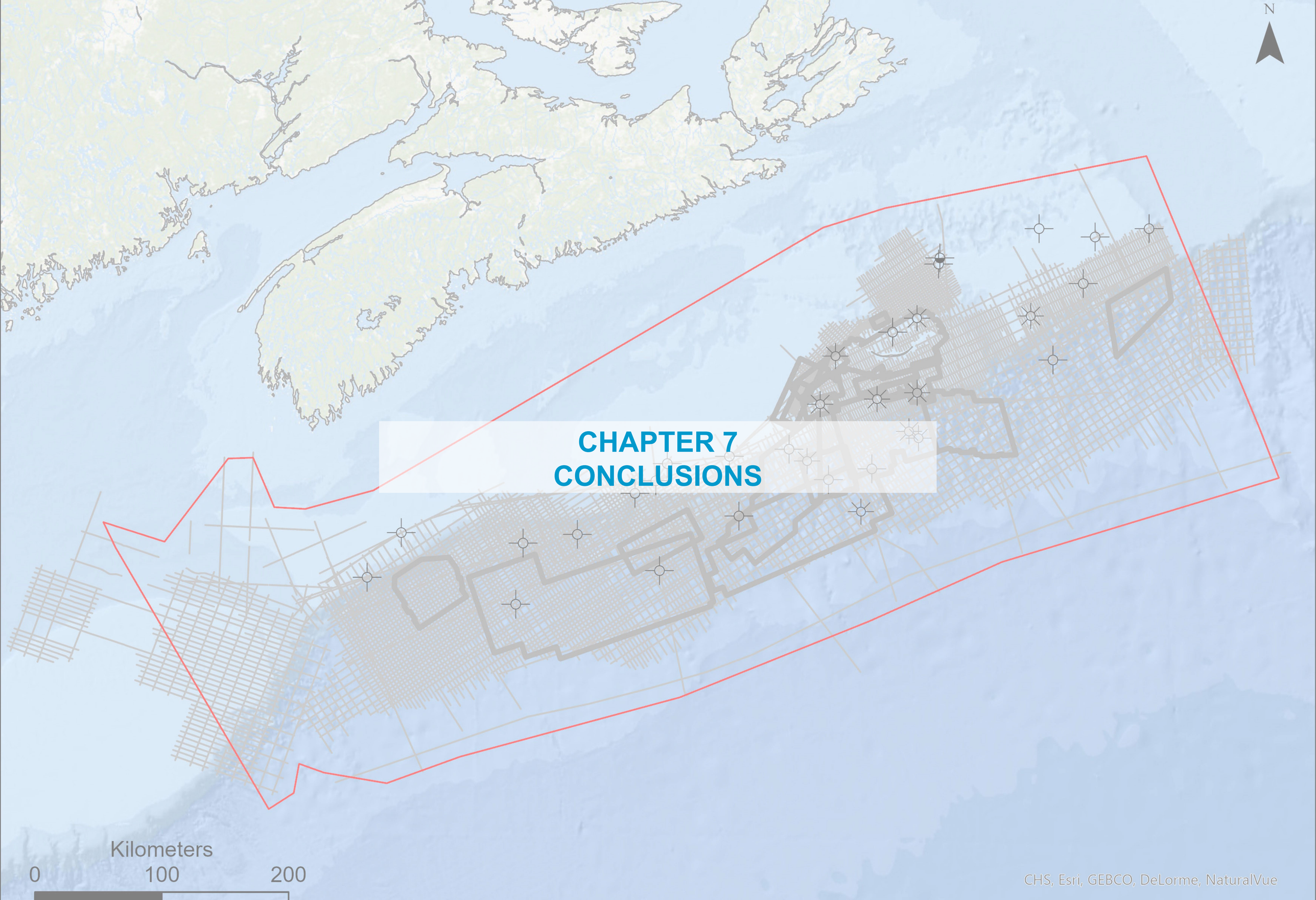
CHAPTER 7
CONCLUSIONS



Conclusions and Future Work

CONCLUSIONS

To attract renewed exploration interest in offshore Nova Scotia, the Scotian Basin Integration Atlas study aimed to produce a definitive review of Nova Scotia's offshore petroleum potential. Previous chapters highlight the successful integration of the past twelve years of data and research undertaken since the publication of the 2011 Play Fairway Analysis. New data and workflows were undertaken by a collaborative team and have provided an updated picture of Nova Scotia's potential for the petroleum exploration community. Key takeaways include:

(1) There is a material frontier exploration opportunity in deep water offshore Nova Scotia

- The YTF is estimated at ~ 32 bnboe (in place/unrisked, range 26 – 70 bnboe)
- There are at least 10 leads with in place volumes > 250 Mmboe (5 leads have volumes > 1 bnboe each)
- The resource consists of gas, condensate and light oil (the GOR is predicted to increase from west to east in line with the increasing basin depth)

(2) There is greater confidence in the presence of working thermogenic petroleum systems across the whole margin

- There is evidence for two effective source rocks: (a) an Early Jurassic marine Type II source and (b) a Late Jurassic(~Tithonian) terrestrial source, Type II/III

(3) Reservoir presence remains as a significant risk, however risk reduction has been demonstrated through a combination of:

- Application of modern interpretation methods applied to very high quality 3D seismic
- Rigorous sequence stratigraphy and seismic geomorphological analysis, and
- Careful application of quantitative geophysical inversion based on 3D seismic

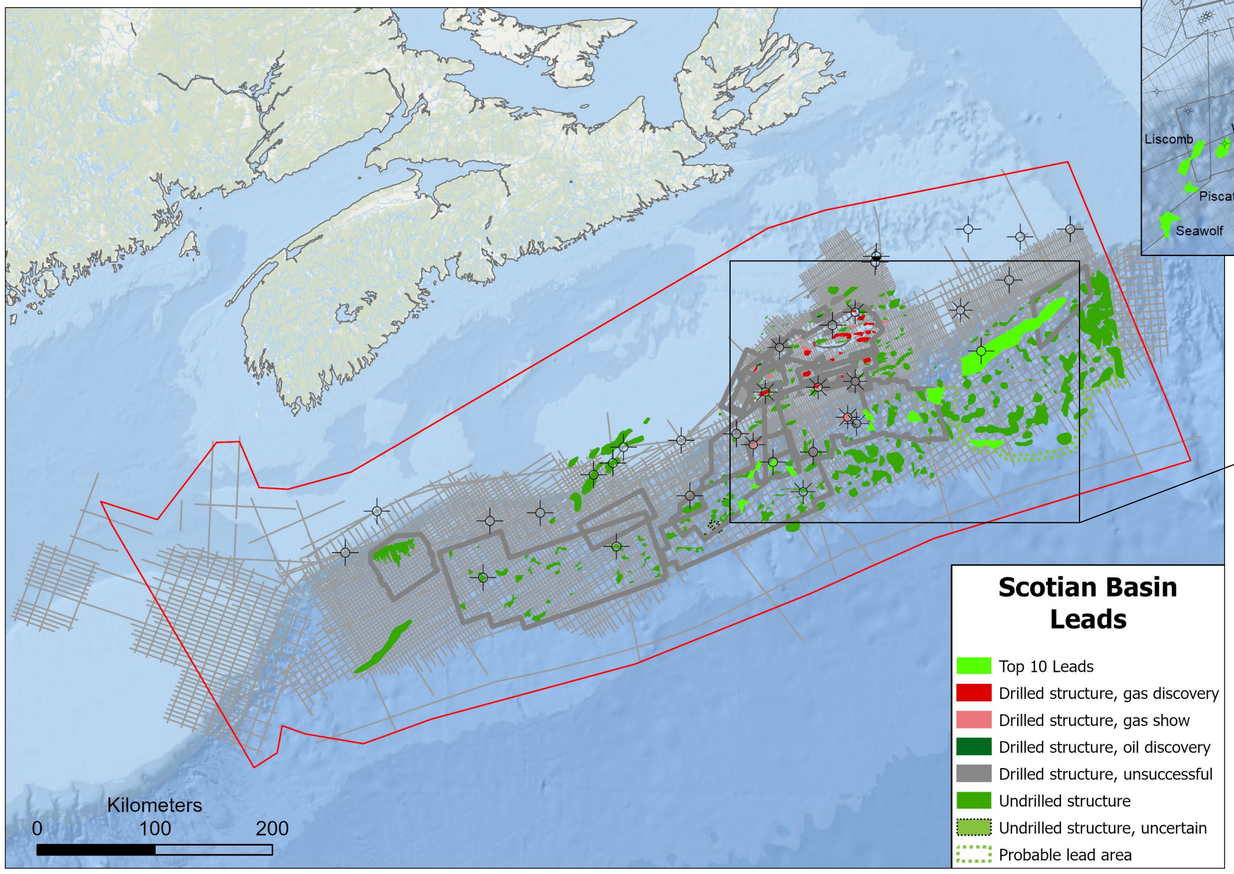


Figure 1: Map of identified leads with top 10 isolated in the inset.

YTF volumes (in place, unrisked)

Total	Total Oil (BB)	Total Gas (Tcf)	Total Oil & Gas (BOEB)
P90 Low Case	19.3	47.4	25.8
P50 Most Likely	22.6	64.6	31.5
P10 High Case	49.2	148.4	69.6

HC Volumes

in reservoir condition (Graph Mm^3) and in standard condition (Bbl, Tcf)
most likely scenario

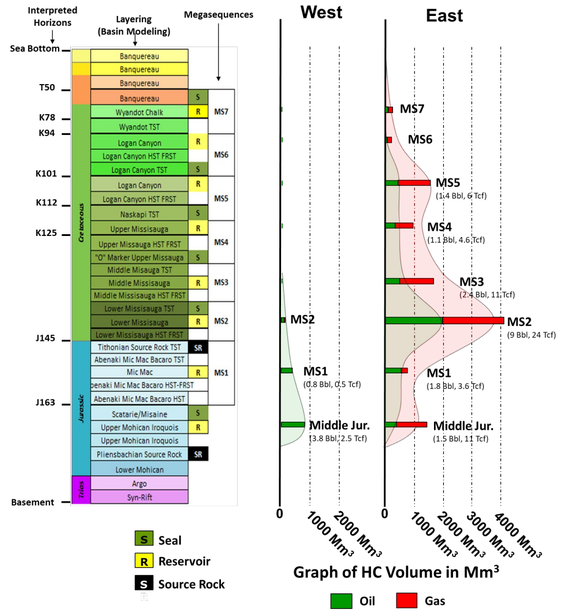


Figure 2: Yet to Find hydrocarbon volumes (in place and unrisked)

Top 10 leads (volume v GCOS)

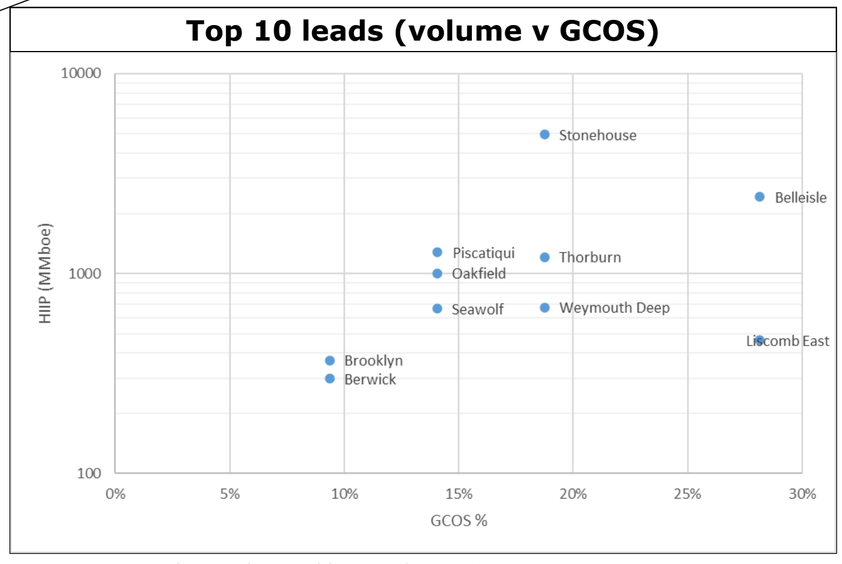


Figure 3: Volume vs Geologic Chance of Success of the top 10 evaluated leads

Conclusions and Future Work

RECOMMENDATIONS FOR FURTHER WORK

Several areas have been identified for potential future work to further our understanding of the margin as follows

- Improve seismic data quality: Nova Scotia has 8 3D seismic surveys on the slope, but only 2 are modern WAZ surveys and only 3 have "modern" processing. Improved seismic imaging could:
  - help to reduce reservoir presence risk via 3D seismic data reprocessing or new seismic data acquisition as part of a new exploration program).
  - maximize return on investment as reservoir imaging will have the most significant impact on improving the likelihood of exploration success.

- Improve understanding of exploration play risks through higher resolution interpretation and modeling, including:
  - Interpreting more horizons to better define the depositional systems through time (including utilization of automated workflows with emphasis on the Middle to Upper Jurassic, Cretaceous and the Tertiary
  - More accurate modelling of salt dynamics and morphology and interaction with sediment distribution
  - Prospect scale petroleum systems modelling in service of more accurate understanding of the interaction of sediment transport with salt dynamics and better prediction of charge migration.
  - More rigorous approach to risking (explicit separation of play and prospect risk)
  - Improving understanding of top seal risk in the presence of over pressure (the impact of column height on top seal capacity)
  - Sensitivity analysis as regards L. Jurassic source including:

    (i)Geographic distribution
    (ii)Source rock type (Type 2 or 2/3)
    (iii)Assessing the impact of alternative basal heat flow models (e.g. the effect of migration of hot spots in around the area of interest)

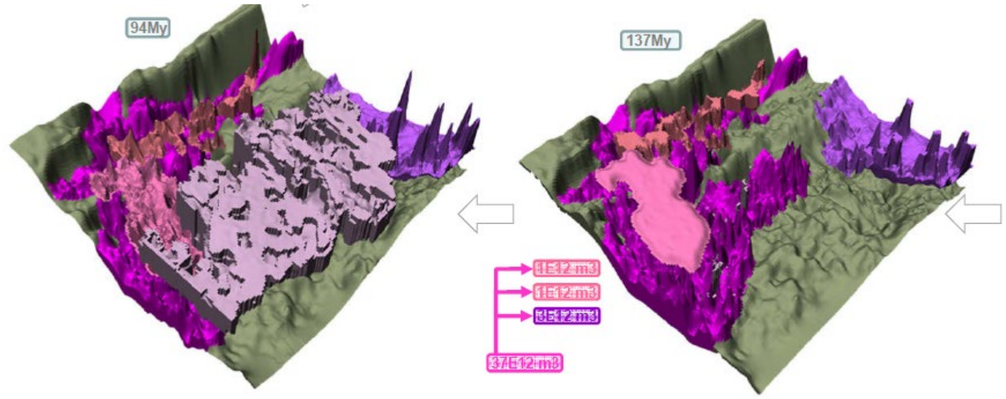


Figure 4: Example of the prospect scale petroleum systems modelling used to understand the interaction of sediment transport with salt dynamics and better prediction of charge migration.

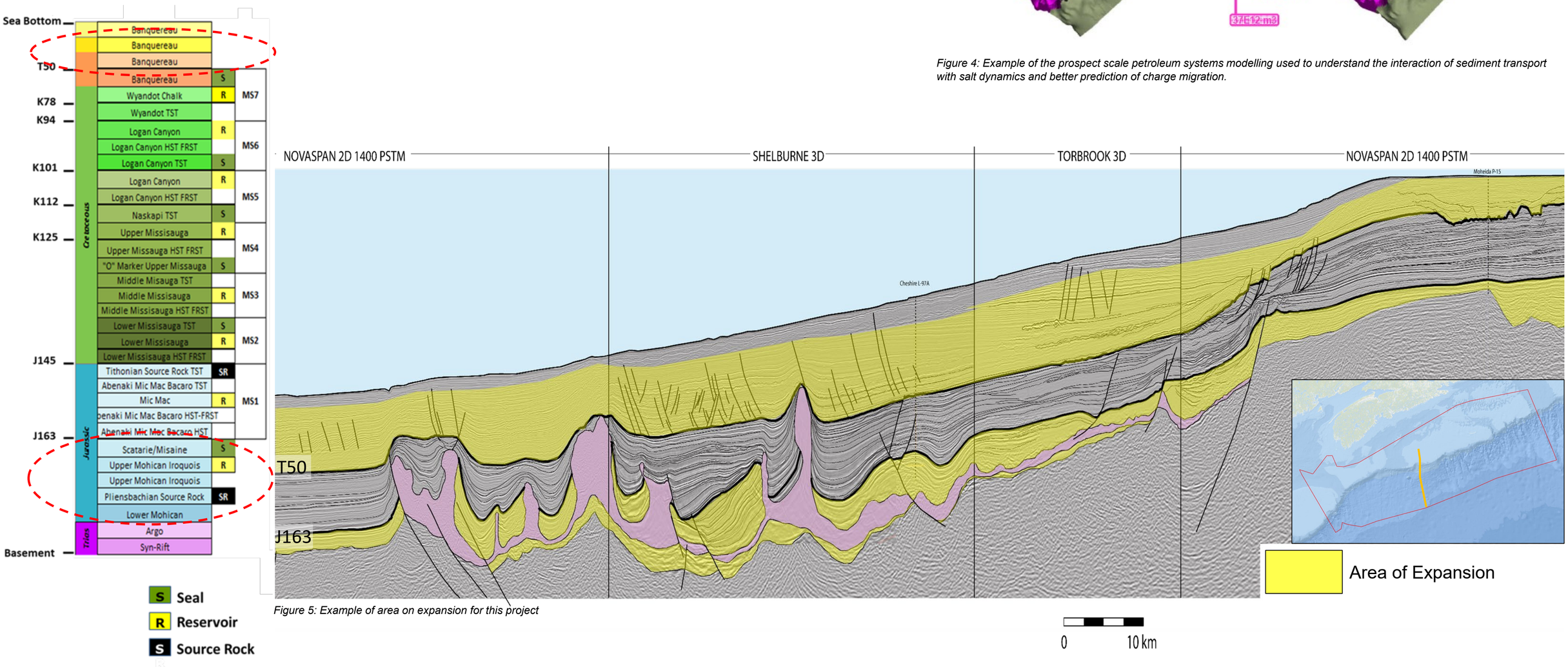


Figure 5: Example of area on expansion for this project