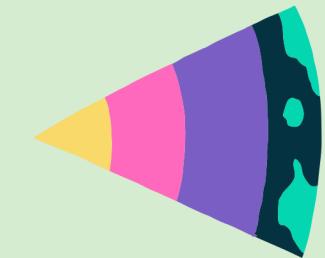


Geodynamics Researcher & Numerical Modeller



Numerical Modelling

WHAT: Setting up finite mathematical models and calculating them with discretized equations.

WHY: To understand the fundamentals of complex geological phenomena (e.g., mantle convection, continental rifting, seismic propagation, etc.)



Pros



- Not restricted in visibility, time and scale, unlike analog models or geological/geophysical observations.
- Cost-effective for large-scale simulation
- Remote work - can multi-task while the model is running!



Duties

- Access, navigate and perform computation within the supercomputer.
- Implement a variety of models resembling specific geological settings using code ASPECT.
- Download and analyze results locally using ParaView.
- Report the findings and incorporate related findings to an in-press paper.



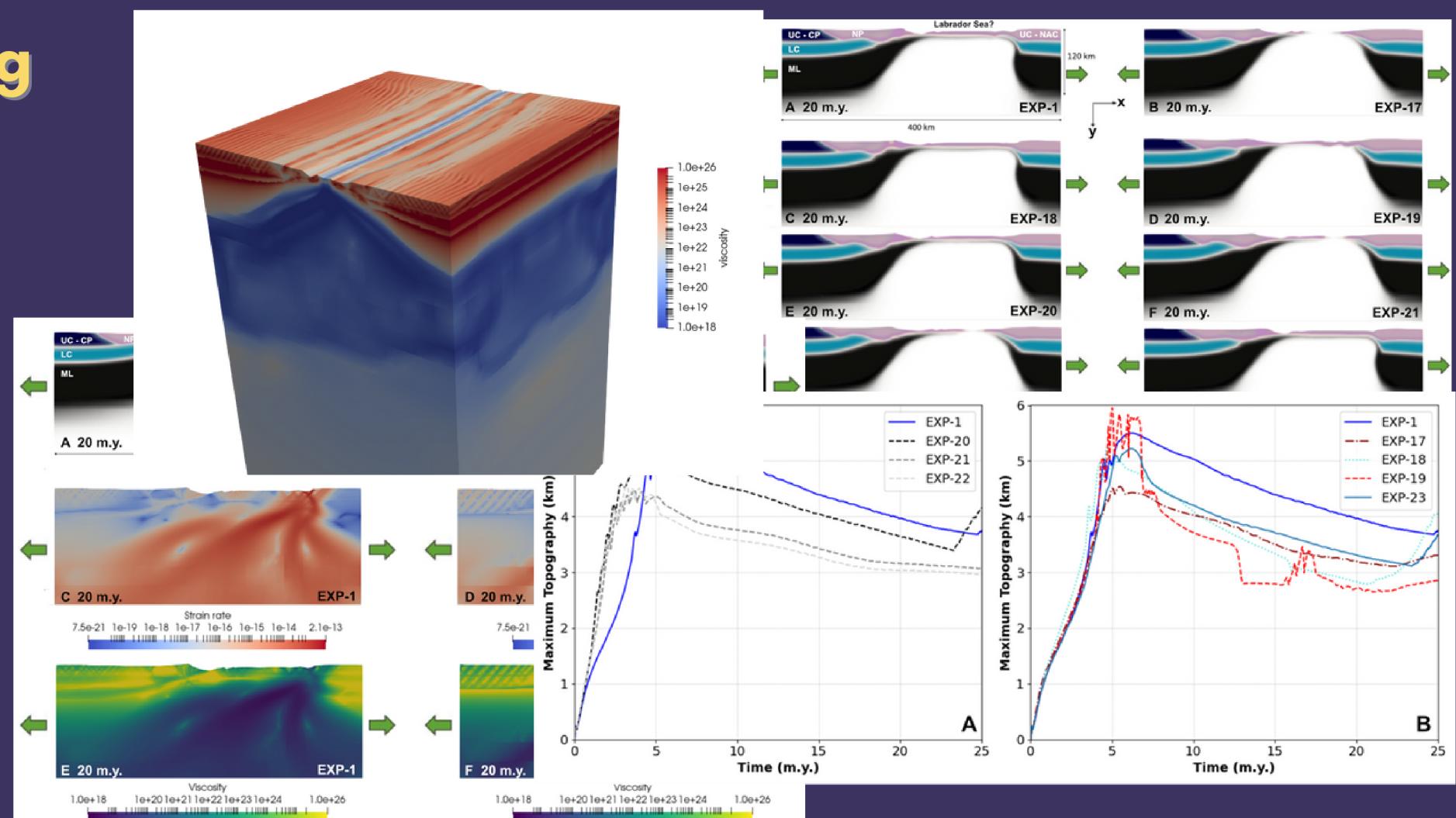
Cons

- Not that easy to set up - A lot of things to consider.
- Models are sometimes VERY computationally intensive.
- Debugging gives HEADACHES!



A Lot of Geophysical Modelling

- Inherited structural weakness (scarring) leaves opportunity for continental break-up with reactivation of past faults.
- *Strain weakening* (material softening) parameters are key to *continental rifting* and were explored to learn the tectonic behaviour.
- *Deformation mechanisms* not well-solved; few studies have explored them in rifting.
- More conditions/parameters that could generate 'continental fragments'?
 - Different rheology?
 - Heating?
 - Composition of scars?



Things I've learned

- Do not rush! Research takes a lot of time.
- Back up and document work, always!
- Maintain the balance of life and work.
- Don't be afraid to ask for help when you are stuck.



To Prospects

This summer research opportunity was funded by Centre for Research in Earth System Science (CRESS) at UTSC.

If you like researching and see yourself potentially to be a research, please check them out! They have various projects led by Professors every summer.

