

Subsurface Structure of the Western Transverse Ranges and potential for Large Earthquakes

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SCEC 2016 Special Fault Study Area Workshop



SAN DIEGO STATE
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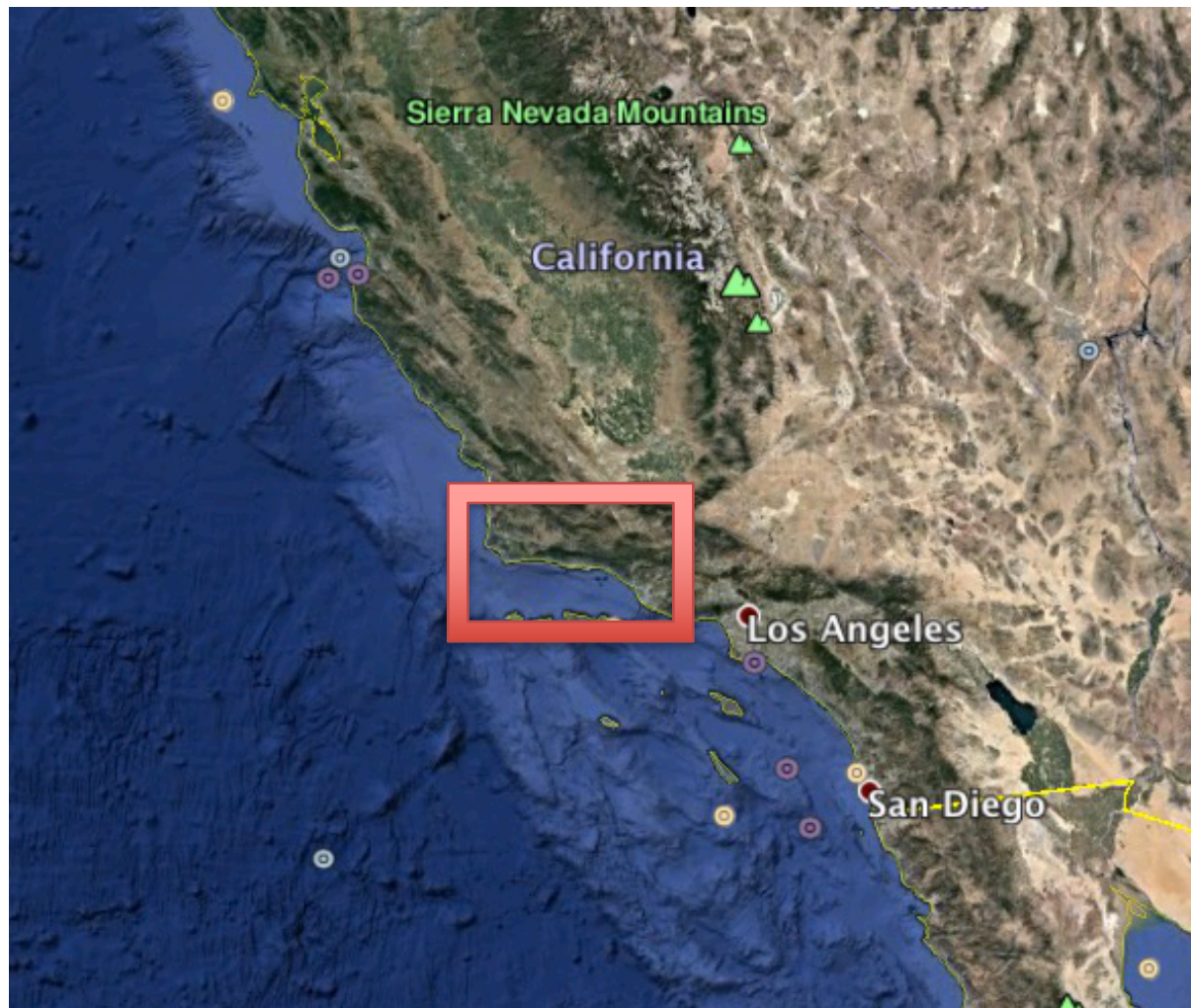
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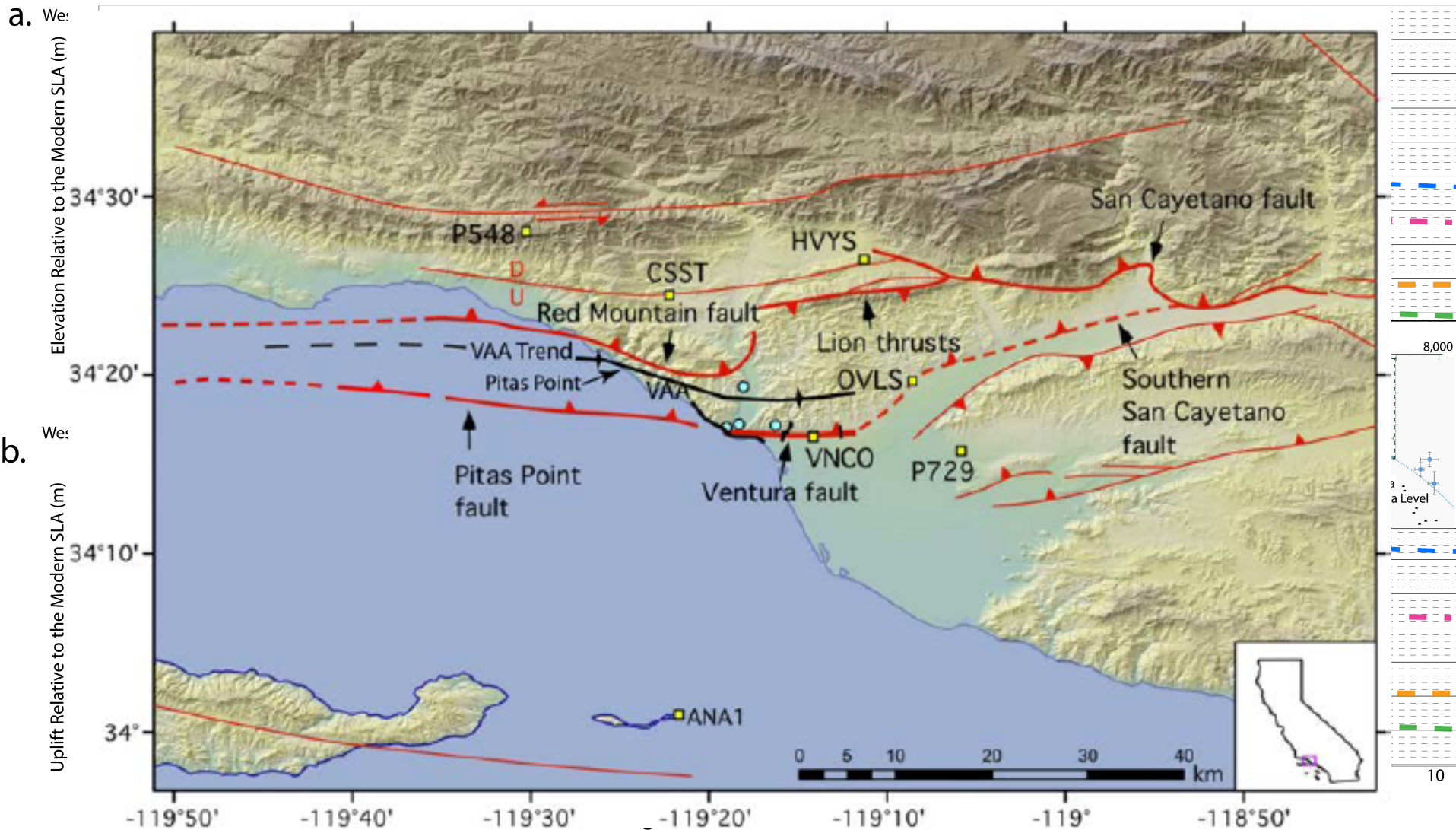
Outline

- Motivation – evidence for large events
- Map view of the on-shore geology and structures
- Cross-sections - subsurface structure, evolution
explanation of observations
- Summary

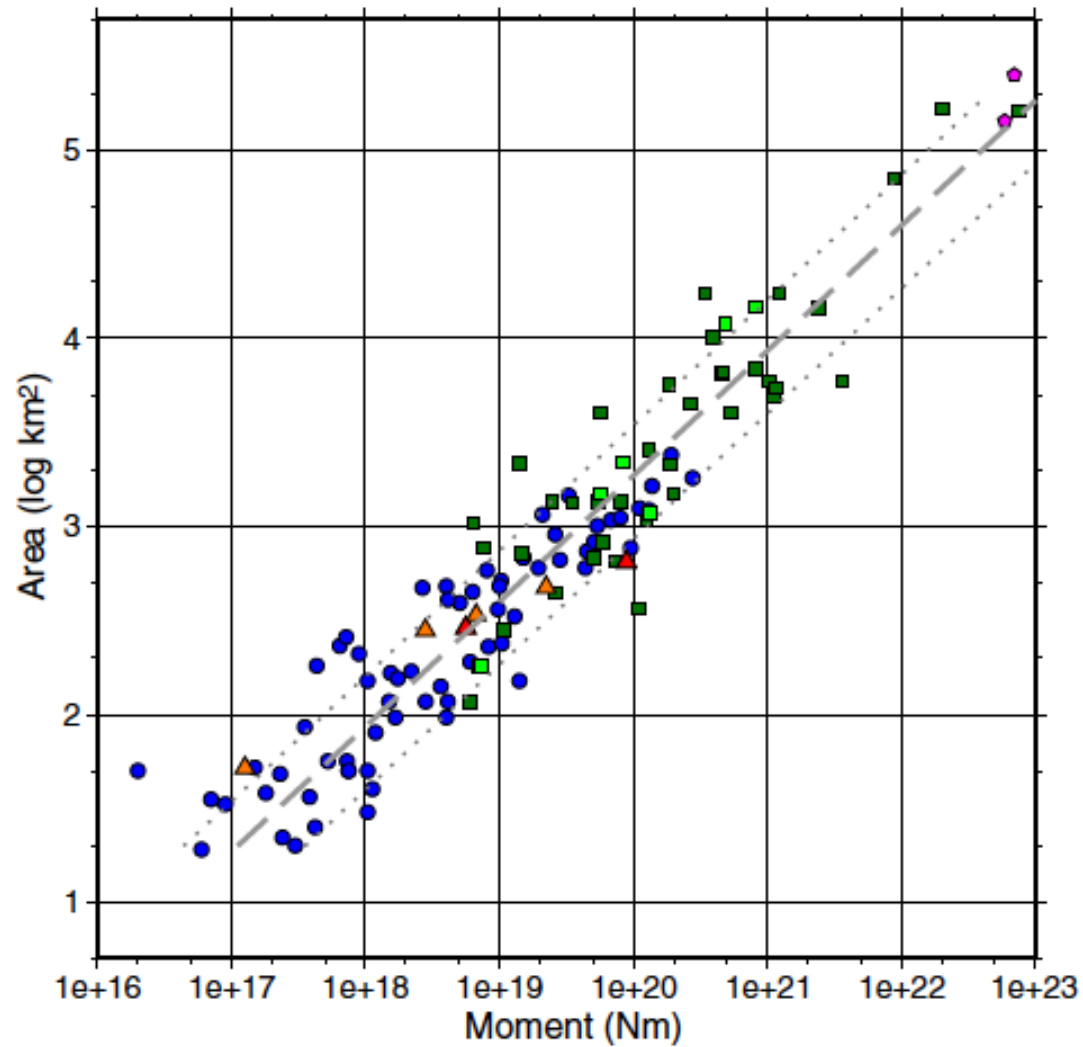
Location



Evidence for Large Events

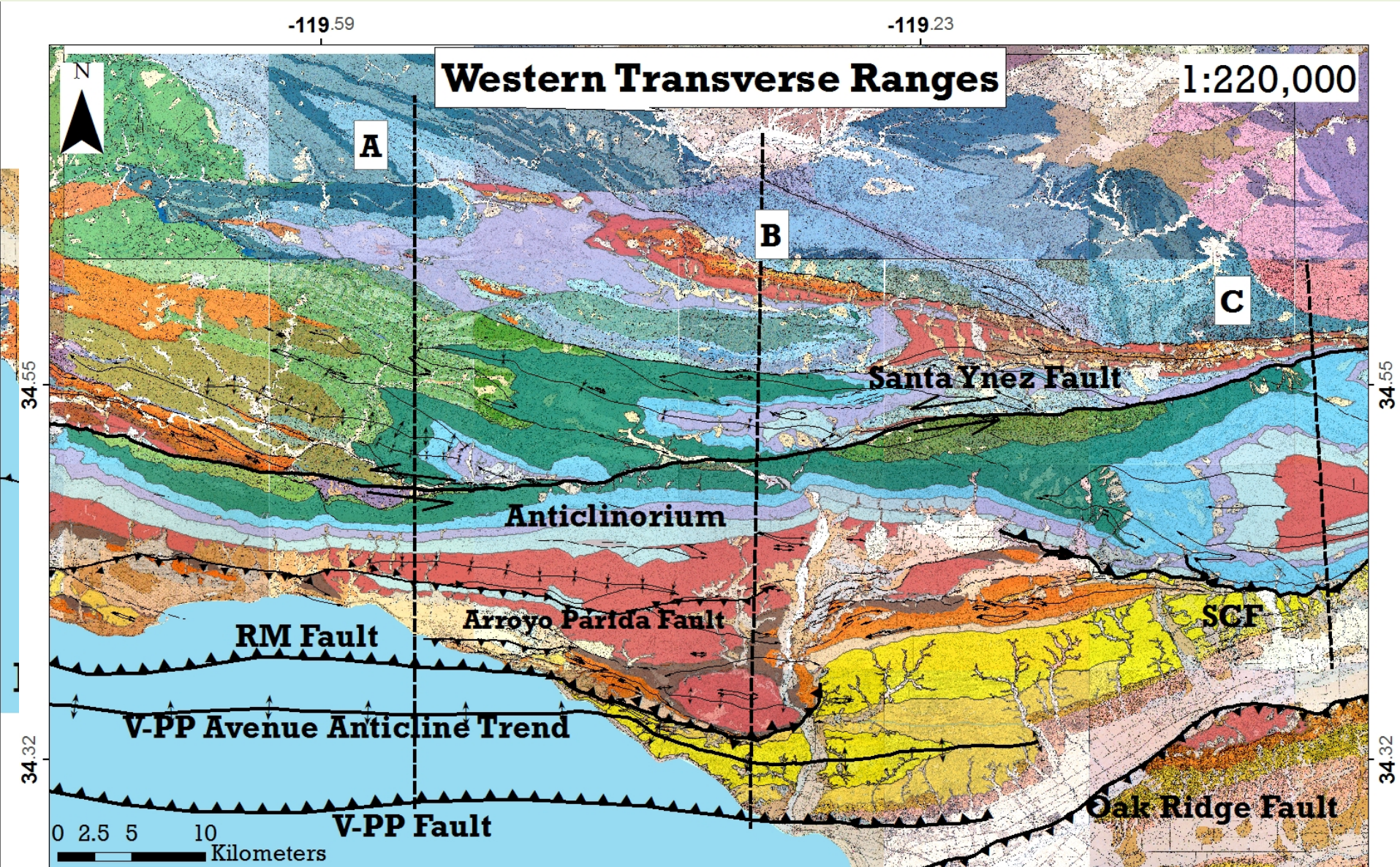


Scaling Relation

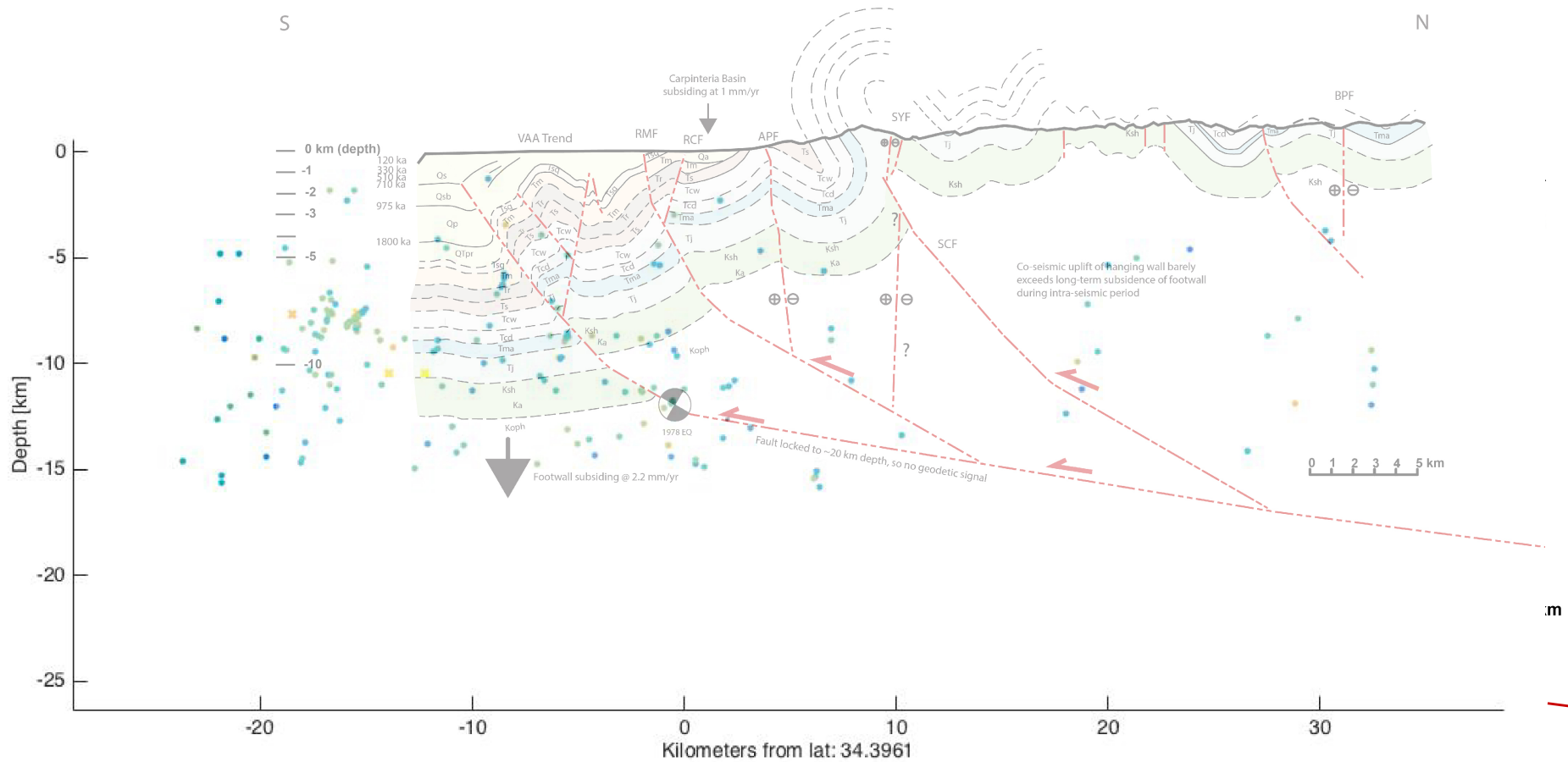


Leonard (2010)

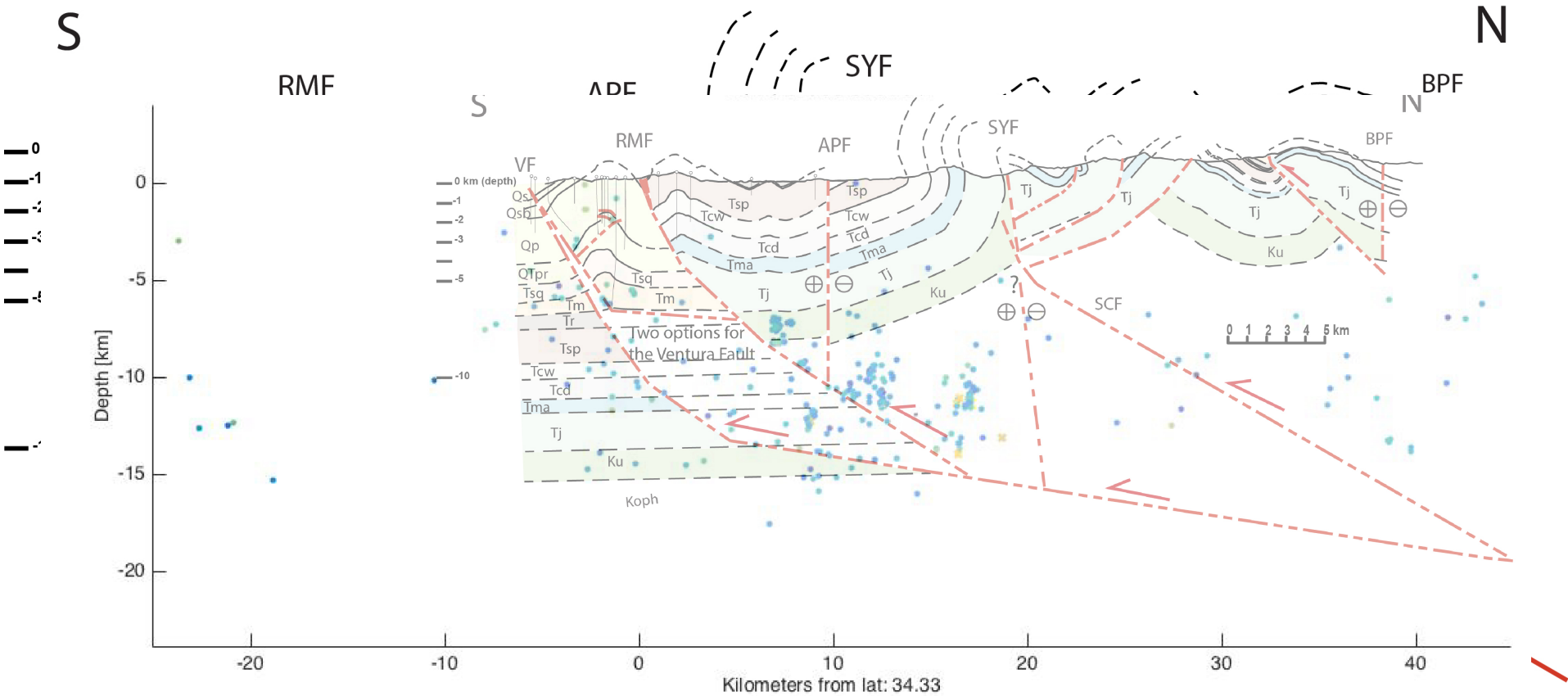
Geological (Dibblee's) Map



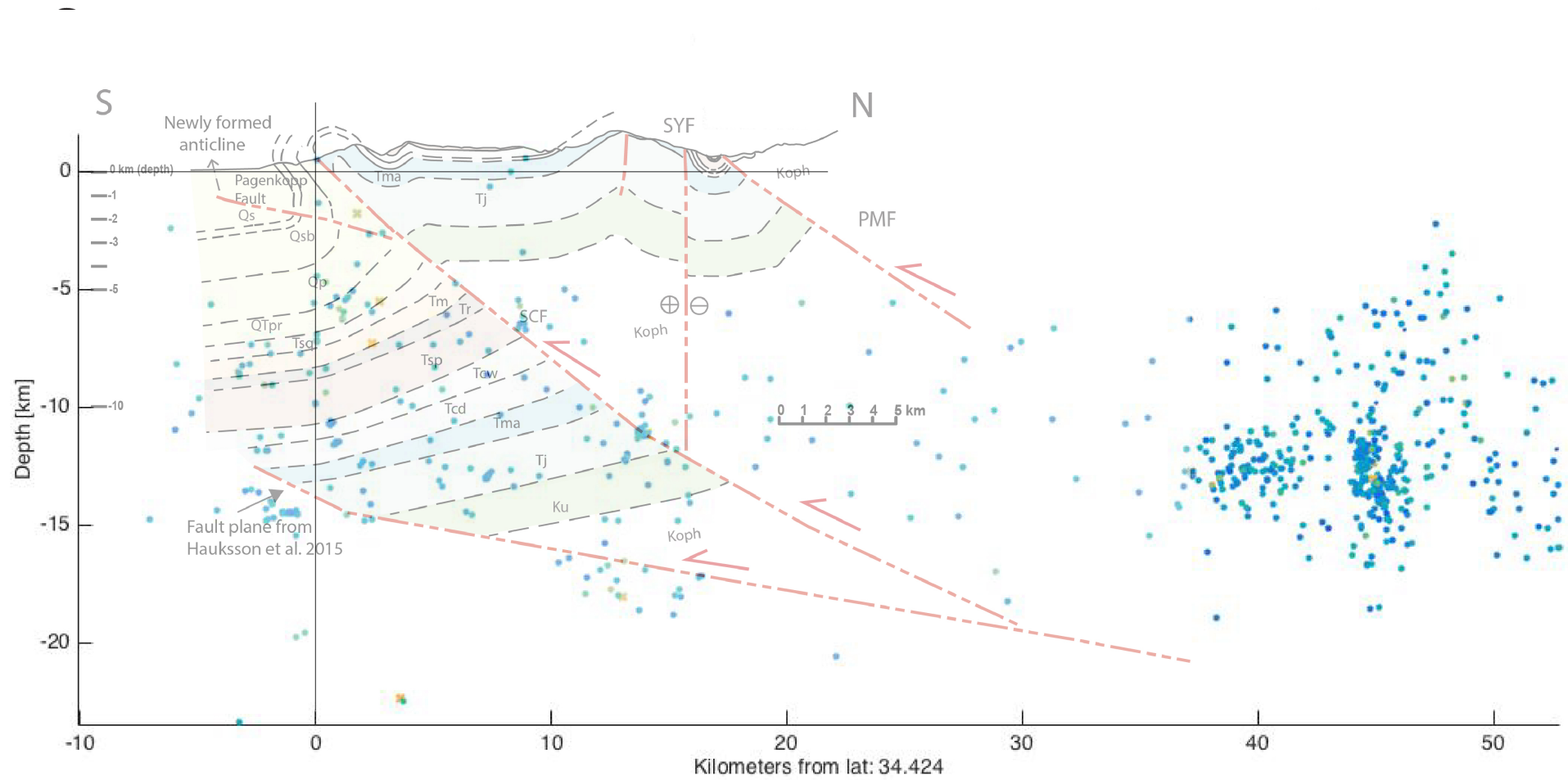
Cross Section A



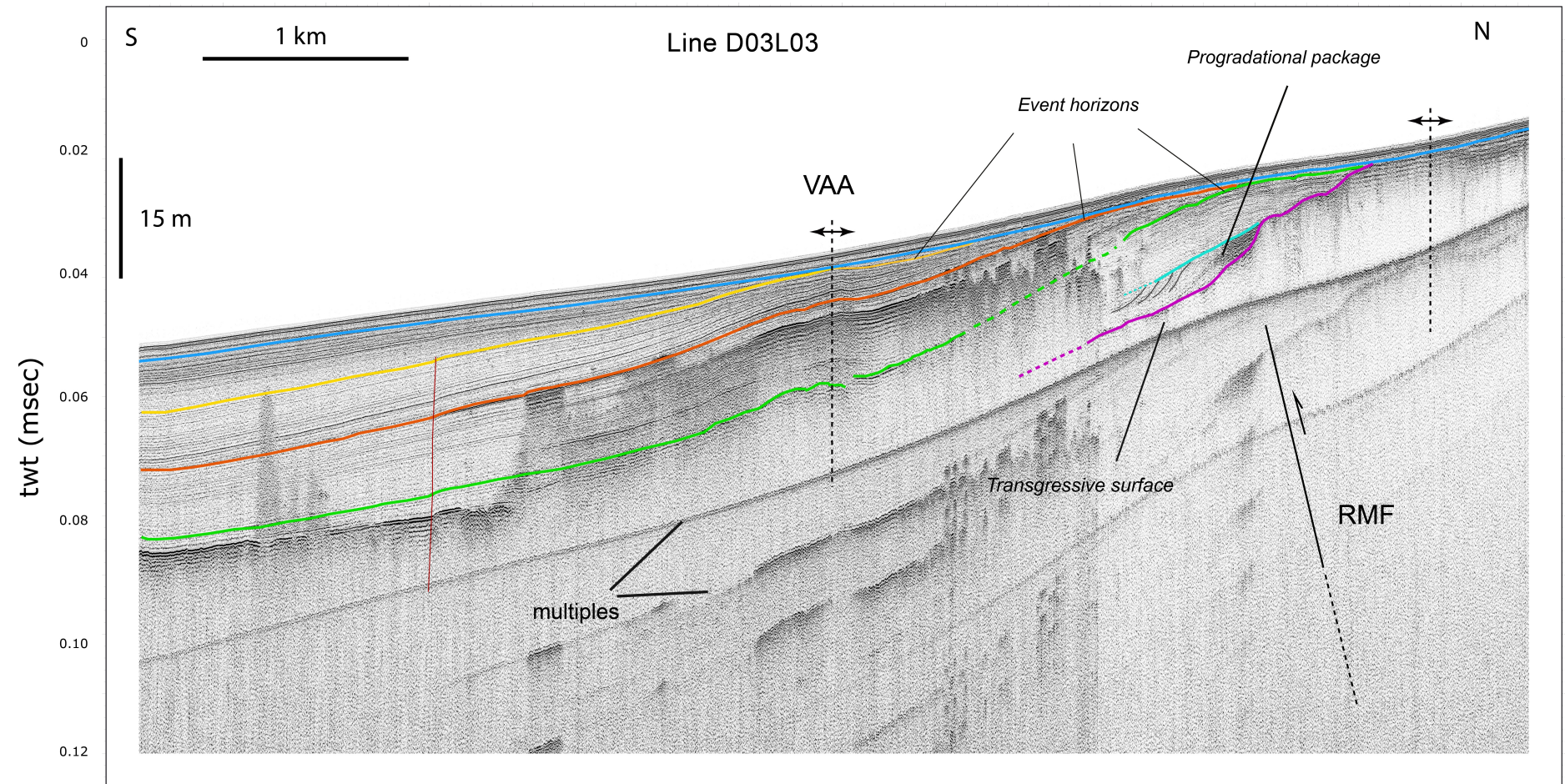
Cross Section B



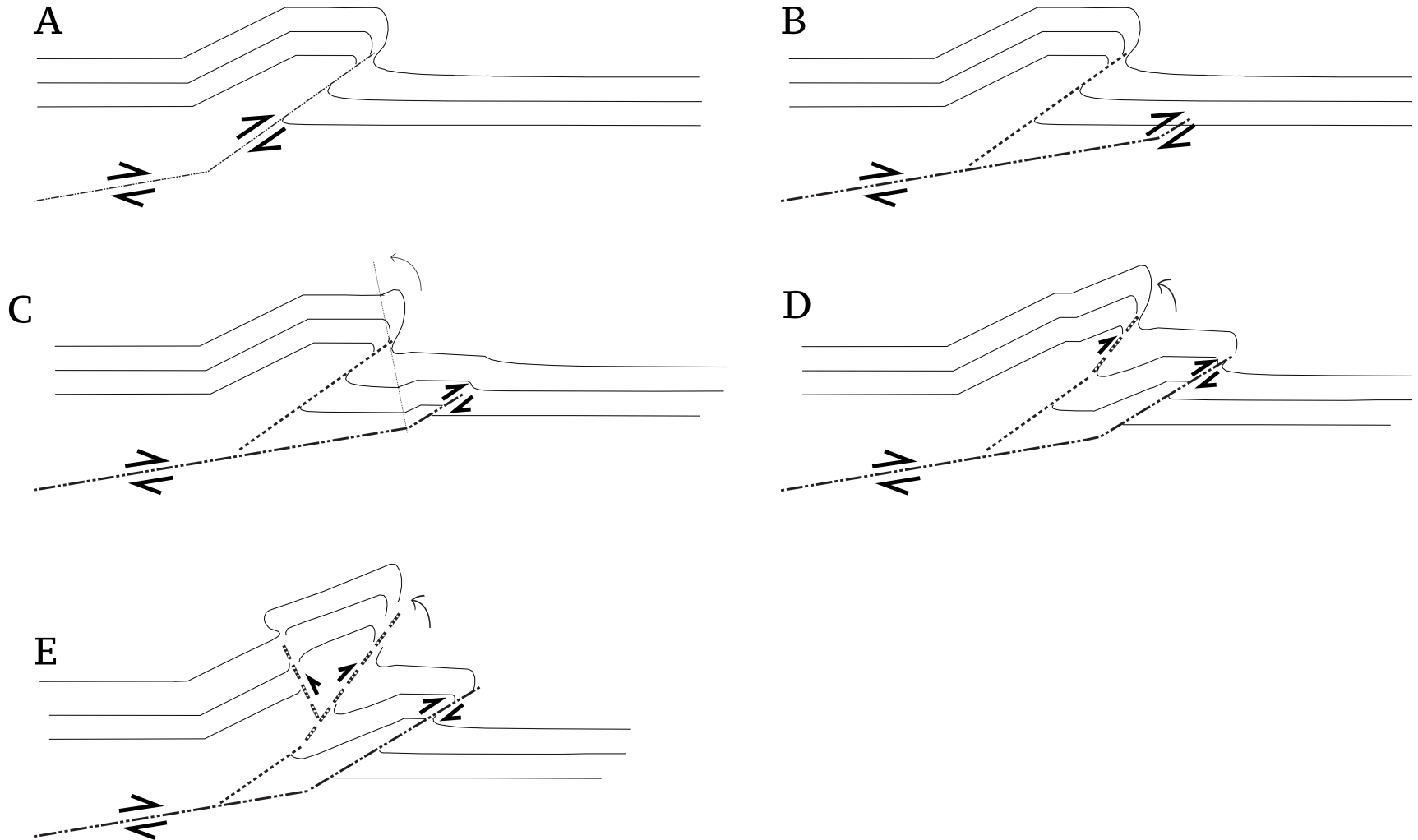
Cross Section C



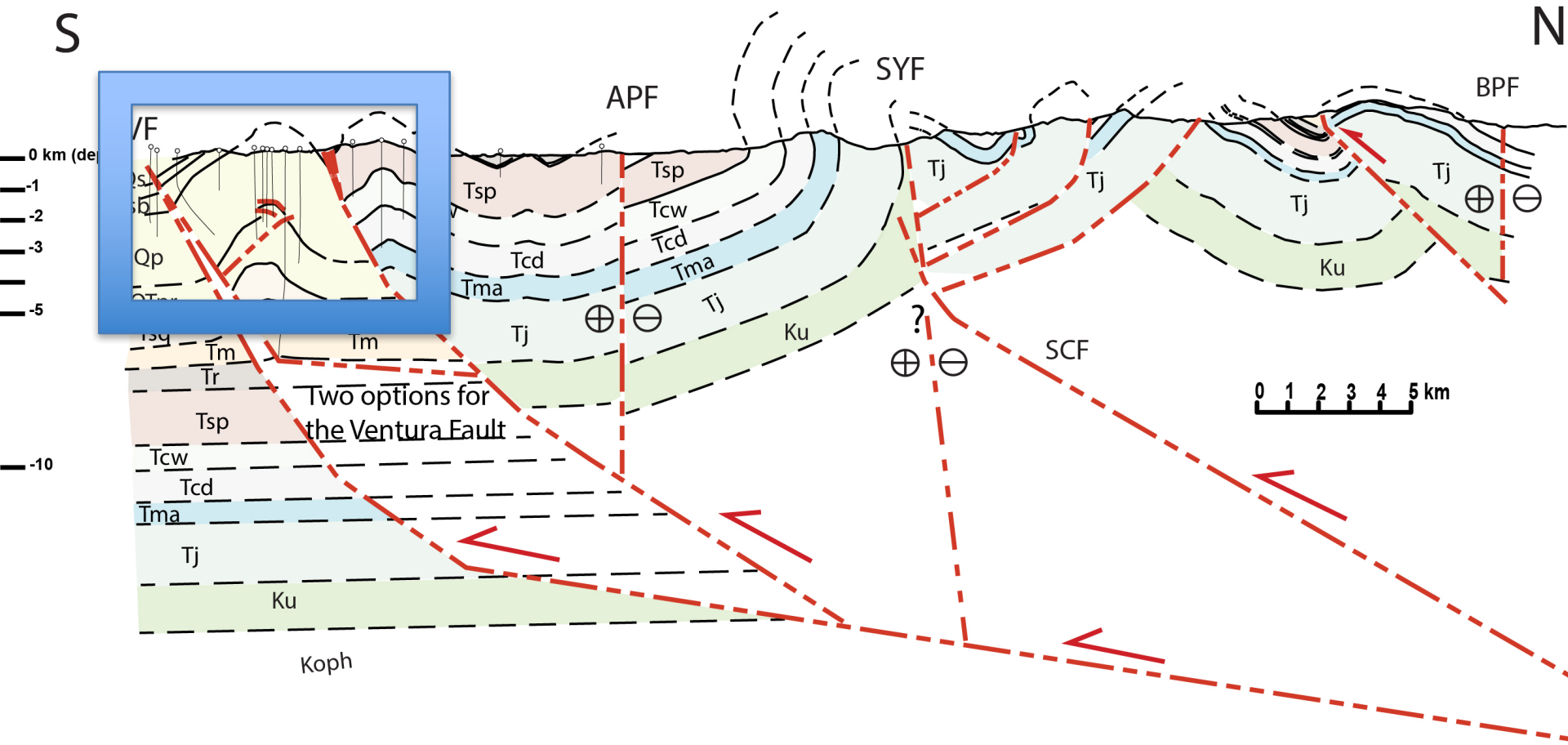
Red Mountain Fault



Model of Fault Rotation



Retro-Deformation of VAA



Summary

- We presented a model assuming that a general common form is maintained and it serially developed southward
- The big faults and folds are north dipping
- The late quaternary activity on the Red Mountain Fault might relate to rotation of the fault

Summary

- We hope to better constrain the depth of the detachment
- We expect the loading to be at the north
- A 3D model will be interpolated once we complete more cross-sections

Thank You!