

# Magnetic Mineralogy of Lacustrine Carbonates from the Sheep Pass Formation, Nevada

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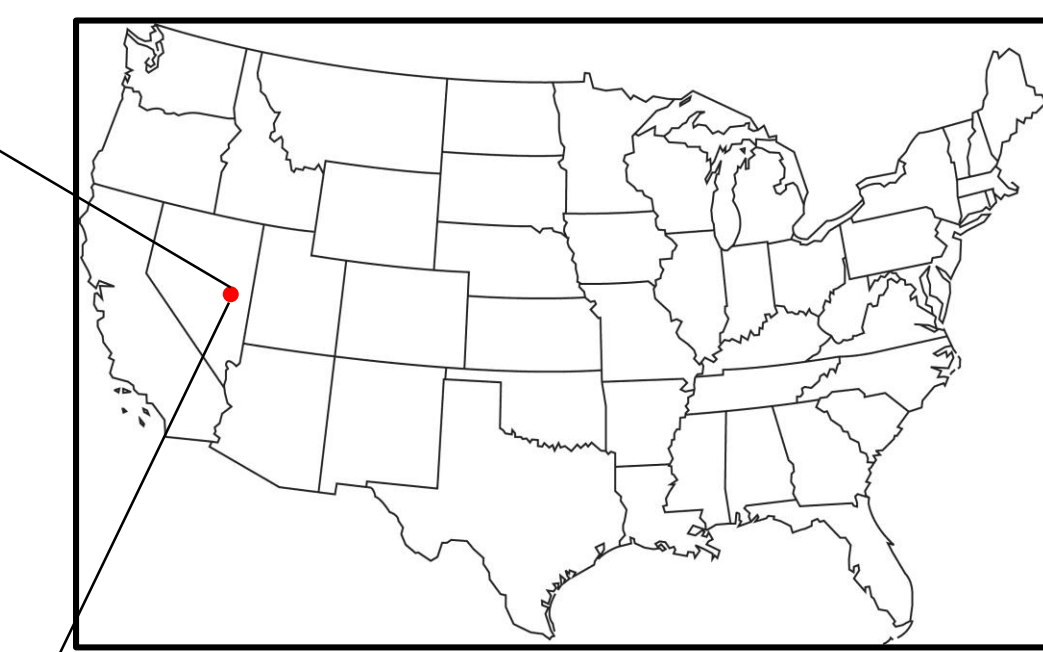
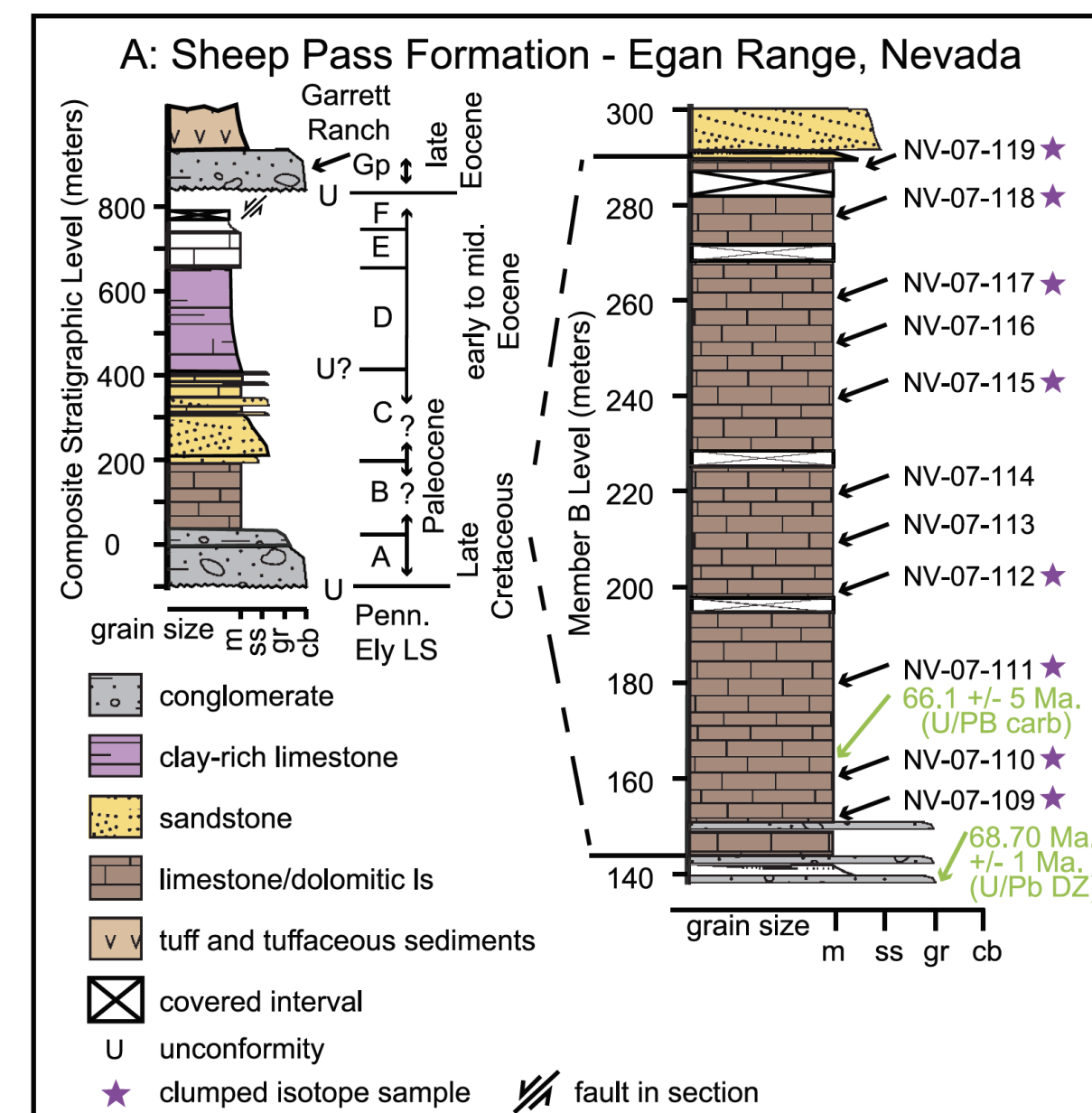
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The Sheep Pass Formation is being developed as a high elevation record of climate change during a greenhouse interval. Understanding how magnetic remanence is preserved in these lacustrine carbonates will be critical for developing a reliable magnetic chronology for this unit.

## INTRODUCTION & BACKGROUND

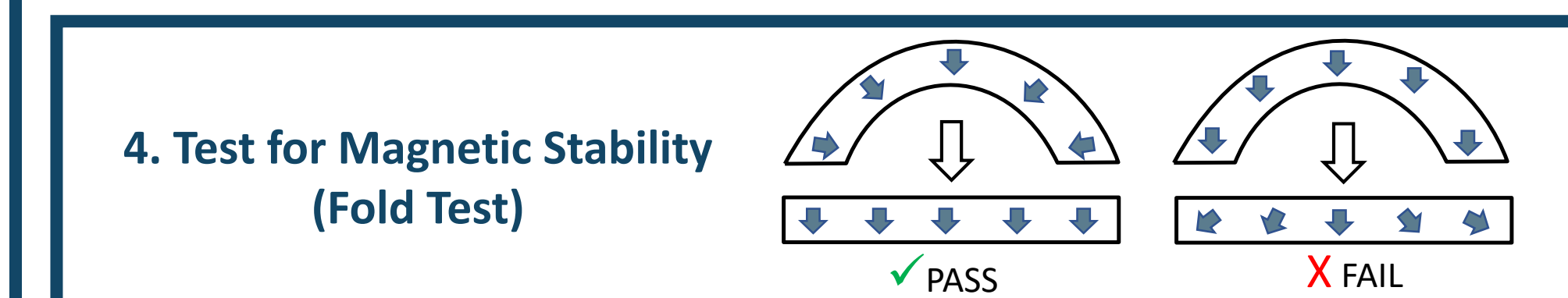
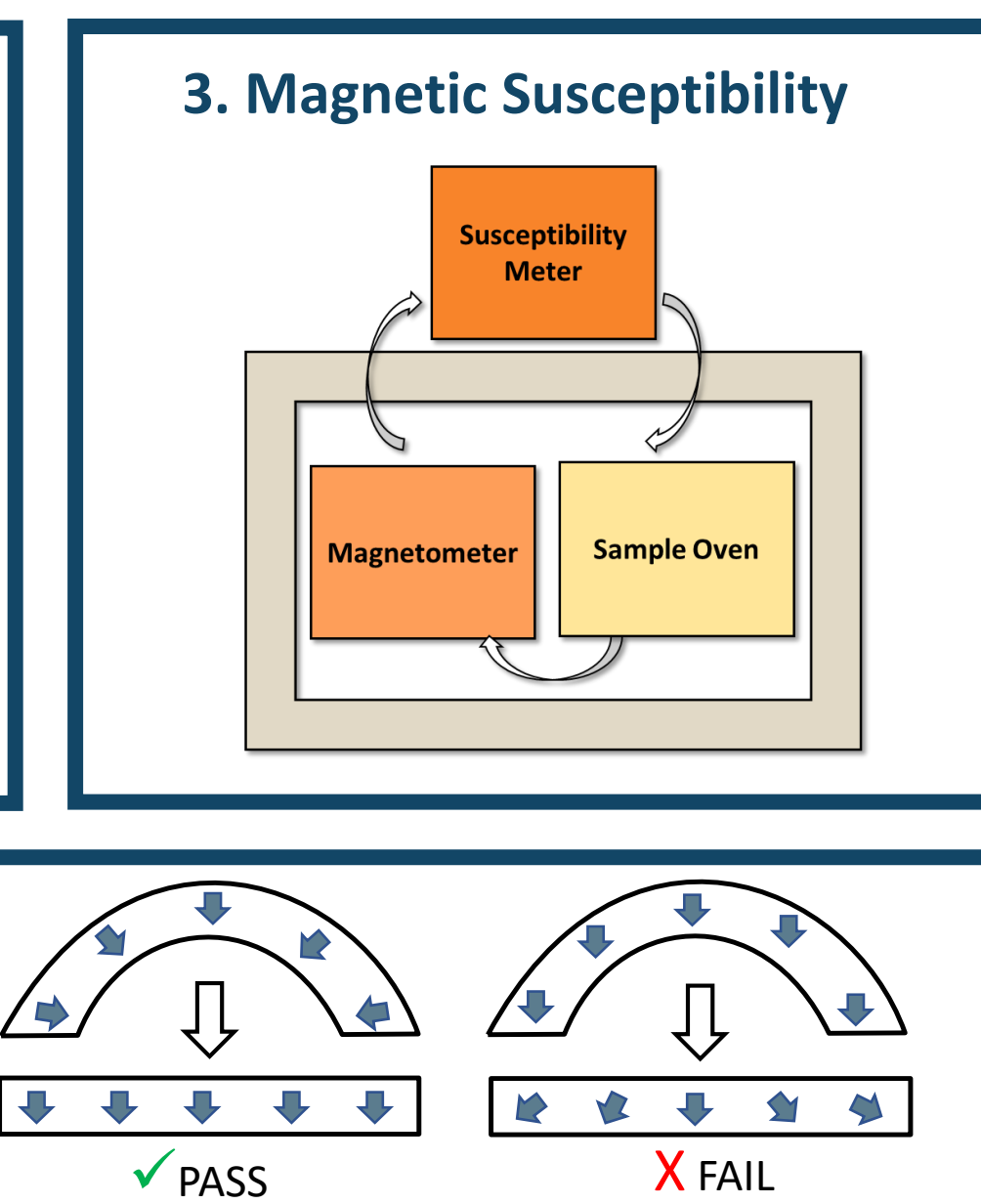
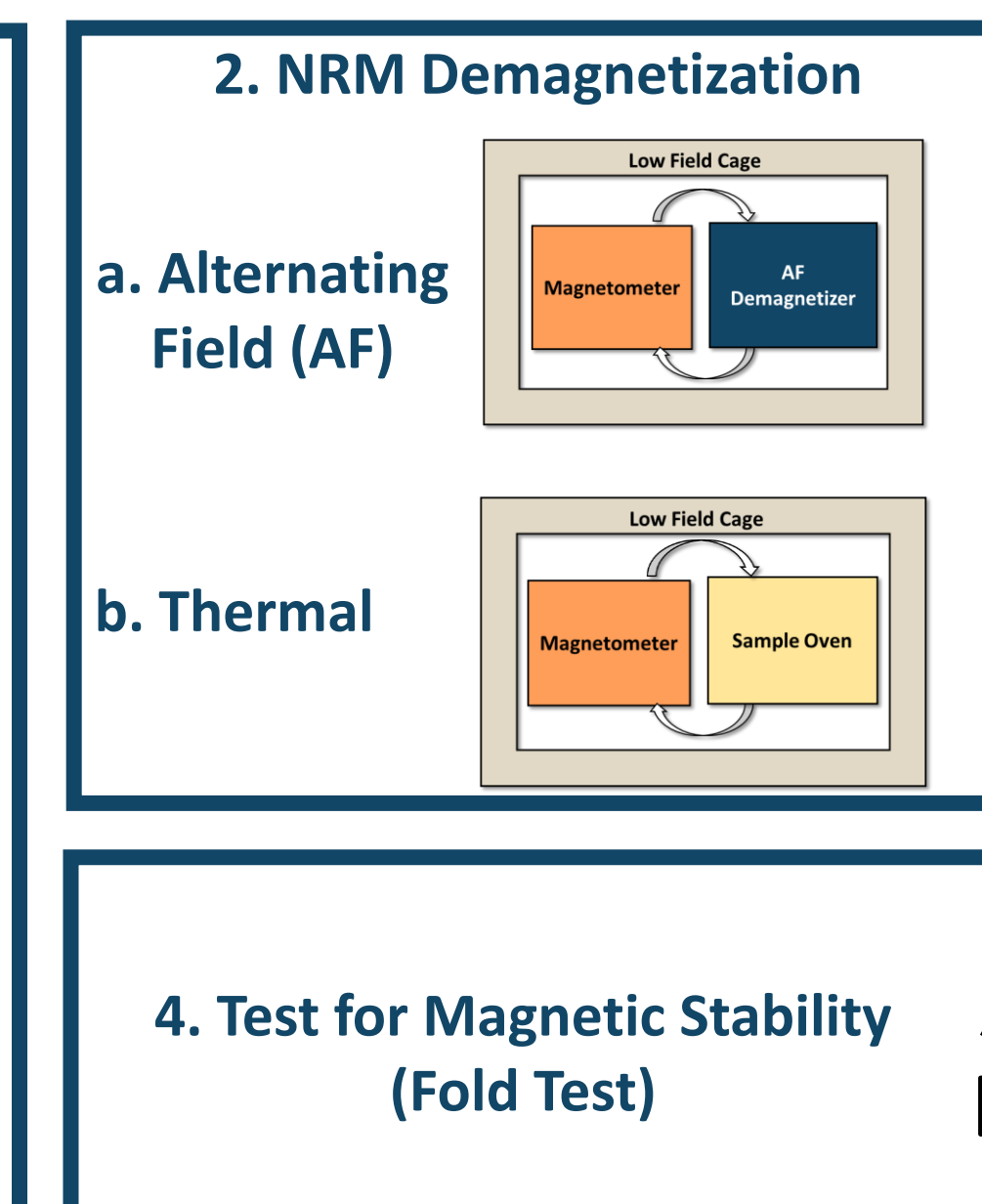
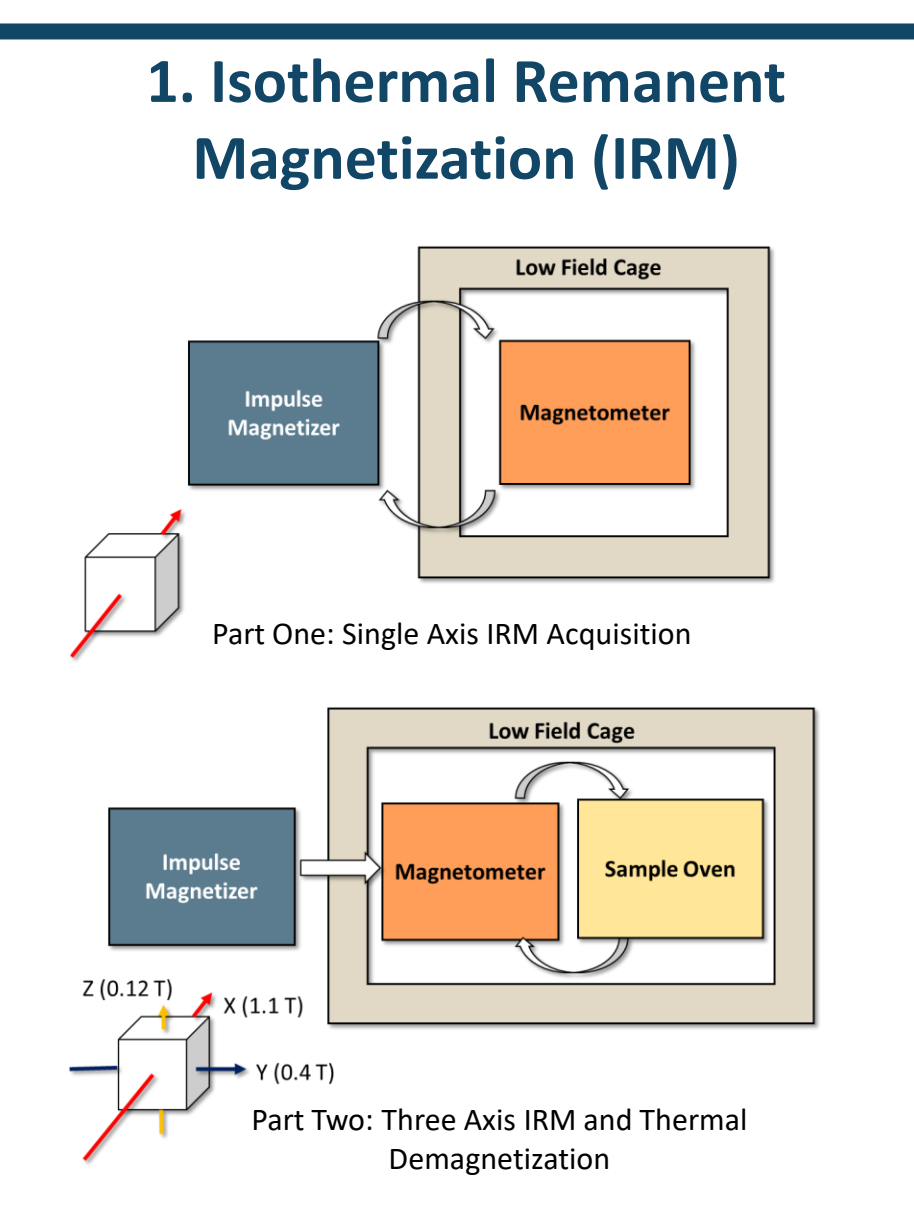


The Sheep Pass Formation is exposed in eastern Nevada (above). The formation is comprised of six members that preserve lacustrine carbonates as well as mixed siliciclastic sedimentary rocks. It is interpreted to have been deposited as part of a high elevation lake system during the Late Cretaceous – Paleogene (e.g., Druschke et al., 2011; Snell et al., 2014). The stratigraphic section (left; from Snell et al., 2014), shows lithological variation within the formation, as well as existing chronological constraint.

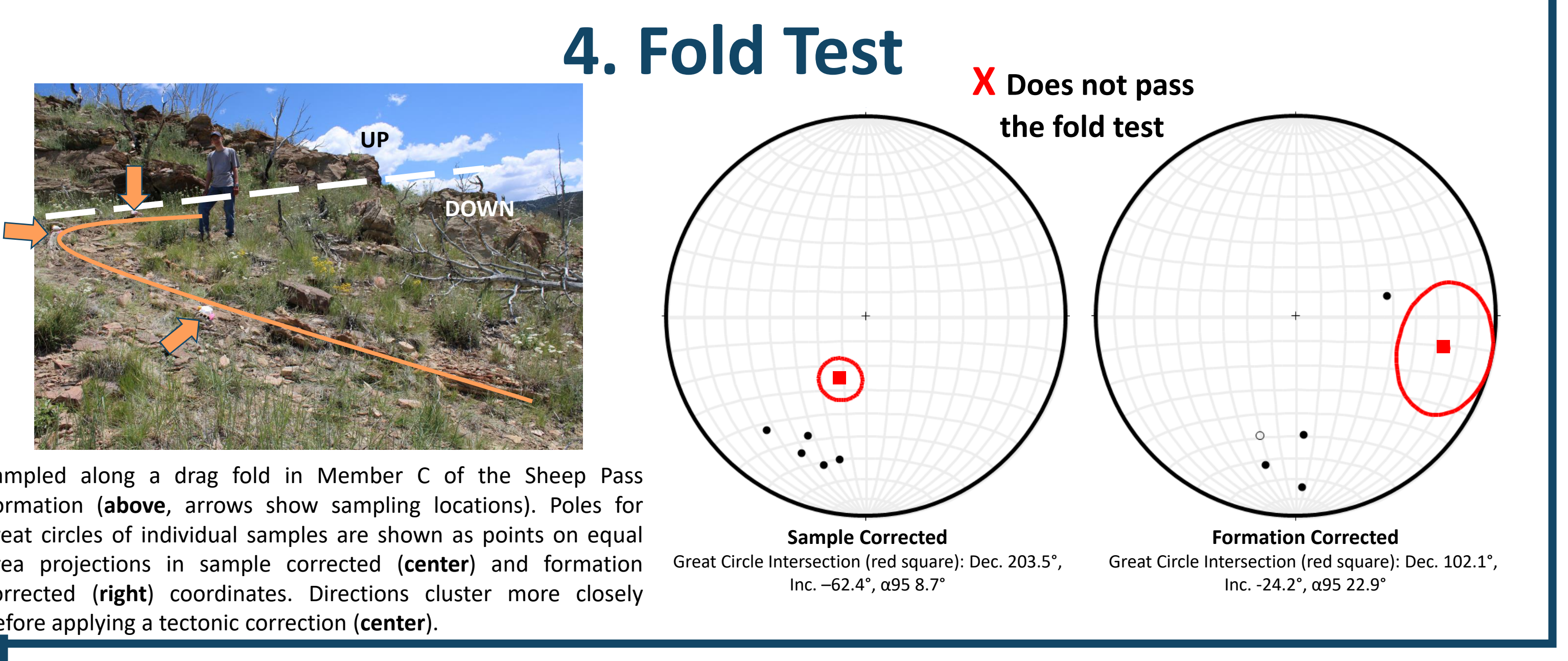
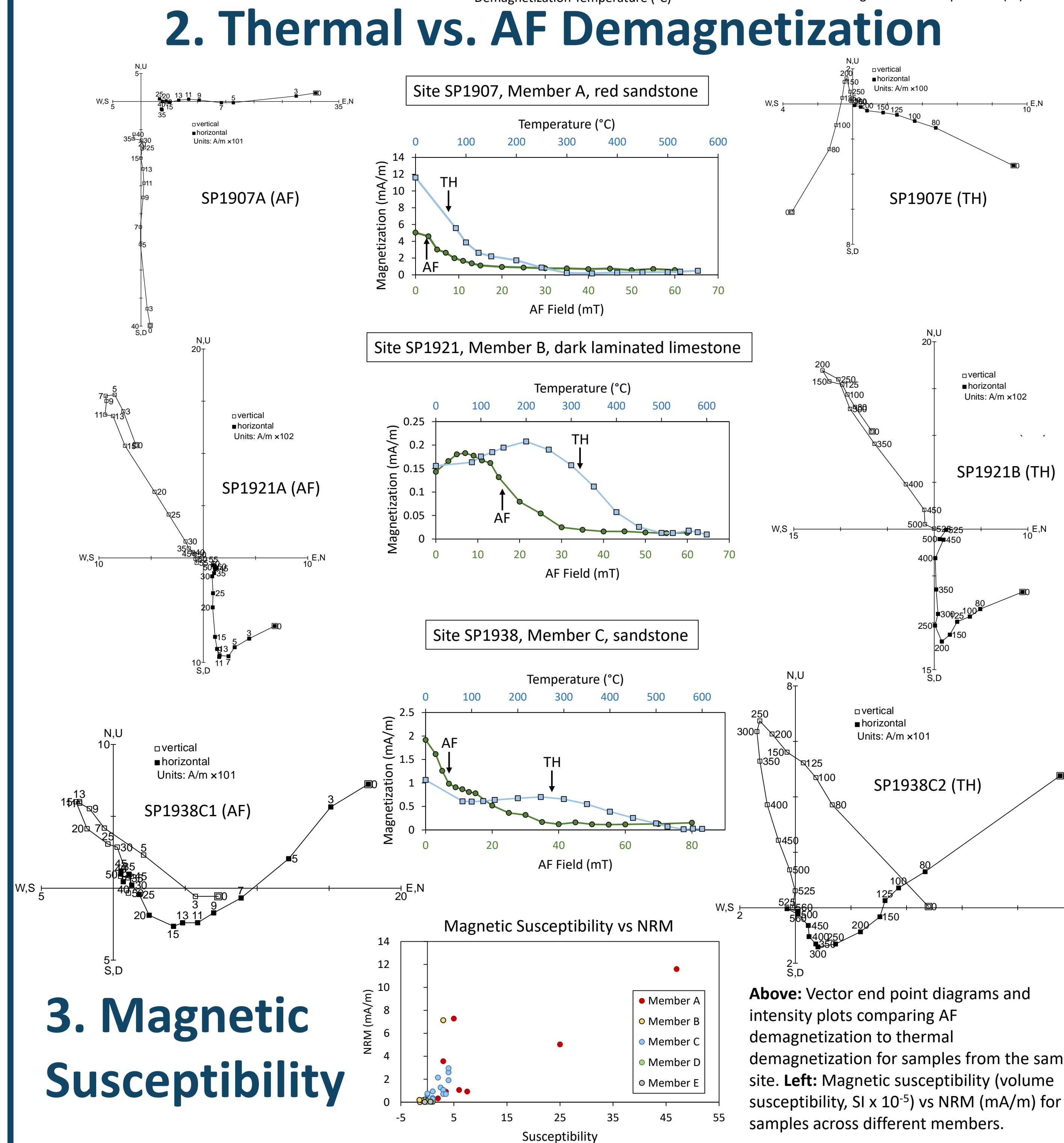
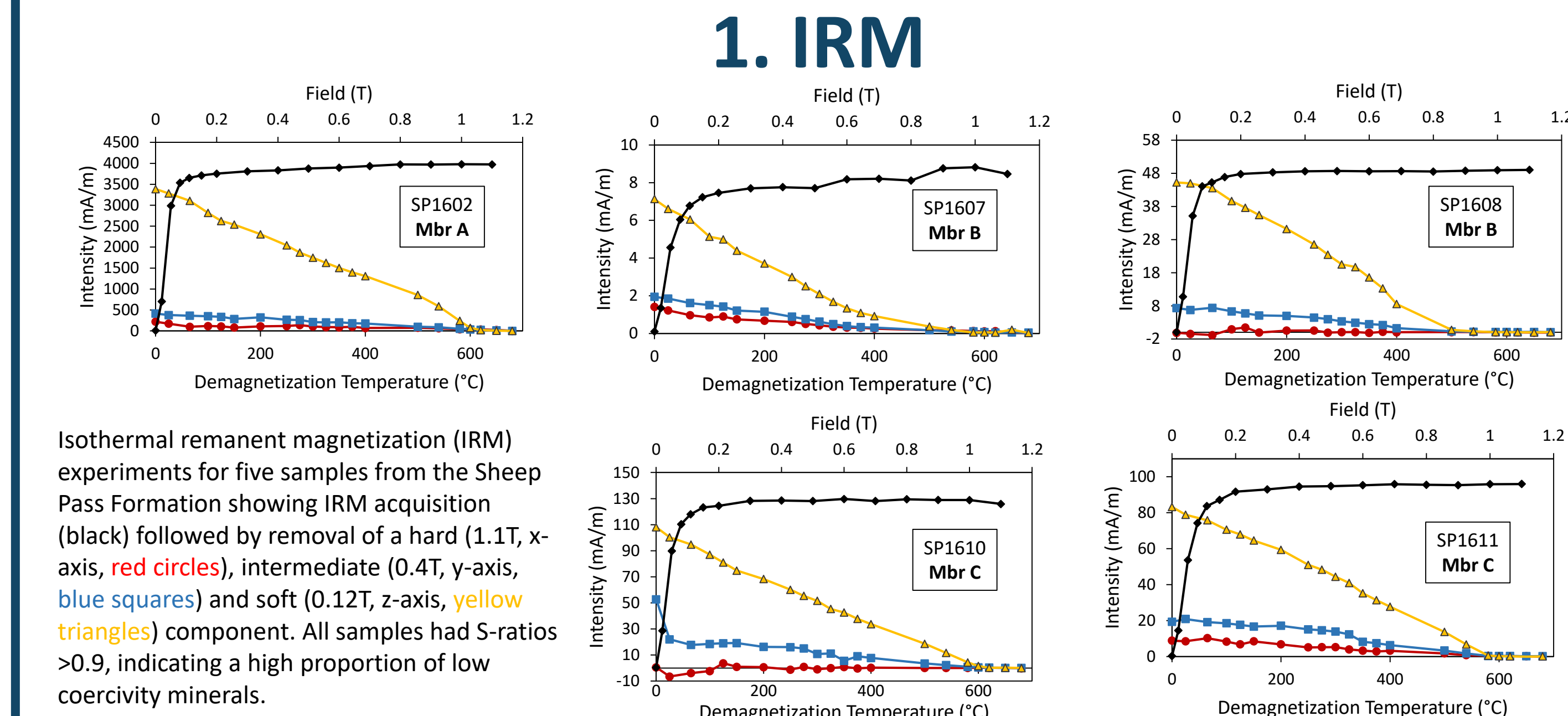
## OBJECTIVES

- Gain insight into the acquisition of magnetic remanence in freshwater carbonates
- Characterize the magnetic mineralogy of the Sheep Pass Formation
- Determine the appropriate demagnetization protocol to develop the magnetostratigraphy of the Sheep Pass Formation

## METHODS



## RESULTS



## DISCUSSION & CONCLUSIONS

- IRM experiments show that Sheep Pass facies with variable lithology are dominated by low coercivity minerals with unblocking temperatures between 400°C and 580°C (e.g., magnetite, maghemite, titanomagnetite).
- Alternating field (AF) and thermal demagnetization typically show similar patterns and appear to remove overprint magnetizations effectively.
- Generally low volume susceptibility (between ~-1.5 and 0.5 SI x 10<sup>-5</sup>), is consistent with a large proportion of diamagnetic minerals (e.g., calcite). Members that are predominately siliciclastic (e.g., Members A and C) tend to have higher and more variable magnetic susceptibility and natural remanent magnetization (NRM).
- Samples analyzed from the drag fold in Member C do not pass the fold test. This fold is isolated in terms of size and degree of folding relative to other parts of the formation, so more work is needed to determine whether all parts of the formation have been completely overprinted.

## MOVING FORWARD

- Develop precise demagnetization protocols that account for lithological variation between different members in order to establish the magnetostratigraphy.
- Further assess the possibility of remagnetization of the Sheep Pass Formation, including potential tectonic implications.

**References**

Druschke, P., Hanson, A.D., Wells, M.L., Gehrels, G.E., Stockli, D., 2011. Paleogeographic isolation of the Cretaceous to Eocene Sevier hinterland, east-central Nevada: Insights from U–Pb and (U–Th)/He detrital zircon ages of hinterland strata. *Geol. Soc. Am. Bull.* 123, 1141–1160.

Snell, K. E., Koch, P. L., Druschke, P., Foreman, B. Z., Eiler, J. M. (2014). High elevation of the 'Nevadaplano' during the Late Cretaceous. *Earth and Planetary Science Letters*, 386, 52–63.

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