

Final Exam – Applied Magnetism; Spring 2008. Who? _____

For the following three questions, provide clear, concise, and accurate answers. Write them as if you are speaking to a journalist.

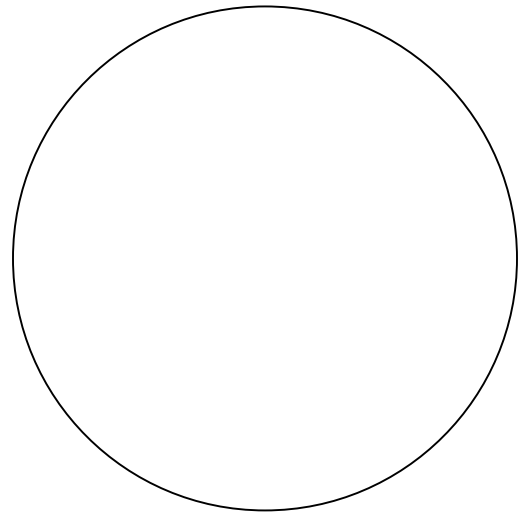
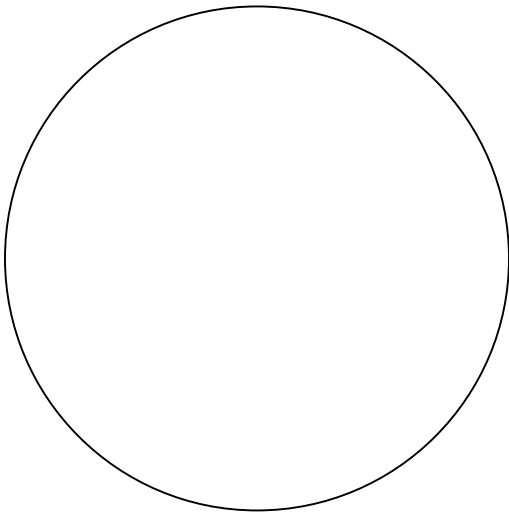
1. What do blocking temperatures and coercive force have in common?

2. What is the geocentric axial dipole hypothesis and how is it important to tectonic studies?

3. What does *reduction to the pole* mean and what is its usefulness?

4. Suppose the reliable paleomagnetic signal for a Triassic micro-continent has a measured inclination of 43° and the micro-continent currently resides at 65° north. How far (great circle degrees or kilometers) has it travel in the north-south direction? What can you determine about its east-west motions (and why)?

5. On one of the provided projections, sketch an apparent polar wander path that yields a paleomagnetic Euler pole at 90°E , 0°N with angular frequency = $90^\circ/180$ million years. Label your diagram carefully, completely, and neatly. Note any assumptions and explain your thinking as necessary.

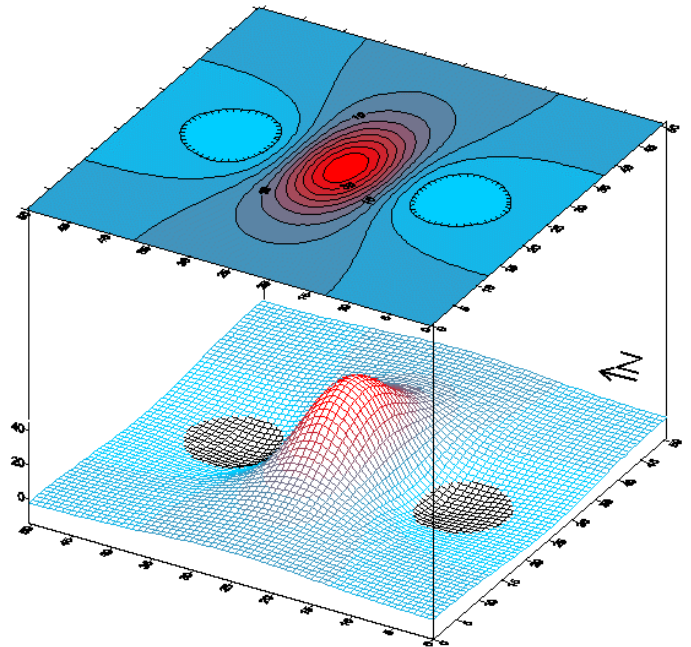


6. What is upward continuation and how do you use it for qualitative depth estimates? For example, how might I decide if the source for some magnetization resides at 50-80 meters deep?

5. Sketch, in the spatial frequency domain, a filter which separates wavelengths less than 5 kilometers from the remainder which go up to 20 kilometers. Label your sketch carefully and completely. Explain your reasoning.

7. Explain why measurement errors create problems with downward continuation and differentiation in the frequency domain. Use appropriate sketches to clarify your answer.

8. This image has been on the course web page all semester. What can you determine (or say) about the causative source?



9. Bonus – You may substitute this for any individual question above (e.g., 1, 2, ..., 8). Write out what question you wish I had asked and answer it. I will assess the relative difficulty along with your answer.