

TO Bownbag Seminar  
Tuesday June 24, 2014  
Ross Nelson Mitchell

## True Polar Wander and Supercontinent Cycles: Implications for Lithospheric Elasticity and the Triaxial Earth

### Abstract:

The amplitude of true polar wander events is shown to occur in cycles out of phase with the formation of supercontinents over the past 3 Gyr. Associated with small-amplitude true polar wander, supercontinents act to stabilize the spin axis. Stabilization can be explained by reduced lithospheric elasticity and/or the triaxial (oblate) figure of the Earth, both of which are legacies of the supercontinent cycle. An excess triaxial ellipticity would only be expected to affect the first transition between supercontinents, whereas decreased lithospheric elasticity would have also influenced formation of the first supercontinent, if sizable enough. My analysis indicates the presence of 4 supercontinents since 3 Ga and proposes that the triaxial Earth originates from the supercontinent cycle.