

Rheology in the field - what, why, how
Christopher Gerbi, University of Maine
26 March 2010

Continental topography, orogenic deformation and metamorphic patterns, fluid flow, and other large-scale features of our planet are controlled or affected by the strength and strength variation of continental crust. Geodetics, numerical modeling, and extrapolated laboratory deformation experiments provide a great deal of insight into the rheological structure of the crust. Further refinement and ground-truthing of quantitative interpretations, geodynamic concepts and processes identified by the above methods requires field-based rheologic study. Three case studies serve to illustrate the point. (1) Dry (granulite facies) rock weakens substantially by fracturing and fluid infiltration. (2) Growth of porphyroblasts in schists reverses the strength contrast between sandy and shaley units. (3) Patterns of deformed mafic and felsic multilayers indicate widely varying behavior of mafic units and in places suggest little strength contrast between mafic and felsic lithologies.