



## **Reverse shear across refracted axial planar cleavage planes associated with folding of fine grained marine clastic sedimentary sequences from the Variscan foreland of southern Ireland.**

P. A. Meere (1) and K. F. Mulchrone (2)

(1) Department of Geology, University College Cork, Cork, Ireland (p.meere@ucc.ie/+353 21 427 1565), (2) Department of Applied Maths, University College Cork, Cork, Ireland (k.mulchrone@ucc.ie/+353 21 427 0813)

This study focuses on high angle reverse shear across axial planar cleavages planes on the limbs of folds from the Variscan Rhenohercynian foreland of southern Ireland. The deformed lithologies consist of thinly (mm scale) interbedded marine mudstone and fine grained siltstone units alternating with thicker (cm scale) marine mudstone units. These rocks were deformed at the end of the Carboniferous under sub-greenschist conditions with a deformation sequence consisting of initial layer parallel shortening followed by buckling, ongoing cleavage development and late stage accommodation thrusting. Folds are generally upright, tight and gently plunging structures. The cleavage fabric in the mudstones is penetrative on outcrop scale and sub-parallel to the axial plane. Cleavage in the more silty units exhibits marked refraction and convergent angular discordance ( $5^{\circ}$ - $20^{\circ}$ ) with fold axial planes. The observable reverse shear along cleavage is restricted to these more competent units. A number of models are presented to account for the kinematics of this oblique shearing and its possible contribution as a mechanism to overall fold geometries.