The structural evolution of the western frontal margin of the Adelaide Fold Belt in South Australia.

by

Charles D. Nesbitt, B.Sc.

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Department of Geology and Geophysics
University of Adelaide
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ABSTRACT

Sediments belonging to the western frontal margin of the Adelaide Fold Belt in the Southern Flinders Ranges have undergone deformation in the Delamerian Orogeny. Through continual E-W compression the, the sediments were folded and thrusted. A major decollement was formed within the Callanna Beds at the base of the Adelaidean Sequence and a thin thrust sheet (approx. 5km) was produced. The decollement extends to the edge of the ranges, to the west of which are the relatively undeformed units of the Stuart Shelf.

Within the thrust sheet, a high degree of subsidiary thrusting occurred leading to the generation of three distinct geometrical subdomains. These are a series of back thrusts near the leading edge of the thrust sheet, a series of forward thrusts to the east of the sections and a triangle zone between the two. Localised high strain areas occur along, or in the vicinity of thrusts in an otherwise low strain area.

The amount of crustal shortening within this part of the fold belt is on average 4.4km. This has been largely accommodated by the thrust displacement and to a lesser extent fault bend folds, fault propagation folds and cleavage development.