

# Internal radar layers in central West Antarctica and their implications for Holocene ice sheet changes

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Upstream of Ice Stream D in West Antarctica, RES data reveal a major and distinctive englacial structure, where internal layers are located at an ice depth up to 1 km deeper than their surrounding elevations. The linear englacial 'fold' that is formed by the layer pattern can be traced well across 10 km, and less well for much longer. The long-axis of the structure is located at a 30° angle to the current ice flow direction. A number of ways in which this layer pattern may have formed are examined. This examination shows that the layer structure is more easily explained if the ice flow direction were along the line of the fold's axis than under the current glaciological setting. Ice flow modelling is used to propose that the englacial feature was developed by significant rates of basal melting in association with ice-sheet drawdown at a time when the ice flow direction was different to today. Current ice dynamics may account for subsequent deformation of the internal layer patterns in the last few thousand years.