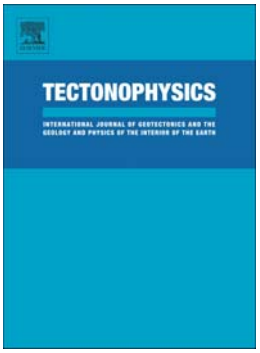

Seismic reflection patterns associated with continental convergent margins through time

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Seismic reflection patterns associated with continental convergent margins through time

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Abstract. The important role of tectonic wedging in accommodating horizontal shortening strain is increasingly recognized to occur at all scales within continental convergence zones. Wedge structures appear most common in accretionary orogens involving former passive margins with large-volume turbidite sedimentary fans or accretionary prisms. Relatively small-scale wedges can be recognized in outcrop, but crustal scale wedge geometries must be observed and analysed using seismic reflection methods. Reflection profiles now exist across a large number of accretionary orogen settings of diverse ages and continents. Similarities in seismic patterns within the major eras enable creation of a series of stylised continental margin transects for each major time period. Relatively low rock strength found in turbidite sediments rich in micas, especially when contrasted with strengths of igneous volcanic arc rocks, plays a major role because it localizes thrust faults within weaker horizons. Schematic cross sections across accretionary margins that span five geological eras summarize the principal features interpreted on numerous seismic reflection sections. Important details vary, such as the depths where tectonic wedging initiates, but tectonic wedges of diverse scales are observed in all cross sections. The percentage and degree of consolidation or