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FORMATION OF MELANGE IN A FORELAND BASIN OVERTHRUST SETTING:
EXAMPLE FROM THE TACONIC OROGEN.

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Flexure of the North American continental lithosphere during emplacement of the Taconic Allochthon in medial Ordovician times created a westward migrating depositional trough or foreland basin. Turbidites shed into this trough from the Taconic orogenic belt formed a progradational submarine fan complex, subsequently deformed by the advancing allochthon. Structural mapping in eastern New York shows a west-to-east increase in deformation intensity from flat lying strata through tightly folded sequences to highly disrupted melange. Two distinct types of melange have been recognized: graywacke-shale ("broken formation") and graywacke-carbonate-argillite (tectonized olistostrome). Additionally, large blocks and slivers of chert and shelf carbonate occur in the melange through imbrication of the original stratigraphic sequence. The melange occurs in discontinuous belts parallel to regional structural trends and represents zones of high strain. This deformation has resulted in boudinage of interbedded graywacke and shale sequences, development of pervasive phacoidal cleavage and rotation of fold hinge lines toward the overthrust direction. Initial formation of melange appears to occur preferentially in more ductile shaly or olistostromic units. The Taconic melange represents early stages in the formation of melange not commonly preserved along convergent plate boundaries and not easily studied in modern accretionary settings.