Remnants of shelf carbonates are preserved along the northern edge of the basin. The mapped segment was shortened by about 65%; metamorphism reached low grade conditions along the northern margin of the basin.
The flysch sequence reaches a thickness of at least 5 km and consists to a large degree of volcaniclastic (andesitiec to dacitic)material shed from the magmatic-arc Gangdise belt. Particularly in the western part of the study area, plutonic and sedimentary rocks from deep erosion levels and/or more distal sources contributed to the basin fill. Rivers from the Lhasa block acted as point sources and fed five major deep-sea channel systems. Turbidity currents in the channels were directed towards the growing accretionary wedge of the subduction zone, thus indicating that the basin was continuously filled up to outer ridge level and gradually shallowing. Three forearc flysch is subdivided into at least three megasequences, which begin with wide (up to several km) incised (10 to 50 m), coarse-grained channel fills and their associated fan deposits. The upper parts of the megasequences contain hemipelagic dark shales and marls (deposited above the CCD). Lateral channel migration, channel migration, channel lobe swtching, but also volcanic pulses generated a predominantly fining-upward, high-frequency cyclicity.
After continental collision, the marine sedimentation in the forearc basin was replaced by fluvial deposits of the Eocene-Oligocene Qiuwu formation, which is time-equivalent to the Kailas and Indus molasses farther west and rich in coarse gravel derived from the Gangdise belt. Both forearc flysch and Qiuwu formation were deformed simultaneously during the Miocene. We assume that the molasse-type Qiuwu formation represents the final continental facies of the forearc basin filling.

Depositional events and their records - an introduction

G. Einsele, S. K. Chough, T. Shiki
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Course and University Lectures topic

Event deposits of some lateral extent as defined here occur almost in all types of sedimentary basins. They reflect either local, intra - basinal processes, or they are associated with regional or global mechanisms. Some types of event beds, such as sediment gravity flows, sandy and muddy turbidites, are common and usually well preserved. They make up large proportions of basin fills, whereas others (e.g., tsunami deposits and in-situ earthquake structures) appear to be less frequent or rare in the geological record. Volume, frequency, and facies of event deposits are controlled by several

processes: pre-event sediment accumulation, triggering and transport mechanisms, and mode of final deposition.

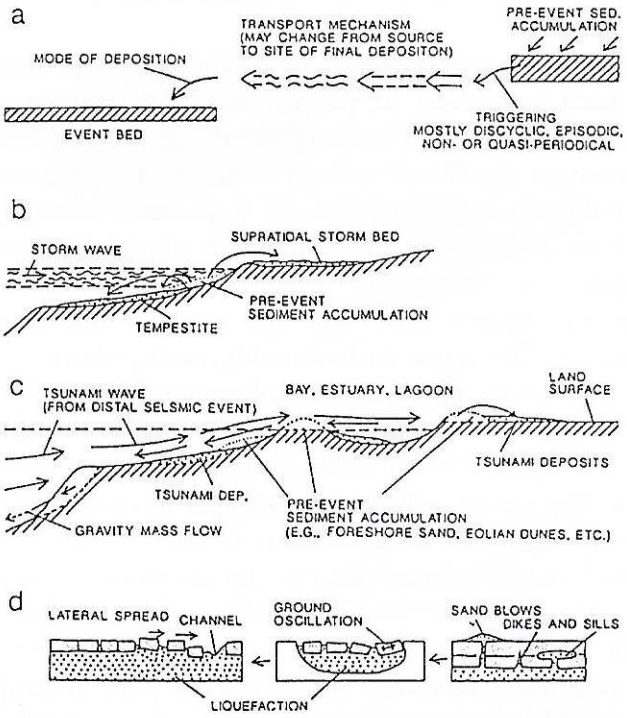


Fig. 1. Processes involved in the generation of event deposits. (a) General scheme of event beds resulting from redeposition of sediment accumulated prior to the event. This model particularly applies to gravity-driven mass movements. (b) Wind-driven storms producing supratidal storm layers and subtidal tempestites predominantly consisting of pre-event sediment accumulated in the foreshore zone. (c) Earthquake-induced tsunami wave approaching the shelf and flooding the coastal zone (based on Minoura and Makaya, 1991). Tsunami deposits may originate from both the landward flow and backflow as well as from submarine slope failure (producing mud flows and turbidites). Tsunami deposits also consist mainly of pre-event sediment of the foreshore and coastal zones. (d) In-situ disturbances of flat-lying pre-event sediments by earthquake shocks (after Greene et al., 1994).