Sedimentary processes of Earthquake and tsunami-induced conglomerates in Miocene Morozaki Group

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Very large gravels (large boulder) are not so rare. We can see them many place (e.g. the end of alluvian fan, rocky coast, valleys in steep mountains). Transportation of large gravels needs string agents because of their heavy weight. Therefore the forming processes of sediments including very large gravels is recognized as hazards.

But middle Miocene conglomerates distributed in Tsubutegaura Coast(Chita Peninsula, Central japan) are unique. In this article, we call these conglomerates Tsubutegauea conglomerates. Tsubutegaura conglomerates include very large gravels (maximum about 3m in grain size). The conglomerates was deposited about 50km off the coast(Shibata,1977), and about 400 to 800 meters depth (upper batyal) (Shibata and Itoigawa, 1988). In such deep sea environments, very large gravels are seldom deposited. Shiki and Yamazaki(1996) interpreted Tsubtegaura conglomerates as tsunami-induced conglomerates.

Tsunami-induced sediments in a sea area are often interpreted as sediments transported from a land by the strong downward flow of tsunami. But features of gravels included in Tsubutegauwa Conglomerates, and examinations of the possible process transportating very large gravels show that Tsbutegaura conglomerates were deposited by collapse of the cliff. Tectonic settings around Tsubutegaura Coast (Shiki et al.,2002) suggest the cliff as that of paleo active faults.

Clusters and imbrications of the gravels in Tsubtegaura conglomerates show variable paleocurrent directions. This means the combined influence of collapse and tsunami during sedimentation of Tsubutegaura conglomerates.