Possibility of extraction of terrestrial environment indicator from a fluvial depositional system

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A fluvial depositional system is an important element for reconstruction of terrestrial paleoenvironment same as lake and pond deposit. The system is roughly divided into a braided river and a meandering river system. Different deposits of subenvironments in each system had been preserved: a flood plain deposit remains as well as a point bar in a meandering river system, but, tends to be laterally discontinuous between in-channel bars in a braided river. Recognition of these ancient river form is useful for approximate estimation of geography and climate. In addition, from various deposits of each river ; point-bar, in-channel bar, natural levee, flood plain, crevasse splay, ox-bow lake etc., indicate sedimentary processes such as periodical discharge or flooding connected with meteorological events. The reconstruction of sedimentary processes is conducive to analyze fossil preservation. Biological remains can provide valuable insight into the environment. Fossiliferous layers are observed in various subenvironments of each river. Fossils accumulated in channel-base 'lag' or crevasse- splay deposits suggest broader environments included the upper reaches and surrounding of the river. Oppositely, fossils in flood plain and ox-bow lake deposits might indicate environment closer to a river .

In this study, I analyze some fluvial depositional systems of different ages and types; the Lower Cretaceous Tetori Group, the Pleistocene Shimosa Group, the Lower Cretaceous Wonthaggi Formation (Australia). In the Cretaceous Kuwajima, Akaiwa and Kitadani Formations, meandering and braided river facies are observed. Flood-plain deposit of the Kuwajima Formation includes different types of fossil assemblage (Isaji and Okazaki, 2000; Isaji et al., 2001). The Pleistocene Ryugasaki-Anegasaki and Kiyokawa Formations, Shimosa Group have a meandering river system. A ill-sorted muddy sands contained various terrestrial life remains (Kaneko et al., 2000; Hirayama et al., 2001) is recognized a crevasse-splay deposit. The Cretaceous Wonthaggi Formation (Australia) shows a typical braided river system and contained dinosaur's remains (Rich, T.H. and Rich P.V., 1989) in the channel-base lag.

It is thought that these analysis give the base of extraction of terrestrial environment index from a fluvial depositional system.