Sedimentary facies related to supercritical-flow bedforms in foreset slopes of middle Pleistocene Gilbert-type delta, central Japan

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This study examined sedimentary facies related to supercritical-flow bedforms in foreset slopes of a Gilbert-type delta in the middle Pleistocene Kamiizumi Formation, central Japan, paying particular attention to bed architectures and internal structures, grain-size distributions, and molluscan assemblages. Coarser grained chute-and-pool deposits laterally alternate with finer grained antidune to subcritical deposits on progradational steep delta slopes. The cyclicity of foresets is an intrinsic characteristic of supercritical flows on progradational steep delta slopes. Cyclic steps in the lower part of the delta foresets may reflect enhanced flood currents on the gentler parts of the delta slope. The vertical changes from cyclic steps to chutes-and-pools to antidunes represent decreasing flow velocity and are the result of autogenic flow transitions during rapid aggradation. Remarkable variations in the facies of delta foreset beds reflect the conditions of inflowing sediments as well as the intrinsic instability of supercritical flows on the foreset slope.

Keywords: supercritical-flow deposits, Gilbert-type delta, Pleistocene

