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Stratification and inertia effects caused by suspended sediment in river meandering

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Suspended load brings about density stratification which limits turbulence and lateral mixing process. Hereafter, the river adjusts its meandering procedure in a different way compared to no suspended load. Generally, suspended load has a wide range of sediment transport capacity depending on the flow velocity and diameter. Higher concentration suspended load affects the flow density obviously. The inertia effect is considered by adopting hydrostatic equations without Boussinesq approximation. This study compares simulations with and without stratification and inertia effect respectively. For low suspension concentration, stratification effect advances secondary flow. For higher suspension concentration, inertia effect suppresses secondary flow and would change rotation direction. Stratification effect slows down meandering speed while inertia effect changes meandering development trend.