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SEDIMENT TRANSPORT AT VERY HIGH CONCENTRATIONS AND ITS MOVEMENT BEHAVIOR

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In the Yellow River, the annual average sediment discharge and the annual average sediment concentration are the highest in the world. The measured maximum concentration approaches 1600 kg/m^3 in its tributary. The mechanisms of sediment movement are much different between very high concentrations and the general concentration. For the case of hyperconcentration, the decisive condition for the suspension of sediment particles is the Bingham ultimate shear stress (for Model I), or the intergranular dispersive stress (for Model II), but it is no longer the vertical turbulent intensity of the flow. The theoretical equations of vertical suspended sediment concentration such as the Rouse equation derived from low sediment concentrations are no longer applicable.

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