

Formative processes of channel bar examined from a GPR data of bar and a comparative flume experiment

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Formation of braid bars and point bars in a river channel were influenced by water discharge, slope gradient and sediment supply. GPR (Ground Penetrating Radar) survey was conducted on a braid bar at the Abe River in Shizuoka Prefecture, central Japan. A braid bar, 340m long, 50m wide, 1.5m high, consists of cobble to fine sand including pebble. Internal sedimentary structures of the bar were revealed by the GPR survey. The braid bar was divided into two parts, mainly bar and the side bar. The mainly bar was coarser and higher than side bar. Longitudinal GPR profiles obtained along down current direction, showed parallel beddings in the upstream of bar deposits and forest beddings in the downstream one. Transverse profiles showed parallel beddings in the mainly bar and channel-fill structures in the side bar. The formation of the braid bar that a high water-discharge and sediment supply during flood caused the bar migration and accretion was inferred from the sedimentary structures.

We used a plane flume, 3.6m long, 0.9m wide, 0.3m high, to form a braid bar. In the experiment, a large sediment supply caused deposition of braid bars in the channel. We will consider a formation of a channel bar observed in an actual river comparing a flume experiment.

Keywords: Channel bar, GPR, flume experiment