

Interactive comment on “Selective deposition response to aeolian-fluvial sediment supply in the desert braided channel of the Upper Yellow River, China” by H. Wang and X. Jia

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Sedimentation characteristics and sediment sources of a braided river are the basic issue on fluvial sedimentology. In this paper, the authors mainly showed the differences of sediment granularities between the sand bar surface layer and channel bed of the braided channel reach along the eastern margin of the Ulan Buh desert, Yellow river, and attempted to explain the sources of the sediments for both the depositional sub-environment. Their main standpoints are: 1) selective deposition resulted in sedimentation of coarser sediments from aeolian sands and channel bank erosion on the channel bed, and of the finer fluvial sediments on the surfaces of the mid-channel

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bars and floodplain; and 2) Lateral selective deposition reduces sediment transport for the study river reach and is a primary reason for formation of the “above-ground-river” reach downstream. However, obvious contradiction appears in both the standpoints. Any sandy bedded rivers can transport certain bedload, so, the sandy bedded braided channel reach is not exceptive. The falling sands from the aeolian dunes must be sorted by river flow at different flow conditions, and the sorted coarser fraction could be a part of bedload while the sorted finer fraction could be a part of suspended load. Thus, the coarser sediments deposited in both the channel bed and lower layers of the mid-channel bars in the river reach are the partial compound of fluvial bedload and sorted coarser grains from aeolian dunes. For the “above-ground-river” reach, the more large in sediment transport from the upstream river reach, the more advantageous for its formation. However, a natural river is difficult to form an above-ground-river without human activities. Therefore, the reduced sediment transport in the study river reach could not be the primary reason for the formation of the downstream “above-ground-river”. Besides, some specific comments are below. The paper needs to be revised according to mentioned above and below.

1. It needs to show the proportion of the coarser (>0.08 mm) and the finer (<0.08 mm) grains of the aeolian dunes. 2. No fluvial bedload has been monitored in the study river reach. However, the fluvial bedload from the upperstream channel must be existent and need to be considered. The coarser sediment at the channel bed could be the compound of the aeolian sands and the fluvial bedload partially. Thus, the present description and conclusion for the source of the sediment at the channel bed are inexact. 3. The abbreviation in Fig. 3 needs to be annotated. 4. Sometimes there are no point bars (side bars) in the opposite bank, but mid-channel bars are (e.g., from 1966 to 1969, Fig. 7). Please notice that typical point bars commonly just appear in meander belts of a meandering channel pattern. Similar bars appeared in a braided channel pattern be commonly called as side bars. The sand bars between channels commonly be called as mid-channel bars. 5. Fig. 11 shows that the suspended sediment load at the Bayangaole gauging station is greater than that at Shizuishan gauging station.

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It indicates that a portion of the aeolian dune sands are transported as suspended sediment load.

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