



## **Study on the Quarternary glacial-ploughed deformation beddings in Seven Springs, western Chaidam Basin**

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In the western Qaidam basin, the Quarternary glacial-ploughed deformation beddings in the yellow-brown calcareous sandstone and calcareous mudstone bearing conglomerate are developed. Among which, the large ones may be up to 2m in thickness for an individual bed within it, and remarkably complicated in shape as illustrated especially by the pipe-like and sheath-like deformation bedding, and rod-like and tabular structures. Otherwise, the lithology of the outwash is very complex as well, containing not only claystone, claystone bearing conglomerate, calcareous and argillaceous sandstone but also conglomerate, and among which a kind of argillaceous conglomerate is specific and the coarse-grained deposition and moraine surface induced by glacier are scratched clearly by the glacier. According to the sporopollen analysis, the outwash is formed in the Quarternary, and more possible in Pleistocene that is analogous to the Quarternary ice age, though the definite period is yet to be ascertained. The evidence of Quarternary outwash in Mangai depression of western Qaidam basin is unequivocal and may therefore of important significance for the study of Quarternary ice age and related Tibet Plateau research in terms of formation and evolution, paleo-climate and paeo-geography. Moreover, the outwash discussed herein demonstrates unambiguous evidence that the Tibet Plateau in the Quarternary is not mantled by a whole icecap.