



The aeolian landforms and mapping in the Mu Us Desert, China

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Located at the border of monsoon climate area, the Mu Us Desert is a transition zone between desert in the Northwestern China and sand land in the Northeastern China. Not only mobile dunes, semi-fixed dunes, and fixed dunes, but also rivers and lakes can coexist in the Mu Us Desert. Through field investigations and indoor remote sensing interpretations, we have completed an aeolian geomorphologic map of the Mu Us Desert in a scale of 1:250,000. The geomorphology of Mu Us Desert is classified into six types based on exogenic force: aeolian landforms, fluvial landforms, lacustrine landforms, arid-erosion landforms, loess landforms, and the others. Based on dune mobility, aeolian landforms are classified into three types: mobile dunes, semi-fixed dunes, and fixed dunes. Based on geomorphic features, aeolian landforms can be subdivided into barchan, barchan chain, transversal dunes, grid shaped dunes, parabolic dunes, and nest shape dunes, etc. We report that in the Mu Us Desert: (1) The area of aeolian landforms is 34 thousand km². The area of mobile dunes, semi-fixed dunes, and fixed dunes are 7.3, 17.6, and 9.1 thousand km², respectively. (2) The mobile dunes mainly locate in the northern and western part of the Mu Us Desert. Those with a moving speed of more than 3 m per year mainly distribute in flat places such as lacustrine plain and alluvial-lacustrine plain. The semi-fixed dunes mainly locate in the south-western, north-southern, and north-eastern of the Mu Us Desert. The fixed dunes mainly locate in the area with good water condition. (3) The sand dunes are mainly simple dunes, which are generally small with 5~10 m in heights.

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