



## **Assessment of extreme wind erosion from a cropping field in Inner Mongolia**

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Croplands in central Inner Mongolia (North China) cover less than 5 % of the total land area. These fields are highly prone to degradation by aeolian sand transport and dust emission and represent hazardous wind erosion hot spots.

Strong winds and high soil erodibility caused extreme wind erosion in spring 2006 on a 147 ha fallow field in Inner Mongolia, China. The size and thickness of the fresh material in the sediment fan, which developed leewards of the field, was measured to derive the volume and the mass of the transported material. The average thickness and the total size of the sediment fan were 11 mm and 257 ha, respectively. About one third of the sediments remained on the cropped field while two thirds were found in the surrounding grassland area. About 44,600 m<sup>3</sup> of surface soil material were moved by wind during the months of April and May 2006. While 27,600 m<sup>3</sup> remained in the sandy sediment fan, 17,000 m<sup>3</sup> soil material, largely of the clay and silt fractions were removed by dust emission.

The net loss from the cropped field was calculated to be 331 t ha<sup>-1</sup>, which was equivalent to about 30 mm of the upper soil surface. The average dust production at the field amounted to 126 t ha<sup>-1</sup>. An average of 8 mm remained on the field, dominated by particles greater than 200 μm. The sediment fan on the grassland had an average thickness of 13 mm, and consisted predominantly of fine sand. This accumulation of sand at the surface of the cropping and grass-land locally degraded soil quality. Croplands are probably thought to contribute considerably to the total dust production, soil organic carbon loss and soil degradation in the temperate grasslands of semi-arid Inner Mongolia. Based on this study, the abandonment of tillage in the semi-arid grasslands is strongly recommended.