

Do suspended sediment and bedload move progressively from the summit to the sea along Magela Creek, northern Australia?

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Abstract Soil erosion rates on plots of waste rock at Ranger uranium mine and basin sediment yields have been measured for over 30 years in Magela Creek in northern Australia. Soil erosion rates on chlorite schist waste rock are higher than for mica schist and weathering is also much faster. Sediment yields are low but are further reduced by sediment trapping effects of flood plains, floodouts, billabongs and extensive wetlands. Suspended sediment yields exceed bedload yields in this deeply weathered, tropical landscape, but the amount of sand transported greatly exceeds that of silt and clay. Nevertheless, sand is totally stored above the topographic base level. Longitudinal continuity of sediment transport is not maintained. As a result, suspended sediment and bedload do not move progressively from the summit to the sea along Magela Creek and lower Magela Creek wetlands trap about 90.5% of the total sediment load input.

Key words turbidity; sediment yields; sediment discontinuities; natural sediment traps; sediment budget