



Wind erosion flux measurements and variability on traditionally cultivated fields in South West Niger: crop residues and soils crust impacts.

A. Abdourhamane Touré (1), J.L. Rajot (2,3), Z. Garba (1), B. Marticorena (3), C. Petit (4), D. Sebag (5,6), and O. Malam Issa (7)

(1) Université Abdou Moumouni, Département des Sciences de la Terre, Niamey, Niger, (2) IRD, UMR 211 BIOEMCO, Paris, France, (3) Université Paris Est Créteil, UMR 7583 CNRS, LISA, Créteil, France, (4) Université de Paris 1 Panthéon-Sorbonne, UMR 7041 ArScAn, Paris, France, (5) Université de Rouen, M2C, UMR 6143 CNRS, 76821 Mont Saint Aignan Cedex, France, (6) Université Montpellier 2, IRD UMR 050 HSM, Montpellier, France, (7) Université de Reims Champagne-Ardenne, IRD UMR 211 BIOEMCO, Niamey, Niger

In the Sahel, crop residues are well known to reduce wind erosion. But these crop residues were studied on controlled experimental plots with amounts much higher than those traditionally encountered on cultivated fields. This work aims i) to monitor crop residues on traditional field and to quantify its influence on wind erosion ii) to characterize the impacts of soils crusting on erosion flux. At Banizoumbou in Niger, crop residues cover rates (%) and wind erosion fluxes (kg m⁻¹ per event) have been measured for six seasons on two plots: PA (1,5 ha) maintained bare and PB (1,5 ha) traditionally cultivated. Results showed that crop residues efficiently prevent cultivated fields from wind erosion during the dry season and considerably reduce erosion fluxes at the beginning of the rainy season. A minimal cover rate of about 2 % (100 Kg.ha⁻¹) appears as critical to limit wind erosion. Below this rate, soil losses by wind erosion would dramatically increase as observed on plot PA. On this plot, the area covered with erosion crusts increased at the soil surface from the first year of measurements during each rainy season. They are due to the combined effect of wind erosion and rainfall, but not to water erosion as the plot is not sloped. After soils crusting wind erosion flux regularly decreases on plot PA. This decrease seems to be due to supply limitation in erodible sediment.