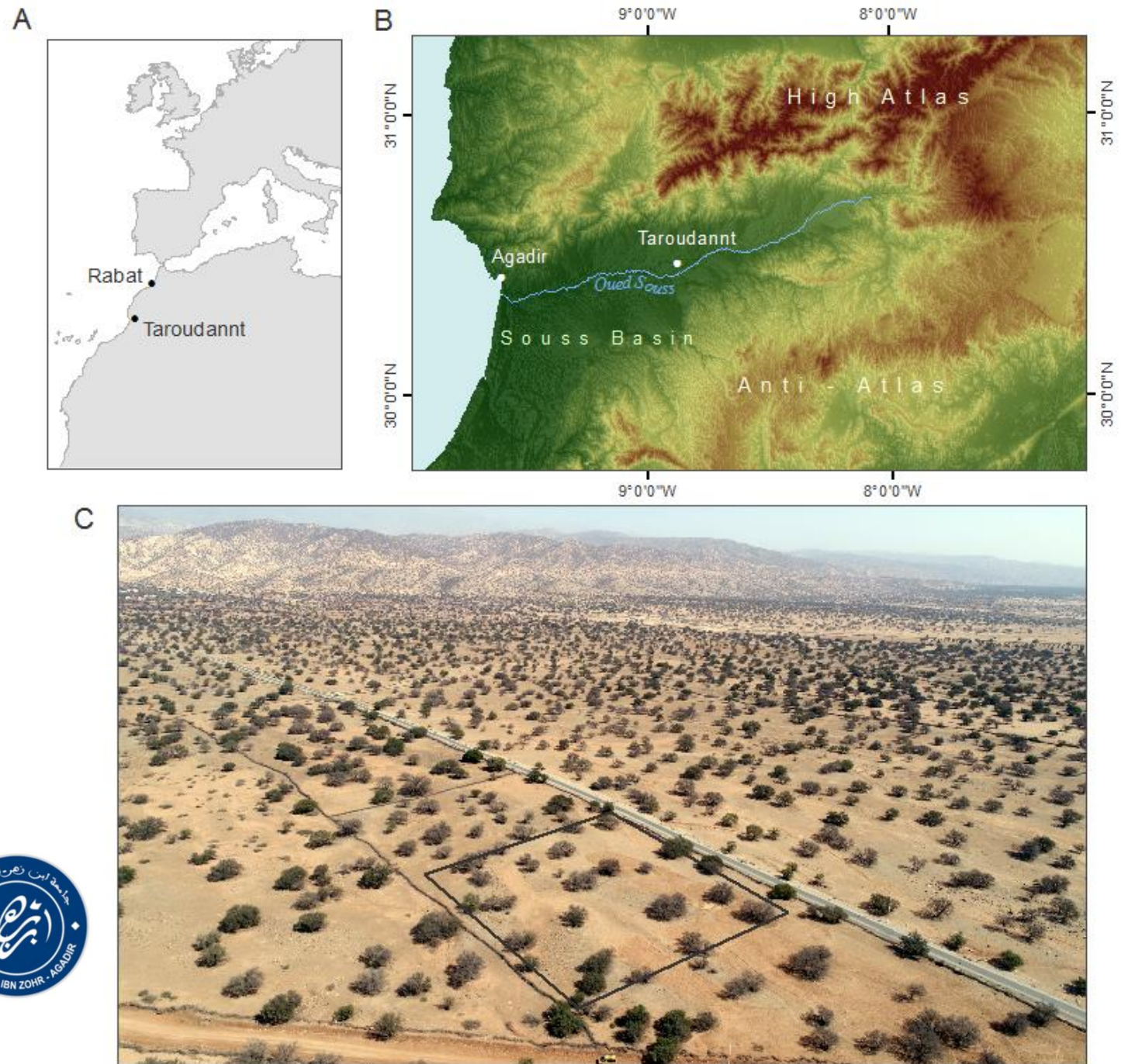


Wind erosion in Moroccan argan woodlands under extensive agrosilvopastoral management

Miriam Marzen, Mario Kirchhoff, Irene Marzolff, Ali Aït Hssaine, Johannes B. Ries

The endemic argan woodlands cover large parts of South Morocco. The unique ecosystem has been under extensive agrosilvopastoral management for centuries and is at severe risk of degradation. Causes for degradation are overgrazing and increasing scarcity and variability of rainfall.

By means of an experimental study with the Trier Portable Wind Simulator, we tested different associated surfaces and found freshly ploughed and crusted surfaces most susceptible to wind erosion, while rock fragment cover was less affected.



Tree area



Underneath argan trees with high percentage of organic material (argan litter)

Crust



Strongly crusted and highly compacted substrate with traces of wash processes

Rock fragments



> 70% differently sized rock fragment cover on soil surface with higher plant density

Ploughed (old)



> 1 year old tillage activities with weakly developed crust

Freshly ploughed



Freshly broken soil crust with high percentage of fine soil material

Trier Portable Wind and Rainfall Simulator PWRS (without rainfall equipment)

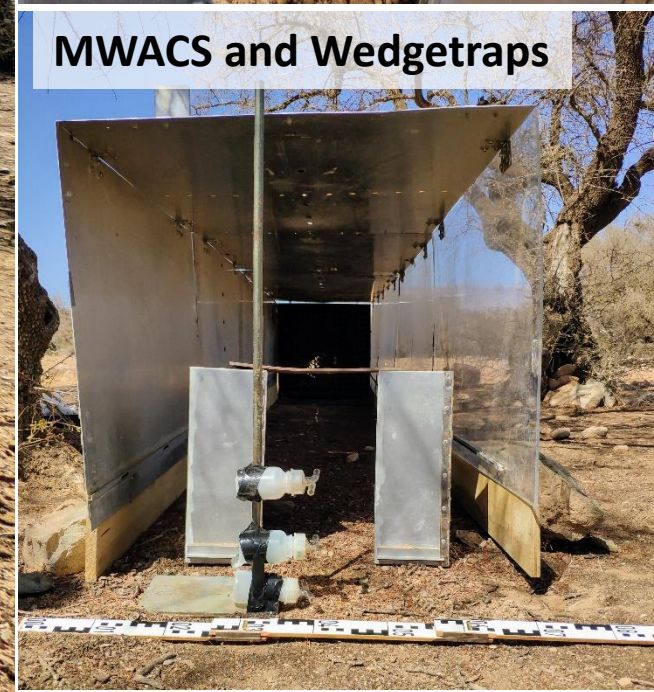




Wind simulator mounted underneath trees with ploughed area in the background

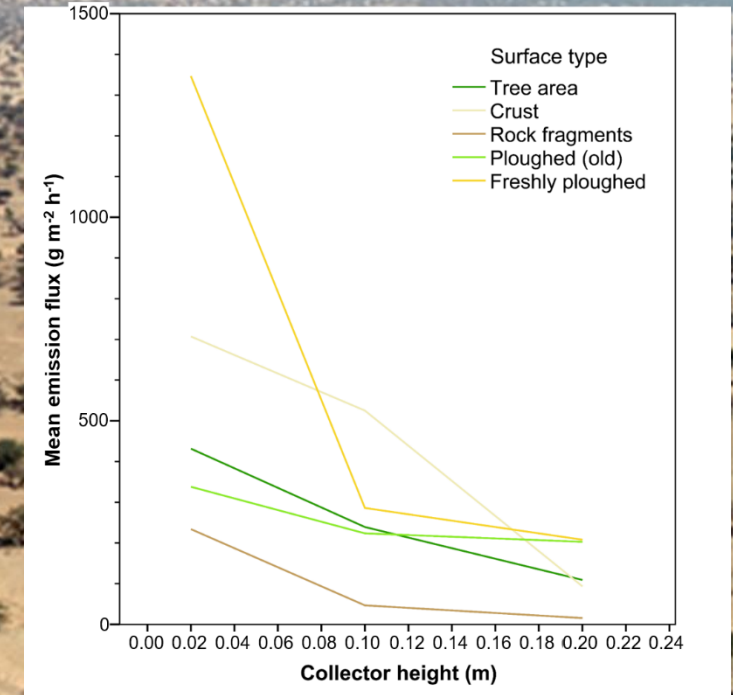
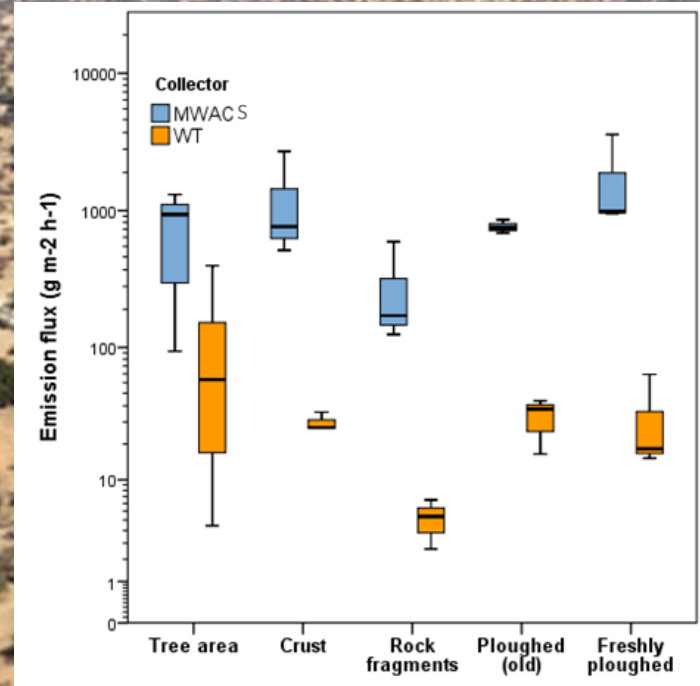
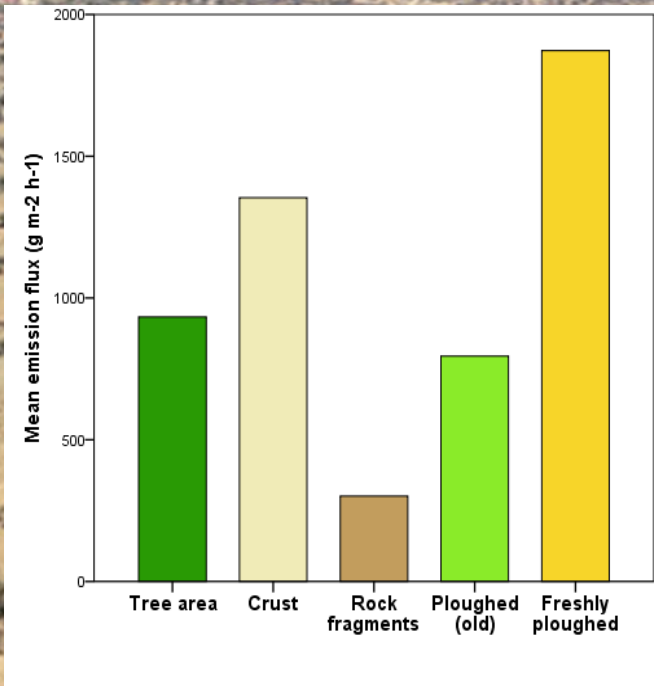


Wedgetraps



MWACS and Wedgetraps

Preliminary results generated from data measured with Modified Wilson And Cook Sampler:



- Highest emission fluxes measured on freshly ploughed and strongly crusted surfaces
- Argan tree litter possibly important source for regional C_{org}-distribution
- Implications for management including conservation of argan woodlands

→ Marzen et al. (in review): Relative quantification of wind erosion in argan woodlands in the Souss Basin, Morocco