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Requirements for Wind-Driven Rain research on soil erosion processes

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Wind-Driven Rain (WDR) research not only requires a unique facility, which can simulate wind and rain concurrently but also necessitate knowing the possible deviations from erosion sub-processes under Wind-Free Rain.
The facts that WDR physics is strongly related to the velocity vector of rainfall induced by the wind velocity and direction and the sub-processes occur under a system of dual fluids invalidate the approaches of Wind-Free Rain. The fall vector is needed in WDR instead of non-directional estimates of Wind-Free Rain in order to explain detachment and transport processes.
As such, Wind-Driven Raindrop Detachment is based on the partitioned contributions of compressional and tangential forces that vary with wind velocity, and wind shear force is a determining transport parameter in the process of Wind-Driven Raindrop Detachment and Wind-Driven Transport rather than the gravitational force induced by the slope gradient.
Furthermore, Wind-Driven Raindrop Detachment and Wind-Driven Transport could be in all directions depending upon the wind direction irrespective of slope direction. Similarly, compressional and tangential forces of WDR interact with shallow flow hydraulics in the process of Wind-Driven Rain Impacted Flow Transport, changing raindrop impact roughness and flow transport capacity. While compressional forces always vertically interrupt the downward flow, tangential forces are sometimes against the flow (windward slopes) and other times contribute to the flow being at the same direction vectorally (leeward slopes).
Conclusively, WDR research requires assessing the combined action of wind and rain on the erosion and hydrological processes. The research facility for simulating wind and rain simultaneously (a combination of a wind tunnel with a rainfall simulator) over a long test area, constructed at the International Centre for Eremology, Ghent University, Belgium offers ample opportunities for research on erosion processes.