

RAINFALL OVERLAND FLOW SIMULATIONS

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Abstract

We are interested in simulating rainfall overland flows on agricultural fields, because they may have some undesirable effects such as soil erosion and pollutant transport. The model used for these simulations is the system of Shallow Water or Saint-Venant system. In this context, we can meet some numerical difficulties due to dry/wet transitions. This work is divided into two parts. First we present the numerical method for the resolution of the Shallow Water equations integrated in FullSWOF-2D (Full Shallow Water for Overland Flow : an object oriented code in C++). This method is based on a hydrostatic reconstruction scheme to cope with dry/wet transitions, coupled with a semi-implicit friction term treatment. In the second part, FullSWOF-2D is tested and by comparison with experimental field observations validated on several real events measured by IRD on two different runoff plots in Niger (West Africa).

References

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