

Teaching soil erosion in high schools. A coherent set of experiments showing processes and factors.

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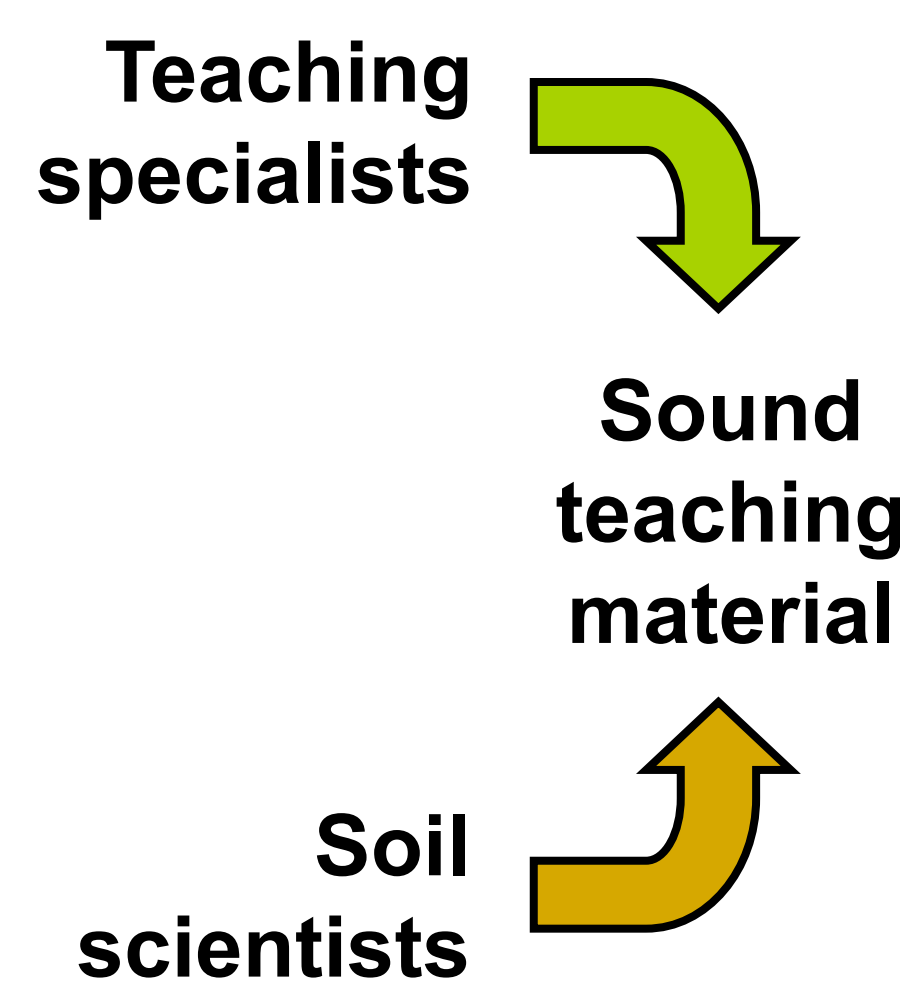
The need for soil erosion teaching

The national program for French high schools requires teaching about soils. Because **soils are new in the curriculum**, "Life and Earth sciences" teachers have a limited knowledge about soils. Hence, **pedagogic resources need to be expanded**.



Most teachers and students have never paid attention to soil erosion

A collaboration between soil scientists and teaching specialists



- Soil scientists know about soil erosion.
- Teaching specialists know about teaching.

Collaboration between soil scientists and teaching specialists is needed to build pedagogic resources about soils that teachers can use in the classroom.

Experiments for the classroom

The description of the experimental set is made available to teachers. It requires only easy-to-find and cheap materials.

A procedure for splash

Factors: Drop size and aggregate size

A procedure for interrill erosion

Factors: Soil cover and rainfall intensity



This experimental set allows to use the knowledge acquired in both **physics** and **biology-geology** courses.



For now, no procedure for rill erosion...

We are looking for ideas to experiment with the factors of rill erosion.

Suggestions welcome!

A movie showing an experiment and its dataset

Because not all classrooms will go to a soil lab, we have to bring them the lab!

The movie



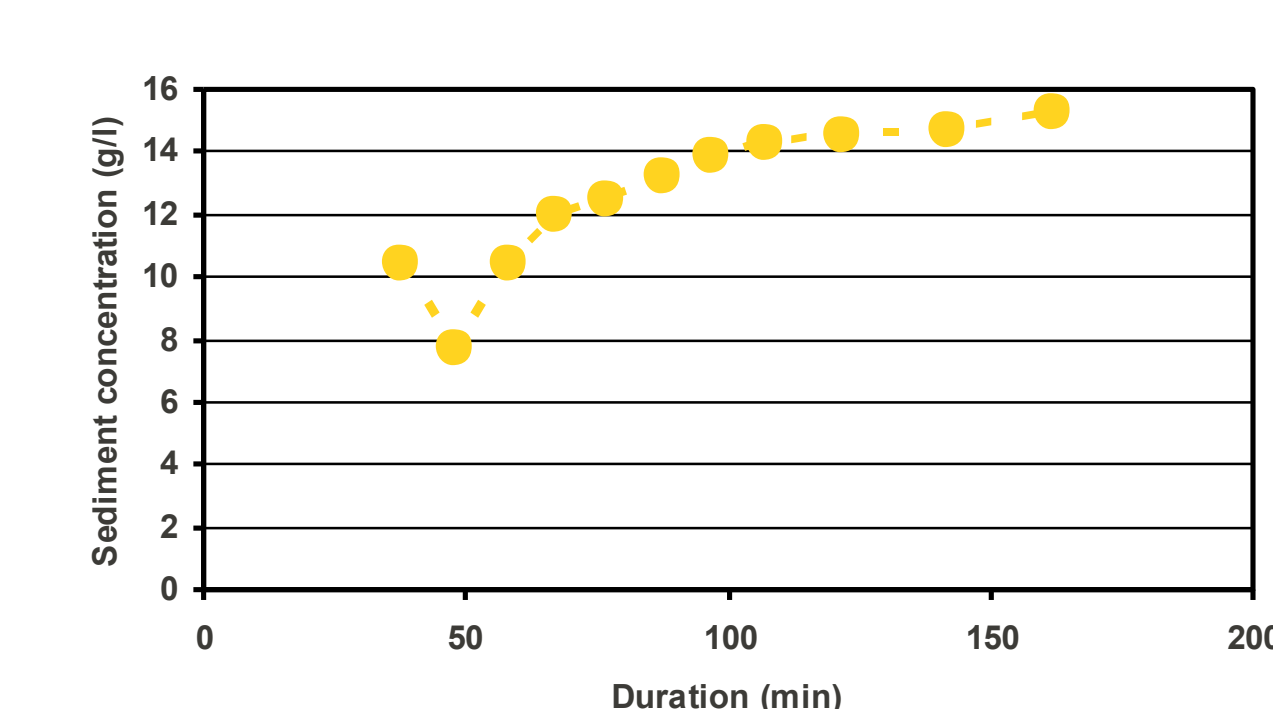
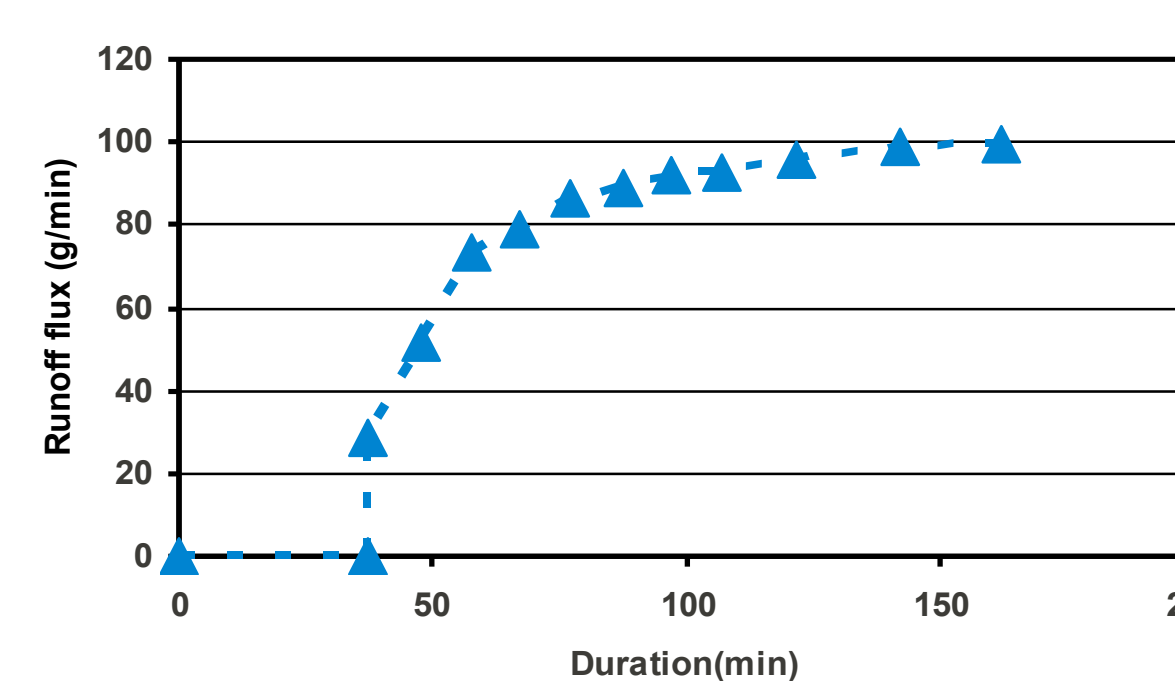
The movie shows a laboratory experiment under rainfall simulation.

The dataset

INRA		Nom de la manip.		Date	UR SOLS	
Baptiste		Baptiste		23/03/16	UR SOLS	
Nom de rattachement	Débit de prélèvement (mm)	Fin du prélèvement (min)	Masse terre (g)	Masse terre + eau + sédiments (g)	Masse Eau + sédiments (g)	
Baptiste-R-M-01	38	38	63,01	74,17	41,16	
Baptiste-R-M-02	45	51	43,43	55,00	41,57	
Baptiste-R-M-03	55	61	44,49	56,41	42,05	
Baptiste-R-M-04	65	71	44,44	57,33	42,48	
Baptiste-R-M-05	75	81	44,58	58,47	42,91	
Baptiste-R-M-06	85	91	44,61	59,64	43,34	
Baptiste-R-M-07	95	101	44,84	60,90	43,77	
Baptiste-R-M-08	105	111	44,10	62,21	44,20	
Baptiste-R-M-09	115	121	44,44	63,56	44,63	
Baptiste-R-M-10	125	131	44,88	64,93	45,06	
Baptiste-R-M-11	135	141	44,52	66,31	45,49	

The dataset is used as teaching material.

The students plot the data:



The teacher guides the students in explaining the results.

Teaching about soil erosion becomes **more than teaching about soil**: It is an opportunity to teach the scientific method!

The basis was a real scientific experiment that got published in a peer-reviewed journal.

Outcome

- This work is the base of a new dynamic of collaboration between teaching institutions and researchers.
- Teaching material is available for all teachers
- More material could be built in the future (rill erosion...)

Acknowledgements

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