ECOLE LEMANIQUE DES SCIENCES DE LA TERRE
DES UNIVERSITES DE GENEVE ET DE LAUSANNE

Master ès Sciences in Earth sciences

Title: Land erosion by rill impact of the past Environnement and the climate changes

Contact persons

Two people (one has to be professor/MER)

Prof. M. Jaboyedoff

Context

Land erosion is an increasing issue, because the intensities of rainfalls are increasing, and overland flow are more intense providing more power for the creation of rills. In Switzerland in the Plateau seems that such erosion locations are located where creeks have been drained. This trace can be observed on former topographic maps or on aerial images.

Aims and Methods

The goal is to analyze news cases and past case using 3D data such a drone photogrammetry and Lidar cloud points, to:

- Calculate volume eroded
- Simulate the flow path
- Model the erosion
- …

References

Ban, Y.Y. & Lei, T.W. 2022. Mathematical method for physics-based rill erosion process using detachment and transport capacities. Scientific Reports, 12, 4812, doi: 10.1038/s41598-022-08512-6.

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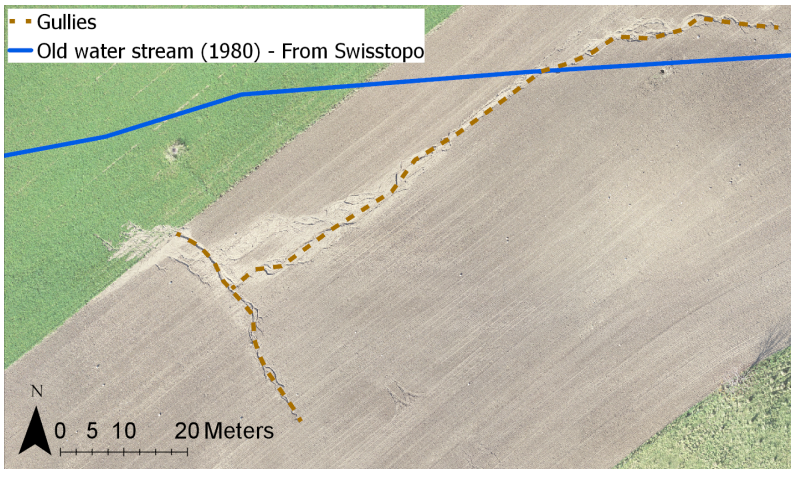
Morgan, R.P.C. (2005): Soil Erosion and Conservation (3rd Edition). Blackwell Publishing

Morschel, J. et D. Fox, 2004, Une méthode de cartographie du risque érosif : application aux collines du Terrefort Lauragais, M@ppemonde, n°76, 11 p, [En ligne] URL : http://mappemonde.mgm.fr/ num4/articles/art04404.pdf.

Panagos, P., Borrelli, P., Poesen, J., Ballabio, C., Lugato, E., Meusburger, K., Montanarella, L. & Alewell, C. 2015. The new assessment of soil loss by water erosion in Europe. Environmental Science & Policy, 54, 438-447, doi: https://doi.org/10.1016/j.envsci.2015.08.012.



Website

Prerequiste

Indicate if the student must take some course or module