1 Supplement Methods

1.1 Validation of the empirical topsoil erosion model

We tested the performance of our topsoil erosion model (Eq. (1)) by comparing model estimates with topsoil erosion rates (TER) derived from ^{137}Cs measurements carried out on the CLP. The latter allow in principle to estimate the overall soil loss over a period of ca. 40 years. We only selected studies for which detailed information on the field sites studied (size of the field, land use, topography) was available. Furthermore, it had to be possible to separate the effects of water and tillage erosion if the latter is important (Govers et al., 1996). We found studies on 44 slopes for which these conditions were met (Supplement Table 4). If estimates of water erosion were reported in the study, the reported value was directly used. If only ^{137}Cs inventories were provided, the TER was calculated by a simple model relating ^{137}Cs depletion to soil loss (Zhang et al., 2008c):

$$R_e = H * \rho_b * (1 - \left(\frac{x}{x_{ref}}\right)^{\frac{1}{n-1963}})$$

where R_e is the estimated soil erosion rate (t $km^{-2}yr^{-1}$), H is the depth of the plough layer (0.15m or using a reported value), ρ_b is the specific density of the plough layer (1450 kg m^{-3} or using a reported value), x is the measured mean ^{137}Cs inventory of the slope (Bq m^{-2}), x_{ref} is the locally reference ^{137}Cs inventory (Bq m^{-2}) and n is the year of sampling.

The accuracy of the model estimates was calculated using the relative root mean square error (RRMSE) (Van Rompaey et al., 2001):

$$RRMSE = \frac{\sqrt{\frac{1}{n}\sum_{i=1}^{n}(M_i - P_i)^2}}{\frac{1}{n}\sum_{i=1}^{n} M_i}$$

Where, M_i is the measured TER derived from ^{137}Cs inventory, P_i is the predicted TER from our model (equation 1) and n is the number of observations. Fig. 3 demonstrates that agreement between measured and predicted TER is good: the *RRMSE* is 0.56 and 77% of the predicted values are within a factor 0.5 to 2 of the measured values. Part of the unexplained variance is due to the fact that soil erosion at the plot scales is characterized by a strong variability (Nearing et al., 1999).

Furthermore, soil erosion may be expected to be affected by factors such as local rainfall characteristics, crop type and specific soil properties at the measurement site, which were not included in our model. Finally, the accuracy of ^{137}Cs inventories is affected by factors such as detector sensitivity (Parsons and Foster, 2011).

1.2 Uncertainty analysis of TER

Our estimates of TER are subject to important uncertainties. The most important of those are the uncertainties on the effects of rainfall erosivity, soil erodibility and crop type, integrated in the factor a, on the effectiveness of terracing (T_E), on the proportion of terracing (T_P), as well as uncertainty on the average field length under terraced (λ_T), and non-terraced conditions (λ_s). We quantified the resulting overall uncertainty using a Monte-Carlo analysis whereby 6000 independent calculation were run, randomly sampling each of the aforementioned variables, assuming a normal distribution described by its mean value and the standard deviation of this mean. Standard deviations of the mean value could be derived from the sample datasets from T_E , T_P, λ_T and λ_s. The standard error of the mean for *a* was quantified by perturbing the observed erosion rates in each slope class by adding an error term to the mean value of the TER for each slope class. This error term was randomly drawn from a normal distribution with a mean value and a standard deviation equal to the standard deviation of the mean TER calculated for each slope class. This procedure was repeated 6000 times and the standard error of the mean value of *a* was calculated.

1.3 Uncertainty of gully erosion estimation:

Two factors may contribute to uncertainty on the gully erosion estimates under 2005 conditions: the area of CLP that is subject to gully erosion and the average erosion rate within this gullied area. From our GE analysis, we obtained that ca. 13.2 % of the CLP consists of gullied areas. Given the sample size (1000 points in GEps) this estimate is robust, with a standard deviation of 2%. Sun (2014) divided the CLP into six topographical categories and reported that ridge and valley areas, which are subject to intense gullying accounted for 14.4% of CLP (Sun et al., 2014).

We therefore assumed that the uncertainty on the area on the CLP that is covered by gullies is small in comparison to other uncertainties. However, the rate of erosion within gullied areas is subject to a large uncertainty. The ratio between gully erosion rates and erosion rates on hilly land was calculated for 11 catchments resulting in a value of 2.60 ±1.48. We directly used this value and its associated uncertainty for our extrapolation to the CLP.

2 Supplement Discussion

2.1 Why were previous estimates of TER too high?

2.1.1 Model parameterization

The (R)USLE model is widely used to spatially estimated rill and sheet erosion rate at various scales. The model is a simple factorial model that can be written as:

$$A = R \times K \times L \times S \times C \times P$$

Where A is the annual rill and sheet erosion rate (t $ha^{-1}yr^{-1}$); R is the rainfall erosivity factor (MJ $ha^{-1}h^{-1}yr^{-1}$); K is the soil erodibility factor (t ha h ha^{-1} MJ^{-1} mm^{-1}): L is slope length factor; S is the slope steepness factor; C is the cover management factor; P is the support practice factor.

The model has been shown to be successful in providing unbiased, reasonably accurate estimates of soil erosion rates measured on erosion plots, especially in the USA. However, applying the model in other environments at the landscape rather than the plot scale carries important risks. First, the parameter values derived from model guidelines may not be adequate for the area under study. Second, the extrapolation of erosion data from the plot to the landscape scale requires that the values of the topographical factors (slope gradient and length) are correctly calculated.

It is not possible to examine all parameters independently as they are all interrelated: an overestimation of rainfall erosivity may be compensated by an underestimation of soil erodibility and vice versa. However one may assess whether the empirically derived values for a given parameter are indeed in agreement with model guidelines if other parameters are assumed to be correctly calculated. We examined whether this was the case for soil erodibility.

Soil erodibility (K factor)

Soil erodibility can be calculated from basic soil properties using a (set of) empirical equations relating the soil's erodibility to the grain size distribution of the top soil layer, its organic matter content, its structure and/or its permeability using an empirical model proposed by Wischmeier and Smith (1978) (Wischmeier and Smith, 1978). Alternatively, soil erodibility can be directly calculated from measured soil erosion rates for a soil under so-called black fallow conditions, provided that rainfall erosivity is known. We found two studies were such a methodology was applied and made additional calculations for 41 plots in our database, located in different parts of the CLP where soils were maintained under black fallow conditions (Wang et al., 2013; Zhang et al., 2004). We found that soil erodibility factors that were directly derived from field measurements were, on average, 2 to 3 times lower than model-based estimates (Supplement Table 1). This confirms the result of an earlier study with a more limited dataset. Zhang et al., 2004 used a limited dataset (16 plots on 4 sites) to establish a simple model relating the soil erodibility to the soil's clay content for the soils of CLP (Zhang et al., 2004). This model was used by Fu et al., 2011 and provides more realistic estimates than the more general models used in other studies (Fu et al., 2011) (Supplement Table 1). However, other studies derived soil erodibility values from Wischmeier and Smith (1978)'s model, which at least partly explains why they obtained very high TER estimates (Schnitzer et al., 2013).

Topography (LS factor)

The application of any erosion model on arable land requires knowledge of slope gradient and length: when the (R)USLE is used, this topographic information is used to calculate to so-called LS factor, which represents the relative average erosion rate to be expected on a parcel in comparison to the reference erosion rate measured on a 22.13 m long plot on a slope of 9%. Slope gradient values calculated from Digital Elevation Models (DEMs) are resolution-dependent, but these effects can easily be corrected for (Van Rompaey et al., 1999). Calculating slope lengths for arable land using a DEM is more complicated. The calculation of slope length using topographic information only may result in significant overestimations of the slope length that is relevant for topsoil erosion. On the CLP, fields are only rarely so large that they cover an entire slope. Fields often have different crops, and erosion processes will most often not occur on all fields simultaneously. As a result, slope lengths are in reality much more often limited by parcel boundaries than by natural topographical breaks. The relevant slope length is therefore the average field length, rather than the average topographic slope length. Ignoring this reality will lead to a significant overestimation of slope length and hence of topsoil erosion rates. We were not able to exactly reconstruct the calculation procedures used in previous studies, but it is clear that they yield widely divergent results. Schnitzer et al., 2013 arrive at an average LS factor of 11.90 for the whole

CLP, while the application of the procedure proposed by Van Remortel et al., 2004, which uses topographical information only, results in an average value of 5.28 (Van Remortel et al., 2004). We calculated LS values for 307 terraced and non-terraced parcels in our GE sample dataset. These calculations resulted in an even lower value of 2.21 (2.67 for terraced land and 1.94 for non-terraced land). The overestimation of the LS factor is one of the main reasons why TER are overestimated when the (R)USLE is applied at the landscape scale.

The second important reason why classical slope length calculations bias TER is that the dependency of TER on topography is fundamentally different on arable land in comparison to land under permanent vegetation. Empirical analyses consistently show that, when a significant permanent vegetation cover is present, TER does not systematically increase with slope length (Cammeraat, 2002; Cerdan et al., 2004). This finding was confirmed by our plot data analysis. The key reason for the absence of an erosion-slope length relationship is that the presence of permanent vegetation induces hydrological discontinuity in surface runoff. While runoff is known to accumulate in the downslope direction on arable land, if most often does not so on land with permanent vegetation. On the latter, zones of lower infiltrability alternate with zones of high infiltrability, which absorb most of the runoff coming from upslope. As surface runoff does not increase in the downslope direction, the TER does neither. Calculating erosion rates from data obtained on short plots and assuming that SRER will increase with slope length if permanent vegetation is present will then inevitably lead to an overestimation of topsoil erosion under natural vegetation.

Also, we did not find any relationship between slope gradient and TER under permanent vegetation. While the absence of such a relation may be due to an erosion-surface cover feedback, the latter would require that a significant rock fragment fraction is present in the soil (Govers et al., 2006). This is not generally the case on the CLP. An alternative explanation is that, given the low runoff rates and the discontinuous nature of runoff, erosion under natural vegetation is mainly driven by splash detachment. Although the latter may be affected by slope gradient, it is far less so than detachment by overland flow. The weak slope dependency of raindrop detachment is likely to be smaller than the variability of erosion rates induced by other factors varying between plots such as total vegetation cover and vegetation pattern. As a consequence, no meaningful pattern could be detected.

3 Supplement Figure

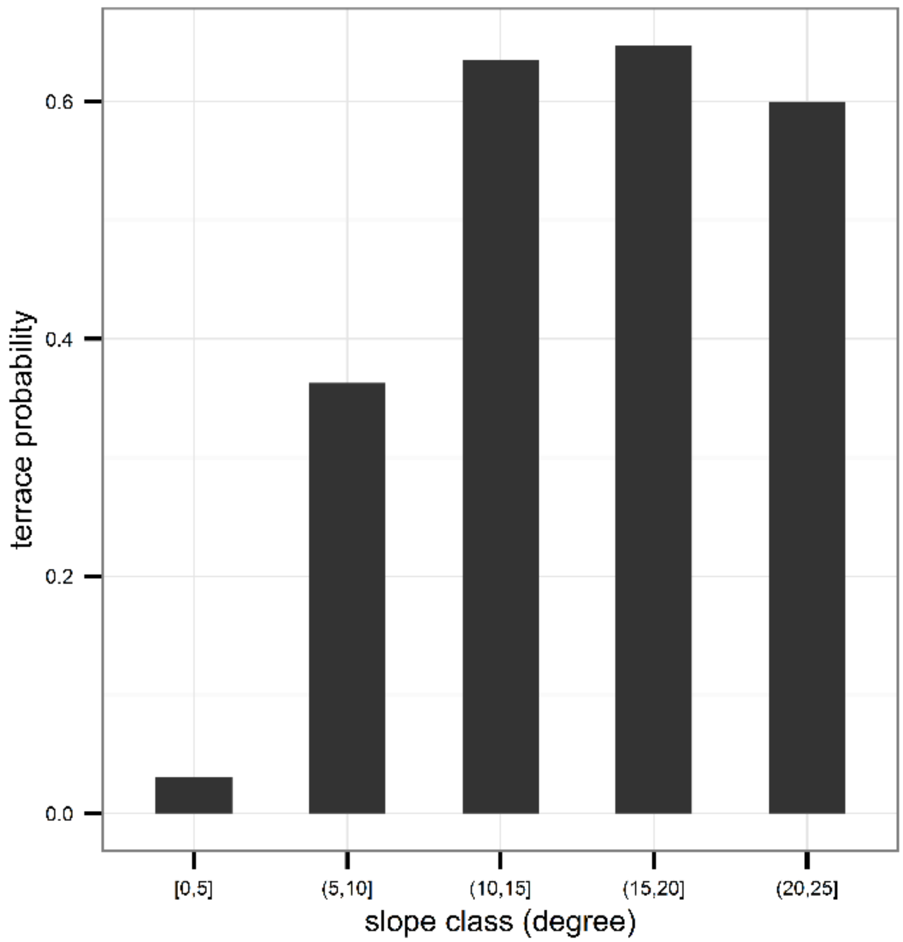

Fig. S1. Proportion of farmland that is terraced for different slope classes. The probability that land is terraced strongly increases up to a slope gradient of ca. 15° after which it remains more or less constant up to a slope gradient of ca. 25°. Very steep slopes are somewhat less frequently terraced, probably because the marginal agricultural return does not warrant the terracing effort.

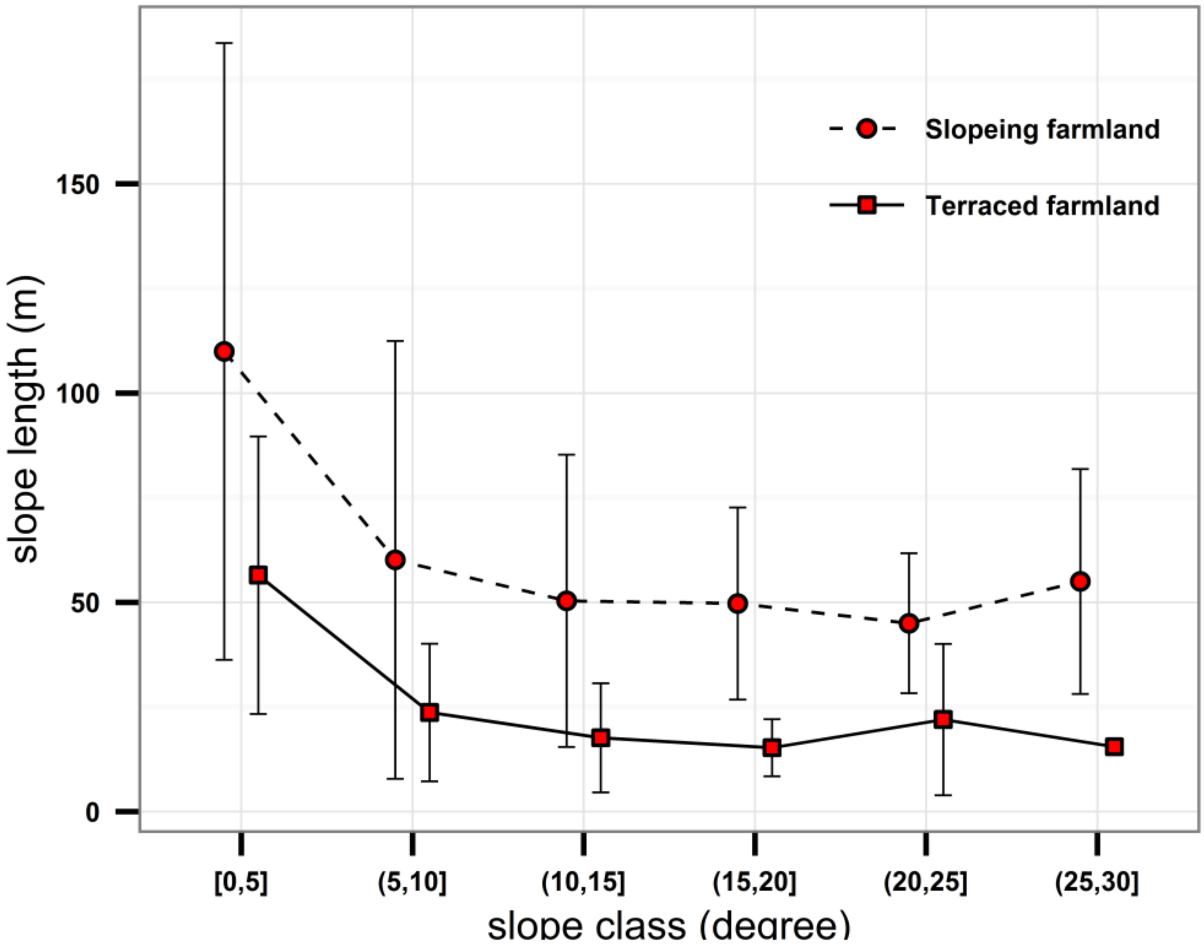

Fig. S2. Measured mean slope length for terraced and sloping farmland at different slope levels in CLP. Field sizes and hence slope length are clearly larger on gentle slopes.

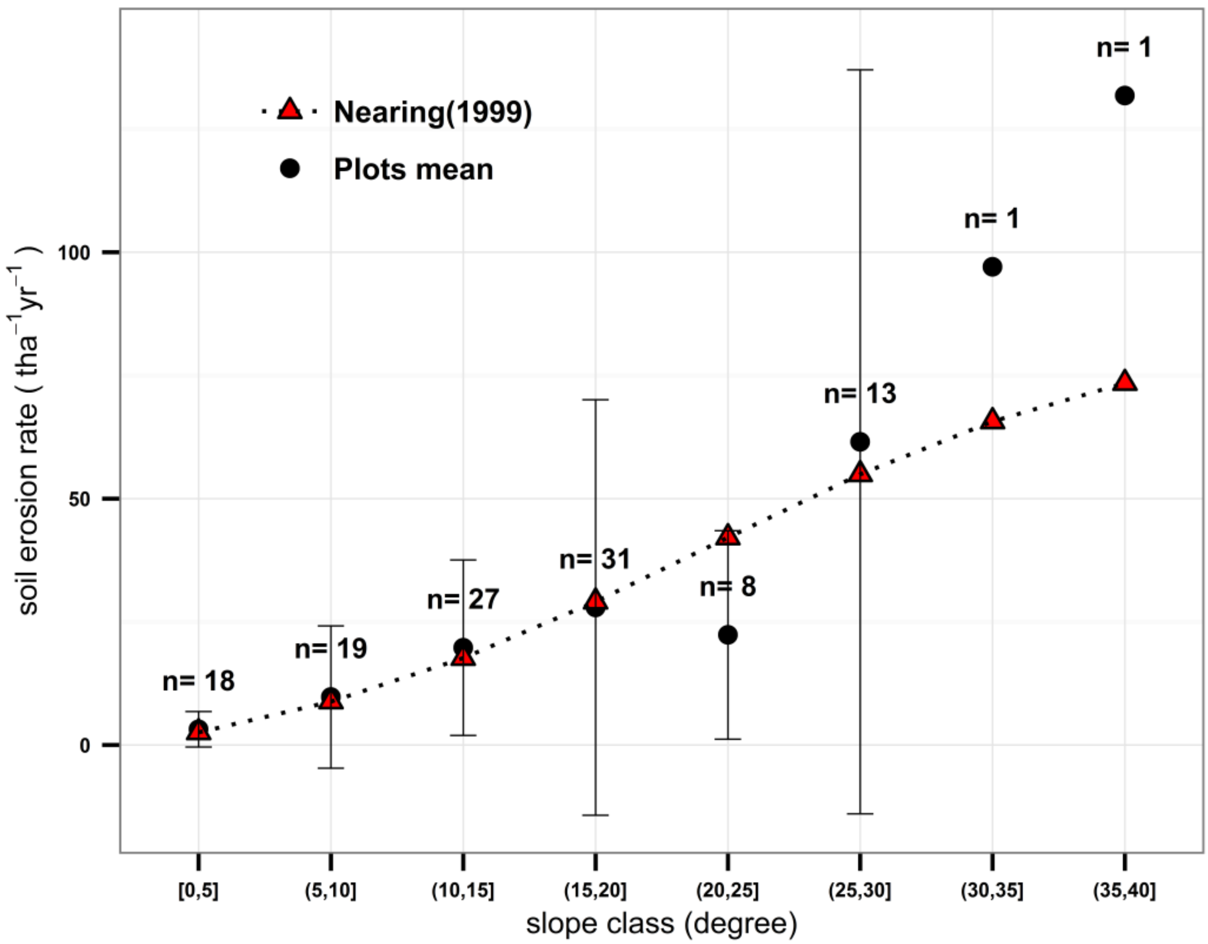

Fig. S3. Mean and standard deviation of the soil topsoil erosion rate for different slope classes of farmland on the CLP. (Relative) variations predicted using the model of of Nearing (1999) are also indicated. The Nearing model excellently predicts relative variations in erosion rates up to a slope of 30 °. Comparison of model predictions and observations at higher slope gradients is not relevant due to a lack of data.

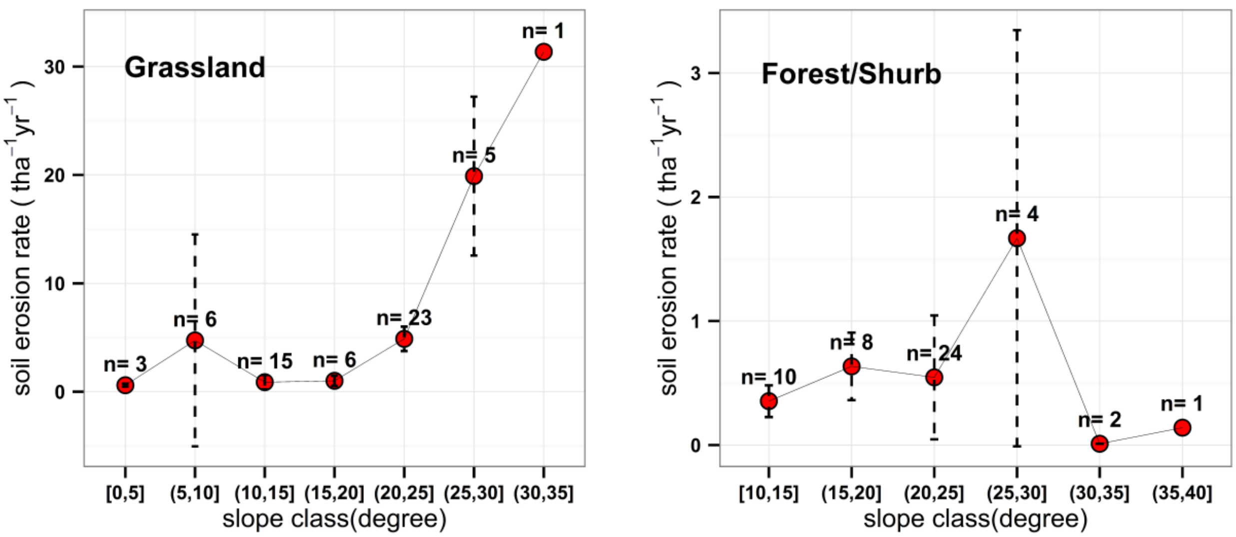

Fig. S4. Weighted mean soil erosion rate of grassland and PV at different slope levels based on erosion plot database: slope does not have a statistically significant effect on topsoil erosion rates on land under permanent woody vegetation. On grassland, a slope effect may be present, but only for slopes exceeding 25 °, but more data are needed to confirm this

4 Supplement Table

Table S1. Comparison of estimated and measured soil erodibility values (K factor, t ha-1(MJ mm)-1 ha h) in CLP. Estimates are, on average, two to three times higher than measured values.

Estimated soil erodibility				Measured soil erodibility		
Reference	Range	Mean	Methods	Reference	PN	Mean
(Pan and Wen, 2013)	0.033-0.048	0.041	Forster (1991) (Foster et al., 1991)	(Zhang et al., 2004)	17	0.0163±0.0081
(Li et al., 2006)	0.013-0.065	0.039	Torri (1997) (Torri et al., 1997)	(Wang et al., 2013)	6	0.0185±0.0079
(Wang et al., 2007)		0.043	EPIC	This study	41	0.0142±0.0226
(Pang et al., 2012)	0.032-0.052	0.040	EPIC			
(Qin et al., 2009)		0.047	Dg			
(Fu et al., 2005)	0.016-0.032	0.020	RUSLE			
(Gao et al., 2013)	0.034-0.043	0.039	EPIC			
(Schnitzer et al., 2013)-RUSLE1	0.006-0.119	0.051	EPIC			
(Schnitzer et al., 2013)-RUSLE2	0.001-0.030	0.013	Zhang (2004) (Zhang et al., 2004)			
Mean		0.04±0.031		Mean		0.015±0.023

Table S2. Review of previous estimates of the contribution of gully erosion to total erosion on the CLP: CAg is the proportion of gully areas in catchment (%); Hcs, Gcs and Dcs are the mean 137Cs inventories in the top-soil/sediment of inter-gully, gully and depositional area, respectively (Bq kg^{-1}); Scg is sediment contribution by gully erosion (%); $E_{g/h}$ is the ratio of gully erosion to topsoil erosion.

Reference	CA_g	H_{CS}	G_{CS}	D_{CS}	S_{CG}	E_g/E_h	Method
(Shi et al., 1997)	-	-	-	-	68.63	/	sediment record
(Feng, 2003)	47.00	5.30	0.02	0.98	81.32	4.90	Cs-137
(Yang et al., 2006)	54.00	-	-	-	67.60	1.77	Cs-137
(Zhang et al., 1997)	47.00	3.90	0.02	0.90	77.00	3.77	Cs-137
(Jing, 1986)	-				75.57	/	sediment record
(Li et al., 2003)	-	5.86	2.16	3.37	67.00	/	Cs-137
(Li et al., 2003)	-	-	-	-	60.00	2.15	sediment record
(Jiao et al., 1992)	50.00	-	-	-	60.00	1.50	literature reviews
(Li et al., 2008)	47.00	5.83	0.02	1.36	77.00	3.78	Cs-137
(Li et al., 2008)	33.00	3.47	0.02	1.15	67.00	4.12	Cs-137
(Li et al., 2008)	42.00	3.15	2.18	2.86	30.00	0.59	Cs-137
(Li et al., 2008)	41.60	3.59	0.00	2.25	37.00	0.82	Cs-137
Mean ± STDEV	45.20±6.53				64.01±19.02	2.60±1.48	

Table S3. Proportion of soil loss reduction by terrace (T_E) from literature review: PY is the plot year; SFE is the sloping farmland plot erosion rate (t $ha^{-1}yr^{-1}$); TFE is the terraced farmland plot erosion rate (t $ha^{-1}yr^{-1}$).

Reference	PY	SFE	TFE	T_E
(Wang et al., 2002)	8	28.66	7.15	0.25
(Zhang et al., 2008a)	3	0.33	0.19	0.58
(Xu et al., 2010)	5	7.40	3.49	0.47
(Shen et al., 2010)	4	0.60	0.30	0.50
(Cai, 2004)	5	1.17	0.37	0.32
(Lu et al., 2009)	1	20.33	4.55	0.22
(Lu et al., 2009)	1	32.92	5.19	0.16
(Yang, 1999)	3	155.70	4.92	0.03
(Zhou, 2007)	2	9.13	0.19	0.02
(Chen et al., 2006)	2	30.79	0.77	0.03
(Chen et al., 2006)	2	42.25	1.88	0.04
(Wu and Li, 1998)	4	18.70	1.00	0.05
(Zhang et al., 2008b)	9	45.16	2.11	0.05
(Fu et al., 2000)	3	8.32	0.53	0.06
(Fu et al., 2000)	3	28.56	0.97	0.03
(Fu et al., 2000)	3	2.26	0.24	0.11
Mean		27.02±37.45	2.12±2.23	0.20±0.19

Table S4. Comparison of measured and predicted erosion rates. Measurements are based on 137Cs inventories. Model predictions are based on the model developed in this study (Eq. 2): SL slope length (m); SD: slope degree (°); MeanCs: mean ^{137}Cs inventory of the slope (Bq m^{-2}); ReCs: reference ^{137}Cs inventory (Bq m^{-2}); ME: measured erosion rate (t ha^{-1} yr^{-1}); PE: predicted erosion rate (t ha^{-1} yr^{-1}).

Sample year	SL	SD	MeanCs	ReCs	ME	PE	Reference
	240	19.7	953.89	2390	57.97	114.66	(Chen et al., 2002)
1997	37	10.44	2026.89	2390	10.54	3.55	(Li and Lindstrom, 2001)
1997	180	25	827.75	2390	66.78	139.24	(Li and Lindstrom, 2001)
1998	60	8.68	1502.52	1761	13.16	17.60	(Li et al., 2007)
1998	200	19.04	891.99	1761	55.85	99.50	(Li et al., 2007)
2005	50	17	824.6	1582	44.64	41.98	(Li et al., 2009)
2005	90	25	587.34	1582	67.61	98.46	(Li et al., 2009)
	43.8	6.5			1.3	2.08	(Quine et al., 1999)
	8	3.3			0	0.41	(Quine et al., 1999)
1997	110	19.3	316.46	2250	92.50	75.30	(Wang, 2003)
1997	64	18	439.05	2250	77.43	51.75	(Wang, 2003)
1997	52	18.2	551.43	2250	66.85	47.43	(Wang, 2003)
1997	70	22.6	327.67	2250	90.90	75.60	(Wang, 2003)
1997	32	25.4	470.33	2250	74.24	59.95	(Wang, 2003)
1997	24	21.9	479.11	2250	73.38	42.33	(Wang, 2003)
1997	21	6.4	552.57	2250	66.75	7.07	(Wang, 2003)
1997	23	13.1	1160.5	2250	31.82	19.33	(Wang, 2003)
1997	70	17.9	162.15	2250	122.83	53.67	(Wang, 2003)

1997	52	13.4	610.67	2250	62.09	30.04	(Wang, 2003)
1997	33	23	168.05	2250	121.22	53.21	(Wang, 2003)
1997	37	31.6	611.69	2250	62.01	82.93	(Wang, 2003)
1997	8	27.3	629.9	2250	60.64	32.83	(Wang, 2003)
1997	105	24.6	573.45	2250	65.02	104.08	(Wang, 2003)
1997	30	21.8	641.58	2250	59.78	47.01	(Wang, 2003)
1997	103	26	537.86	2250	68.01	110.84	(Wang, 2003)
1997	15	30	257.92	2250	101.84	50.07	(Wang, 2003)
1997	39	25.9	1664.13	2250	14.57	67.87	(Wang, 2003)
1997	34	17.8	2089.61	2250	3.58	37.09	(Wang, 2003)
1997	29	12.6	2125.85	2250	2.75	20.51	(Wang, 2003)
	45	14	1930	2676.5	24.65	29.81	(Wu and Kou, 1997)
	10	1	2640	2676.5	0.07	0.15	(Wu and Kou, 1997)
	100	10	1960	2676.5	23.2	27.50	(Wu and Kou, 1997)
	100	1	2270	2676.5	11.6	2.41	(Wu and Kou, 1997)
1993	24	9.8	1250	2500	37.68	13.10	(Zhang et al., 1997)
1993	70	18.3	560	2500	80.26	55.48	(Zhang et al., 1997)
1993	23	36	440	2500	92.84	73.04	(Zhang et al., 1997)
	90	10.5	1070	2540	65.00	27.90	(Zhang et al., 1998)
	48.3	24		2540	87.10	68.27	(Zhang et al., 1998)
	76.6	19.2		2540	82.80	62.35	(Zhang et al., 1998)
	61.1	29		2540	94.90	97.37	(Zhang et al., 1998)
1992	49.23	23.98	705.2	2540	71.32	68.85	(Zhang et al., 2002)
1992	77.13	19.11	771	2540	66.46	62.13	(Zhang et al., 2002)
1992	62.29	28.94	557.2	2540	84.09	98.09	(Zhang et al., 2002)
1992	88.82	11.21	1068	2540	48.56	30.38	(Zhang et al., 2002)

Reference

Cai, X.: Benefits from Soil and Water Conservation Measures on Reducing Runoff and Sediments in Shixia Small Watershed, Resour. Sci., 26(Supplement), 144–150, 2004.

Cammeraat, L. H.: A review of two strongly contrasting geomorphological systems within the context of scale, Earth Surf. Process. Landforms, 27(11), 1201–1222, 2002.

Cerdan, O., Le Bissonnais, Y., Govers, G., Lecomte, V., van Oost, K., Couturier, a., King, C. and Dubreuil, N.: Scale effect on runoff from experimental plots to catchments in agricultural areas in Normandy, J. Hydrol., 299(1-2), 4–14, doi:10.1016/j.jhydrol.2004.02.017, 2004.

Chen, G., Fan, H., Chen, H. and Dong Guoquan: Benefits of sediment reduction of soil conservation practices in the black region of Northeast China, Sci. Soil Water Conserv., 4(6), 13–17, 2006.

Chen, S., Hua, L., He, Z., Wei, D., Xia Hou, G. and Li, Y.: Effect of soil erosion on soil properties in deep cultivated hill slope in loess plateau, Agro-environmental Prot., 21(4), 289–292, 2002.

Feng, M.: A study on responses of soil erosion and sediment yield to closing cultivation on sloping land in a small catchment using 137Cs technique in the Rolling Loess Plateau, China, Chinese Sci. Bull., 48(19), 2094–2101, doi:10.1360/02wd0589, 2003.

Foster, M. A., Gabel, S. E., Ward, T. S., Kleine, L. G., McCann, P. K. and MOORE, J.: Morphological characters as indicators of rubber content in guayule (Parthenium argentatum-Compositae), SIDA, Contrib. to Bot., 331–338, 1991.

Fu, B., Liu, Y., Lü, Y., He, C., Zeng, Y. and Wu, B.: Assessing the soil erosion control service of ecosystems change in the Loess Plateau of China, Ecol. Complex., 8(4), 284–293, doi:10.1016/j.ecocom.2011.07.003, 2011.

Fu, B. J., Zhao, W. W., Chen, L. D., Zhang, Q. J., Lu, Y. H., Gulinck, H. and Poesen, J.: Assessment of soil erosion at large watershed scale using RUSLE and GIS: a case study in the Loess Plateau of China, L. Degrad. Dev., 16(1), 73–85, doi:10.1002/ldr.646, 2005.

Fu, J., Jiang, Z., Yi, C., Zhang, W. and Wang, Y.: Studies on soil and water conservation benefit of contour hedgerows in arid hillside farmland, Tillage and Cutivation, (4), 38–40, 2000.

Gao, H., Li, Z., Li, P., Jia, L., Pang, G. and Xu, G.: Concept and calculation methods of erosion control degree: A case study of the Wangmaogou watershed, Sci. Soil Water Conserv., 11(1), 17–24, 2013.

Govers, G., Quine, T. A., Desmet, P. J. J. and Walling, D. E.: The relative contribution of soil tillage and overland flow erosion to soil redistribution on agricultural land, Earth Surf. Process. landforms, 21(10), 929–946, 1996.

Govers, G., Van Oost, K. and Poesen, J.: Responses of a semi-arid landscape to human disturbance: a simulation study of the interaction between rock fragment cover, soil erosion and land use change, Geoderma, 133(1), 19–31, 2006.

Jiao, J., Liu, Y. and Tang, K.: An approach to runoff and sediment generation of gully and intergully land in samll watershed, J. Soil Water Conserv., 6(2), 24–28, 1992.

Jing, K.: A study on gully erosion on the Loess Plateau, Sci. Geogr. Sin., 6(4), 340–347, 1986.

Li, M., Yang, J., Hou, J. and Shen, Z.: Sediment deposition process for a silt dam in a small watershed in Loess Hilly Region, Trans. CSAE, 24(2), 64–69, 2008.

Li, M., Yang, J., Hou, J. and Shen, Z.: The spatial variance of hill slope erosion in Loess Hilly Area by 137Cs tracing method, Nucl. Tech., 32(1), 50–54, 2009.

Li, Y. and Lindstrom, M. J.: Evaluating Soil Quality – Soil Redistribution Relationship on Terraces and Steep Hillslope, Soil Sci. Soc. Am. J., 65(iii), 1500–1508, 2001.

Li, Y., Poesen, J., Yang, J. ., Fu, B. and Zhang, J. .: Evaluating gully erosion using 137Cs and 210Pb/137Cs ratio in a reservoir catchment, Soil Tillage Res., 69(1-2), 107–115, doi:10.1016/S0167-1987(02)00132-0, 2003.

Li, Y., Wang, J. and Zhang, J.: Calculation of soil water erosion modulus based on RUSLE and its assessment under support of artificial neural network, Chinese J. Appl. Ecol., 17(6), 1019–1026, 2006.

Li, Y., Zhang, Q. W., Reicosky, D. C., Lindstrom, M. J., Bai, L. Y. and Li, L.: Changes in soil organic carbon induced by tillage and water erosion on a steep cultivated hillslope in the Chinese Loess Plateau from 1898–1954 and 1954–1998, J. Geophys. Res., 112(G1), G01021, doi:10.1029/2005JG000107, 2007.

Lu, G., Ban, X., Lei, Z. and Wu, X.: Benefit of Soil and Water Conservation in the Process of Harnessing a Sloping Farmland in the Black Soil Region, Northeast China, Res. soil water Conserv., 16(6), 51–55, 2009.

Nearing, M. A., Govers, G. and Norton, L. D.: Variability in Soil Erosion Data from Replicated Plots, Soil Sci. Soc. Am. J., 63(6), 1829, doi:10.2136/sssaj1999.6361829x, 1999.

Pan, J. and Wen, Y.: Estimation of soil erosion using RUSLE in Caijiamiao watershed, China, Nat. Hazards, 71(3), 2187–2205, doi:10.1007/s11069-013-1006-2, 2013.

Pang, G., Xie, H., Li, R. and Yang, Q.: Soil erosion dynamics of Zhifanggou Watershed during the past 70 years, Sci. Soil Water Conserv., 10(3), 1–8, 2012.

Parsons, A. J. and Foster, I. D. L.: What can we learn about soil erosion from the use of 137Cs?, Earth-Science Rev., 108(1-2), 101–113, doi:10.1016/j.earscirev.2011.06.004, 2011.

Qin, W., Zhu, Q. and Zhang, Y.: Soil erosion assessment of small watershed in Loess Plateau based on GIS and RUSLE, Trans. CSAE, 25(8), 157–163, 2009.

Quine, T. a., Walling, D. E. and Zhang, X.: Tillage erosion, water erosion and soil quality on cultivated terraces near Xifeng in the Loess Plateau, China, L. Degrad. Dev., 10(3), 251–274, doi:10.1002/(SICI)1099-145X(199905/06)10:3<251::AID-LDR342>3.0.CO;2-F, 1999.

Van Remortel, R. D. D., Maichle, R. W. W. and Hickey, R. J. J.: Computing the LS factor for the Revised Universal Soil Loss Equation through array-based slope processing of digital elevation data using a C++ executable, Comput. Geosci., 30(9-10), 1043–1053, doi:10.1016/j.cageo.2004.08.001, 2004.

Van Rompaey, A. J. J., Govers, G. and Baudet, M.: A strategy for controlling error of distributed environmental models by aggregation, Int. J. Geogr. Inf. Sci., 13(6), 577–590, 1999.

Van Rompaey, A. J. J., Verstraeten, G., Van Oost, K., Govers, G. and Poesen, J.: Modelling mean annual sediment yield using a distributed approach, Earth Surf. Process. Landforms, 26(11), 1221–1236, doi:10.1002/esp.275, 2001.

Schnitzer, S., Seitz, F., Eicker, a., Guntner, a., Wattenbach, M. and Menzel, a.: Estimation of soil loss by water erosion in the Chinese Loess Plateau using Universal Soil Loss Equation and GRACE, Geophys. J. Int., 193(3), 1283–1290, doi:10.1093/gji/ggt023, 2013.

Shen, Z., Gong, Y., Li, Y. and Liu, R.: Analysis and modeling of soil conservation measures in the Three Gorges Reservoir Area in China, Catena, 81(2), 104–112, doi:10.1016/j.catena.2010.01.009, 2010.

Shi, H., Tian, J.-L., Liu, P.-L. and Zhou, P.-H.: A study on sediment sources in a small watershed by using REE tracer method, Sci. China Ser. E Technol. Sci., 40(1), 12–20, 1997.

Sun, W., Shao, Q., Liu, J. and Zhai, J.: Assessing the effects of land use and topography on soil erosion on the Loess Plateau in China, Catena, 121, 151–163, doi:10.1016/j.catena.2014.05.009, 2014.

Torri, D., Poesen, J. and Borselli, L.: Predictability and uncertainty of the soil erodibility factor using a global dataset, CATENA, 31(1-2), 1–22, doi:10.1016/S0341-8162(97)00036-2, 1997.

Wang, B., Yang, Q., Liu, Z. and Meng, Q.: Changes of soil erosion intensity due to conversion of farmland to forest and grassland in Yanhe River Basin, Sci. Soil Water Conserv., 5(4), 27–33, 2007.

Wang, B., Zheng, F., Römkens, M. J. M. and Darboux, F.: Soil erodibility for water erosion: A perspective and Chinese experiences, Geomorphology, 187, 1–10, doi:10.1016/j.geomorph.2013.01.018, 2013.

Wang, X.: Study on the Characters of erosion intensity evolvement in Yangou watershed, Northwest A&G University., 2003.

Wang, X., Wei, H., He, B. and Li, Y.: BENEFITS OF COMPREHENSIVE CONTROL IN REDUCTION OF WATER AND SEDIMENT IN HEMINGGUANWATERSHED, ACTA Pedol. Sin., 39(2), 246–253, 2002.

Wischmeier, W. H. and Smith, D. D.: Predicting rainfall erosion losses-A guide to conservation planning., DC: United States Department of Agriculture, Washington., 1978.

Wu, J. and Li, Y.: Study on the relationship between different control measurement on runoff and sediment in a limestone watershed, Beijing Water, (6), 13–16, 1998.

Wu, Y. and Kou, Q.: The method of 137Cs study soil erosion in the loess gully area of east Gansu province, Bull. Soil Water Conserv., 17(5), 7–10, 1997.

Xu, Q., Wang, T., Li, Z., Cai, C., Shi, Z. and Jiang, C.: Effect of soil conservation measurements on runoff , erosion and plant production : A case study on steeplands from the Three Gorges Area , China, J. Food, Agric. Environ., 8(3-4), 980–984, 2010.

Yang, M.-Y., Tian, J.-L. and Liu, P.-L.: Investigating the spatial distribution of soil erosion and deposition in a small catchment on the Loess Plateau of China, using 137Cs, Soil Tillage Res., 87(2), 186–193, doi:10.1016/j.still.2005.03.010, 2006.

Yang, Z.: Study on Soil Loss Equation of Cultivated Slopeland in Northeast Mountain Region of Yunnan Province Yang, Bullet soil Water Conserv., 19(1), 1–9, 1999.

Zhang, J. H., Su, Z. A. and Liu, G. C.: Effects of terracing and agroforestry on soil and water loss in hilly areas of the Sichuan Basin, China, J. Mt. Sci., 5(3), 241–248, doi:10.1007/s11629-008-0189-6, 2008a.

Zhang, K., Li, S., Peng, W. and Yu, B.: Erodibility of agricultural soils on the Loess Plateau of China, Soil Tillage Res., 76(2), 157–165, doi:10.1016/j.still.2003.09.007, 2004.

Zhang, W., Zhang, X. and Zhidong, G.: Experimental Study on the USLE Model in Granite Gneiss Region of Northern Jiangsu Province, Subtrop. Soil Water Conserv., 20(4), 5–15, 2008b.

Zhang, X., Walling, D. E., Quine, T. a. and Wen, a.: Use of Reservoir Deposits and Caesium-137 Measurements To Investigate the Erosional Response of a Small Drainage Basin in the Rolling Loess Plateau Region of China, L. Degrad. Dev., 8(1), 1–16, doi:10.1002/(SICI)1099-145X(199703)8:1<1::AID-LDR240>3.0.CO;2-X, 1997.

Zhang, X., Quine, T. A. and Walling, D. E.: Soil erosion rates on sloping cultivated land on the Loess Plateau near Ansai , Shaanxi Province , China : An investigation using 137 Cs and rill measurements, Hydrol. Process., 12(February 1997), 171–189, 1998.

Zhang, X., Feng, M. and Wen, A.: Cs Technique in the Loess Plateau of China, in 12th ISCO Conference, pp. 450–455, Beijing., 2002.

Zhang, X., Long, Y., He, X., Fu, J. and Zhang, Y.: A simplified 137Cs transport model for estimating erosion rates in undisturbed soil., J. Environ. Radioact., 99(8), 1242–6, doi:10.1016/j.jenvrad.2008.03.001, 2008c.

Zhou, J.: Basic Benefits from Soil and Water Conservation in Sanchahe Small Watershed, Bullet soil Water Conserv., 27(3), 63–64, 74, 2007.