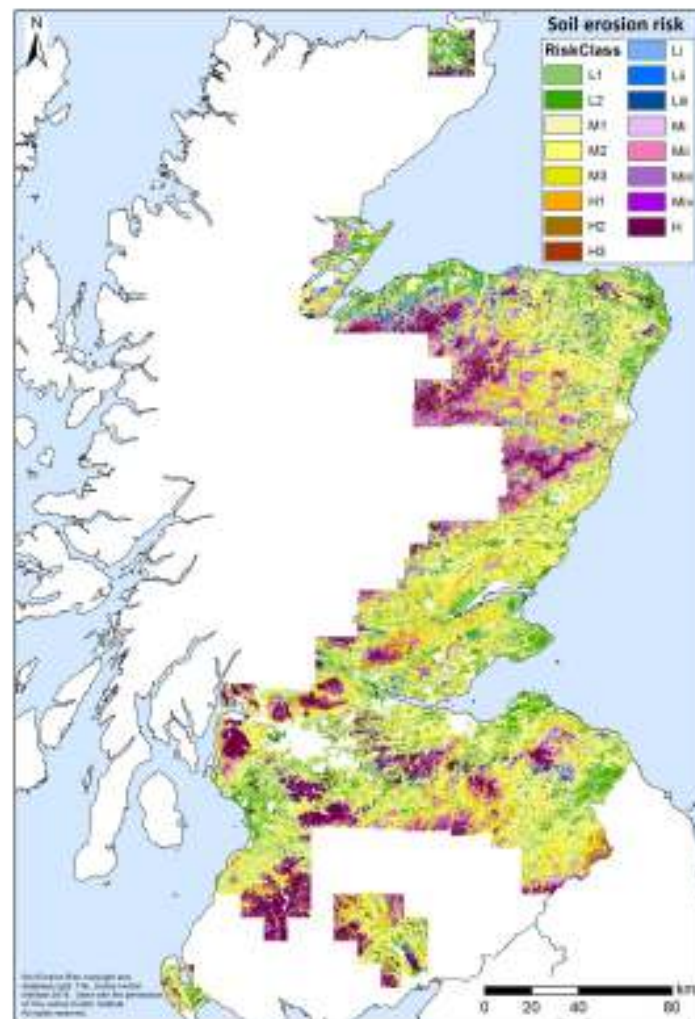


Map soil erosion risk (partial cover)

Risk map – Map of the risk of soil erosion by water.

What do I see on my screen?

The map shows the risk of a bare soil being eroded by water under intense or prolonged rainfall and primarily covers the cultivated land in Scotland. Soils with mineral topsoils have been classified separately from those with organic (peaty) surface layers.



Map legend

The risk of soil erosion is shown in 3 main classes for soils with mineral topsoils; High, Moderate or Low. The risk of erosion is greatest on coarse textured soils with a low water adsorption capacity on steep slopes. Each main class is divided into 3 subclasses (H1-3, M1-3 and L1-3) with the greater numbers in each risk class indicating a higher risk of erosion due to increases in slope, soil textures becoming more coarse and/or the soils having a lesser ability to absorb rainfall.

The risk of soil erosion for soils with organic (peaty) surfaces is also shown in 3 classes; High, Moderate or Low. The Moderate and Low erosion risk classes are divided into subclasses (Mi–iv and Li-iii) with the greater numbers (i–iv) in each risk class indicating a higher risk of erosion due to increases in slope and/or the soils having a lesser ability to absorb rainfall.

Mineral soils:

High erosion risk – the combination of soil texture, water absorption capacity and moderate to steep slopes mean that these soils are at high risk of erosion.

H3 - Coarse textured soils with low water absorption capacity on steep slopes

H2- Coarse and medium textured soils with moderate to low water absorption capacity on moderately steep to steep slopes

H1- Coarse, medium and fine textured soils with high to low water absorption capacity on moderate to steep slopes

Moderate erosion risk – the combination of soil texture, the capacity to store rainfall and almost level to steep slopes mean that these soils are at a moderate risk of erosion.

M3- Coarse, medium and fine textured soils with high to low water absorption capacity on gentle to steep slopes

M2- Coarse, medium and fine textured soils with high to low water absorption capacity on almost level to steep slopes

M1- Coarse, medium and fine textured soils with high to low water absorption capacity on almost level to moderately steep slopes

Low erosion risk – the combination of soil texture, the capacity to store rainfall and almost level to moderate slopes mean that these soils are at a low risk of erosion.

L3- Coarse, Medium and fine textured soils with high to low water absorption capacity on almost level to moderate slopes

L2- Medium and fine textured soils with moderate to high absorption capacity on almost level to gentle slopes

L1- Fine textured soils with high absorption capacity on almost level slopes. The combination of absorption capacity soil texture and slope means that this class has not been mapped

Organic (peaty) soils:

High erosion risk – Peat soils.

H- Peat soils on all slopes

Moderate erosion risk – soils with peaty surface layers that can allow a degree of infiltration and are on gentle to steep slopes.

- Miv- Soils with a peaty surface layer with a low absorption capacity on steep slopes
 - Miii- Soils with a peaty surface layer with a low to moderate absorption capacity on moderately steep to steep slopes
 - Mii- Soils with a peaty surface layer with low to high absorption capacity on moderate to steep slopes
 - Mi- Soils with a peaty surface layer with low to high absorption capacity on gentle to moderately steep slopes
- Low erosion risk** – soils with peaty surface layers that can allow a moderate degree of infiltration and on almost level to moderate slopes.
- Liii- Soils with a peaty surface layer with low to high absorption capacity on almost level to moderate slopes
 - Lii- Soils with a peaty surface layer with low to high absorption capacity on almost level to gentle slopes
 - Li- Soils with a peaty surface layer with high absorption capacity on almost level slopes

What is included in the digital dataset?

The soil erosion risk map gives information on the likelihood of a bare soil being eroded under intense or prolonged rainfall based on the intrinsic characteristics of soil texture and its ability to absorb and store rainfall as well as slope. The map shows the erosion risk for soils with mineral topsoils and those with organic surface layers in 3 classes. Each of these classes (apart from the High erosion risk class for peaty soils) is further subdivided depending on the severity or risk in each class.

How was the map & dataset created?

The susceptibility to erosion based on soil texture and capacity to absorb rainfall was combined with the slope to determine how erosive the overland flow could be with steeper slopes leading to faster runoff.

Each of the soils that occur in the Soil Map of Scotland (partial cover) dataset was assessed in terms of topsoil texture and grouped in broad categories with the more coarse textured soils being most susceptible to breaking down under intense or prolonged rainfall. The soil's ability to absorb rainfall varies depending on the soil porosity, depth to a slowly permeable layer and inherent wetness (derived from the Hydrology of Soil Types (HOST) classification (Boorman et al., 1995)). The Land Cover of Scotland map (LCS88) was used to identify which soils were likely to be uncultivated and have an organic topsoil from those that were likely to be cultivated or uncultivated and have a mineral topsoil. Where the LCS88 map showed a mixture of both semi-natural and cultivated land cover, the latter was taken to represent the land cover class. The slope characteristics were derived from the Ordnance Survey Open data 50m DTM, OS data © Crown copyright and database right (2017). The map is a 50m raster grid.

Where the soil map units were described as *complexes* (that is, more than one soil type is found in the area), the precautionary principle was applied and the soil within the complex most at risk of erosion was used to describe the whole map unit.

How is it updated?

New areas of digitised soil information will become available and the area covered by the map will be extended.

Be aware: This map is produced at a fixed scale; zooming-in does not change the resolution of the map.

Please cite as: Lilly, A. and Baggaley N.J. 2018. Soil erosion risk map of Scotland (partial cover). James Hutton Institute, Aberdeen.

Technical and reference material

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- Lilly, A & Baggaley, N.J., 2014. Developing simple indicators to assess the role of soils in determining risks to water quality, CREW project number CD2012_42.
(http://www.crew.ac.uk/sites/default/files/sites/default/files/publication/CREW_Risks%20to%20water%20quality.pdf)
- Lilly, A., Hudson, G., Birnie, R.V. and Horne, P.L. 2002. Inherent geomorphological risk of soil erosion by overland flow in Scotland. Scottish Natural Heritage Research, [Survey and Monitoring Report No.183](#).
- SSDI [Metadata](#) file

Table below shows the relationship between erosion risk for mineral soil and for peaty soils in relation to soil texture, water absorption capacity and slope.

		<i>Almost level</i>	<i>gentle</i>	<i>moderate</i>	<i>moderately steep</i>	<i>steep</i>
Texture	Water Absorption Capacity	Slope				
		0-2	2-5	5-10	10-18	18-30
Coarse	High	L3	M1	M2	M3	H1
	Moderate	M1	M2	M3	H1	H2
	Low	M2	M3	H1	H2	H3
Medium	High	L2	L3	M1	M2	M3
	Moderate	L3	M1	M2	M3	H1
	Low	M1	M2	M3	H1	H2
Fine	High	L1	L2	L3	M1	M2
	Moderate	L2	L3	M1	M2	M3
	Low	L3	M1	M2	M3	H1
Organic	High	Li	Lii	Liii	Mi	Mii
	Moderate	Lii	Liii	Mi	Mii	Miii
	Low	Liii	Mi	Mii	Miii	Miv
Peat	Low	H	H	H	H	H