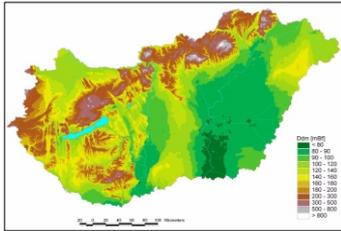


# Geological aspects of erosion vulnerability

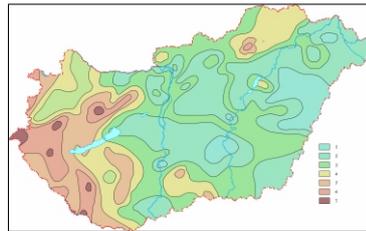
B. Kerék, P. Farkas, L. Kuti, I. Szentpétery  
 Geological Institute of Hungary  
 H-1143, Budapest, Stefánia út 14., Hungary  
 kerek@mafi.hu

Studying the geological aspects of soil erosion, three factors have crucial influence on the process: relief, precipitation and grain size distribution of the near-surface sediments. Relief could be characterised by slope angle, in the case of using the Bacsó precipitation-index, the grain size distribution of the near-surface sediments was taken into consideration on the basis of geological maps.

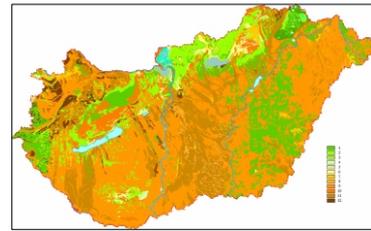
Digital elevation model



Index of precipitation



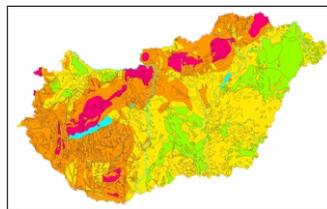
Lithology of the surface



$$EV = (Sc * Pi) + Gc$$

From the available data, the erosion vulnerability could be counted by the Farkas-formula:  $EV = (Sc \times Pi) + Gc$  (Ev: erosion vulnerability, Sc: slope category, Pi: precipitation-index, Gc: grain composition so the type and grain size of the near-surface sediments. Based on the calculated value, four erosion vulnerability categories were defined: not vulnerable, slightly-, fairly and strongly vulnerable.

Erosion vulnerability map of Hungary



Categories inducing and influencing erosion:

Level	Slope angle (%)	Index of precipitation (Pi)	Layers of grain composition (Gc)
1	0-5	< 20	solid state, boulder mass, pebbles
2	5-15	20-30	coarse sand
3	15-25	30-40	clay, peaty earth, peat
4	25-35	40-50	clayey silt
5	35-45	50-60	silt, fine sand, silt sand
6	45-60	60-70	sandy silt

Equation of factors of erosion vulnerability:  $EV = (Sc \times Pi) + Gc$

Ev value of erosion vulnerability	Level of erosion vulnerability
0-5	not vulnerable (0-5)
6-10	slightly vulnerable (6-10)
11-15	fairly vulnerable (11-15)
16-20	strongly vulnerable (16-20)

Sc: slope category  
 Pi: precipitation index  
 Gc: grain composition (classified according to frequency)

Erosion vulnerability calculation

The derived regional erosion map shows where strict soil protection rules should be adopted, but it also helps to choose the optimal branch of cultivation from environmental point of view, and to choose plants with proper surface coverage. In the future it would be useful to extend the research to the connection between the parent material and the baserock, from an erosion vulnerability point of view.



Thank you for your attention

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