# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Tronosa

**Country: Montenegro** 

**Year: 2018** 

GPS coordinates, latitude and longitude with Google Maps: 42.968747,19.836161

#### **INPUT DATA**

#### Geometric characteristics of the river basins

 $F = 29.5919 \text{ km}^2$  (Surface area of the drainage basin)

O = 27.49582 km (Length of the watershed)

 $Fv = 19.85667 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 9.73523 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 11.33772 km (Natural length of main water course)

Lb = 12.40093 km (Length of the drainage basin measured by a series of paraller lines)

# **Topograpfic characteristics of the river basins**

Contour line length - Liz [km]: ["10.42299 ","17.33215 ","19.26944 ","16.25709 ","11.98655 ","9.71556 ","5.71036 ","0.74851 "]

The area between the two neighboring contour lines - f [km²]: ["2.98664 ","4.35729 ","5.20436 ","5.85422 ","3.92314 ","3.46386 ","2.40854 ","1.35322 ","0.04063 "]

h0 = 700 m (Altitude of the initial contour)

 $\Delta h = 100 \text{ m (Equidistance)}$ 

Hmin = 622 (Lowest altitude in the drainage basin)

Hmax = 1476 (Highest altitude in the draigane basin

# Hydrological characteristics of the river basins

 $\Sigma L = 11.33772$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 10.43256 km (The shortest distance between the fountain (head and mouth))

### Water permeability

fp = 0.2021 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.0383 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.7596 (Part of the surface area of the drainage basin which is composed of the rocks of poor water permeability (heavy clay, compact eruptive))

#### Land use

fs = 0.532023983 (Part of the surface area of the drainage basin under the forest)

ft = 0.314555218 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.153420799 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

#### Meteorological data

**hb** = **157.6 mm** (Level of torrent rain)

Up (years) = 100

to = 8.9 °C (Average annual air temperature)

Hgod = 983.7 mm (Average annual quantity of precipitation)

### **Erosion coefficients**

Y = 1.1063 (Types of soil structures and allied types)

3.71 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

82.79 % (Serpentines, red sand stones, flishe deposits)

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0 % (Podzols and parapodzols, decomposed schist)
13.49 % (Solid and Schist limestone, Terra Rosa and Humic soil)
0 % (Brown forest soils and Mountain soils)
0 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.50782 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
15.34 % (Plough-lands)
1.94 % (Orchards and vineyards)
17.99 % (Mountain pastures)
11.52 % (Meadows)
31.92 % (Degraded forests)
21.28 % (Well-constituted forests)
\phi = 0.29172 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
4.63 % (Depth erosion)
4.11 % (80% of the river basin under rill and gully erosion)
3.6 % (50% of the river basin under rill and gully erosion)
3.08 % (100% of the river basin under surface erosion)
11.52 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
1.54 % (50% of the river basin under surface erosion)
1.03 % (20% of the river basin under surface erosion)
0 % (There are smaller slides in the watercourse beds)
15.34 % (The river basin mostly under plough-land)
55.15 % (The river basin under forests and perennial vegetation)
INPUT DATA
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A = 0.47290680136747 (Coefficient of the river basin form)

m = 0.58794184371746 (Coefficient of the watershed development)

**B** = 2.3862645785437 km (Average river basin width)

a = 0.68406827544024 ((A)symmetry of the river basin)

G = 0.3831359257094 (Density of the river network of the basin)

**K** = 1.0867629805148 (Coefficient of the river basin tortuousness)

 $H_{sr} = 953.84329765916$  m (Average river basin altitude)

D = 331.84329765916 m (Average elevation difference of the river basin)

 $I_{sr} = 30.901243245618 \%$  (Average river basin decline)

 $H_{leb}$  = 854 m (The height of the local erosion base of the river basin)

 $E_r = 116.55067292076$  (Coefficient of the erosion energy of the river basins relief)

 $S_1 = 0.86725$  (Coefficient of the regions permeability)

 $S_2 = 0.7242793632$  (Coefficient of the vegetation cover)

W = 1.6583702814239 m (Analytical presentation of the water retention in inflow)

 $2gDF^{1/2} = 438.93726385624 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)

 $Q_{max} = 216.22700768523 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin)

T = 0.99498743710662 (Temperature coefficient of the region)

Z = 0.47618773455425 (Coefficient of the river basin erosion)

 $W_{god} = 29899.938795429 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.28312736497123$  (Coefficient of the deposit retention)

 $G_{god} = 8465.4908839509 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god} \text{ km}^{-2} = 286.07459757403 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$ 

http://www.wintero.me