Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S1-3

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.69,57.84

INPUT DATA

Geometric characteristics of the river basins

F = 28.68 km^2 (Surface area of the drainage basin)

O = 29.16 km (Length of the watershed)

Fv = 22.22 km^2 (Surface area of greater portion of the drainage basin)

Fm = 6.46 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 7.03 km (Natural length of main water course)

Lb = 7.91 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["16.76 ","24.17 ","18.01 ","7.36 ","1.10 "]

The area between the two neighboring contour lines - f [km^2]: ["4.36 ","11.64 ","8.34 ","3.34 ","0.90 ","0.10 "]

h0 = 1700 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1611 (Lowest altitude in the drainage basin)

Hmax = 2189 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 47.7 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 6.43 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.07 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.42 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.51 (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 = 0.00 (Part of the surface area of the drainage basin under the forest)

ft = 0.98 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.02 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 36.84 mm (Level of torrent rain)

Up (years) = 100

to = 9.30 °C (Average annual air temperature)

Hgod = 343 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.09509 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

59.07 % (Decomposed limestone and marls)

3.19 % (Serpentines, red sand stones, flishe deposits)

31.18 % (Podzols and parapodzols, decomposed schist)

0 % (Solid and Schist limestone, Terra Rosa and Humic soil)

0 % (Brown forest soils and Mountain soils)

6.56 % (Epieugleysol and Marshlands)

0 % (Good structured Chernozems and alluvial well-structured deposits)

0 % (Bare, compact igneous)

Xa = 0.608 (Planning of the drainage basin, rate of drainage basin regulation)

2 % (Bare lands)

0 % (Plough-lands)

0 % (Orchards and vineyards)

98 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.63843 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

53.82 % (80% of the river basin under rill and gully erosion)

2.55 % (50% of the river basin under rill and gully erosion)

0 % (100% of the river basin under surface erosion)

0.92 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

0 % (50% of the river basin under surface erosion)

42.71 % (20% of the river basin under surface erosion)

0 % (There are smaller slides in the watercourse beds)

0 % (The river basin mostly under plough-land)

0 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.80884779516358 (Coefficient of the river basin form)

m = 0.37030606020712 (Coefficient of the watershed development)

B = 3.6257901390645 km (Average river basin width)

a = 1.0990237099024 ((A)symmetry of the river basin)

G = 1.663179916318 (Density of the river network of the basin)

K = 1.0933125972006 (Coefficient of the river basin tortuousness)

H_{sr} = 1798.7946304045 m (Average river basin altitude)

D = 187.7946304045 m (Average elevation difference of the river basin)

I_{sr} = 23.50069735007 % (Average river basin decline)

H_{leb} = 578 m (The height of the local erosion base of the river basin)

E_r = 79.502938154065 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.832 (Coefficient of the regions permeability)

S_2 = 0.804 (Coefficient of the vegetation cover)

W = 0.49343848135089 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 325.07282107248 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 86.788035237179 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.0148891565092 (Temperature coefficient of the region)

Z = 0.74784654129573 (Coefficient of the river basin erosion)

W_{god} = 20284.321540986 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.27482149177594 (Coefficient of the deposit retention)

G_{god} = 5574.5675055566 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 194.37125193712 m^3 km^{-2} god^{-1} (Real soil losses per km^2)