Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S5-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.74,57.4

INPUT DATA

Geometric characteristics of the river basins

F = 13.64 km^2 (Surface area of the drainage basin)

O = 22.84 km (Length of the watershed)

Fv = 8.43 km^2 (Surface area of greater portion of the drainage basin)

Fm = 5.21 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 8.24 km (Natural length of main water course)

Lb = 8.7 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["1.41 ","3.93 ","14.30 ","8.68 ","2.57 "]

The area between the two neighboring contour lines - f [km^2]: ["0.41 ","0.90 ","4.24 ","4.53 ","3.55 ","0.01 "]

h0 = 1100 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1069 (Lowest altitude in the drainage basin)

Hmax = 1562 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 21.98 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 6.19 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.1 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.41 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.49 (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 (Part of the surface area of the drainage basin under the forest)

ft = 0.96410 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.03590 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 33.55 mm (Level of torrent rain)

Up (years) = 100

to = 11.80 °C (Average annual air temperature)

Hgod = 303.5 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.13753 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

87.13 % (Decomposed limestone and marls)

2.95 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

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

0 % (Brown forest soils and Mountain soils)

9.92 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.61975 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

3.59 % (Plough-lands)

8.98 % (Orchards and vineyards)

87.43 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.65274 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

30.97 % (80% of the river basin under rill and gully erosion)

31.62 % (50% of the river basin under rill and gully erosion)

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

2.94 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

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

34.47 % (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 = 0.54050970873786 (Coefficient of the river basin form)

m = 0.62938312511904 (Coefficient of the watershed development)

B = 1.567816091954 km (Average river basin width)

a = 0.47214076246334 ((A)symmetry of the river basin)

G = 1.6114369501466 (Density of the river network of the basin)

K = 1.3311793214863 (Coefficient of the river basin tortuousness)

H_{sr} = 1323.8969941349 m (Average river basin altitude)

D = 254.8969941349 m (Average elevation difference of the river basin)

I_{sr} = 22.646627565982 % (Average river basin decline)

H_{leb} = 493 m (The height of the local erosion base of the river basin)

E_r = 81.657006333787 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.817 (Coefficient of the regions permeability)

S_2 = 0.80718 (Coefficient of the vegetation cover)

W = 0.44959475970996 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 261.17947449982 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 41.855856437588 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.1313708498985 (Temperature coefficient of the region)

Z = 0.79566262169514 (Coefficient of the river basin erosion)

W_{god} = 10442.905738115 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.26456693648801 (Coefficient of the deposit retention)

G_{god} = 2762.8475791662 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 202.55480785676 m^3 km^{-2} god^{-1} (Real soil losses per km^2)