

International Journal of Pharmacy and Technology, 2016, vol.8, N3, pages 14841-14852

Geomorphometric analysis of river basins in east European Russia using SRTM and aster GDEM data

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Abstract

© 2016, International Journal of Pharmacy and Technology. All rights reserved. The spatial database of geomorphometric indices with the scale of 1:200 000 was created for the first time on the basis of a basin approach for the east of the Russian Plain European part. The basins built in a semiautomatic mode on the basis of SRTM DEM and Aster GDEM were used as OTE here. Using the abovementioned DEM the basic morphometric relief characteristics such as slope, slope length, vertical subdivision, river network density, LS factor were calculated. The mean values of these characteristics were calculated for basins. Using the vectorized map of geomorphological zoning, the belonging of basins to the geomorphological areas was determined. On the basis of the obtained geographic information database the main statistics of morphometric relief characteristics are calculated, and the results are interpreted using the existing scales and classifications. The dispersion analysis method revealed statistically significant associations for a number of characteristics with geomorphological regions. The regularities of spatial changes concerning considered geomorphometric characteristics were revealed. All studies were performed on the project Russian Science Foundation (RSF) «Geography and Geoecology of rivers and river basins of the European Russia: spatial analysis, estimation and modeling».

Keywords

ASTER gdem, Relief morphometry, Russian plain, SRTM