

Research on rainstorm-induced flood risk assessment in China based on 1 km grid data

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Abstract Hazard degree of rainstorm, elevation, variation of topography, and river and lake were calculated at a scale of 1 km grid based on the 1961–2008 daily precipitation data from 560 meteorological stations in China, SRTM 90 m elevation data and 1:1 000 000 vector data of river and lake. Then rainstorm-induced flood hazard in China was assessed with weighted sum method. Degree of vulnerability of cropland area percentage, population density and GDP density at the 1 km grid scale were calculated by using 1 km grid land-use data, 1 km grid population data and 1 km grid GDP data. Then rainstorm-induced flood vulnerability in China was assessed with weighted sum method. Finally, 1 km grid rainstorm-induced flood risk in China was assessed with the risk assessment model of “Risk = Hazard × Vulnerability”. Rainstorm-induced flood risk assessment in China based on 1 km grid data can overcome the limitation of homogenized socio-economic factors in the same administrative unit, which existed in previous researches on flood risk assessment, and reveals the spatial pattern of flood risk in more detail.

Key words rainstorm-induced flood risk; flood hazard; flood vulnerability; 1 km grid data; China