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SPATIAL and temporal distribution characteristics of erosion dynamics in watersheds under the influence of different rainfall types and underlying surface

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In order to scientifically understand the spatial distribution characteristics of hydrological hydrodynamics in river basins under different conditions (land use, rainfall), the flood process of Wan'an Small Watershed was simulated by coupling the distributed hydrological model MIKE SHE and the one-dimensional hydrodynamic model MIKE11, revealing the variation characteristics of hydrodynamic parameters at different scales of main ditch and branch ditch in the basin. The results show that: (1) Different rainfall types and underlying surface conditions changed the distribution of erosion dynamics in small watershed channels, and the erosion

dynamic parameters of ditches with smaller cumulative rainfall and rain intensity decreased greater. (2) The erosion power of runoff in small watersheds is characterized by the change trend of large upstream, small downstream, large tributaries and small main ditches, and the changes in the upper and middle reaches are more drastic than those in the downstream. (3) The impact of land use change on heavy rainfall over short duration is small, and the variation of erosion dynamic parameters of main ditch is significantly greater than that of branch ditch. The research results can provide a scientific reference for the planning of soil and water conservation in the Yangtze River Basin.

Keywords: MIKE model; Model simulation; hydrological hydrodynamics; rainfall types;