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The impacts of karst background on land degradation in China

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Karst rocky desertification (KRD) is the most serious environmental, geological and ecological problem in southwestern China, and 2.22 hundred million people's producing and living have been deeply affected by it. KRD data was obtained by user–computer interactive interpreting method from Landsat remote sensing images of Guizhou in 1986, 1995 and 2000. The relation is discussed with mathematics modeling method between lithological background of carbonate rock and spatial-temporal evolution of KRD land, combining with digital-distribution data of carbonate rock assemblages types. There are the following findings :(1) the evolution process of KRD land is constrained by geological background. The evolution mode of KRD land is related to carbonate rock types and is uncorrelated obviously with its purity. The proportion of Only Change Mode and Returned Change Mode in calcareous rock combination type area is higher than in dolomite combination type area, but Progressive Change Mode is on the contrary.(2) Significant positive correlation were observed between evolution scale, evolution speed, evolution frequency and carbonate rock purity, moreover, limestone combination type area > dolomite combination type area.(3)In calcareous rock combination type area, no KRD land evolves easily to moderate KRD; But in dolomite combination type area, no KRD land evolves easily to light KRD and it must bear buffering, only then has the possibility to evolve to the strong KRD. (4) The variation of the strong KRD and extremely strong KRD is not significant in the long-term evolution process, no matter how the carbonate rocks is pure or its compose, while the variation of the light KRD and moderate KRD is remarkable.