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Desertification in the south Junggar Basin, 2000–2009: Part I. Spatial analysis and indicator retrieval

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Abstract

Desertification is a serious environmental problem that threatens ecological balance and society sustainability, and pursuit of efficient techniques for its monitoring is always highlighted. Compared to in-situ investigation, remote sensing (RS) has proved to be an efficient solution plan, particularly for large covers, whereas previous RS-based studies mostly focused on proposal and validation of various indicators for different scenarios. To comprehensively reflect desertification and project its trend, this study attempted to develop a new comprehensive RS information model, with the scenario for test deployed at the south Junggar Basin, China in the last decade (2000–2009). The premise of establishing such a model, however, is not simple, involving selection of RS images with appropriate spatial resolutions and uniform retrievals of indicators with high accuracies. To handle these fundamental problems, this Part I compared the merits and faults of MODIS and TM images in desertification characterization, by making spatial analyses including land cover patch- and pixel-scale analyses and land attribute semi-variance and

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