Atmospheric Path Radiation Map Generated from Remote Sensing Digital Image Based on Heterogeneous Surface Reflectance

Xianhua Li[1,2,3,4], Xuefeng Liu[1], Andrew Y. S. Cheng[4,5], Lihua Xu[3], Jianhua Mao[1], Wanqiu Zhang[3], Zongjing Liang[3], Ruixia Yang[3], Jun Xu[3], Hui Lin[4]

[1]Research Center of Remote Sensing and Spatial Information Science, Shanghai University, Shanghai, P. R. China, 200072
E-mail: lxhcn@yahoo.com.cn
[2]Joint Laboratory of Archaeological Remote Sensing, School of Resources, Chinese Academy of Sciences, Ministry of Education, and National Cultural Relic Bureau, Shanghai, P. R. China, 200436
[3]East China Normal University, Shanghai, P. R. China, 200062
[4]Joint Laboratory of Geosciences Information, Chinese Academy of Sciences and The Chinese University of Hong Kong, Hong Kong, P. R. China
[5]Department of Physics and Materials Science, City University of Hong Kong, Hong Kong, P. R. China

Abstract

The state of the atmospheric environment is related to the values of atmospheric path radiation in remote sensing data. As an important information resource, an atmospheric path radiation image derived from remotely sensed data can be used in many research fields. These include the research in the transmission properties of the atmosphere, the atmospheric modification of remote sensing image, the study of both regional and urban atmospheric environment, and the monitoring of the atmospheric environmental qualities. The principle and methodology for generating the heterogeneous atmospheric path radiation image are described in detail. It is based on known surface reflectance. Using remote sensing images from Shanghai City as a demonstration example, we briefly analyzed the properties of the resulting image of atmospheric path radiation.

Keywords

atmospheric path radiation, remote sensing digital image, surface reflectance, atmospheric environment, RS retrieval