FRACTION IMAGES IN MULTITEMPORAL CHANGE DETECTION

Victor Haertel1, Yosio E. Shimabukuru1 & Raimundo Almeida-Filho1

Abstract

The concept of mixed pixels allows the interpretation of remote sensing digital image data at sub-pixel level. Fraction-image data, obtained using the notion of mixed pixels, offer a potentially powerful method to detect changes in land-cover over a given period of time. This study proposes a new approach to detect land-cover changes, using two sets of fraction-image data obtained from sets of multispectral image data acquired at two different dates, over the same area. Changes based on the selected pixel components are then used to generate the fraction-change image data, including both positive (increase) and negative (decrease) changes in each component. The proposed analysis is then performed in the fraction-change space in two different ways: (1) by implementing unsupervised classification methods and (2) by comparing the fraction-change images among themselves. The proposed methodology is tested on two sets of Landsat-TM multispectral image data obtained at two different dates and covering a test area mapped in previous works. Results obtained by the proposed methodology are presented and discussed.

1Universidade Federal do Rio Grande do Sul-UFRS, Porto Alegre-RS, Brazil
2Instituto Nacional de Pesquisas Espaciais-INPE, C. P. 515, São José dos Campos-SP, Brazil