

Comparing pixel-based classification methods to detection land use changes in dryLand ecosystems, based on time series of satellite images

Kharazmi R, PhD Candidate, St. Petersburg State University, Russia

Abdollahi A A, Assistant Professor, Sahid Bahonar University of Kerman, IRAN

Panidi E A, Associate Professor, St. Petersburg State University, Russia

Karkon V M, PhD Candidate, State University of Land Use Planning, Moscow, Russia

Rahdari M R, PhD Candidate, University of Tehran, IRAN

Abstract

Actual issue of remote sensing data analysis is to design highly automated algorithms. In general case, full automation cannot be achieved due to complexity of most computational and analysis techniques. Nevertheless, automatic computations can be implemented in some special cases (e.g., when producing some standardised analytic products). In our study, we investigate the capabilities of automatic analysis of the land cover change in Eastern Iran, where the dry lands presented in significant amount and high risk of desertification exists. The study has a regional scale. We used automatic unsupervised classification technique to detect and monitor the desertification at the Sistan Basin in Iran. Currently we have designed the automatic computational algorithm and evaluated its accuracy. We used the Landsat satellite imagery of years 1990s, 2000s, and 2010s. To produce the benchmark maps of the land cover, we conducted the supervised classification with training samples, basing on our previous field observations on this area. In order to adopt unsupervised classification technique to the study context (i.e., to the features of arid lands), we used the Soil Adjusted Vegetation Index (SAVI) maps. These maps were used as the additional input data for unsupervised classification. As a result, the unsupervised classification produced three basic classes of land cover (vegetation cover, bare land and water bodies) in automatic mode, with appropriate accuracy. Produced land cover maps show the intensive decrease of vegetated areas, loss of water, and arid lands increase during the study period.

Recent Publications (minimum 5)

1. Mansour Karkon, Rasoul Kharazmi, Ali akbar Nazari Samani, Mohammadreza Rahdari, seid Hamid Matinkhah, Nasrollah Aslinejad, 2015. Monitoring of Woody Plant Changes in Western Iran using Remote Sensing and Geographical Information System (Case study: Zagros Forest), Journal of Forestry Research.
2. Kharazmi R., Panidi E.A., Karkon varnosfaderani M., 2016. Assessment of dry land ecosystem dynamic based on time series of satellite images, journal of current problems in remote sensing of the earth from space, T. 1. № 5, in Russian
3. M. Karkon varnosfaderani, Kharazmi R., Shapovalov D., Mitrofanov E, 2016. Accuracy ranking of plant cover visual photo interpretation based on vegetation indices (the Zagros mountains, west Iran are taken as an example), journal of Geodesy & aerial photography, No.4, in Russian
4. Rahdari MR, Kharazmi R, Alipur H, khosravi H, karkon varnosfaderani M, Nasiri A, 2014. Potential Assessment of rain water harvesting areas with using GIS and DSS, the GIAN Conference (Anthropogenic Changes of Environment and Landscape in Arid and Semi-Arid Regions).
5. Kharazmi R, Chaban LN, 2015. Analysis of ecosystem dynamics in the Sistan Basin on basis of multispectral space imagery processing results, journal of Geodesy & aerial photography, No.4, in Russian



Biography (150 word limit)

Rasoul Kharazmi was born in Kerman, Iran, in 1986. He received the Bsc degree in natural resources from the University of Zabol, Zabol, Iran, in 2009, and Msc degrees in Information system and technology from the Moscow state university of geodesy and cartography (MIIGAiK), Russia, in JUN 2014. At the moment he is PhD candidate in Geoinformatics in St. Petersburg State University (SPBU) from SEP 2014.

Email:

KharazmiRasoul@Gmail.com

Notes/Comments: