Classification of Environmental Sciences Based on Remote Sensing Technology

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DESCRIPTION

Image classification techniques play a vital role in categorizing the pixels of remotely sensed images into various land cover classes. Pixels of remotely sensed images are classified into a different field like agriculture, urban, forest, water resources, grassland, industrial zones, residential zones etc. This kind of process is also called land cover mapping. Remote sensing image classification techniques is required for the purpose of extract information for thematic map creation, field surveys, disaster management, effective decision making, spatial data mining, and digital satellite image interpretation. Band Reflection Phenology Index (BRPI) method is proposed to classify the level 1 Landsat 8 imagery land covers. This method also classifies the Advanced Space borne Thermal Emission and Reflection Radiometer (ASTER) hyper spectral imagery environments.

These two study territory is used for segmentation and environment change analysis in the proposed work. Landsat 8 takes the entire earth imagery in 16 days cycle. Eleven bands are used to take the surface. Landsat 8 (OLI+TIRS) imagery is collected for environmental analysis and classification process. This multispectral image helps to classify the surface using phenology aspect. The datasets are procured from the Earth explorer. Advanced Space borne Thermal Emission and Reflection Radiometer (ASTER) is a multispectral resolution satellite that has 14 bands and 15-meter resolution. The imagery using surface studies, global change detection and calibration studies. This ASTER dataset is freely available for research purposes and is most useful for analysis and mapping process.

Landsat 8 and ASTER imagery has been collected from the United States Geological Survey Department Landsat Program. Geo referencing Tagged Image File Format (GeoTIFF) image has been used for the analysis process. Fool proof classification is the most significant property for environment change analysis and the classification accuracy related to the suitable imagery selection process. Band ratio phenology index method bonded with high resolution hyper spectral imagery classification to distinguish earth surface and it relies upon the supervised imagery classification. The BRPI method has various processing steps such as procurement, study area determination, band combination BRPI formulation and accuracy assessment.

The study area has taken as the imagery with more number of sensors and various resolutions. So, the layer stocking is essential to combine the needed band imagery. Geometric corrections were performed in the imagery to avoid geometric distortions from the satellite dataset. It is performed to enhance image visualization quality. The need for geometric correction is decided on the satellite imagery visualization.

CONCLUSION

Primary coordinate transformation method is used in the proposed approach to rectify the geometric distortions on imagery dataset. The possibilities of cloud occurring in satellite image dataset. First one is satellite and sun elevation is different but the shadow occurs on the imagery. Second type is sun and satellite elevation is partially equal than the cloud occurs on the satellite imagery. The Sun elevation and azimuth angle is verified from the meta data file. If the satellite elevation is not equal to sun elevation, then no need to perform the cloud removal operation. The reflection values are directly computed. Band Reflection Phenology Index methodology is proposed to work on passive sensor satellite imagery. green, red, near infrared bands are having various spectral reflectance esteems. High BRPI values denote the dry and buildings. Water bodies absorb the radiation from the source energy. So, the level of reflection is deficient in water bodies and moisture areas.