The 36th International Symposium on Remote Sensing of Environment,
11 – 15 May 2015, Berlin, Germany, ISRSE36-457

Dynamic soil erosion assessment using NDVI variations for the USLE´s C factor

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THEME: Forests, biodiversity and terrestrial ecosystems

KEY WORDS: Soil erosion, USLE, NDVI variability

ABSTRACT:

Eutrophication of rivers and lakes is a major environmental concern in recent years. Resulting of the evidence of an eutrophication process in the Montebello Lakes area in southern Mexico close to Guatemalan border developed in a karstic area, a project to determine the eutrophication level and the potential sources of pollution has been carried out along the Comitán river basin. Besides the monitoring campaigns for water and soil samples, detailed land use/land cover maps are necessary for erosion and nonpoint pollution sources modelling.

Due to the climatic intra an interannual variations and vegetation and agriculture dynamics, a series of NDVI images derived from SPOT 5 and 6 satellites are evaluated in order to assess the amount of change of vegetation cover and its influence in the soil erosion model combined with very detailed digital elevation model and soil maps. Since optical remote sensing imagery is usually taken during the dry season, images are analyzed before and after the rainy season (February to May and November to February) along with daily precipitation data and erodability data from a soil map resulting from geomorphological and soil profiles analysis in a GIS environment.

It is expected that the use of satellite an ancillary data can contribute to a continuous monitoring of the environmental conditions of the basin and also support spatial models for prediction and control of the eutrophication.