LANDSLIDE SUSCEPTIBILITY MAPPING BY MULTI-TEMPORAL RADAR SATELLITE IMAGES AND LOGISTIC REGRESSION MODEL

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ABSTRACT

Radar satellite images have been used to determine landslides with some methods such as DInSAR, PSInSAR, SBAS..., However, radar images can detect only landslide locations. For accessing landslide risk, Radar images were used as an input data. Logistic regression model was used to model the risk of landslide. The input data includes 15 ALOS PalSAR-1 satellite images from 2007 to 2010 and Sentinel -1 images from 2014-2017. With 15 ALOS-PalSAR-1 images, the landslides can be detected and used as one input layer. The other data layers are map layers created by geographic information systems GIS such as geological maps, land cover map, slope map. By using of logistic regression models, we have built a landslide susceptibility map. Sentinel-1 data with 20 images were also processed to determine the landslides location in the period of 2014-2017 which is used to validate the landslide risk model and achieve good accuracy.

ANALYSIS OF SPATIAL AND TEMPORAL CHANGES OF COASTAL WETLAND IN THAI THUY DISTRICT, THAI BINH PROVINCE USING REMOTE SENSING AND GIS

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ABSTRACT

The coastal wetland of Thai Thuy district, Thai Binh province located in the Red River Delta Biosphere Reserve, characterized ecosystem of mangroves on the tidal delta. In recent years, the process of encroaching sea dikes, developing ecotourism, aquaculture of local people together with the impact of nature has significantly changed the area of wetland ecosystem, especially mangroves forest.

Based on analysis satellite images collected in various periods and GIS techniques, maps of wetland ecosystem types of the Thai Thuy coastal wetland in years of 2000, 2010 and 2018 that were established. Areas of each wetland types in each of above periods were calculated. Spatial and temporal changes of these wetland ecosystems were studied also. Study results show that wetland ecosystems, especially mangrove forest were changed on morphology, areas, and spatial distribution under influent of natural evolution and anthropogenic impacts. The results are also the basis for the establishment of models for sustainable use of estuary coastal wetlands that are available to each periods of ecological succession as well as the development of conservation planning in this area.