

USING REMOTE SENSING PRODUCTS FOR ENVIRONMENTAL ANALYSIS IN SOUTH AMERICA

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ABSTRACT:

Land cover plays a major role in many biogeochemical models that represent processes and connections with terrestrial systems; hence, it is a key component for public decisions in ecosystems management. The advance of remote sensing technology, combined with the emergence of new operational products, offers alternatives to improve the accuracy of environmental monitoring and analysis. This work uses four remotely sensed databases: the GLOBCOVER, the Vegetation Continuous Field (VCF), MODIS Fire Radiative Power (FRP) and the Tropical Rainfall Measuring Mission (TRMM). The objective of this study is to analyze the environmental characteristics in South America from 2000 to 2005 using these four remotely sensed databases. Initially, GLOBCOVER was assessed based on VCF product, and was afterwards analyzed for its quantitative and spatial distribution of the fires with the FRP database. The results show that GLOBCOVER has a tendency to overestimate forest classes and to underestimate urban and mangroves areas. The fire quantification on GLOBCOVER product shows that the highest incidence of fires can be observed in the deforestation arc, located in the Amazon forest border, with vegetation cover composed mainly of broadleaved evergreen or semi-deciduous forest. A time series analysis of FRP database indicates that biomass burning spreads to areas of broadleaved evergreen or semi-deciduous forest and savannah regions, even with rainfall anomalies observed with TRMM database. We suggest to improve the map of vegetation and urban areas and to use other products derived from satellites, such as the images of City Lights, created out of data from the Defence Meteorological Satellite Program (DMSP).

TOPIC: Remote sensing applications

ALTERNATIVE TOPIC: Remote sensing applications