Geophysical Research Abstracts,
Vol. 10, EGU2008-A-07706, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-07706
EGU General Assembly 2008

Forest vegetation-climate feedback regimes derived from satellite remote sensing data

M.Zoran

National Institute of R&D for Optoelectronics, Remote Sensing Department, PO Box MG-5, 76900 Bucharest-Magurele, Romania; (mzoran@inoe.inoe.ro;Fax/Phone : +40-21-4574522)

Vegetation and climate interact through a series of complex feedbacks, which are not very well understood.The patterns of forest vegetation are largely determined by temperature, precipitation, solar irradiance, soil conditions and CO2 concentration. Vegetation impacts climate directly through moisture, energy, and momentum exchanges with the atmosphere and indirectly through biogeochemical processes that alter atmospheric CO2 concentration. Changes in forest vegetation landuse-landcover alter the surface albedo and radiation fluxes, leading to a local temperature change and eventually a vegetation response. This albedo (energy) feedback is particularly important when forests mask snow cover. Forest vegetation-climate feedback regimes are designated based on the temporal correlations between the vegetation and and the surface temperature and precipitation. The different feedback regimes are linked to the relative importance of vegetation and soil moisture in determining land-atmosphere interactions. The spatio-temporal dynamics are assessed in terms of the NDVI-surface temperature correlations.Observed vegetation feedbacks on temperature and precipitation are assessed based on Landsat TM, ETM ,MODIS and IKONOS satellite data across the forested areas in North/Eastern part of Bucharest town, Romania for a period of 1986 -2006 period.The computed feedback parameters can be used to evaluate vegetation-climate interactions simulated by models with dynamic vegetation. Specific aim of this paper is to assess the forest vegetation-climate feedbacks on forest ecosystem and its biodiversity as well as on adjacent environment areas and to provide early warning strategies on the remote sensing spectral information basis.