Geophysical Research Abstracts, Vol. 8, 00696, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00696

ENSO influences the leaf appearance dates of boreal forests in central Siberia

S.M. Vicente-Serrano (1,2), N. Delbart (1,3), T. Le Toan (1), M. Grippa (1)

(1) Centre d'Etudes Spatiales de la Biosphère, France, (2) Instituto Pirenaico de Ecología, Spain, (3) Ecosystem Change Research Group, JAMSTEC Frontier Research Center for Global Change, Japan. (svicen@ipe.csic.es/Phone: +34976716034)

The role of the El Niño-Southern Oscillation (ENSO) on the interannual variability of the leaf appearance dates of boreal forests in the Northern hemisphere (1982-2004) is analysed. The leaf appearance dates were obtained from Remote Sensing data using the Normalised Difference Water Index (NDWI) from SPOT-VEGETATION (VGT). This index has the advantage of separating the phenology from the snowmelt signal. An increase in the NDWI, built from a combination of near and middle infrared bands, can be uniquely attributed to the leaf appearance. The methodology used to measure phenology before 1998 relies on the fact that both SPOT-VGT data and Pathfinder AVHRR Land (PAL) data are available in 1998-2001. For each pixel and each year (1998-2001, except 1999), the NDVI value from the PAL dataset at the leaf appearance date derived using SPOT-VGT is recorded. Then, the three NDVI values are averaged to give a threshold value specific to each pixel. We have found significant negative correlations between the ENSO, quantified by means of the Southern Oscillation Index (SOI), and the leaf appearance dates in central Siberia with up to 9 months lag. The correlations between leaf appearance dates and summer Sea Surface Temperatures (SST) show a pattern that resembles the ENSO phenomena with positive and significant correlations in the East pacific and negative in the West. These findings are explained by the role of SOI on Sea Level Pressures, 500 hPa Geopotential and the wind flow direction and intensity during the months of leaf appearance (April and May) and on average temperatures, which determine noticeably the date of leaf appearance.