

Recent Signal of Vegetation Change in Siberia Using Satellite Data

Hidetaka Sakai[1]; Rikie Suzuki[2]; Akihiko Kondoh[3]

[1] Life and Earth Sci., Chiba Univ.; [2] FRCGC, JAMSTEC; [3] CEReS, Chiba Univ.

<http://dbx.cr.chiba-u.jp/>

Global vegetation index data based on the observation of the satellite NOAA from 1980's enabled us to analyze the vegetation change over continental-scale regions for 20 years and more. An increasing trend of vegetation in boreal forests has been reported by some previous studies. Since the signal of such trend in the vegetation is probably apparent in the ecotone, detailed investigation should be required in the region of ecotone.

This study targeted the ecotone from the boreal forest to the tundra in eastern Siberia, and examined the 19-year (1982 to 2000) trend of the satellite-derived vegetation index by using two kinds of parameters, i.e., the annual accumulative NDVI (SigmaNDVI) and the annual maximum NDVI (MaxNDVI). As a result, we confirmed that SigmaNDVI showed an increasing trend in the boreal forest as previous studies pointed out. By contrast, an increasing trend of MaxNDVI was found over the region to the north of the boreal forest (transitional zone between the boreal forest and the tundra).

This suggests that signals due to the biomass increase or the vegetation change occurred in the region are detected. The trend of the surface air temperature (15-year from 1986 to 2000) and the snow cover (19-year from 1982 to 2000) over this transitional zone was examined. Consequently, an advancing trend of the snow thaw timing and warming trend in air temperature in spring and summer were detected. These results delineate that the increasing trend of MaxNDVI is a vegetation response to the global warming.