

Spatial distribution pattern of willows in Indigirka river lowland of northeast Siberian Arctic

*Tomoki Morozumi¹, Rong Fan¹, Ryo Shingubara¹, Shinya Takano¹, Ruslan Shakmatov¹, Shunsuke Tei², Hideki Kobayashi³, Rikie Suzuki³, Trofim C Maximov^{4,5}, Atsuko Sugimoto^{6,1}

1.Graduate School of Environmental Science, Hokkaido University, 2.NIPR, 3.JAMSTEC, 4.IBPC SB RAS, 5.BEST center, NEFU , 6.Faculty of Earth Environmental Science, Hokkaido University

A warming climate and longer growing season may lead higher primary production and expansion of deciduous tundra shrubs in the arctic. Willows and alders are dominant plants in riparian ecosystem, which is frequently disturbed by river flooding. Because of their high productivity, carbon assimilation in this ecosystem is expected to be important. However, willows distribution and primary production have not be fully understood yet. Willows dominate large area of the floodplain of Yana-Indigirka-Kolyma river lowland in northeast Siberian Arctic. We investigated distribution patterns and NDVI of willows in the Indigirka River floodplain using satellite image classification and GIS.

High resolution vegetation map and satellite derived NDVI were obtained from a WorldView-2 satellite image (10 x 10 km) based on the field observations in July 2013 near Chokurdakh (70°N, 148°E). The willow distribution pattern corresponding to a distance from the river was analyzed. The willow covers 1/6 of lowland in local scale, and showed large extent along mainstream of the Indigirka River. This implies that large area along the main stream is affected by spring flooding, and willows cover this area. Besides, the area covered by willows showed the highest NDVI among the vegetation classes. These results mean the willow vegetation along the main stream and tributaries may greatly affect the primary production in river lowland of northeast Siberian Arctic.

Keywords: vegetation, floodplain, NDVI, GIS