MODELING OF NET ECOSYSTEM EXCHANGE (NEE) AT WETLANDS APPLYING REMOTE SENSING

Key words: backscattering coefficient, ENVISAT ASAR, Landsat 8 OLI, NEE, Sentinel-1A, soil moisture, TerraSAR-X, vegetation water content

Summary

The article presents results of the study on modeling Net Ecosystem Exchange (NEE) in the wetland ecosystem using remote sensing and in-situ data. The study has been conducted in Biebrza Valley for the years 2011–2015. The analysis of application of optical and microwave images for the assessment of vegetation-moisture conditions influenced carbon exchange has been performed. The impact of soil moisture and type of vegetation habitat on CO₂ flux in wetland ecosystems has been analyzed to develop NEE models. Soil moisture (WG) and vegetation water content (WR) have been correlated with backscattering coefficient (σ°) calculated from the signal registered by microwave satellites in different wave polarization. The research was focused on the assessment of carbon balance in time and space taking into account vegetation cover and soil moisture derived from satellite data. The research is important for monitoring wetland ecosystem.