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Multiyear Dynamics of Remotely Mapped Characteristics of Ecosystems in Northern Eurasia

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The climate change of the last decades has to be reflected in the ecosystems dynamics. By investigating the ecosystem dynamics one can get the information about climate change. One of the most suitable source of information about ecosystem dynamics is remote sensing satellite data. We used EOS multispectral images, gravimetric data of the GRACE satellite, and AURA satellite contents of sulfur dioxide data for the period of the last ~20 years. Daily and 8 days composites of different quantitative characteristics, reduced to the spatial resolution 1x1 km, were retrieved from standard products and raw data: - the daily averaged land surface temperature; - the duration of vegetation (the period of year when a land surface temperature is higher than $+10^{o}C$); - the Enhanced Vegetation Index (EVI); - the effective water layer thickness (EWLT) according satellite gravimentry); - the concentration of sulphur dioxide in atmosphere. The speed of each characteristics change was estimated and mapped by using linear regression. As the result, the regular chain of isometric domains of land surface temperature rising and decreasing was noticed from the West edge to the East edge of Northern Eurasia. The presence of this chain was the reason to express hypothesis about more complex structure of the modern atmospheric circulation and interaction between the Ferrel and the Polar cells. Additionally we have noticed that domain of the land surface temperature growth at the Northern part of West Siberia coincides with decreasing of EWLT. We interpreted this phenomena as result of permafrost degradation.