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**Title Prof.**

**Last Name of PRESENTING Author Tishkov**

**Middle Name or initials of PRESENTING Author A.**

**First Name of PRESENTING Author Arkady**

Country of PRESENTING Author Russia

Institution, organization or general address Institute of Geography, RAS

Theme -Theme 1: Design, Optimization and Implementation of the Observing System

Theme 2: Observing in Support of Adaptation and Mitigation

Author list (in order) Tishkov Arkady\*; Belonovskaya Elena and Krenke Alexander

Poster title (brief) National, regional, and local levels for assessment of actual anthropogenic transformation of Russian Arctic ecosystems

Abstract - text box

For three levels (national, regional and local) for assessment of actual anthropogenic transformation of ecosystems of the Arctic zone of Russian Federation was presented. The analyses was held with the help of surface surveys, remote sensing and information-statistical technologies.

The island Kolguev was chosen as a local level object where for nearly 25 years the Institute of Geography RAS is conducting complex investigations. It was shown, that in the XXI century multidirectional processes of the dynamic of the vegetation cover take place there. Mostly these processes deal with climatic changes, with so called “greening” (distribution of *Salix* sp. and *Betula nana* bushes). From the beginning of the XXI century anthropogenic factors (intensive reindeer grazing) also influence the vegetation dynamic. But after 2012 the mass death of reindeers was happened and restoration of vegetation has been revealed by remote sensing. First of all, areas of degraded sands have overgrown.

On the regional level multiscale and multidirectional processes of anthropogenic transformation and restoration of Arctic vegetation have been identified by remote sensing. In the most Arctic regions of Russia, the area of degrading ecosystems prevails over the area with restored communities. The proportion of areas with a stable state of vegetation (unchanged during the period 2000–2018) ranges from 60% (Kola Peninsula) to 98% (Chukotka). A relatively favorable situation (above 95% of territories with stable and recovering cover) was noted for the Arkhangelsk and Magadan regions. Yakutia, the Nenets and Yamalo-Nenets okrugs have growing trends in transformed territories. The most catastrophic situations in absolute measure are noted in Tyumen region, Komi Republic and Krasnoyarsk Territory (200-300 thousand km<sup>2</sup> each). Murmansk Oblast (about 37%), Republic of Karelia (about 18%), Tyumen Oblast, and Komi Republic (about 15.5%) are the leaders in terms of relative indicators.

At the subglobal (national) level, the scale of climatogenic and anthropogenic transformation of ecosystems about 300 thousand km<sup>2</sup> was estimated for the Russian Arctic and adjacent subarctic territories. This is comparable in area with the area under synergistic effect of climate warming and economic activity - the area of “greening” of the Russian Arctic.