Supplementary material.
Section A. Dynamics of climatic variables and indices.

Meteorological stations:
Nadym (65°32’N, 72°32’E, 7 m a.s.l.**), Nyda (**66°37’N, 72°57’E, 10 m a.s.l.**), Novy Port (**67°41’N, 72°52’E, 12 m a.s.l.**)**

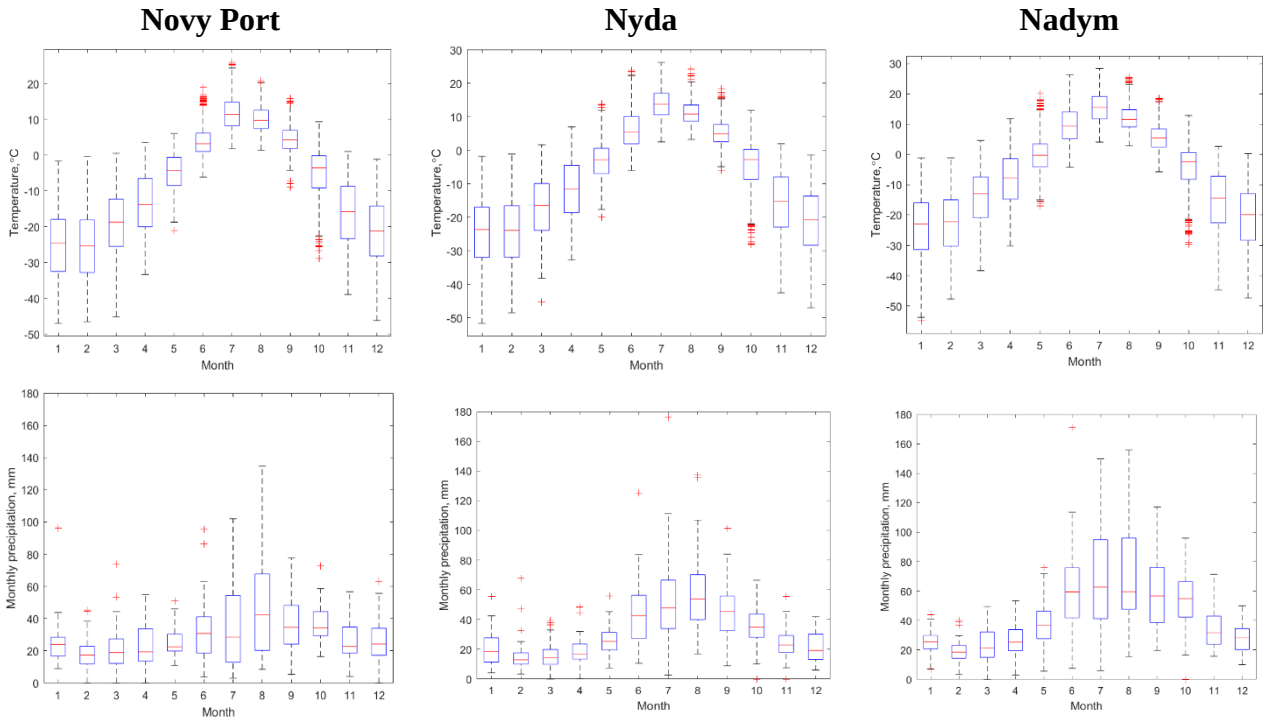


Fig. SA1. Seasonal cycles of monthly temperature and precipitation over 1966-2010. Red risks denote median values, bottom and top edges of boxes are 25th and 75th percentiles.

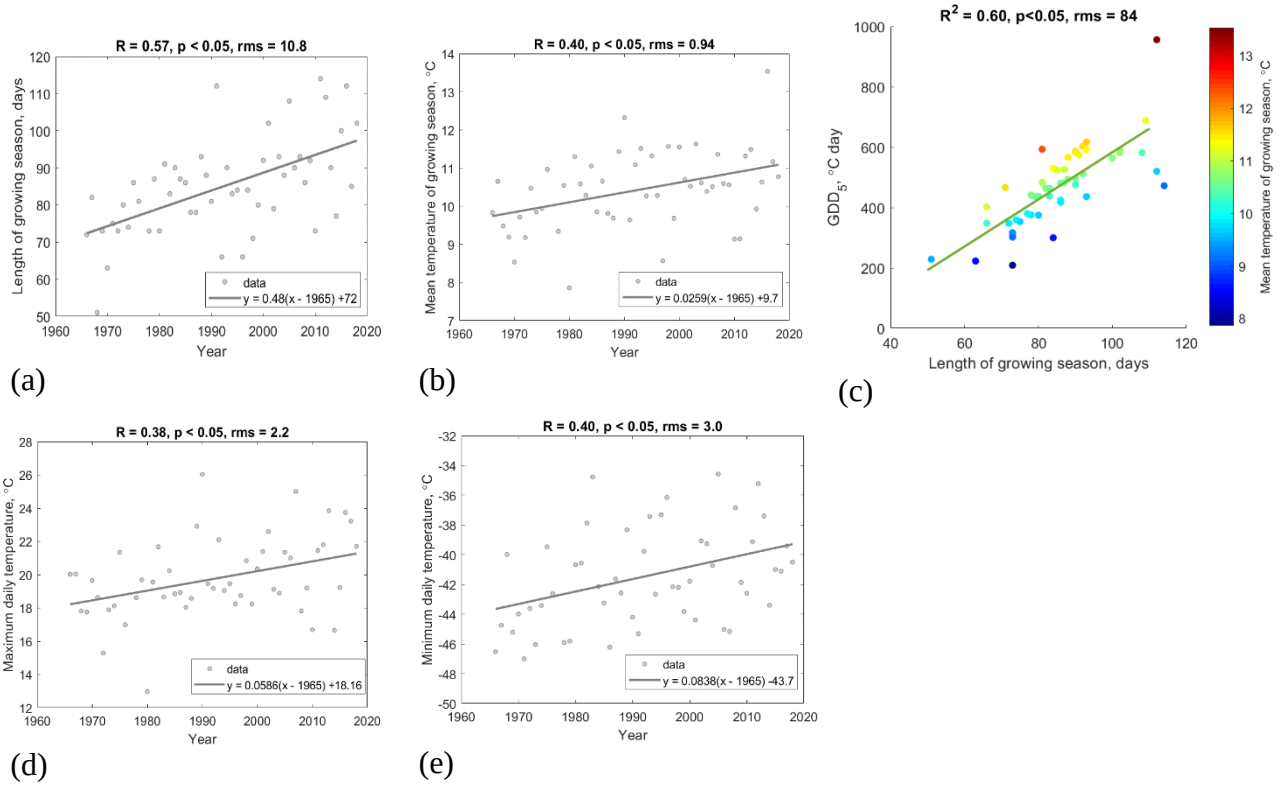


Fig. SA2. Long term-trends, Novy Port: length of growing season (a), mean temperature of growing season (b) minimum daily temperature (d), maximum daily temperature (e); correlation of growing degree-days with the length of growing season (c), color scale – mean temperature of growing season.

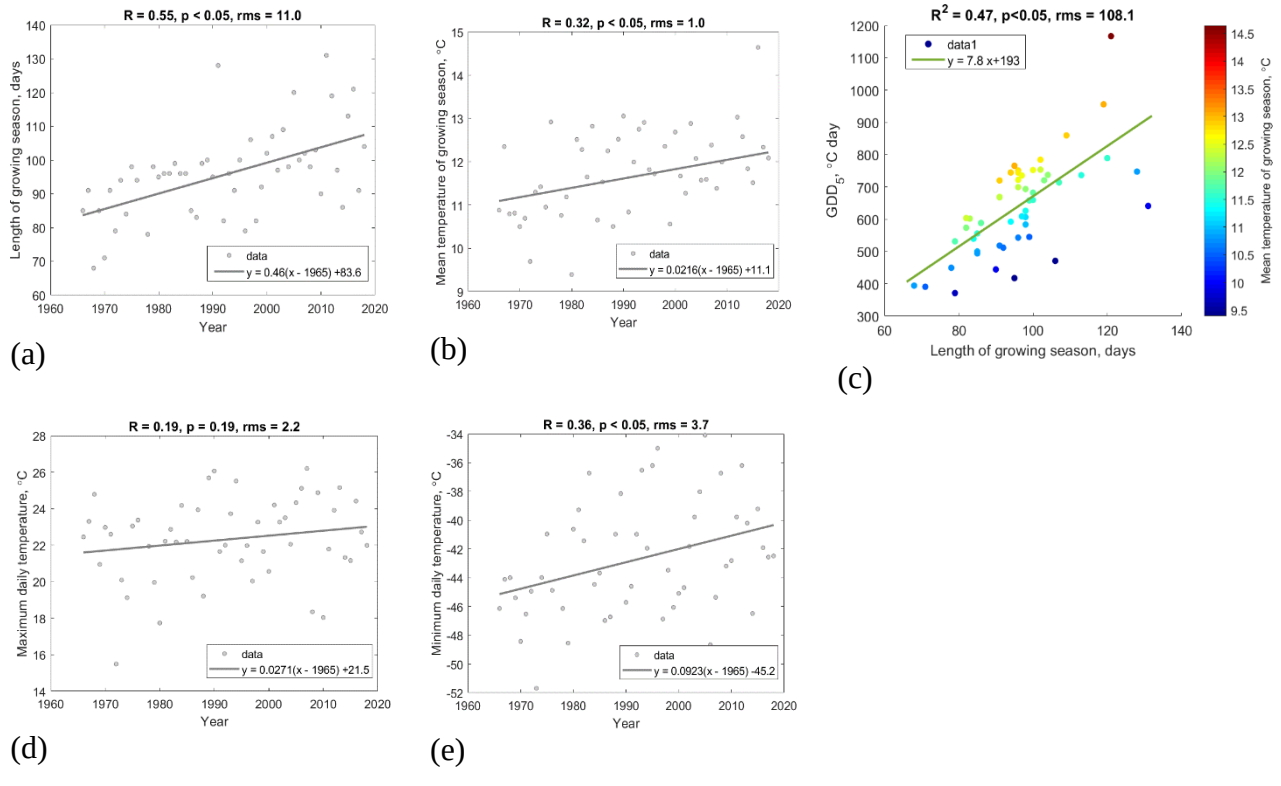


Fig. SA3. Same as SA2, for Nyda.

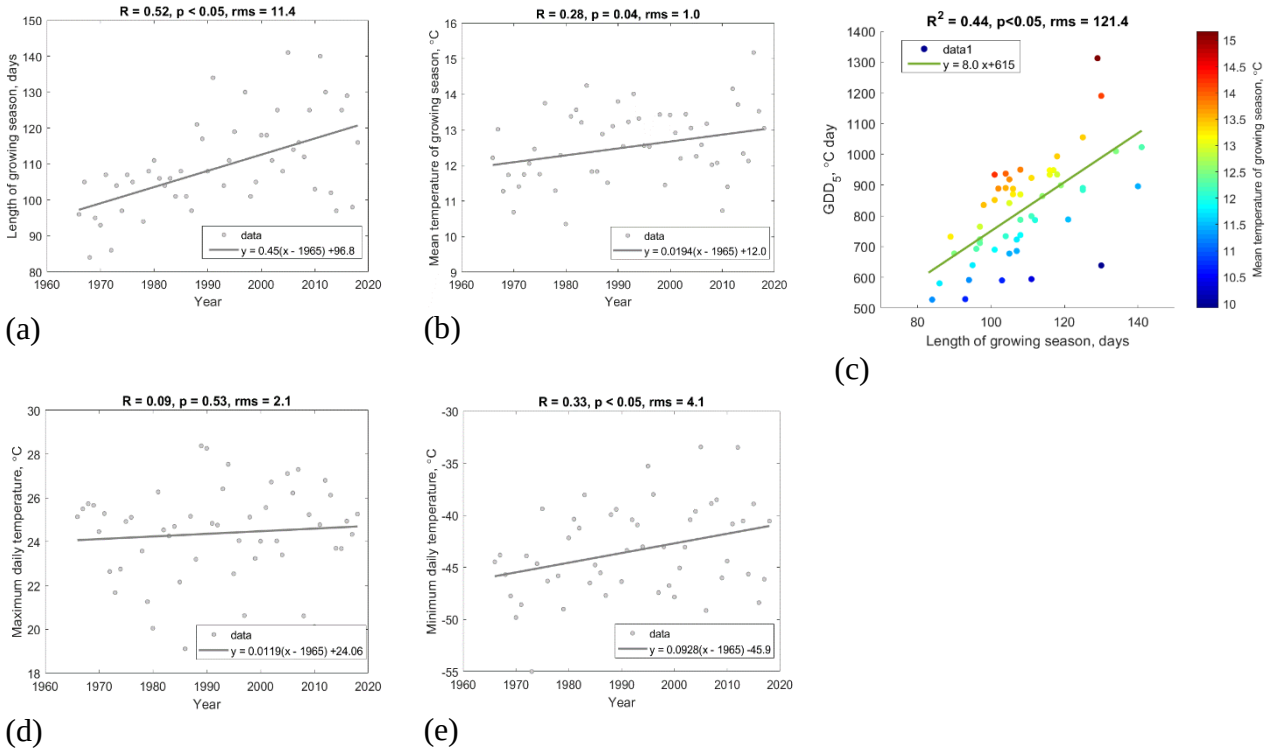


Fig. SA4. Same as SA2, for Nadym.

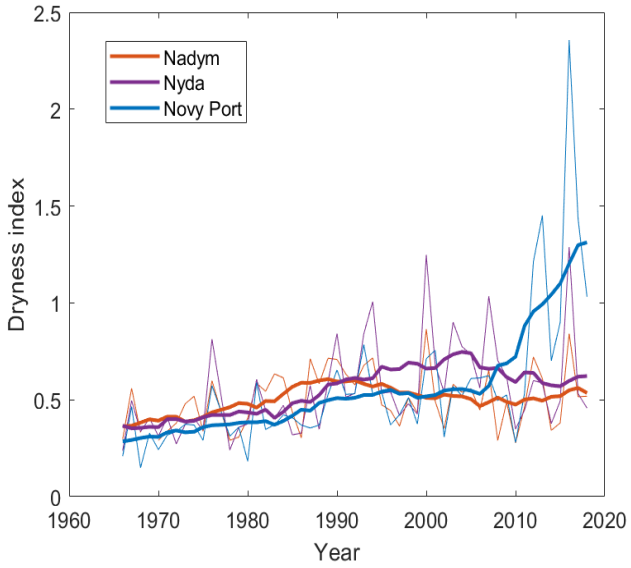


Fig. SA5. Dryness index, the ratio between potential evaporation and precipitation.

Section B. Qualitative assessment of vegetation dynamics based on remote sensing.

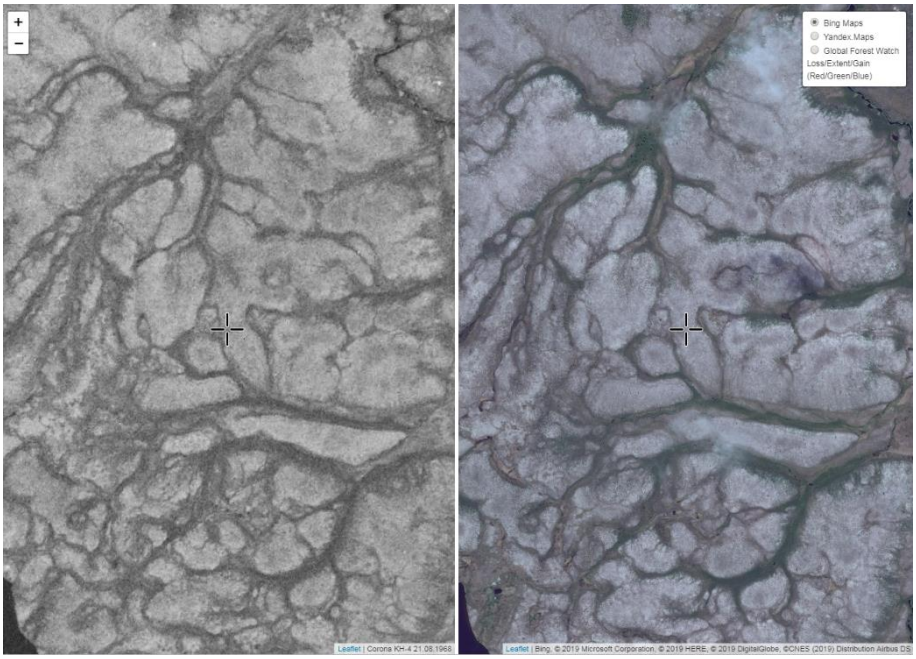


Fig SB1. Background conditions – no dynamics, reference site 9 in geoportal NC50 (left panel – Corona/KH-4b, 1968, right panel – Bing Maps layer (Aerial), 2016). © Microsoft.

Fig. SB2. Afforestation of the river valleys, reference site 12 in geoportal *NC50* (left panel – Corona/KH-4b, 1968, right panel – Bing Maps layer (Aerial), 2016. © Microsoft.

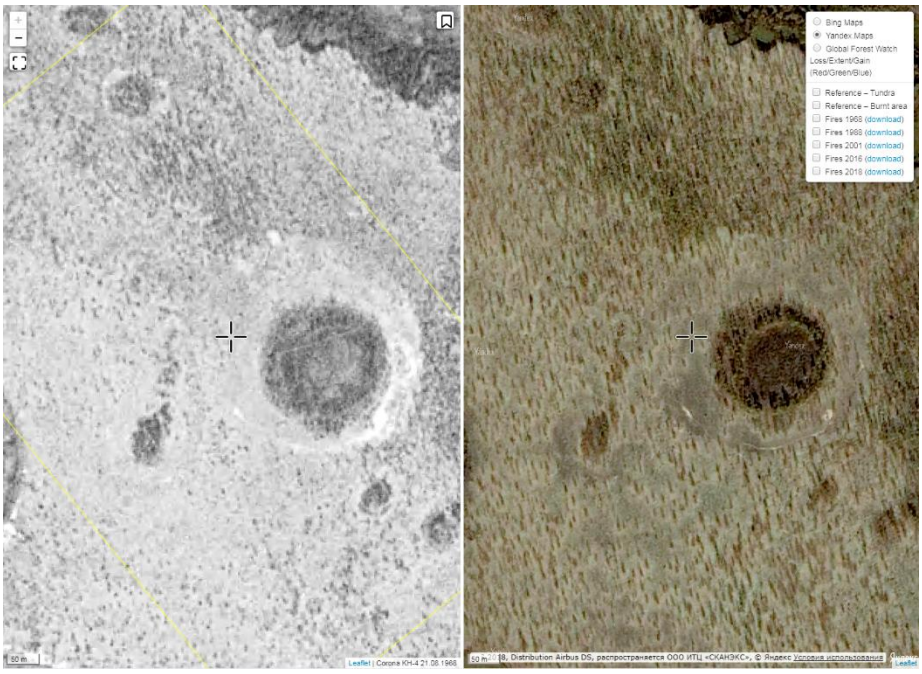
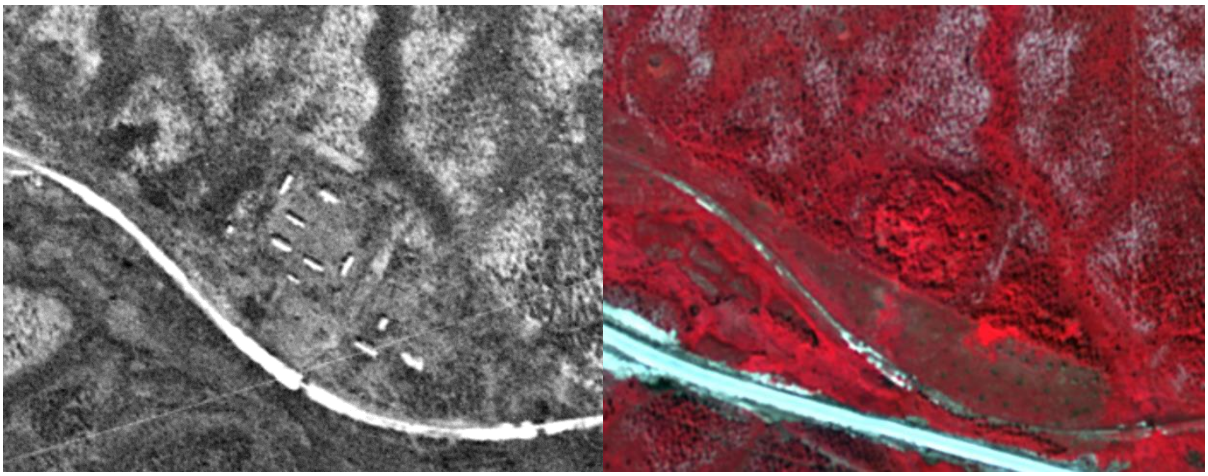


Fig. SB3. Active afforestation of the suffosion sinkholes, reference site 19 in geoportal *NC50* (left panel – Corona/KH-4b, 1968, right panel –Yandex.Maps layer, 2017).

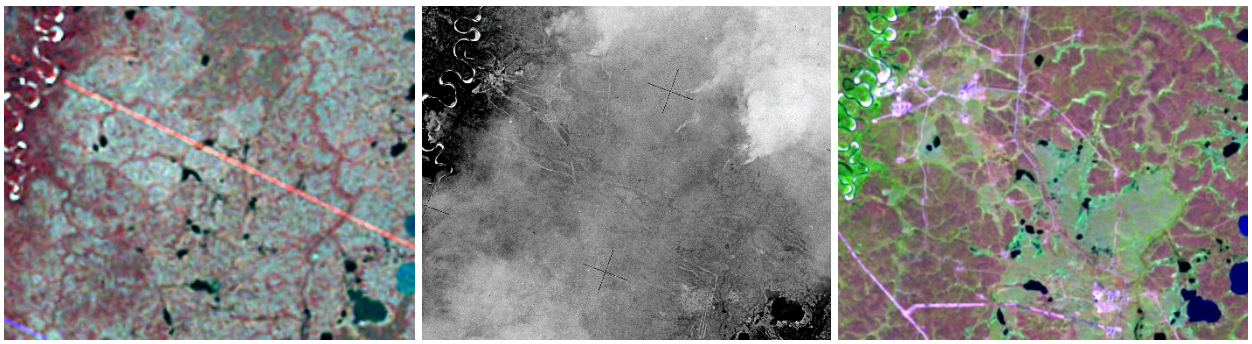


a *b*

c

Fig. SB4. Afforestation of the former railway road «Salekhard-Nadym», reference site 20 in geoportal *NC50* (a – Corona/KH-4b, 21/08/1968; b – «Resurs-P», 04/07/2016; c – photo taken by Unmanned Autonomous Vehicle DJI Phantom, 11/06/2019).

Section C. Fire hot spots assessed by remote sensing.



a *b* *c*

Fig. SC1. Fire on the territory of Medvezhye field. Images: a – undisturbed territory, Landsat (1973); b – hot spots visualized using data from Hexagon/KH-9 (path DZB1212-500073, date – 23.07.1976, resolution 6-8 м), c – burned landscape, Landsat-5 (1987).

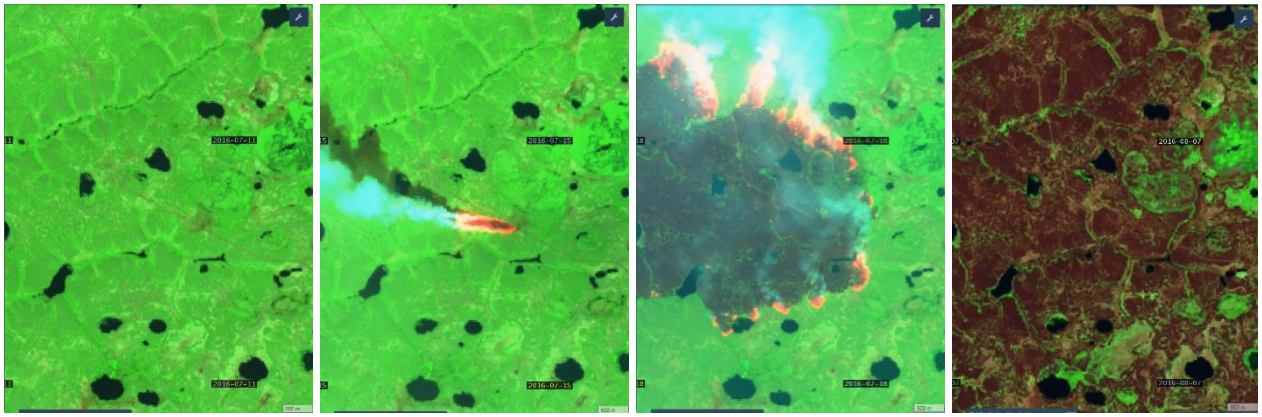


Fig. SC2. Fire near the temporary road of heavy transport, data from Sentinel-2, 2016. From left to right: 11 July, 15 July, 18 July, 7 August.

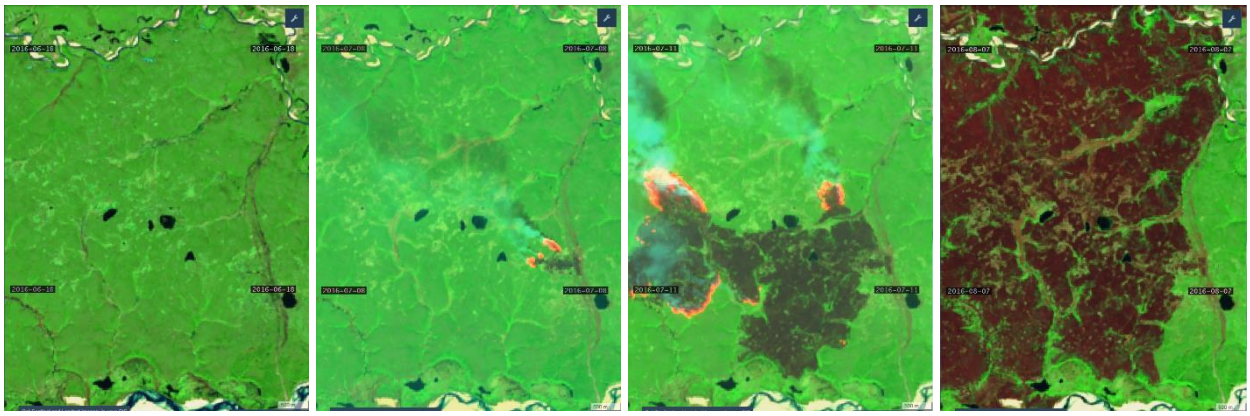
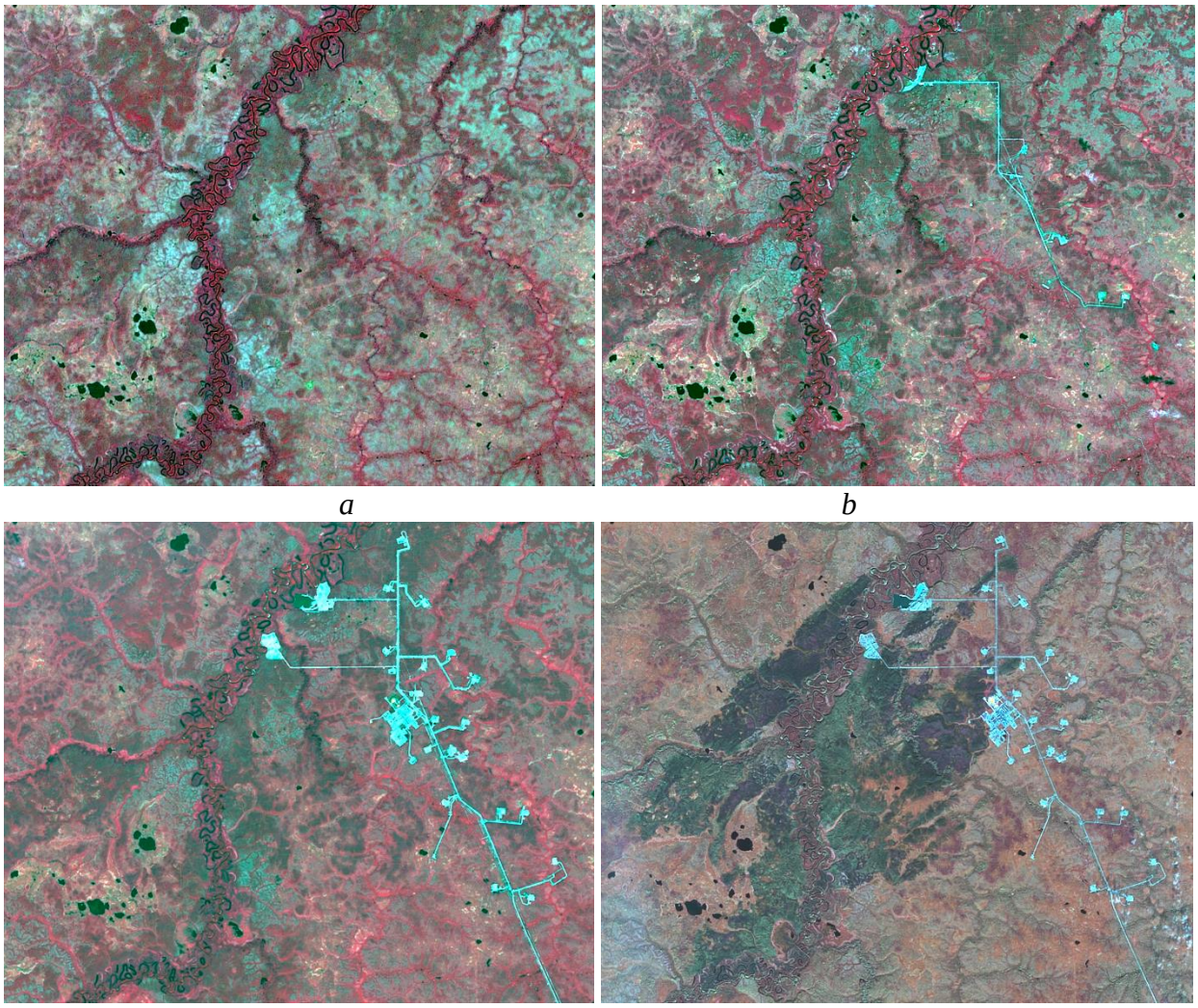


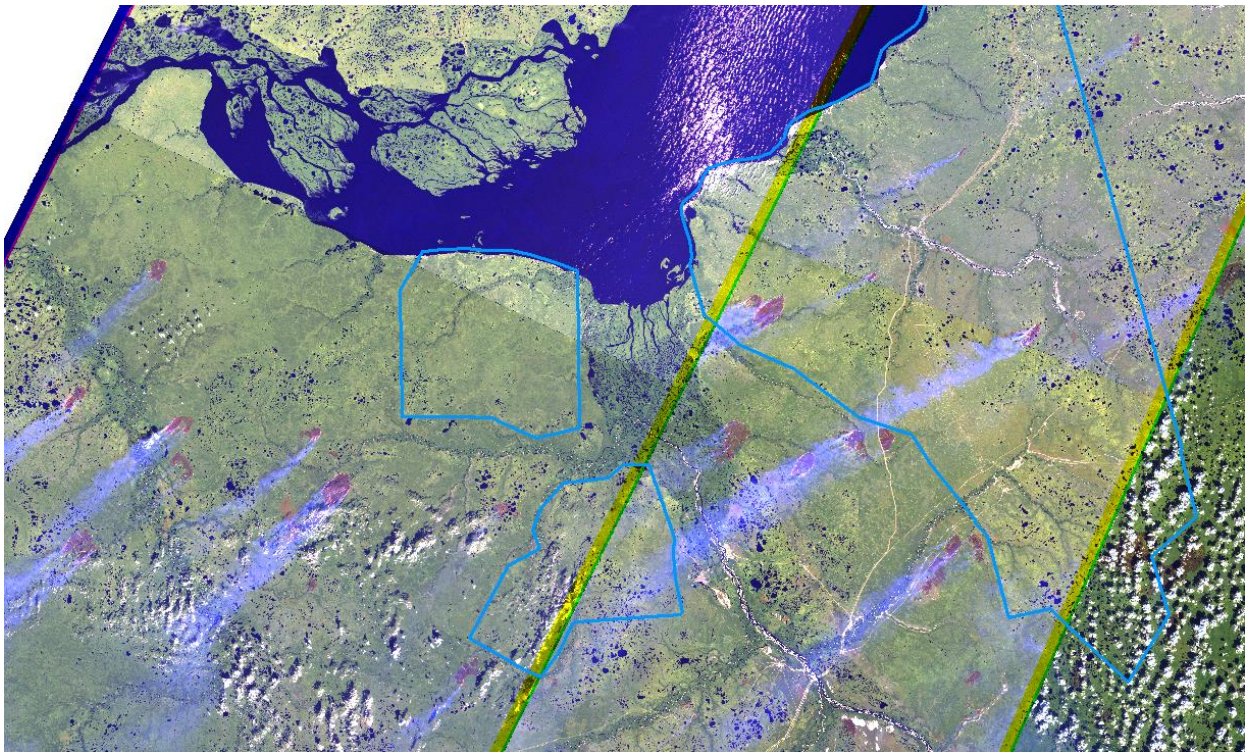
Fig. SC3. Dynamics of tundra fire near the temporary road, data from Sentinel-2, 2016. From left to right: 18 June, 08 July, 11 July, 7 August.



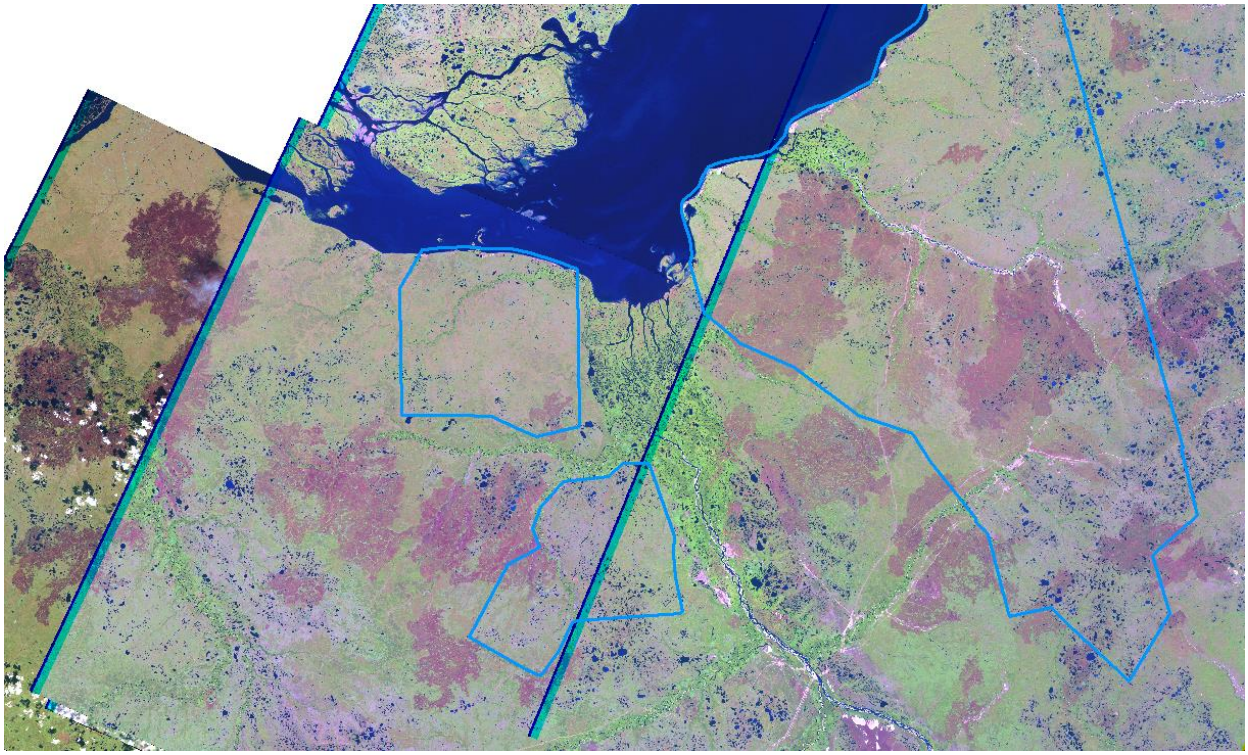
a *b*

c *d*

Fig. SC4. Building infrustructures of Yarudeyskoe field (study area 2). Data is from Landsat-7,8: a – 2002, b – 2013, c – 2016, d – 2018.

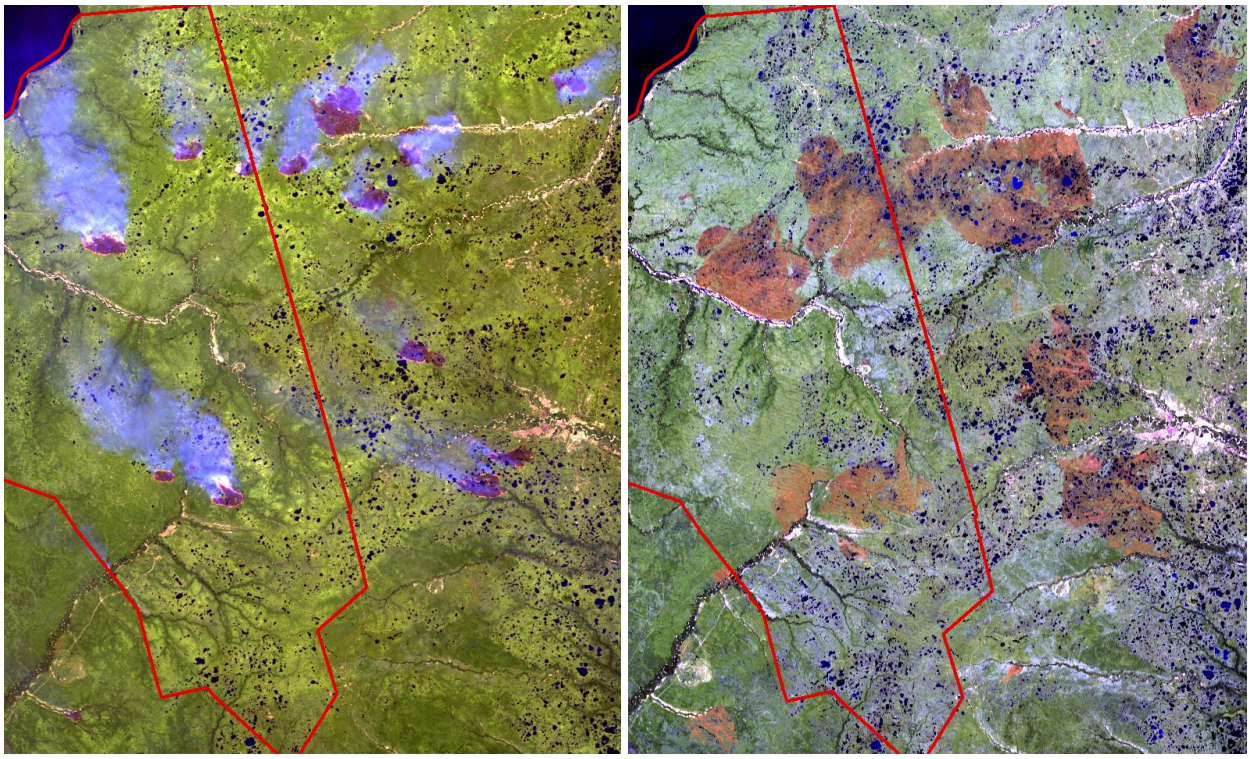


a



b

Fig. SC5. Initiation (a) and consequences (b) of the large regional fires using Landsat-5: a – July 1990 г., b – July-August 1991 г. (the boundaries of study areas are shown in light blue).



a *b*

Fig. SC6. Initiation (a) and consequences (b) of the large regional fires using Landsat-8: a – July 2016, b – July-August 2017 (the boundaries of the study area 1 are shown in red color).

Section D. Topographic maps.

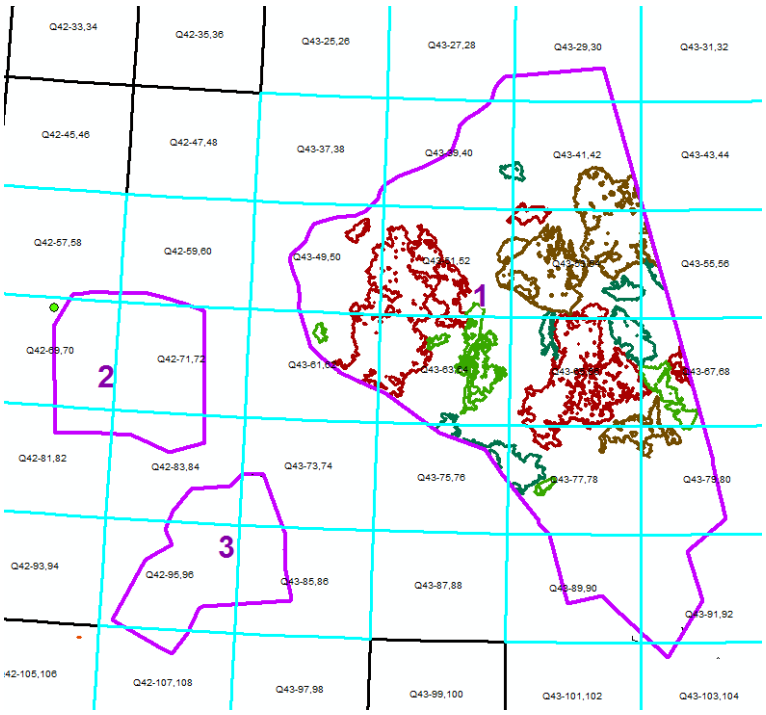


Fig. SD1. Coverage of the study areas by separate sheets of the topographic map.