Influence of vegetation cover on temperature dynamics of sandy soil

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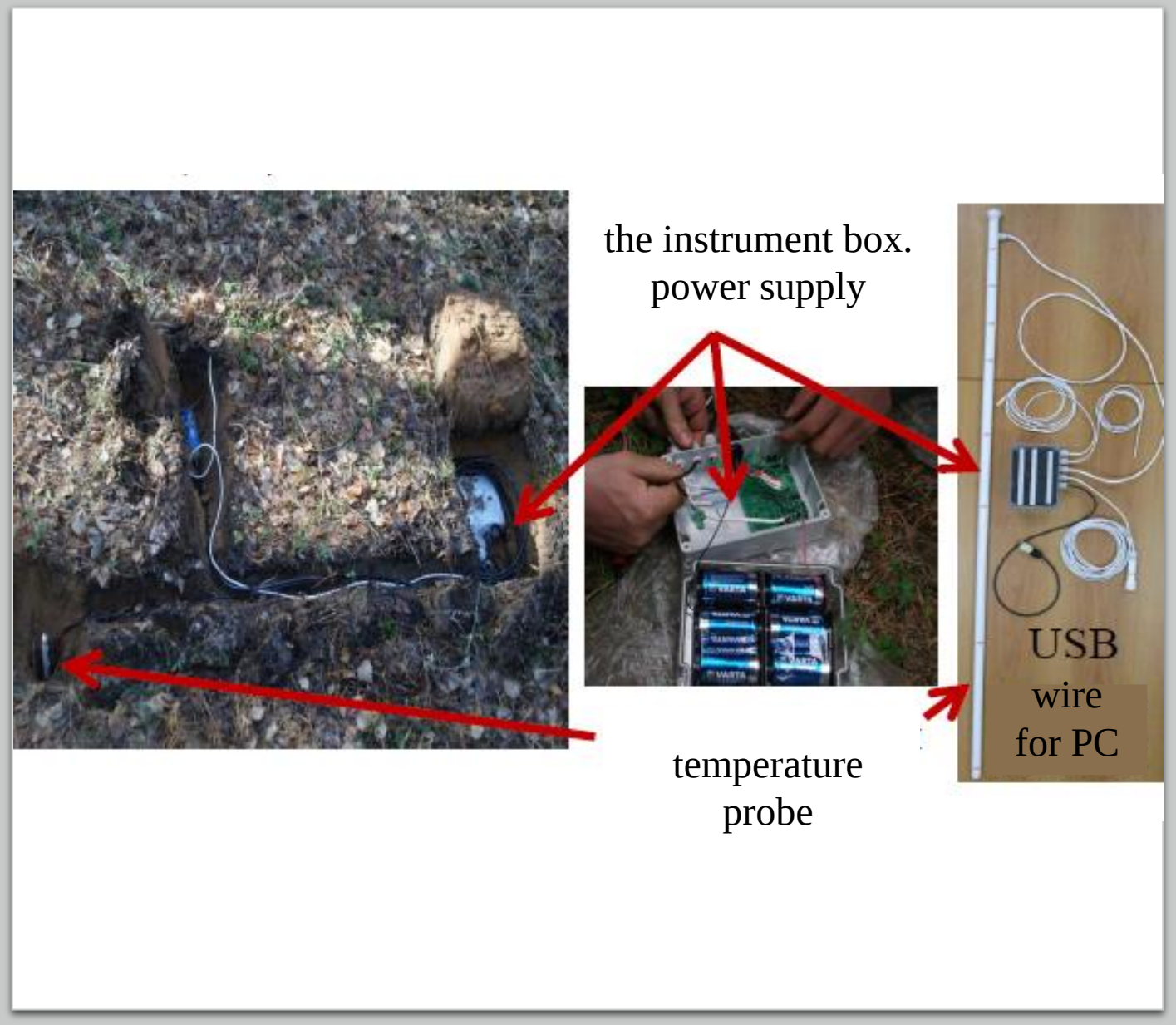
The aim of the study is to consider the influence of vegetation cover on the temperature regime of sandy soils.

To achieve the goal of the study, the following tasks were solved:

1. Systematize the electronic data set on the temperature of sandy soils at depths of 0-320 cm in areas with different vegetation cover in the Tunka basin (Republic of Buryatia).
2. To carry out statistical processing and analysis of the material obtained.
3. Evaluate the influence of vegetation cover on the formation of the temperature regime of sandy soils.



Arrangement autonomous atmospheric-soil temperature complex

- The temperature probes use DS18B20 sensors, whose accuracy is brought to ±0.1°C by calibration in the range of -55...+50°C.

The soil temperature sensor measures the depth (cm): 0; 2; 5; 10; 15; 20; 30; 40; 45; 50; 55; 60; 0,80; 100; 120; 160; 240; 320.

3 experimental sites with sandy soil and different types of vegetation

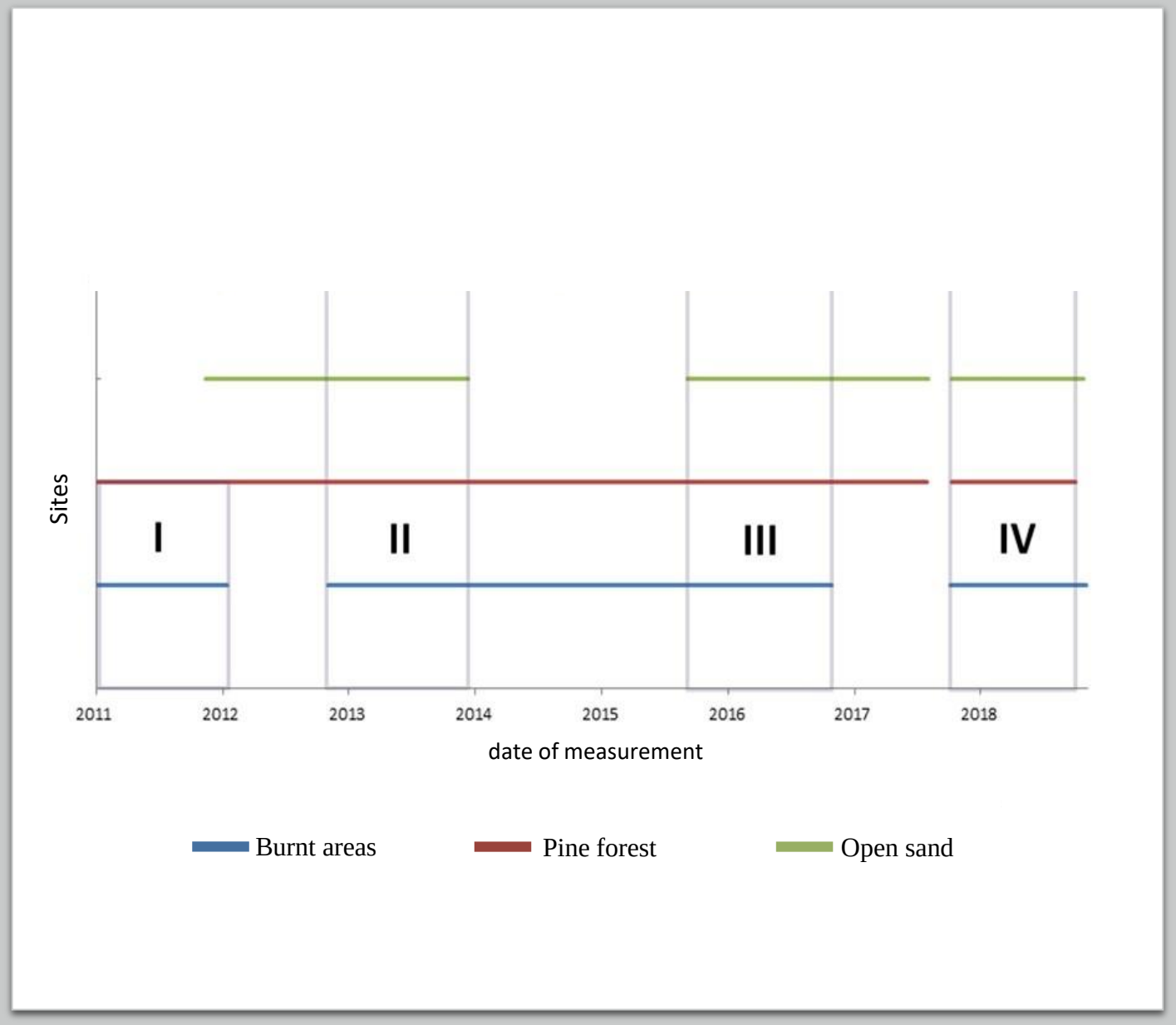
Burnt areas (A26)

Pine forest(A27)

Open sand(A35)

Established by the staff of the Institute of geography named after V.B. Sochava SB RAS in the Tunka basin

Observations were made from October 13, 2011 to August 16, 2019 in the soil profile from the surface to 320 cm depth.

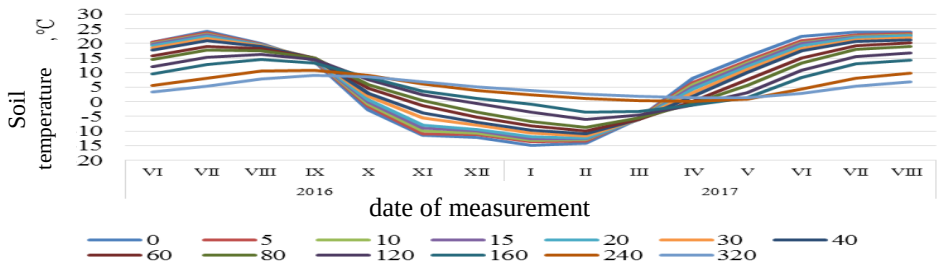


The synchronicity of measurements according to microclimatic monitoring

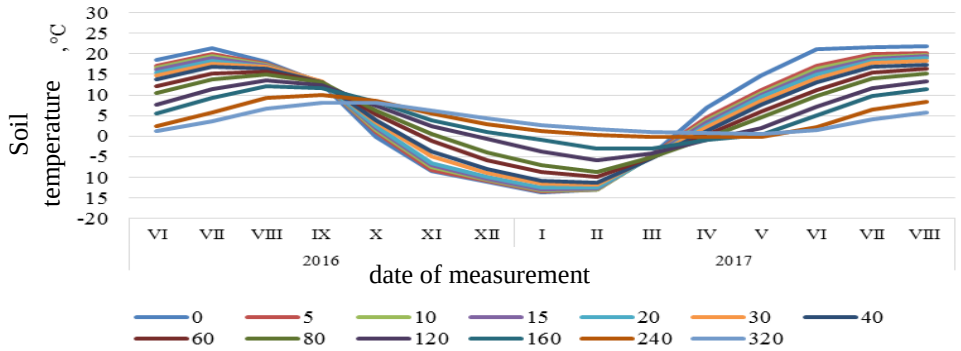
Periods:

- 15.10.11-25.10.12
- 14.08.13-21.09.14
- 18.06.16-7.08.17
- 22.07.18-14.07.19

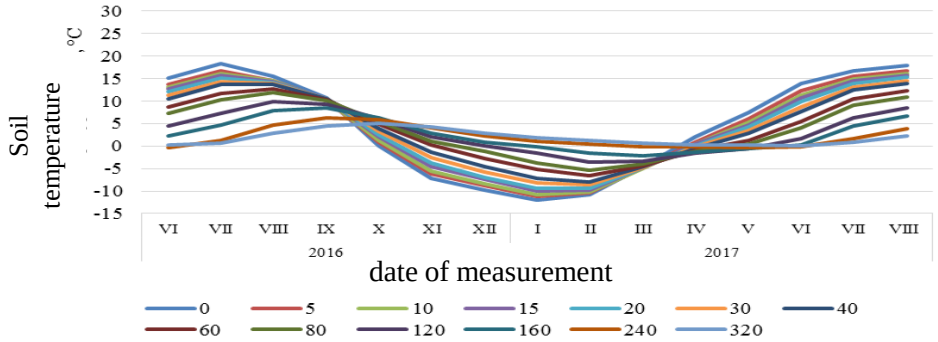
Annual course of the average monthly temperature of sandy soil at different depths



A35 – Open sand

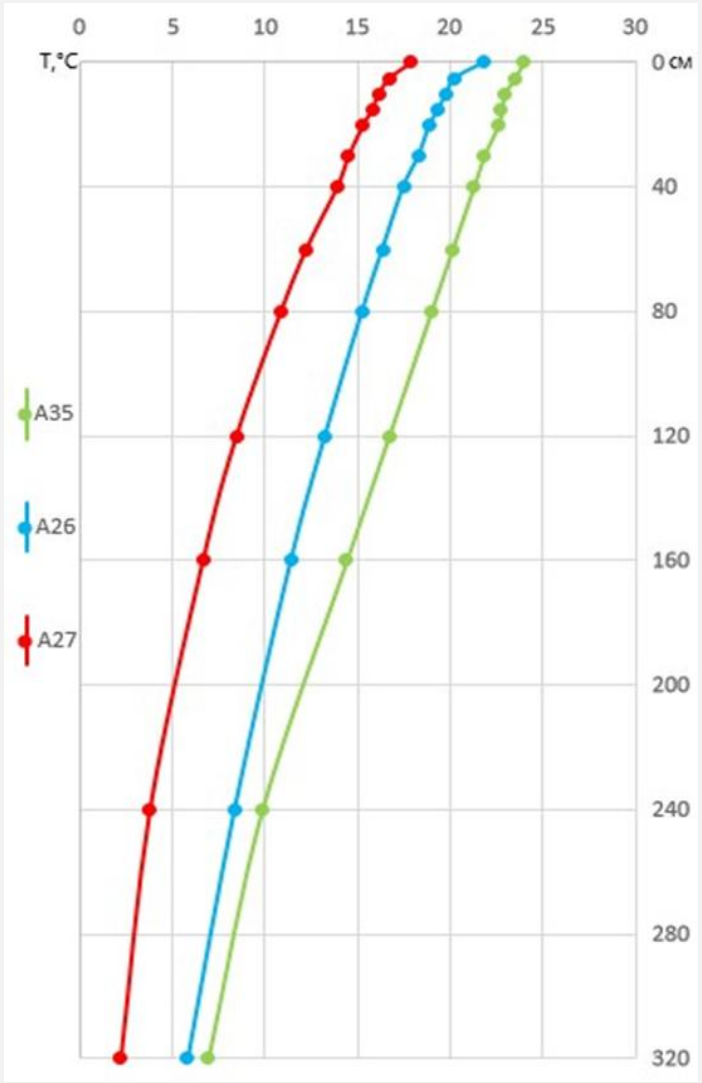


A26 – Burnt areas

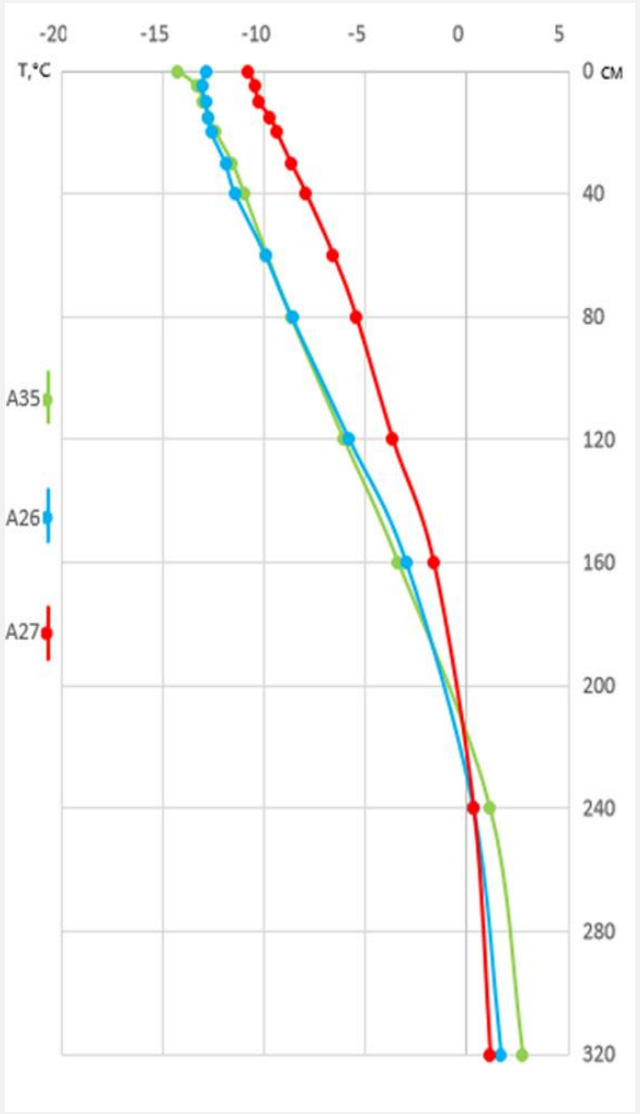


A27 – Pine forest

Gradient profile of the average monthly soil temperature in the layer 0-320 cm



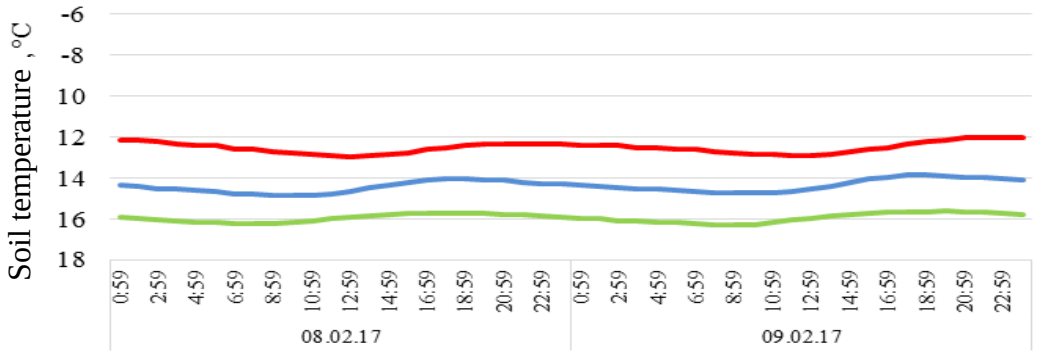
August, 2017



January, 2017

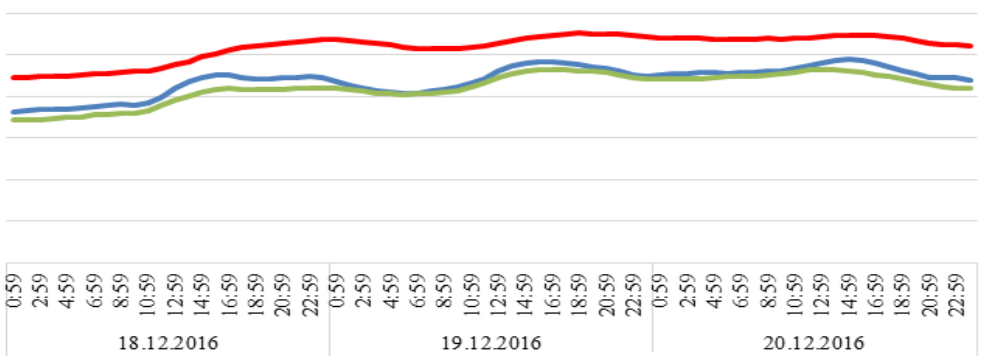
Diurnal variation of soil temperature depending on cloudiness in winter

Clear weather (from 8-9.02.2017)



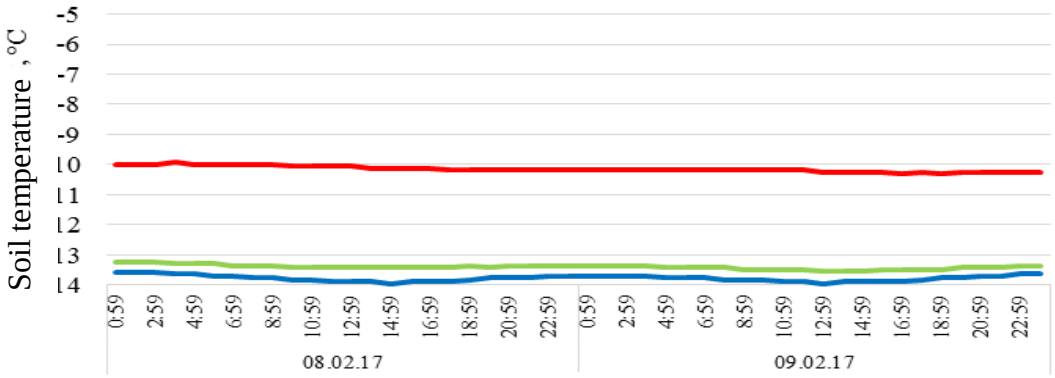
date of measurement

Cloudy weather (18-20.12.2016)

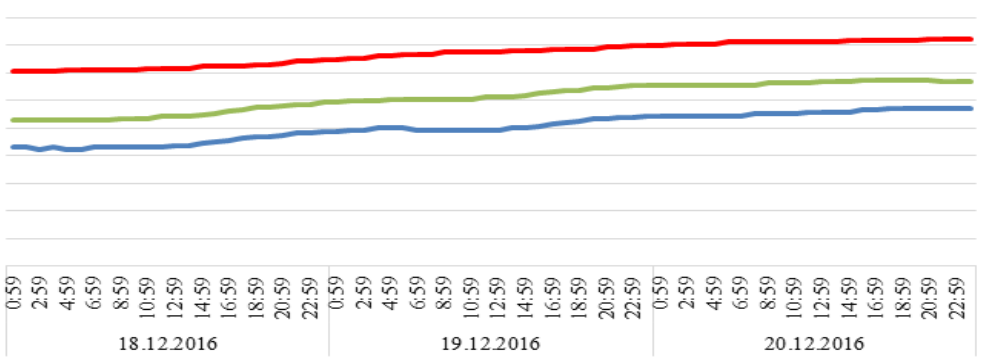


date of measurement

Soil surface



date of measurement



date of measurement

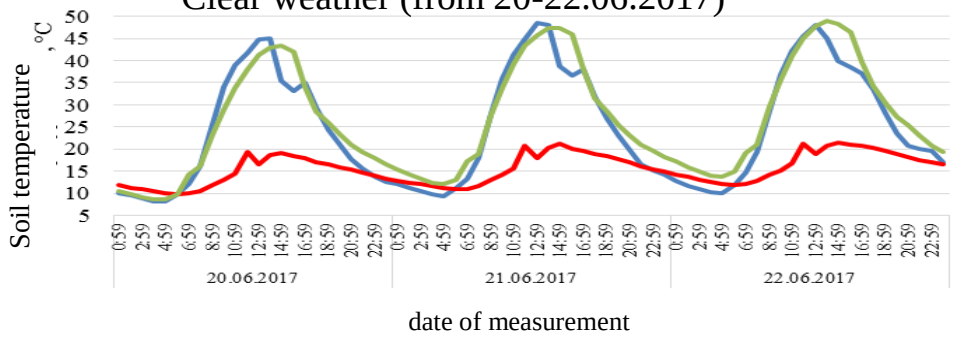
Depth 20 cm

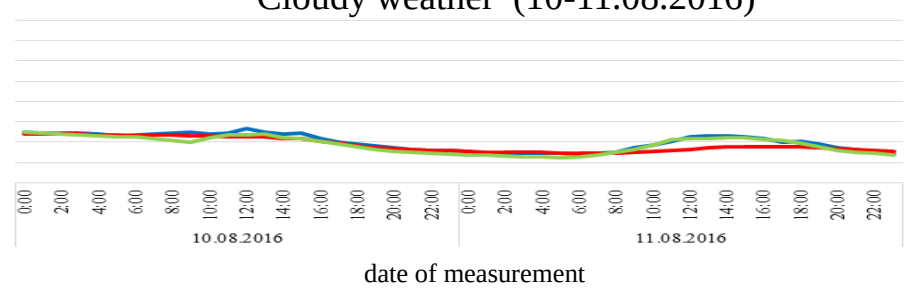
Diurnal variation of soil temperature depending on cloudiness in summer

Clear weather (from 20-22.06.2017)

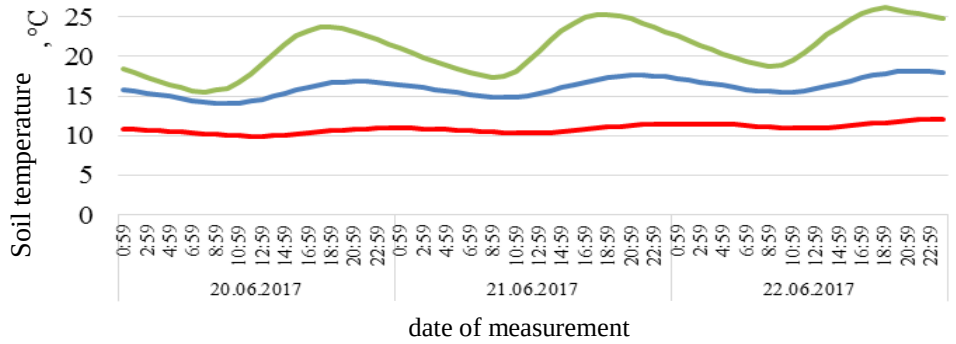
Cloudy weather (10-11.08.2016)

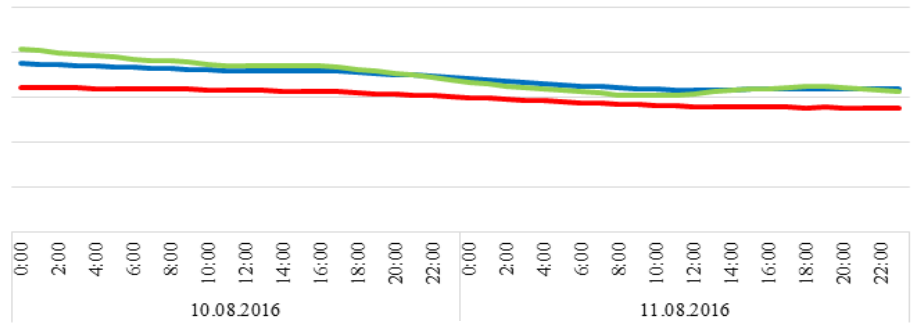
Soil surface



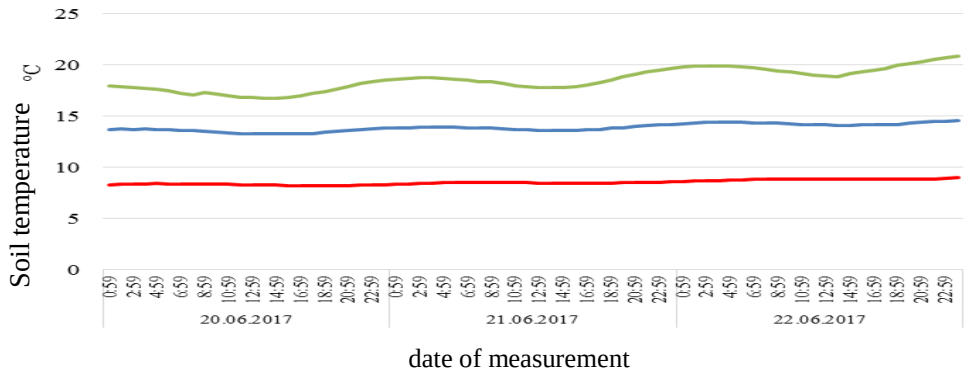


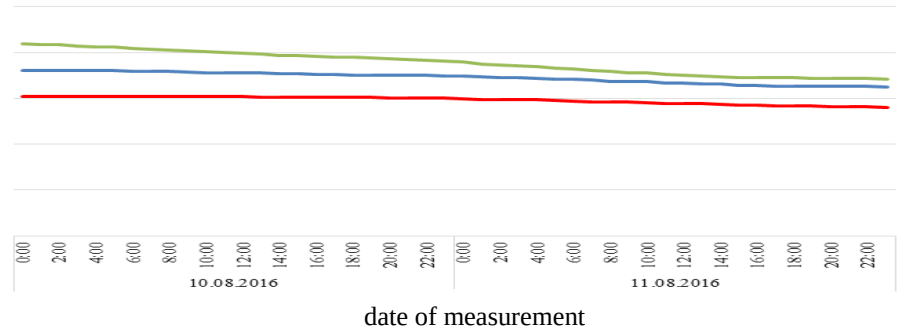
Depth 20 cm



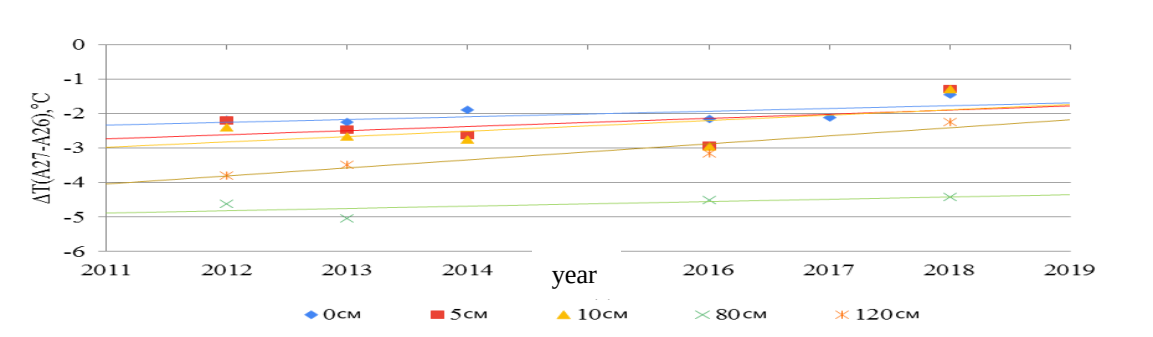


Depth 40 cm

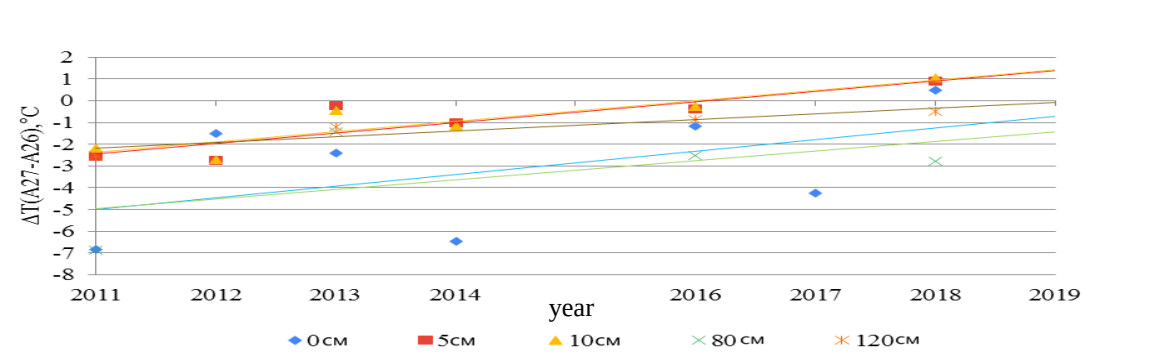




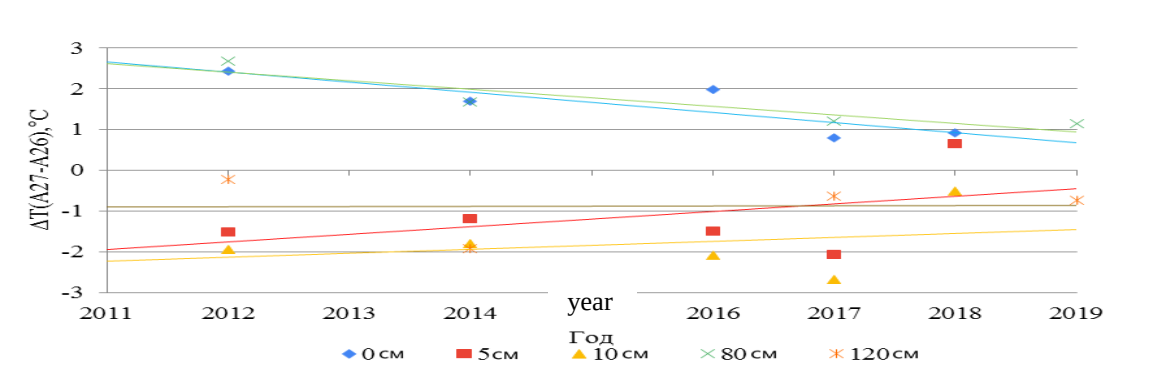
The difference in soil temperatures between sites A27(Pine forest) and A26



Average monthly



Max



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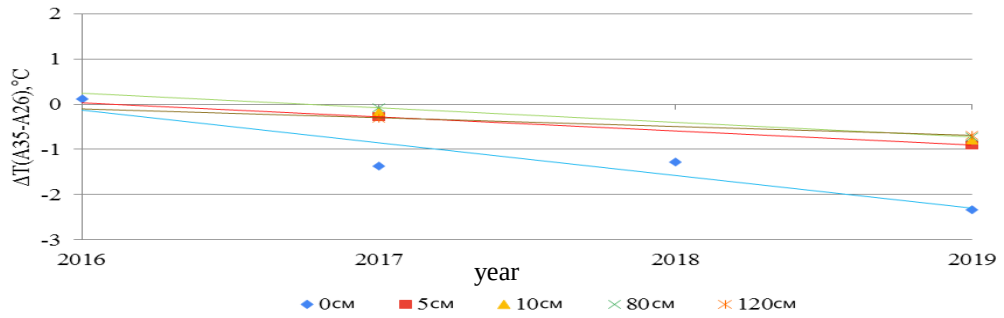
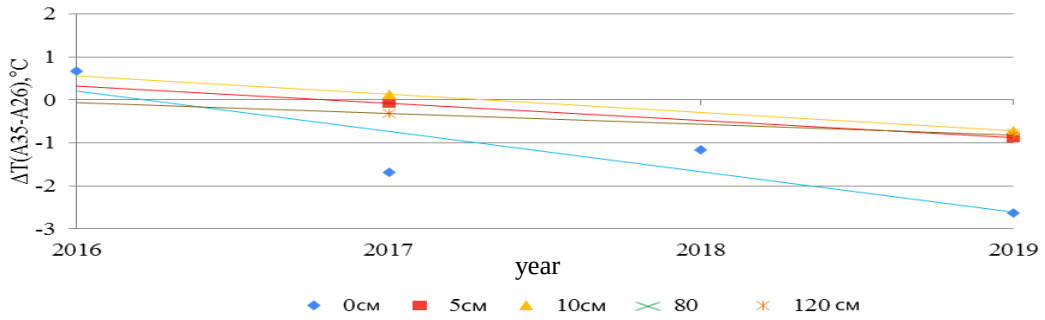
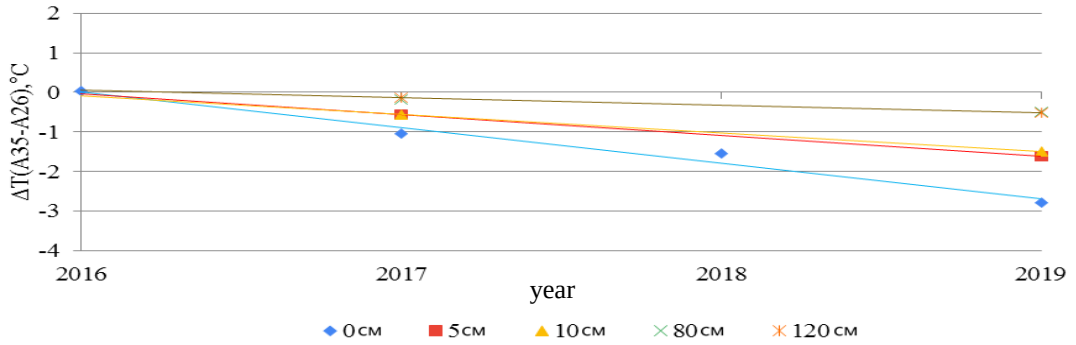
The difference in soil temperatures at different depths between sites A35 (open sand) and A26 (burnt)



Average monthly



Max



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Thanks for your attention!