

Atmospheric measurements on the Great Taevaskoda clearing and the forest on the outcrop

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Four research questions were posed during the study:

- How does air humidity depend on height?
- How does air pressure depend on height?
- How does the surface temperature differ between the clearing and the forest?
- How do atmospheric temperature, air humidity, and air pressure change throughout the day?

The hypotheses formulated during the study were

- The temperature is lower under the trees than in the sun.
- Air humidity is higher at lower elevations, near the river, than on the cliff above in the forest.
- The air pressure on the cliff is slightly lower than in the clearing by the river.
- In the evening, the temperature is lower than at noon.

Research area “Lagendik”

- The "Lagendik" measurement site is located in front of the Great Taevaskoda at an elevation of 40.5 meters above sea level
- (Coordinates: N 58.108003, E 27.050214).
- The site has sandy soil.



Lagendik



Research area “Metsaalune”

- The measurement site "Metsaalune" is located at the top of Suur Taevaskoda, under the forest, at an elevation of 68.5 meters above sea level
- (Coordinates: N 58.107506, E 27.049771).
- The site has a mossy ground surface.



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Metsaalune



Equipment used

- **Barometer**
- **Psychrometer**
- **Infrared thermometer**

	Time of day	Atmospheric pressure	Surface temperature	Cloud coverage	Humidity	Air temperature
Lagendik	14:33	1021 hPa	26.3°C	20-40% (cu, ci)	50%	25°C
Metsaalune	15:00	1015 hPa	17°C	did not measure	66%	25°C
Lagendik	16:15	1023 hPa	23.3°C	25-50% (cu, ci)	64.5%	23°C
Metsaalune	16:00	1021 hPa	18.3°C	did not measure	57.5%	22°C
Lagendik	17:20	1023 hPa	21.1°C	1-10% (cu, ci)	78%	19°C
Metsaalune	17:33	1022 hPa	18.9°C	did not measure	57.5%	21.5°C

Conclusions

Air humidity decreases with altitude: It was found that air humidity decreased by an average of 11.2% for every 20 meters in altitude.

Air pressure decreases with altitude: The air pressure decreased by an average of 3 hPa for every 20 meters in altitude.

Temperature difference between the clearing and the forest: The surface temperature was 5.5°C lower at the forest site compared to the clearing. This difference was attributed to the shade provided by trees and the difference in soil types (sandy soil at the clearing and mossy soil in the forest).

Air humidity at the clearing vs. forest: The air humidity was 11.2 percentage points higher at the clearing compared to the forest site. This was explained by the proximity to the river at the clearing and the 20-meter altitude difference between the two sites.

Air temperature changes throughout the day: The air temperature decreased by 3.5°C during the measurements, confirming that the temperature was lower in the evening compared to noon. This decrease is explained by the changing angle of the sun's rays.

