The impact of the landscape surrounding the Saesaare reservoir on weather (microclimate)

Salakuulaja kivi
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Purpose

This study aimed to examine how proximity to a body of water affects air humidity and temperature across different terrain types, specifically comparing forested areas, clearings, and forest edges.

Our main question was: Does distance from a body of water measurably impact air humidity?

Hypotheses

Hypothesis 1: When moving away from a body of water, air humidity will steadily and noticeably decrease.

Hypothesis 2: Air humidity will generally be higher in areas with more vegetation, such as forests, compared to other areas like clearings.

Hypothesis 3: A body of water will keep the air temperature lower than in the surrounding area, especially during the summer.

Pilt: How To Become A Research Scientist: What To Know – Forbes Advisor

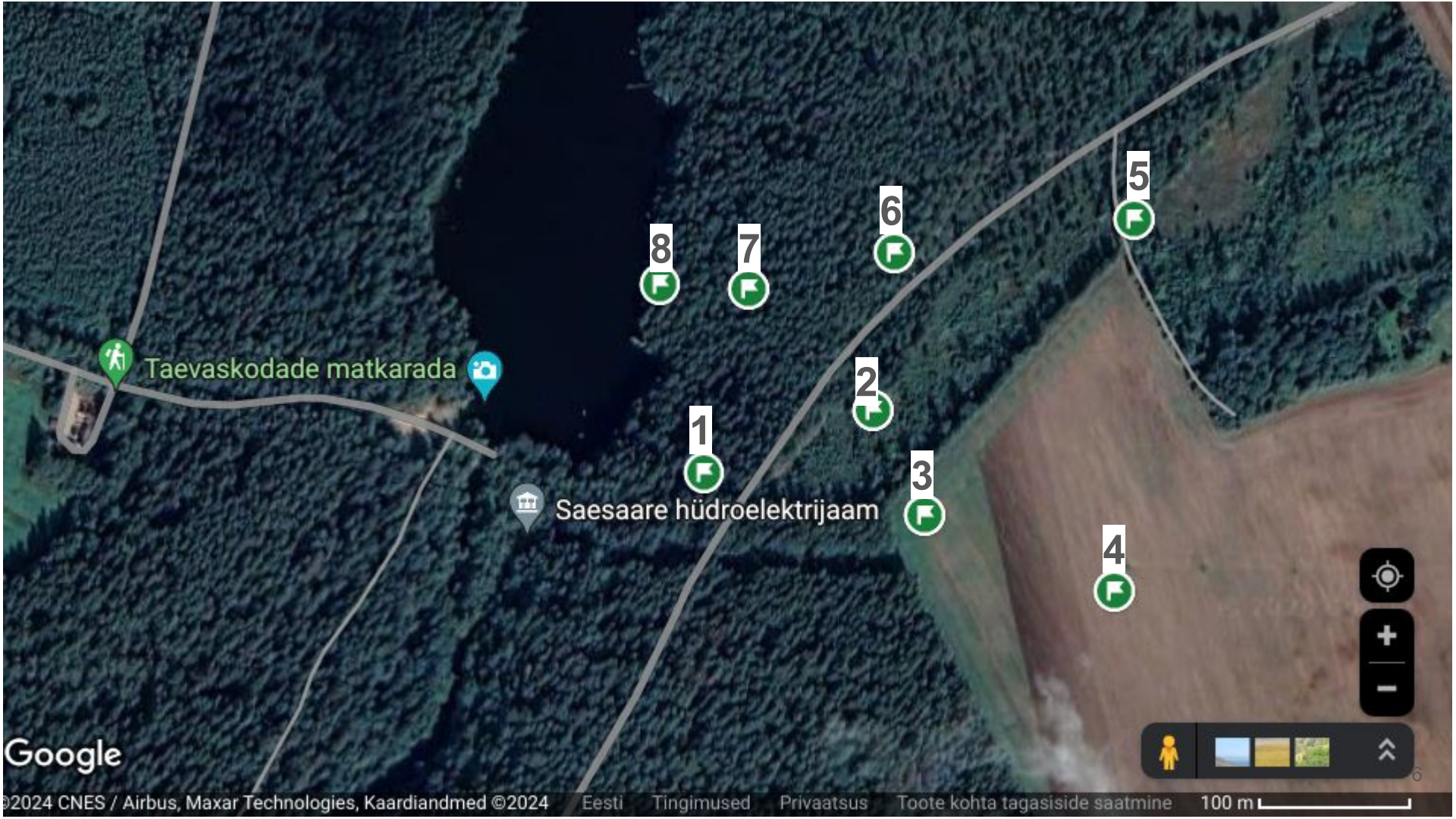
Methods

- 8 punkti
- Observations
  - Cloud types
  - Cloud cover
  - Sky color
  - Land cover type

- Equipment
  - Barometer
  - Infrared thermometer
  - Pchrometer
  - Digital thermometer
  - GPS

Equipment used

- Infrared thermometer
- Barometer
- Psychrometer (distilled wate
- Digital thermometer
- Cloud charts
- Mobile phone GPS


Taevaskodade matkarada
Saesaare hüdroelektrijaam
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Research area 1

Coordinates:

58.1147387 N

27.054117 E

Research area 2

Coordinates:

58.1151098 N

27.0560314 E

Research area 3

Coordinates:

58.1144175 N

27.056653 E

Research area 4

Coordinates:

58.1138205 N

27.058663 E

Research area 5

Coordinates:

58.1165517 N

27.0590348 E

Research area 6

Coordinates:

58.1160532 N

27.0562701 E

Research area 7

Coordinates:

58.1158341 N

27.0546182 E

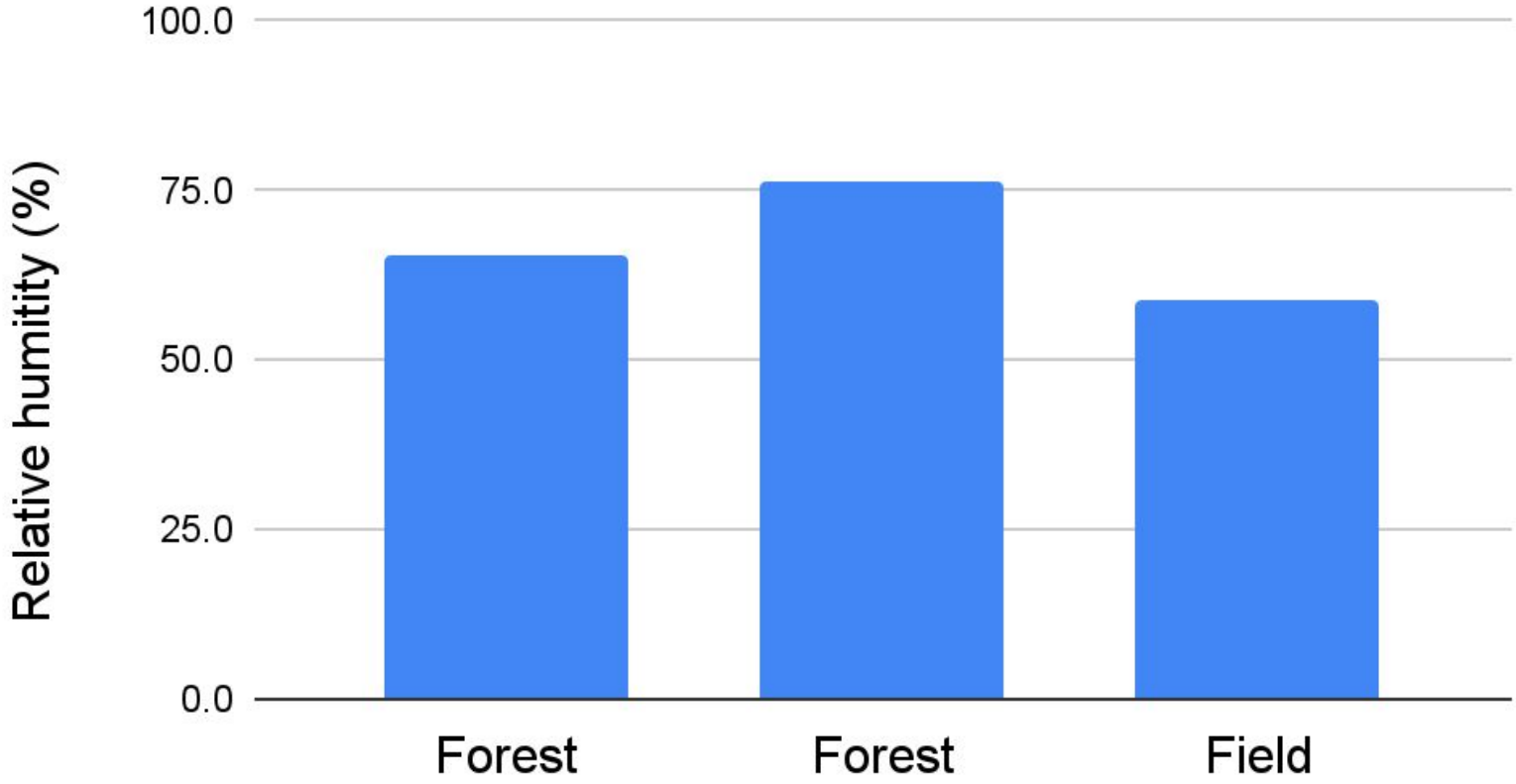
Research area 8

Coordinates:

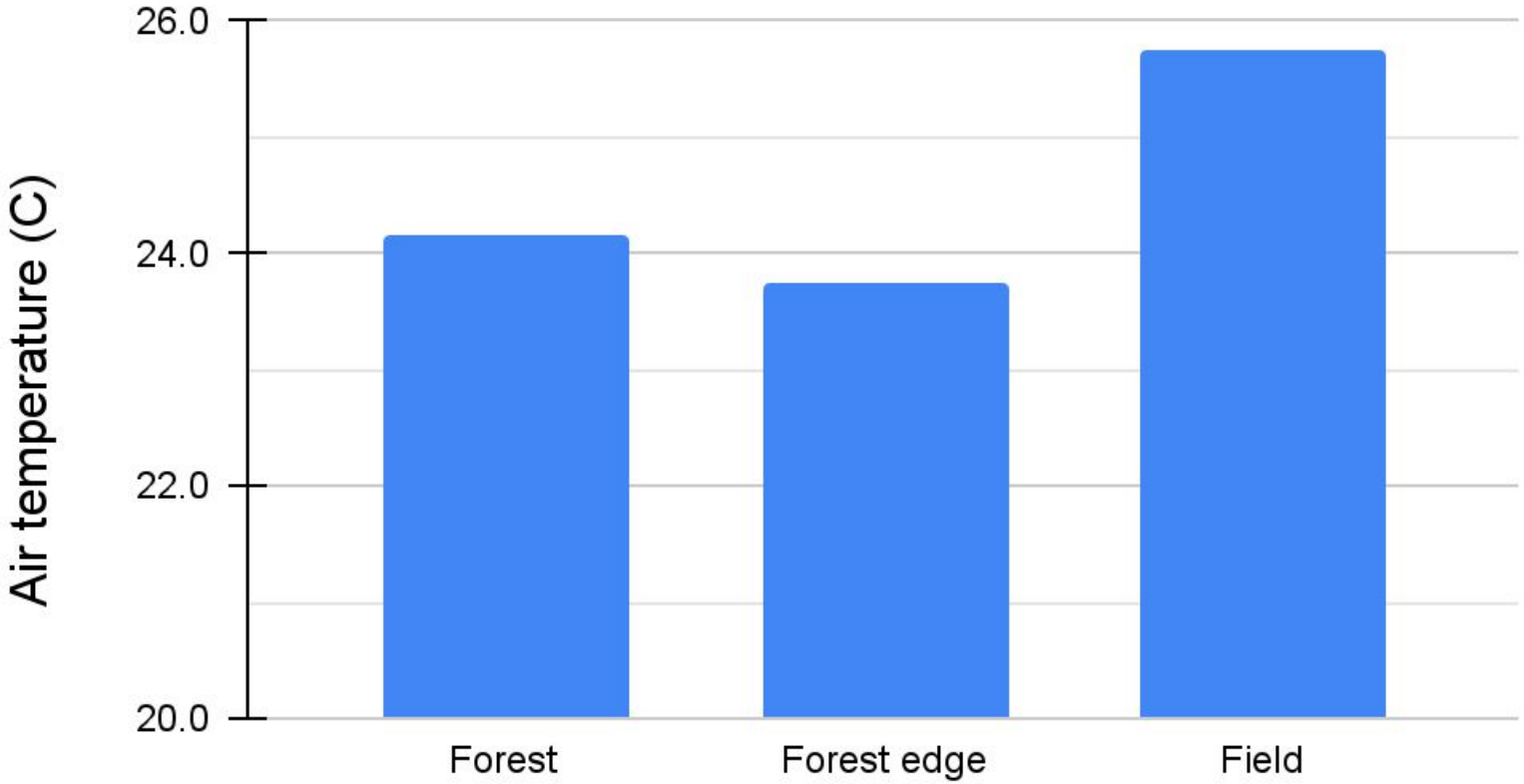
58.1158566 N

27.0538887 E

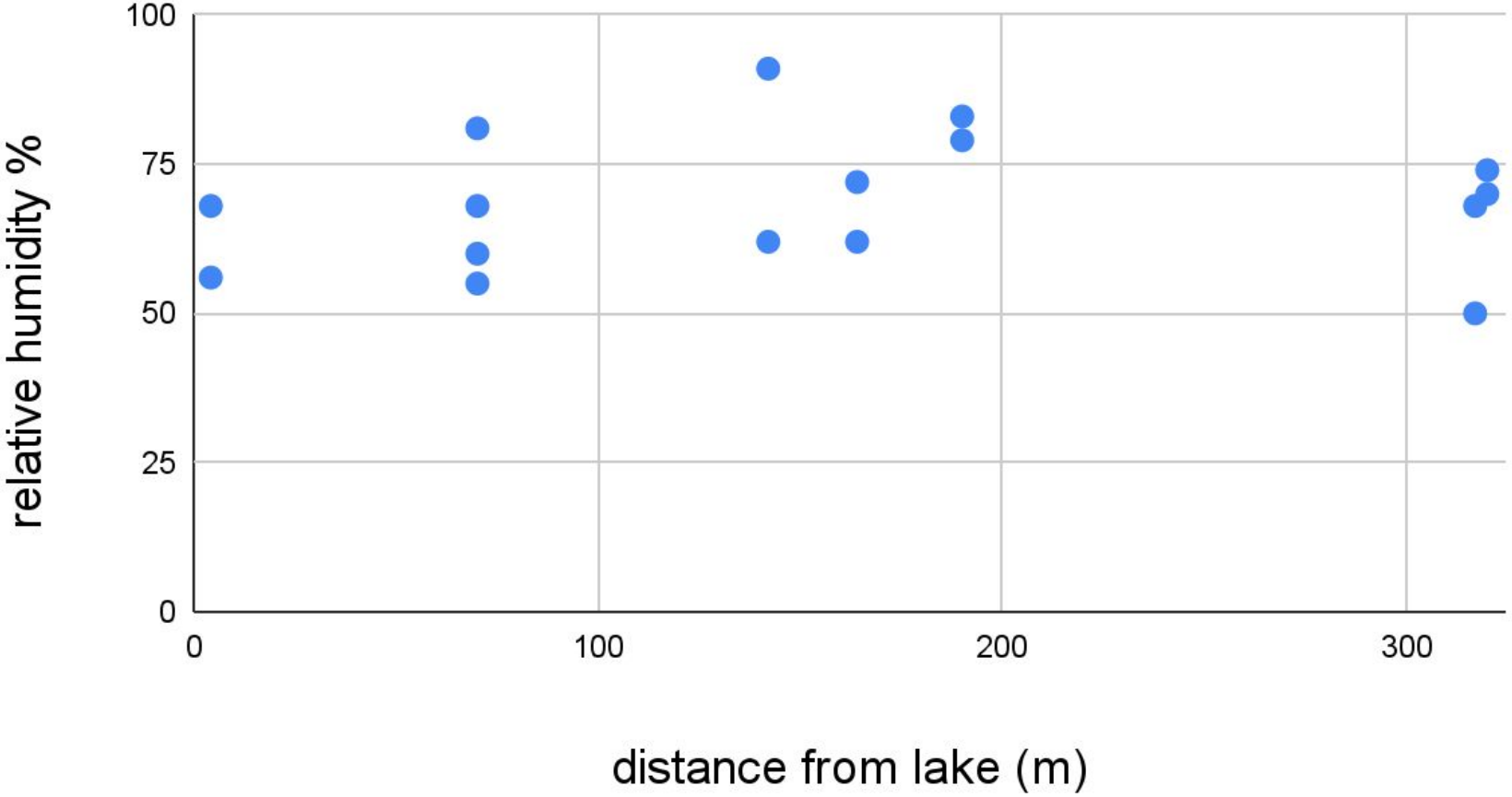
Average humidity in diffeerent research areas



Average air temperature in different terrains



Relative humidity and distance from lake (m)



Results

Tulemuste kohaselt oli kõige niiskem metsaservas, teisele kohale jäi mets ja põllul oli kõige kuivem.

Kõige soojem oli põllul, teisel kohal oli mets ja metsaservas oli kõige külmem

Niiskus ei muutunud oluliselt järvest eemaldudes

Pilt: Statistics - Definition, Types, Importance

Hypothesis Verification

1. **Air humidity decreases as we move away from Saesaare Reservoir:**
    - Based on the results, it seems that **humidity levels did not change significantly** as the distance from the lake increased, which **contradicts the hypothesis**. The air humidity remained relatively stable regardless of the distance from the reservoir.
2. **Relative humidity in the forest is higher than on the open field:**
    - The **forest edge** showed higher humidity levels than the field, which supports the hypothesis that **humidity is greater in the forest than in the open field**. Forests tend to retain more humidity due to the presence of vegetation and less exposure to direct sunlight.
3. **Temperature in the forest is generally lower than on the open field:**
    - According to the results, the **field** was the warmest area, and the **forest** was second in terms of temperature, confirming that **temperature is generally lower in the forest** compared to the open field, likely due to shade and the cooling effects of the forest canopy.

Challenges Encountered

- We only had one measurement point on the **open field** (lagendik), as we accidentally ended up in a **pasture**. To avoid potential conflicts with the **cows** in the area, we decided to leave the site shortly after, which limited our data collection there.
- The initial goal was to move away from the lake in a **straight line**; however, due to **obstacles**, this plan could not be executed perfectly, which may have affected the accuracy or consistency of the measurements.
- There were also issues with one of the **measurement instruments**, which could have been **prevented** by bringing **additional equipment** to ensure a smoother data collection process

Challenges

- We had only one measurement point at the clearing because we had ended up in a pasture and did not want to get into conflict with the cows in the distance, so we left shortly after.
- The goal was to head straight away from the lake, but due to some obstacles, this did not succeed perfectly.
- There were issues with one measuring device, which could have been prevented by bringing more equipment.