

# Variation in the atmospheric measurement data of different weather stations

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# INTRODUCTION

Researching and studying the atmosphere is important, because the atmosphere affects us constantly. The more we know about the atmosphere, the easier it is to:

- Predict the weather
- Protect the climate
- Reduce air pollution



# RESEARCH QUESTIONS

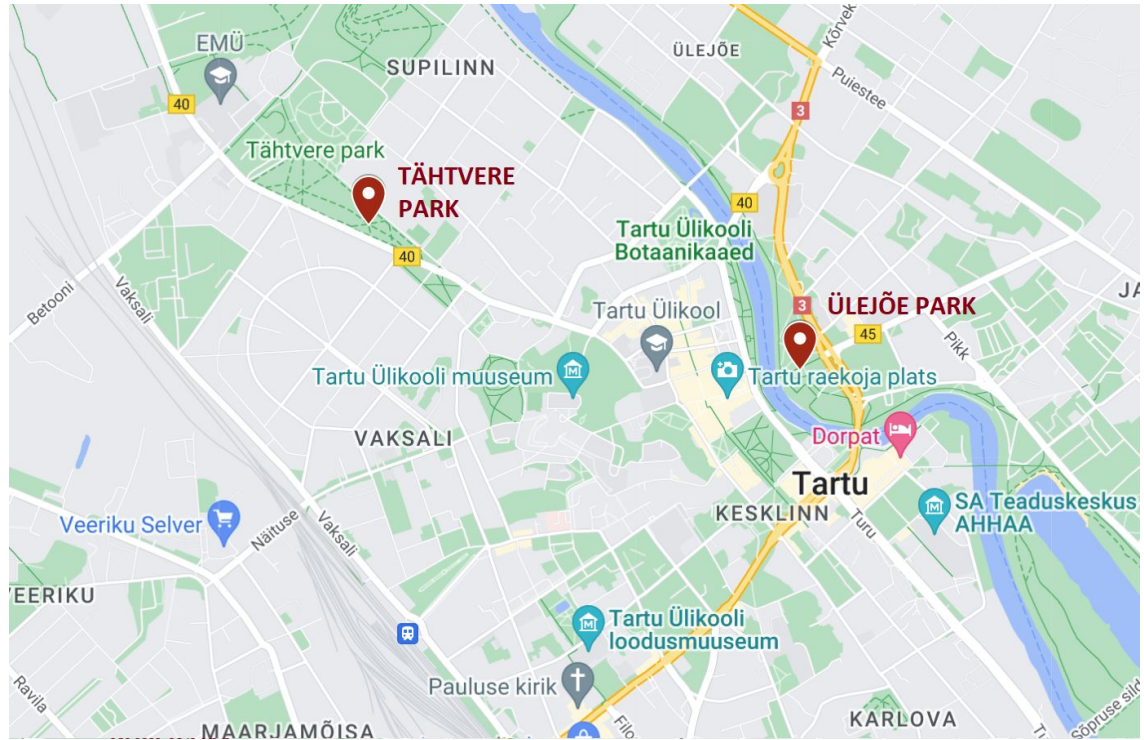
- Are the results from all weather stations different?
- Is half an hour enough time for the indicators to change?
- Is the data from the two parks different?

# LOCATION

- Tähtvere park - 56.5 m  
(observation time  
14:15–15:30)

- Ülejõe park - 35 m  
(observation time  
16:00-17:15)

3 measurements in each park  
after 30 minute intervals



# INSTRUMENTS

- Digital thermometers
- Sling psychrometer
- Barometer
- GLOBE cloud chart



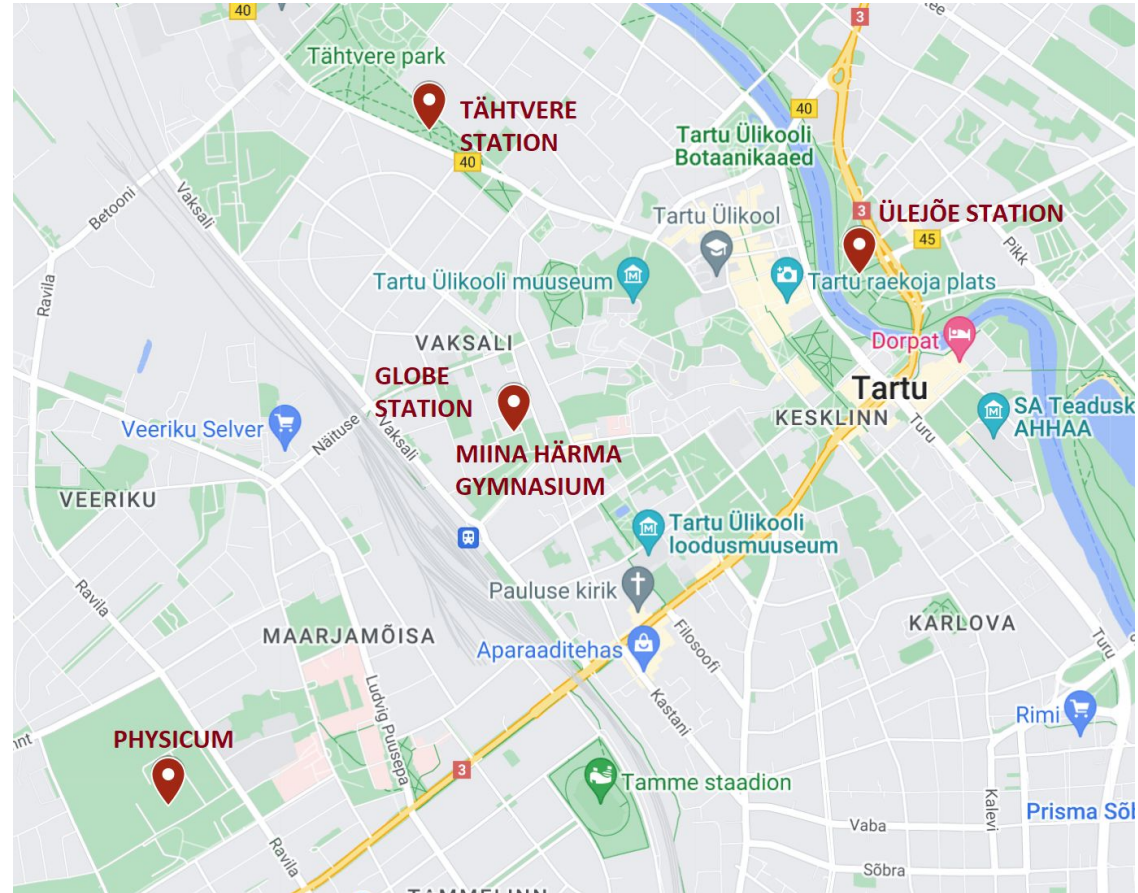
# METHODS

We measured in 2 parks:

- Air temperature
- Air pressure
- Air humidity
- Observed clouds

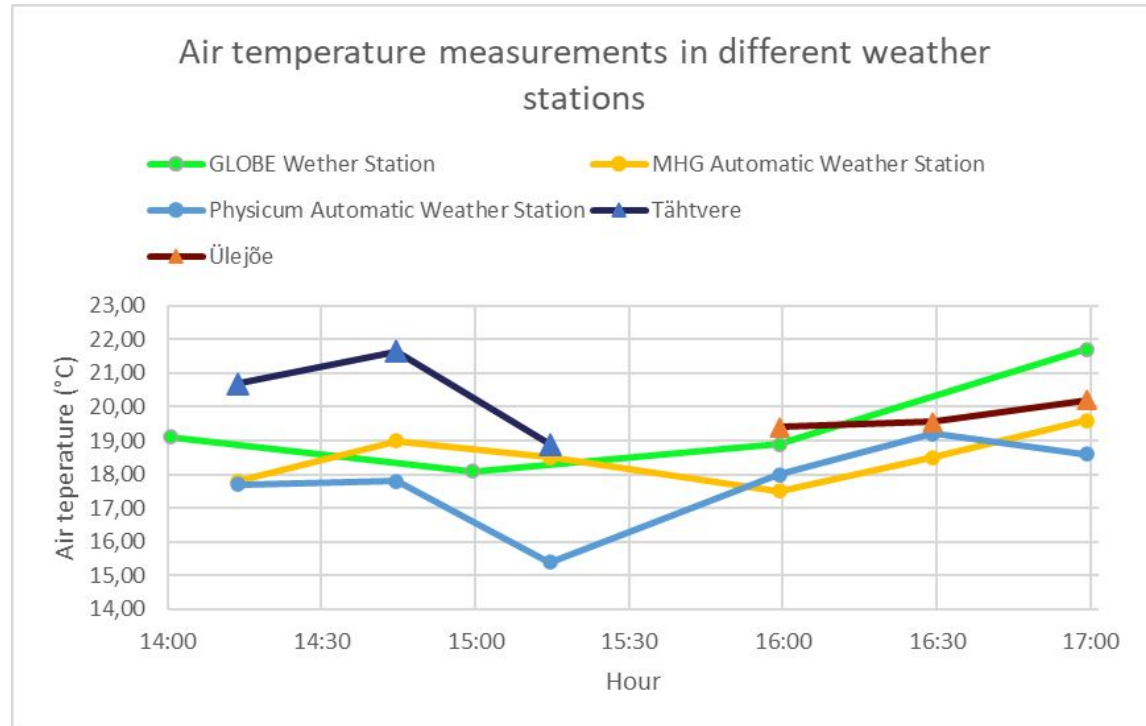
And we collected data from 3 additional stations:

- Physicum automatic weather station
- Miina Härma GLOBE station
- Miina Härma automatic station



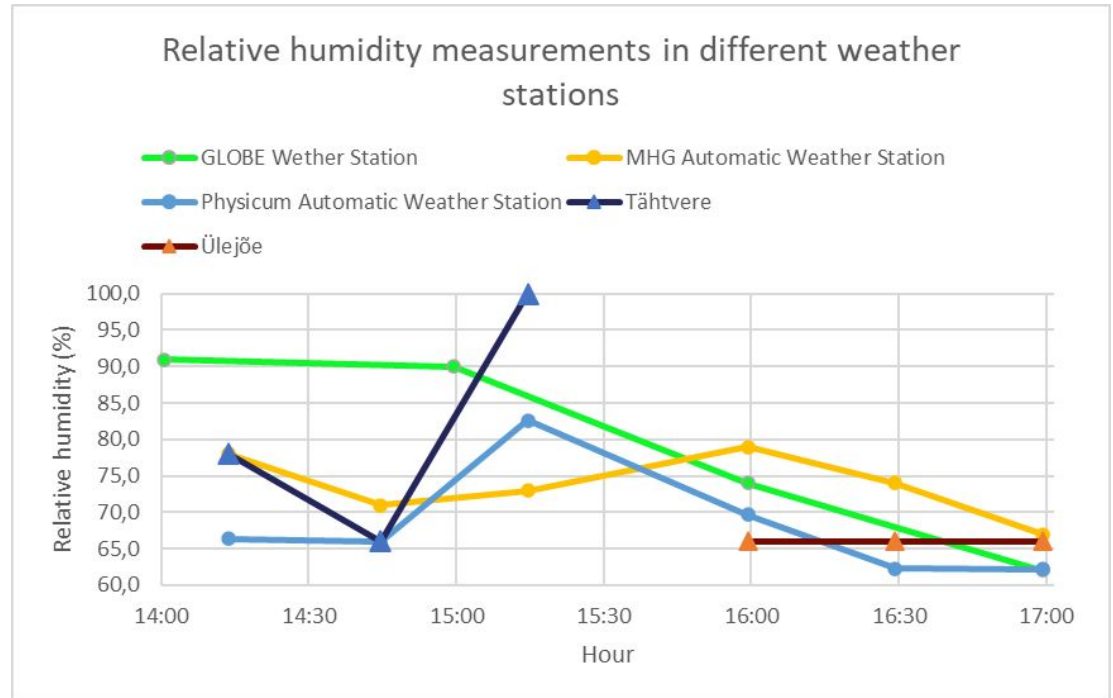
# RESULTS - AIR TEMPERATURE

- Air temperature results were different in all stations
- We can see that the air temperature changes a little bit in 30 minutes
- The data is different in the parks that we measured



# RESULTS - RELATIVE HUMIDITY

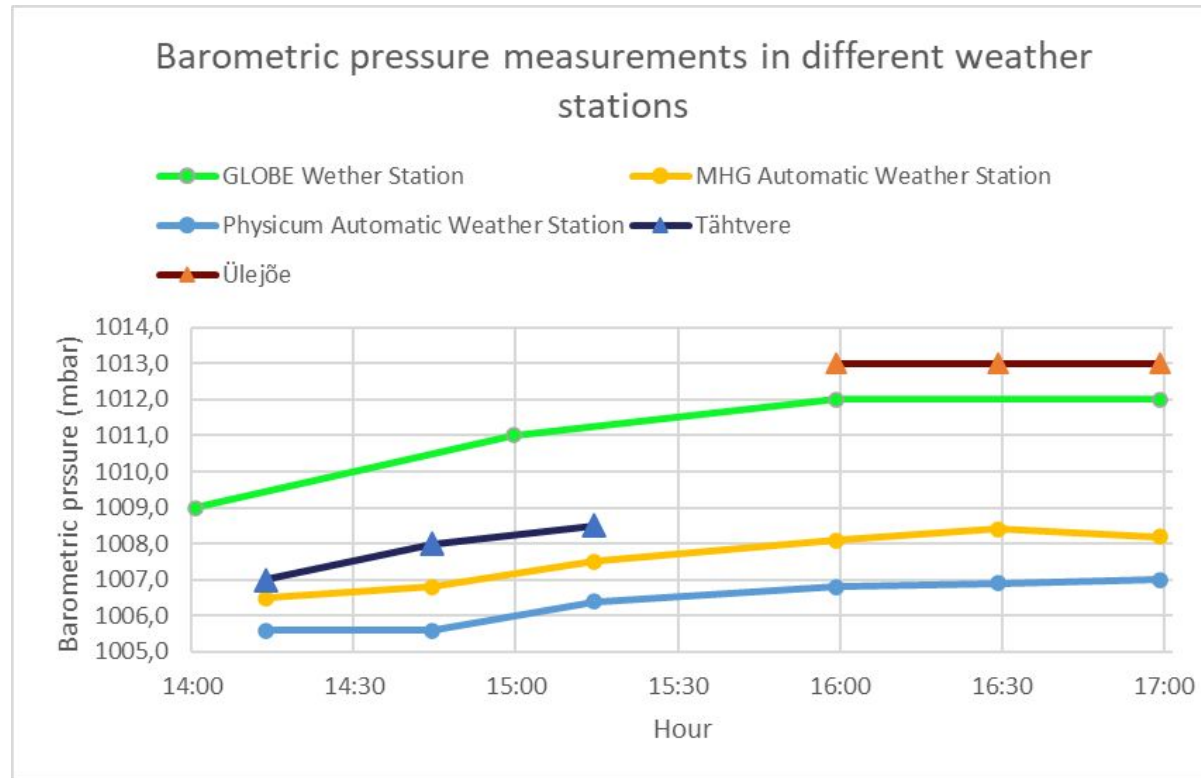
- Relative humidity results are mostly different in all stations
- In Tähtvere park there was rain and weather changed very quickly
- But in Ülejõe park the weather didn't really change





# RESULTS - AIR PRESSURE

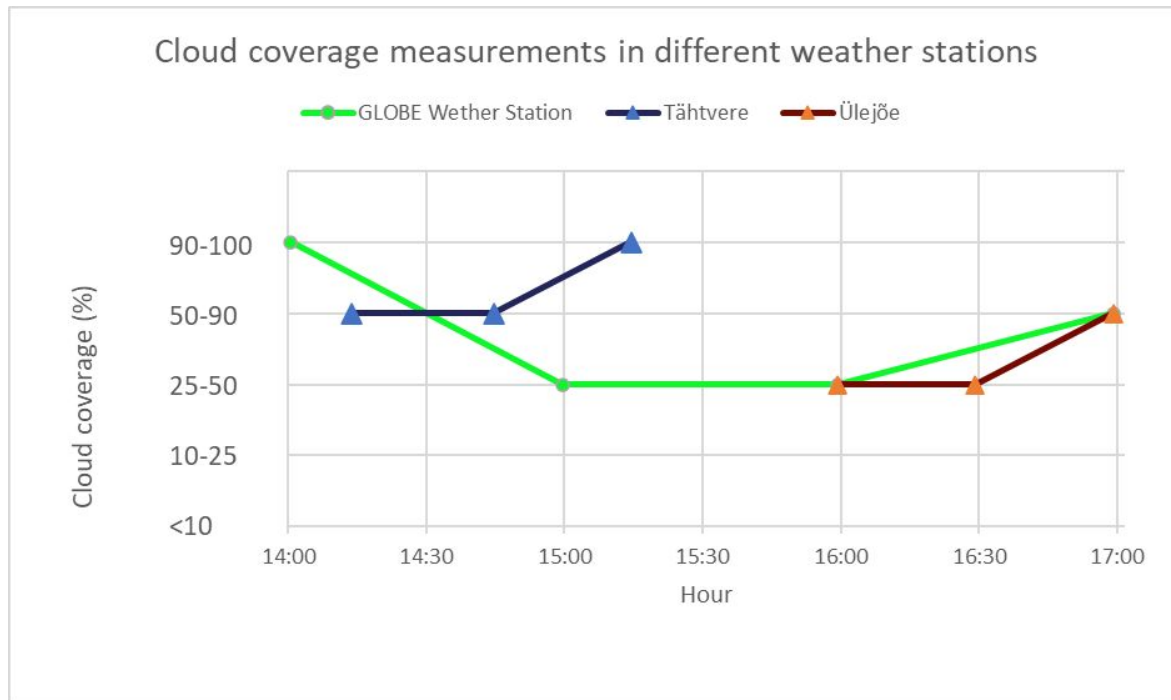
- Air pressure results show very well the differences between stations
- 30 minute interval measurements didn't change, they were stable
- There was a big difference between Tähtvere and Ülejõe (Ülejõe is 21.5 m lower in altitude)



# RESULTS - CLOUD OBSERVATION

Cloud observations were done in 3 stations:

- Tähtvere
- Ülejõe
- Miina Härma GLOBE station



The clouds were constantly in motion during our expedition.

Cloud coverage changed from 25% to 100%.

Main cloud types were cumulus and stratocumulus.

# CONCLUSIONS

- We learned that different weather stations give different results.
  - The reasons for it can be that **different instruments** are used
  - The weather stations **locations are various** (altitude, buildings, obstacles)
  - Automatic stations are different from manual stations (**human error can occur**)
- Some indicators changed (air temperature and relative humidity) after the 30 minutes measurements but some didn't (air pressure).
  - Estonian **weather can change very quickly**
- Unfortunately we didn't do **the measurements** in Tähtvere and Ülejõe parks at the same time
  - But we saw differences in all indicators in both parks, **they have different microclimate.**
  - The altitude differences of the parks is **21.5 m.**
  - Ülejõe park **is next to a river.**



**THANK YOU!**