

1.

Title: Dependence of amount of precipitation according to height above sea level

Researchers: Maxmilián Vanča and Eliška Riesslerová

School name: Primary school Mánesova Otrokovice

Project expert: Mr. Karel Lípa (ČHMÚ), Mr. Pavel Broža, Mr. Stanislav Šindler (geography teacher)

2.

Abstract: We choose this topic because we are both interest in Geography. We were thinking about if height above sea level has some influence on precipitation. So we asked a question: How will the amount of precipitation change according to the height above sea level? We thought that with increasing height above sea level precipitation will be bigger and conversely. After discussion with our geography teacher we choose five places from our region with different height above sea level but same windward side and it were places in valley. We used data from our meteorological station and from Czech hydrometeorological institute (ČHMÚ). Our expert was Mr. Lípa who helped us with gaining data from the institute. We counted average quantity of precipitation from every month and compared them to average data from other places. We used data from March 2017 to March 2018. We replaced data from summer holiday from our station, because we were not able to measure them. Then we used data from meteorological station in our town Otrokovice. We found out that there is dependence, but only in some of the months per year. Our hypothesis was proved in August, October, November, February and March. So we think our hypothesis was correct, and answer to our research question is that there is some dependence. We also think that it would be interesting if we were continued with our research and maybe earn data from more than just one year, so we could conclusively prove or disprove our hypothesis.

Key words: precipitation, height above sea level, drought, wet

3.

Research question: How will the amount of precipitation change according to the height above sea level?

Hypothesis: With rising height above sea level, precipitation will go up, and conversely.

We wanted to know if is Otrokovice more dry or wet region, since we're living here. So we choose this question to find out in our project and that is also why we find another places with different height above sea level. Our mentor, Mr. Lípa, helped s with common characteristics of the places. Then we discussed it with our geography teacher, Mr. Šindler, and he helped us with picking specific places. We found some complications with windward sides. Also, we realized that we need to choose places in valley, like Otrokovice, because it could really affect our research. Eventually we choose five meteorological stations including

our school station. Precipitation were measured by us both, but by some of my classmates too. Overall there were about ten students plus us taking part in measurement and collecting data.

Equipment: We used hydrometer.

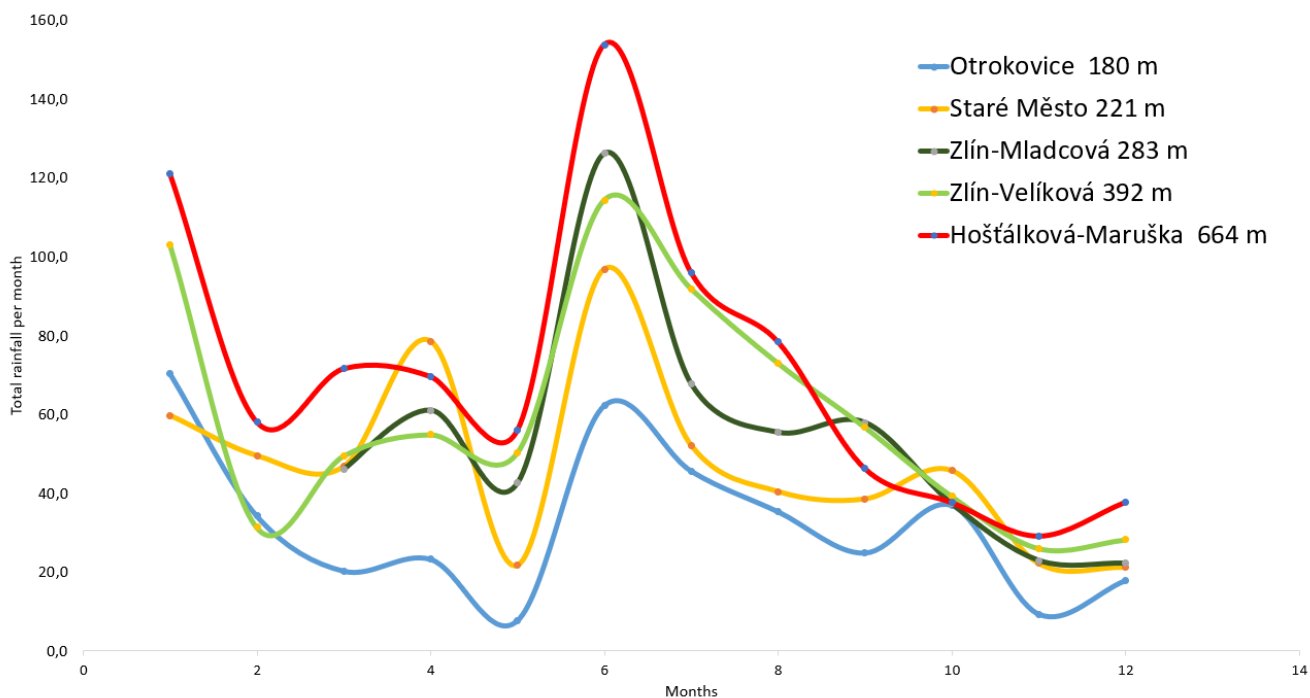
5.

## Map with selected data



	Otrokovice	Staré Město	Zlín-Mladcová	Zlín-Veliková	Hošťálková-Maruška
	<b>180 m</b>	<b>221 m</b>	<b>283 m</b>	<b>392 m</b>	<b>664 m</b>
April	70,4	59,7		102,9	120,9
May	34,2	49,5		31,3	58,0
June	20,2	46,7	46,1	49,4	71,5
July	23,2	78,5	61,0	54,8	69,5
August	7,6	21,7	42,6	50,2	55,9
September	62,2	96,7	126,2	114,2	153,6
October	45,6	52,1	67,6	91,7	95,8
November	35,3	40,4	55,4	72,9	78,3
December	24,8	38,5	57,9	56,7	46,2
January	36,9	45,7	37,3	39,2	37,6
February	9,3	22,2	22,9	26,0	29,1
March	17,8	21,2	22,2	28,2	37,7

### Results of our research



**Research methods:** We made tables from our data and data from ČHMÚ, also we were collecting our them for one year.

### We used GLOBE protocol called: Integrated Atmosphere (1 day)

THE GLOBE PROGRAM SCIENCE Data Entry Welcome Student 1 of Pavel Broza-GLOBE

Data Entry Home / ZS Manesova Otrokovice / Garden meteorological station:ATM-01 / Integrated Atmosphere (1-Day)

Comments

**Precipitation** - Expand/Collapse | X Remove

Days of accumulation \* 1

Types of precipitation measured: Rainfall, New Snowfall, Total Snowpack

**Rainfall**

Accumulation mm: Measurable, 15 mm

Rain pH Measured With

Note: pH measurements are only allowed when you have 3.5 mm or more of liquid

Comments

### 6.

**Research results:** Our conditions were not ideal because we had to choose places with similar windward sides and in valley, where is also a meteorological station, so we had not much options. But we choose proper places in our region, and the results partly proved our hypothesis. We found out that our hypothesis was proved in August, October, November, February and March, but in other months not. That is why our answer to research question is that precipitation depends on height above sea level.

8.

Conclusion: We were researching dependence of height above sea level on precipitation. We used data from similar places in our region but with different heights above sea level. Our hypothesis was partly proved, and that was in August, October, November, February and March.

We really appreciate help from our teacher Mr. Broža, who showed us GLOBE and taught us how to measure data and a lot of more things about meteorology, also he introduced us to people from TEREZA (which is Czech education center) and from ČHMÚ. Our geography teacher, Mr. Šindler was helpful too. And we have to thank our mentor from ČHMÚ, Mr. Lípa, who helped us to choose the right places for research and with earning data.

Badges:

Be a Collaborator: We were measuring our data for most time, so we engaged our schoolmates. We were also cooperating with our geography teacher and physics teacher.

Data Scientist: We collaborated with Czech hydrometeorological institute and we used their data, from which we made graphs and tables.

STEM Professional: We cooperated with Mr. Lípa from ČHMÚ, who is expert in air meteorology.