

# Ivano-Frankivsk City Environmental Station



**Our Ivano-Frankivsk City Environmental Station is located in Ivano-Frankivsk city, which is located in the southwest of Ukraine and is considered to be the eastern "gate" of the Carpathians.**



**Population - 263.4 thousand.  
Date of foundation of the city: 1662.  
Geographic coordinates of area  
observations: latitude 48.56,  
longitude 24.43,  
height 260 m**

# Hydrosphere



# Water research (Our lake)



soil research soil research



Urban Heat Island Effect (UHIE)-Surface Temperature Field Campaign



Pedosphere





measuring the trees



# Biosphere



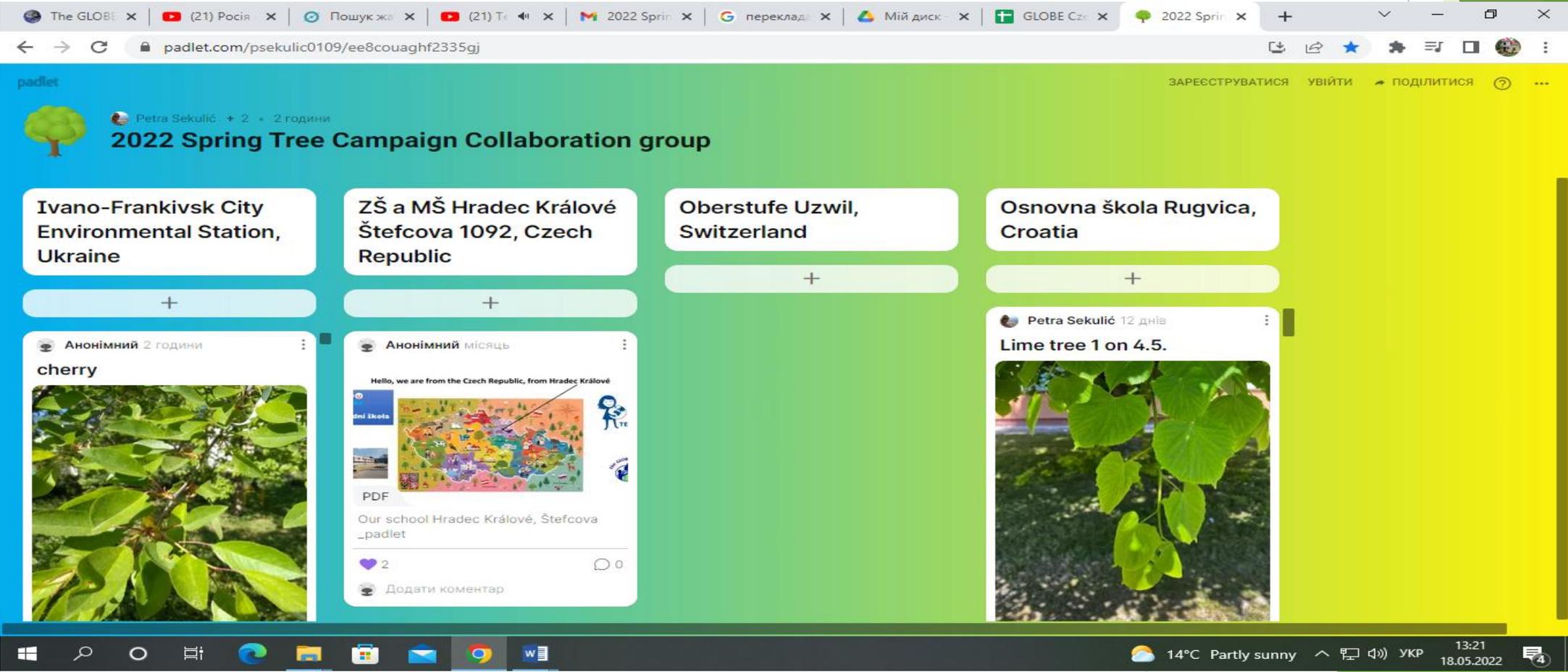
## Earth as a System



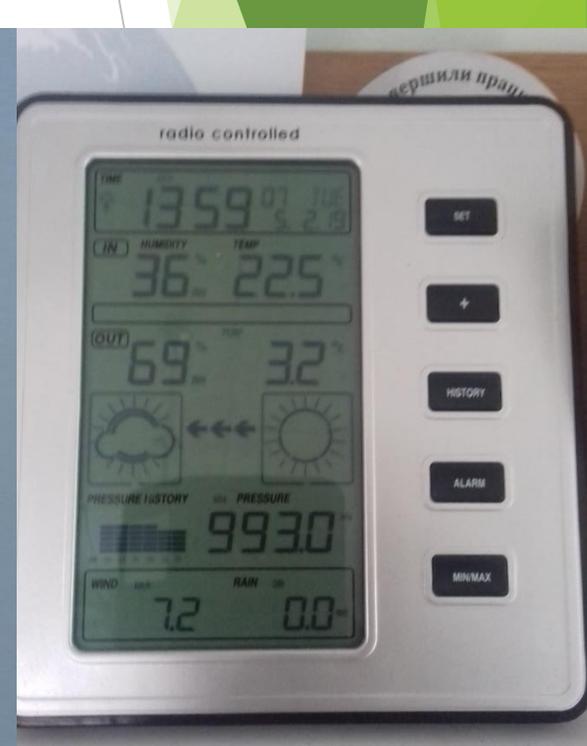
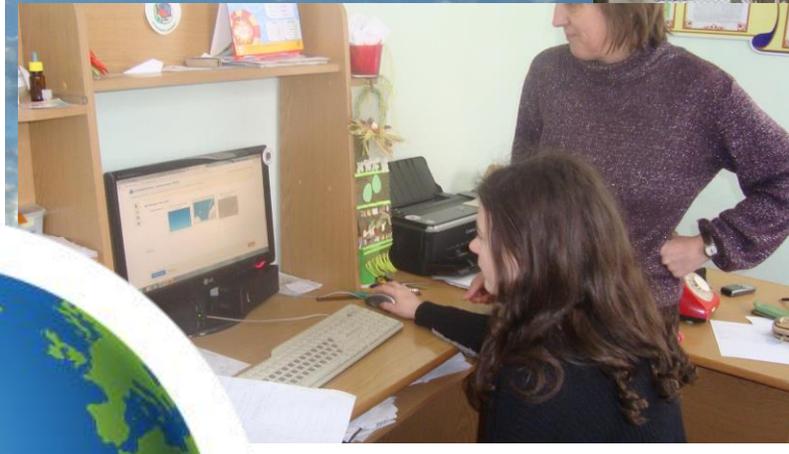
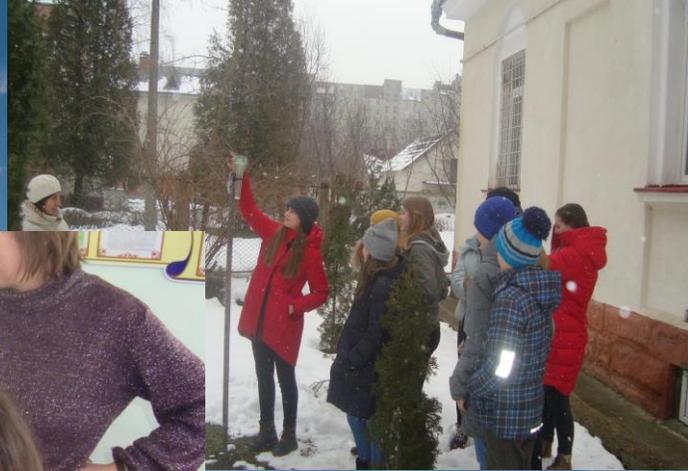
European phenological campaign



In this direction, we cooperate with Silva Balkarová from ZŠ a MŠ Hradec Králové Štefcova 1092, Czech Republic, with Petro Sekulich Osnovna škola Rugvica (Czech Republic), Markus Eugster Oberstufe Uzwil (Switzerland) and Rasa Gaidiene from Anyksciai distr. Troskunai K. Inciura Gymnasium (Lithuania). We share data and photos. Presentations and photos of trees are available on Padlet.



# Atmosphere



Scientists have proven that the intensity and frequency of extreme precipitation increases with the increase in global temperature.

It is noted that such an explosive increase in the amount of precipitation can harm the economy and social stability in various countries, because record showers are closely related to, for example, floods and the availability of drinking water. These natural phenomena can lead to human casualties and financial losses in various parts of the world.

Based on this, we decided to analyze the situation in the city of Ivano-Frankivsk. Observations of the atmosphere began in 2015 as part of the international GLOBE program. Data on air temperature, precipitation, humidity and atmospheric pressure are entered on the GLOBE website. Based on the collected data, we analyzed the amount of precipitation that fell in the city of Ivano-Frankivsk during 2015-2023. Data were grouped by season: winter, spring, summer, and fall.

## Amount of precipitation in winter, mm

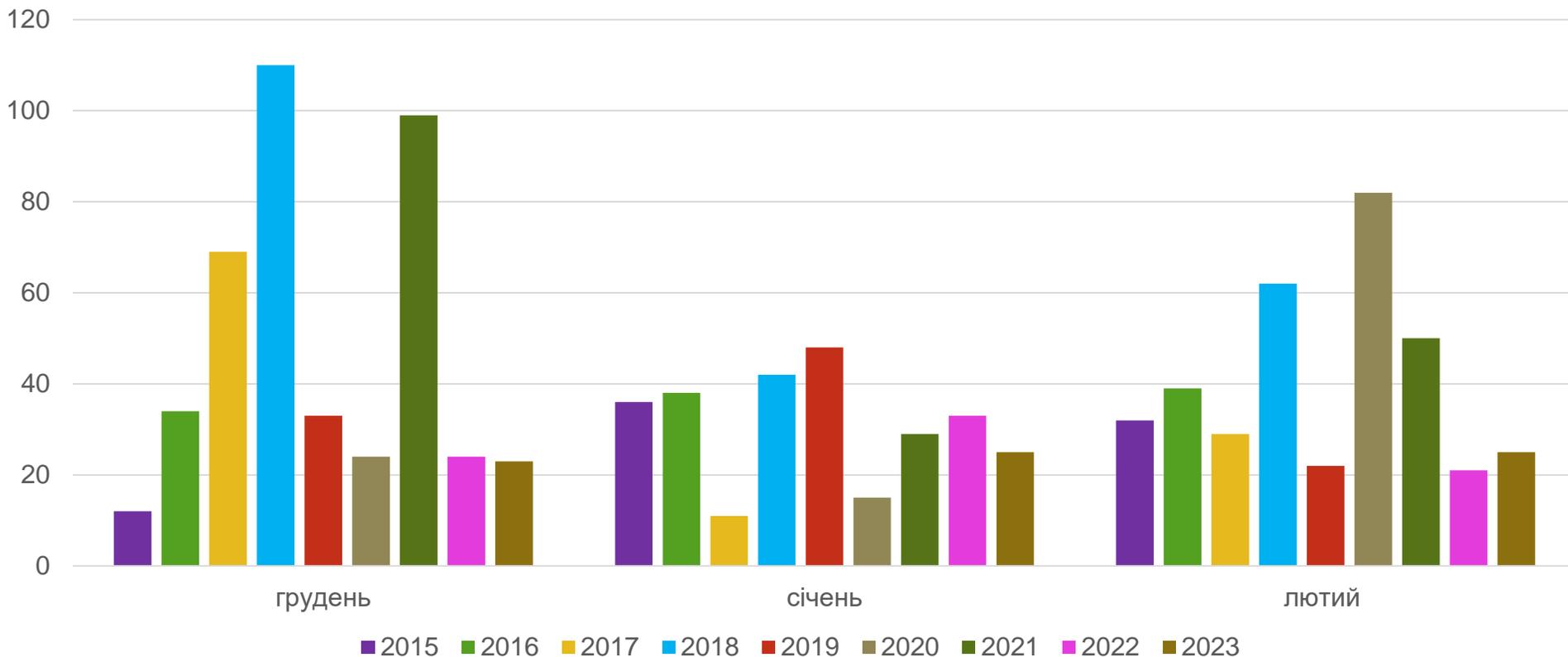
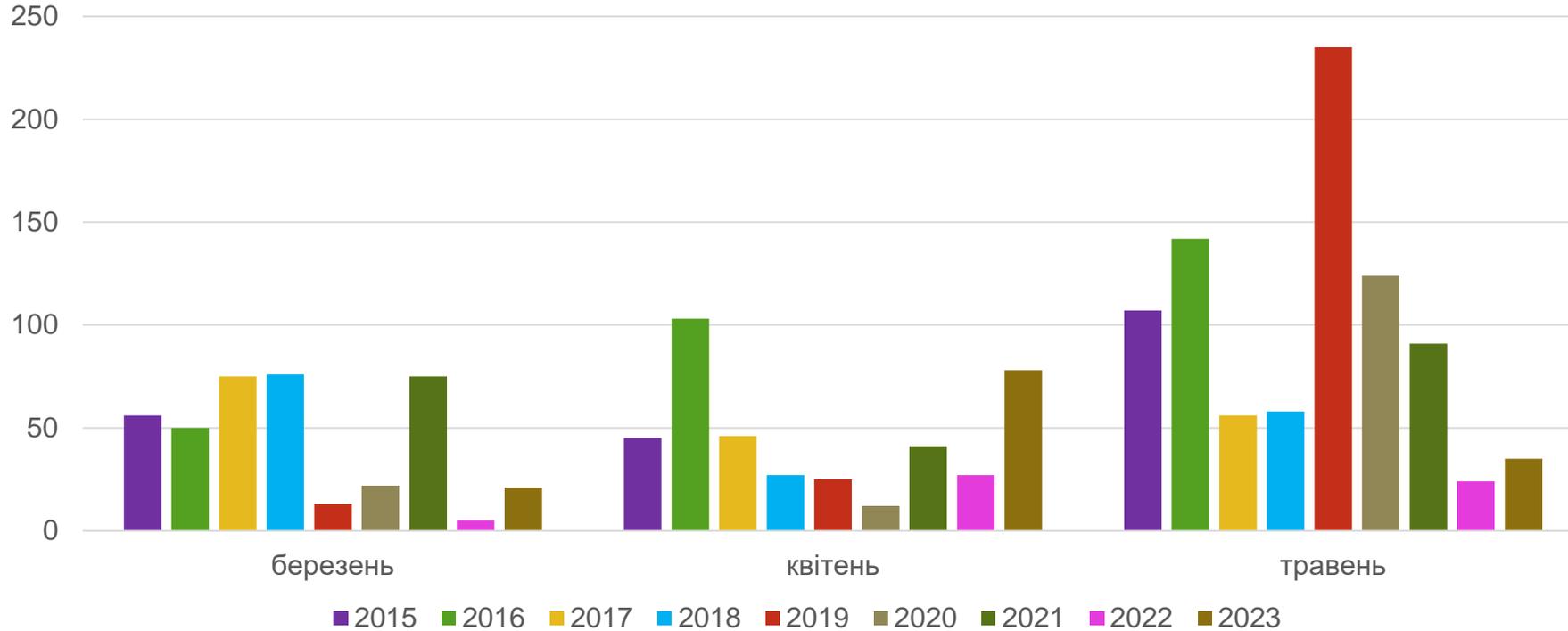


Table of average monthly precipitation in winter, mm

	2015	2016	2017	2018	2019	2020	2021	2022	2023	norm
December	12	34	69	110	33	24	99	24	23	45
January	36	38	11	42	48	15	29	33	25	26
February	32	39	29	62	22	82	50	21	25	35

As you can see, the amount of precipitation in winter is below normal

## Amount of precipitation in spring, mm



## Table of average monthly precipitation in spring, mm

	2015	2016	2017	2018	2019	2020	2021	2022	2023	<b>norm</b>
March	56	50	75	76	13	22	75	5	21	<b>35</b>
April	45	103	46	27	25	12	41	27	78	<b>55</b>
May	107	142	56	58	235	124	91	24	35	<b>78</b>

In spring, we also observe below-normal precipitation. The exception was May 2020, when we had a flood.

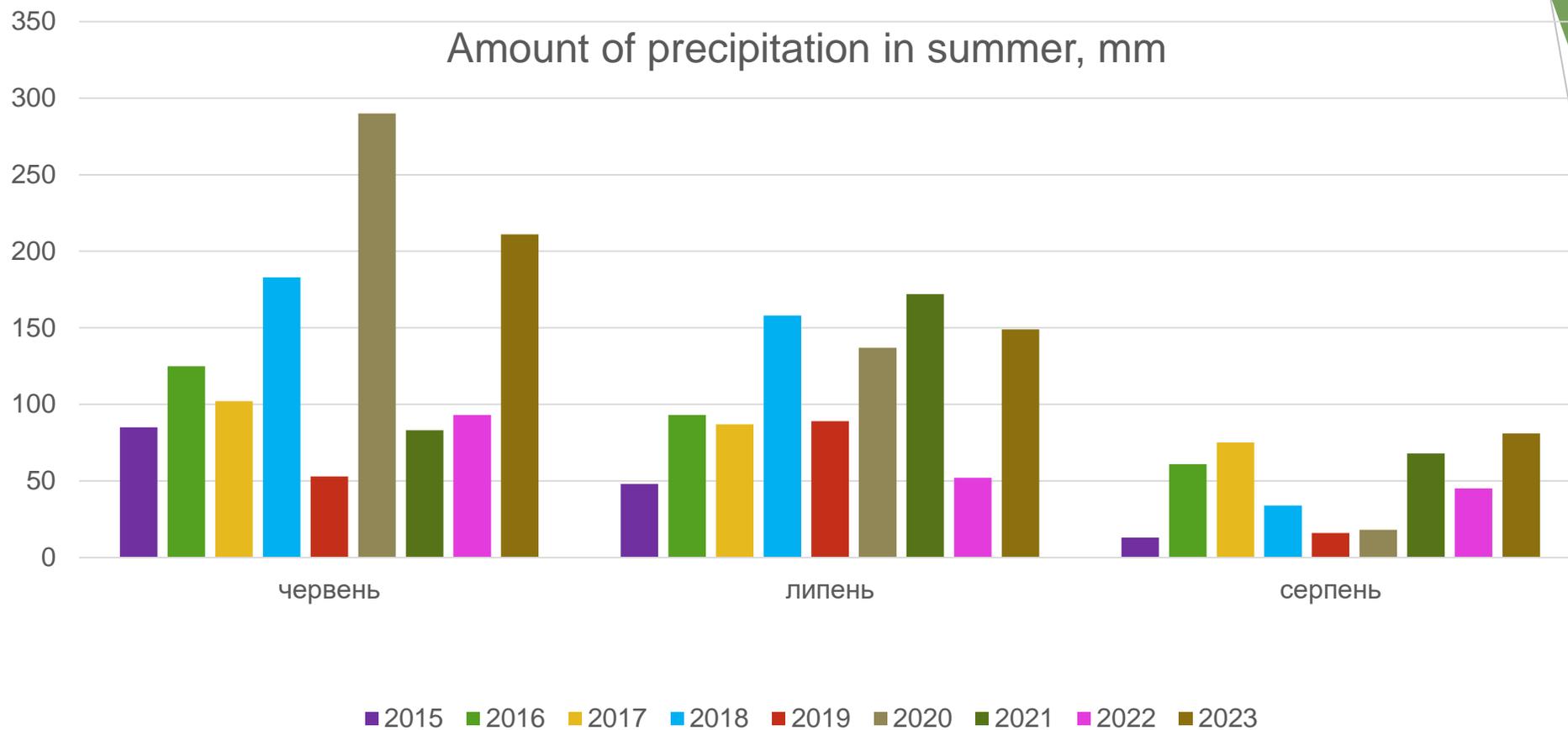


Table of average monthly precipitation in summer, mm

	2015	2016	2017	2018	2019	2020	2021	2022	2023	<b>norm</b>
June	85	125	102	183	53	290	83	93	211	<b>92</b>
July	48	93	87	158	89	137	172	52	149	<b>101</b>
August	13	61	75	34	16	18	68	45	81	<b>78</b>

In summer, the amount of precipitation exceeds the norm.

## Amount of precipitation in autumn, mm

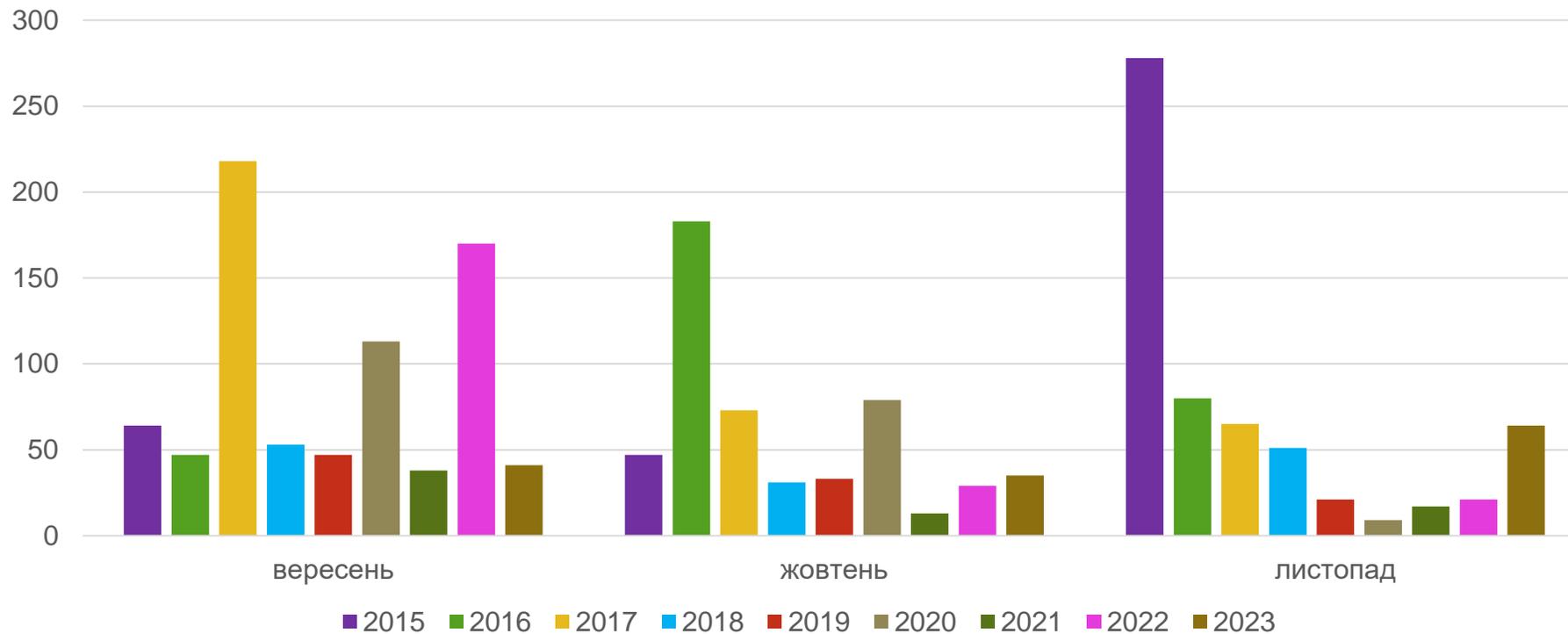
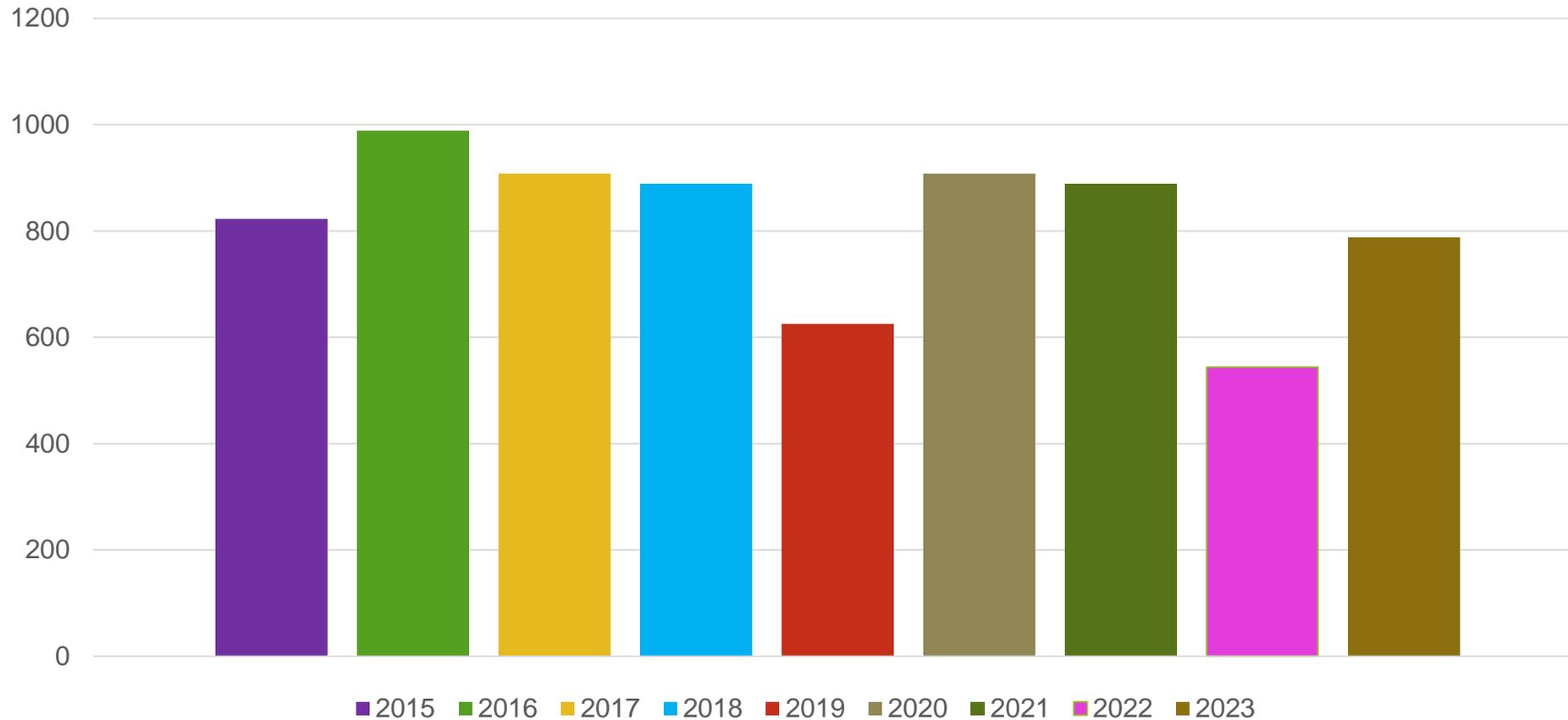


Table of average monthly precipitation in autumn, mm

	2015	2016	2017	2018	2019	2020	2021	2022	2023	norm
September	64	47	218	53	47	113	38	170	41	64
October	47	183	73	31	33	79	13	29	35	48
November	278	80	65	51	21	9	17	21	64	32

In autumn, we observe a decrease in the amount of precipitation relative to the norm. The exception is November 2015.

Average annual rainfall, mm



Average annual rainfall, mm

2015	2016	2017	2018	2019	2020	2021	2022	2023	Норма
822	988	907	889	625	907	889	544	788	689

Analyzing the average annual precipitation, we see that it is close to the norm. The exception is the year 2022. He is the driest.

After analyzing the amount of precipitation that fell during 2015-2023, we see an increase in days with a large amount of precipitation. At the beginning of observations, the amount of precipitation per day rarely exceeded 10 mm. In recent years, especially in the spring-summer period, there have been days when the monthly rate of precipitation fell per day. And there were days when the amount of precipitation reached 2-3 monthly norms.

This gives us the right to say that the climate in the city is changing.

**Thank you for listening**

