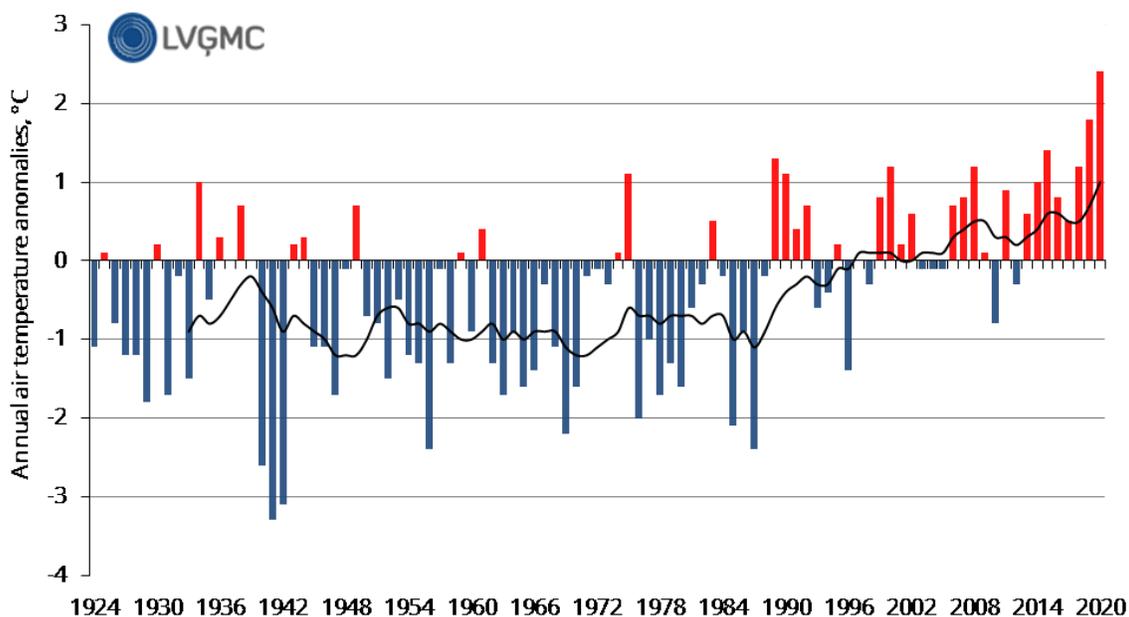


## WEATHER ANOMALIES IN LATVIA, 2020

Year 2020 in Latvia was the warmest on record going back to 1924, the air temperature was 2.4 °C above 1981-2010 normal. The precipitation amount in 2020 was slightly below normal, nevertheless it was wettest between of all three years.

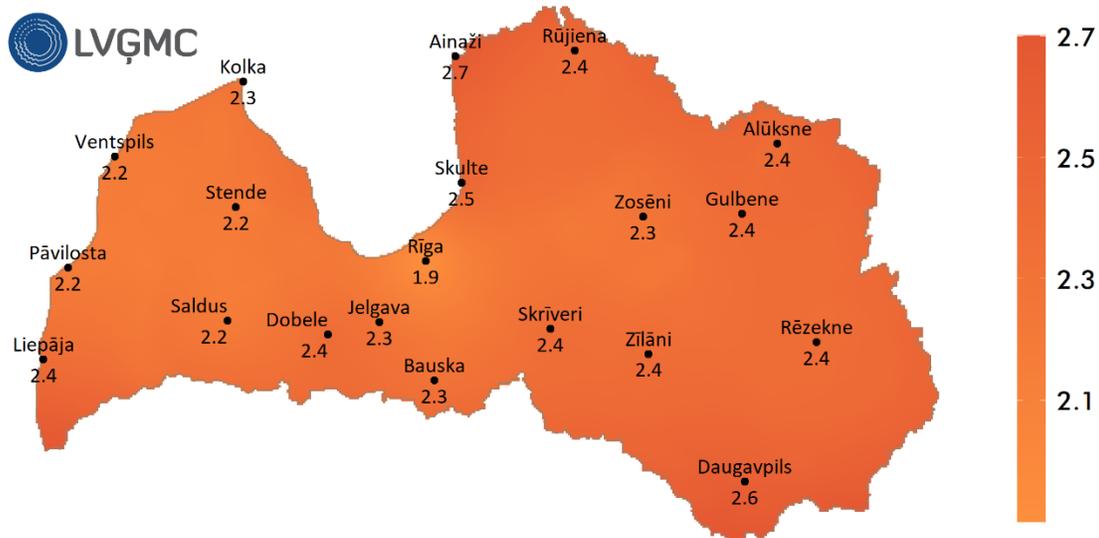
### Year

In 2020, the average air temperature in Latvia was +8.8 °C (2.4 degrees above the normal for the period of 1981-2010), making it the warmest year on record (since 1924), exceeding the record of 2019 by 0.6 °C (Figure 1). All three warmest years on record are since 2015, and period 2011-2020 was average 1 °C above normal.



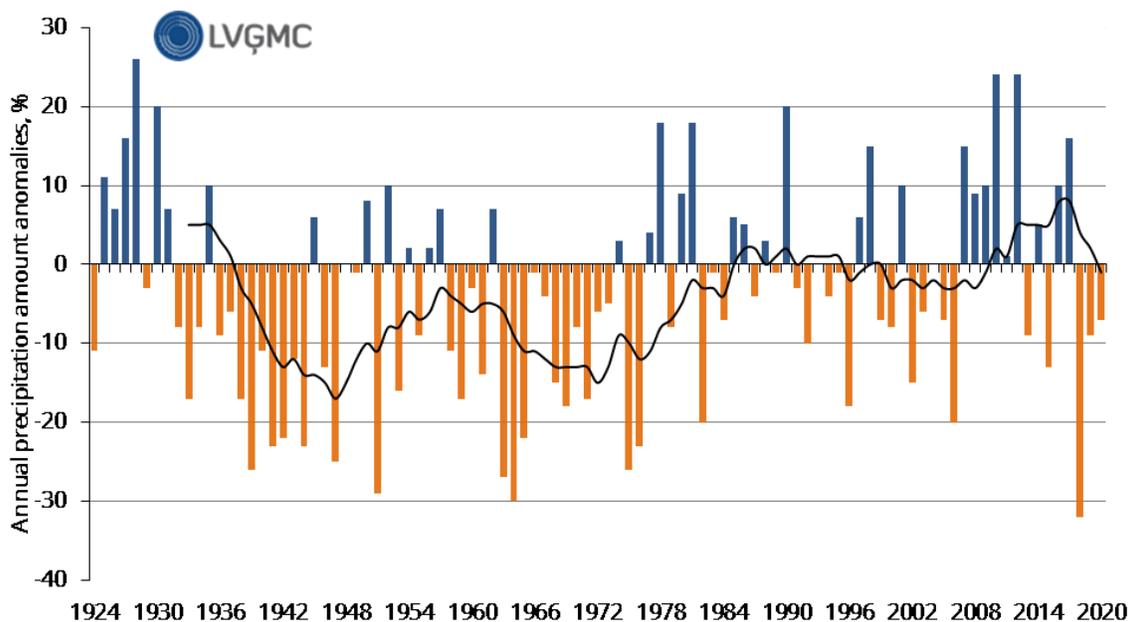
**Figure 1** Annual air temperature anomalies in Latvia (1924-2020) relative to 1981-2010 normal, °C (The black line represents the 10 year moving mean)

In almost all observing stations annual average air temperature anomalies (Figure 2) were above 2 °C. The largest anomalies were in eastern Latvia, and spatially average air temperature anomalies were from 1.9 °C in Riga to 2.6 °C in Daugavpils (southeast Latvia).



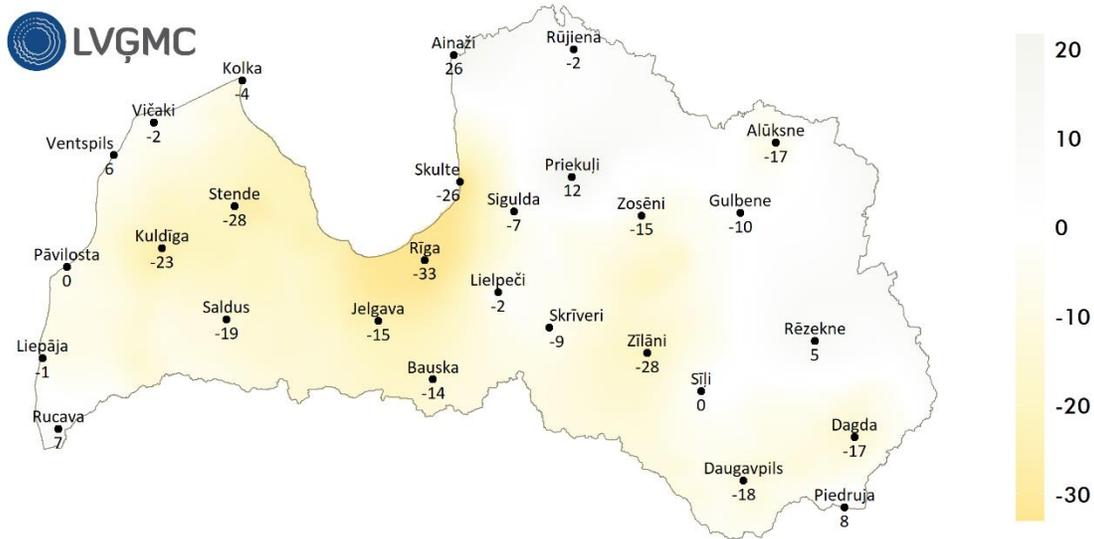
**Figure 2** Spatial distribution of annual air temperature anomalies in 2020, in Latvia relative to 1981-2010 normal, °C

Total amount of precipitation in 2020 in Latvia was 641.5 mm, 7% below the annual normal (692.3 mm). Although last year was drier than normal, 2020 was the wettest of the last three years (Figure 3).



**Figure 3** Annual precipitation anomalies in Latvia (1924-2020) relative to 1981-2010 normal, % (The black line represents the 10 year moving mean)

In most parts of Latvia year 2020 was drier than normal, only in 3 observing stations annual precipitation exceeded 1981-2010 normal – Ainazi (northern Latvia), Rezekne (eastern Latvia) and Ventspils (western Latvia). Spatially annual precipitation anomalies were from -33% in Riga to +26% in Ainazi (Figure 4), but precipitation amount was from 491.6 mm in Zilani (eastern Latvia) to 852.2 mm in Rucava (southwest Latvia).

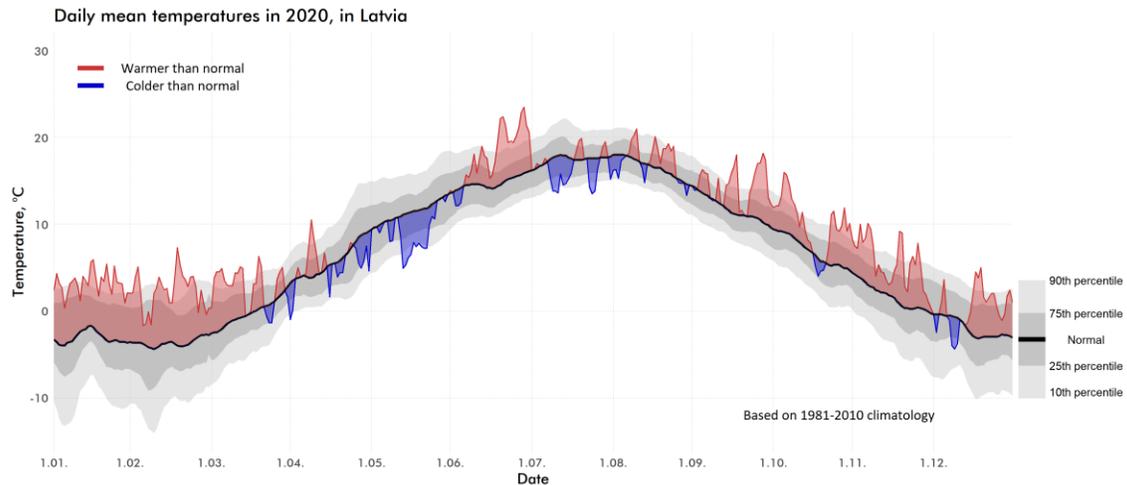


**Figure 4** Spatial distribution of annual precipitation anomalies in 2020, in Latvia relative to 1981-2010 normal, %

Year 2020 in Latvia was more windy than usual. The annual average wind speed was 3.6 m/s, which is 0.4 m/s above the normal. On 12 March in Liepāja (southwest Latvia), the strongest wind gusts of 2020 were observed – 34.1 m/s, the strongest registered wind gusts in Latvia in the last five years.

### Weather in seasons and months

Air temperature in 2020 was mostly above normal (Figure 5), especially in winter and autumn seasons, which were warmest on the record. Last year total 101 day were warmer than 90<sup>th</sup> percentile of 1981-2010, while only 15 days were cooler than 10<sup>th</sup> percentile.

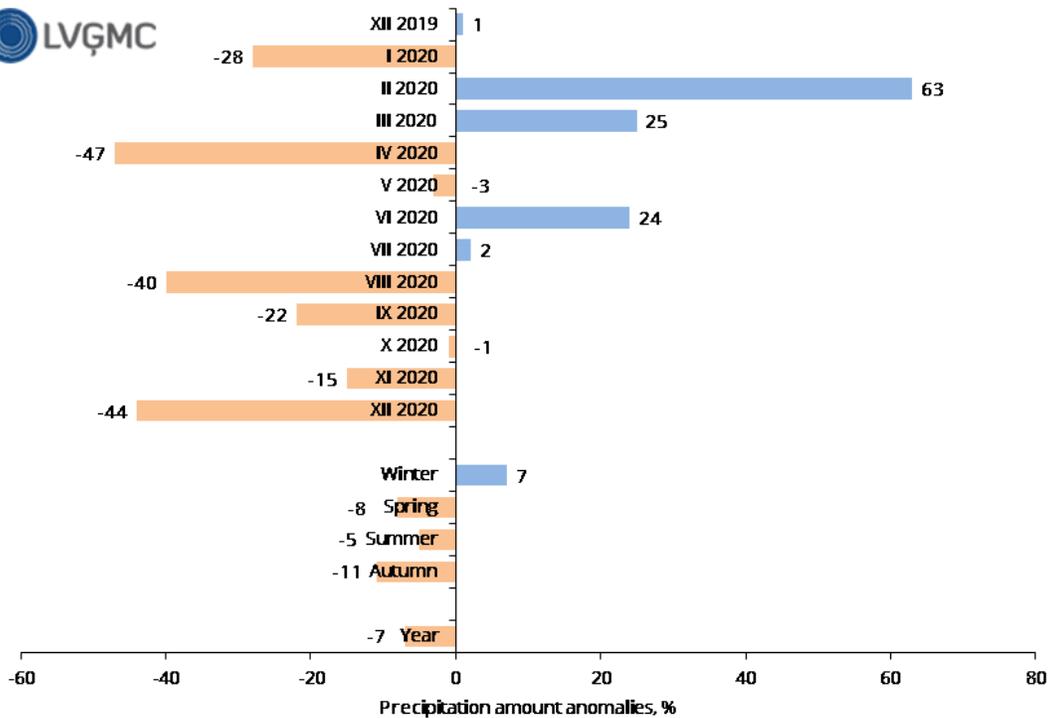


**Figure 5** Daily mean temperatures in 2020, in Latvia compared with 1981-2010 normal and percentiles, °C

Similar distribution was observed in maximum and minimum air temperature records. In observing stations in Latvia last year 394 daily maximum air temperature records and only 14 daily minimum air temperature records were registered.

Since winter and autumn were the warmest in the observation history, the annual minimum air temperature was only -10.3 °C – the highest annual minimum air temperature of the past at least 60 years. In the spring and summer, the heat was less frequent. Only in these seasons records of minimum air temperatures were recorded, and annual maximum air temperature +31.4 °C was the lowest since 2009.

Since August all months have been drier than normal, and in 2020, in Latvia 2/3 of all months were drier than normal. Out of all seasons only winter was wetter than normal (Figure 6).



**Figure 6** Monthly and seasonal precipitation amount anomalies of 2020 in Latvia compared with 1981-2010 normal, %

### Winter 2019/2020

In Latvia the average air temperature of winter 2019/2020 was  $+2.7\text{ }^{\circ}\text{C}$  ( $5.7\text{ }^{\circ}\text{C}$  above normal), becoming the warmest winter on record, by  $1.7\text{ }^{\circ}\text{C}$  overcoming record of winter 1924/1925. January with an average air temperature of  $+3.1\text{ }^{\circ}\text{C}$  was the warmest on the record, while February (average air temperature  $+2.2\text{ }^{\circ}\text{C}$ ) was the 2<sup>nd</sup> warmest, only behind February 1990.

The winter of 2019/2020 in Latvia, with precipitation amount 153.7 mm, was 8% wetter than normal. The February was the wettest month of winter and with precipitation amount 60.1 mm (63% above normal) it was the 4<sup>th</sup> wettest February on record. Besides in Pavilosta (western Latvia) precipitation amount in February reached 121.8 mm, which is the third largest monthly precipitation amount registered in Latvia.

Due to the record warmth, for the first time in at least 60 years, snow cover was not registered all throughout the winter.

### Spring

Spring was mostly cooler than the normal. March, with an average air temperature of  $+2.9\text{ }^{\circ}\text{C}$ , was the only spring month warmer than the normal and became the 6<sup>th</sup> warmest March on the record. April was  $0.1\text{ }^{\circ}\text{C}$  cooler than normal (average air temperature  $+5.6$

°C), while May with average air temperature of +9.5 °C was 1.9 °C cooler than the normal. May 2020 was the first since 1999, when the average air temperature was below +10 °C.

In spring the total precipitation amount in Latvia was 112.6 mm, 8% below the season normal (122.7 mm).

### **Summer**

The average summer air temperature in Latvia was +17.2 °C, which is 1.0 °C above the summer normal. From summer months, the warmest was June, which, with an average air temperature of +18.1 °C (3.3 °C above normal), was the second warmest June on the record. In July and August, air temperature was mostly below normal, with July in Latvia being 1 °C cooler than normal, while August was 0.7 °C warmer than the normal.

Last summer was the wettest since 2017, still it was drier than normal. The total precipitation amount in Latvia was 215.0 mm, which is 5% below the normal (225.7 mm). The wettest summer month was June – with an average precipitation amount of 91.1 mm in Latvia it was 24% wetter than the normal (73.3 mm). In the last two days of June particularly severe rainfall was observed.

### **Autumn**

In autumn the average air temperature in Latvia was +9.9 °C, which is 3.2 °C above the normal, therefore autumn 2020 was the warmest on record, by 0.2 °C exceeding the record of autumn 1934. September with an average air temperature of +14.5 °C was the third warmest, behind Septembers of 1934 and 2018, in October the average air temperature was +9.8 °C, becoming 2<sup>nd</sup> warmest October, only 0.1 °C behind October 1967, while November was the warmest in observation history, surpassing November 1928 by 0.2 °C.

The precipitation amount in Latvia in autumn 2020 was 178.1 mm, 11% below the normal (201 mm). All of the autumn months were drier than the norm.