Analysis of Meteorological Data for Station AL007: Temperature, Pressure, and Precipitation Trends

# Abstract

In 2015, the lowest atmospheric pressure recorded at station AL007 was during January, with a minimum pressure of 980.12 mbar. In 2021, February was the month with the highest atmospheric pressure at station AL007, reaching a maximum of 1037.92 mbar. For precipitation in 2013, the greatest discrepancy between maximum and minimum values occurred in August, with a difference of 26.8 mm. Regarding temperature in 2017, August again showed the greatest discrepancy, with a difference of 20.321°C between the highest and lowest temperatures recorded for station AL007.

# On which month of the year 2015 was the lowest value of the pressure recorded for station AL007?

To determine the month of 2015 when the lowest pressure was recorded at station AL007, we need to examine the "Min Pressure (mbar)" values for each month in 2015. Here are the values:  
  
- January: 980.12  
- February: 987.36  
- March: 994.01  
- April: 1001.83  
- May: 1005.79  
- June: 1009.75  
- July: 1007.68  
- August: 1008.28  
- September: 1008.25  
- October: 998.62  
- November: 984.8  
- December: 1023.76  
  
By comparing these values, we find that the lowest pressure recorded was in January with a value of 980.12 mbar.

# On which month of the year 2021 was the highest value of the pressure recorded for station AL007?

To determine the month with the highest value of atmospheric pressure recorded for station AL007 in the year 2021, we will examine the "Max Pressure" values for each month of 2021:  
  
- January 2021: Max Pressure = 1028.16 mbar  
- February 2021: Max Pressure = 1037.92 mbar  
- March 2021: Max Pressure = 1032.74 mbar  
- April 2021: Max Pressure = 1029.6 mbar  
- May 2021: Max Pressure = 1021.88 mbar  
- June 2021: Max Pressure = 1024.32 mbar  
- July 2021: Max Pressure = 1018.08 mbar  
- August 2021: Max Pressure = 1019.81 mbar  
- September 2021: Max Pressure = 1022.38 mbar  
- October 2021: Max Pressure = 1028.95 mbar  
- November 2021: Max Pressure = 1027.45 mbar  
- December 2021: Max Pressure = 1029.78 mbar  
  
The highest Max Pressure was recorded in February 2021 with a value of 1037.92 mbar. Therefore, February was the month with the highest atmospheric pressure recorded for station AL007 in the year 2021.

# In which month of year 2013 does the precipitation show the greatest discrepancy between its maximum and minimum values for station AL007?

To determine the month with the greatest discrepancy between maximum and minimum precipitation values for station AL007 in the year 2013, we will calculate the difference between the maximum and minimum precipitation values for each month and identify the month with the highest value. Here are the calculations:  
  
- January 2013: Max = 5.1, Min = 0.0, Difference = 5.1 - 0.0 = 5.1  
- February 2013: Max = 5.8, Min = 0.0, Difference = 5.8 - 0.0 = 5.8  
- March 2013: Max = 11.9, Min = 0.0, Difference = 11.9 - 0.0 = 11.9  
- April 2013: Max = 6.5, Min = 0.0, Difference = 6.5 - 0.0 = 6.5  
- May 2013: Max = 9.1, Min = 0.0, Difference = 9.1 - 0.0 = 9.1  
- June 2013: Max = 4.8, Min = 0.0, Difference = 4.8 - 0.0 = 4.8  
- July 2013: Max = 13.4, Min = 0.0, Difference = 13.4 - 0.0 = 13.4  
- August 2013: Max = 26.8, Min = 0.0, Difference = 26.8 - 0.0 = 26.8  
- September 2013: Max = 10.2, Min = 0.0, Difference = 10.2 - 0.0 = 10.2  
- November 2013: Max = 21.5, Min = 0.0, Difference = 21.5 - 0.0 = 21.5  
- December 2013: Max = 2.5, Min = 0.0, Difference = 2.5 - 0.0 = 2.5  
  
From these calculations, August 2013 shows the greatest discrepancy between maximum and minimum precipitation values with a difference of 26.8 mm.

# In which month of year 2017 does the temperature show the greatest discrepancy between its maximum and minimum values for station AL007?

To determine the month in 2017 where the temperature shows the greatest discrepancy between its maximum and minimum values for station AL007, we need to calculate the difference between the maximum and minimum temperatures for each month.  
  
Here are the calculations for each month in 2017:  
  
1. January 2017:  
 - Max: 14.676  
 - Min: -2.994  
 - Discrepancy: 14.676 - (-2.994) = 17.670  
  
2. February 2017:  
 - Max: 17.733  
 - Min: 2.814  
 - Discrepancy: 17.733 - 2.814 = 14.919  
  
3. March 2017:  
 - Max: 24.394  
 - Min: 5.894  
 - Discrepancy: 24.394 - 5.894 = 18.500  
  
4. April 2017:  
 - Max: 24.11  
 - Min: 4.734  
 - Discrepancy: 24.11 - 4.734 = 19.376  
  
5. May 2017:  
 - Max: 29.022  
 - Min: 9.599  
 - Discrepancy: 29.022 - 9.599 = 19.423  
  
6. June 2017:  
 - Max: 33.447  
 - Min: 15.87  
 - Discrepancy: 33.447 - 15.87 = 17.577  
  
7. July 2017:  
 - Max: 33.374  
 - Min: 18.776  
 - Discrepancy: 33.374 - 18.776 = 14.598  
  
8. August 2017:  
 - Max: 38.648  
 - Min: 18.327  
 - Discrepancy: 38.648 - 18.327 = 20.321  
  
9. September 2017:  
 - Max: 28.727  
 - Min: 11.837  
 - Discrepancy: 28.727 - 11.837 = 16.890  
  
10. October 2017:  
 - Max: 26.825  
 - Min: 8.978  
 - Discrepancy: 26.825 - 8.978 = 17.847  
  
11. November 2017:  
 - Max: 19.883  
 - Min: 2.429  
 - Discrepancy: 19.883 - 2.429 = 17.454  
  
12. December 2017:  
 - Max: 16.749  
 - Min: 0.334  
 - Discrepancy: 16.749 - 0.334 = 16.415  
  
The month with the greatest discrepancy between maximum and minimum temperatures is August 2017, with a discrepancy of 20.321°C.

# Summary Table

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| Question | Numerical Data |
| Month with lowest pressure in 2015 | January |
| Month with highest pressure in 2021 | February |
| Month with greatest precipitation discrepancy in 2013 | August |
| Month with greatest temperature discrepancy in 2017 | August |

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