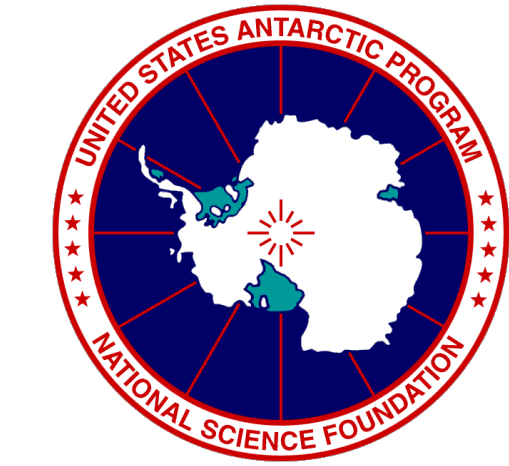




# The Warming and Cooling within the Antarctic Climate: Marble Point Station

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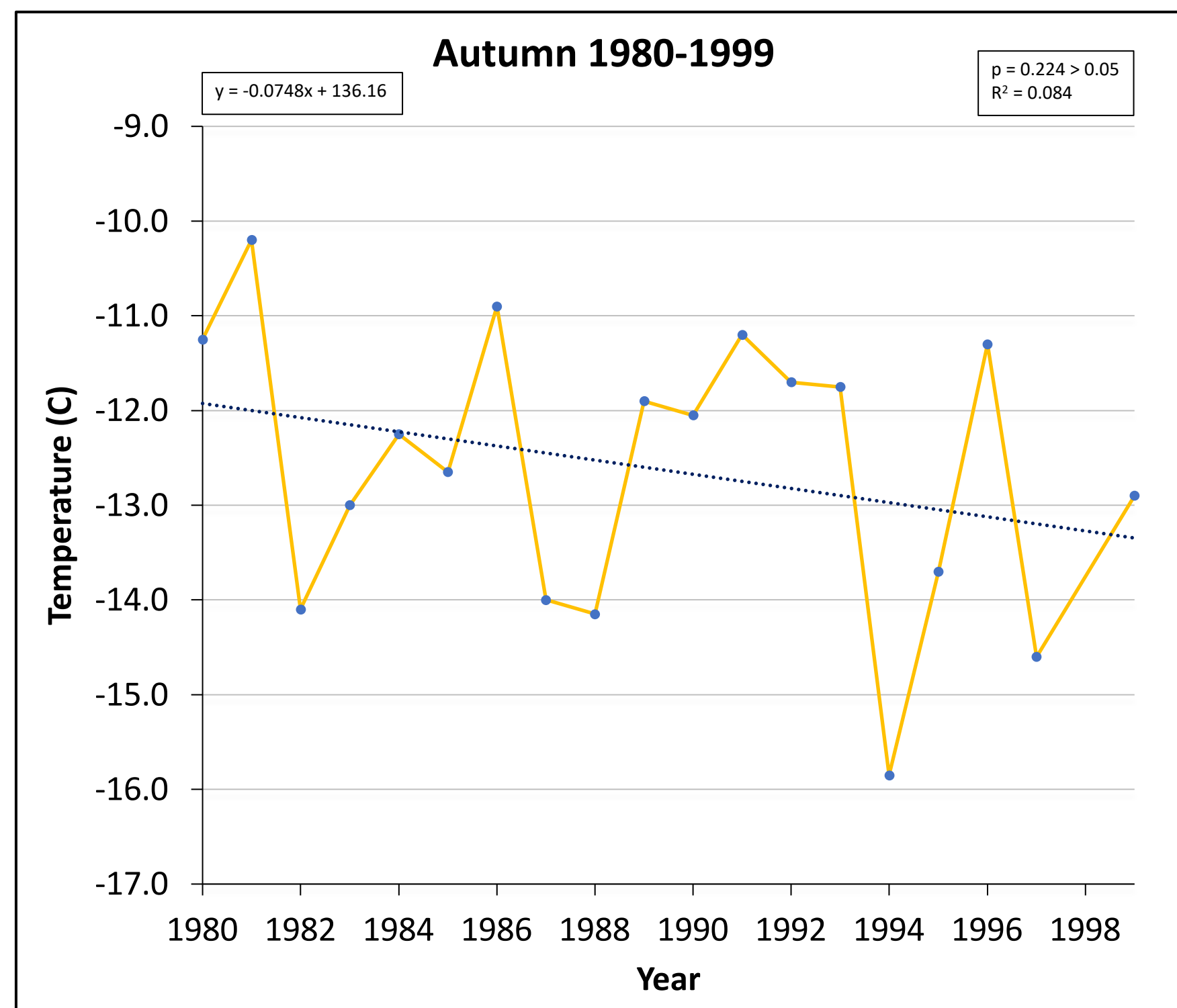
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## Introduction

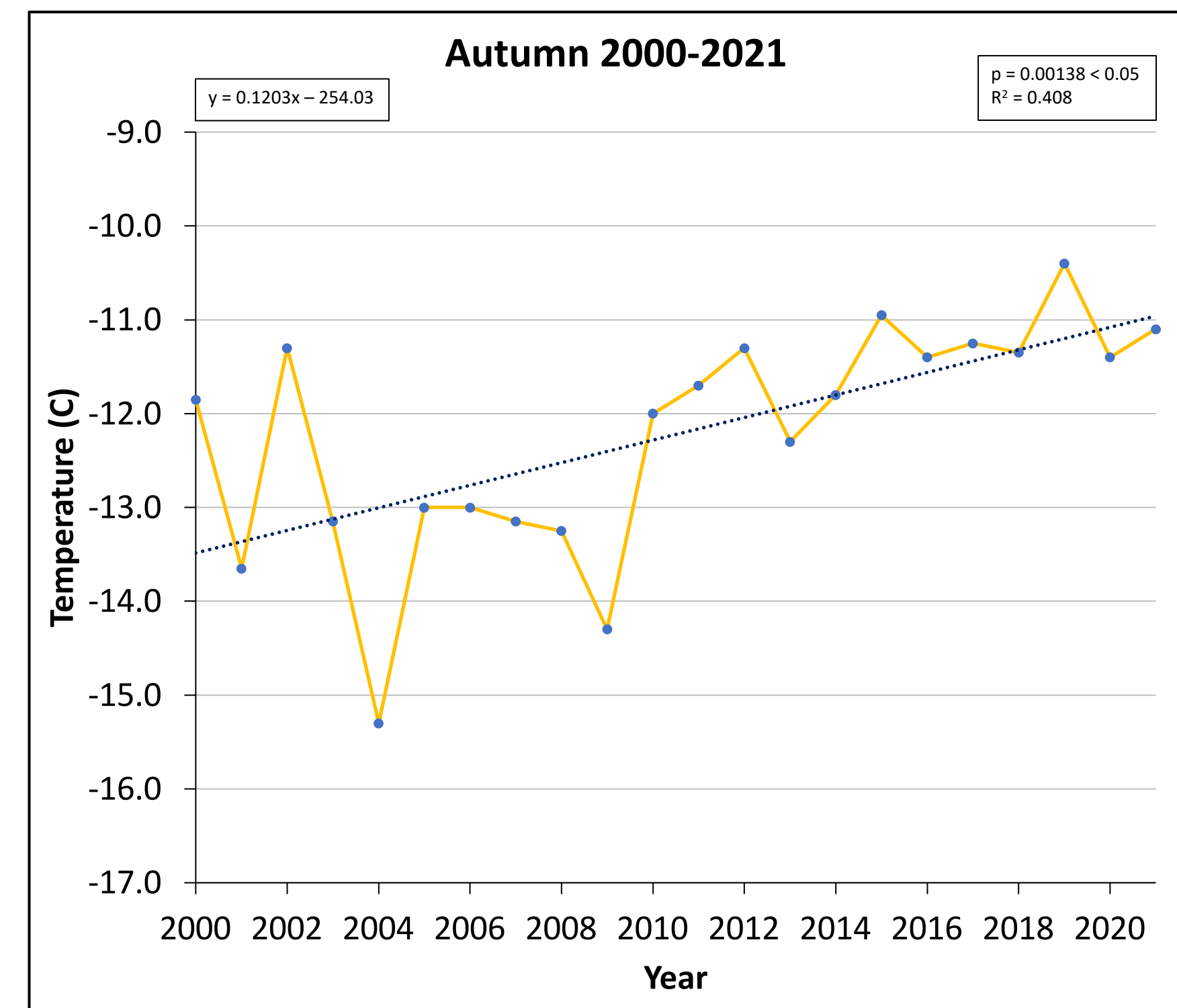
- The Antarctic Meteorological Research and Data Center is now finalizing the analysis of the collected data to produce a climatology of the Marble Point Station area in the Antarctic.
- After consideration of mean temperatures, a new classification of seasons has been adopted breaking up the traditional four seasons into five.

## Statistical Findings

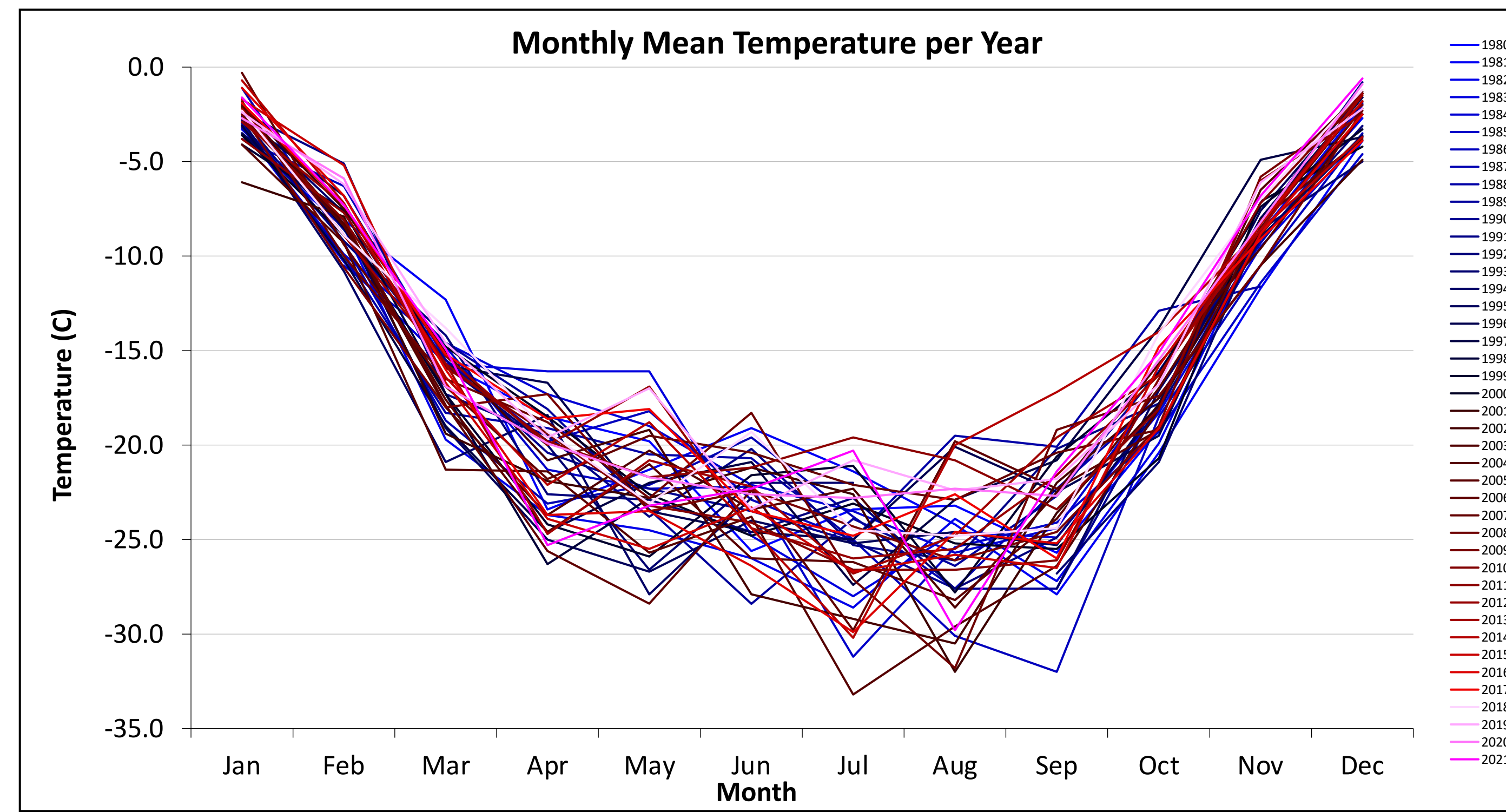
- Significance testing has shown significant warming and cooling trends from the years 1980-2021.
- The first half of the climatology (1980-1999) warmed at a rate of 0.65°C per decade, while the latter half (2000-2021) warmed at 0.95°C per decade.



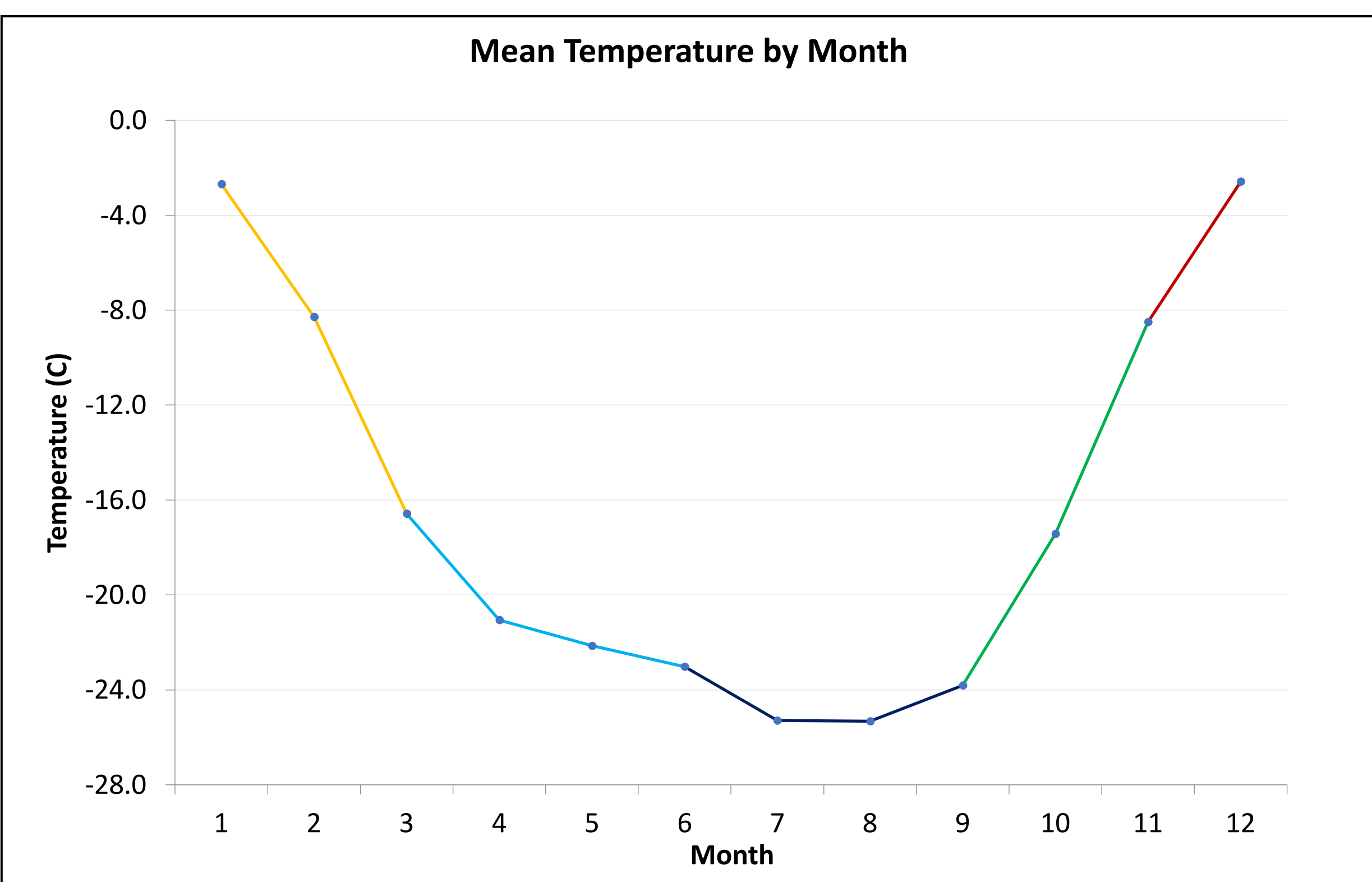
The annual mean temperature for the season of Autumn averaged from 1980 to 1999.



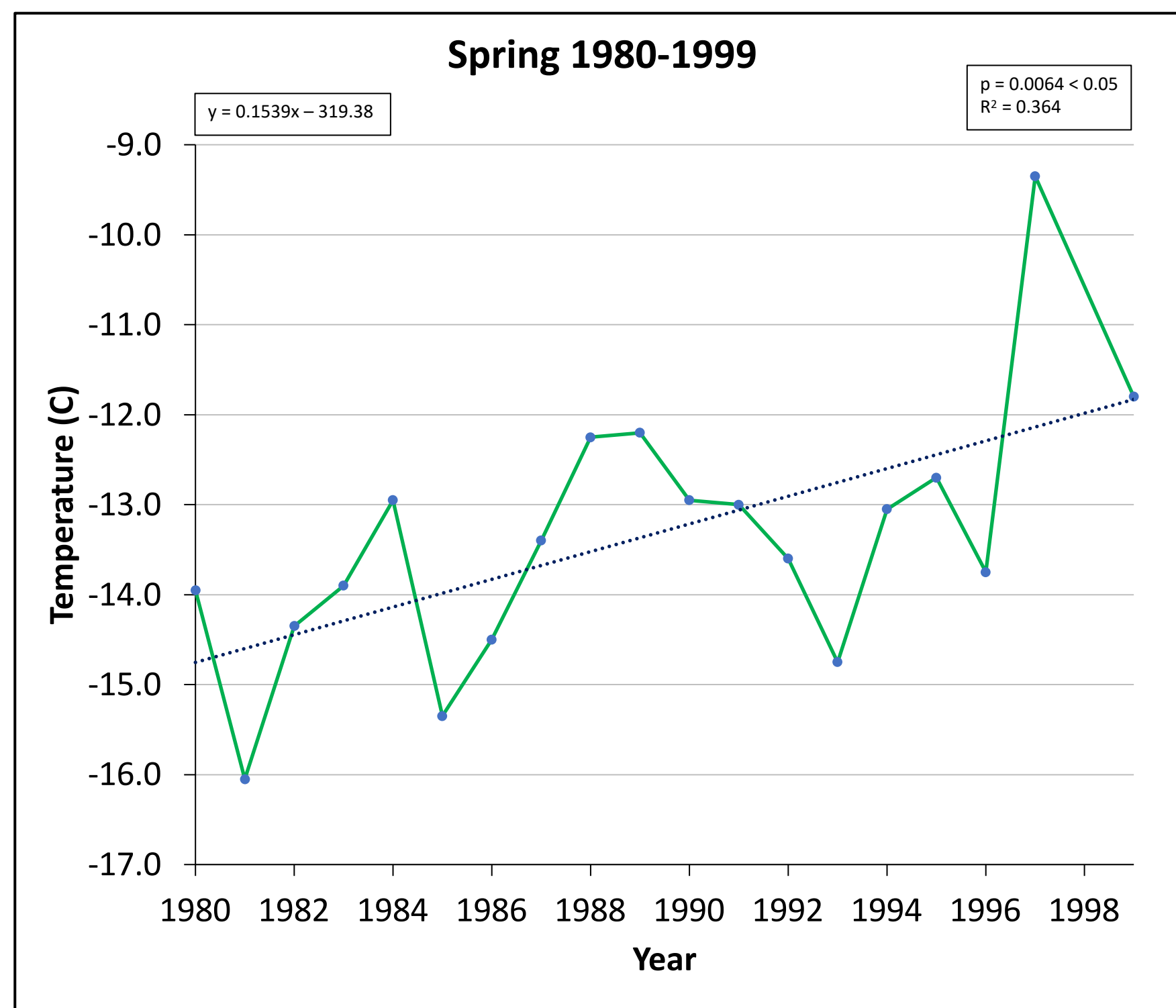
The annual mean temperature for the season of Autumn averaged from 2000 to 2021.



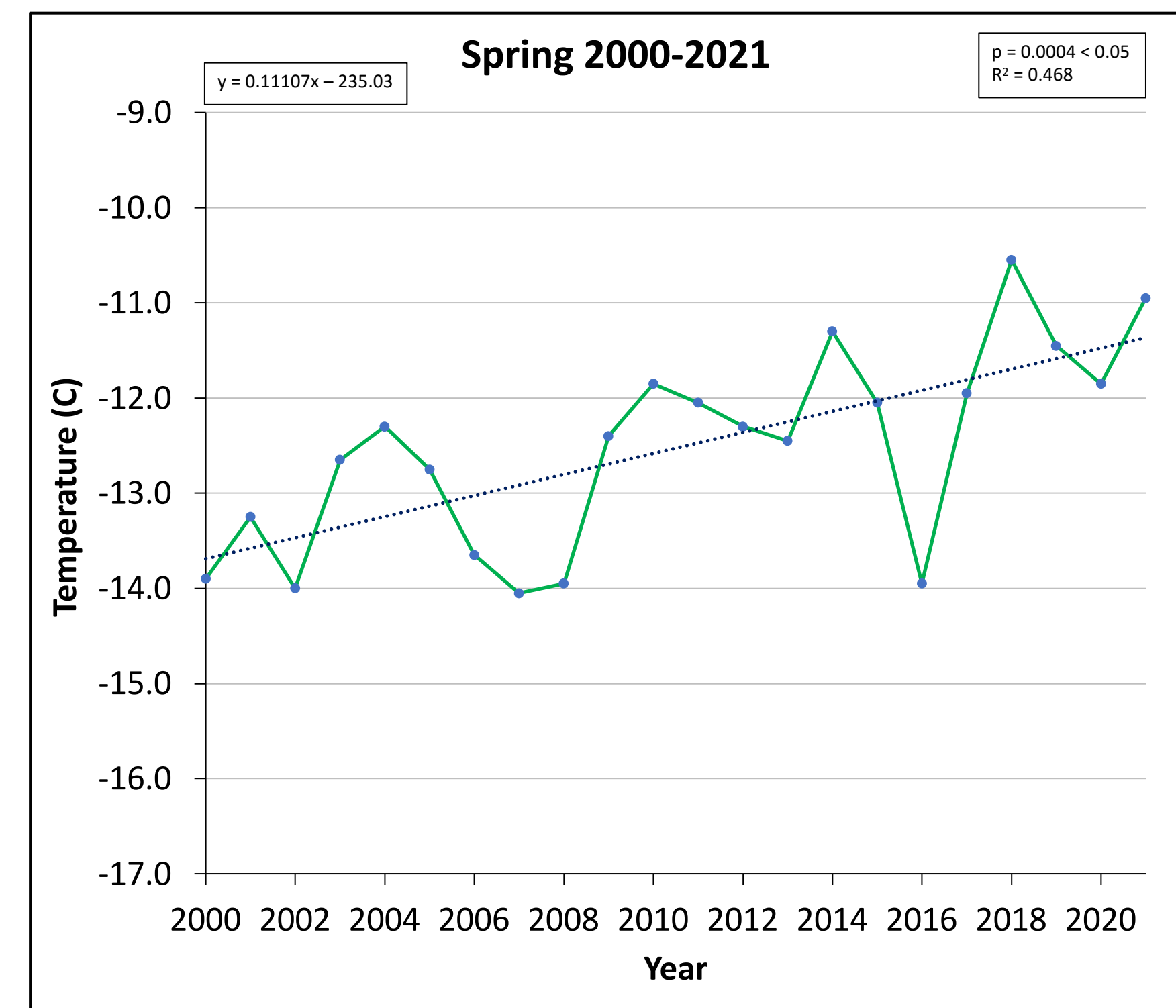
The monthly mean temperature for each year from 1980 (Blue) to 2021 (Red).



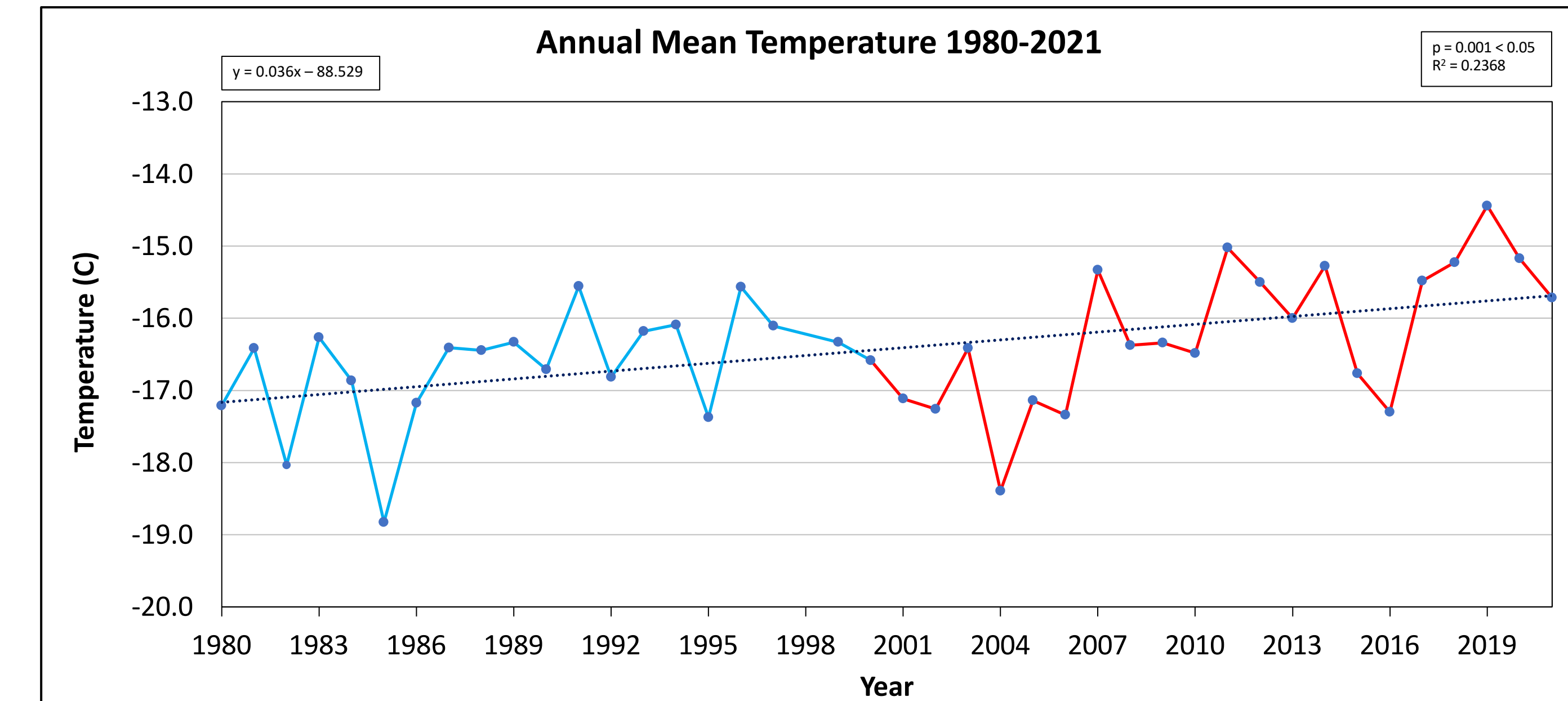
The monthly mean temperature averaged from 1980 to 2020. Each color represents a season: Autumn (Yellow), First Winter (Light Blue), Second Winter (Dark Blue), Spring (Green), Summer (Red).



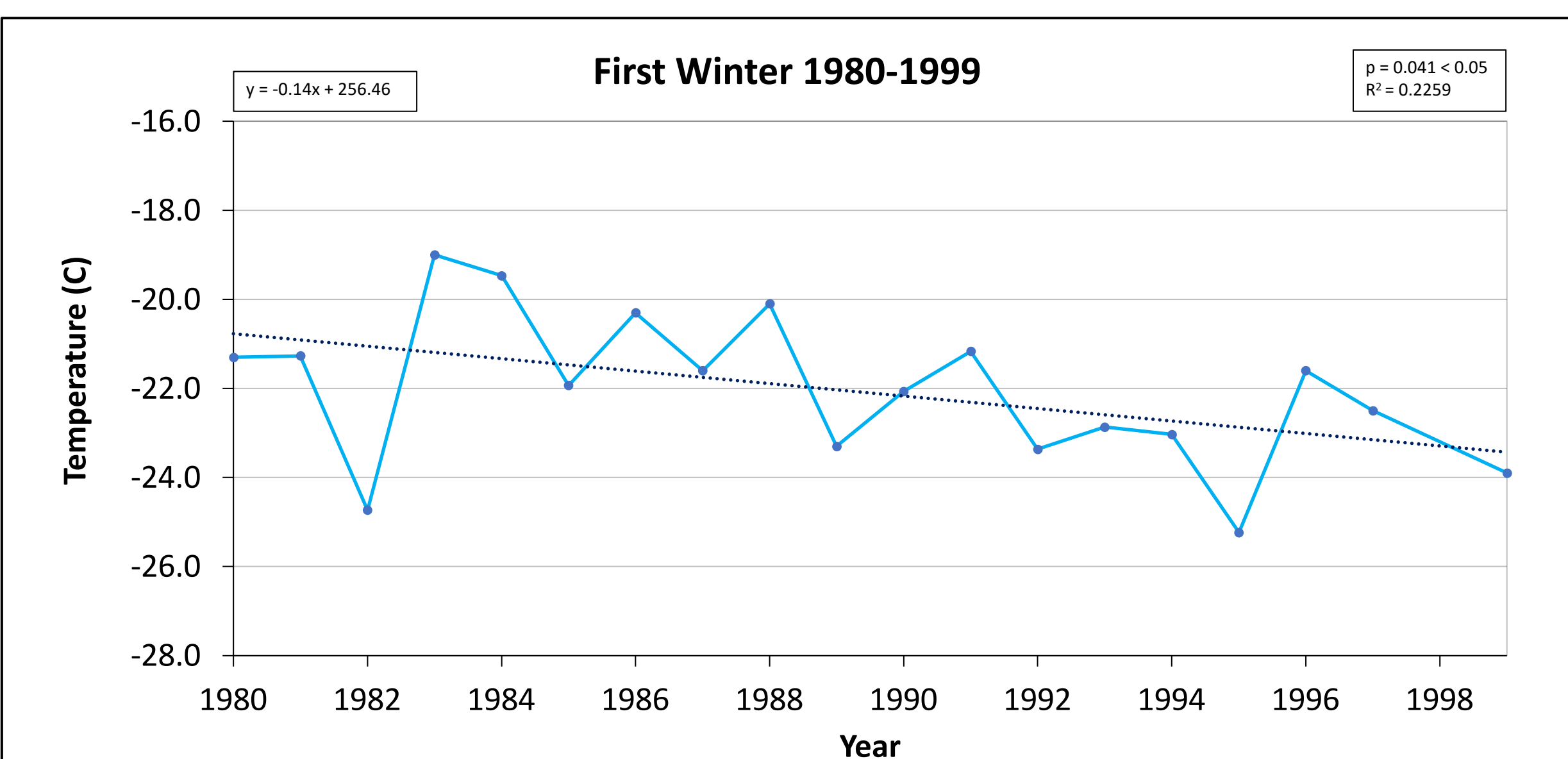
The annual mean temperature for the season of Spring averaged from 1980 to 1999.



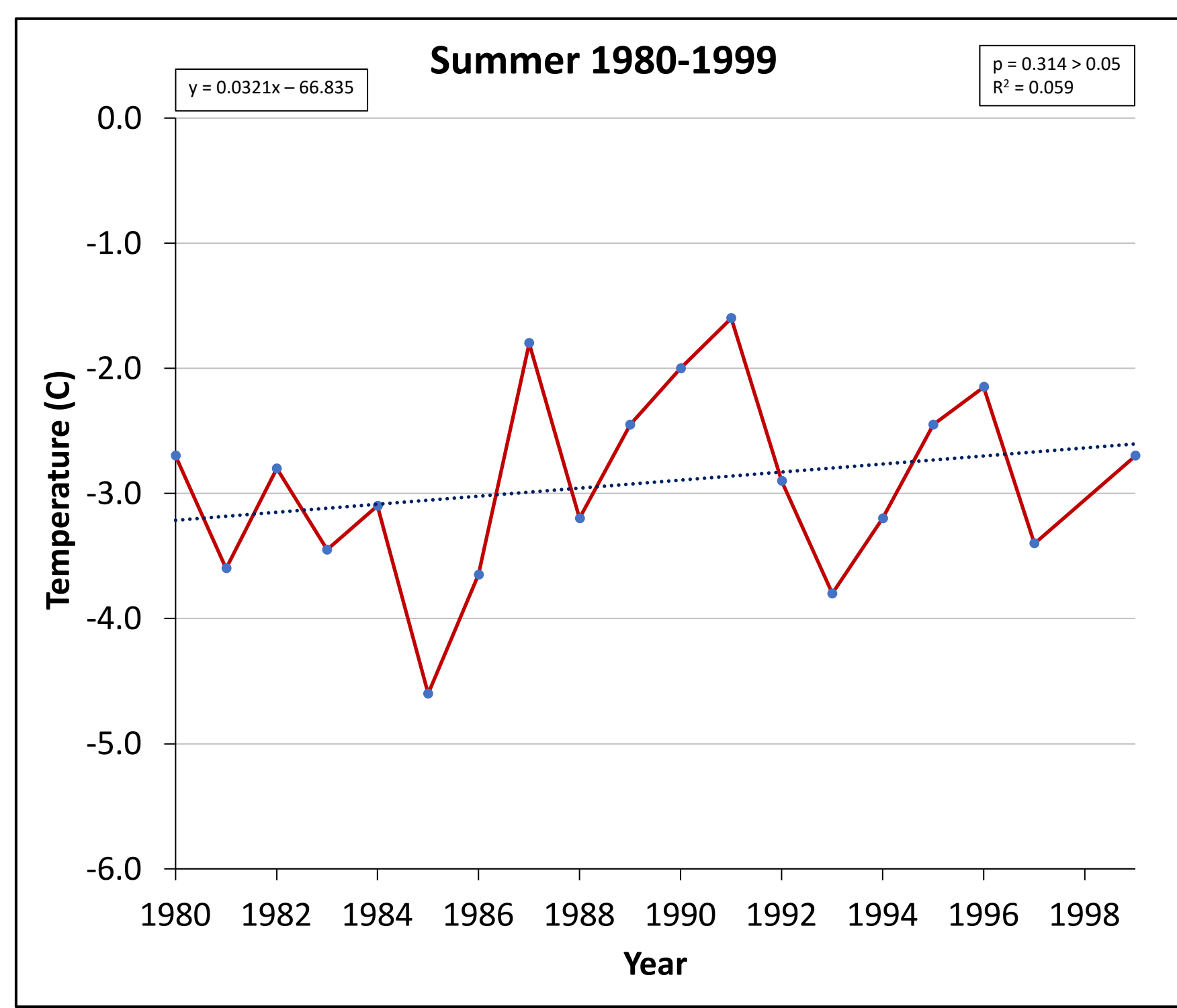
The annual mean temperature for the season of Spring averaged from 2000 to 2021.



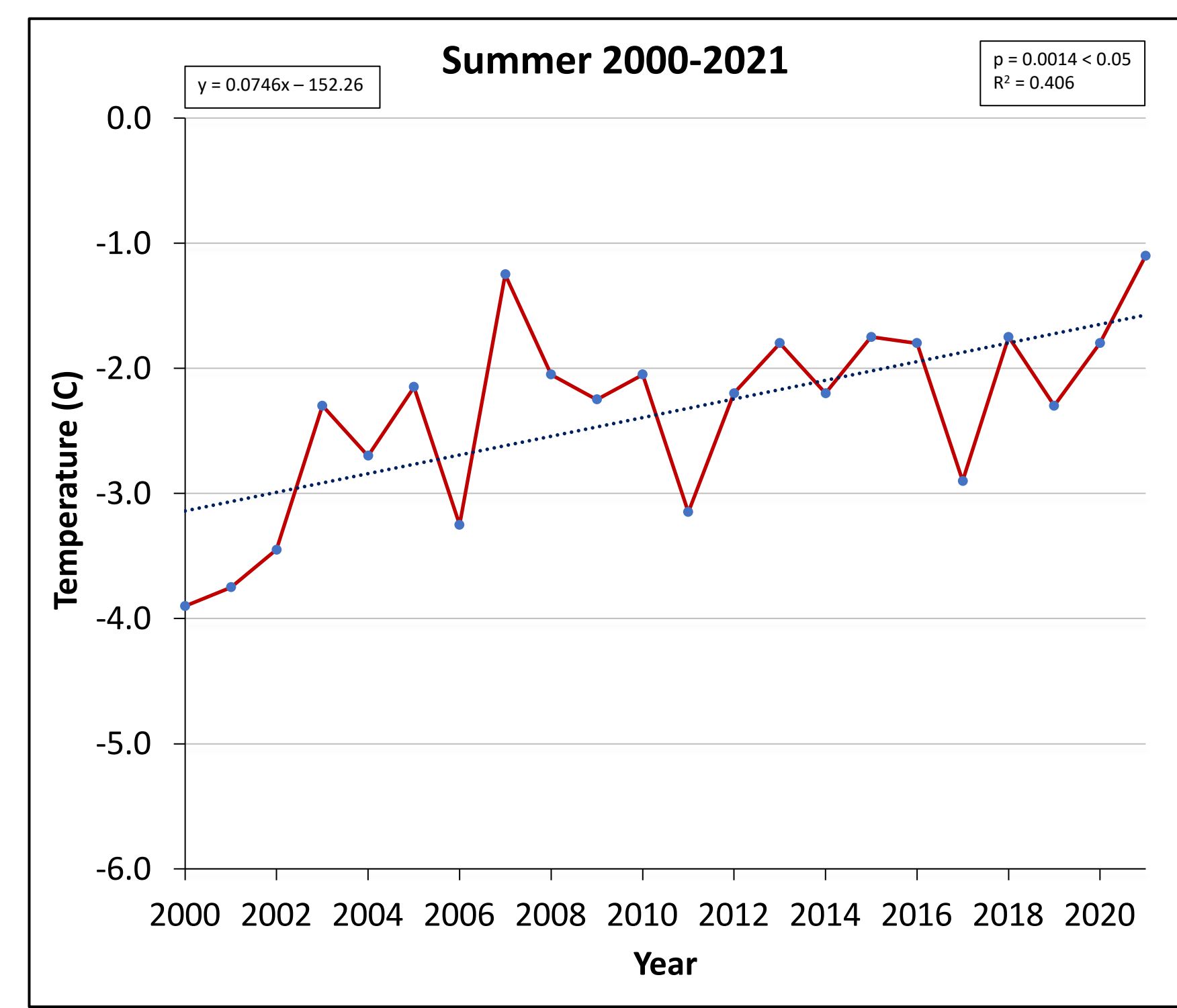
The annual mean temperature from 1980 to 2021. Light blue represents the first half of the climatology (1980-1999), light red represents the second half (2000-2021).



The annual mean temperature for the season of First Winter averaged from 1980 to 1999.



The annual mean temperature for the season of Summer averaged from 1980 to 1999.



The annual mean temperature for the season of Summer averaged from 2000 to 2021.

## Methodology

- Using data from 1980-2021, linear trendlines were constructed to describe the slope of the data. Then, a regression analysis was done on each period to determine significance values. Due to lack of data, the year of 1998 was omitted.

## Impacts

- A climatology for Marble Point Station is important as it will be used by multiple organizations to support research within the McMurdo Sound region including United States Antarctic Program forecasters, helicopter pilots, US Support Forces personnel, research scientists, etc.

## Future Work

- We plan to do more statistical significance testing on the observed warming and to do more comparisons between the different AWS at Marble Point.

## Acknowledgements

The work funded here is supported in part by the United States Antarctic Program, Office of Polar Programs, Geoscience Directorate, and National Science Foundation under Grants 1951720 & 1951603.

## References

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