

Lapse rates are rates at which the atmospheric temperature changes as the altitude increases. Collecting data from weather balloon flights allowed for us to look deeper into lapse rates. After collecting and analyzing the data, we were able to build different types of models to represent the data. Starting off with segmented models, we were able to move into piecewise and polynomial models using a form of cross validation to see which model was the best fit without overfitting the data. This allowed us to better calculate the lapse rate for each set of data, finding that the average lapse rate for the flights in Montana during the summer of 2020 ranged from -6 to -7 c/km. With this information, we plan to see how an eclipse affects the lapse rate and can gain a better understanding of temperature changes in the atmosphere.