The experiment being investigated is whether or not airplane contrails can predict future weather based on how long they remain visible. The hypothesis is that contrails can indeed predict weather. During the experiment, contrails were observed. Recorded data included the time and day the contrail appeared over the Roaring Fork Valley, the duration of the contrail, the size and scale of the contrail (patchy, full, skinny, etc.), the current weather conditions, and weather conditions that follow 24 and 48 hours later. After analyzing results, it was found that contrails could predict some change in the weather pattern, but it was not consistently accurate. Studying contracts will not allow accurate forecasting of specific temperatures or specific precipitation amounts, but observing contrails can lead to an increased knowledge of upcoming cloudiness and potential storm and precipitation development.