Our aim is to identify how the internal environment of the Columbus module is regulated by machinery. This will be achieved by interpreting how exposure to sunlight will affect the environment and cause the fluctuation in results. From data collected, we will explore the casual relationship between the exposure to sunlight and the effect it has on the computer system that controls the temperature, pressure and humidity. We are doing this to get an insight in to the atmospheric management system.

The experiment will use the thermometer, barometer, hygrometer and the camera used to measure light in lumens. The thermometer will gather temperature in degrees Celsius, the barometer, pressure in Pascal Pa and the hygrometer humidity, measured as a percentage. Other sensors used include the gyroscope, magnetometer and the accelerometer. These are combined to create a representation of the location of the ISS based on an x, y and z axis. Consequently, this will allow us to determine why the changes in the internal environment are changing in relation to the position of the ISS. Two major tools for this experiment is the thermometer and hygrometer because it will measure the fluctuation in temperature in degrees Celsius and humidity in a percentage, allowing us to view the regulation of the atmosphere. Additionally, we can compare the temperature changes to humidity levels to understand why these are fluctuating. As stated previously, the barometer will measure pressure in Pascal Pa and we believe the pressure will fluctuate between 959 hPa and 1013 hPa.

Our prediction is when there is direct exposure to sunlight it will cause temperature and humidity to increase, causing the environmental control system to activate and regulate these, causing a stabilisation in atmospheric conditions. We believe in the sunlight the temperature will rise, creating a peak in humidity. The reason is that the rise in temperature will cause astronauts within the Columbus module to perspire and exhale more water vapour. This will create a peak in humidity and display an obvious correlation between sunlight and how this affects the internal environment. However, we expect there to be minimal changes in temperature and humidity because of the environmental control system. We expect to see a slight drop in temperature when there is no direct exposure to sunlight when the ISS is in the Earth’s shadow. Furthermore, we believe that the pressure will fluctuate between 959 and 1013 hPa based on where the ISS is in orbit according to our research. The pressure will increase when the temperature increases because the molecules in the air move faster creating a greater force exerting an increase in pressure. We will determine when the ISS is exposed to sunlight by using the Ephem module.