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Tracing the source of CO_2 in a classroom at the University of Calgary LUIS TOTH, University of Calgary — Increasing carbon dioxide concentrations in the atmosphere are associated with global climate change and the sources of CO_2 are largely from the combustion of organic matter. The link between the source of carbon and the CO_2 that is produced can be demonstrated by exploring the stable isotopic composition of the CO_2 and the carbon in the organic material. The relative amounts of ^{13}C and ^{12}C are distinct depending on the origin of the carbon and this is largely preserved in the CO2 that is produced. In this project, variations in CO2 and the isotopic composition of the carbon were investigated in order to identify the sources of this gas in a lecture theater at the University of Calgary. Samples were taken over an eight-hour period as well as an atrium on campus. Additional samples were also taken at different locations in Calgary and Okotoks, Alberta to create comparison data for urban versus rural locations. A Thermoscientific DeltaRay Isotope Ratio Spectrometer was used to analyze CO2 concentrations and carbon isotopic compositions. Data show increasing levels of CO2 in the classroom over the course of the day, which are associated with the metabolism of organic matter, which we attribute to the presence of students in the room.

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