



**Prof. Debra Wunch**

**Department of Physics  
University of Toronto**

## **Using Atmospheric Remote Sensing to Examine the Earth's Carbon Cycle**



The carbon cycle describes the flow of carbon between the atmosphere, oceans and land. It is influenced by changes in the sources and sinks of carbon, including anthropogenic releases (fossil fuel burning), changes in land use, the respiration and photosynthesis of plants, and the uptake and release by oceans. Atmospheric measurements of carbon dioxide, methane, and other greenhouse gases are valuable for quantifying their sources and sinks and monitoring their long-term trends. In this talk, I will introduce our current capabilities in measuring atmospheric carbon dioxide and other gases using ground-based remote sensing and in situ techniques. I will then describe scientific results from these remote sensing platforms, focusing on the quantification of urban-scale methane emissions in the Greater Toronto Area and other urban areas around the world.