



Laser remote sensing of greenhouse gases at NIST

Stephen Maxwell (1), Kevin Douglass (1), and David Plusquellic (2)

(1) National Institute of Standards and Technology, Gaithersburg, MD, United States, (2) National Institute of Standards and Technology, Boulder, CO, United States

The National Institute of Standards and Technology is pursuing optical technologies for remote sensing of greenhouse gases in support of mitigation efforts and climate research. We will describe the development of a rapid, integrated-path differential absorption LIDAR (DIAL) system at our Boulder site as well as the development and testing of an indoor, range-resolved DIAL system on our Gaithersburg site.

Our eventual goal is the measurement of greenhouse gas emission rates from distributed sources covering areas of 1 km² to 10 km². Such measurements require simultaneous wind and gas density measurements. The presentation will describe our progress toward these measurements as well as development of LIDAR laser sources and implementation of various direct and heterodyne detection schemes.