



Advanced near-and mid-infrared laser based instruments for atmospheric measurements

Dirk Richter, Petter Webring, Scott Spuler, James Walega, Mike Spowart, and Alan Fried

National Center for Atmospheric Research, Earth Observing Laboratory, Boulder, United States (dr@ucar.edu)

We present new ground and airborne instruments for atmospheric measurements based on fiber and diode laser sources. This versatile optical technology can be configured to provide high resolution, sensitive, selective, and real-time measurements. In particular we will present current and planned instruments to measure important trace gas species, including isotopes, and 3D wind-speeds from an aircraft platform.

All the instruments presented leverage technology advances made in the photonics and optical telecommunication industry. We have developed a set of tools based around these technological building blocks and used them to design a suite of measurement capabilities for use by the atmospheric research community. Optical technologies have been accumulating a proven record of robust performance, and enable one to built more lightweight and compact instrumentation for easy deployment for traditional ground, advanced sea, and airborne measurement platforms. We will present how these enabling optical technologies have served as the foundation for select instruments, and provide a roadmap for future development opportunities.