

Development of High Spectral Resolution Lidars at the University of Wisconsin

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Our group in the University of Wisconsin – Madison has developed several High Spectral Resolution Lidars. The lidars we describe here use relatively high power injection-seeded Nd:YAG lasers and Iodine spectroscopic cells to separate Mie and Rayleigh scattered photons in the lidar returns. The instruments had proven to be eye-safe and capable of continuous operation in remote areas requiring low maintenance. They were successfully deployed in numerous field campaigns and various locations around the globe. Over the years these HSRL lidars had undergone multiple modifications improving the performance and adding new measurement capabilities such as atmospheric temperature profile and extinction cross section measurements, dual wavelength operation, and telescope elevation scanning. Here we describe our three latest configurations of the evolved and upgraded instruments.