The accuracy of lidar measurements

Graham J. G. Upton
Department of Mathematical Sciences, University of Essex, UK. (gupton@essex.ac.uk
+441206873043)

In experiments near London in the summer of 2003, two Doppler lidars were used to
derive information about components of wind velocity at a range of altitudes. Data
were collected about every two seconds for periods of about 10 minutes. There is
variation in the results recorded. The question is whether it is possible to distinguish
between variations due to measurement error (lidar accuracy) and variations due to
changes of wind velocity (turbulence). Very simple models are suggested, with some
providing acceptable fits to the data. It is found that the back-scattered signal strength
is a good indicator of lidar accuracy. The implications for dual-lidar calculations will
be examined.