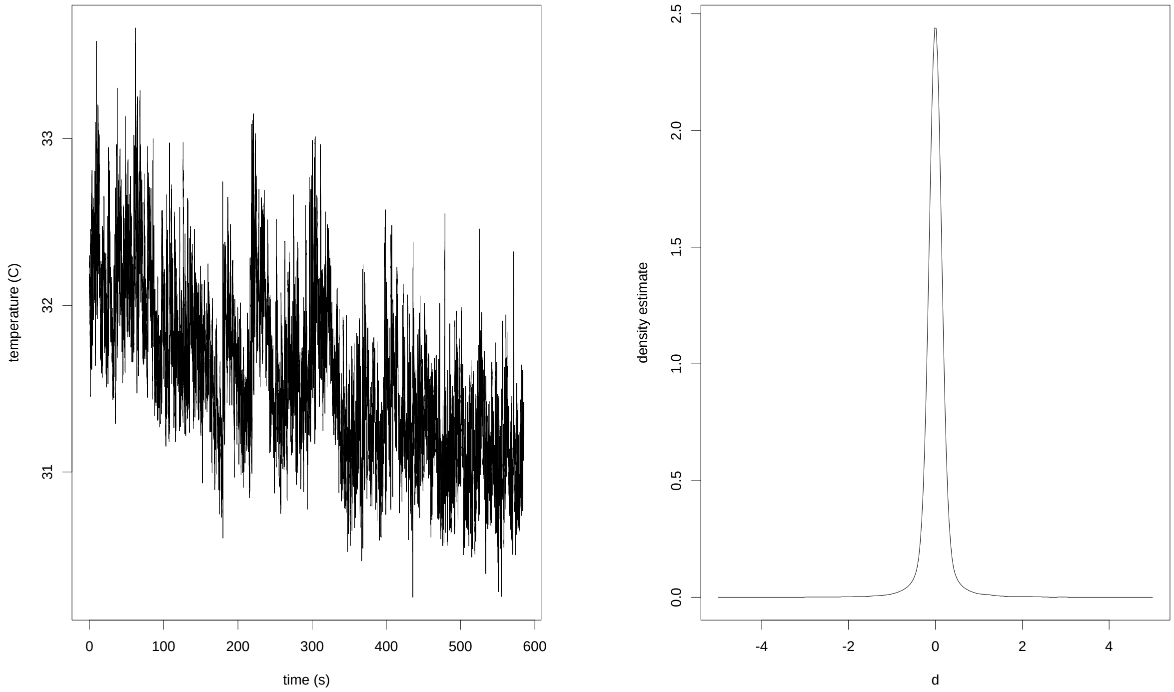

Turbulence Data Set

The three velocity components (U_1, U_2, U_3) and air temperature (T) measurements were collected during an experiment in June 1993 over a uniform dry lake bed (Owens lake) in Owens valley, California (elevation = 1,100 m). The lake bed is bounded by the Sierra Nevada range to the east and the White and Inyo Mountains to the west. The site's surface is a heaved sandy soil extending uniformly more than 11 km in the North-South direction. The momentum roughness height for this sandy surface is 0.13 mm. The three velocity components were measured at $z = 2.0 - 3.0m$ above the surface using a triaxial ultrasonic anemometer (Gill Instruments/1012R2). The sampling frequency f_s was 56 Hz and the sampling period T_p was 9.75 minutes resulting in 32,768 data points per velocity component. The short sampling period was necessary to achieve steady state conditions in the mean meteorological conditions.

Desctiption of figure: (a) Temperature measurements, and (b) Density estimator fot the coefficients supporting Mallat's model (Mallat observed that for variety signals and images the family of Exponential Power Distributions ($\mathcal{EPD}(\alpha, \beta)$) given by:

$$f(d) = C \cdot e^{-(|d|/\alpha)^{\beta}}, \ \alpha, \beta > 0. \tag{1}$$

is a very good probabilistic model.