

**Three Topics in Non-linear Time Series Analysis and Modelling**  
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The three topics are (1) Volatility Graphics, (2) Garch Squares as Volatile Autoregressive Variables, and (3) Strict Stationarity Aspects of Garch Models. At least on the basis of the speaker's knowledge, these topics could do with further development. The first topic is relatively undeveloped, and concerns exploratory graphics for volatility in financial series, graphics which explore the existence of volatility and its dependence on earlier values. The importance of prior decorrelation in these methods will be made. Illustrations will be based on financial series while simulations will demonstrate validity. The second topic deals with autocorrelations of squares of uncorrelated/decorrelated values and these being a useful signature of volatility. Explicit models of squared values from Arch and Garch models are shown to be of linear Arma form except that their innovations are volatile in a Garch manner, and dependent. The final topic, if time permits, again concerns Arch and Garch models, and in particular with the tantalizing problem of determining parametric restraint regions necessary for their strict (distributional) stationarity and for their finite expected conditional variance.