



## Climate Time Series Analysis and Forecasting

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This paper will discuss various aspects of climate time series data analysis, modelling and forecasting being carried out at Lancaster. This will include state-dependent parameter, nonlinear, stochastic modelling of globally averaged atmospheric carbon dioxide; the computation of emission strategies based on modern control theory; and extrapolative time series benchmark forecasts of annual average temperature, both global and local. The key to the forecasting evaluation will be the iterative estimation of forecast error based on rolling origin comparisons, as recommended in the forecasting research literature. The presentation will conclude with a comparison of the time series forecasts with forecasts produced from global circulation models and a discussion of the implications for climate modelling research.