for some (gaussian?) noise sequence ω_t. Thus the unobservable AR process Z_t, provides the "success" probability for S_t after transformation. Generalisations to higher order processes, transforms other than the log-odds, and time-varying parameters (ϕ_t rather than simply ϕ), are evident. The outlier model (1) can now be extended to this binary series by a minor extension of (2) to

$$Z_t = X_t + \delta_t,$$
$$X_t = \phi X_{t-1} + \omega_t,$$

incorporating changes via ω_t series, patchy outliers, and, now, observational outliers through appropriate models for the δ_t series. The only point of significant difference between this model and (1) is that the sampling model is now Bernoulli, rather than gaussian, which leads to a slightly different view of the way in which observational outliers are generated. A closely related, but structurally quite different, class of models for binary series provides for dynamic evolution of transition probabilities in Markov chains. The first order case, for example, has a basic model for $P(S_t = 1|\pi_t)$ as above, but, instead of the continuous process model for the log-odds probability Z_t in (2), a discrete version

$$Z_t = \theta_t + \phi_t S_{t-1} + \omega_t, \tag{3}$$

where θ_t and ϕ_t are time-varying process parameters and ω_t, as usual, process evolution noise. Concerning outlier models, a basic problem arises with (3) in that the observations S_t are fed back into the process model, so a little more thought is required in modelling pure observational outliers. Perhaps the authors have some comments on such problems.

REFERENCES

West, M. (1986). Bayesian model monitoring. *J. Roy. Statist. Soc. Ser. B* **48** 70–78.

West, M. and Harrison, P. J. (1986). Monitoring and adaptation in Bayesian forecasting models. To appear in *J. Amer. Statist. Assoc.*

West, M., Harrison, P. J. and Migon, H. S. (1985). Dynamic generalized linear models and Bayesian forecasting (with discussion). *J. Amer. Statist. Assoc.* **80** 73–97.

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REJOINDER

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The discussants have provided us with more than ample food for thought concerning a myriad of issues related to our work on influence functionals for time series. Leading issues include the following: (1) Relationships and dif-