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Interactive Comment

Interactive comment on "Downstream prediction using a nonlinear prediction method" *by* N. H. Adenan and M. S. M. Noorani

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Referee #2 We are very grateful for the helpful, suggestion and useful information made by the reviewer in order to improving the writing of this manuscript.

Referee comment: The paper could benefit from a clarification on what is the main aim and contribution of the work: Comparison of variations of nonlinear prediction methods (Model and Model II) (p.14332 l.12-14), or testing for chaotic behaviour of the Langat river (p.14343 l.4), or testing of applicability of non linear prediction method for a case study in Malaysia (p.14335 l.3-4), or contributing to flood risk management in an urban environment through stream flow prediction (p.14333 l.1-12). Author comment: Contributing to flood risk management in an urban en-

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vironment through river flow prediction (p.14333 l.1-12) would be the main aim.

Referee comment: For each of the above choices an extended discussion of, and literature review on, the chosen focus would be valuable in the Introduction section. Author comment: (p.14333 1.1-12) Referring to the empirical method for urban hydrology research, the behaviour of river flow in the downstream area is important to provide accurate information for the whole river flow (Viesmann and Lewis, 1996). This information can help in planning, development and flood prevention of the downstream area. Extended literature: There are several research have been done in contributing to flood risk management. Some of the research focus on the rainfall modelling (El-Shafie, Noureldin, Taha, Hussain, & Mukhlisin, 2012), prediction of events using time series data mining (Damle & Yalcin, 2007) and regional scale flood modelling that integrates NEXRAD Level III rainfall, GIS, and a hydrological model (HEC-HMS/RAS) (Knebl, Yang, Hutchison, & Maidment, 2005). However in this research, we focused on river flow prediction based on chaos theory. Therefore, the information about flow of the river since the study of floods in an urban environment is related with river flow in this research is become the main aim.

Referee comment: Each of the graphs and tables currently presented can be discussed in more detail. For example, from the plotted flow graphs (Fig.6) it can be seen that for the last 2 months model I is more accurate in predicting the low-flows than model II. The authors conclude that the prediction results of model II are better than those of Model I, because of its slightly higher correlation coefficient (P.14342 l.23-24, and Table II), but the same Table II shows a lower Mean Absolute Error and Root Mean Square Error for model I.

The scatter plots in Fig. 6 have different horizontal and vertical axis, which makes it difficult to compare. The scatter plots are not discussed.

Author comment: The scatter plots in Fig. 6 have been updated. Edited paragraph: (p.14342 20-25) The combination of preliminary parameters for Model I is while for Model II it is . Thus, for both models, the combination of the preliminary parameters has been applied to construct the phase space. The plotted flow graf (Fig. 6(a) and Fig. 6(c)) shows that the last two months model I is more accurate in predicting the low-flows than Model II. In addition, Table 2 shows that a lower Mean Absolute Error and Root Mean Square Error for model I. However, the prediction results of Model II are better than those of Model I, because of its slightly higher correlation coefficient. The scatter plot for both models is depicted in Fig. 6(b) (Model I) is closed from the idea line for low-flows while Fig. 6(c) (Model II) is a little distant from the idea line for low-flows. However, both models give a good reasonably prediction for high-flows. Overall, the results show good performance prediction for chaos theory in predicting the future value of the river flow for the downstream area. Thus, analysis and prediction of the Langat River can provide information in which the selection of a combination of preliminary parameters in the reconstruction phase space is essential for better prediction results.

References Damle, C., & Yalcin, A. (2007). Flood prediction using Time Series Data Mining. Journal of Hydrology, 333(2-4), 305–316. doi:10.1016/j.jhydrol.2006.09.001 El-Shafie, A., Noureldin, A., Taha, M., Hussain, A., & Mukhlisin, M. (2012). Dynamic versus static neural network model for rainfall forecasting at Klang River Basin, Malaysia. Hydrology and Earth System Sciences, 16(4), 1151–1169. doi:10.5194/hess-16-1151-2012 Knebl, M. R., Yang, Z.-L., Hutchison, K., & Maidment, D. R. (2005). Regional scale flood modeling using NEXRAD rainfall, GIS, and HEC-HMS/RAS: a case study for the San Antonio River Basin Summer 2002 storm event. Journal of Environmental Management, 75(4), 325–36. doi:10.1016/j.jenvman.2004.11.024

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 14331, 2013.