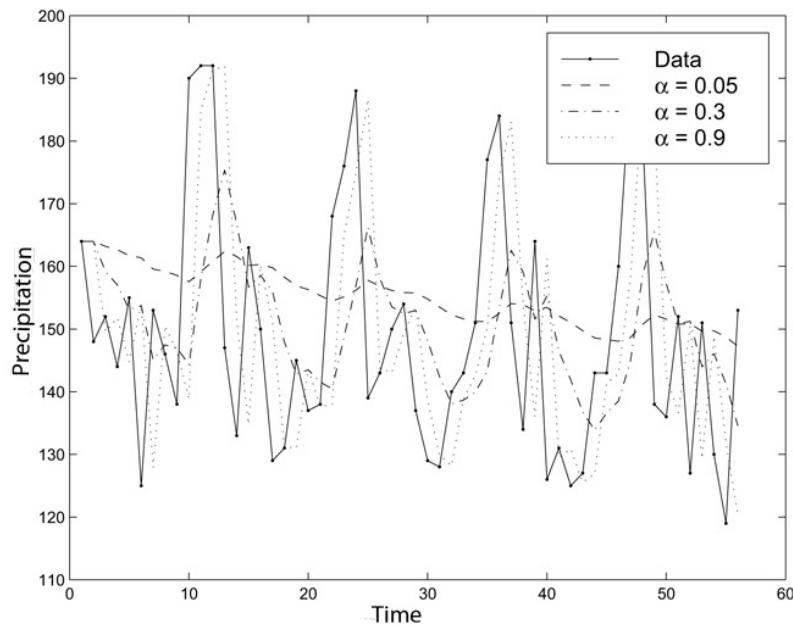


## Activity: Exponential Smoothing

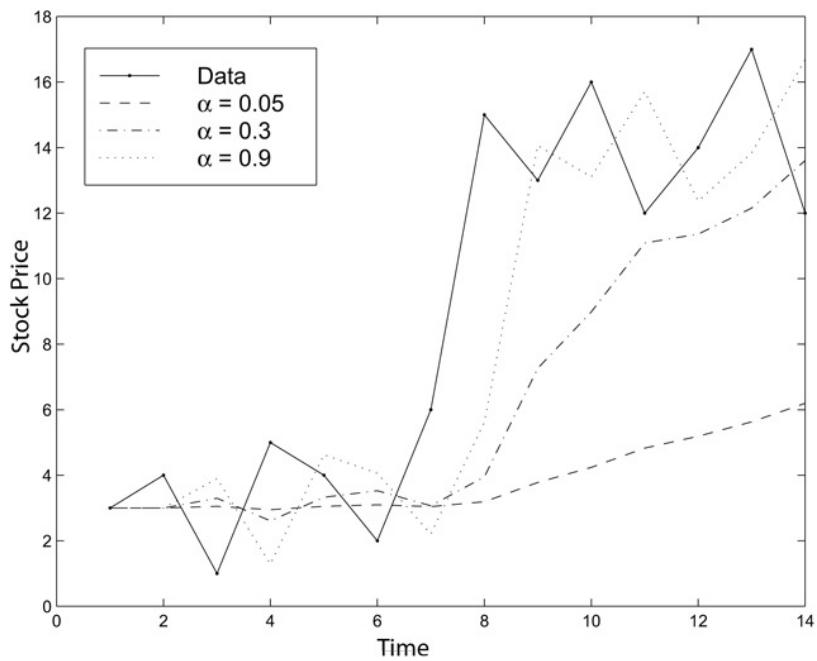
This activity aims to help you appreciate how the parameter in exponential smoothing can affect the fitted values and therefore the forecasts.

1. Consider the following figure, which shows precipitation levels over a course of 58 months. In addition to the data, fitted exponential smoothing models with  $\alpha = 0.05$ ,  $\alpha = 0.3$ , and  $\alpha = 0.9$  are shown.

Compare and contrast the different fitted models. Which is least noisy (i.e., the smoothest)? Which best captures the seasonality?



2. Consider the following figure, which shows the stock price for a company over 14 days with financial statements issued on the 7th day. The same exponential smoothing models are fit to this series as in Question 1. Which model would you say is the best? Explain your choice. Which model best captures the jump in the process? Are your conclusions the same as in Question 1?



3. Consider the following figure, which shows quarterly casino profits as well as exponential smoothing and Holt's method. Which is the best fit? What criterion (or criteria) are you applying in making your choice? What might you do to this series to improve the fit of the models?

