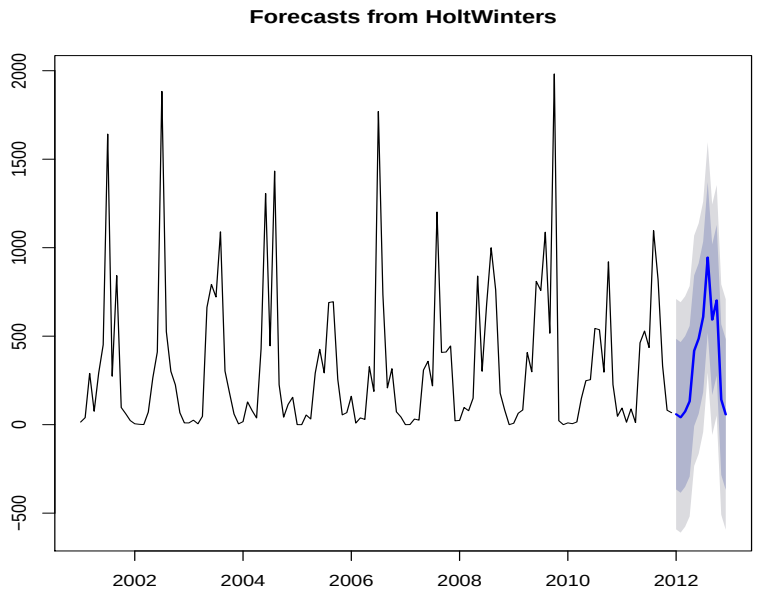

Figure 4.8: The graph of the time series with the forecasted values.

The 'forecast errors' are calculated as the observed values minus predicted values, for each time point. We can only calculate the forecast errors for the time period covered by our original time series, which is January 2011 to December 2011 for the rainfall data. One measure of the accuracy of the predictive model is the sum-of-squared- errors (SSE) for the in-sample forecast errors. The in-sample forecast errors are stored in the named element "residuals" of the list variable returned by `forecast.HoltWinters()`. If the predictive model cannot be improved upon, there should be no correlations between forecast errors for successive predictions. In other words, if there are correlations between forecast errors for successive predictions, it is likely that the exponential smoothing forecasts could be improved upon by another forecasting technique. The function `acf()` function was used here to test for autocorrelation in the errors.

```
acf(rainforecasts2$residuals, lag.max = 20)
```