# Plots of Time Series Exponential Smoothing Model MAM_with_dampening
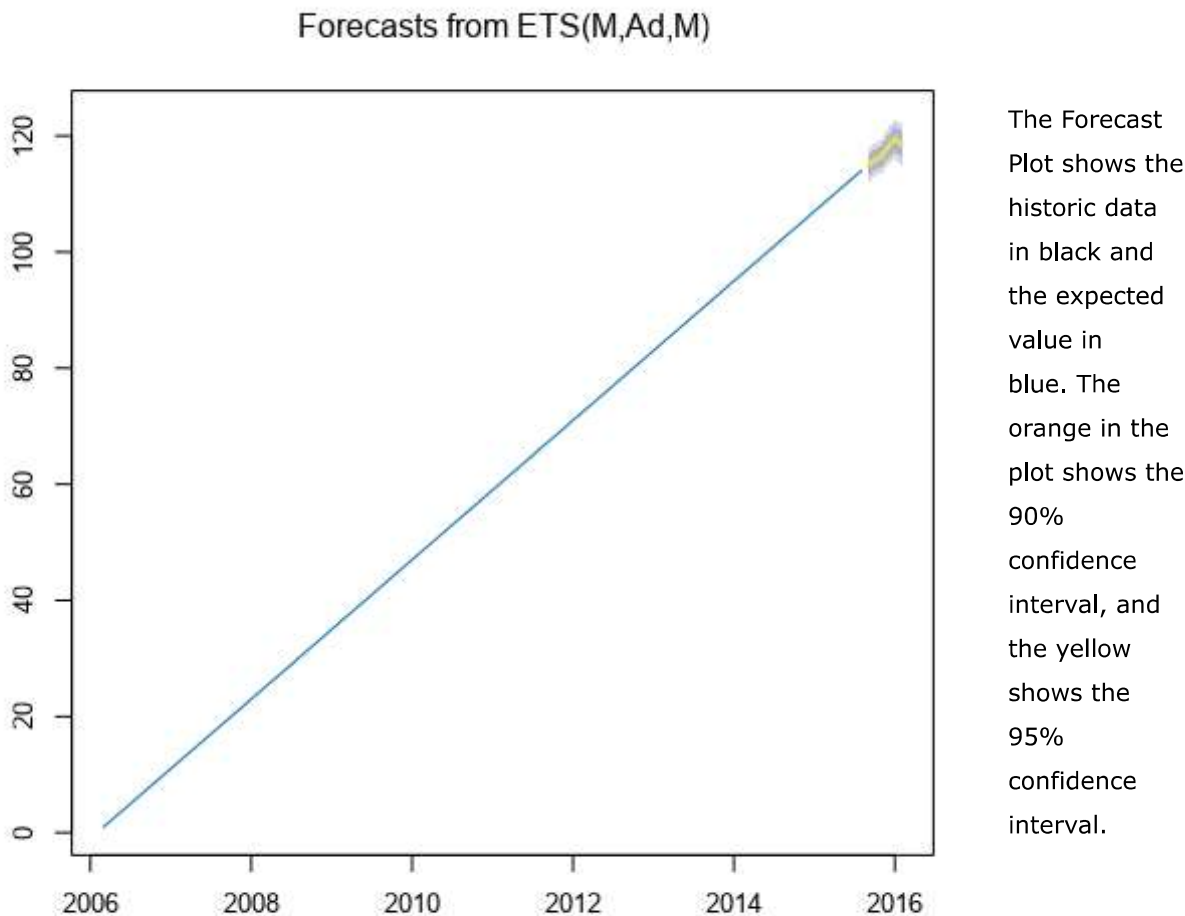
In statistics, a time series is a sequence of data points measured at successive points in time spaced at uniform intervals. Examples of time series are the daily closing value of a stock market index or the annual flow volume of a river. Time series analysis comprises methods for analyzing time series data in order to extract meaningful statistics and other characteristics of the data.
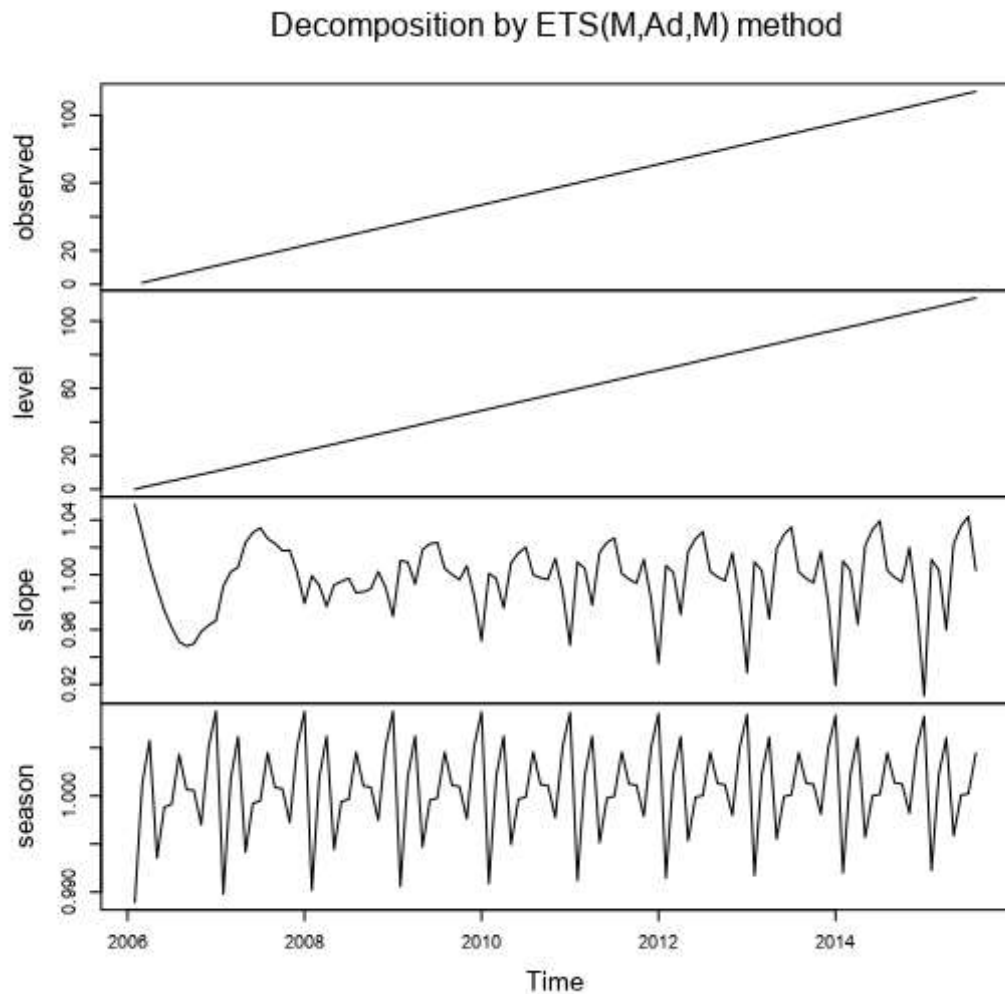
Decomposition Plot separates time series data into several components. Decomposition method is often used to yield information about time series components i.e. trend, cycle, seasonal, etc.

- Observed: This is the actual data.
- Level: This is the overal baseline without seasonal trends.
- Slope: This is the rate of change associated with the Level.
- Season: This shows the seasonal trend of the data.

Not all of the above components will occur each time.

Decomposition by ETS(M,Ad,M) method

Forecasts from ETS(M,Ad,M)

The Forecast Plot shows the historic data in black and the expected value in blue. The orange in the plot shows the 90% confidence interval, and the yellow shows the 95% confidence interval.

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Summary of Time Series Exponential Smoothing Model MAM_with_dampening

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Method:
ETS(M,Ad,M)

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In-sample error measures:

ME	RMSE	MAE	MPE	MAPE	MASE	ACF1
0.2263168	0.4033658	0.3059637	0.6666895	0.7788318	0.025497	-0.2621405

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Information criteria:

AIC	AICc	BIC
414.1175	421.3175	463.3691

Smoothing parameters:

Parameter	Value
alpha	0.087031
beta	0.086023
gamma	0.019573
phi	0.979967

Initial states:

State	Value
l	-0.033481
b	1.051243
s0	0.988951
s1	1.008316
s2	1.004497
s3	0.996283
s4	0.999954
s5	1.000128
s6	1.003962
s7	0.998816
s8	0.998624
s9	0.993374
s10	1.005929