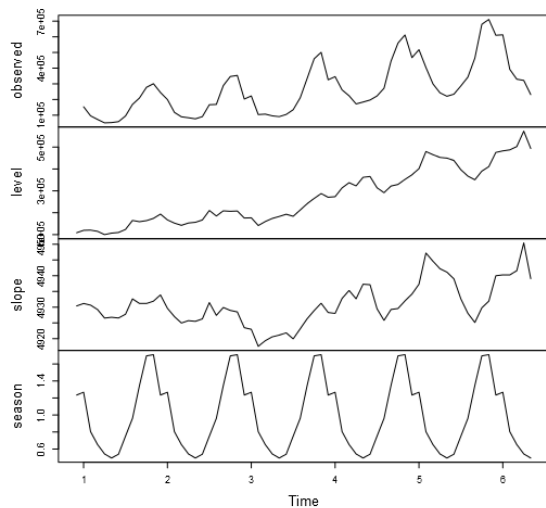


## Plots of Time Series Exponential Smoothing Model ETS\_M\_A\_M\_

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 by ETS(M,A,M) method

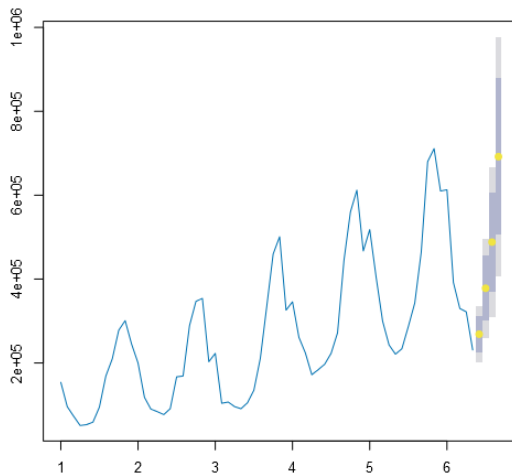


Decomposition Plot separates time series data into several components. Decomposition method is often used to yield information about time series components i.e. trend, cycle, seasonal, etc.

- Observed: This is the actual data.
- Level: This is the overall 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.

Forecasts from ETS(M,A,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.

## Summary of Time Series Exponential Smoothing Model ETS\_M\_A\_M\_

Method:

ETS(M,A,M)

In-sample error measures:

ME	RMSE	MAE	MPE	MAPE	MASE	ACF1
3729.2947922	32883.8331471	24917.2814212	-0.9481496	10.2264109	0.3635056	0.1436491

Information criteria:

AIC	AICc	BIC
1634.6435	1645.9768	1669.4337

Smoothing parameters:

Parameter	Value
alpha	0.765251
beta	0.000103
gamma	0.001046

Initial states:

State	Value
l	108789.11104
b	4930.392995
s0	1.234579
s1	1.709665
s2	1.695871
s3	1.347622
s4	0.960194
s5	0.751247
s6	0.539075
s7	0.493873
s8	0.543018
s9	0.652615
s10	0.80417