Time Series Forecasting

The fuel price at Walmart

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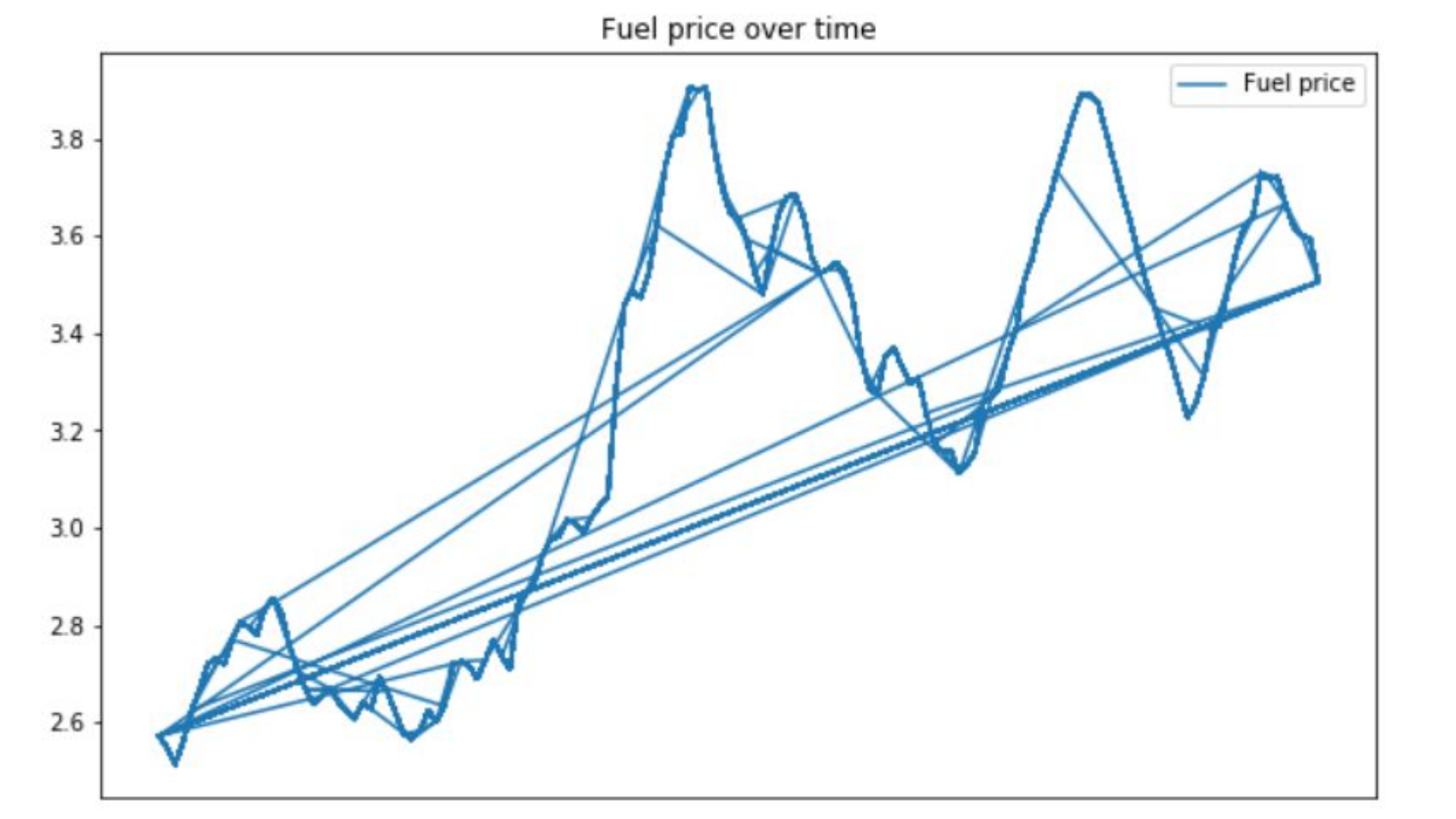
Getting and cleaning the data

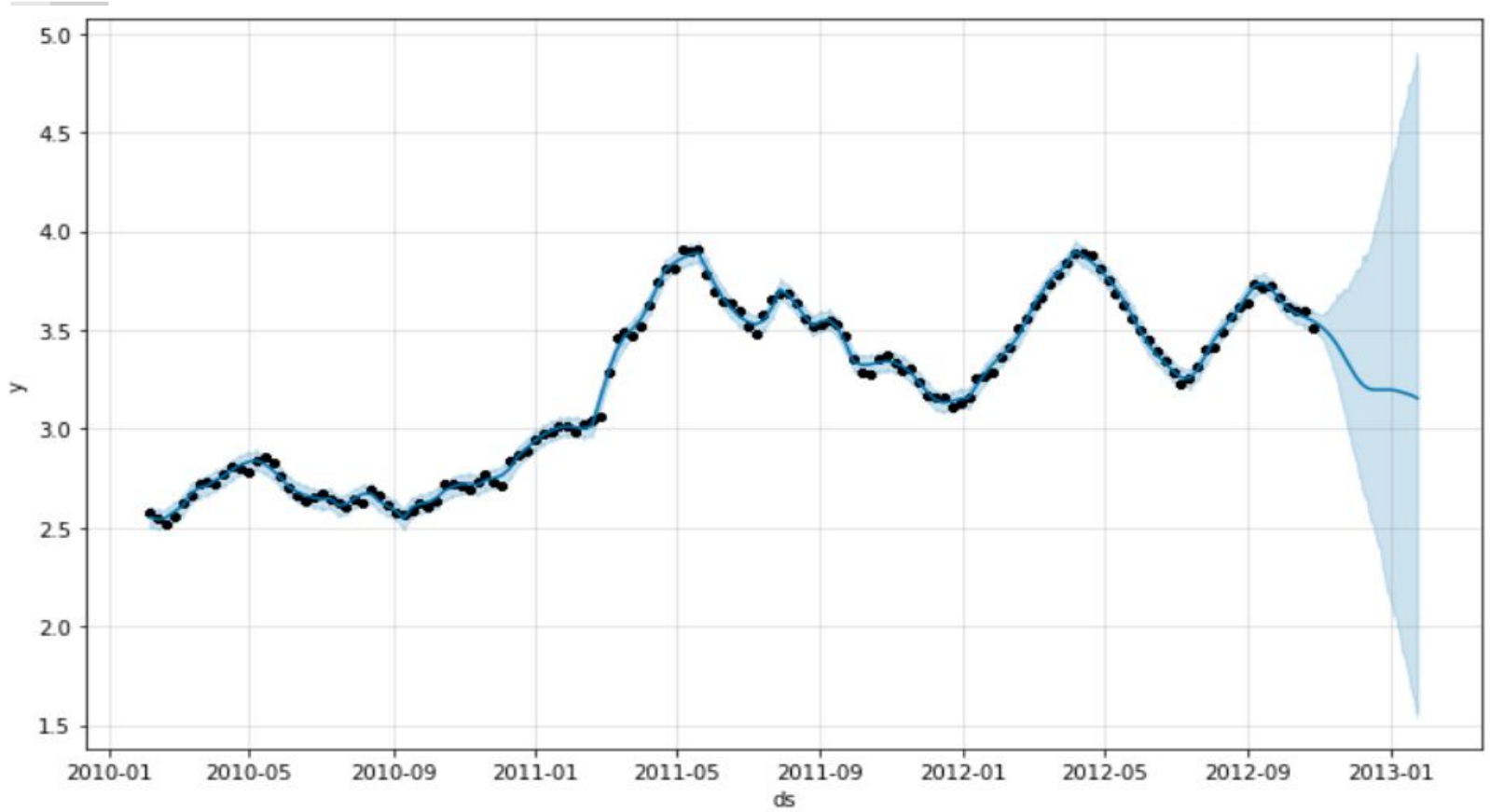
- Stored in a **relational database** on an Amazon Web Services server.
- Fetched **tables** from the database with R package RMySQL.
- Reconstructed a **dataset** with the fetched tables.
- Cleaned with R: **data types** are correct, **impute** with the mean, remove **outliers.**

Forecasting time series

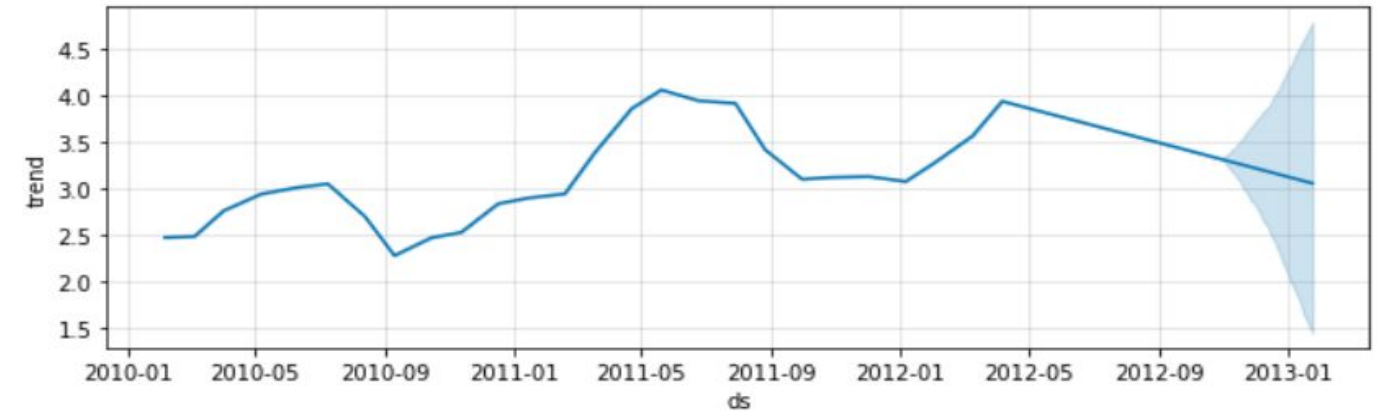
- **Generalized additive model** with non-linear smoothers on the regressors.
- Regressor is **time** in this case.
- Using a model to fit **historical data** of fuel prices from 2010 to 2012.

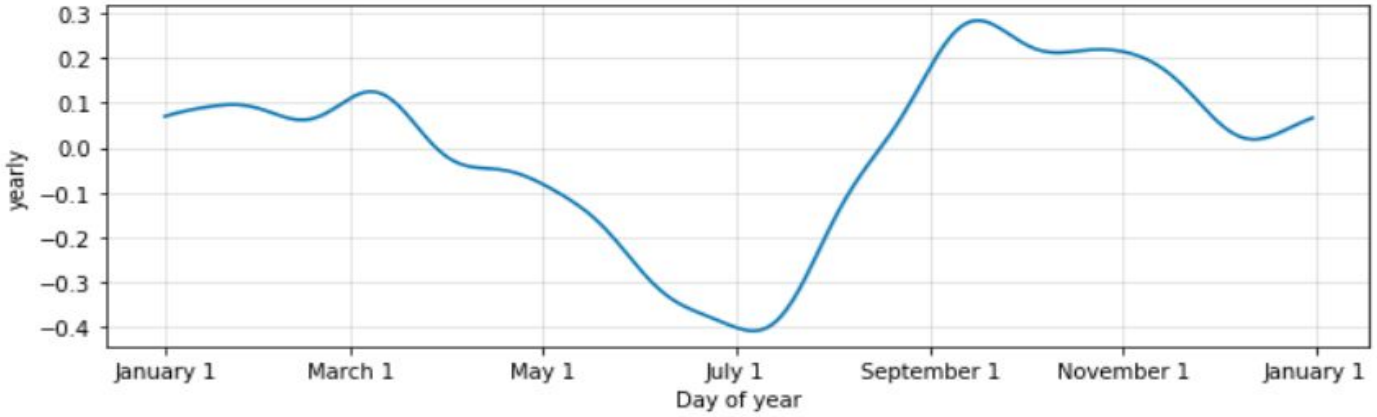

Fuel price over time
Fuel price
3.8
3.6
3.4
3.2
3.0
2.8
2.6

Forecast – 3 months

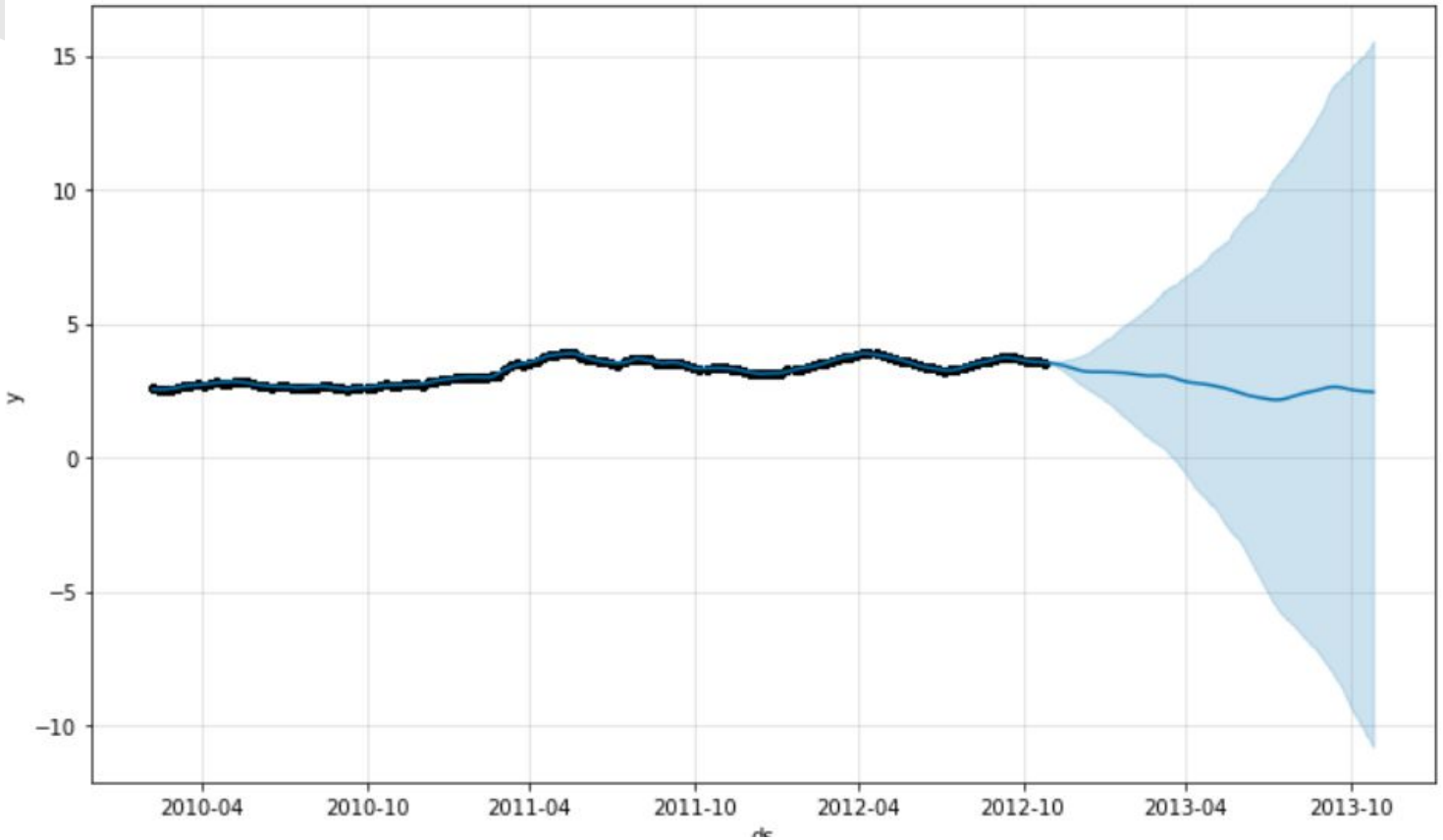


Trend & Seasonality - 3 months

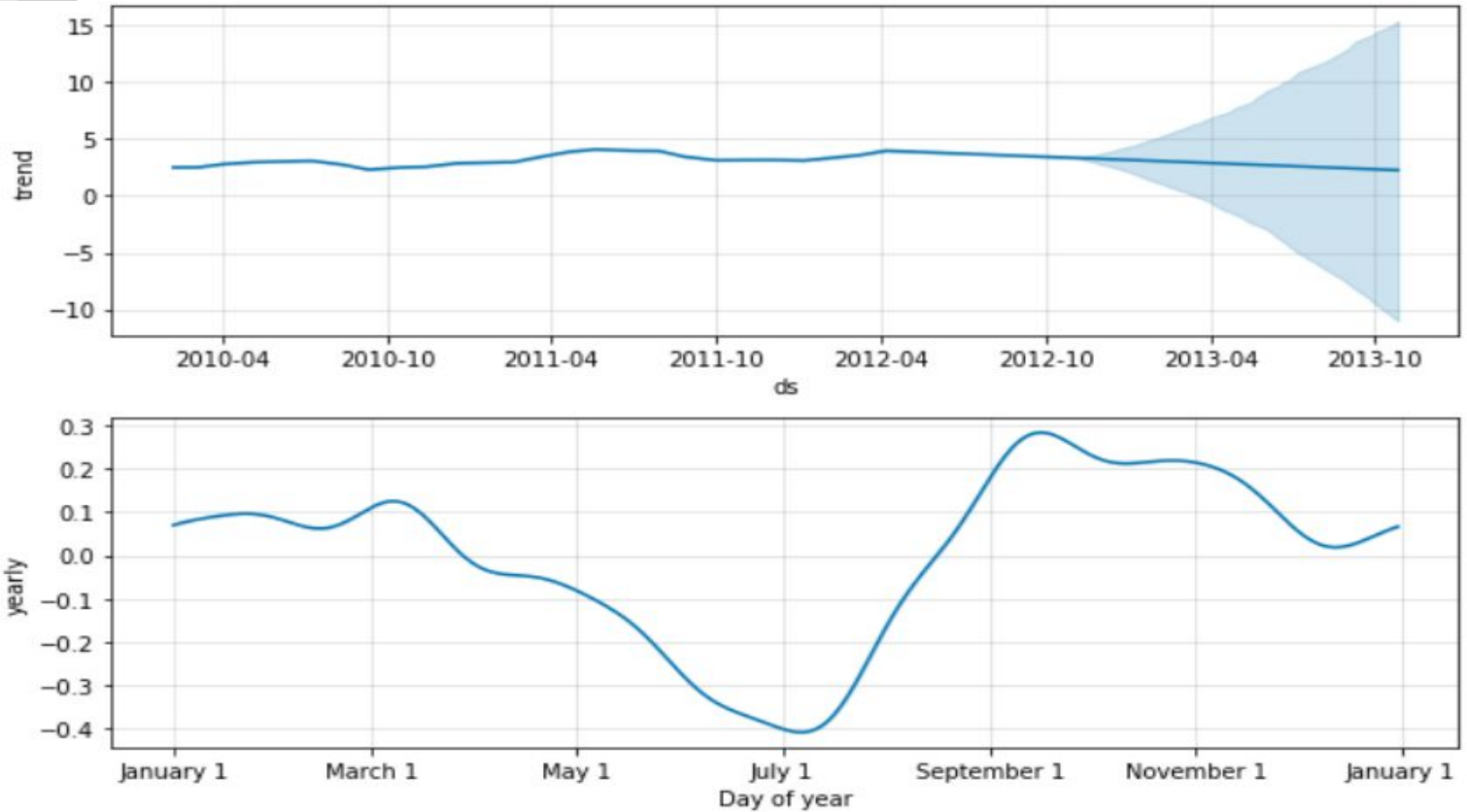




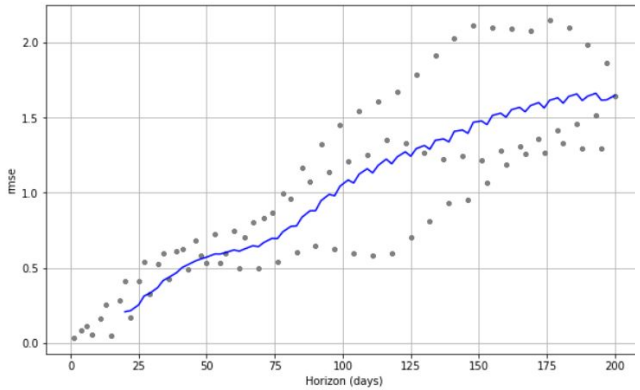
Forecast - 1 year

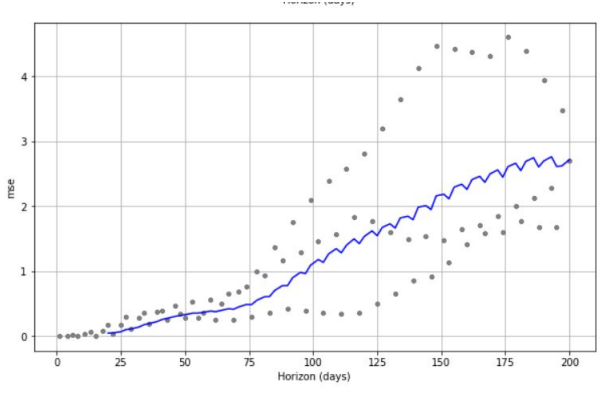


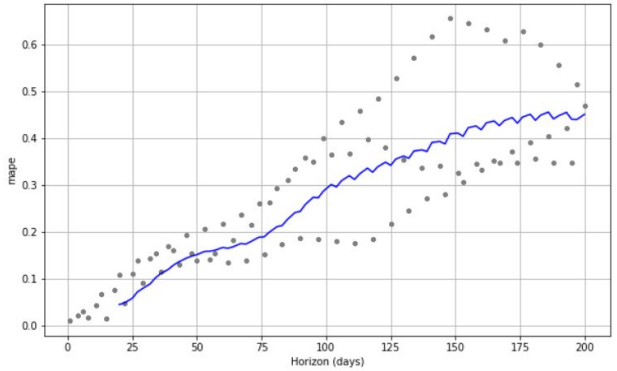
Trend & Seasonality - 1 year

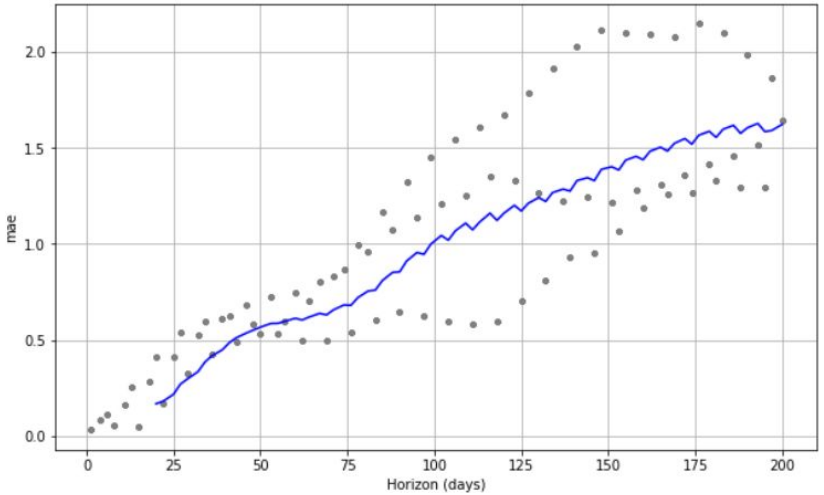


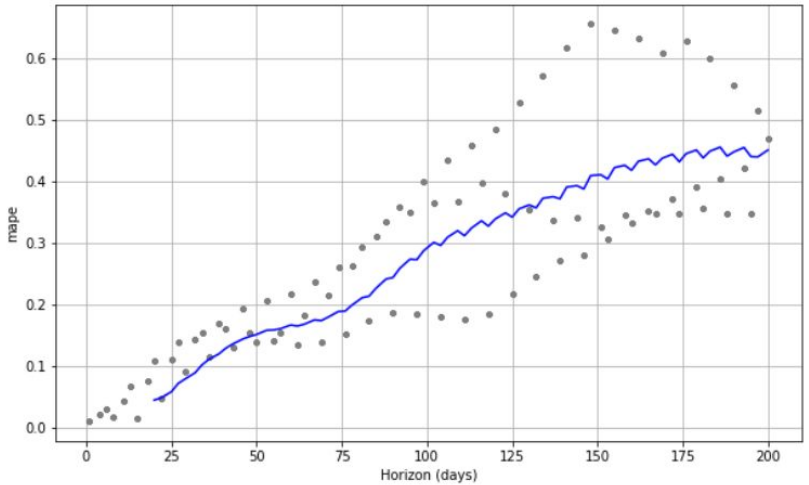
Model's Performance











Summary

- Fuel price was a little bit higher between 2011 and 2012.
- Fuel price should go down in the next 3 months.
- In the year 2013, price will look like in the year 2010.
- Fuel price is stable on a yearly scale.