Exploratory Data Analysis - SIGNAL Viewer

Open the menu item Cell and click Run All to see a summary of the data feed passed into this notebook from the URL.

In [4]:
```
%%javascript
function getQueryStringValue (key)
{
    return unescape(window.location.search.replace(new RegExp("^(?:.*[&\\?]" + escape(key).replace(/[\.\+\*]/g, "\\$&") + "(?:\\=([^&]*))?)?.*$", "i"), "$1"));
}
IPython.notebook.kernel.execute("DATA='".concat(getQueryStringValue("DATA")).concat("'"));
```

Load libraries for charting

In [16]:
```
%run SignalViewerHelper.py
```

```
Get chart data and review the features we have created.
```

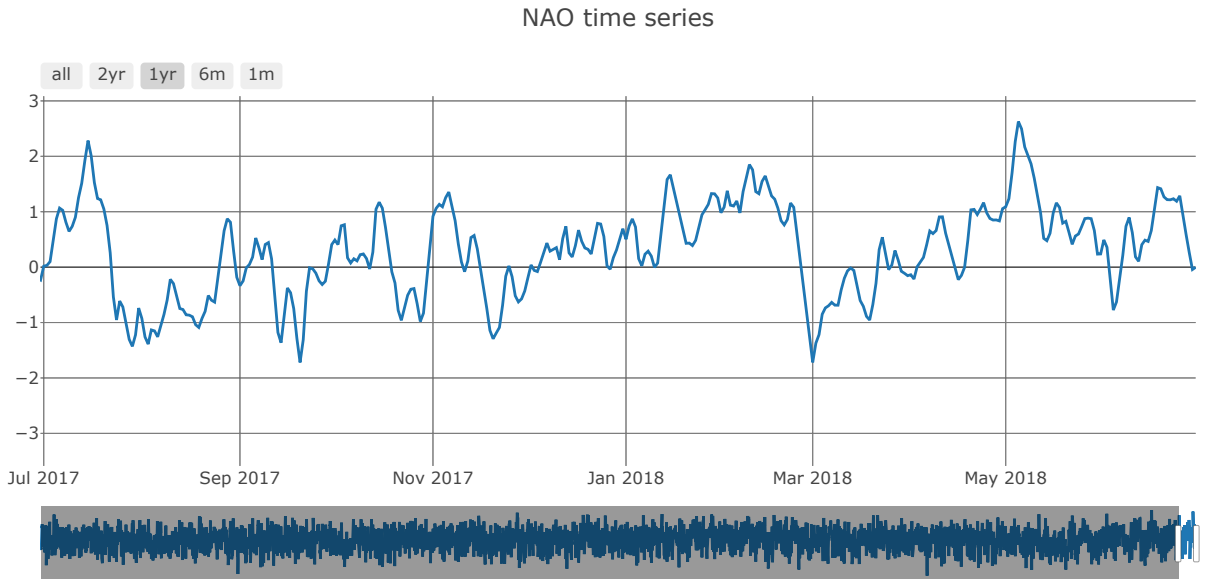
In [8]:
```
df = get_data(DATA)
df.head(10)
```

Out[8]:

datetime	value	value_lag2	value_lag7	value_lag30	value_lag365	value_mavg30	value_mavg90
1951-01-01	-0.745	-0.700	-1.642	-0.216	0.365	-0.613067	-0.279522
1951-01-02	-0.529	-0.646	-1.671	-0.564	0.096	-0.611900	-0.298333
1951-01-03	-0.217	-0.745	-1.454	-1.055	-0.416	-0.583967	-0.314622
1951-01-04	0.057	-0.529	-1.212	-0.976	-0.616	-0.549533	-0.327822
1951-01-05	-0.045	-0.217	-0.923	-0.058	-0.261	-0.549100	-0.339600
1951-01-06	0.013	0.057	-0.700	0.529	0.052	-0.566300	-0.347178
1951-01-07	0.022	-0.045	-0.646	0.282	-0.156	-0.574967	-0.352167
1951-01-08	-0.314	0.013	-0.745	-0.136	-0.440	-0.580900	-0.355489
1951-01-09	-0.434	0.022	-0.529	-0.121	-0.497	-0.591333	-0.357289
1951-01-10	-0.092	-0.314	-0.217	0.058	-0.227	-0.596333	-0.355000

Lets review the time series and explore the series using the interactive chart.

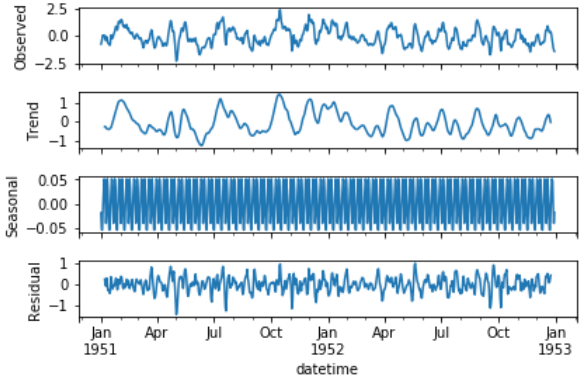
In [9]:
```
fig = chart(f'{DATA} time series', df)
iplot(fig)
```



Export to plot.ly »

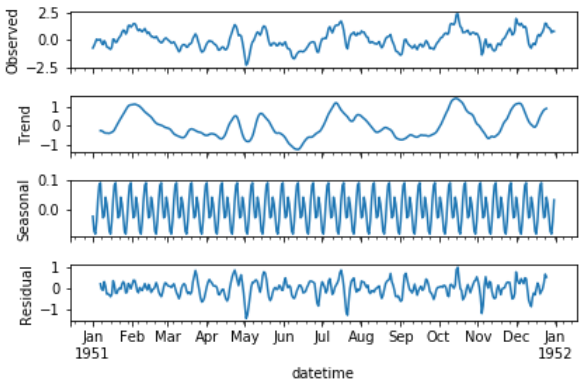
Lets review multiple years and examine the observed, trends, seasonality and residuals using decomposition with additive differencing.

In [18]:
```
dsd = seasonal_decompose(df[:730]['value'], model='additive',freq=12)
dsd.plot()
plt.show()
```



Lets zoom in an review a single calendar year

In [19]:
```
dsd = seasonal_decompose(df[:365]['value'], model='additive',freq=12)
dsd.plot()
plt.show()
```



In [ ]: