

# Darwin Tahiti SOI Comparison

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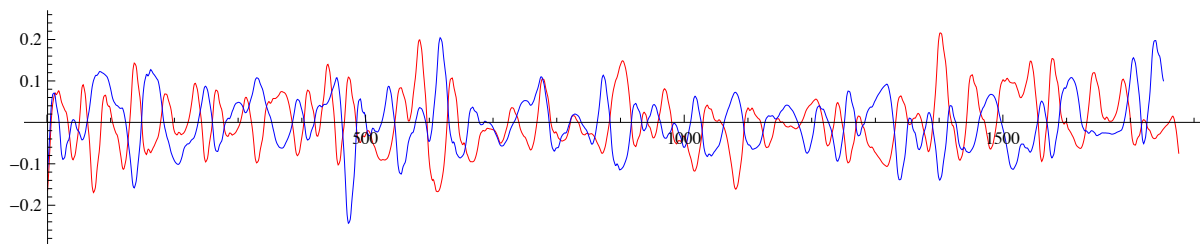
## SOI Data

<http://www.cgd.ucar.edu/cas/catalog/climind/darwin.ascii>

<http://www.cgd.ucar.edu/cas/catalog/climind/tahiti.ascii>

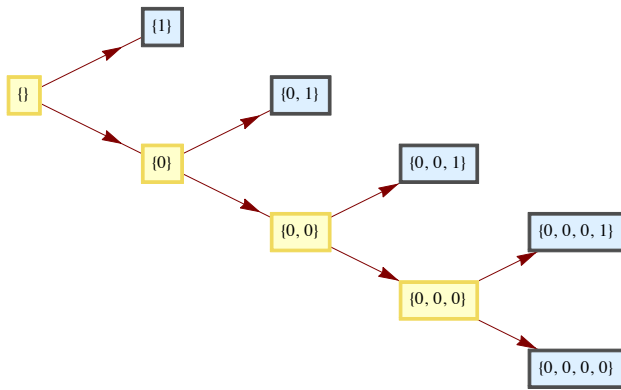
## Wavelet Decomposition

Darwin SOI Red, Tahiti SOI Blue, both denoised, Daubechies Wavelet[4], padding extrapolated:



**Note:** 0 is 1866, 1776 is 2013, units month

## Refinement Index



### Energy Fractions

Most of the signal is {0, 0, 0, 0}:

```
Out[160]= {{1} → 0.00187916, {0, 1} → 0.00272335,  
{0, 0, 1} → 0.00861977, {0, 0, 0, 1} → 0.00159752, {0, 0, 0, 0} → 0.98518}
```

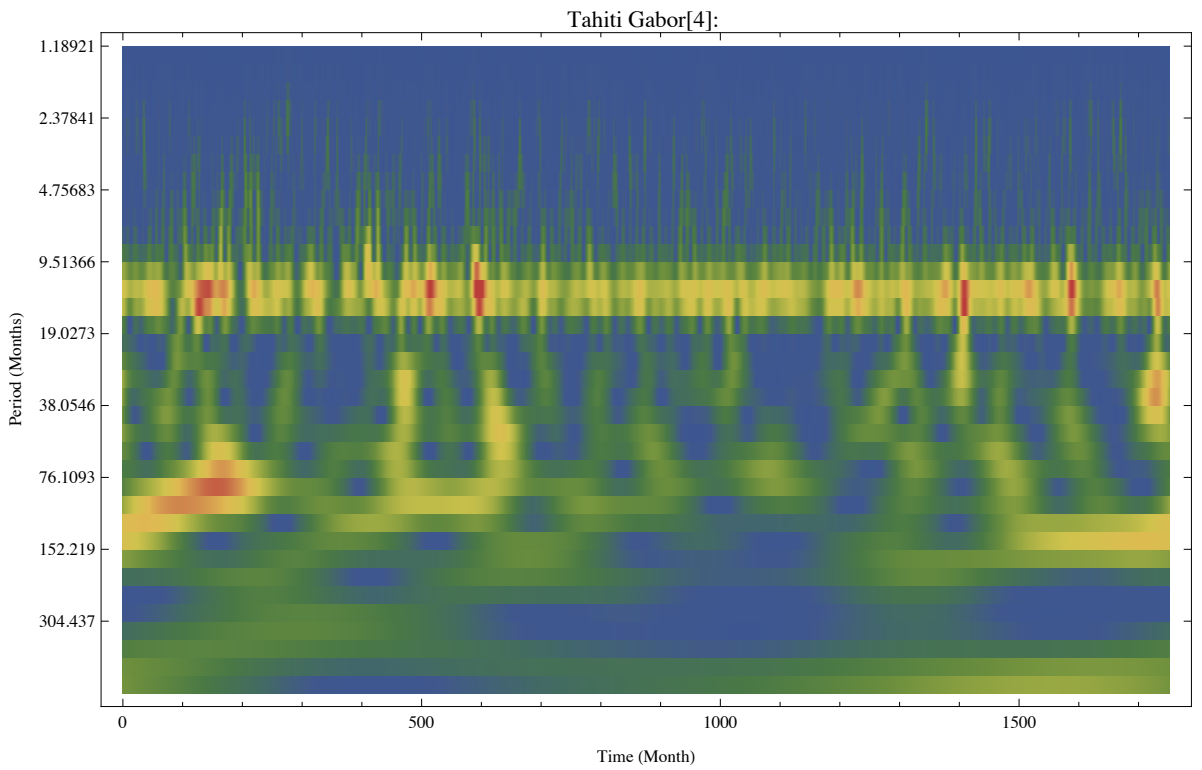
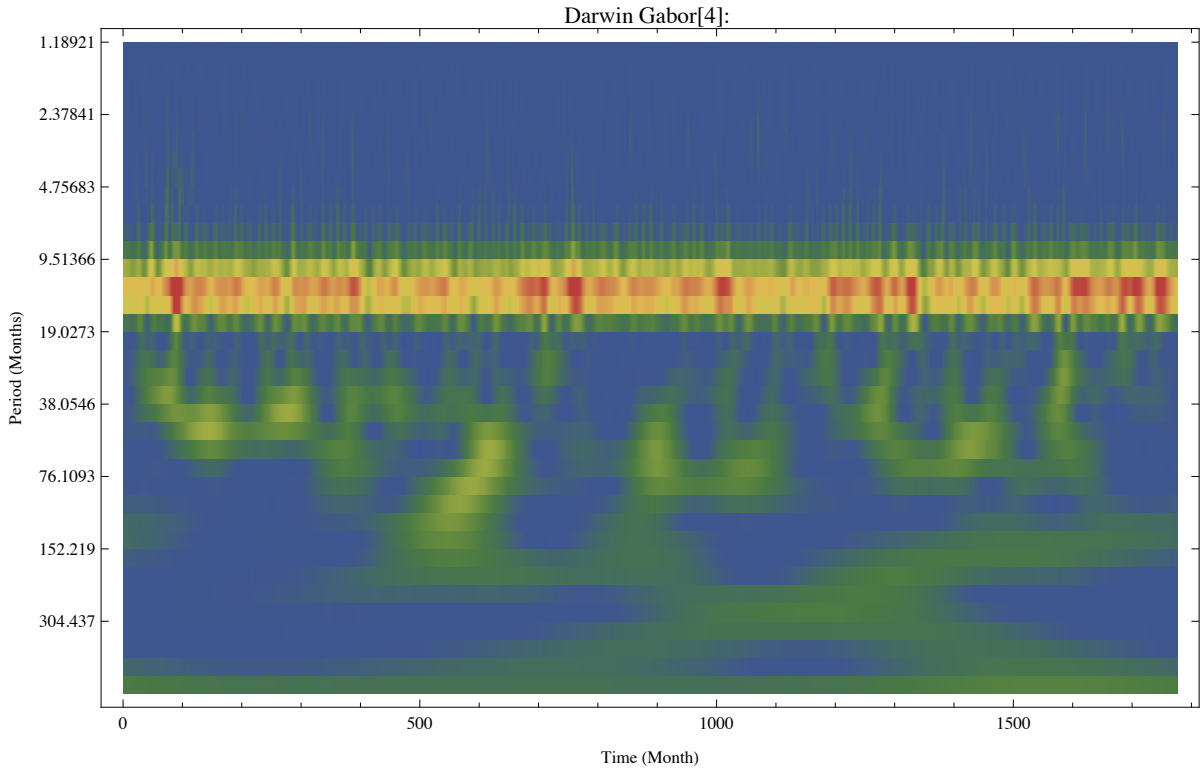
# Scalograms

DGaussian Wavelet [4] , un-padded.

Color Scheme: Blue Min, Red Max



Look at periods 9-19 months, you see these part sof the signals are almost the same periods, enough amplitude most of the time for the two signals have same periods. However the periodicity for 9-19 months is stronger in amplitude for Darwin:



Remove the top frequencies and you can see that 19-38 periods are not matching i.e. there are period of times on x-axis that 19-38 periodicity is completely missing in one signal while present on the other,

therefore out of step phase could be explained in this period range:

