

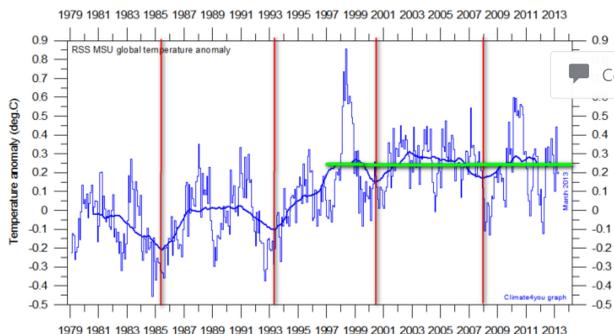
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A short spectrum analysis of the RSS global temperature anomalies

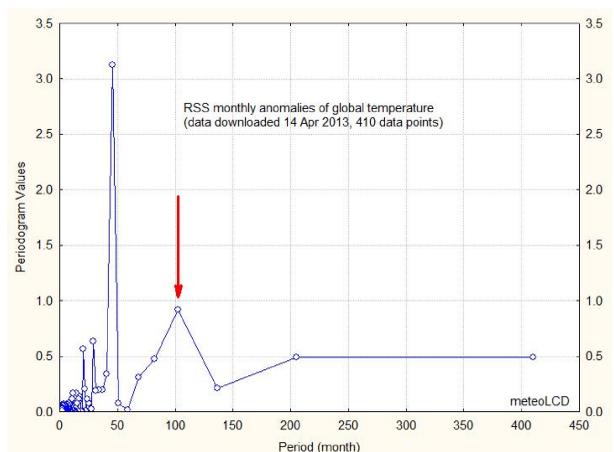
The discussion on climate cycles is an ongoing and interesting research topic. Particularly so, when many scientist estimate that the consensus IPCC AR's neglect to take into account very prominent cycles, like the ~60 years cycle apparent in oceanic oscillations (see for instance [here](#)). A quick inspection of the available satellite data from RSS shows a recurrent dip about every 8 years:



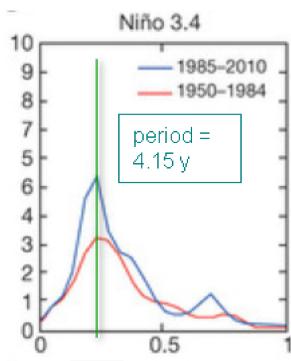
Let us make a quick spectral analysis of these monthly data (410 data points). The following table shows the 10 dominant peaks with their period in months:

	Frequency	Period	Cosine Coeffs	Sine Coeffs	Periodogram	Density
9	0.021951	45.5556	0.042436	0.115958	3.125643	1.504191
4	0.009756	102.5000	0.029578	0.060027	0.918012	0.603941
14	0.034146	29.2857	0.026196	-0.048913	0.631132	0.342492
20	0.048780	20.5000	-0.047160	0.023323	0.567445	0.302632
2	0.004878	205.0000	0.001251	0.048988	0.492283	0.421455
1	0.002439	410.0000	-0.014767	-0.046569	0.489287	0.362144
5	0.012195	82.0000	-0.047179	-0.009693	0.475570	0.515692
10	0.024390	41.0000	-0.039531	-0.009769	0.339919	0.963090
6	0.014634	68.3333	-0.034141	0.018140	0.306399	0.291545
3	0.007317	136.6667	0.031931	-0.003350	0.211322	0.468781

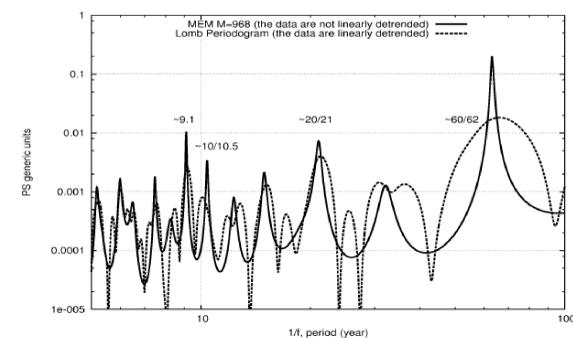
The next figure gives a graphical representation:



The visual clue is confirmed by the spectrum: there is a periodicity of 102.5 months i.e. about 8.5 years in the time series; note the large width of the peak, showing the relatively strong unsharpness (or the variability of that period). Most apparent is the very sharp peak corresponding to 45.6 month i.e. about 3.8 years. This seems to be the fingerprint of ENSO. A paper published in Nature by Watanabe et al. (Nature 471, 209–211, 10 March 2011, doi:10.1038/nature09777) shows the following periodogram (green line and text box added), which suggests a period of 4.15 years for about the same period.



Nicola Scafetta has published a very interesting paper in the Journal of Atmospheric and Solar Terrestrial Physics (DOI: 10.1016/j.jastp.2011.12.005, reprint [here](#)) "TESTING AN ASTRONOMICALLY BASED DECADEAL-SCALE EMPIRICAL HARMONIC CLIMATE MODEL VS. THE IPCC (2007) GENERAL CIRCULATION CLIMATE MODELS" where he documents a 9.1 year period caused by solar/lunar decadal oscillations:

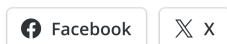


His assumption is that the climate is resonating with several dominant cycles imposed by astronomical pattern.

Conclusion:

A quick and dirty spectrum analysis of the RSS global temperature anomaly displays 2 very apparent cycles of about 4 and 8-9 years period: the first shows the fingerprint of ENSO, and the second could have an extraterrestrial cause. Neither of these two phenomena is believed to be related to atmospheric greenhouse gas concentrations.

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One Response to "A short spectrum analysis of the RSS global temperature anomalies"

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elektryczne Warszawa Says:
 February 25, 2014 at 21:20 | Reply

I'm impressed, I must say. Rarely do I come across a blog that's both equally educative and interesting, and let me tell you, you have hit the nail on the head. The problem is something which too few folks are speaking intelligently about. I am very happy that I came across this during my hunt for something concerning this.

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